APPENDIX A – Ecological Appraisal FPCR 2017

Protech Development UK Ltd.

Radford Semele

Ecology Report

March 2017

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1.0 INTRODUCTION

Site description

1.1 The proposed development site hereafter referred to as 'the site' is located south of Radford Semele, Leamington Spa, Warwickshire. The site comprises a single field of 1.66ha of un-grazed, species poor, semi improved grassland. The site is bound by residential housing to the north, arable land to the south and east. Arable land is also present to the east and this is subject to a planning refusal for residential development (planning reference 16/1666).

Brief planning history

1.2 The site has been subject to a previous planning application submitted and validated on 12th August 2016. The previous application (planning reference: W/16/1489) was for up to 40 dwellings locally equipped area of play SUDS, associated infrastructure, biodiversity/nature conservation enhancements and public open space. The application was recommended for refusal by Warwickshire County Council (WCC) Ecology Services and subsequently refused on 22nd December 2016.

Current proposals

1.3 Current proposals include for up to 16 residential dwellings (developable area c.0.75ha), public open space, Locally equipped Area of Play (LEAP) and c.0.91ha biodiversity enhancement.

Associated documents

1.4 As the following report relies largely on survey data from a number of different ecological consultants and seeks to draw together the overall findings of these separate surveys in a composite document as supporting information for the current application, reference will be made to the following documents also provided at *Appendices B & C* to this report in-line with British Standard *Biodiversity – Code of practice for planning and development* (BS 42020:2013 Sect. 6.12 & 6.13):

- Ecological Appraisal (August 2016) LDA Design 8900.01_R_LG_HB_290716
- Reptile Mitigation Strategy (September 2016) BSG Ecology 8900.03_RMS_APPR_270916

1.5 Reference may also be made to the following documents associated with the previous application on this site where the current masterplan addresses some of the issues previously raised in response to the previous application (Ref W/16/1489) also provided at *Appendices D-G*:

- Letter of objection (September 2016) Ecology Services, Warwickshire County Council
- Response to objection letter (October 2016) BSG Ecology 8900.03_L_APPR_051016
- Letter of objection (October 2016) Ecology Services, Warwick County Council
- Response to objection letter (November 2016) BSG Ecology 8900.03_L2_APPR_031116

2.0 BASELINE ECOLOGY

2.1 A site visit was made by a suitably experienced ecologist from FPCR Environment and Design Ltd in order to assess whether baseline conditions within the site boundary had changed since the previous submission of a planning application on the site in 2016. Generally, the observations were consistent with those of the Ecological Appraisal (LDA, August 2016) and descriptions are included below.

Habitats/flora

General

2.2 Habitats observed within the site include species-poor semi-improved grassland, tall herbaceous ruderal vegetation, dense native scrub and indigenous hedgerows. On the north and east boundaries to the site were dry field drainage ditches that link to an offsite waterbody to the northeast.

Species poor semi improved grassland

2.3 The species poor grassland recorded on the site can be described as species poor, of medium-low distinctiveness and in poor condition. This habitat type dominates the majority of the site. in some areas, although these were observed to be limited, the sward had developed a tussock structure with thatch layers indicative of low levels of management. Species recorded included creeping bent *Agrostis stolonifera*, cow parsley *Anthriscus sylvestris* (abundant), cock's-foot *Dactylis glomerata*, false oat-grass *Arrhenatherum elatius*, timothy *Phleum pratense*, broadleaved dock *Rumex obtusifolius*, creeping thistle *Cirsium arvense*, common sorrel *Rumex acetosa*, cleavers *Galium aparine* and common nettle *Urtica dioica* (occasional). A number of further plant species were present at much lower abundance (rare) and none of these were species that receive legislative protection, rare in terms of conservation status or notable.

Tall herbaceous ruderal

2.4 Several stands of tall herbaceous ruderal vegetation were present within the site with largest areas in the northeast and southeast corners of the field with further smaller stands extending along the northern and southern boundaries and several small stands on the west boundary. Also assessed of medium-low distinctiveness in poor condition, these comprised commonly of cow parsley with varying composition and abundance of broadleaved dock, common nettle, rosebay willowherb *Chamerion angustifolium* and common bramble *Rubus fruticosus* agg..

Dense scrub

2.5 A small, dense patch of self-set native scrub was present in the southwest corner of the site. species included common bramble, dog rose *Rosa canina*, common ivy *Hedera helix* and common ash *Fraxinus excelsior*.

Hedgerows

2.6 Two indigenous hedgerows were present on the site forming the southern and eastern boundaries. Both were assessed as 'important' under the biodiversity criteria of the Hedgerow Regulations

1997 and both were also assessed as 'species rich' with on average five or more woody canopy forming species per 30m stretch.

Fauna

Badger

2.7 Limited numbers of signs indicating low level use of the site by badgers had been observed, detailed within the Ecological Appraisal (LDA, August 2016) that reported observations of mammal runs characteristic of those formed by badger, a day nest on the southern boundary and snagged guard hairs on the barbed wire boundary fence in the northeast corner of the site. No sett was recorded and no signs indicating the occupation of the site by badgers were subsequently observed when a specific badger survey was conducted in June 2016.

Birds

2.8 Habitats within the site have been assessed as being suitable for birds and the variety of vegetation structures present will inevitably provide resources to local breeding bird populations; and in addition to providing nesting sites, will also provide cover for birds whilst rearing young. Records of local birds with conservation status including those listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended) or listed on the Birds of Conservation Concern (BoCC) red or amber lists. The site has the potential to provide resources to some birds of conservation status but given the size of the site, the location of the site and the habitats present this is unlikely to provide a significant resource.

Bats

Activity

2.9 Numerous records of bats were returned following consultation with Warwickshire Biological Records Centre (WBRC) and presented within the Ecological Appraisal (LDA, August 2016). These included records of the following species: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula* and brown long-eared *Plecotus auritus*. Records of two further species; Natterer's bat *Myotis nattereri* that is less common nationally but has a relatively widespread distribution in Warwickshire and the Annex II barbastelle bat *Barbastellus barbastellus* that is rarer with relatively unpredictable distribution nationally and considered scarce across Warwickshire.

2.10 Activity surveys undertaken by Wardell Armstrong (August 2016) in association with the adjacent Taylor Wimpey application *Land on the south side of Southam Road* planning ref: W/16/1666 confirmed use of the wider local area by common pipistrelle, soprano pipistrelle and *Myotis sp.* the majority of observed activity being from the former two pipistrelle species.

Roosts

2.11 The existing bungalow whose garage will be removed to accommodate the site access was assessed on Friday 10th March 2017. The building is a single storey, gable ended, brick built garage with a multi pitched, concrete tiled roof. This building will be removed in order to facilitate the implementation of primary access into the site. Wooden soffit boxes are present and barge boards on the gable ends. Internally the building is open plan to the roof and used for storage. The

structure is relatively modern with sound construction. There are no gaps in the soffit boxes or gaps under tiles. The mortar and render is in a good state of repair with none missing. The building is considered of negligible value to support roosting bats.

Reptiles

2.12 Full presence/absence surveys for reptiles have been undertaken by BSG Ecologists (http://www.bsg-ecology.com/index.php/people/) during the recommended survey period in 2016 with full results included within the Ecological Appraisal (LDA, August 2016). Results have been reproduced in the table below. In summary, a maximum of four adult grass snake *Natrix natrix* was observed on 1st July 2016.

Table 1.0 Reptile survey results (LDA, August 2016)

Date	Survey results
23/06/16	Three adult grass snake (unknown sex)
28/06/16	Three adult and two juvenile grass snake (unknown sex)
01/07/16	Four adult and two juvenile grass snake (unknown sex)
05/07/16	Three adult and two juvenile grass snake (unknown sex)
13/07/16	Two adult and two juvenile grass snake (unknown sex)
18/07/16	No reptiles observed
26/07/16	No reptiles observed

2.13 Assessed in accordance with the population level criteria as stated in the Key Reptile Site Register[1], a system that classifies reptile populations of separate species into one of three population categories. These categories are based on the total number of adult animals observed during individual survey occasions. It is concluded therefore, that there is a 'Low' population of grass snake on site.

Table 2.0 Key reptile site survey assessment categories

Species	Low population (No. of individuals)	Good population (No. of individuals)	Exceptional population (No. of individuals)
Adder	<5	5 - 10	>10
Common lizard	<5	5 – 20	>20
Grass snake	**<5**	**5 - 10**	**>10**
Slow worm	<5	5 – 20	>20

Amphibians

2.14 eDNA survey results provided within the Ecological Appraisal (LDA, August 2016) were returned positive for the presence of GCN within waterbodies 1 and 2 (see *Figure 3*) and further records were returned following consultation with WBRC of four GCN (one female and three male) within waterbody 1, 10m northeast of the site; and of a single male GCN within waterbody 2, 90m southwest of the site.

[1] Froglife (1999). Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesworth

2.15 Populations of common toad *Bufo bufo* and smooth newt *Lissotriton vulgaris* are known from the wider local area following the return of records from WBRC. A single common toad was recorded on site over the course of presence/absence surveys for reptiles completed in 2016. Reported in the Ecological Appraisal (LDA, August 2016).

Limitations and assumptions

2.16 No bat activity surveys have been undertaken in association with former or current planning applications on this site. The key habitat features which are likely to be used by bats included the boundary hedgerows which are retained and buffered from the development. Furthermore, the main access into the site is provided through the existing access to minimise any potential effects of the proposals. Given that the primary habitats are retained / buffered from the proposals and the site access uses the existing access, the proposed development is unlikely to affect current use of the site by the local bat population and additional survey work is considered unnecessary to support this application. This approach is proportional to the likely potential effects of the proposals; therefore, the approach is in accordance with the requirements of the BS42020 (BSI, 2013) and the BCT 2016 guidance. It is recognised that there may be minor adverse impacts both to bats; and commuting and foraging habitats through light spill, noise and fragmentation; however, with the retention of all linear habitat features and habitat creation inherent to the design such impacts can be adequately mitigated. Please see further details within *Section 3.0 - Discussion*. The lack of survey information in this instance is not therefore considered to represent a significant constraint to either the assessment of likely impacts or the determination of this application.

2.17 Limitations to presence absence surveys for reptiles were outlined and addressed previously within the Ecological Appraisal (LDA, August 2016):

The reptile surveys were conducted from 23rd June – 26th July. The optimal survey months are considered to be April, May and September (Gov.uk, 2015) when reptiles are most active and needing to bask in cool weather. June/July is outside the optimal survey window because reptiles are only likely to need to bask for short periods of time. Favourable weather conditions were selected (such as surveys following rain or sunshine after cold nights) during the survey period as per the best practice guidance (Froglife, 1999) therefore removing the influence of time of year. We [LDA] *have confidence in this assessment because reptiles were frequently being encountered at other sites surveyed by BSG Ecology within the region (Oxfordshire and Bedfordshire), therefore should reptiles have been present in any numbers, they are considered likely to have been encountered.*

2.18 We would agree with the statement made within the Ecological Appraisal (LDA, August 2016) that the above described limitations do not represent a constraint to the assessment. It is clear that the weather conditions, ambient temperatures in particular, at the time of survey visits within the suboptimal survey periods are of more significance in determining the likelihood of recording reptiles than falling within the sub-optimal period itself.

2.19 No population size class assessment for GCN has been completed to date in association with the proposed development of the site for this, or the previously proposed scheme. Representations by Warwickshire County Council in objection to the previous application on the site (WCC Ecology Services, September 2016) noted that waterbody 1 and 2 were subject to such an assessment in association with an adjacent application (that has since been refused planning consent) *Land on the south side of Southam Road* planning reference W/16/1666.

2.20 Although noted within comments in the WCC response to the adjacent application that the surveys were not undertaken in-line with the relevant guidance[2] (all having been undertaken too late in the season), we consider that this, together with the eDNA surveys undertaken by BSG and reported within the Ecological Appraisal (LDA, August 2016) to be sufficient to determine the likely potential impacts of the proposed development and the lack of repeat population size class assessments upon waterbody 1 and waterbody 2 in support of this application is therefore not considered a constraint.

2.21 It was also noted that no objection was raised by WCC Ecology Services based in the limitations outlined above in association with the adjacent planning application *Land on the south side of Southam Road* planning reference W/16/1666.

[2] Whitehurst (2001) *Great Crested Newt Mitigation Guidelines: Version August 2001.* English Nature, Peterborough.

3.0 DISCUSSION

Statutory sites

3.1 Long Itchington and Ufton Woods Site SSSI is 3.5km southeast of the site and therefore the site falls within the 3-5km zone of influence of the SSSI. Within this zone, residential development in this zone is not recognised as a development likely to impact upon the integrity of any features for which the SSSI is designated.

Non-statutory sites

3.2 Non-statutory designated sites do not receive statutory protection. However, they do receive policy protection (as 'Local Sites') as reflected in the National Planning Policy Framework (NPPF) which suggests that local planning authorities should set criteria based policies against which proposals for developments on or affecting protected wildlife site should be judged.

3.3 Seventeen non-statutory sites of nature conservation interest are located within 2km of the site. Owing to the scale of current proposals, the degree of geographic separation and the proportion of natural & semi-natural green space inherently included within the design of the proposed development it is considered unlikely that the potential for minor increases in residential occupants and subsequent effects of ecosystem service use will be significant upon any of these non-statutory sites.

3.4 'The Valley' Local Wildlife Site (LWS) is the closest non-statutory site c.50m southwest of the site. this non-statutory site is an area of arable and improved grassland farmland with some smaller areas of semi-improved grassland containing lady's bedstraw and other County notable plant species. Habitats not being hydrological and with the site not being open public access the potential for adverse effects to arise through the proposed development is considered negligible.

3.5 Several of the non-statutory sites of nature conservation interest are partly, if not solely noted for their riparian or aquatic habitats and fauna; namely these are Whitnash Brook Local Wildlife Site (LWS), Grand Union Canal (pLWS), Leam Valley & Welches Meadow (pLWS), River Leam (pLWS) and Lower Fosse Farm Pool. None of these have direct hydrological connectivity with the site and the drainage ditches present within the site have been observed as mostly dry. None of these sites are therefore likely to be negatively impacted by changes to local hydrological conditions or waterborne pollution events resulting from the proposed development in either the construction or operational phases.

3.6 Current guidance provided through the NPPF states that new developments should implement sustainable drainage systems (SUDS) as a means of storm water control in order to maintain flow rates at levels no greater than the pre-developed baseline conditions but also to improve water quality. The removal of potential pollutants and contaminants will be optimised by the implementation of source control features that may include permeable paving, filter strips, ditches, swales and tertiary attenuation bodies that through a process of filtration and settling will remove suspended contaminated sediment.

3.7 Furthermore, the implementation of SUDS drainage features throughout the site is likely to enhance biodiversity throughout the proposed development through the creation of additional habitats associated with the features. Tertiary attenuation features, ditches and swales for instance

are likely to provide marginal and ephemeral riparian habitats that would benefit a wide range of local wildlife including invertebrates, amphibians and birds.

Habitats

3.8 The degree to which habitats receive consideration within the planning system relies on a number of mechanisms, including:

- Inclusion within specific policy (e.g. veteran trees, ancient woodland and linear habitats in NPPF, or non-statutory site designation),
- Identification as a habitat of principal importance for biodiversity under NERC and consequently identification as a Priority Habitat within the local Biodiversity Action Plan (LBAP) and a Priority Habitat for England under Biodiversity 2020.

3.9 Under NPPF development should seek to contribute a net gain in biodiversity with an emphasis on improving ecological networks and linkages where possible.

3.10 All habitats identified within the site are considered to be of low biodiversity value. Species-poor semi-improved grassland comprising common and widespread species would normally also be considered of no more than low biodiversity valuable particularly as such habitat is easily replicable; however, WCC Ecology Services have expressed that this habitat is of greater value owing to its rarity in the county in responses association with the previous application on this site. the current application seeks to address previous concerns of WCC Ecology Services by significantly reducing the developable area, retaining more of this habitat and commitment to improving the condition of the habitat in the long term. Further details are included in the Biodiversity Impact Assessment (BIA) calculation section below.

3.11 It should be noted that at this stage, the proposed development is outline although the Landscape Framework anticipates the development will result in the following:

3.12 0.67 ha of species-poor, semi-improved grassland will be lost to facilitate the development.

3.13 0.32 ha of tall herbaceous ruderal habitat will be lost to facilitate the development.

3.14 c.220 linear m of species-rich native hedgerows to be retained and enhanced through ‘gapping-up’ with indigenous woody species.

3.15 177 linear metres of species-rich native hedgerows will be planted enveloping the development proper and restricting public access to the majority of retained species-poor, semi-improved grassland and increasing the value of the site to local wildlife (badgers, GCN, reptiles and breeding birds) by providing a new corridor for movement in addition to foraging, nesting and refuge opportunities.

3.16 c.170 m of drainage ditch will be enhanced by re-profiling and beneficial management of bankside vegetation to maintain a more open channel.

3.17 0.66 ha of species-poor, semi-improved grassland will be retained and enhanced to raise the condition status from poor to good. (see BIA section below).

3.18 0.01 ha of amenity grassland will be created in public open space. Flowering amenity lawn mix will be specified in order to ensure such habitat is of moderate condition.

3.19 Substantial areas of residential gardens (lawn and shrub).

3.20 0.19 ha of riparian and marginal aquatic habitats (balancing pond with permanent water)

3.21 Substantial areas of marsh grassland / wet meadow at SUDS basin margins and enhanced ditch in the north of the site.

Biodiversity Impact Assessment

3.22 The results of the Biodiversity Impact Assessment are summarised in *Table 3.0* below, taken from the full matrix that is provided at *Appendix A*.

3.23 The BIA calculation has been based upon the proposed area of retained species-poor, semi-improved grassland attaining good condition within ten years which is in-line with the recommendations of Warwickshire County Council relative to the previous application on the site. Specifically, that, "*to achieve a fully functioning species-rich grassland will not be feasible within only five years given that the grassland is currently in poor condition"* (WCC Ecology Services, October 2016).

Table 3.0 Biodiversity Impact Assessment Summary.

Habitats	**Area (ha)**	**Habitat Biodiversity Value**
Total existing area onsite	1.62	4.86
Habitats negatively impacted by development Habitat Impact Score	0.99	2.97
On site habitat mitigation Habitat Mitigation Score	1.62	3.15
Habitat Biodiversity Impact Score If -ve further compensation required		**0.18**
Percentage of biodiversity impact		
Linear features	**Length (km)**	**Linear Biodiversity Value**
Total existing length onsite	0.48	4.32
Linear features negatively impacted by development Linear Impact Score	0.00	0.00
On site linear mitigation Linear Mitigation Score	0.49	2.70
Linear Biodiversity Impact Score If -ve further compensation required		**2.70**
Percentage of linear biodiversity impact		

3.24 The existing habitats identified within the site have a Habitat Biodiversity Value of 4.86 units and the proposed development will result in a loss (Biodiversity Impact Score) of 2.97 units. A total of 3.15 units will be retained/created/enhanced as a result of the proposed development resulting in an overall Habitat Biodiversity Impact Score of 0.18.

3.25 Existing linear features on site have a Linear Biodiversity Value of 4.32 units with the development resulting in no loss (Linear Impact Score). A total of 2.7 units will be created and enhanced as a result of the proposed development and therefore a Linear Biodiversity Impact Score of 2.7 units.

3.26 All hedgerows on the site are assessed as being species rich and important under the Hedgerow Regulations 1997. The ecological value of the hedgerow resource is such that the retention and buffering of these has formed a key element of the landscape framework of the proposed development. Specifically, all hedgerows have been retained in their entirety and protected from the potential adverse effects of the construction and operational phases of the proposed development in accordance with BS5837 *Trees in Relation to Construction* and through the adoption of a Green Infrastructure and Biodiversity Management Plan to ensure long-term sympathetic management of these features. Inclusion of existing retained hedgerows within the curtilage of new residential gardens has been avoided through the design of the Landscape Framework and Illustrative Masterplan. Where hedgerows are retained within the curtilage of private residences, they inevitably decline in value and quality through inappropriate management (usually implemented by residents), gradual incorporation into residential gardens and supplementary planting with ornamental species not beneficial to local wildlife. Semi-mature trees within hedgerows will also be retained and protected from any potential damage to root systems that may arise from construction operations.

Protected species

3.27 Principal pieces of legislation protecting wild species are Part 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA) and the Conservation of Habitats and Species Regulations 2010 (as amended). Some species, for example badgers, also have their own protective legislation (Protection of Badger Act 1992). The impact that this legislation has on the Planning system is outlined in ODPM 06/2005 Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.

3.28 This guidance states that as the presence of protected species is a material consideration in any planning decision, it is essential that the presence or otherwise of protected species, and the extent to which they are affected by proposals is established prior to planning permission being granted. Furthermore, where protected species are present and proposals may result in harm to the species or its habitat, steps should be taken to ensure the long-term protection of the species, such as through attaching appropriate planning conditions.

3.29 In addition to protected species, there are those that are otherwise of conservation merit, such as species of principal importance for the purpose of conserving biodiversity under the Natural Environment and Rural Communities (NERC) Act 2006. These are recognised in the National Planning Policy Framework (NPPF), which advises that when determining planning applications, LPA's should aim to conserve and enhance biodiversity by applying a set of principles including:

- *If significant harm resulting from a development cannot be avoided……, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *Development proposals where the primary objective is to conserve or enhance biodiversity should be encouraged.*

3.30 The implications for the proposed development that various species identified from the desk study and field survey, or those that are otherwise thought reasonably likely to occur, are outlined below:

Badger

3.31 No evidence of occupation of the site by badgers has been confirmed on site to date although a single day nest was observed on the southern boundary and numerous mammal runs were recorded throughout the site. no foraging signs or latrines have been observed which would suggest that whilst badgers move through the site, habitats do not constitute significant foraging resources.

3.32 Precautionary measures would need to be implemented during the construction phase to ensure that badgers are not indirectly harmed through isolation or injured from falls into excavations such as trenches, holes and ditches. Therefore, these should be covered outside of working hours or, where excavations are too large to cover, a means of escape should be provided, such as sloping banks or wooden planks. Pipes over 250mm in diameter should be capped overnight, this will reduce the possibility of badgers and other mammals becoming trapped and injured.

3.33 Construction operations should be restricted to daylight hours in order to reduce the potential for adverse effects through disturbance to badger (and other nocturnal and crepuscular wildlife). Construction offices, material compounds and security buildings would be located in appropriate locations away from retained habitats in order to reduce the potential for accidental damage to habitats or interruption to regularly used badger runs. All waste materials should be appropriately stored, in particular domestic waste from construction site welfare units that may attract badgers should be stored in heavy duty bins with lids.

Birds

3.34 The bird assemblage present within the application site and wider survey area is typical of edge-of-settlement habitats with pastoral fields, hedgerows and woodland features and farmland.

3.35 As the proposed development is a residential development there will be two types of impacts, these are immediate disturbance resulting from construction activities and long-term habitat loss and land use change and disturbance from residents.

3.36 All wild bird species are protected while nesting by the Wildlife and Countryside Act 1981 (as amended). This legislation protects wild birds and their eggs from intentional harm, and makes it illegal to intentionally take, damage, or destroy a wild bird nest while it is in use or being built.

3.37 Where removal of woody vegetation is required (in this case limited to scrub), it is recommended that this is carried out outside of the nesting season (March – September inclusive) as all birds are protected whilst on the nest under the Wildlife and Countryside Act 1981 (as amended). If removal outside the nesting season is not feasible, all vegetation to be removed should be checked by an experienced ecologist for the presence of active nests. Should active nests be discovered, detailed advice would be provided by the supervising ecologist. Advice is likely to include a buffer zone around any located nests until all young have fledged.

3.38 There is potential for bird boxes to provide additional enhancements for the local bird population and such provisions would be in accordance with local planning policy and the aspirations of the NPPF. Suitable nest box types could include:

- A mixture of small hole (26mm and 32mm) boxes placed throughout the site on suitable trees and buildings will provide nesting opportunities for blue tit and great tit. These boxes generally have a high uptake rate.

- Larger terraced style or multiple single holed 32mm nest boxes should be placed on buildings to attract house sparrows, and 42mm single holed nest boxes can be placed on building or trees to provide opportunity for starlings.
- Eaves mounted boxes suitable for use by house martins placed on buildings to encourage occupation by the species.

3.39 Small open fronted nest boxes again should be placed throughout the site especially on trees which support a climber such as ivy which provides a degree of concealment.

3.40 The retention and management of areas of species-poor semi-improved grassland with limited public access will inevitably also provide some degree of nesting/breeding resource for ground nesting birds in addition to providing a more varied foraging resource including seed bearing plant species as the grassland improves in conditions and a more diverse sward is established.

Bats

3.41 Given the habitats present within the site in combination with the local records received following consultation with WBRC and bat activity data associated with the adjacent application (planning ref: W/16/1666) the site is considered to be subject to low activity levels associated with casual foraging and commuting by insignificant number of common and widespread bat species.

3.42 The potential impact of the development will be minimised as all linear features on site are to be retained within the Landscape Framework. A substantial proportion of the site is to be retained as grassland with limited public access and is not subject to development. Mitigation and enhancements on site include additional tree and hedgerow planting at the development edge that will enhance commuting and foraging habitat for bats in addition to reducing the effect of light spill from new residences upon retained habitats. The proposals include the creation of a SUDS attenuation feature with area of permanent standing water and the enhancement of the drainage ditch in the north of the site to provide a corridor of riparian habitat providing further foraging opportunities for bats. Bat boxes will be installed in suitable locations to provide further enhancements. Whilst the indicative locations of three Schwegler 1FF bat boxes shown at *Figure 4* the scope for such enhancements is not restricted either to this number or this type of bat box.

3.43 Most common bat species are typically unaffected by artificial lighting whilst commuting and foraging and in some cases (common pipistrelle, soprano pipistrelle and serotine) utilise such lighting for foraging on the invertebrates attracted there.[3] It is therefore considered that moderate increases in lighting will not have an adverse effect on populations of these common bat species.

3.44 Whilst this may be the case, low level lighting will be implemented on the estate road backing on to the newly created fence/indigenous hedgerow/tree edge to the development to reduce any disturbance effects from lighting upon retained grassland habitats. In order to reduce such potential effects upon bats and other wildlife, lighting will be designed in line with guidance provided by the Institute of Light Engineers, 2005[4].

3.45 During the construction phase of the proposed development, the impacts of disturbance by lighting to retained habitats and subsequent effects on foraging bats through security lighting, location of construction compounds and vehicular lighting when late working, can be reduced through

[3] Rydell J & Racey, P A (1993) Street lamps and the feeding ecology of insectivorous bats. Recent Advances in Bat Biology Zool Soc Lond Symposium abstracts

[4] 2005). *Guidance Notes for the Reduction of Obtrusive Light GN01*. The institute of Lighting Engineers.

appropriate siting of the site offices away from sensitive retained habitats and restriction of construction activities to normal working hours.

Reptiles

3.46 Over the course of strategic presence/absence surveys for reptiles (LDA, August 2016 & BSG September, 2016) a peak count of four adult grass snake was recorded.

3.47 All British reptiles are protected from killing and injury under the Wildlife and Countryside Act 1981 (as amended) and are listed as species of principal importance for the conservation of biodiversity under the NERC Act, indicating that public bodies, such as the Local Planning Authority, have a duty to have regard to the conservation of these species.

3.48 This partial protection does not directly protect the habitat of these reptile species. Where these animals are present on land that is to be affected by development, the implications of legislation are that providing that killing can *reasonably be avoided* then an operation is legal. This requires that:

- the animals must be protected from injury or killing;
- mitigation should be provided to maintain the conservation status of the species; and
- following operations the population should be monitored.

3.49 In the absence of mitigation, construction operations may potentially result in the accidental killing or injuring of common reptiles, which as a result of the protection afforded to them, will need to be avoided. The site will be subject to a translocation programme undertaken in tandem with the great crested newt mitigation (see below section) to remove any individual reptiles encountered to a receptor area prior to the commencement of site clearance works.

3.50 The retained grassland area enveloping the proposed development on the north, east and south sides will act as a receptor area for both translocated reptiles and GCN. Although it is acknowledged that adult grass snakes have large home ranges and populations are commonly recorded at low densities it is noted that the loss of suitable habitat to the development footprint will reduce the habitat currently available for grass snake to utilise. Owing to this, enhancements will be required in order to increase the carrying capacity and quality of the remaining retained habitats. All linear habitat features with the potential to be used by the species are being retained in full and landscaping buffers (grassland) maintained adjacent to these to allow continued connectivity and movement of individuals through the site.

3.51 Largely the mitigation strategy for reptiles outlined herein follows that previously outlined in the Reptile Mitigation Strategy proposed in association with the former application on this site (BSG, September 2016), the majority of measures being standard and accepted methods of habitat enhancement. Proposed enhancements include:

- The creation of four hibernacula the location and specification of which are provided in *Figure 5*;
- The enhancement of the drainage ditch along the northenr boundary of the site to create a wider open channel with riparian planting on the banksides;
- The creation of a SUDS attenuation feature of c.0.19ha that will include areas of permanent standing water in addition to marginal areas;

3.52 Other enhancements will be delivered through the implementation of long term management prescriptions such as the creation of designated areas for the arisings of management on site (including grass form mowing and brash from hedgerow maintenance etc.) and rotational mowing regime to allow the establishment of thatch within the retained grassland and encourage a more diverse vegetation structure. Areas of grassland will also be manipulated to promote wildflower establishment with the aim of increasing the condition of retained grassland within a ten-year period.

3.53 Translocation will be undertaken following the installation of the fencing (for the GCN mitigation works – see below) and will be achieved in accordance with current best practice guidelines. Artificial refugia (0.5 x 0.5m roofing felt) will be placed within the areas of the site which provide suitable habitat for reptiles at a density of 50 per ha with trapping undertaken for a minimum of 60 days as recommended for grass snake populations of this size, with 5 clear days of no captures. All captured reptiles would be transferred into the receptor area where they would remain until the completion of construction operations following which time TAF will be removed and individuals will be able to move freely throughout Green infrastructure of the Proposed Development.

3.54 Upon completion of the reptile trapping period the remaining cleared areas of habitat will be destructively searched under supervision of a suitably experienced, licenced ecologist, prior to the commencement of works. Any reptile/amphibians found during the search would be transferred to the receptor site.

3.55 Trapping and translocation of reptiles will be undertaken within the same recommended period for GCN between mid-March and mid-October, when these animals are active and in suitable weather conditions (overnight temperatures above 10ºC, no rain, no wind).

3.56 All of the above works will be undertaken under the supervision of a suitably experienced, licenced ecologist.

3.57 The provision and agreement of a comprehensive strategy for the mitigation of impacts upon reptiles can be adequately secured through an appropriately worded planning condition with all management prescriptions secured within an appropriate Biodiversity Management Plan.

GCN

3.58 Great crested newts are afforded legal protection by Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and under the Conservation of Habitats and Species Regulations 2010 (as amended). This legislation applies to all life stages of great crested newts. Great crested newts are also listed as a species of principal importance under the NERC Act and as a local priority species.

3.59 Consultation records, eDNA survey data (LDA, August 2016) and presence/absence survey data collected by Wardell Armstrong in association with the adjacent application (August 2016, planning ref: W/16/1666) indicate that a small population of GCN is present in both waterbodies within 250m of the site although it has been acknowledged that there were some limitations to the survey data submitted in support of that particular application.

3.60 Hedgerows, species-poor semi-improved grassland (in particular where tussocky in structure) and scrub all have the potential to provide places of shelter or rest to GCN and likely provide terrestrial foraging resources to the population. There is also some anecdotal evidence of GCN road mortalities (WCC, October 2016) near to the proposed access into the site that may indicate individual GCN migrate through the site between the two waterbodies although it is important to

note that it is not possible to verify the location of where photographs submitted to WCC were taken.

3.61 Although a relatively crude method of assessing the actual risk of harm or injury to the species, when using the Natural England GCN licence rapid risk assessment, during initial site clearance activities there is a high likelihood that in the absence of mitigation an offence may be committed. The Natural England GCN licence rapid risk assessment identifies the area within 0-50m of a confirmed breeding pond as a 'high risk' area given this area is considered to provide the core supporting habitat. In light of this, a 50m landscape buffer zone is proposed within which, only habitat enhancement works for GCN (including the construction of hibernacula, gapping up of existing retained hedgerows etc.) will be implemented.

3.62 Development will need to ensure that no offence is committed during works and this would necessitate the requirement for a European Protected Species License (EPSL) to legitimise mitigation works. This will involve the retention and enhancement of habitats potentially used by GCNs and where habitats will be lost, mitigation to ensure that no individuals are harmed, injured or killed.

3.63 The waterbodies from which the small population of GCN's were recorded are outside of the application site and as such will not be directly affected by habitat loss to the footprint of the proposed development.

Outline mitigation proposals

3.64 Prior to the commencement of works and upon receipt of an EPSL a trapping and translocation exercise will be conducted following the standard techniques and fencing specifications as outlined within the GCN Mitigation Guidelines (English Nature 2001) and the HGBI Best Practice and Lawful Standard document[5]. Connectivity measures will be implemented both to prevent re-entry of translocated newts to the development area and; in combination with permanent fencing or engineered guide solutions to divert any migrating GCN through existing culverts beneath the highway ('The Valley') therefore maintaining connectivity between both of the identified waterbodies. Temporary Amphibian exclusion Fencing (TAF) will be attached to the post and rail fencing where it will remain for the duration of the construction period, following the completion of which it will be removed under the EPSL.

3.65 To ensure that following completion of construction that the potential adverse effects of the built elements of the proposed development are minimised, roads and drainage will be designed to be permeable to amphibians. Typically, such measures take the form of 'Cross-Channel Interceptors' or shallow 'Tunnels/Underpasses' in line with the recommendations of Chapter 9 of the Design Manual for Roads and Bridges DMRB[6]. Generally, the use of Kerbs will be avoided but where necessary the use of inset kerbs adjacent to drains would be employed to prevent animals becoming trapped.

3.66 A significant area of green infrastructure delivered by the proposed development accessible to GCN (including 0.66ha of semi improved grassland, 0.19ha SUDS features and enhanced,

[5] Herpetofauna Groups of Britain and Ireland (1998), Evaluating Local Mitigation / Translocation Programmes: Maintaining Best Practice and Lawful Standard. HGBI advisory notes for Amphibian and Reptile Groups (ARGs). HGBI, c/o Froglife, Halesworth. Unpublished

[6] *Design Manual for Roads and Bridges (DMRB) Volume 10 Environmental Design and Management Section 4 Nature Conservation Part 6 HA98/01 Nature Conservation Management Advice in Relation to Amphibians* (2001) The Highways Agency/The Scottish Executive Development Department/The National Assembly for Wales & The Department for Regional Development.

reprofiled drainage ditch) will far exceed the 15-20% of total application site area of suitable habitat for GCN recommended by Natural England. In addition, the retention of all linear features (together with the creation of X metres of new indigenous hedgerow, enhancements to the northern drainage ditch and addition of SUDS features with permanent areas of standing water) will ensure the maintenance, if not improvement of connectivity around and through the site.

3.67 The retention and enhancement of semi improved grassland through appropriate management in addition to the provision of suitable hibernacula features will constitute an increase in available resources for the local population of GCN and ensure the favourable conservation status of the species is maintained and secured in the long term. In order to restrict access to the vast majority of the retained grassland area, the development edge will be separated by a post and rail fencing, new indigenous hedgerow and tree boundary outside the curtilage of residential ownership.

3.68 As no waterbodies are to be lost as a result of the proposed development no waterbodies will be required to compensate or mitigate for the loss of aquatic habitat. An attenuation feature is proposed in the central south east of the application site within a wider area of green infrastructure. It is intended for the SUDS attenuation feature to be designed in line with the aspirations of the National Planning Policy Framework and Natural England's description of green space as, '*multifunctional resource capable of delivering a wide range of environmental and quality of life benefits (ecosystem services) for local communities*'.

3.69 In order to maximise the biodiversity value of the SUDS feature in terms of the resources provided to local wildlife including GCN, it should include areas with depths of 1.5 metres in order that there will be a permanent area of standing water throughout the year. In addition, the attenuation waterbodies will be designed to accommodate the following features where possible to maximise biodiversity benefits and ensure the suitability for colonisation by local populations of GCN in future:

- Embayments, spits and a variety of edge profiles to maximise the available shoreline and create valuable micro-habitat;
- Gently sloping shallows created at suggested gradients of 1:100 to create summer draw-down zones increasing the value of the waterbody to aquatic invertebrates;
- Marginal shelves planted with suitable emergent and marginal planting; and
- Deeper water areas to provide an area of year-round open water to be maintained as free from vegetation.

3.70 Marginal and emergent species to be planted (at suggested densities of one plant per 0.5m^2) will include a combination of the following species:

- Flowering rush *Butomus umbellatus*
- King cup *Caltha palustris*
- Meadowsweet *Filipendula ulmaria*
- Yellow flag iris *Iris pseudacorus*
- Purple loosestrife *Lythrum salicaria*
- Water mint *Mentha aquatica*
- Water forget-me-not *Myosotis scorpioides*
- Common water starwort *Callitriche stagnalis*

- Frogbit *Hydrocharis morsus-ranae*
- Common water crowfoot *Ranunculus aquatilis*

3.71 Draw-down zones will be seeded with an appropriate wet grassland mix (suggested sowing rate of 4g/5g per m^2) and managed in an appropriate manner to maximise suitability for GCN in the long term. The new SUDS attenuation waterbody will provide a net increase in habitat suitable for amphibian species.

Further legislation discussion

3.72 It is important to note that the application is for outline planning permission and that much of the detail such as cross-sections of various Green Infrastructure features, soft landscaping etc. has not been considered at this stage. The level of detail that has been submitted within this report is considered sufficient to allow the LPA to assess the likely significant impacts upon ecological receptors and therefore enable a decision to be made.

3.73 Natural England guidance on EPS clearly states:

"The level of detail (including specific information on the timing and implementation) required for a licence application is not usually available at the planning application stage. The level of species detail in respect of the compensation mitigation and its delivery for any proposed development that is required at the licensing stage when Natural England will be required to satisfy itself of the three tests will also be higher than that ordinarily required in the planning consent process. Such level of detail often may only be available at the detailed stage of the development's evolution."

3.74 Furthermore, recent caselaw (*Morge* and *Prideaux*) that relates to the duty of the Planning Authority on European Protected Species (EPS) such as GCN, the direction is that the LPA does not need to do a shadow assessment of the three 'tests' set out in the Habitat Regulations but rather the LPA simply need to assess if they believe a licence is 'unlikely' to be granted by Natural England at the implementation stage. Indeed, the *Prideaux* case rules that if there is no objection from Natural England, the LPA can proceed on the basis that a licence is not unlikely to be granted in the future.

3.75 In addition to the above points relating to recent case law and Natural England guidance, the *British Standard 42020:2013 Biodiversity – Code of practice for planning and development* also emphasises the importance of 'proportionality' when planning and undertaking survey works and (in the case of LPA Ecologists) in determining planning applications. BS 42020 states:

"The work involved in preparing and implementing all ecological surveys, impact assessments and measures of avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision maker and their consultees should ensure that any comments and advice made over an application are also proportionate"

3.76 Whilst mitigation at the detailed design or reserve matters stage will be refined and sufficient detail will need to be provided at such a time to support an EPS licence application in relation to GCN, the outline mitigation proposals provided within this report are considered proportional both in terms of the ecological receptors currently supported by habitats within the application site, and the

potential likely significant impacts that may arise through the actions associated with the construction, and operation phases of the proposed development.

3.77 Such mitigation measures and the management or maintenance required in order to safeguard biodiversity and promote significant net biodiversity gains in the long term can furthermore be detailed in an appropriate Management Plan and secured through an accordingly worded planning condition.

Key

- Site Boundary
- 1km Site Buffer
- Local Nature Reserves (LNR)
- Local Wildlife Site (LWS)
- Potential Local Wildlife Site (pLWS)
- Ecosite

Site Reference	Site Name	Designation
23/36	Whitnash Brook	LWS
18/36H	Disused Railway Line Leamington-Rugby	LWS
27/36H	Fosse wood and canal hedge and towpath	Potential LWS
16/36	River Leam	Potential LWS
27/36M	Fosse wood and canal hedge and towpath	Potential LWS
41/36	Offchurch Bury Park	Ecosite
83/36	Woodland adjacent to Grand Union Canal	Potential LWS
46/36	Hill Farm	LWS
61/36	St Nicholas Churchyard	Ecosite

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Radford Semele

Protected Sites Plan

1:8,500 | APD/MEL | 15/3/2017

Figure 1 | **7691-E-01A**

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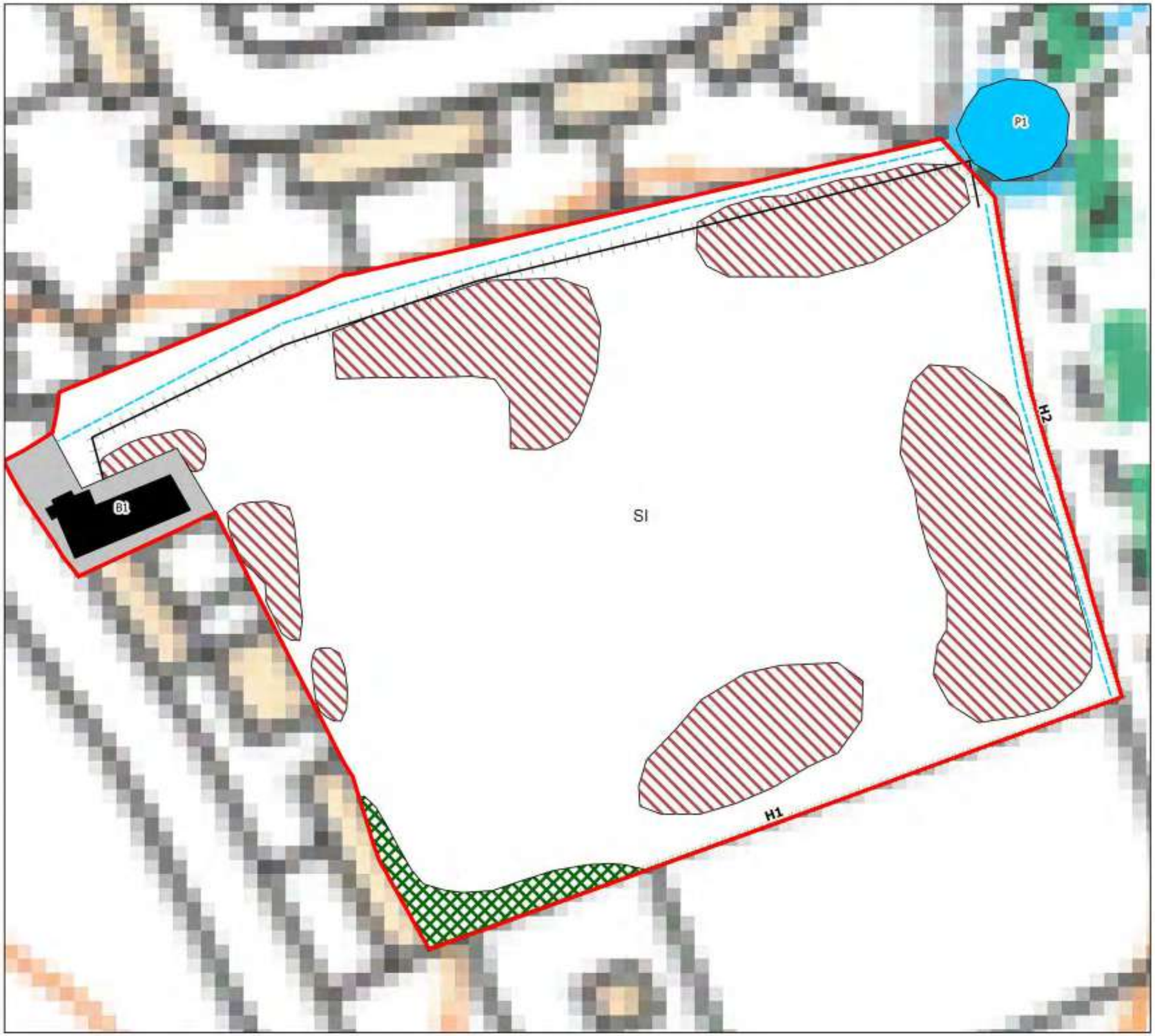
masterplanning ■ environmental assessment ■ landscape design ■ urban design ■ ecology ■ architecture ■ arboriculture

P:\xxxx\xxxx\QGIS\Plans\xxxx-E-01 Consultation Request Plan.qgs

Key

- Site Boundary
- Buildings
- Standing water
- Scrub - dense/continuous
- Other tall herb and fern - ruderal
- SI — Poor semi-improved grassland
- Intact hedge - native species-rich
- Fence
- Dry ditch



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client: Protech Development UK Ltd.
project: Radford Semele
drawing title: PHASE 1 HABITAT PLAN
scale: 1:700 | drawn: APD/HEL | date: 17/3/2017
drawing / figure number: **Figure 2.0** | rev: **7691-E-02A**

Key

- Site Boundary
- Pond with reference number

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P:\0000\0000\QGIS\Plans\0000-E-01 Consultation Request Plan.qgs

client: Protech Development UK Ltd.

project: Radford Semele

drawing title: Waterbody Location Plan

scale: 1:1,000 | drawn: APD/ MEL | date: 15/3/2017

drawing number: **Figure 3.0** | rev: **7691-E-03A**

Key

- Site Boundary
- Developed Area
- Locally Equipped Area of Play
- SuDS Area
- Retained Semi-improved Grassland
- 50m Pond Buffer
- New Species Rich Native Hedgerow
- Retained Hedgerow
- Retained Drainage Ditch
- Created Hibernacula
- Indicative Location of Schwegler 1FF Bat Box
- Indicative Location of Schwegler 1B Bird Box

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client
Protech Development UK Ltd.

project
Radford Semele

drawing title
Opportunities and Constraints Plan

scale 1:850 | drawn APD / | date 15/3/2017

drawing / figure number
Figure 4

job no.
7691-E-04A

Key

- Site Boundary
- Developed Area
- Locally Equipped Area of Play
- SuDS Area
- Retained Semi-improved Grassland
- 50m Pond Buffer
- New Species Rich Native Hedgerow
- Retained Hedgerow
- Retained Drainage Ditch
- Created Hibernacula
- Indicative location of Schwegler 1FF bat box
- Indicative location of Schwegler 1B bird box
- Grass/brash pile for grass snake

N.B. Specification taken from; Fig. 8 of the Great Crested Newt Conservation Handbook, Froglife (2001)

Protech Development UK Ltd.

Radford Semele

Great crested newt and grass snake hibernacula and grass/ brash arisings pile specifications and indicative locations.

1:850 | APD / MEL | 17/3/2017

Figure 5 | **7691-E-05A**

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APPENDIX A – Biodiversity Impact Assessment (BIA) Calculations

Warwickshire Coventry and Solihull - Biodiversity Impact Assessment Calculator

v 18.3 08/08/2014
Amendment from v18.2 only affects green roofs, for other habitats v18.2 still usable
Please fill in both tables

KEY	
	No action required
	Enter value
	Drop-down menu
	Calculation
	Automatic lookup
	Result

Local Planning Authority:	
Site name:	
Planning application reference number:	
Assessor:	
Date:	

Please do not edit the formulae or structure.
To condense the form for display hide vacant rows, do not delete them
If additional rows are required, or to provide feedback on the calculator please contact WCC Ecological Services

T. Note	code	Existing habitats on site – Please enter all habitats within the site boundary: Phase 1 habitat description	Habitat area (ha)	Habitat distinctiveness: Distinctiveness	Score (A)	Habitat condition: Condition	Score (B)	Habitats to be retained with no change within development: Area (ha) (C)	Existing value (A x B x C = D)	Habitats to be retained and enhanced within development: Area (ha) (E)	Existing value (A x B x E = F)	Habitats to be lost within development: Area (ha) (G)	Existing value (A x B x G = H)	Comment
		Direct impacts and retained habitats												
	B6	Grassland: Poor semi-improved grassland	1.[illegible]	Medium-Low	3	Poor	1	[illegible]		[illegible]	1.89	0.67	2.01	
	C31	Other: Tall ruderal	[illegible]	Medium-Low	3	Poor	1	[illegible]		[illegible]		0.12	0.36	
		Total	1.82				Total	0.00	0.00	0.61	1.89	0.59	2.87	J

ΣD + ΣF + ΣH
Site habitat biodiversity value: [illegible]

Before/after impact	Indirect Negative Impacts including off site habitats	K					Value of loss from indirect impacts (K x A x B = Li, La)	Li - La
Before								
After								
Before								
After								
Before								
After								
Before								
After								
Before								
After								
	Total	0.00					M	0.00

HIS = J + M
Habitat Impact Score (HIS): [illegible]

T. Note	code	Proposed habitats on site (Onsite mitigation): Phase 1 habitat description	Area (ha) (N)	Target habitats distinctiveness: Distinctiveness	Score (O)	Target habitat condition: Condition	Score (P)		Time till target condition: Time (years)	Score (Q)	Difficulty of creation / restoration: Difficulty	Score (R)	Habitat biodiversity value (N x O x P) / Q / R	Comment
		Habitat Creation												
	n/a	Built Environment: Gardens (lawn and planting)	[illegible]	Low	2	Poor	1		5 years	1.2	Low	1	0.40	
	n/a	Built Environment: Buildings/hardstanding	[illegible]	none	0	Poor	1		5 years	1.2	Low	1	0.00	
	J12	Grassland: Amenity grassland	[illegible]	Low	2	Poor	1		5 years	1.2	Low	1	0.02	
	G1	Wetland: Standing water	[illegible]	High	6	Poor	1		5 years	1.2	Medium	1.5	0.87	
	B22	Grassland: Semi-improved neutral grassland	[illegible]	Medium	4	Moderate	2		10 years	1.4	Medium	1.5	0.84	
		Total	0.81											
		Habitat Enhancement						Existing value S (= F)					((N x O x P) - S) / Q / R	
	B22	Grassland: Semi-improved neutral grassland	[illegible]	Medium	4	Moderate	2	1.89	10 years	1.4	Low	1	2.25	
		Total	0.62											

Trading down correction value: [illegible]
Habitat Mitigation Score (HMS): [illegible]

HBIS = HMS - HIS
Habitat Biodiversity Impact Score: [illegible] Gain
Percentage of biodiversity impact loss:

KEY			
	No action required		
	Action required		
	Drop-down menu		
	Calculation		
	Automatic lookup		
	Overall Result		Loss to biodiversity
			Gain to biodiversity

Warwickshire Coventry and Solihull - Biodiversity Impact Assessment Calculator - Linear Features

KEY	
	No action required
	Enter value
	Drop-down menu
	Calculation
	Automatic lookup
	Result

Linear Features
Hedges and other linear features can offer a higher biodiversity value per length than a standard area of habitat due to factors such as connectivity and must therefore be compensated for in parallel to the standard metric.

Please fill in both tables

Please do not edit the formulae or structure
To condense the form for display hide vacant rows, do not delete them
If additional rows are required, or to provide feedback on the calculator please contact WCC Ecological Services

		Existing linear features on site		Linear distinctiveness		Linear condition		Linear Biodiversity Value: Linear features to be retained with no change within development		Linear features to be retained and enhanced within development		Linear features to be lost within development		
T. Note	code	Phase 1 habitat description	Feature length (km)	Distinctiveness	Score	Condition	Score	Length (km)	Existing value	Length (km)	Existing value	Length (km)	Existing value	Comment
		Direct Impacts and retained features			A		B	C	A x B x C = D	E	A x B x E = F	G	A x B x G = H	
	J211	Hedges: Native species rich intact hedge	0.21	High	6	Good	3	0.19	3.42	0.02	0.36			
	J26	Ditches: Dry ditch	0.27	Low	2	Poor	1	0.08	0.16	0.19	0.38			
		Total	0.48				Total	0.27	3.58	0.21	0.74	0.00	0.00	J
													∑D + ∑F + ∑H	
											Site Linear Biodiversity Value		4.32	

Before/after impact	Indirect Negative Impacts	K				Value of loss from indirect impacts: K x A x B = Li, Lii	Li - Lii
Before							
After							
Before							
After							
Before							
After							
Before							
After							
Before							
After							
	Total	0.00				M	0.00
							HIS = J + M
							Linear Impact Score (LIS) 0.00

		Proposed linear features on site (Onsite mitigation)		Target linear distinctiveness		Target linear condition			Time till target condition		Difficulty of creation / restoration		Linear biodiversity value	
T. Note	code	Phase 1 habitat description	Length (km)	Distinctiveness	Score	Condition	Score		Time (years)	Score	Difficulty	Score		Comment
		Linear Creation	N		O		P			Q		R	(N x O x P) / Q / R	
	J231	Hedges: Native species rich hedge with trees	0.28	High	6	Poor	1		10 years	1.4	Low	1	1.20	
		Total	0.28											
		Linear Enhancement						Existing value S (= F)					((N x O x P) - S) / Q / R	
	J231	Hedges: Native species rich hedge with trees	0.02	High	6	Moderate	2	0.36	10 years	1.4	Low	1	-0.09	
	G2	Ditches: Running water	0.19	High	6	Moderate	2	0.38	5 years	1.2	Low	1	1.58	
		Total	0.21											
												Trading down correction value	0.00	
												Linear Mitigation Score (LMS)	2.70	
													LBIS = LMS - LIS	
												Linear Biodiversity Impact Score	2.70	Gain
												Percentage of linear impact loss		

KEY		
	No action required	
	Action required	
	Drop-down menu	
	Calculation	
	Automatic lookup	
	Overall Result	Loss to biodiversity
		Gain to biodiversity

Biodiversity Impact Assessment Summary

Site name:	
Planning reference number:	

Habitats	Area (ha)	Habitat Biodiversity Value
Total existing area onsite	1.62	4.86
Habitats negatively impacted by development Habitat Impact Score	0.99	2.97
On site habitat mitigation Habitat Mitigation Score	1.62	3.15
Habitat Biodiversity Impact Score If -ve further compensation required		**0.18**
Percentage of biodiversity impact		

Linear features	Length (km)	Linear Biodiversity Value
Total existing length onsite	0.48	4.32
Linear features negatively impacted by development Linear Impact Score	0.00	0.00
On site linear mitigation Linear Mitigation Score	0.49	2.70
Linear Biodiversity Impact Score If -ve further compensation required		**2.70**
Percentage of linear biodiversity impact		

For any questions with regard to biodiversity impact and this development please contact Warwickshire County Council Ecological Services:

email: planningecology@warwickshire.gov.uk
tel: 01926 418060

If there is an anticipated loss to biodiversity and no further ecological enhancements can be incorporated within the development it may be possible to compensate for this loss through a biodiversity offsetting scheme.

Please contact The Environment Bank for discussions on potential receptor sites in your area:

email: lmartland@environmentbank.com
tel: 01926 412772

Warwickshire County Council

Environment Bank

APPENDIX B AND C – Documents prepared in support of previous application on the site (Ref W/16/1489)

APPENDIX B– Ecological Appraisal (August 2016) LDA Design
8900.01_R_LG_HB_29016

LDĀDESIGN

Radford Semele

Ecological Appraisal
2 August 2016

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LDĀDESIGN

8900.01_R_LG_HB_290716
2 August 2016
Radford Semele

Contents

LDĀDESIGN

2 August 2016
Radford Semele

Version:	1.1
Version date:	29th of July 2016
Comment	FINAL

This document has been prepared and checked in accordance with ISO 9001:2008.

2 August 2016
Radford Semele

1.0 Introduction

1.1. Site Description

The proposed development site is located to the south of the village of Radford Semele, Warwickshire, between The Valley and St Nicholas Road, with a central Ordnance Survey grid reference: SP346638 (hereafter referred to as the Site). The location and boundary of the Site is shown in Figure 1. The Site comprises a meadow 1.66 ha in extent. The surrounding land uses include arable fields to the east, south and west and a residential area to the north.

1.2. Proposed Works

The proposals include the construction of 40 residential properties with private gardens and associated infrastructure. Landscaping within the Site will include areas of green space, tree and hedgerow planting and a balancing pond.

1.3. Aims of Study

1.4. The aims of this study were to provide:

- A summary of the biological records obtained during the data search.
- Descriptions of the habitats present within the Site and evaluate their potential to support protected species.
- Information regarding any invasive species recorded during the course of the survey.
- Details of the legislative and/or policy protection afforded to any habitats or species of importance likely to be associated with the Site.
- Assessments of potential impacts and details of how the mitigation hierarchy will be applied to avoid, mitigate and compensate for impacts on habitats and species to result in a net gain for biodiversity.
- Measures to ensure biodiversity is maintained and enhanced throughout the Site during site clearance, construction and operation of the Site.

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2.0 Methodology

2.1. Desk Study

To gather existing records and information on designated sites and protected or otherwise notable species within the local area, a desk study was carried out. Information was sought by contacting Warwickshire Biological Records Centre (WBRC) in May 2016, and by consulting the Multi-Agency Geographic Information for the Countryside database (MAGIC, accessed 21 June 2016) to establish the ecological context of the Site. Records were obtained from a search area extending to 2 km from the central grid reference SP346638. Data was returned by WBRC on 14/06/16.

2.2. Field Survey

Phase 1 habitat survey

An extended Phase 1 habitat survey of the Site was carried out on 27 May 2016 by Laura Grant, Senior Ecologist with 8 years' experience as a professional ecologist. Weather conditions during the survey were suitable being warm (19˚C) with high cloud cover and occasional strong sun, and a wind speed of 2 on the Beaufort scale.

The survey methodology was based on that described in Handbook for Phase 1 Habitat Survey (Joint Nature Conservation Committee (JNCC), 2010). Habitats present at the Site were identified and mapped, and target notes were made of features of potential ecological interest or presence of invasive species. The potential of the Site to support protected or otherwise notable species was also assessed by the surveyor during the survey. A suite of surveys for protected species have been recommended and are currently in progress (June 2016). Interim results are included within this report, where available.

Habitat Suitability Index (HSI) Assessment for Great Crested Newts

There are no water bodies within the Site; however, there are two ponds within 250 m of the Site. These were assessed on 13 June 2016 to identify their potential to support great crested newts (GCN) Triturus cristatus. This involved a Habitat Suitability Index (HSI) assessment in which information on the physical features and characteristics of each water-body were collected in order to calculate a HSI score (in accordance with Oldham et al., 2000).

The suitability index was calculated by allocating scores to features associated with each pond; these include features such as size, quality of surrounding habitat and presence of fish. The individual feature scores are then used to calculate the overall HSI for each water body as a number between 0 and 1, with 0 being the least suitable and 1 being the most suitable. The HSI score allows each water-body to be placed in one of five categories defining its suitability for great crested newts as follows:

- <0.5 = poor
- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- >0.8 = excellent

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Great crested newt eDNA surveys

In order to determine whether the proposed development would have any impacts on GCN, and to inform any necessary Natural England licences that may be required, eDNA surveys have been undertaken to identify the presence or likely absence of the species within the two ponds within 250 m of the Site. The eDNA water samples were taken on 13 June 2016 (within the optimal survey window) by licenced surveyor Hannah Smith (2016-5936-CLS-CLS).

The sample collection procedure followed the published methods[1] presented in DEFRAs Technical Advice Note WC1067[2] an extract of which is presented in Appendix 3. Since the largest of the ponds measured less than 0.01 ha, a single eDNA sample collection kit was used per pond. Twenty sub-samples of water were taken from each pond, with sampling points spaced as evenly as possible around the accessible pond margins and sample locations micro-sited to areas considered most likely to be used frequently by great crested newts (for example near suitable egg laying material). These subsamples were then combined and the resultant sample for each pond was then used to fill six sample tubes, each containing 35 mL of ethanol to preserve the eDNA sample. The samples were stored in a fridge prior to return to the FERA laboratory for analysis. Samples were sent to FERA for analysis the same week and the results were returned on 30 June 2016

Badger

Evidence of badger was recorded during the Phase 1 habitat survey therefore a full badger survey was conducted by Hannah Smith and Sarah Joscelyne on 13 June 2016. This included inspections of the hedgerows and areas of scrub on the Site, as well as along the field/ hedgerow boundary in the field to the east of the Site which was accessed via a public footpath.

Reptiles

The grassland was identified as having potential to support reptiles. Artificial refuges (1 m x 0.5 m sheets of roofing felt) were therefore deployed throughout the Site on 13 June 2016. A total of 50 refugia were deployed, equating to 30 per hectare. It is recognised this is a higher density than current best practice guidance of five to ten per hectare for general survey purposes (Froglife, 1999). The increased survey effort has been conducted to provide an increased likelihood of encountering reptiles, if present. The refugia were left in–situ for two weeks prior to the first survey visit to allow the refugia to "bed down". The refugia were checked for reptile presence on seven occasions during suitable weather conditions (e.g. sun or partial cloud, air temperature 9-18°C, sunshine

[1] Williams, P. (2013). How to collect a water sample to detect Great Crested Newt eDNA. GCN eDNA protocol. Freshwater Habitats Trust

[2] Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, RA., Foster, J., Wilkinson, J., Arnett. A., Williams, P., and Dunn, F. (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford

after rain, first sunshine after dull overcast weather (Froglife, 1999)) within June and July 2016.

Table 1: Reptile survey details

Date	Surveyor	Weather Conditions
23/06/2016	Sarah Joscelyne	15˚, cloud 8/8, no rain,wind or sun
28/06/2016	Hannah Bilston	14-16˚c, cloud 6/8, no rain, light wind and occasional strong sun
01/07/2016	Hannah Smith	15˚c, cloud 8/8, no rain, light wind and occasional sun
05/07/2016	Hannah Smith	16˚c, cloud 8/8, light wind and occasional sun
13/07/2016	Hannah Smith	15˚c, cloud 7/8, no rain, light wind and occasional sun
18/07/2016	Hannah Smith	15˚c, cloud 8/8, no rain, no wind and occasional sun
26/07/16	Hannah Smith	16˚C, cloud 7/8, no rain, light wind and occasional sun

2.3. Warwickshire Biodiversity Impact Assessment Calculator

The Biodiversity Impact Assessment metric (Environment Bank, 2014) has been used to calculate the biodiversity value of the Site before and after development. This then calculates if the development is likely to cause a loss or gain to biodiversity. It is a metric used to quantify the value of biodiversity at any site and can form an evidence base on required mitigation for a development, the amount of residual biodiversity impact and if necessary the amount of required offsite compensation – Biodiversity Offsetting.

Warwickshire Biodiversity Impact Assessment (Version 18.3) was used to identify net losses and gains within the proposed development site. The assessment uses a calculator which has two subsections:

1.Habitat

2.Linear features

The following information is required from an ecological survey in order to complete the calculator:

- Area of each habitat and length of each linear feature
- Habitat type
- Habitat condition

- Impact from development, both directly onsite, and indirectly offsite
- Onsite biodiversity mitigation/enhancement measures.

Each habitat is given a distinctiveness score as part of its biodiversity value:

- High: 6
- Medium-High: 5
- Medium: 4
- Medium-Low: 3
- Low: 2

To complete the calculator the development impacts e.g. areas to be retained or lost due to required site clearance, and the risk factors of these, are taken into account.

This information is combined to determine a Habitat Impact Score and a Habitat Mitigation Score. The latter is subtracted from the former to give the Habitat Biodiversity Impact Score for the proposed works on the site. The same is done for the linear features on the site. This produces the Biodiversity Impact Assessment which is displayed as a unit of loss or gain of biodiversity and informs as to whether further mitigation or compensation will be required (biodiversity offsetting).

2.4. Personnel

The personnel involved in the field work and reporting are detailed above. A summary of each BSG Ecology staff member's professional experience is provided at http://www.bsg-ecology.com/index.php/people/

2.5. Limitations to survey methods

The reptile surveys were conducted from 23 June – 26 July 2016. The optimal survey months are considered to be April, May and September (Gov.uk, 2015) when reptiles are most active and needing to bask in cool weather. June/July is outside the optimal survey window because reptiles are only likely to need to bask for short periods of time. Favourable weather conditions were selected (such as surveys following rain or sunshine after cold nights) during the survey period as per best practice guidance (Froglife, 1999) therefore removing the influence of time of year. We have confidence in this assessment because reptiles were frequently being encountered at other sites surveyed by BSG Ecology within the region (Oxfordshire and Bedfordshire), therefore should reptiles have been present in any numbers, they are considered likely to have been encountered.

There were no other constraints to the surveys as they were conducted during optimal times of year and/or during optimal survey conditions and all areas of the Site were accessible.

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3.0 Results and Interpretation

3.1. Desk Study

3.1.1. Protected Species

WBRC returned 754 records of protected, priority and/or notable species within 2 km of the Site. Moth species account for 509 (67.5 %) of these records. The species records are discussed in the Protected Species section.

3.1.2. Designated Sites

Statutory Sites

There are no statutory designated sites within the 2 km search area. The closest statutory site is Long Itchington and Ufton Woods Site of Special Scientific Interest (SSSI), which is situated ca. 3.5 km to the south-east of the Site. The Site is within the 3-5 km Impact Risk Zone for the SSSI. Residential development in this zone is not recognised as a planning application type likely to impact on the features for which the SSSI was designated.

Non-Statutory Sites

There are 17 non-statutory sites within the 2 km search area of the Site. The Site itself has no designations.

The Valley Local Wildlife Site (LWS) at Hill Farm (ref: 46/36) is the closest non-statutory site to the Site, being ca. 50 m from the south-western boundary. This LWS is connected to Hill Farm, which is designated as being an Ecosite. The site is composed of farm land of arable and improved grassland. There is a small area of semi-improved grassland with lady's bedstraw *Galium verum*. In addition the site has other County notable species and therefore parts of the site are of higher nature conservation value.

All other non-statutory sites are more than 500 m from the Site boundary; these are listed in Table 2 below. All sites are called 'Ecosites' which then have a further designation of Local Wildlife Site (LWS), Local Nature Reserve (LNR) or a site with ungraded nature conservation status.

Table 2: Non-statutory designated sites within 0.5-2 km of the Site boundary (as of 14/06/16)

Location	Designation	Reasons for designation
Ecosite 23/36 Whitnash Brook 0.9 km SW	Southern part = Whitnash Brook LWS Northern part = Whitnash Brook LNR Central area = potential LWS	Varied habitats exist, with mature trees, scrub and grassland areas. The stream itself retains a good water quality and a range of aquatic plants. Sedge *Carex sp.* beds and wetland features are also present on the site of an old mill and pond at Whitnash.
Ecosite 61/36 Radford Semele, St	Nature conservation status ungraded. Parish	Churchyard with several first county records for lichens.

Nicholas churchyard 1.1 km N	value.	
Ecosite 19/36 Parlour Spinney on Radford Hill 1.15 km E	Potential LWS	Mixed woodland with dominant ash *Fraxinus excelsior* and much larch *Larix decidua* and oak *Quercus robur*. Hawthorn *Crataegus monogyna* dominates the understorey and the ground flora shows evidence of past disturbance.
Ecosites 22/36 Grand Union Canal 1.25 km NW	Potential LWS	A range of marginal vegetation remains. The canal is used by nesting birds, whilst there are species rich emergent and marginal floral assemblages along the bankside habitats. Ferns are also present on the walls, whilst water vole *Arvicola terrestris* has been recorded along parts of the canal.
Ecosite 18/36 Disused Railway Line Leamington – Rugby 1.3 KM NE	LWS	Woodland, scrub, tall herb, grassland, wetland and short turf communities. Communities include important calcicolous assemblages and part of the line is listed in English Nature's Grassland Inventory for Warwickshire.
Ecosite 83/36 Woodland adjacent to Grand Union Canal 1.3 km NE	Potential LWS	Three areas of semi-natural broadleaved woodland on the sides of the Canal.
Ecosite 41/36 Offchurch Bury Park 1.3 km N	Nature conservation status ungraded. Site of Parish value.	Part of large estate with patches of woodland and tall herb communities amongst arable farmland. A large part of estate is included under the River Leam designation, including the flood plain
Ecosite 48/36 Leam Valley 1.35 km W	Leam Valley LNR and Welches Meadow potential LWS	This site includes the river and its immediate floodplain corridor, which includes wet meadows. These wet meadows are important for their floral species assemblages as well as for breeding and overwintering birds. There

		is a wide range of aquatic, emergent and marginal vegetation. Kingfisher *Alcedo atthis* has been recorded along the river.
Ecosite 63/36 Whitnash Churchyard 1.5 km W	Nature conservation status ungraded. Site of Parish value.	Churchyard containing an interesting range of typical grassland and tall herb flora. The hedges are reasonably species rich and may be ancient.
Ecosite 06/36 GWR Railway - Warwick to Banbury 1.5 km SW	Potential LWS. Runs into Harbury Railway Cutting SSSI	Broadleaved semi-natural woodland, scrub and grassland communities. Good range of plant species and include maidenhair spleenwort *Asplenium trichomanes.*
Ecosite 68/36 Field at Golf Lane 1.5 km W	Whitnash Meadow Potential LWS	A semi improved field that is unmown and ungrazed and provides a good habitat for a variety of butterfly. There is a wide rich diversity of forb species. More notable county flora records for the site are betony *Stachsy officinalis*, bee orchid *Ophrys apifera*, wild carrot *Daucus carota*, pepper saxifrage *Silaum silaus*, fairy flax *Linum cathartiucm*, woolly thistle *Cirsium eriophorum* and red bartsia *Odontites vernus.* A good range of butterfly species have also been recorded.
Ecosite 16/36 River Leam 1.6 km NW	Potential LWS. Designated as part of the Leam Valley statutory LNR	High nature conservation value and is important to a number of rare, notable and protected species in the county. The river is also designated as a LNR through the Newbold Common area of Leamington Spa. The designated site includes the river, its immediate floodplain corridor and adjacent wet meadows. These wet meadows are important not only in terms of their floral species assemblages but also for birds. There is a wide range of aquatic, emergent and marginal vegetation. Notable species recorded along the river include water vole *Arvicola amphibius*,

		otter *Lutra lutra* and white-clawed crayfish *Austropotamobius pallipes.* Within the floodplain are a number of ponds with records of great crested newt *Triturus cristatus.*
Ecosite 27/36 Fosse Wood and canal hedge and towpath 1.7 km E	Potential LWS	Derelict woodland with standard oaks *Quercus* and hazel coppice *Corylus avellana*. Canal hedge with various woody species.
Ecosite 33/36 Campion Hills and Newbold Comyn. 1.75 km NW	Nature conservation status ungraded.	The site is largely golf course with amenity grassland and young woodland plantation. There are also areas with tall herb vegetation. A tree and scrub lined lane is also present and there are a number of ponds on the edge of the flood plain.
Ecosite 20/36 Golf Course at Whitnash and Golf Lane 1.9 km SW	Part Mollington Hill LWS and some potential LWS	Bridle path/footpath from Whitnash to Fosse Way. The hedges on both sides are species rich and reportedly good for birds. The golf course includes an area of mature woodland of larch *Larix sp* with oak *Quercus sp* and mixed pines *Pinus sp*. Ridge and furrow still exists on the fairways. The grassland that remains is species rich calcicolous. The site includes a parish boundary hedge on the southwest boundary of the golf course. The hedge is believed to be archaeologically important under the hedgerow regulations.
Ecosite 44/36 Lower Fosse Farm Pool 1.9 km S	Nature conservation status ungraded. Parish Value	A man made irrigation pool with some rushes and willows.

LWS = Local Wildlife Site; LNR = Local Nature Reserve

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3.2. Field Survey

3.2.1. Habitats

WBRC returned records of 15 different plant species which are classed as county rare plants within the 2 km search area (see Appendix 2). None of these plants are listed within the Site itself. The closest record to the Site is ca. 150 m to the south-west. Here, tormentil *Potentilla erecta*, has been recorded. This plant is a native to the British Isles and can be found in various habitats including pastures (Stace, 2010). Therefore there is a possibility that tormentil, a near threatened plant on the Red List, may also be found within the Site boundary.

The Site contains semi-improved grassland, areas of tall ruderal vegetation, dense scrub and hedgerows. On the northern and eastern boundaries are dry ditches which lead to a field pond outside the Site boundary to the north-east.

No invasive species were recorded in the data search, nor were any identified during the Phase 1 habitat survey.

Photographs of the different habitats are included within Appendix 1, Target Notes from the survey are included within Appendix 6 and species lists are included within Appendix 7.

Poor semi-improved Grassland

The Site supports poor semi-improved grassland of medium-low distinctiveness in poor condition, and this extends across the whole of the Site (photographs 1-5). The grassland is tussocky and thatched in places indicating no recent management has taken place. There is abundant creeping bent *Agrostis stolonifera* as well as frequently occurring cow parsley *Anthriscus sylvestris* and cock's-foot *Dactylis glomerata*. Rarely occurring species within the grassland include field forget-me-not *Myosotis arvensis,* red campion *Silene dioica* and sweet vernal grass *Anthoxanthum odoratum*. A full species list can be found in Appendix 7.

Tall ruderals

There are several patches of tall ruderals in medium-low distinctiveness in poor condition distributed throughout the Site. Most of these are composed of cow parsley, with others also containing broadleaved dock *Rumex obtusifolius*, nettle *Urtica dioica*, bramble *Rubus fruticosus agg*. and rosebay willowherb *Chamerion angustifolium.*

Brash

There is a small area of brash (photograph 6) towards the north-western corner of the Site (Target Note 4).

Dense scrub

There is a patch of dense scrub in the south-western corner of the Site (photograph 7). This is comprised of species of bramble, rose Rosa sp., ivy *Hedera helix* and ash *Fraxinus excelsior*.

Hedgerows

There are intact hedgerows bordering the southern and eastern boundaries of the Site (photograph 8). They are approximately 5 m high and 2 - 3 m wide and are infrequently managed. The hedgerows are both species-rich, and have been classed as such because they

have more than five native woody species within a 30 m section. This qualifies them as being nationally "Important" under Schedule 1, Part II, paragraph 6 of the Hedgerow Regulations 1997. Species present include hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and elder *Sambucus nigra* and the ground flora typically includes cleavers *Galium aparine,* nettle and cow parsley. A full species list can be found in Appendix 7.

Dry ditches

There are two dry ditches encompassing the northern and eastern boundaries. The eastern ditch is ca. 1 m deep and 1.5-4 m wide, with the northern ditch ca. 1-3 m deep and 2-3 m wide.

Ponds

There are no ponds within the Site, however there are two within 250 m of the Site boundary (Figure 2).

The pond 10 m north-east of the Site is ca. 350 m2 and is flanked by margins of frequently occurring bramble, nettle, cleavers, occasional yellow flag iris *Iris pseudacorus* and rarely occurring sedge *Carex* sp. (photograph 9). The HSI score for the pond is 0.75 identifying it as being of 'good' suitability for great crested newts.

The pond located 90 m south-west of the Site is ca. 140 m2 and has margins predominantly of common reedmace *Typha latifolia* (photograph 10). It has an HSI score of 0.7 which also qualifies as being of 'good' suitability for GCN.

3.2.2. Protected and Priority Species

The legislative protection for all species described below is detailed in Appendix 8.

Reptiles

Grass snake *Natrix natrix* has been recorded within the 2 km search area (4 records, to 2012). This is a species which is protected under the Wildlife and Countryside Act (WCA) 1981 (as amended) and is a Species of Principal Importance (SPI). Reptile surveys recorded grass snake within the Site, with a peak count of four adults and two juveniles during a single survey (see results in Table 3).

There is also potential for other common reptiles such as slow-worm *Anguis fragilis*, and common lizard *Zootoca vivipara* to be present within the Site as the tussocky and thatched nature of some areas of the grassland provides suitable habitat. The absence of these species during the surveys suggests that only very small population of each species have potential to be present. All common reptile species are listed as Species of Principal Importance (SPI) in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

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Table 3: Reptile survey results

Date	Survey Results
23/06/16	Three adult grass snake
28/06/16	Three adult and one juvenile grass snake
01/07/16	Four adult and two juvenile grass snake
05/07/16	Three adult and one juvenile grass snake
13/07/16	Two adult and two juvenile grass snake; 1 toad
18/07/16	No reptiles recorded
26/07/16	No reptiles recorded

Amphibians

eDNA surveys were conducted to determine presence of GCN for ponds within 250 m of the Site. Ponds 1 and 2 (Figure 2) were surveyed and results returned from FERA confirm the presence of GCN in both ponds. In addition there are 12 records of GCN within the search area (12 records, to 2016). There are two records from May 2016 which are from the two ponds within 250 m of the Site. WBRC have identified 1 female and 3 male GCN in the pond approximately 10 m north-east of the Site boundary (Pond 1). One male GCN was also returned from the pond 90 m south-west of the Site (Pond 2).

Common frog *Rana temporaria* (6 records, to 2015), common toad *Bufo bufo* (3 records, to 2012) and smooth newt *Lissotriton vulgaris* (7 records, to 2012) have been recorded outside of the Site, within the 2 km search area. Common toad was also recorded within the Site beneath a reptile felt.

Nesting Birds

Six bird species were recorded within the Site including house sparrow *Passer domesticus*, dunnock *Prunella modularis,* blackbird *Turdus merula*, robin *Erithacus rubecula,* wood pigeon *Columba palumbus* and carrion crow *Corvus corone*.

The bird records from the desk study search area include two species listed on Schedule 1 of the WCA; kingfisher *Alcedo atthis* and redwing *Turdus iliacus*. There are also four SPIs; house sparrow *Passer domesticus*, reed bunting *Emberiza schoeniclus,* skylark *Alauda arvensis*, and yellowhammer *Emberiza citrinella*. In addition species are also listed as Birds of Conservation Concern (BoCC) with 16 species on the Amber list and eight on the Red list[3]. These are listed in Appendix 2.

[3] BoCC aim to review the status of birds in the UK. The assessment is based on the most up-to-date evidence available and criteria include conservation status at global and European levels and, within the UK: historical decline, trends in population and range, rarity, localised distribution and international importance.

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The hedgerows on the southern and eastern boundaries of the Site have the potential to support nesting birds. The Site is considered to be unsuitable for ground nesting birds due to the vegetation structure and high activity of domestic cats *Felis catus* within the Site

Badger

The desk study returned three records of badger *Meles meles* setts within a 1 km radius of the Site. In addition, there have been three records of badger casualties on the A425 south of Radford Semele.

Signs of badger were found throughout the Site. Tracks akin to those made by badgers were found across the grassland (distribution shown on Figure 2). Badger hair was also located in the south-western corner by the dense scrub, at the end of one the tracks (photograph 11), and also on the barbed wire fence next to the path in the north-eastern corner (photograph 12). In addition an area of fresh digging and bedding was found under the hedgerow on the southern boundary (at grid reference SP 34668 63826) (photograph 13). No sett could be identified, and it is thought that the bedding found is from a day nest. Badgers, instead of returning to the main sett during the day, will sometimes set up day nests. It is considered that there is likely to be a main sett located close by, possibly in the woodland 50 m to the south of the Site.

An additional badger survey of the Site was conducted in June 2016 and no further badger signs or setts were identified.

Bats

WBRC returned 45 records of bats within 2 km of the Site between 1992 and 2015, of at least six different bat species; barbastelle bat *Barbastella barbastellus,* Natterer's bat *Myotis nattereri*, noctule *Nyctalus noctula*, brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus.* The closest record of a bat to the Site is located 50 m to the west of the Site and was a common pipistrelle.

Otter and water vole

There are two records of water vole *Arvicola amphibius* from the River Leam 1 km to the north of the Site. The ditches on the northern and eastern boundaries of the Site are unsuitable for water vole as they were not holding water when they were surveyed in June 2016 and were densely shaded. Water vole is a SPI in England. Both the River Leam and grand Union Canal have had records of otter *Lutra lutra* (7 records, to 2008).

Other mammals

The data search has also returned historic records of hedgehog *Erinaceus europaeus* (one record in 1966), brown hare *Lepus europaeus (*3 records, to 2005), and harvest mouse *Micromys minutus* (3 records, to 2006). There was no evidence of these species within the Site; however, it is suitable for foraging and nesting hedgehog. All of these species are SPI.

Invertebrates

WBRC returned records of 543 notable invertebrate records within the 2 km search area. These comprise records of beetles (Coleoptera; 26 records), bees, wasps and ants (Hymenoptera; 3 records), true bugs (Hemiptera; 1 record) and butterflies and moths (Lepidoptera; 4 butterfly and 509 moth records). The habitat requirements of the species recorded range from aquatic habitats to woodland and bare ground to grasslands. The

grassland on the Site although tussocky is structurally and species poor, providing limited opportunities for invertebrates. The hedgerows and scrub are likely to provide opportunities for a range of invertebrate groups. Only speckled wood butterfly *Pararge aegeria* was observed during the Phase 1 habitat survey.

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4.0 Potential Impacts and Recommendations

4.1. Designated Sites

The construction of 40 residential properties within the Site will increase the recreational pressure on existing public footpaths in the local area. This will include paths which traverse through the Valley LWS (located 50 m from the Site). It is not considered that increased usage will negatively affect the features for which it or the remaining non-statutory designated sites in the local area were designated.

4.2. Habitats

Proposals for the Site are only outline at this stage. However, it is anticipated that the proposed development will result in loss of:

- c. 0.81 ha of poor semi-improved grassland of medium-low distinctiveness in poor condition.
- c. 0.35 ha of tall ruderal vegetation of medium-low distinctiveness in poor condition.

It is proposed that the following habitats are retained and/or created:

- 206 m of species-rich native hedgerows to be retained, filling in gaps to provide an enhancement.
- 206 m of species-rich native hedgerow will be planted parallel to the above retained feature to enhance its value as a corridor for wildlife such as badgers, bats and reptiles.
- 107 m of ditch will be enhanced by positively managing bankside vegetation to maintain a more open channel which is not choked by vegetation.
- 0.49 ha of poor semi-improved grassland of medium-low distinctiveness in poor condition to be retained and enhanced to a good condition by incorporating plug plants and mowing twice per year at appropriate times to promote the establishment of favourable meadow species.
- 0.58 ha of land to be occupied by buildings/hardstanding.
- 0.51 ha to be occupied by gardens (lawn and planting) of low distinctiveness and moderate condition.
- 0.05 ha of amenity grassland of low distinctiveness and moderate condition will be created in public open spaces.
- 0.02 of standing water will be incorporated as a balancing pond of high distinctiveness and good condition.

4.3. Biodiversity Impact Assessment

The Warwickshire Biodiversity Impact Assessment Calculator has identified the above proposals will result in:

- A Linear Biodiversity Impact Score Gain of 2.23 units.
- An area Habitat Biodiversity Impact Score Gain of 0.26 units.

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A summary of the biodiversity impact assessment calculator can be found in Appendix 4.

Mitigation, compensation and enhancement measures for protected and priority species are outlined below. In addition to the habitat retention, enhancement and creation measures these will further ensure a net gain in biodiversity is achieved for the Site.

4.4. Protected and Priority Species

Reptiles

A peak count of four adult snake has been recorded within the Site. Juveniles were also present, indicating breeding is taking place within or in close proximity to the Site. No slow-worm or common lizard were identified within the Site however their remains potential for low populations of each species to be present. In the absence of mitigation, the proposals could result in killing or injury of reptiles.

To prevent the killing and injury of reptiles during site clearance a reptile fence will be installed and maintained along the boundaries of the construction zone. All reptiles will be translocated from the footprint of the construction zone to the grassland retained buffers around the margins. The fencing will be retained in situ throughout the Site clearance and construction phases of the development.

A 10 m wide strip of the poor semi-improved grassland will be retained along the southern and eastern boundaries and a 50 m buffer will be retained around the pond in the north-east of the Site. These areas will be maintained and enhanced for grass snake by:

- Installation of four hibernacula which will be at least 2 metres long, 1 metre wide and 1 metre high, be filled with inert, clean hardcore, brick rubble, logs, sleepers or similar materials plus loose topsoil surrounded by rough vegetation.
- Enhancement of the northern ditch to maintain a more open channel which is not choked by vegetation
- Creation of a swale which will include a variety of native aquatic marginal, emergent and submerged species.
- Ensuring access to the buffer areas is in place for maintenance contractors. Prescribing management of the grassland areas to include mowing twice a year to a minimum height of 15 cm and creation of a grass pile to provide opportunities for breeding.

Great crested newts:

The desk study and eDNA surveys have confirmed that GCN are present in both ponds within 250 m of the Site. At this stage, the size of the population is unknown however, they are considered likely to be part of the same metapopulation because they are within 268 m of each other. The Site offers suitable habitat for them to forage and shelter within the hedgerows, scrub and thatched grassland. It may also be used by individuals to migrate between the two ponds. The proposed development will potentially kill newts, reduce the core foraging area and result in a fragmented population. A 50 m landscape buffer is therefore being provided surrounding the pond to maintain the core foraging area.

The rationale for the 50 m buffer comes from the Natural England great crested newt (GCN) licenced method statement which states that the terrestrial habitat between 0-50 m from a breeding pond is considered the core habitat. Disturbance within the core zone is not

considered appropriate as impacts to GCN would be particularly high. Therefore this area will be left undeveloped and enhanced for GCN e.g. through the creation of multiple hibernacula (log and rubble piles which GCN and grass snake can seek refuge in) and management of the grassland as a meadow i.e. not amenity grassland. Enhancement of the core area will help to compensate for the loss in area accessible to the GCN through the development of the Site.

Currently the Site may be used by GCN commuting between the pond 5 m north-east and 90m south-west of the Site. Connectivity between these areas will be maintained and enhanced by:

a) infilling gaps in the existing hedgerows.

b) enhancing the ditch on the northern boundary and ensuring a green corridor is maintained from the pond to The Valley road.

c) creating a 10 m buffer to the Site boundary on the southern and eastern boundaries to be managed as rough grassland.

d) creating a new native species-rich hedgerow parallel to the existing hedgerow.

e) creating four hibernacula within the buffer zone. The 10 m buffer will be of greater suitability to GCN than the current conditions within the Site and therefore this will also help compensate for the loss in area.

f) the habitats will be managed and secured in the long term.

The 10 m buffer will also provide optimal foraging habitat for badgers and connectivity for grass snake.

The residential scheme will be designed to avoid trapping newts by avoiding use of kerbs, where possible. Where kerbs are required they will be sloped either side of gully pots to reduce the risk of individuals falling in.

The measures outlined above will ensure the favourable conservation status of the species is maintained within the local area, however; potential for killing or injury during site clearance and construction cannot be avoided. It will therefore be necessary to secure a European Protected Species Mitigation (EPSM) licence to enable newts to be trapped and translocated from the development footprint. The brash pile will be destructively searched by hand under the licence once the trap out has almost finished (e.g. five days before the end). GCN will be translocated to the 50 m enhanced core area and 10 m buffer to the east and south of the development. These areas will be fenced using semi-permanent amphibian and reptile fencing (such as Caudon® Semi-permanent Amphibian/Reptile Fencing which is designed to last up to 5 years) which will be retained in situ throughout the site clearance and construction phases of the development. A newt grid will be installed at the Site entrance to enable traffic onto the Site while preventing newts accessing the development area.

The GCN licence would also cover the removal of the fence line once construction is completed, because GCN may use gaps along the fence line itself as a place of rest. This will enable individuals to forage and rest within gardens and green infrastructure within the development footprint.

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Nesting Birds

The hedgerows, bramble scrub, and brash pile are likely to support a range of more commonly occurring nesting birds. In the absence of mitigation, clearance of scrub and the brash pile could destroy a nest if conducted during the breeding bird season. The hedgerows will be retained in their entirety therefore it is not considered necessary to conduct further surveys to identify the assemblage present. However, the small areas of scrub and brash pile should be cleared outside of the nesting bird season (typically, March – August inclusive). Mature trees should also only undergo arboricultural works (if required) outside of the nesting bird season.

In the event that any vegetation clearance cannot be undertaken outside of the bird nesting season a nesting bird check should be undertaken by a suitably qualified ecologist prior to works commencing to determine whether or not nesting birds are present. If nesting birds are found to be present any works judged likely to cause a disturbance will need to be delayed until the young have fledged.

Bird boxes with a 40 mm diameter entrance hole which are suitable for a wide range of bird species should be included on trees within the hedgerow to provide an enhancement. This would include three Schwegler 1B boxes to be positioned as advised by an ecologist on Site.

Badger

Badger are present on Site, as confirmed by a single badger day bed with fresh bedding on the southern boundary of the Site (at grid reference SP 34668 63826), however, no setts were present indicating the Site is not used for breeding. There were extensive mammal runs throughout the Site suggesting it is however frequently traversed by this species; although signs of foraging were limited and no latrines were found.

Badger could be killed or injured during the construction phase of the development by falling in to excavations or entrapment in pipes. It is therefore proposed that trenches/excavations have sloped escape ramps or are covered overnight and that pipes greater than 15 cm diameter are blanked off at the end of each working day. The activity suggests badger setts will be present in the local landscape and the Site presents suitable foraging habitat for badger. As a result of the proposed development these foraging opportunities will be severely reduced and therefore it is suggested that foraging opportunities for badger are maintained within the Site by incorporating the landscape buffer on the eastern and southern boundaries. This will be in the form of enhancing the current hedgerow on Site as well as creating a new hedgerow parallel to the afore mentioned to create a corridor suitable for badger to forage in. Badger is a mobile species therefore it is proposed that a pre-construction survey is conducted in advance of Site clearance works.

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Bats

The Site is likely to be used by foraging and commuting bats with mature trees on the eastern boundary offering low potential to support roosting bats. Due to the small scale of the development and that hedgerow features will be retained and enhanced, it is not considered necessary to conduct surveys to ascertain the use of the Site by bats.

In the absence of mitigation, bats may be impacted by increased lighting within the Site. An increase in lighting could result in commuting routes being interrupted and decrease opportunities for foraging. As such six foot fencing and a hedgerow are being included to help shield lighting impacts. These measures will ensure opportunities for foraging and commuting bats will be maintained within the Site.

Three Schwegler 1FF bat boxes will be included on trees within the hedgerows to be positioned as advised by an ecologist on Site to provide an enhancement (approximate locations are indicated on Figure 3 in Appendix 5).

Invertebrates

The grassland, although tussocky in places, is structurally and species poor, providing limited opportunities for invertebrates. It is therefore not considered necessary to conduct surveys to identify the assemblage present as they are likely to be common and widespread species. The hedgerows and scrub may provide opportunities for a range of invertebrate groups which could include protected species. However, given that they will be retained and enhanced no surveys are considered necessary.

The Site will be enhanced for invertebrates by creation of a balancing pond which will diversify the habitats present within the Site. Log piles will also be included within the landscape buffer to provide a range of conditions suitable for invertebrates.

The newly created habitats will be protected and retained on Site and managed in the long term, thereby providing long term security for a range of species.

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5.0 References

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6.0 Appendices

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6.1. Appendix 1: Photographs

1. Western boundary of site

2. Eastern boundary of site

3. Northern boundary of site

4. Poor semi-improved grassland within centre of site

5. Northern boundary of site

6. Brash pile in north-west part of site

7. Scrub in south-western corner of site

8. Southern hedgerow

9. Pond c.5m north-east of site

10. Pond c.90m south-west of site

11. Badger hair from the south-western corner of the site

12. Badger hairs from the north-eastern corner of the site

13. Badger day bed in southern hedgerow

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6.2. Appendix 2: Desk Study Results

6.2.1. Desk study bird records for species listed as Birds of Conservation Concern (BoCC) (red or amber status).

Scientific Name	Common Name	Red or Amber Listed	Search area records	Most recent record
Chroicocephalus ridibundus	Black-headed Gull	Amber	4	2010
Pyrrhula pyrrhula	Bullfinch	Amber	11	2010
Prunella modularis	Dunnock	Amber	26	2010
Picus Viridis	Green Woodpecker	Amber	2	2005
Motacilla cinerea	Green Woodpecker	Amber	1	2005
Passer Domesticus	House Sparrow	Red	3	2010
Falco tinnunculus	Kestrel	Amber	1	2005
Alcedo atthis	Kingfisher	Amber	1	2010
Linaria cannabina	Linnet	Red	1	2005
Anas platyrhynchos	Mallard	Amber	12	2010
Turdus viscivorous	Mistle Thrush	Amber	2	2010
Turdus iliacus	Redwing	Red	1	2010
Emberizia schoeniclus	Reed Bunting	Amber	1	2005
Alauda arvensis	Skylark	Red	1	2005
Turdus philomelos	Song Thrush	Red	6	2010
Sturnus vulgaris	Starling	Red	6	2010
Columba oenas	Stock Dove	Amber	2	2005
Hirundo rustica	Swallow	Amber	2	2005
Apus apus	Swift	Amber	2	2010
Aythya fuligula	Tufted Duck	Amber	1	2005
Sylvia communis	Whitethroat	Amber	8	2010
Poecile montana	Whitethroat	Amber	8	2010
Phylloscopus trochilus	Willow warbler	Amber	1	2005

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Emberiza citrinella	Yellowhammer	Red	2	2005

6.2.2. **Desk study of local rare plant records within the 2 km search area.**

Scientific Name	Common Name	Number of records	Most recent record	Warwickshire Status	England Red List (Stroh et al. 2014)
Salix Triandra	Almond Willow	1	1978	Scarce	
Geranium Sanguineum	Bloody crane's-bill	1	2010		Near Threatened
Nepeta cataria	Cat-mint	1	Unknown	Rare	Vulnerable
Glebionis segetum	Corn-Marigold	1	2010	Local BAP	Vulnerable
Spergula arvensis	Corn Spurrey	1	1977	Local BAP	Vulnerable
Agrostemma Githago	Corncockle	1	2010		Possibly extinct as native in England
Ranunculus circinatus	Fan-leaved Water-crowfoot	2	1985	Scarce	
Knautia arvensis	Field scabious	1		2010	Near Threatened
Erophila glabrescens	Glaborous Whitlowgrass	2	1987	Scarce	
Chenopodium bonus-henricus	Good-King-Henry	2	1994	Scarce	Vulnerable
Plantago major subsp. intermedia	Greater Plantain	1	2008	Scarce	
Rosa stylosa	Short-styled Field-rose	1	1887	Rare	

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Ranunculus parviflorus	Small-flowered Buttercup	1	Unknown	Scarce	
Potentilla erecta	Tormentil	1	2000		Near Threatend
Callitriche Platycarpa	Various-leaved Water-starwort	1	1998	Scarce	

Warwickshire status: Rare = 1-3 records; Scarce = 4-10 records; Local BAP = Local Biodiversity Action Plan species.

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6.3. Appendix 3: Stages of eDNA field sampling protocol

Step 1 Identify where 20 samples will be taken from the pond. The location of sub-samples should be spaced as evenly as possible around the pond margin, and if possible targeted to areas where there is vegetation which may be being used as egg laying substrate and open water areas which newts may be using for displaying.

Step 2 Open the sterile Whirl-Pak bag by tearing off the clear plastic strip c 1cm from the top (along the perforated line), then pulling the tabs. The bag will stand-up by itself.

Step 3 Collect 20 samples of 30 mL of pond water from around the pond (see 1 above) using the ladle (fill the ladle), and empty each sample into the Whirl-Pak bag. At the end the Whirl-Pak bag should be just under half full (600 mL).

NOTE: Before each ladle sample is taken, the pond water column should be mixed by gently using the ladle to stir the water from the surface to close to the pond bottom without disturbing the sediment on the bed of the pond. It is advisable not to sample very shallow water (less than 5-10 cm deep).

Step 4 Once 20 samples have been taken, close the bag securely using the top tabs and shake the Whirl-Pak bag for 10 seconds. This mixes any DNA across the whole water sample.

Step 5 Put on a new pair of gloves to keep the next stage as uncontaminated as possible.

Step 6 Using the clear plastic pipette provided take c15 mL of water from the Whirl-Pak bag and pipette into a sterile tube containing 35 mL of ethanol to preserve the eDNA sample (i.e. fill tube to the 50 mL mark). Close the tube ensuring the cap is tight.

Step 7 Shake the tube vigorously for 10 seconds to mix the sample and preservative. This is essential to prevent DNA degradation. Repeat for each of the 6 conical tubes in the kit. Before taking each sample, stir the water in the bag to homogenize the sample - this is because the DNA will constantly sink to the bottom.

Step 8 Empty the remaining water from the Whirl-Pack bag back into the pond.

Step 9 The box of preserved sub-samples is then returned at ambient temperature immediately for analysis. If batches of samples are collected and stored prior to analysis they should be refrigerated at 2-4° C. Kits can be stored for up to one month in a refrigerator before analysis. It is not necessary to freeze samples. Freezing may damage storage bottles, which can lead to leaking during transit, and also unnecessarily increases costs by requiring refrigerated transport. The length of time eDNA samples are stored in a refrigerator prior to analysis should be recorded and passed on to the analysing laboratory. Use an appropriate labelling system to ensure that the kits are supplied with a unique reference number.

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6.4. Appendix 4: Biodiversity Impact Assessment Summary

Habitats	Area (ha)	Habitat Biodiversity Value
Total existing area onsite	1.65	4.95
Habitats negatively impacted by development Habitat Impact Score	1.16	3.48
On site habitat mitigation Habitat Mitigation Score	1.65	3.74
Habitat Biodiversity Impact Score If -ve further compensation required		0.26
Percentage of biodiversity impact		
Linear Features	**Length (km)**	**Linear Biodiversity Value**
Total existing length onsite	0.48	4.32
Linear features negatively impacted by development Linear Impact Score	0.00	0.00
On site linear mitigation Linear Mitigation Score	0.40	2.23
Linear Biodiversity Impact Score If -ve further compensation required		2.23
Percentage of linear biodiversity impact		

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6.5. Appendix 5: Figures

Figure 1: Red line boundary of Site

Figure 2: Extended Phase 1 habitat survey results

Figure 3: Proposed mitigation and enhancement

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LEGEND

- Site boundary
- (1) Target note
- Dense scrub
- SI — Species-poor semi-improved grassland
- Tall ruderal vegetation
- P1 — Pond
- Brash pile
- H1 — Native species-rich hedge
- Fence
- Dry ditch
- Mammal tracks

LDĀDESIGN

PROJECT TITLE

RADFORD SEMELE

DRAWING TITLE

Figure 1: Extended Phase 1 habitat survey map

ISSUED BY	Oxford	T: 01865 887 050	
DATE	23 Jun 2016	DRAWN	COH
SCALE @A3	1:750	CHECKED	SJ
STATUS	Final	APPROVED	LG

No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

Sources: BSG Ecology survey data, Ordnance Survey

L:\Contracts\Live Contracts\8801-8900\8900 Radford Semele, Preliminary Ecological Appraisal\Work in Progress\Mapping\02 GIS\01 projects\8900_ponds.mxd

LEGEND

- Site boundary
- P1 Pond

LDĀDESIGN

PROJECT TITLE
RADFORD SEMELE

DRAWING TITLE
Figure 2: Pond locations

ISSUED BY	Oxford	T: 01865 887 050	
DATE	24 Jun 2016	DRAWN	COH
SCALE @A3	1:1,250	CHECKED	SJ
STATUS	Final	APPROVED	LG

No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

Sources: BSG Ecology survey data, Ordnance Survey

L:\Contracts\Live Contracts\8801-8900\8900 Radford Semele, Preliminary Ecological Appraisal\Work in Progress\Mapping\02 GIS\01 projects\8900_pond_buffers.mxd

No residential development is proposed within the 50 m buffer. The rationale for the 50 m buffer comes from the Natural England great crested newt (GCN) licenced method statement which states that the terrestrial habitat between 0-50 m from a breeding pond is considered the core habitat. Disturbance within the core zone is not considered appropriate as impacts to great crested newts would be particularly high.

Therefore this area will be left undeveloped and enhanced for GCN e.g. through the creation of a swale and multiple hibernacula (log and rubble piles which GCN and grass snake can seek refuge in) and management of the grassland as a meadow i.e. not amenity grassland.

Enhancement of the core area will help to compensate for the loss in area accessible to the GCN through the development of the Site.

Scheme avoiding use of kerbs, where possible, or ensuring kerbs are sloping either side of gully pots to reduce the risk of individuals falling in.

Currently the site may be used by GCN commuting between the pond 5 m north-east and 90 m south-west of the Site. Connectivity between these areas will be maintained and enhanced by

(i) infilling gaps in the existing hedgerows;
(ii) enhancing the ditch on the northern boundary and ensuring a green corridor is maintained to The Valley road;
(iii) creating a 10 m buffer to the Site boundary on the southern and eastern boundaries to be managed as rough grassland;
(iv) creating a new native species-rich hedgerow parallel to the existing hedgerow; and
(v) creating additional hibernacula within the buffer zone.

Being as the 10 m buffer will be of greater suitability to GCN than the current conditions within the Site, this will also help compensate for the loss in area.
The 10 m buffer will also provide optimal foraging habitat for badgers and connectivity for grass snake.

0 50 m

North

LEGEND

- Site boundary
- P1 Pond
- 50 m buffer from Pond 1
- Enhance ditch
- Creation of a native species-rich hedgerow
- Semi-permanent fencing to be removed once construction is complete
- Newt grid across access road
- Approximate location of hibernacula
- Infilling gaps in hedgerow
- Indicative location of Schwegler 1FF bat box
- Indicative location of Schwegler 1B bird box

LDĀDESIGN

PROJECT TITLE
RADFORD SEMELE

DRAWING TITLE
Figure 1: Constraints and opportunities plan

ISSUED BY	Oxford	T: 01865 887 050	
DATE	29 July 2016	DRAWN	COH
SCALE @A3	1:1,000	CHECKED	LG
STATUS	Final	APPROVED	LG

No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

Sources: BSG Ecology survey data, basemap derived from Proposed Site Plan (5389/F/10 rev.D) produced by Quattro Design Architects

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6.6. Appendix 6: Target Notes

Target Note 1

A dense scrub line in the south-western corner of the Site. Badger *Meles meles* hair was found here. The scrub is composed of frequent bramble *Rubus fruticosus* agg. and ivy *Hedera helix*, occasional rose Rosa sp. and rare occurrences of ash *Fraxinus excelsior*.

Target Note 2

A badger day bed under the southern hedgerow. There is lots of fresh bedding present as well as recent diggings. The diggings do not extend into a sett.

Target Note 3

In the grassland to the southern part of the Site, a hole in the ground was identified. This was 40 cm deep, 30 cm wide and 60 cm long. No signs of digging was found and the hole had unknown origins.

Target Note 4

An area of brash towards the north-western corner. Provides good refugia for reptiles and amphibians and could be used by nesting birds and hedgehog.

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6.7. Appendix 7: Species lists

6.7.1. Meadow species

Common Name	Scientific Name	DAFOR
Creeping bent	*Agrostis stolonifera*	A
Cow parsley	*Anthriscus sylvestris*	F
Cock's-foot	*Dactylis glomerata*	F
Broadleaved dock	*Rumex obtusifolius*	O
Hogweed	*Heracleum sphondylium*	O
Nettle	*Urtica dioica*	O
Cleavers	*Galium aparine*	O
False oat-grass	*Arrhenatherum elatius*	O
Timothy	*Phleum pratense*	O
Common sorrel	*Rumex acetosa*	O
Creeping thistle	*Cirsium arvense*	O
Red campion	*Silene dioica*	R
White campion	*Silene latifolia*	R
Field forget-me-not	*Myosotis arvensis*	R
Dandelion	*Taraxacum spp.*	R
Common mouse-ear	*Cerastium fontanum*	R
Creeping buttercup	*Ranunculus repens*	R
Annual meadowgrass	*Poa annua*	R
Greater plantain	*Plantago major*	R
White clover	*Trifolium repens*	R
Red deadnettle	*Lamium purpureum*	R
Perennial rye-grass	*Lolium perenne*	R
Hedge bindweed	*Calystegia sepium*	R
Common ragwort	*Senecio jacobaea*	R
Common vetch	*Vicia sativa*	R
Sweet vernal grass	*Anthoxanthum odoratum*	R
Meadow buttercup	*Ranunculus acris*	R

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6.7.2. **Hedgerow species**

Common Name	Scientific Name	DAFOR	
Hedgerow			
Blackthorn	*Prunus spinose*	H1	H2
Hawthorn	*Crataegus monogyna*	O	F
Bramble	*Rubus fruticosus agg*	F	R
Elder	*Sambucus nigra*	F	O
Dog rose	*Rosa canina*	O	R
Ash	*Fraxinus excelsior*	R	-
Field maple	*Acer campestris*	R	O
Ivy	*Hedera helix*	O	O
Scots pine	*Pinus sylvestris*	O	-
Wych elm	*Ulmus glabra*	R	-
Dead elm	*Ulmus sp.*	R	F
Blackthorn	*Prunus spinose*	R	-
Ground Flora			
		H1	H2
White dead-nettle	*Lamium album*	O	-
Cleavers	*Galium aparine*	F	F
Nettle	*Urtica dioica*	F	F
Cow parsley	*Anthriscus sylvestris*	F	O

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Cocks foot	*Dactylis glomerata*	O	O
Herb-robert	*Geranium robertianum*	O	-
Hogweed	*Heracleum sphondylium*	R	-
Creeping thistle	*Cirsium arvense*	O	-
Bramble	*Rubus fruticosus agg*	F	O

H1= Hedgerow 1; H2 = Hedgerow 2 (please refer to Figure 1)

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6.8. Appendix 8: Summaries of Relevant Policy, Legislation and Other Instruments

This section briefly summarises the legislation, policy and related issues that are relevant to the main text of the report. The following text does not constitute legal or planning advice.

National Planning Policy Framework

The Government published the National Planning Policy Framework (NPPF) on 27th March 2012. Text excerpts from the NPPF are shown where they may be relevant to planning applications and biodiversity including protected sites, habitats and species.

In conserving and enhancing the natural environment, the NPPF (Paragraph 109) states that 'the planning system should contribute to and enhance the natural and local environment' by:

a) Recognising the wider benefits of ecosystem services;

b) Minimising impacts on biodiversity and providing net gains in biodiversity, where possible contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

c) Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

In paragraph 111, the NPPF refers to brownfield land as follows: 'planning policies and decisions should encourage the effective use of land by re-using land that has been previously developed (brownfield land), provided that it is not of high environmental value.'

Paragraph 117 refers to how planning policies should aim to minimise impacts on biodiversity, to: 'identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;' and to 'promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan.'

Paragraph 118 of the National Planning Policy Framework advises how, when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the mitigation hierarchy. The mitigation hierarchy advises that if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.

Where proposals or activities require planning permission, the NPPF states that '...local planning authorities should aim to conserve and enhance biodiversity by applying the following principles

a) Proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be

permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;

b) Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;

c) Opportunities to incorporate biodiversity in and around developments should be encouraged;

d) Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss; and

e) The following wildlife sites should be given the same protection as European sites:

– potential Special Protection Areas and possible Special Areas of Conservation

– listed or proposed Ramsar sites; and

– sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.'

In respect of protected sites, the NPPF requires local planning authorities to make 'distinctions…between the hierarchy of international, national and locally designated sites so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.'

In paragraph 125 the NPPF states that 'by encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.' This applies to protected species that are a material consideration in the planning process including bats and may also apply to other light sensitive species.

Government Circular ODPM 06/2005 Biodiversity and Geological Conservation

Paragraph 98 of Government Circular 06/2005 advises that "the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. Local authorities should consult Natural England before granting planning permission. They should consider attaching appropriate planning conditions or entering into planning obligations under which the developer would take steps to secure the long-term protection of the species. They should also advise developers that they must comply with any statutory species' protection provisions affecting the site concerned…"

Paragraph 99 of Government Circular 06/2005 advises that "it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under

planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted".

Standing Advice (GOV.UK)

The GOV.UK website provides information regarding protected species and sites in relation to development proposals: 'Local planning authorities should take advice from Natural England or the Environment Agency about planning applications for developments that may affect protected species.' GOV.UK advises that 'some species have standing advice which you can use to help with planning decisions. For others you should contact Natural England or the Environment Agency for an individual response.'

The standing advice (originally from Natural England and now held and updated on GOV.UK) provides advice to planners on deciding if there is a 'reasonable likelihood' of protected species being present. It also provides advice on survey and mitigation requirements.

When determining an application for development that is covered by standing advice, in accordance with guidance in Government Circular 06/2005, Local planning authorities are required to take the standing advice into account. In paragraph 82 of the aforementioned Circular, it is stated that: 'The standing advice will be a material consideration in the determination of the planning application in the same way as any advice received from a statutory consultee...it is up to the planning authority to decide the weight to be attached to the standing advice, in the same way as it would decide the weight to be attached to a response from a statutory consultee.'

Natural Environment and Rural Communities (NERC) Act 2006 – Habitats and species of principal importance

The Natural Environment and Rural Communities (NERC) Act came into force on 1 October 2006. Sections 41 (S41) of the Act require the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England and Wales respectively. The list has been drawn up in consultation with Natural England and Countryside Council for Wales (now NRW), as required by the Act. In accordance with the Act the Secretary of State keeps this list under review and will publish a revised list if necessary, in consultation with Natural England and NRW.

The S41 list is used to guide decision-makers such as public bodies, including local authorities and utilities companies, in implementing their duty under Section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions, including development control and planning. This is commonly referred to as the 'Biodiversity Duty.'

Guidance for public authorities on implementing the Biodiversity Duty has been jointly published by Defra and the Welsh Assembly Government. One of the key messages in this document is that 'conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them.' In England and Wales, the administration of the planning system and licensing schemes are highlighted as having a 'profound influence on biodiversity conservation.' Local authorities are required to take measures to "promote the preservation, restoration and re-creation of priority habitats,

ecological networks and the protection and recovery of priority species. The guidance states that 'the duty aims to raise the profile and visibility of biodiversity, clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making.'

In 2007, the UK Biodiversity Action Plan (BAP) Partnership published an updated list of priority UK species and habitats covering terrestrial, freshwater and marine biodiversity to focus conservation action for rarer species and habitats in the UK. The UK Post-2010 Biodiversity Framework, which covers the period from 2011 to 2020, now succeeds the UK BAP. The UK priority list contained 1,150 species and 65 habitats requiring special protection and has been used as a reference to draw up the lists of species and habitats of principal importance in England and Wales.

In England, there are 56 habitats of principal importance and 943 species of principal importance on the S41 list. These are all the habitats and species found in England that were identified as requiring action in the UK BAP and which continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

European protected species (Plants)

The Conservation of Habitats and Species Regulations 2010 (as amended) consolidate the various amendments that have been made to the Regulations. The original (1994) Regulations transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

"European protected species" (EPS) of plant are those which are present on Schedule 5 of the Conservation of Habitats and Species Regulations 2010. They are subject to the provisions of Regulation 45 of those Regulations.

Regulation 45 makes it an offence to deliberately pick, collect, cut, uproot or destroy a wild plant of an EPS. It also makes it an offence to have in possession or control any live or dead plant or part of plant which has been taken in the wild and which is an EPS (or listed in Annexe II(b) or IV(b) of the Habitats Directive).

European protected species (Animals)

The Conservation of Habitats and Species Regulations 2010 (as amended) consolidates the various amendments that have been made to the original (1994) Regulations which transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

"European protected species" (EPS) of animal are those which are present on Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended). They are subject to the provisions of Regulation 41 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

a) Intentionally or deliberately capture, injure or kill any wild animal included amongst these species

b) Possess or control any live or dead specimens or any part of, or anything derived from a these species

c) deliberately disturb wild animals of any such species

d) deliberately take or destroy the eggs of such an animal, or

e) intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place

For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

a) to impair their ability—

– to survive, to breed or reproduce, or to rear or nurture their young, or

– in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

b) to affect significantly the local distribution or abundance of the species to which they belong.

Although the law provides strict protection to these species, it also allows this protection to be set aside (derogated) through the issuing of licences. The licences in England are currently determined by Natural England (NE) for development works and by Natural Resources Wales in Wales. In accordance with the requirements of the Regulations (2010), a licence can only be issued where the following requirements are satisfied:

a) The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'

b) 'There is no satisfactory alternative'

c) The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Definition of breeding sites and resting places

Guidance for all European Protected Species of animal, including bats and great crested newt, regarding the definition of breeding and of breeding and resting places is provided by The European Council (EC) which has prepared specific guidance in respect of the interpretation of various Articles of the EC Habitats Directive Section II.3.4.b) provides definitions and examples of both breeding and resting places at paragraphs 57 and 59 respectively. This guidance states that 'The provision in Article 12(1)(d) [of the EC Habitats Directive] should therefore be understood as aiming to safeguard the ecological functionality of breeding sites and resting places.' Further the guidance states: 'It thus follows from Article 12(1)(d) that such breeding sites and resting places also need to be protected when they are not being used, but where there is a reasonably high probability that the species concerned will return to these sites and places. If for example a certain cave is used every year by a number of bats for hibernation (because the species has the habit of returning to the same winter roost every year), the functionality of this cave as a hibernating site should be protected in summer as well so that the bats can re-use it in winter. On the other hand, if a certain cave is used only occasionally for breeding or resting purposes, it is very likely that the site does not qualify as a breeding site or resting place.'

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Birds

All nesting birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

The Conservation of Habitats and Species (Amendment) Regulations 2012 has placed new duties on competent authorities (including Local Authorities and National Park Authorities) in relation to wild bird habitat. These provisions relate back to Articles 1, 2 and 3 of the EC Directive on the conservation of wild birds (2009/147/EC, 'Birds Directive') (Regulation 9A(2) & (3) require that 'in the exercise of their functions as they consider appropriate' these authorities must take steps to contribute to the 'preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of upkeep, management and creation of such habitat...'

In relation to the duties placed on competent authorities under the 2012 amendment Regulation 9A (8) states: 'So far as lies within their powers, a competent authority in exercising any function [including in relation to town and country planning] in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies).'

Badger

Badger is protected under the Protection of Badgers Act 1992. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A badger sett is defined in the legislation as "a structure or place, which displays signs indicating current use by a badger".

ODPM Circular 06/2005 provides further guidance on statutory obligations towards badger within the planning system. Of particular note is paragraph 124, which states that "The likelihood of disturbing a badger sett, or adversely affecting badgers' foraging territory, or links between them, or significantly increasing the likelihood of road or rail casualties amongst badger populations, are capable of being material considerations in planning decisions."

Natural England provides Standing Advice, which is capable of being a material consideration in planning decisions. Natural England recommends mitigation to avoid impacts on badger setts, which includes maintaining or creating new foraging areas and maintaining or creating access (commuting routes) between setts and foraging/watering areas.

Reptiles

All native reptile species receive legal protection in Great Britain under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Viviparous lizard, slow-worm, grass snake

and adder are protected against killing, injuring and unlicensed trade only. All native species of reptile are included as 'species of principal importance' for the purpose of conserving biodiversity under Sections 41 of the NERC Act 2006.

Current Natural England Guidelines for Developers states that 'where it is predictable that reptiles are likely to be killed or injured by activities such as site clearance, this could legally constitute intentional killing or injuring.' Further the guidance states: 'Normally prohibited activities may not be illegal if 'the act was the incidental result of a lawful operation and could not reasonably have been avoided'. Natural England 'would expect reasonable avoidance to include measures such as altering development layouts to avoid key areas, as well as capture and exclusion of reptiles.'

The Natural England Guidelines for Developers state that 'planning must incorporate two aims where reptiles are present:

- To protect reptiles from any harm that might arise during development work;
- To ensure that sufficient quality, quantity 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.

Wild mammals in general

The Wild Mammals (Protection) Act 1996 (as amended) makes provision for the protection of wild mammals from certain cruel acts, making it an offence for any person to intentionally cause suffering to any wild mammal. In the context of development sites, for example, this may apply to rabbits in their burrows.

Hedgerows

Article 10 of the Habitats Directive requires that 'Member States shall endeavour…to encourage the management of features of the landscape which are of major importance for wild fauna and flora. Such features are those which, by virtue of their linear and continuous structure…or their function as stepping stones…are essential for the migration, dispersal and genetic exchange of wild species'. Examples given in the Directive include traditional field boundary systems (such as hedgerows).

The aim of the Hedgerow Regulations 1997, according to guidance produced by the Department of the Environment, is "to protect important hedgerows in the countryside by controlling their removal through a system of notification. In summary, the guidance states that the system is concerned with the removal of hedgerows, either in whole or in part, and covers any act which results in the destruction of a hedgerow. The procedure in the Regulations is triggered only when land managers or utility operators want to remove a hedgerow. The system is in favour of protecting and retaining 'important' hedgerows.

The Hedgerow Regulations set out criteria that must be used by the local planning authority in determining which hedgerows are 'important'. The criteria relate to the value of hedgerows from an archaeological, historical, wildlife and landscape perspective.

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Radford Semele

APPENDIX C- Reptile Mitigation Strategy (September 2016) BSG Ecology 8900.03._RMS_APPR_270916

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Radford Semele

Reptile Mitigation Strategy

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Client	McLoughlin planning
Project	Radford Semele
Report title	Reptile Mitigation Strategy
Draft version/final	FINAL
File reference	8900.03_RMS_APPR_270916

	Name	**Position**	**Date**
Originated	Laura Grant	Senior Ecologist	20 September 2016
Reviewed	Hannah Bilston	Principal Ecologist	23 September 2016
Approved for issue to client	Hannah Bilston	Principal Ecologist	27 September 2016
Issued to client	Laura Grant	Senior Ecologist	27 September 2016

Contents

1 Introduction

Site Description

1.1 The proposed development site is located to the south of the village of Radford Semele, Warwickshire, between The Valley and St Nicholas Road, with a central Ordnance Survey grid reference: SP346638 (hereafter referred to as the Site). The location and boundary of the Site is shown in Figure 1. The Site comprises a meadow 1.66 ha in extent. The surrounding land uses include arable fields to the east, south and west and a residential area to the north.

Background

1.2 BSG Ecology were instructed by McLoughlin Planning in late May 2016 to conduct surveys of the Site to inform a planning application for the construction of 34 residential properties with private gardens and associated infrastructure.

1.3 Reptile surveys were conducted as part of the suite of surveys undertaken to inform the application. The surveys identified the presence of a low number of grass snake *Natrix natrix* (see survey results in Section 2). The ecological Services Team at Warwickshire County Council requested a reptile mitigation strategy to be submitted and agreed prior to determination of the planning application.

1.4 Great crested newts (GCN) *Triturus cristatus* have been recorded within a pond 5 m north-east of the Site boundary therefore are considered likely to forage and/or commute within the Site. The species is a European Protected Species which is protected[1] against killing, injury, deliberate disturbance and destruction of a breeding site or resting place. Activities which may cause an offence (such as site clearance) will therefore need to be conducted under a European Protected Species Mitigation (EPSM) licence once planning permission has been obtained. The licence will set out the mitigation and compensation measures which will be implemented to prevent the killing and injury of great crested newts during the construction phase of the proposed development. The EPSM licence for GCN will be secured prior to this Reptile Mitigation Strategy being implemented and the mitigation strategies for both species will be implemented together.

[1] Present on Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended) and subject to the provisions of Regulation 41 of those Regulations and protected under the Wildlife and Countryside Act 1981 (as amended).

2 Status of Reptiles on the Site

2.1 Grass snake has been recorded within the 2 km search area (four records obtained from the Warwickshire Biological Records Centre, to 2012). This is a species which is protected under the Wildlife and Countryside Act (WCA) 1981 (as amended) and is a Species of Principal Importance (SPI) in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.. Reptile surveys recorded grass snake within the Site, with a peak count of four adults and two juveniles during a single survey (see results in Table 1).

2.2 There is also potential for other common reptiles such as slow-worm *Anguis fragilis*, and common lizard *Zootoca vivipara* to be present within the Site as the tussocky and thatched nature of c. 30 % of the grassland provides suitable habitat. The absence of these species during the surveys suggests that only very low numbers of each species have potential to be present. All common reptile species are protected under the Wildlife and Countryside Act 1981 (as amended) and are listed as SPIs. The measures employed to mitigate impacts on grass snake will also mitigate impacts on other species of reptiles, if present.

Table 1: Reptile survey results

Date	**Survey results**
23/06/16	Three adult grass snake
28/06/16	Three adult and one juvenile grass snake
01/07/16	Four adult and two juvenile grass snake
05/07/16	Three adult and one juvenile grass snake
13/07/16	Two adult and two juvenile grass snake; 1 toad
18/07/16	No reptiles recorded
26/07/16	No reptiles recorded

3 Potential Impacts in the Absence of Mitigation

3.1 This section highlights the potential impacts of the proposed development on reptiles.

3.2 The development proposals require the clearance of 0.78 ha of structurally poor semi-improved grassland and 0.35 ha of tall ruderal vegetation. These habitats provide limited opportunities for foraging or sheltering reptiles. Nevertheless, in the absence of mitigation clearance of this vegetation and the brash pile in the north-west of the Site has the potential to result in the killing and or injury of grass snake and therefore contravene the legislation protecting this species.

3.3 The following section outlines a strategy for mitigating for this loss of habitat and for preventing potential killing and injury of grass snake prior to Site preparation works and throughout the construction and operational phase of the proposals.

4 Method Statement

Rationale

4.1 In the absence of mitigation it is likely that grass snake will be killed and/or injured though activities such as site clearance. Part of the Site will therefore be sectioned off prior to site clearance and construction activities and reptiles will be translocated to the retained zone which will be referred to as the 'Receptor Site' throughout the remainder of this Mitigation Strategy.

Location of Receptor Site

4.2 The Receptor Site will encompass 0.5 ha of semi-improved neutral grassland along the northern, eastern and southern boundaries, a new swale 0.02 ha in extent in the north-west of the Site, and an enhanced ditch on the northern boundary, as indicated on Figure 2.

4.3 The Receptor Site will be fenced off prior to site clearance and throughout construction using herras fencing or similar to prevent unauthorised access and/or storage of materials within the protected areas.

Enhancement of Receptor Site

4.4 As the Receptor Site already supports a reptile population, prior to translocation it will be necessary to increase its potential carrying capacity by increasing its suitability for grass snake. Enhancement is to be focused on increasing opportunities for foraging, hibernation, summer shelter and basking (see all features on Figure 2).

4.5 The measures described below will be implemented within the Receptor Site prior to the release of translocated reptiles from the development footprint. This habitat enhancement must take place under supervision of an ecologist due to sensitivities associated with the potential presence of great crested newts and reptiles.

Increasing Species and Structural Diversity of Grassland

4.6 To ensure the grassland reaches good condition within five years the following is proposed:

- In July – August 2017 the areas of grassland to be retained and enhanced will be mowed to 15 cm height and the arisings collected[2].
- The ground will be hand searched for any features which may be used as refugia by reptiles or amphibians (as per the methods detailed within the great crested newt EPSM licence). Once all potential suitable features are removed (of which there are likely to be very few given the site's current condition), the ground will be harrowed. Localised turf strips of approximately 2 m x 2 m will also be conducted. The turves will be used to top the hibernacula and basking bank to be created (see details below).
- A wildflower mix to include grass suppressant species such as yellow rattle *Rhinanthus minor* as well as at least six of the wildflower indicator species of semi-improved grassland listed on page 71 of the Farm Environment Plan (FEP) Manual (Natural England, 2013) will be sown in autumn 2019.
- Spot treatments with an herbicide and/or hand-pulling will be conducted to prevent undesirable species from having more than 5 % coverage.
- An autumn afterseed will be conducted in 2018 if few wildflower species establish and/or cover of wildflower species is not more than 20 %. This will be followed by plug planting if diversity has not increased by June 2018.

[2] Some of the collected arisings will be used to make a grass pile suitable for breeding grass snake.

Creation of Grass Piles

4.7 Grass cuttings will be deployed to create a grass pile in the north-east of the Receptor Site to provide opportunities for breeding grass snake.

Creation of Four Hibernaculum

4.8 Four hibernacula will be created within the Receptor Site with a variety of sun exposure positions.

4.9 Each hibernaculum will have the following characteristics:

- Be at least 4 m long by 2 m wide by 1 m high. As the geology of the Site is free draining this can be partially set into the ground. One long aspect should be south facing.
- A core of bricks and rocks or timber.
- Be covered in turf.
- Have "access points" of timber or rubble around the edges protruding from the vegetative cover which lead to internal cavities.

Creation of a Basking Bank

4.10 In the north of the Site the Public Right of Way will be maintained. Immediately south of the footpath a bund will be created using soil and rubble to build a bank approximately 1 m high. This will create a south-facing slope suitable for reptiles to bask in open areas. It may also be used as a refugia by reptiles and amphibians.

Enhancement of Northern Ditch

4.11 The northern ditch will be enhanced to maintain a more open channel which is not choked by vegetation. This will be achieved by strimming the existing vegetation and re-profiling as necessary to facilitate establishment of grass banks. Should injurious weeds (as listed on the Injurious Weeds Act, 1959) such as creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, ragwort *Senecio jacobaea*, broad-leaved dock *Rumex obtusifolius* or curled dock *Rumex crispus* colonise more than 15 % of the banks they will be controlled by hand-pulling or spot application of herbicide when in periods of active growth.

Creation of a swale

4.12 A swale 0.02 ha in extent will be created prior to the installation of fencing (detailed below) once the great crested newt licence has been secured. The swale will include a variety of native aquatic marginal, emergent and submerged species. This will be attractive to a variety of wildlife including frogs which are a food source for grass snake.

Fencing

4.13 There is a Public Right of Way along the northern boundary of the Site. This will be fenced (e.g. with a stock fencing post and wire fence) to prevent public access to the Receptor Site but allow permeability of wildlife.

4.14 Semi-permanent herptile (reptile and amphibian) exclusion fencing will be installed by an experienced herptile fencing contractor (under a watching brief by an experienced ecologist) along the boundaries of the development footprint. Prior to the installation of the fence mowing along the route of the fence will be undertaken and the hibernacula, basking bank and swale will be created. At the north-western corner the fencing will abut a stop gap with a minimum 12 cm gap (see image to the right) which will permit vehicular access to the development footprint whilst reducing the likelihood that reptiles or amphibians will move back into the development footprint area.

4.15 The herptile fencing will remain in place for the duration of the Site clearance and construction phases of the development.

Translocation

4.16 Where a low number of grass snake are recorded on a Site a minimum of 60 days trapping is recommended by the HGBI guidelines (HGBI, 1998). However, given the limited extent of good-quality habitat for grass snake present within the development footprint and the small size of the development footprint it is likely that grass snake will be trapped out of the site much sooner than 60 days. The numbers of reptiles being captured will be closely monitored and, in the event five consecutive days of no trapping or observations of grass snake is reached within the Site prior to 60 suitable days of trapping being undertaken, BSG Ecology will make an assessment as to whether a reasonable trapping effort can be accounted for. This assessment will be based on; the number of trapping days undertaken, the number of reptiles captured, any pattern in decline in number over the trapping period and sequence of weather conditions. In this event, consultation with Warwickshire County Council will be undertaken to determine whether it can be agreed that suitable effort has been expended. If this agreement is reached, the Site will be declared clear of reptiles. Conversely, should the number of reptiles captured be higher than expected (based on the survey results) or additional species be discovered, consultation will be undertaken with the Council to agree any required changes to the agreed strategy.

4.17 Based on our experience working at similar sites, we anticipate to undertake a minimum of 25 days of trapping reptiles during suitable weather conditions. This accounts for the low number of grass snake present, their localised distribution and low suitability of a large proportion of the habitat within the development footprint. As stated above reptile translocation will continue until five reptile-free days are achieved (i.e. starting from day 21). Any reptiles recovered during this period will be translocated to the Receptor Site.

4.18 Trapping will be undertaken by hand; artificial refugia (bitumen felt and corrugated tins) will be used to facilitate the process. The refugia will be numbered with spray paint to accurately map and locate each one. Pitfall traps will be deployed to facilitate the capture of great crested newts. The HGBI guidelines (HGBI 1998) indicate a density of 50 artificial refugia per hectare need to be deployed prior to the commencement of the trapping period. Given the area from which reptiles are to be excluded is approximately 1.13 ha, up to 100 artificial refugia will be deployed within the development footprint. All refugia and natural features of the Site suitable for basking reptiles will be checked at least once a day during suitable conditions (see below) by a suitably qualified ecologist throughout the translocation period. Any reptiles captured will be removed by hand to the Receptor Site. Soft cotton bags will be used to facilitate collection and transport of captured animals.

4.19 The number of reptiles captured will be recorded on a daily basis and entered into a spreadsheet that will be managed by BSG Ecology. The weather conditions, refugia number or the refugia number nearest to where they were captured will also be recorded.

4.20 Guidance on suitable trapping conditions for reptiles is provided in Froglife's Advice Sheet 10 (Froglife, 1999). Suitable days are generally considered to be when temperatures are between 9°C and 18°C. Rainy and windy days are generally unsuitable for basking reptiles; however, the sequence of weather is important. For example, hot days after a period of cold days can be good for catching basking reptiles, as can showery weather following a period of dry days. The weather patterns will be monitored by BSG Ecology throughout the trapping period. All reptiles captured will be moved to the Receptor Site that same day.

Habitat Manipulation

4.21 Habitat manipulation may be undertaken during the translocation in accordance with HGBI guidelines (1998) if deemed necessary to increase capture efficiency. This may include mowing some areas of grassland to reduce opportunities for reptiles.

Destructive Search

4.22 Once the Site has been declared clear of reptiles (following a minimum of 25 days trapping including five clear days of no reptile sightings) site clearance can take place.

Maintenance and Eventual Removal of Exclusion Infrastructure

4.23 The herptile fencing will be checked regularly by BSG Ecology during the trapping process to ensure it is in good condition and continuing to function as a barrier to reptiles. BSG Ecology will advise the developer of any repairs that may be necessary. The developer will be responsible for ensuring that repairs are undertaken promptly.

4.24 The exclusion fencing and stop gap will be maintained throughout the construction phase of development. The developer will be responsible for the on-going maintenance of the exclusion fence once the translocation has been completed. Particular care will be taken to ensure that debris and sediments are not permitted to build up within the stop gap or adjacent to the exclusion fencing, reducing its effectiveness as a barrier to grass snake.

4.25 Removal of the herptile fencing post-construction will be undertaken under an ecological watching brief by a suitably experienced ecologist in case any reptiles or great crested newts are discovered within crevices created by the fencing.

5 Post Translocation Habitat Management

Habitat Management

5.1 Habitat management will be instructed by the developer.

5.2 The grassland habitats within the Receptor Site will be mown twice a year (June and August) to a minimum height of 15 cm. The arisings will be collected and grass pile will be created to provide opportunities for breeding grass snake.

5.3 Pernicious weeds, as identified on Schedule 9 of the Wildlife and Countryside Act (1981) as amended, such as Japanese knotweed, should they establish will be controlled with the aim of their eradication.

5.4 Should injurious weeds (as listed on the Injurious Weeds Act, 1959) such as creeping thistle, spear thistle, ragwort, broad-leaved dock or curled dock colonise more than 5 % of the grassland they will be controlled by hand-pulling or spot application of herbicide when in periods of active growth.

5.5 An autumn afterseed will be conducted if few wildflower species establish and/or cover of wildflower species is not more than 20 %.

5.6 Any household refuse thrown over the fences in to the Receptor Site will need to be removed by the management company responsible for the after care of the development to prevent the materials reducing the extent of suitable habitat and/or potentially killing or injuring reptiles.

6 Schedule of Reptile Mitigation Strategy Actions

6.1 The planning application is only outline at this stage therefore the exact dates of mitigation actions is unknown. However, on the basis great crested newt population surveys will be conducted in spring 2017 to inform an EPSM licence application it is assumed that the following is a reasonable schedule for delivery of the scheme.

Table 3: Schedule of Reptile Mitigation Strategy Actions

Task	**Timing**
Secure GCN EPSM Licence*	July 2017
Enhance Receptor Site	July – August 2017
Install Herptile Exclusion Fencing	April 2018
Translocate Reptiles and GCN	April-May 2018
Habitat Manipulation	May 2018
Hand and Destructive Search	May 2018 (once translocation complete)
Development can Commence	May/June 2018
Maintenance and Eventual Removal of Exclusion Infrastructure	2018-24
Habitat Management	Mowing twice per year.

*Assuming full planning consent has been achieved and all conditions relating to wildlife have been discharged by late May or early June 2017 when the EPSM licence is submitted.

7 Residual Impacts following Mitigation and Enhancement

7.1 Currently the Site is of low value to grass snake as the lack of structural and species diversity provides limited opportunities for foraging or shelter. This is reflected in our survey findings which indicate a low number of individuals is present. Mitigation measures will be adopted to prevent the killing and injury or any reptiles present. Measures are also included to enhance habitats within the Site, including enhancing the northern ditch, and the creation of a new swale, hibernacula and grass piles suitable for breeding grass snake. In combination these measures will enhance the local area for reptiles.

8 References

Froglife (1999) *Reptile Survey. An introduction to planning, conducting and interpreting surveys for snake and lizard conservation.* Froglife Advice Sheet 10. Froglife, Halesworth.

Herpetofauna Groups of Britain and Ireland (HGBI) (1998) *Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards*. HGBI Advisory Notes for ARGs.

Natural England (2010) *Higher Level Stewardship Farm Environment Plan (FEP) Manual Third Edition*. Natural England

9 Figures

Figure 1: Phase 1 habitat survey results

(overleaf)

Figure 2: Proposed reptile and amphibian mitigation

(overleaf)

APPENDIX D-G- Correspondence in relation to the previous application on the site (Ref W/16/1489)

APPENDIX D- Letter of objection (September 2016) Ecology Services, Warwickshire County Council

Comments for Planning Application W/16/1489

Application Summary
Application Number: W/16/1489
Address: Land at The Valley, Radford Semele, Leamington Spa, CV31 1UZ
Proposal: Outline planning application for the erection of up to 40 dwellings with associated open space. All matters reserved bar access.
Case Officer: Jo Hogarth

Customer Details
Name: Miss Agni-Louiza Arampoglou
Address: Ecological Services, Economic Growth, Warwickshire County Council, PO Box 43, Warwick CV34 4SX

Comment Details
Commenter Type: Commentor
Stance: Customer objects to the Planning Application
Comment Reasons:
Comment:Dear Jo,

I considered the survey work and BIA calculation undertaken, the proposed works, aerial photography and habitat and species records in the surrounding area.

BIA calculation
According to the BIA calculation the existing grassland on site is poor semi-improved (of poor condition). Given that the grassland is of poor condition (species indicating semi-improved grassland such as sweet vernal grass are at low abundance) we consider that it can reach moderate condition within 10 years, given also the human pressure on this grassland following the housing development. I therefore do not agree with the values in the calculation that this grassland will reach good condition within only 5 years. I revised these values in the calculation and the development is likely to result to a biodiversity loss of 1.66 units.
I would therefore recommend that the application is deferred or refused at this stage due to the impact on biodiversity loss, being contrary to NPPF and ODPM Circular 06/2005. I would recommend that further habitat enhancements are considered within the application site boundary (e.g. marshy grassland surrounding the SUDs pool) and the BIA calculation is revised prior to determination.

Great Crested Newts
From the survey work undertaken it appears that eDNA surveys were carried out in the two ponds within 250m of the site but no detailed great crested newt population assessment surveys (comprising six visits of minimum 3 survey techniques applied) have been undertaken. According

to the eDNA analysis results both ponds were found to host great crested newts. WBRC holds records of male and female great crested newts (indicating breeding population) at the pond just outside the north-eastern corner of the application site. Please note that this the first great crested newt breeding pond confirmed in Radford Semele and so far the only pond known where breeding occurs. Taking into account the great crested newt records in the surrounding area this population is deemed highly important at the local level. Although a 50m buffer area of semi-improved grassland is proposed surrounding the breeding pond along with a corridor of grassland and hedgerows bordering the site, we are concerned about human pressure on these habitats impacting on this population, especially if these habitat areas double as public open space. To fully determine the impact of the proposed development on great crested newts, more information is needed regarding the population size and we would therefore recommend that a full great crested newt population size class survey is carried out at both ponds and submitted prior to determination of the application.

Reptiles
The peak count of grass snakes found on site during the reptile survey was 4 adults and 2 juveniles. Similarly with great crested newts, this is the first confirmed breeding grass snake population at Radford Semele. Thus, the site is considered of high local value also to reptiles. No surveys were carried out in the key months for reptile surveys April, May and September thus it may be possible that the population is higher than estimated. To safeguard this grass snake population I would recommend that a reptile mitigation strategy is submitted and agreed prior to determination of the application. Human pressure on any proposed grass snake habitat should also be taken into account.

To conclude, we do not have all baseline information required to assess the impacts of this development on protected species. From aerial photography and HBA records it appears that this grassland is one of the few remaining areas of tussocky/poor semi-improved grassland in Radford Semele and the immediate surrounding area.

Please let me know if you require further information at this stage.

Kind Regards,
Agni

Agni-Louiza Arampoglou MSc ACIEEM
Assistant Ecologist

APPENDIX E- Response to objection letter (October 2016) BSG Ecology 8900.03_L_APPR_051016

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Our ref: 8900.03_L_APPR_051016
Your ref:

05 October 2016

Rob Young
Senior Planning Officer
Warwickshire District Council
PO Box 43
Warwick
CV34 4SX

Dear Rob

Re: Comments for Planning Application W/16/1489

This letter has been prepared by BSG Ecology on behalf of Protech Developments UK Limited in response to the comments by Agni-Louiza Arampoglou to Planning Application W/16/1489. The client team had a pre-application meeting on 27 June 2016 with Warwickshire District Council. It was recognised that the site would be ecologically sensitive therefore we entered in to pre-app discussions with the Ecological Services team on 29 June 2016.

We are now in receipt of an objection letter from Agni and have set out below and in the attached Reptile Mitigation Strategy our response to her comments.

BIA Calculation

Agni's Comment

According to the BIA calculation the existing grassland on site is poor semi-improved (of poor condition). Given that the grassland is of poor condition (species indicating semi-improved grassland such as sweet vernal grass are at low abundance) we consider that it can reach moderate condition within 10 years, given also the human pressure on this grassland following the housing development. I therefore do not agree with the values in the calculation that this grassland will reach good condition within only 5 years. I revised these values in the calculation and the development is likely to result to a biodiversity loss of 1.66 units.

I would therefore recommend that the application is deferred or refused at this stage due to the impact on biodiversity loss, being contrary to NPPF and ODPM Circular 06/2005. I would recommend that further habitat enhancements are considered within the application site boundary (e.g. marshy grassland surrounding the SUDs pool) and the BIA calculation is revised prior to determination.

Our Response

The grassland on site has been identified as poor semi-improved grassland of medium-low distinctiveness on the basis that:

- ≠ The grassland is tussocky and thatched
- ≠ Species diversity is poor, with three species (creeping bent *Agrostis stolonifera*, cow parsley *Anthriscus sylvestris* and cock's-foot *Dactylis glomerata*) being abundant / frequent within the sward.

- The grassland structure is poor, with no areas of bare ground or variation of topography to create microclimates suitable for a variety of species.

The Warwickshire BIA Calculator states that "*At present, Defra guidance is for Condition assessments to be made using criteria set out within the Farm Environment Plan (FEP) Manual, however this is just a guide and not always suitable; ecological expertise and experience should be used for the final decision.*"

The Farm Environment Plan (FEP) Manual[1] indicates that the grassland is semi-improved grassland because cover of rye-grasses *Lolium* sp. and white clover *Trifolium repens* is less than 30 %, the cover of wildflowers / broadleaved herbs is more than 10 % and typical grass species (cock's-foot, false oat-grass *Arrhenatherum elatius* and sweet vernal grass *Anthoxanthum odoratum*) are present (page 61). The FEP states '*no condition assessment is required for this feature'* (page 60). The Guide to Biodiversity Offsetting[2] suggests the applicable BAP habitat Lowland Meadows criteria are therefore used. Criteria 1-4 of the Lowland Meadows BAP habitat are:

1) Cover of undesirable species (creeping thistle, spear thistle, curled dock, broadleaved dock, common ragwort, common nettle, marsh ragwort, cow parsley and bracken) less than 5 %.
2) Cover of wildflower and sedges throughout the sward (excluding the undesirable species listed above and creeping buttercup and white clover) more than 20 %.
3) Cover of bare ground (including localised areas, for example, rabbit warrens) less than 10 %.
4) Cover of invasive trees and shrubs less than 5 %, and indicators of water logging (such as large sedges, rushes, reeds) less than 30 %.

Only criteria 3 and 4 are currently met for the site therefore the habitat condition is identified as being poor. In order to reach 'moderate' condition, three of the criteria must be met and to be 'good' all four must be met (page 8 of the Guide to Biodiversity Offsetting[2]).

To ensure the grassland reaches good condition within five years the following is proposed:

- In Jul-August 2017 the areas of grassland to be retained and enhanced will be mowed and the arisings collected.
- The ground will be hand searched for any features which may be used as refugia by reptiles or amphibians[3]. Once all potential suitable features are removed (of which there are likely to be very few given the site's current condition), the ground will be harrowed. Localised turf strips of approximately 2 m x 2 m will also be conducted. The turves will be used to top the hibernacula to be created.
- A wildflower mix to include grass suppressant species such as yellow rattle *Rhinanthus minor* as well as at least six of the wildflower indicator species of semi-improved grassland listed on page 71 of the FEP will be sown in autumn 2017.
- Spot treatments with a herbicide and/or hand-pulling will be conducted annually to prevent undesirable species from having more than 5 % coverage.
- An autumn afterseed will be conducted in 2018 if few wildflower species establish and/or cover of wildflower species is not more than 20 %. This will be followed by plug planting if diversity has not increased by June 2019.

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[1] Natural England (2010) *Higher Level Stewardship Farm Environment Plan (FEP) Manual Third Edition*. Natural England.

[2] Environment Bank (2014) *Guide to Warwickshire, Coventry and Solihull Biodiversity Offsetting Biodiversity Impact Assessment calculator v18*. Warwickshire County Council.

[3] Given the potential for great crested newts to be present the work will be conducted under a European Protected Species Mitigation Licence.

The human pressure on the grassland habitats will be negligible as they will be fenced to prevent access, simply providing a Public Right of Way along the northern boundary.

Great Crested Newts

Agni's Comment *"From the survey work undertaken it appears that eDNA surveys were carried out in the two ponds within 250m of the site but no detailed great crested newt population assessment surveys (comprising six visits of minimum 3 survey techniques applied) have been undertaken. According to the eDNA analysis results both ponds were found to host great crested newts. WBRC holds records of male and female great crested newts (indicating breeding population) at the pond just outside the north-eastern corner of the application site. Please note that this the first great crested newt breeding pond confirmed in Radford Semele and so far the only pond known where breeding occurs. Taking into account the great crested newt records in the surrounding area this population is deemed highly important at the local level. Although a 50m buffer area of semi-improved grassland is proposed surrounding the breeding pond along with a corridor of grassland and hedgerows bordering the site, we are concerned about human pressure on these habitats impacting on this population, especially if these habitat areas double as public open space. To fully determine the impact of the proposed development on great crested newts, more information is needed regarding the population size and we would therefore recommend that a full great crested newt population size class survey is carried out at both ponds and submitted prior to determination of the application."*

Our Response

In our original assessment we assumed that a breeding population of great crested newts was present and that individuals in the ponds north-east and west of the site are part of the same metapopulation. Since our report was produced Wardell Armstrong have submitted an Ecological Appraisal Report[4] in support of a Planning Application for the land south of Southam Road, Radford Semele (Warwick District Council Planning Reference: W/16/1666). The report states that of the six ponds within 500 m of their red line boundary, small populations of great crested newts were only present in the ponds which are north-east and south-west of the red line boundary of the development to which our application relates. Peak counts of adults were three males and one female in the north-east pond and one male in the south-west pond. No eggs of any newt species were identified therefore breeding was not confirmed, however, is considered possible on the basis that males and females were present.

We are proposing to maintain and enhance the 50 m core area surrounding the north-eastern pond (located next to the site) and maintain and enhance wildlife corridors which will ensure permeability within the landscape is maintained to the south-western pond where the species is also present.

It should be noted that 0.5 ha of the operational site will comprise gardens which will provide a wealth of opportunities for individuals to forage and seek refuge. The scheme will also avoid the use of kerbs, where possible, or ensure kerbs are sloping either side of gully pots to reduce the risk of individuals falling in. The development site will therefore be permeable to newts during the operational phase.

As previously mentioned, the human pressure on the grassland habitats will be minimal as they will be fenced to prevent access, simply providing a Public Right of Way along the northern boundary. Currently there is only one habitat pile which is located 145 m from the north-eastern pond and 160 m from the south-western pond. Creating four hibernacula and the bund, as well as increasing structural diversity of the grassland habitats will provide a substantial bettering of the refuge habitat.

Habitats within 50 m of the north-eastern pond comprise 50 % intensively managed arable land of low suitability for great crested newts, 25 % gardens and 25 % structurally poor grassland within the site.

[4] Wardell Armstrong (2016) *Land south of Southam Road, Radford Semele. Ecological Appraisal Report (including survey prepared by Wardell Armstrong).* Taylor Wimpy.

The Great Crested Newt Conservation Handbook[5] states that "*distances moved during dispersal vary widely according to habitat quality and availability*". In this case the 50 m core area is of low suitability therefore individuals are likely to occupy terrestrial habitat outside the core area, such as the hedgerows on the eastern and southern boundaries of the site (which are being retained and enhanced) and the woodland 140 m south of the pond which is unaffected by the development.

The mitigation measures proposed will maintain the favourable conservation status of the local population, irrespective of its size because the carrying capacity will be increased beyond its existing level.

We are proposing to conduct size class assessments in 2017 to inform the EPSM licence application, however, consider it likely the feel that the size of population is immaterial to review of this outline planning application.

It should also be noted that Principal Ecologist Hannah Bilston discussed the approach to great crested newt survey and assessment with Agni during a telephone call on 05/07/16. During this call Agni did not indicate that the absence of population size class data would lead to objections being raised when the application was submitted.

Reptiles

Agni's Comment

"The peak count of grass snakes found on site during the reptile survey was 4 adults and 2 juveniles. Similarly with great crested newts, this is the first confirmed breeding grass snake population at Radford Semele. Thus, the site is considered of high local value also to reptiles. No surveys were carried out in the key months for reptile surveys April, May and September thus it may be possible that the population is higher than estimated. To safeguard this grass snake population I would recommend that a reptile mitigation strategy is submitted and agreed prior to determination of the application. Human pressure on any proposed grass snake habitat should also be taken into account."

Our Response

Currently the site is suboptimal for grass snake as the lack of structural and species diversity provides limited opportunities for foraging or shelter. This is reflected in our survey findings which indicate a low population is present (as per Froglife[6] guidance). Our report outlined mitigation measures which would be adopted to prevent the killing and injury or any reptiles present. It also detailed measures to enhance habitats within the site, including enhancing the northern ditch, and the creation of a new swale, hibernacula and grass piles suitable for breeding grass snake. In combination these measures will enhance the local area for the species.

Typically a reptile mitigation strategy is a Condition of a planning application rather than submitted and agreed prior to determination. However, in this instance to give some assurances that the proposals will be deliverable a reptile mitigation strategy has been prepared and is attached.

Value of the grassland

Agni's Comment

"From aerial photography and HBA records it appears that this grassland is one of the few remaining areas of tussocky/poor semi-improved grassland in Radford Semele and the immediate surrounding area."

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[5] Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001) *Great Crested Newt Conservation Handbook*, Froglife, Halesworth

[6] Froglife (1999). *Reptile survey, An introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife advice sheet 10. Froglife.

Our Response

The poor semi-improved grassland present within the site is not a Habitat of Principle Importance nor a local BAP Priority Habitat. Furthermore, under the CIEEM EcIA Guidelines[7] the habitat would not be identified as a Valued Ecological Receptor. This unprotected, low value habitat type is likely to be extensive throughout Warwickshire therefore its presence or absence in the vicinity of Radford Semele is immaterial. We will provide significant enhancements to the site by (i) enhancing existing habitats, (ii) creating new ecologically valuable habitats and features and (iii) securing long-term management. The biodiversity impact of the development, irrespective of the BIA Calculation will therefore be positive.

I trust the above and attached information provides sufficient information about the impacts of the development to enable the application to be determined.

Kind regards,

Laura Grant BSc MCIEEM

Senior Ecologist

For and on behalf of BSG Ecology

Tel: 01865 883833

[7] CIEEM (2016) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

APPENDIX F- Letter of objection (October 2016) Ecology Services, Warwick County Council

Communities
Agni-Louiza Arampoglou
Assistant Ecologist
Warwickshire County Council
PO Box 43
Shire Hall
Warwick CV34 4SX
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agni-louizaarampoglou@warwickshire.gov.uk
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Rob Young
Senior Planning Officer
Warwick District Council
PO Box 2178
Riverside House
Milverton Hill
Royal Leamington Spa CV32 5QH

21st October 2016

PLANNING APPLICATION: W/16/1489
ADDRESS: Land at The Valley, Radford Semele, Leamington Spa, CV31 1UZ
PROPOSAL: Outline planning application for the erection of up to 40 dwellings with associated open space. All matters reserved bar access.

Dear Rob,

I have considered the additional information and Reptile Mitigation Strategy submitted by BSG Ecology, and have reviewed the plans, Ecological Appraisal, WBRC records, Habitat Biodiversity Audit records, aerial photography and the great crested newt survey results submitted by Wardell Armstrong dated May-June 2016 in support of a planning application on an adjacent site.

Taking into account all available information I would recommend **refusal** to this application on ecological grounds.

Biodiversity Value

BSG Ecology stated in their letter dated 5th October 2016 that the application site consists of "an unprotected, low value habitat type which is likely to be extensive throughout Warwickshire therefore its presence or absence in the vicinity of Radford Semele is immaterial". We disagree with this statement. Semi-improved grassland is a scarce habitat in the county and even the less diverse examples (known as poor semi-improved grassland as the site has been classified) remain scarce. In Warwick district only 2.7% of land is classified as poor semi-improved grassland and within Radford Semele parish only 0.7% remains (HBA, 2016). Although the application site is small it is close to another area of semi-improved grassland and these few remaining areas of semi-improved grassland act as important stepping stones for wildlife dispersal. In addition, the grassland within the site is partly tussocky and damp, this type of grassland is also scarce in the county. The closest tussocky grassland is found within the Leam Valley Nature Reserve located north of the village, just over 1km from the site.

I have revised the BIA calculation by considering BSG Ecology's comments and we consider that it is more realistic to expect that the proposed area of retained semi-improved grassland will reach good condition in 10 years providing that is fenced off and no public access is allowed. We still consider that to achieve fully functioning species-rich grassland will not be feasible within only 5 years given that the grassland is currently in poor condition.

According to my revised calculation **the biodiversity loss would therefore be -0.26 biodiversity units**. **This biodiversity loss is contrary to the NPPF and we would therefore recommend that the application in its current form should be refused.**

Protected species

The site also supports protected species and its biodiversity value is consequently considered to be higher than that based on the BIA alone.

A small population of European protected great crested newts has been confirmed using the pond located adjacent to the site in the northeast corner and a further pond to the southwest of the site by Wardell Armstrong consultants (data submitted in support of nearby planning application for '*Land south of Southam Road, Radford Semele'* application W/16/1666*)*. This is the only known population of great crested newts in the village area. It should be noted that there were some limitations to survey work and the numbers detected during the surveys may be higher than were recorded.

The application site is considered optimal habitat for great crested newts and whilst the proposed mitigation area has been increased in size following pre-application discussions with BSG Ecology, the loss of the majority of the grassland in the site would reduce the availability of foraging habitat and shelter for individuals using the site. It appears that great crested newts cross the road between these ponds (The Valley) as WBRC has received photographs of dead great crested newts on this road. An underpass has been requested to allow animals to move between these ponds and if this could be included in the mitigation scheme, along with the new balancing pond and refugia that are proposed, overall it is considered likely that the favourable conservation status of the local population could be maintained, with a detailed scheme of mitigation that could be secured through condition if consent was to be granted.

However, a breeding population of grass snakes has also been confirmed using the site, this was classed as low although it should be noted that the survey work was undertaken in suboptimal months and the population may be higher than was recorded. This is the first recorded breeding population in the parish and one of only 7 in Warwick District.

BSG Ecology stated in their letter that "the site is suboptimal for grass snake as the lack of structural and species diversity provides limited opportunities for foraging or shelter". At the same time they stated that the grassland on site is tussocky and thatched which is optimal habitat for grass snakes. In addition, this tussocky grassland is next to a ditch with scrub cover, tall ruderal, pond and within close distance to broad-leaved plantation woodland connected by intact hedgerow to the site. Adjacent to this woodland is the Local Wildlife Site 'The Valley' consisting of semi-improved grassland and pond. Thus, the assemblage of habitats at this location are considered optimal to support a grass snake population and as a breeding population was found on site, it is clearly of importance for this species.

We are however concerned that the reptile mitigation strategy aims to retain grass snakes on site post development by placing them into a retained area of grassland that will also act as a receptor site for great crested newts. Grass snakes will predate great crested newts, and predation rates would be likely to be increased as animals will be concentrated into a much smaller area. This may cause a decline in the great crested newt population and affect the favourable conservation status of the local population. The proposed management regime for creating and maintaining species-rich semi-improved grassland that is cut twice a year is also not considered optimal for great crested newts or particularly reptiles and it should be ensured that tussocky/rough grassland areas remain present. In addition, contrary to the assertion that great crested newts will use the new gardens, we consider this unlikely as they are often intensively managed and in fact increased pet predation of newts and reptiles is considered likely post development.

We therefore consider that given that the site supports both grass snakes and great crested newts it should be retained, as alternative development sites are available. As there are alternative sites with permission or allocated within the locality and within the emerging Core Strategy **it is our opinion this proposal does not satisfy the 'no satisfactory alternative' test within the Habitats Directive (2010).**

However should you be of the legal opinion that there is no alternative location for these houses and the proposed scheme is granted, then we consider that the breeding grass snake population should be translocated to an off-site receptor site. **This should be identified and surveyed prior to determination** to ensure that it would be suitable.

Other protected species

No bat activity surveys were undertaken in support of this application but it is considered likely that bats will use the site for foraging and commuting.

There are established badger setts in the surrounding area of the site and owing to the majority of the surrounding area consisting of arable land and gardens, it is likely that the site is used foraging by badgers. Use of the site by badger was confirmed during the survey as bedding was recorded and badger hair found.

Although full breeding bird surveys of the site were not undertaken, six bird species were recorded within the site including house sparrow which is a Red Listed species and dunnock which is an Amber Listed species. Other notable birds may also use the site and there are records of notable species in the surrounding area.

Conclusion

To conclude, the application site may well be a small-sized grassland field which is floristically poor, however it is clearly a scarce habitat at the local level, being one of the few remaining areas of tussocky damp poor semi-improved grassland, with added importance as it supports populations of at least two protected species**.** At the district level it is also deemed important as it supports one of the 7 known breeding grass snake populations recorded in Warwick district. Of these 7 breeding grass snake populations only one is classed as large population with the rest being low populations with a peak count of 1-3 adults and 1-5 juveniles.

As the site supports great crested newts it should be retained, as alternative development sites are available within the locality. It is our opinion this proposal does not satisfy the 'no satisfactory alternative' test within the Habitats Directive (2010).

Owing to the assemblage of protected and notable species using the site and the potential presence of other notable species, in accordance with the mitigation hierarchy we recommend that development should be avoided in the first instance and that housing allocation could be focussed elsewhere on alternative sites that may be less ecologically sensitive.

Under the provisions of the NPPF and ODPM Circular 2005/06 local authorities have a wider remit in the requirement to maintain, enhance and restore biodiversity over and above just mitigating for any loss of a habitat.

Paragraph 117 confirms that the NPPF aims to 'promote the preservation, restoration and re-creation of priority habitats, **ecological networks and the protection and recovery of priority species populations, linked to national and local targets**.' It should be noted that the great crested newt is a UK and Local Priority Species, listed in Section 41 of the NERC Act 2006 and the grass snake is a UK Priority Species, listed in Section 41 of the NERC Act 2006.

Paragraph 152 states 'Local planning authorities should seek opportunities to achieve each of the **economic, social and environmental dimensions of sustainable development, and net gains across all three.'** The BIA calculation results in a small biodiversity loss (-0.26 units).

In addition to the NPPF, the LPA also has a biodiversity duty under section 40 of the NERC Act in exercising its functions to 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'.

We would therefore recommend refusal to this application on ecological grounds.

Should you be minded however, to grant approval for this application, please contact us for further advice.

Please let us know if you require additional information for any of the above.

Kind Regards,

Agni-Louiza Arampoglou (ACIEEM Assistant Ecologist) and Lois Browne (MCIEEM Ecologist)

APPENDIX G- Response to objection letter (November 2016) BSG Ecology 8900.03_L2_APPR_031116

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T: 01865 883833 | W: www.bsg-ecology.com | E: info@bsg-ecology.com

Our ref: 8900.03_L2_APPR_031116
Your ref:

03 November 2016

Rob Young
Senior Planning Officer
Warwickshire District Council
PO Box 43
Warwick
CV34 4SX

Dear Mr Young,

Re: Comments for Planning Application W/16/1489

This letter has been prepared by BSG Ecology on behalf of Protech Developments UK Limited in response to the further comments by Agni-Louiza Arampoglou of Warwickshire County Council (WCC) on Planning Application W/16/1489 on 21 October 2016. BSG Ecology previously provided additional information on 05 October 2016 in response to the initial response by WCC comments on the planning application. Given that WCC still recommends refusal of the application we write to provide further information to give confidence that the proposals do conform to national planning policy (the NPPF) and will ensure the maintenance of the favourable conservation status of the great crested newt population.

Biodiversity Value

WCC Comment

BSG Ecology stated in their letter dated 5th October 2016 that the application site consists of "an unprotected, low value habitat type which is likely to be extensive throughout Warwickshire therefore its presence or absence in the vicinity of Radford Semele is immaterial". We disagree with this statement. Semi-improved grassland is a scarce habitat in the county and even the less diverse examples (known as poor semi-improved grassland as the site has been classified) remain scarce. In Warwick district only 2.7% of land is classified as poor semi-improved grassland and within Radford Semele parish only 0.7% remains (HBA, 2016). Although the application site is small it is close to another area of semi-improved grassland and these few remaining areas of semi-improved grassland act as important stepping stones for wildlife dispersal. In addition, the grassland within the site is partly tussocky and damp, this type of grassland is also scarce in the county. The closest tussocky grassland is found within the Leam Valley Nature Reserve located north of the village, just over 1km from the site.

I have revised the BIA calculation by considering BSG Ecology's comments and we consider that it is more realistic to expect that the proposed area of retained semi-improved grassland will reach good condition in 10 years providing that is fenced off and no public access is allowed. We still consider that to achieve fully functioning species-rich grassland will not be feasible within only 5 years given that the grassland is currently in poor condition.

According to my revised calculation the biodiversity loss would therefore be -0.26 biodiversity units. This biodiversity loss is contrary to the NPPF and we would therefore recommend that the application in its current form should be refused.

Our Response

We note that WCC have revised our Biodiversity Impact Assessment calculations which result in the loss of -0.26 biodiversity units which would be contrary to the NPPF. As set out in previous correspondence we do not consider species poor, rank, neutral grassland dominated by common and widespread species to inherently be of high biodiversity value. It is certainly not a priority habitat which the NPPF specifically references as being of particular importance in biodiversity terms. WCC advise that the grassland is of high value as this type of grassland occupies just 2.7 % of the District land area. Given that the District occupies an area of 283 km^2 we calculate the approximate extent of this habitat type within the District is 760 ha or just over 7.5 km^2 Based on these figures the loss of this habitat type as a result of the proposed development would amount to 0.004 % of the total resource within the District.

The NPPF (paragraph 9) encourages a move from a net loss of biodiversity to a net gain and goes on (in paragraph 118) to guide determining authorities to refuse consent where there is significant harm to biodiversity that cannot be mitigated or compensated. The NPPF also directs planning authorities to minimise impacts on biodiversity and achieve net gains where possible (paragraph 109). Given the inherent low biodiversity value of the habitat affected, the extent of this habitat within the District and the percentage of this habitat that would be lost we consider that this does not represent significant harm to biodiversity and as such cannot agree with WCC assertion that the proposal is contrary to the NPPF. However, in the interest of engaging constructively with the WCC Biodiversity Impact Assessment tool, Protech Developments UK Limited is prepared to increase the extent of grassland habitat within the buffers to ensure a positive Habitat Biodiversity Impact Score is achieved on the basis of reaching good condition in 10 years. The revised calculations will result in a net positive Biodiversity Impact Score of +0.02 (see the attached spreadsheet). If this is acceptable then it is clear using the preferred approach promoted by WCC that there is a net positive impact on Biodiversity.

Protected Species

WCC Comment

The site also supports protected species and its biodiversity value is consequently considered to be higher than that based on the BIA alone.

A small population of European protected great crested newts has been confirmed using the pond located adjacent to the site in the northeast corner and a further pond to the southwest of the site by Wardell Armstrong consultants (data submitted in support of nearby planning application for 'Land south of Southam Road, Radford Semele' application W/16/1666). This is the only known population of great crested newts in the village area. It should be noted that there were some limitations to survey work and the numbers detected during the surveys may be higher than were recorded.

The application site is considered optimal habitat for great crested newts and whilst the proposed mitigation area has been increased in size following pre-application discussions with BSG Ecology, the loss of the majority of the grassland in the site would reduce the availability of foraging habitat and shelter for individuals using the site. It appears that great crested newts cross the road between these ponds (The Valley) as WBRC has received photographs of dead great crested newts on this road. An underpass has been requested to allow animals to move between these ponds and if this could be included in the mitigation scheme, along with the new balancing pond and refugia that are proposed, overall it is considered likely that the favourable conservation status

of the local population could be maintained, with a detailed scheme of mitigation that could be secured through condition if consent was to be granted.

However, a breeding population of grass snakes has also been confirmed using the site, this was classed as low although it should be noted that the survey work was undertaken in suboptimal months and the population may be higher than was recorded. This is the first recorded breeding population in the parish and one of only 7 in Warwick District.

BSG Ecology stated in their letter that "the site is suboptimal for grass snake as the lack of structural and species diversity provides limited opportunities for foraging or shelter". At the same time they stated that the grassland on site is tussocky and thatched which is optimal habitat for grass snakes. In addition, this tussocky grassland is next to a ditch with scrub cover, tall ruderal, pond and within close distance to broad-leaved plantation woodland connected by intact hedgerow to the site. Adjacent to this woodland is the Local Wildlife Site 'The Valley' consisting of semi-improved grassland and pond. Thus, the assemblage of habitats at this location are considered optimal to support a grass snake population and as a breeding population was found on site, it is clearly of importance for this species.

We are however concerned that the reptile mitigation strategy aims to retain grass snakes on site post development by placing them into a retained area of grassland that will also act as a receptor site for great crested newts. Grass snakes will predate great crested newts, and predation rates would be likely to be increased as animals will be concentrated into a much smaller area. This may cause a decline in the great crested newt population and affect the favourable conservation status of the local population. The proposed management regime for creating and maintaining species-rich semi-improved grassland that is cut twice a year is also not considered optimal for great crested newts or particularly reptiles and it should be ensured that tussocky/rough grassland areas remain present. In addition, contrary to the assertion that great crested newts will use the new gardens, we consider this unlikely as they are often intensively managed and in fact increased pet predation of newts and reptiles is considered likely post development.

We therefore consider that given that the site supports both grass snakes and great crested newts it should be retained, as alternative development sites are available. As there are alternative sites with permission or allocated within the locality and within the emerging Core Strategy it is our opinion this proposal does not satisfy the 'no satisfactory alternative' test within the Habitats Directive (2010).

However should you be of the legal opinion that there is no alternative location for these houses and the proposed scheme is granted, then we consider that the breeding grass snake population should be translocated to an off-site receptor site. This should be identified and surveyed prior to determination to ensure that it would be suitable.

BSG Response

WCC raise two concerns in relation to the maintenance of favourable conservation status of newts: the provision of a safe crossing point underneath The Valley road; and increased predation rates from grass snake. In relation to the provision of an underpass the purpose of such a measure would be to enable newts to disperse more safely then the current situation and to reduce (it will not avoid completely) the risk of mortality on the existing road (The Valley). The only potential underpass location is at the proposed entrance to the site. This is c. 185 m from the north-eastern pond and 145 m from the south-western pond at the entrance to the proposed development in the north-west of the site. At this location there is an existing culvert under the road and it would be possible to install permanent newt fencing within the development to direct newts to this. Subject to the road improvements and land ownership fencing on the other side of the entrance to the culvert fencing could also be provided to direct newts to the culvert in an area where they may cross the section of

road where there would be increased traffic movement from new residents. It should be noted however, that the level of activity at almost 150 m to 190 m from a breeding pond is likely to represent a small proportion of the overall movements of newts within the populations centred on the two ponds and the likely use of the culvert is considered to be very low. The need for a culvert and permanent fencing would ultimately be determined by Natural England as the licensing authority and it is possible they may consider such a measure as unnecessary. However, if for the purposes of the Councils consideration of maintenance of favourable conservation status you consider fencing to direct newts to the existing culvert would be beneficial then it can be delivered.

In relation to the perceived risk of increased grass snake predation we do not consider this to represent such a significant risk that it is likely to result in decline in the newt population. Great crested newts and grass snakes are often found in similar habitats and locations and increased predation from grass snake has never been raised as a concern by Natural England in our experience of many mitigation schemes for great crested newt. There is also no supporting evidence provided by WCC to support the concern that they have raised. Our comment regarding lack of structural diversity within the site was related to topography (such as south-facing banks) and microhabitats such as bare ground suitable for basking and different sward heights. Whilst the grassland does contain some tussocks and thatch (as shown by photograph 1 below), they are not substantial such that they create optimal conditions. The sward is homogenous which limits availability of refugia and prey (as shown by Photograph 2).

Photograph 1: Patches of tussocks and thatch

Photograph 2: Typical structure of the grassland

No features suitable for breeding grass snake were identified within the site. They are therefore likely to be breeding in features such as compost heaps in adjacent gardens or the habitat immediately surrounding the pond (which is outside the site boundary). Translocation of individuals to an off-site receptor will fragment the population and potentially make both the remaining population and the new population unviable. It is therefore considered to be in the greatest interests of the grass snake to retain the population within the site. Whilst predation of great crested newts may occur, there will be increased opportunities for other sources of prey such as frogs in the swale and small mammals in the grassland habitats, hibernacula and bund.

It is not our intention to intensively manage the grassland habitat. The buffer will be 10 m wide at its narrowest point on the eastern and southern boundaries and 50 m wide at its widest point. This will enable the grassland to be selectively cut and removal arising in particular areas to maximise the floral and structural diversity within the corridors. Some areas will be allowed to develop into tussocky grassland and others managed to maximise opportunities for fine grasses and herbs. Management in this way will therefore maximise opportunities for both reptiles and amphibians as it would provide a structurally more diverse grassland than is currently the case. Management can be detailed in a habitat management plan and controlled through planning condition. Whilst we are not aware of any

current proposals it should be noted that this site could be brought back into agricultural management (grazing or hay making and aftermath grazing) in future. This would most likely reduce the quality of the site for reptiles and great crested newts, with the likely restriction of tussocky grassland to the margins of the fields providing fewer opportunities for newts and grass snake than that proposed as part of the development. As such there is no guarantee that the site will be retained in its current form as desired by WCC.

I discussed the scheme with Lois Browne of WCC on 02 November 2016 who advised that there is a need to consider in combination effects of other proposed developments, such as the Taylor Wimpey development in the north-east of the site. It is proposed that 0.5 ha of suitable habitat for reptiles and amphibians is retained within our proposed scheme and 1.13 ha is lost. The adjacent proposed development would result in an increase of approximately 3 ha of suitable habitat (1.7 ha of which is immediately adjacent to the site and residential gardens on the eastern edge of Radford Semele).

Figure 1: Proposed development north-east of the site (Planning Application W/16/1666).

Currently, habitats within 50 m of the north-eastern pond comprise 50 % intensively managed arable land of low suitability for great crested newts, 25 % gardens and 25 % structurally poor grassland within the site.

If both proposals were to go ahead it would result in 30 % intensively managed arable land of low suitability for great crested newts, 25 % gardens and 45 % species-rich grassland, woodland and hedgerow planting green space and natural areas containing hibernacula and a new attenuation pond. The net result would therefore be positive with increased connectivity and resources within the local landscape for great crested newts and reptiles.

The management proposed within our site will create breeding opportunities, hibernacula and basking sites; all features which are currently not present therefore presenting significant enhancements. The

Taylor Wimpey proposals would also increase habitat availability and connectivity for grass snake within the local area.

Likelihood of a European Protected Species Licence being issued

The planning authority has a duty to consider the impacts of the proposed development upon European Protected Species, in this case great crested newt. WCC raise concerns about two of the three tests that need to be considered by Natural England when considering a licence application. These are the maintenance of favourable conservation status (FCS) and the test of whether there are suitable alternatives. In relation to FCS we have addressed this above and it is our view that the District Council can be confident that should the application be acceptable overall that FCS test can be met. We have not commented on the suitable alternative test as this is essentially a planning consideration that will need to take account of housing need and the provision of suitable alternatives to this proposal to meet that need. This is considered in the wider planning case made by Protech Developments UK Limited.

Other Protected Species

WCC Comment

No bat activity surveys were undertaken in support of this application but it is considered likely that bats will use the site for foraging and commuting.

There are established badger setts in the surrounding area of the site and owing to the majority of the surrounding area consisting of arable land and gardens, it is likely that the site is used foraging by badgers. Use of the site by badger was confirmed during the survey as bedding was recorded and badger hair found.

Although full breeding bird surveys of the site were not undertaken, six bird species were recorded within the site including house sparrow which is a Red Listed species and dunnock which is an Amber Listed species. Other notable birds may also use the site and there are records of notable species in the surrounding area.

BSG Response

We note the observations from WCC in relation to other protected species. None of these comments were made at the pre-application stage and understand that this is not being put forward as a reason for refusal of the application. We would make the following comments:

Bats

In our Ecological Appraisal we identified the Site is likely to be used by foraging and commuting bats with mature trees on the eastern boundary offering low potential to support roosting bats. Due to the small scale of the development and that hedgerow features will be retained and enhanced, it is not considered necessary to conduct surveys to ascertain the use of the Site by bats or the likely impacts.

It is recognised that in the absence of mitigation bats may be impacted by increased lighting within the Site. An increase in lighting could result in commuting routes being interrupted and decrease opportunities for foraging. As such six foot fencing and a hedgerow are being included to help shield lighting impacts. These measures will ensure opportunities for foraging and commuting bats will be maintained within the Site.

Three Schwegler 1FF bat boxes will be included on trees within the hedgerows to be positioned as advised by an ecologist on Site to provide an enhancement of roosting opportunities.

Badger

In our Ecological Appraisal it was reported that the site provides foraging opportunities for badger. These will be maintained within the Site by incorporating the landscape buffer on the eastern and southern boundaries. This will be in the form of enhancing the current hedgerow on Site as well as creating a new parallel hedgerow to create a corridor suitable for badger to forage in. Badger is a mobile species therefore it is also proposed that a pre-construction survey is conducted in advance of Site clearance works.

Birds

In our Ecological Appraisal we identified that the hedgerows, bramble scrub, and brash pile are likely to support a range of more commonly occurring nesting birds. The hedgerows will be retained in their entirety therefore it is not considered necessary to conduct further surveys to identify the assemblage present. Mitigation will be implemented to avoid impacts on nesting birds.

Enhancements for birds include strengthening the existing hedgerow, creation of additional hedgerows and creation of a swale. Three bird boxes with a 40 mm diameter entrance hole which are suitable for a wide range of bird species will also be included on trees within the hedgerow to provide an enhancement.

I trust the above information provides sufficient information about the impacts of the development to enable the application to be determined.

Yours Sincerely

Laura Grant BSc MCIEEM
Senior Ecologist
For and on behalf of BSG Ecology

Tel: 01865 883833

APPENDIX B – GCN Survey Report FPCR 2017

Protech Developments UK Ltd.

Radford Semele

Great Crested Newt Survey Report

June 2017

FPCR Environment and Design Ltd
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-	FINAL	CLP / 09.06.17	MEL / 15.06.17	MEL / 15.06.17

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1.0 INTRODUCTION

1.1 The following report has been compiled by FPCR Environment and Design Ltd on behalf of Protech Developments UK Ltd to present the results of aquatic field survey undertaken in 2017 to determine the presence or likely absence of great crested newts from two waterbodies identified in close proximity to a proposed development at Radford Semele (planning reference: W17/0514).

2.0 METHODOLOGY

Great Crested Newt (GCN)

2.1 Access to third party land was permitted for the purpose of undertaking surveys on two waterbodies (P1 and P2) with Habitat Suitability Index (HSI) assessments and presence/absence surveys conducted at both of these. The location of waterbodies is shown at *Figure 1*.

Habitat Suitability Index (HSI)

2.2 The HSI instrument (Oldman *et al*. 2000)[1] assesses waterbodies against ten pre-determined criteria, producing a score which indicates the degree of suitability for occupation by great crested newts. In general, waterbodies with a higher HSI score are more likely to support great crested newts than those with a lower score and there is a positive correlation between HSI scores and waterbodies with newts recorded. The ten separate attributes assessed for each waterbodies are as follows:

- geographic location;
- waterbody area;
- frequency of drying;
- water quality;
- shade;
- presence of waterfowl;
- presence of fish;
- number of linked waterbodies;
- terrestrial habitat; and
- macrophytic coverage.

2.3 A score is assigned according to the most appropriate criteria level set within each attribute and a total score calculated of between 0 and 1. Suitability is then determined according to the following scale shown in *Table 1.* It should be noted that a low HSI does not necessarily rule out the possibility great crested newts are present, although it does aid in informing the decision as to whether a given waterbody should be selected for further survey, or the likely presence of populations within the wider area.

1 Oldham, R.S., Keeble, J., Swan, M. J. S. and Jeffcote, M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal, 10 (4), 143-155.

Table 1: Great crested newt habitat suitability index

HSI	Waterbody Suitability
<0.5	Poor
0.5 - 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

Presence/absence (aquatic) survey

2.4 Aquatic surveys were conducted between mid-March and mid-June 2017 on all waterbodies identified within 500m of the site boundary, where access was permitted and the previous HSI assessment warranted further surveys. Natural England guidance was followed, as detailed in the Great Crested Newt Mitigation Guidelines (English Nature 2001)[2]. To determine the presence or absence of great crested newts an initial four surveys were performed, with an additional two conducted if great crested newts were recorded. The two further surveys are required to assess the size of the population present.

2.5 Appropriately experienced ecologists from FPCR Environment and Design Ltd. completed all surveys. All surveys were undertaken during suitable weather conditions i.e. ambient air temperature of 5°C minimum and with little/no rain, see *Table 2* below.

Table 1: Great crested newt survey weather conditions

Waterbody ref.	Survey Date	Survey Conditions						
		Turbidity (1-5)	Wind (1-5)	Rain (1-5)	Evening temp °C		Morning temp °C	
					Air pm	Water pm	Air pm	Water pm
1	12/04/2017	2	0	1	12	11	6	5
	18/04/2017	1	0	0	9.5	8.5	6.5	5.5
	28/04/2017	1	0	0	9	6	9	7
	09/05/2017	0	0	0	13.5	12.5	7.5	6.5
	18/05/2017	1	0	0	14	11	13	11
	05/06/2017	3	2	2	10	11	10	9
2	12/04/2017	2	0	0	12	11	6	5
	18/04/2017	2	1	0	9.5	8.5	7	6
	28/04/2017	3	0	0	9	7	9	7
	09/05/2017	3	1	0	13.5	12.5	7.5	6.5

2 English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough. (Under Revision).

	18/05/2017	1	0	0	14	11	13	11
	06/05/2017	1	2	3	10	11	10	9

2.6 On each survey occasion, it is the intention that three of four survey techniques should be employed (egg search, sweep net, bottle trap and torch) where possible. A summary of these techniques is detailed below.

Bottle trapping

2.7 Bottle traps were set within the waterbody in the evening at densities of one trap per two metres of shoreline (where feasible) and left overnight for inspection in the morning. Traps were partially submerged in the water leaving an air bubble in the bottle and secured by a cane marked with a high visibility tape to ensure relocation the following day. Care was taken to ensure that trapping did not occur during excessively warm weather, when the temperature inside the trap could rise considerably, reducing oxygen levels and potentially suffocating the newts.

Sweep netting

2.8 Long handled sweep-nets were used to sample the margins of the pond for great crested newts, with approximately 15 minutes of netting per 50 m of shoreline.

Torching

2.9 Torching involved searching the water body after dusk using high-powered torches to scan the margins and potential display areas for newts. The perimeter of the pond was walked slowly spending approximately 15 minutes torching each 50m of shoreline recording any newts observed. Torch surveys are unsuitable within heavily vegetated and/or turbid ponds or after periods of heavy rain as visibility is diminished.

Egg searching

2.10 Newts lay single eggs on leaves of aquatic plants or other suitable pliable material, after which the material is folded over the egg to protect it. Great crested newt eggs can be distinguished from those of the other newts by their size, shape and colour. Submerged vegetation was examined for newt eggs and folded leaves gently opened to check for eggs. Once a great crested newt egg is identified, no further leaves need to be examined to minimise any further potential disturbance.

3.0 RESULTS

Field survey

Fauna

Great Crested Newt (GCN)

3.1 Results of presence absence surveys undertaken on waterbodies P1 and P2 are included in *Table 3* below.

Table 2: Great crested newt survey results summary

Waterbody ref.	Survey Occasion	Methodology Employed	Peak Count								
			GCN			Smooth			Palmate		
			Num.	Egg	Juv.	Num.	Egg	Juv.	Num.	Egg	Juv.
1	1	B,T,E	-	N	-	6	N	-	-	N	-
	2	B,T,E	-	N	-	11	N	-	-	N	-
	3	B,T,E	-	N	-	6	N	-	-	N	-
	4	B,T	-	N	-	-	N	-	-	N	-
	5	B,T,E	-	N	-	-	N	-	-	N	-
	6	B,T,E	-	N	-	3	N	-	-	N	-
2	1	B,T,E	-	N	-	-	N	-	-	N	-
	2	B,T,E	-	N	-	-	N	-	-	N	-
	3	B,T,E	-	N	-	-	N	-	-	N	-
	4	B,T	-	N	-	-	N	-	-	N	-
	5	B,T,E	-	N	-	10	N	-	-	N	-
	6	B,T,N	-	N	-	8	N	-	-	N	-

4.0 CONCLUSION

4.1 No great crested newts were recorded over the course of full aquatic presence/absence surveys undertaken over the course of the recommended survey period in 2017.

4.2 The HSI scores taken over the course of the survey varied but essentially show that at least for some parts of the survey season the waterbodies are considered suitable breeding habitat for great crested newts. However, no GCN were recorded over the course of surveys in 2017.

4.3 The observation of both smooth newts, common frog and common toad in low numbers over the course of surveys would also demonstrate the suitability of both waterbodies for amphibians.

Key

Site Boundary

Pond with reference number

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client
Protech Development UK Ltd.

project
Radford Semele

drawing title
Waterbody Location Plan

scale 1:1.000 | drawn APD/ MEL | issue 15/6/2017

drawing / figure number
Figure 1

rev
7691-E-01A

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APPENDIX A FULL GCN PRESENCE/ABSENCE SURVEY RESULTS

HSI Summary

Pond	SI -1		SI - 2		SI -3		SI -4		SI -5		SI -6		SI -7		SI -8		SI -9		SI -10		HSI score	Pond suitability	Predicted presence
	geographical location		pond area		pond drying		water quality		shade (perimeter)		fowl		fish		ponds		terrestrial habitat		macrophytes				
	Field result (A,B,C)	SI score	Field result (m2)	SI score	Field result	SI score	Field result	SI score	Field result (% cover)	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score			
1	A	1	200	0.4	Rarely	1	Good	1	5	1	Absent	1	possible	0.7	6	0.8	Moderate	0.7	70	1	0.83	Excellent	93%
2	A	1	150	0.3	Rarely	1	Moderate	0.7	10	1	Absent	1	possible	0.7	6	0.8	Good	1	80	1	0.80	Excellent	93%

HSI – all data

Pond Number	Survey Date	SI -1		SI - 2		SI -3		SI -4		SI -5		SI -6		SI -7		SI -8		SI -9		SI -10		HSI score	Pond suitability	Predicted presence
		Geographical Location		Pond Area		Pond Drying		Water Quality		Shade (perimeter)		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes				
		Field result (A,B,C)	SI score	Field result (m2)	SI score	Field result	SI score	Field result	SI score	Field result (% cover)	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score			
1	04/12/2017	A	1	180	0.3	Never	0.9	Moderate	0.67	2	1	Minor	0.67	possible	0.67	6	0.82	Moderate	0.67	25	0.55	0.69	Average	55%
1	18/04/2017	A	1	238	0.4	Rarely	1	Moderate	0.67	5	1	Minor	0.67	Major	0.01	6	0.82	Good	1	70	1	0.52	Below Average	20%
1	28/04/2017	A	1	200	0.4	Rarely	1	Good	1	5	1	Absent	1	possible	0.67	6	0.82	Moderate	0.67	70	1	0.83	Excellent	93%
1	05/09/2017	A	1	120	0.2	Never	0.9	Good	1	10	1	Minor	0.67	Major	0.01	6	0.82	Good	1	50	0.8	0.49	Poor	3%

1	18/05/2017	A	1	180	0.3	Rarely	1	Moderate	0.67	5	1	Minor	0.67	possible	0.67	6	0.82	Good	1	50	0.8	0.75	Good	79%
1	06/05/2017	A	1	600	1	Never	0.9	Moderate	0.67	30	1	Minor	0.67	possible	0.67	6	0.82	Moderate	0.67	40	0.7	0.80	Good	79%
2	04/12/2017	A	1	50	0.05	Never	0.9	Moderate	0.67	0	1	Absent	1	Absent	1	6	0.82	Good	1	80	1	0.69	Average	55%
2	18/04/2017	A	1	70	0.05	Sometimes	0.5	Poor	0.33	0	1	Minor	0.67	possible	0.67	6	0.82	Moderate	0.67	95	0.85	0.53	Below Average	20%
2	05/09/2017	A	1	63	0.05	Sometimes	0.5	Poor	0.33	0	1	Absent	1	possible	0.67	6	0.82	Moderate	0.67	95	0.85	0.55	Below Average	20%
2	18/05/2017	A	1	150	0.3	Rarely	1	Moderate	0.67	10	1	Absent	1	Absent	1	6	0.82	Moderate	0.67	90	0.9	0.79	Good	79%
2	06/05/2017	A	1	150	0.3	Rarely	1	Moderate	0.67	10	1	Absent	1	possible	0.67	6	0.82	Good	1	80	1	0.80	Excellent	93%
2	28/04/2017	A	1	50	0.05	Annually	0.1	Poor	0.33	0	1	Absent	1	Absent	1	6	0.82	Poor	0.33	40	0.7	0.45	Poor	3%

GCN Results Summary

Pond Number	Survey Date	Evening air temp	Methodology Employed	Highest count									
				GCN		Smooth		Palmate		Toad		Frog	
				Num	Eggs	Num	Eggs	Num	Eggs	Num	eggs	Num	eggs
1	04/12/2017	12°	B,T,E	-	-	6	-	-	-	1	-	-	-
1	18/04/2017	9.5°	B,T,E	-	-	11	-	-	-	-	-	-	-
1	28/04/2017	9°	B,T,E	-	-	6	-	-	-	-	-	1	-
1	05/09/2017	13.5°	B,T	-	-	3	-	-	-	-	-	-	-
1	18/05/2017	14°	B,T,E	-	-	-	-	-	-	-	-	-	-
1	06/05/2017	10°	B,T,E	-	-	-	-	-	-	-	-	-	-
2	04/12/2017	12°	B,T,E	-	-	-	-	-	-	-	-	1	-
2	18/04/2017	9.5°	B,T,E	-	-	-	-	-	-	-	-	1	-
2	05/09/2017	13.5°	B,T	-	-	-	-	-	-	-	-	-	-
2	18/05/2017	14°	B,T,E	-	-	10	-	-	-	-	-	-	-
2	06/05/2017	10°	B,N,E	-	-	8	-	-	-	-	-	-	-
2	28/04/2017	9°	B,T,E	-	-	-	-	-	-	-	-	-	-

Survey Conditions

Survey Conditions						
Turbidity	Wind	Rain	Evening temp		Morning temp	
			Air pm	Water pm	Air am	Water am
2	0	1	12	11	6	5
1	0	0	9.5	8.5	6.5	5.5

1	0	0	9	6	9	7
0	0	0	13.5	12.5	7.5	6.5
1	0	0	14	11	13	11
3	2	2	10	11	10	9
2	0	0	12	11	6	5
2	1	0	9.5	8.5	7	6
3	1	0	13.5	12.5	7.5	6.5
1	0	0	14	11	13	11
1	2	3	10	11	10	9
3	0	0	9	7	9	7

GCN highest counts										
19	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Survey 9	Survey 10
	04/12/2017	18/04/2017	28/04/2017	05/09/2017	18/05/2017	06/05/2017				
Totals	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-				
2	-	-	-	-	-	-				

Smooth Newt highest counts										
	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Survey 9	Survey 10
	04/12/2017	18/04/2017	28/04/2017	05/09/2017	18/05/2017	06/05/2017				
Totals	6	11	6	3	10	8	-	-	-	-
1	6	11	6	3	-	-				
2	-	-	-	-	10	8				

APPENDIX C – Natural England Discretionary Advice Correspondence FPCR 2017

Kurt Goodman

From: Kurt Goodman
Sent: 21 July 2017 10:29
To: Kurt Goodman
Subject: FW: [SPAM-phishing] - Fwd: FW: PSS request - GCN - Land off The Valley, Radford Semele, Leamington Spa - Request response deadline: 10/05/2017

From: Hildred, Ryan (NE) [mailto:Ryan.Hildred@naturalengland.org.uk]
Sent: 03 May 2017 14:48
To: Matthew E. Loak <matthew.loak@fpcr.co.uk>
Cc: PSS Enquiries (NE) <PSSEnquiries@naturalengland.org.uk>; Wildlife Licensing Mailbox Areas 5, 6 and 7-East Midlands and Mercia <WL56&7EastMidsMercia@naturalengland.org.uk>; Newman, Elizabeth (NE) <Elizabeth.Newman@naturalengland.org.uk>
Subject: RE: PSS request - GCN - Land off The Valley, Radford Semele, Leamington Spa - Request response deadline: 10/05/2017

Dear Matthew

Thank you for your PSS request that you have sent to Natural England.

I refer to the email sent to you last week by my colleague Liz Newman in relation to this site. As Liz explained in her email, given Natural England's resources to undertake its statutory licensing function, we have to prioritise the chargeable PSS or species DAS that we take on in order to meet our licensing customer standard (30 working days) as best as we possibly can.

The site that you seek advice on has a small population of GCN, plus does not have planning permission. I understand that there may be disagreement with the local planning authority about some of the ecological mitigation on site. As Liz advised, we would advise FPCR and the local planning authority to consult with our standing advice in order to assist with the planning application determination. We feel this is suitable enough advice for yourselves and the local planning authority to agree a suitable scheme of mitigation.

Once planning permission has been granted and the ecological mitigation plans are more defined (i.e. – you are progressing more towards a licence submission), we would be happy to reconsider a PSS request at that point. Given our capacity and the number of licences we are receiving at present, we politely decline the PSS request.

FYI – we do not provide advice on grass snake in any capacity as this is a domestic species which has been subject to our standing advice since 2011.

Kind regards

Ryan

Ryan Hildred

Casework Manager – Midlands Wildlife Licensing Cluster

East Midlands Area Team

Natural England

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http://www.gov.uk/natural-england

We are here to secure a healthy natural environment for people to enjoy, where wildlife is protected and England's traditional landscapes are safeguarded for future generations.

In an effort to reduce Natural England's carbon footprint, I will, wherever possible, avoid travelling to meetings and attend via audio, video or web conferencing.

Natural England offers two chargeable services – The Discretionary Advice Service (DAS) provides pre-application, pre-determination and post-consent advice on proposals to developers and consultants as well as pre-licensing species advice and pre-assent and consent advice. The Pre-submission Screening Service (PSS) provides advice for protected species mitigation licence applications.

These services help applicants take appropriate account of environmental considerations at an early stage of project development, reduce uncertainty, reduce the risk of delay and added cost at a later stage, whilst securing good results for the natural environment.

From: Matthew E. Loak [mailto:matthew.loak@fpcr.co.uk]
Sent: 03 May 2017 11:06
To: PSS Enquiries (NE)
Subject: 7691 Radford Semele

Dear sir/madam,

Following advice received from Elizabeth Newman (Lead Adviser on the Sustainable Development team) that the Pres-submission Screening Service (PSS) would be a more appropriate avenue than the Discretionary Advice Service (DAS) to receive the particular advice I require in relation to the above named project, please find attached a completed PSS application form. I would be grateful if you could provide me with equation and acceptance of the case at your earliest convenience.

Kind regards,

Matt

Matt Loak MCIEEM | Ecology Associate

BSc(Hons), MSc

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The National Agri-Food Innovation Campus, Sand Hutton, York, YO41 1LZ. 01904 406112

Job Ref:

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APPENDIX D – Natural England Standing Advice GCN

Standing Advice Species Sheet: Great crested newts

NATURAL ENGLAND

1. Typical Habitat/Features Used

1.1 Great crested newts use both aquatic and terrestrial habitat. Adults breed in ponds during the spring and then emerge onto land, spending the summer resting, foraging and dispersing before hibernating through the winter. Larvae take around 4 months to develop, emerging as juveniles typically from around August. Immature newts then remain on land for most of the next 2-4 years until they reach sexual maturity.

1.2 Great crested newts prefer small to medium sized ponds, rather than garden ponds or lakes for example. Breeding ponds must support aquatic vegetation to provide a substrate for egg laying. Open, largely unshaded ponds are preferred over heavily shaded ponds. Ideally there should be open, less vegetated areas within the pond to allow adult males to display in clear view of females. Great crested newts tend to avoid ponds with fish. However, less suitable ponds (for example, smaller ones or those with fish) are sometimes used where they occur close to more favourable ponds.

1.3 Great crested newts do not necessarily require permanent ponds, but the ponds should hold water until at least August in some years to allow successful metamorphosis. The periodic drying up of a pond may be beneficial since it controls predatory fish or invertebrates. Ponds need to support a good invertebrate population to provide food for developing larvae.

1.4 Terrestrial habitat must provide permanent areas of refuge habitat for shelter, daytime refuges and foraging and dispersal opportunities. For hibernation, newts seek out a location that affords them protection from winter conditions and exploit existing opportunities within the landscape such as log piles, disused mammal burrows or cracks in the ground, rather than excavating their own sites. Great crested newts have been known to travel just over 1km from their breeding pond. While such occasional long distance movements are important in the long term, the vast majority of animals are found within a few hundred metres of the breeding pond.

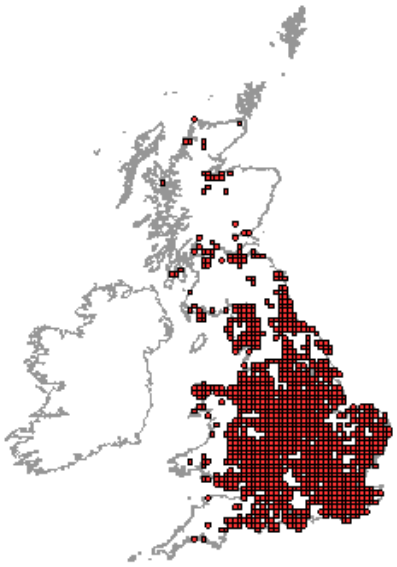
1.5 The UK Biodiversity Action Plan contains a great crested newt Species Action Plan (SAP). For further information, please visit www.ukbap.org.uk . This plan was updated in 2009 with new information, and can be found at: www.arc-trust.org/species/saps.php

2. Distribution

2.1 Although the great crested newt is still widespread in Britain, it has suffered a major decline over the last century and much of its habitat is fragmented by unfavourable land use. The species may be abundant locally in parts of lowland England, while in much of the country it is scarce. Many populations are declining gradually. Only a small proportion of breeding sites (thought to number in the tens of thousands) have been recorded.

2.2 Distribution maps based upon submitted records can be viewed on the National Biodiversity Network Gateway website at http://data.nbn.org.uk/directory/browseTGLevel1.jsp?consFilter=0&dataFilter=1 . It should however be noted that the absence of a record from a particular area does not mean the species is absent. There are other explanations for no recorded presence, notably that no survey has taken place. Not all records are available on the NBN Gateway and so planners are advised also to consult the Local Records Centre (LRC). The LRC and local amphibian experts should be able to give a view on the likely presence of the species in a given area.

2.3 A distribution map for the great crested newt in England is provided below.



Distribution of great crested newts
The absence of a record does not necessarily mean the absence of great crested newts in the area but could be a result of no survey data being available for that particular location.

Source: National Biodiversity Network

Note: The Data Provider, Original Recorder [where identified], Natural England and the NBN Trust bear no responsibility for any further analysis or interpretation of this material, data and/or information.

3. Legislation

3.1 The great crested newt is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of The Conservation of Habitats and Species Regulations 2010 making it an European Protected Species. Details of the legislation can be found at:

Wildlife and Countryside Act
http://www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1981/cukpga_19810069_en_1

The Countryside and Rights of Way Act:
http://www.opsi.gov.uk/acts/acts2000/ukpga_20000037_en_7#pt3-pb8-l1g81

The Conservation of Habitats and Species Regulations 2010
http://www.opsi.gov.uk/si/si2010/uksi_20100490_en_1

A summary of the protection afforded to species can be found in the main standing advice text.

4 Survey Requirements

4.1 All surveys should be undertaken by suitably experienced, and where necessary, licensed surveyors. A survey for great crested newts may be required when background information on distribution suggests that they may be present within, or close to the application site. More detailed indicators of the potential presence of great crested newts are:

- any historical records for great crested newts on the site, or in the general area.
- a pond on or near the site (within around 500m), even if it holds water only seasonally. Note that muddy, cattle-poached, heavily vegetated or shady ponds, ditches and temporary, flooded hollows can be used by great crested newts.
- sites with refuges (such as piles of logs or rubble), grassland, scrub, woodland or hedgerows within 500m of a pond provided that they are not separated by significant barriers to dispersal such as a major trunk road or motorway.

4.2 Natural England has published detailed guidance on surveys to inform development. A brief summary is provided in this document but please note that interpreting how these apply in a particular case will require careful interpretation. The information provided here is for general guidance since the type of survey required will vary according to the specifics of the case.

4.3 It should be noted that the information provided below is a brief summary of the good practice guidelines and does not replace such guidelines. It is intended as an overview for Local Authority Planning Staff and whilst is may provide useful information for applicants and

ecological consultants, surveys should be carried out in accordance with the current good practice guidelines contained in the Great Crested Newt Mitigation Guidelines and other guidance available on our website.

4.4 Field survey

An initial survey of the terrestrial habitats and quality of the ponds within, and adjacent to, the development footprint is a useful starting point. This should ideally follow the Habitat Suitability Index (HSI) methodology developed by Oldham *et al.* 2000 which looks at a number of variables including pond size, terrestrial habitat, pond shading and water quality to derive a probability of newts being present within a pond. This is a helpful tool for large schemes as it may help to 'scope out' some ponds for more detailed surveys. Please note that HSI assessments are not an alternative to carrying out a more detailed survey should one be required.

4.5 Presence/ Likely Absence Survey Effort

(a) Ponds

Method: Three survey methods (selected from netting, torch surveys, egg searches and bottle trapping) should be employed per visit.

Effort: 4 visits in suitable weather conditions.

Timing: mid-March to mid-June, with at least two of these visits during mid-April to mid-May and these should be spread through the survey period to maximise the chance of finding newts if they are using the pond(s).

(b) Terrestrial habitat

Method: Pitfall-trapping with drift fence (preferably plus refuges).

Effort: 60 trapping nights (NB this means 60 nights with suitable weather conditions).

Timing: March – October.

4.6 Relative population class size assessment survey effort

(a) Ponds

Method: Three survey methods (selected from netting, torch surveys, egg searches and bottle trapping) should be employed per visit

Effort: 6 visits in suitable weather conditions

Timing: mid-March to mid-June, with at least 3 of these visits during mid-April to mid-May and these should be spread through the survey season to obtain the peak count of newts within the pond(s)

(b) Terrestrial habitat

Determining population size class by sampling in terrestrial habitat distant from the pond is fraught with practical and interpretative difficulties, and is therefore not recommended.

4.7 For more detailed information on survey effort and methods please refer to the Great Crested Newt Mitigation Guidelines and Natural England's Great Crested Newt method statement template (WML-A14-2 method statement) http://www.naturalengland.org.uk/ourwork/regulation/wildlife/licences/applicationforms.aspx#2

5. Mitigation required

5.1 Mitigation is the term used for the combination of avoidance measures such as careful timing to remove or reduce the impacts of a proposed scheme. Compensation refers to measures which offset the damage caused by the development such as the creation of new habitat.

5.2 Mitigation should include, where necessary, timing the works or changing the design of the proposals

to avoid impacts. Further mitigation for great crested newts may sometimes require their translocation from the development site (or part of it) and removal to a suitable receptor site but this should only be considered as a last resort when they cannot be accommodated on the application site.

5.3 Compensation should ensure that once completed, there will be no net loss of breeding or resting sites. In fact where significant impacts are predicted there will be an expectation that compensation will provide an enhanced habitat (in terms of quality or area) compared with that to be lost. Compensation should also remedy any loss of connectivity brought about through the development.

5.4 Further information on the mitigation techniques can be obtained from the Great Crested Newt Mitigation Guidelines

5.5. Mitigation – Key points to consider

A flow chart to help assess the quality of survey and appropriateness of the mitigation proposed is provided below.

5.6 Breeding sites or resting places – key points to consider:

- Can the impacts be avoided?
  For example: Through redesign of the scheme, can breeding sites and/or terrestrial habitats be avoided thereby securing them and avoiding direct impacts?

- Could the direct impacts be reduced?
  For example: Can the works be carried out at a time to avoid direct impacts upon newts, for example for pond enhancement works these should generally be undertaken during the winter months when newts are unlikely to be within the waterbodies.

- Compensation measures – If there are still residual impacts after undertaking avoidance and minimisation measures, have suitable mitigation and compensation measures been proposed?
  For example:
  - If a minor impact is unavoidable, mitigation on-site, or in the immediate surrounding area, should be provided, entailing small scale relocation and exclusion of newts combined with suitable habitat creation.
  - If a major impact is unavoidable and mitigation cannot be carried out on site, newts should be translocated away from the site to a suitable receptor area. It is important that any new habitats are made suitable prior to translocation.

- Enhancements – can these be secured?
  For example: By suitable post-development management such as aquatic vegetation management and desilting of ponds.

5.7 Impacts on great crested newts – key points to consider:

5.8 There are a number of development activities which can affect great crested newts, which should be fully considered at the application stage. In general, the greater the predicted impact, the greater the level of mitigation will be required. Table 6 on page 34 of the Great Crested Newt Mitigation Guidelines summarises the scale of impacts at the site level, taking into account the proximity of activities to breeding ponds.
Great crested newts can migrate more than 500 metres from their breeding ponds in areas of suitable terrestrial habitat. However, generally the scale of potential impacts will decrease as the distance from the breeding pond increases.
Impacts on great crested newts could include:

- Habitat loss
  Both the loss of breeding ponds and terrestrial habitat can have significant impacts upon great crested newts since newts live on land for the majority of their lives. Populations can be reduced or even go extinct where there is a major loss of habitat due to reduced foraging, breeding and refuge opportunities. Consequently, the mitigation strategy must ensure that there is no net loss of habitat (be it breeding ponds or terrestrial habitat) for newts.

- Habitat modification
  Although some development may not replace newt habitat with built land, it can be made less suitable. For example, changing an area of rough grassland used by newts as terrestrial habitat into amenity grassland could have a negative impact on the population. Therefore the mitigation strategy should ensure that there is no net loss in quantity and quality of habitat.

- Habitat fragmentation and isolation
  Habitat fragmentation and isolation of great crested newt populations can be caused when development imposes barriers to newt dispersal. These barriers can include built land, fast flowing water bodies or extreme landforms. Isolation of great crested newts can result in population number declines and a decrease in genetic viability. Therefore the mitigation strategy should include measures to maintain habitat linkages and preferably reconnect fragmented areas.

- Miscellaneous
  Other more indirect impacts caused by development also need to be fully considered, such as increased shading and siltation of ponds, water table alteration and potential for increased chemical run-off into waterbodies. Great crested newts can also be impacted by interference following a development, such as the introduction of fish to breeding ponds which will predate the young life stages of newts
  In addition, the built environment can present significant barriers to newts through inappropriate design. As such, features such as newt 'friendly' gullies and the use of low level kerbstones at key points where newts may cross quiet roads should be provided as part of the mitigation strategy.

5.9 Receptor sites – key points to consider

- Existing populations and location
  It is generally unacceptable for great crested newts to be moved into an area already supporting a viable population. This is because the dynamics of the receptor site population could potentially be impacted. Exceptions to this are if the newts are being moved within the same site or if small numbers are to be moved (up to 20 adults, plus immature individuals.)

  Receptor sites should generally be as close to the donor site as possible (ideally adjacent), and they should be free of development threats in the future.

- Size and habitats
  The receptor site will need to support an equivalent population as that of the existing donor site. The receptor site should, as a minimum, be of an equivalent size to the donor site and ideally be significantly greater to compensate for the lower quality habitat that is likely to be present in the short to medium term. In particular, where a breeding pond is to be lost, this should generally be replaced by two new ponds for every one lost.

  Any receptor site will also need to include broadly the same mix of habitats which are to be impacted and perform the same ecological function. For example, if several breeding ponds are due to be lost along with an area of terrestrial habitat, then it would be inappropriate to provide solely terrestrial habitat as the breeding function of the site will be lost. Connectivity and habitat

quality should also be considered.

- **Use of Temporary Amphibian Fencing**
  Temporary Amphibian Fencing (TAF) is often used during great crested newt mitigation works.

  Natural England cannot instruct third parties:
  - whether to erect TAF,
  - whether to apply for a licence,
  - "approve" the installation of TAF without a licence or whether any offences would be committed by doing so.

  It is for the person in charge of the scheme, normally through their ecological consultant, to decide on these matters.

  In the majority of cases, a mitigation license is required to install TAF, as the fencing acts as a barrier to movements of great crested newts in their terrestrial phase. If the TAF obstructs access to places used for shelter or protection, this would be deemed an offence without an appropriate license. Natural England advises that TAF is normally only appropriate where there is a reasonable chance of newts encountering the fence line.

6. European Protected Species Development Licensing (issued under Regulation 53(2)(e) of The Conservation of Habitats and Species Regulations 2010)

6.1 Article 16 contains derogations from Article 12. This is transposed by Regulation 53 which allows licences to be issued under certain circumstances. The effect of these licences is to make an activity that would otherwise be an offence, lawful if carried out in accordance with the provisions of the licence. A European Protected Species (EPS) Licence may be required for any activity which:

- Is likely to result in the deliberate capture, injury or killing of a great crested newt
- Will result in the deliberate disturbance of newts
  Disturbance of animals includes in particular any disturbance which is likely to
  (a) impair their ability to
  (i) survive, breed, reproduce or rear or nurture their young; or
  (ii) in the case of animals of hibernating or migratory species, to hibernate or migrate: or
  (b) affect significantly the local distribution or abundance of the species to which they belong
- Will damage or destroy a breeding site or resting place used by great crested newts.

A licence can only be granted if the following tests can be met:

- The consented operation must be for 'preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment';
- There must be 'no satisfactory alternative'; and
- The action authorised 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their range

6.2 For further information regarding licences that can be issued in respect of a development or proposed activity please visit our website at http://www.naturalengland.org.uk/conservation/wildlife-management-licensing/docs/wlms-faqs.pdf.

6.3 Local authority responsibilities in relation to European Protected Species

All competent authorities, when exercising their functions must have regard to the requirements of the Habitats Directive (See Regulation 9(5) of the 2010 Habitats Regulations).

Planning authorities are competent authorities and are exercising a function in deciding whether or not to grant planning permission.
The judgement in the recent case of Morge (FC) (Appellant) v Hampshire County Council [2011] UKSC 2 considered the application of this duty. It came to the conclusion that, **if the Planning Authority concludes that the carrying out of the development for which permission has been applied for even if it were to be conditioned, would be likely to offend Article 12(1), by say causing the disturbance of a species with which that Article is concerned, then it must consider the likelihood of a licence being granted**. The licensing authority is Natural England. When considering the likelihood of a licence being granted it may be helpful for local authorities to view our guidance on how Natural England applies the 3 tests listed above when considering licence applications.

Please see the section on Legislation and Policy Guidance for more information. We will be producing guidance on how we apply the tests above to licence applications in due course.

7. Useful references

Oldham R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. (2000) Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). Herpetological Journal 10(4), 143-155

Great crested newt mitigation guidelines
http://publications.naturalengland.org.uk/publication/810429

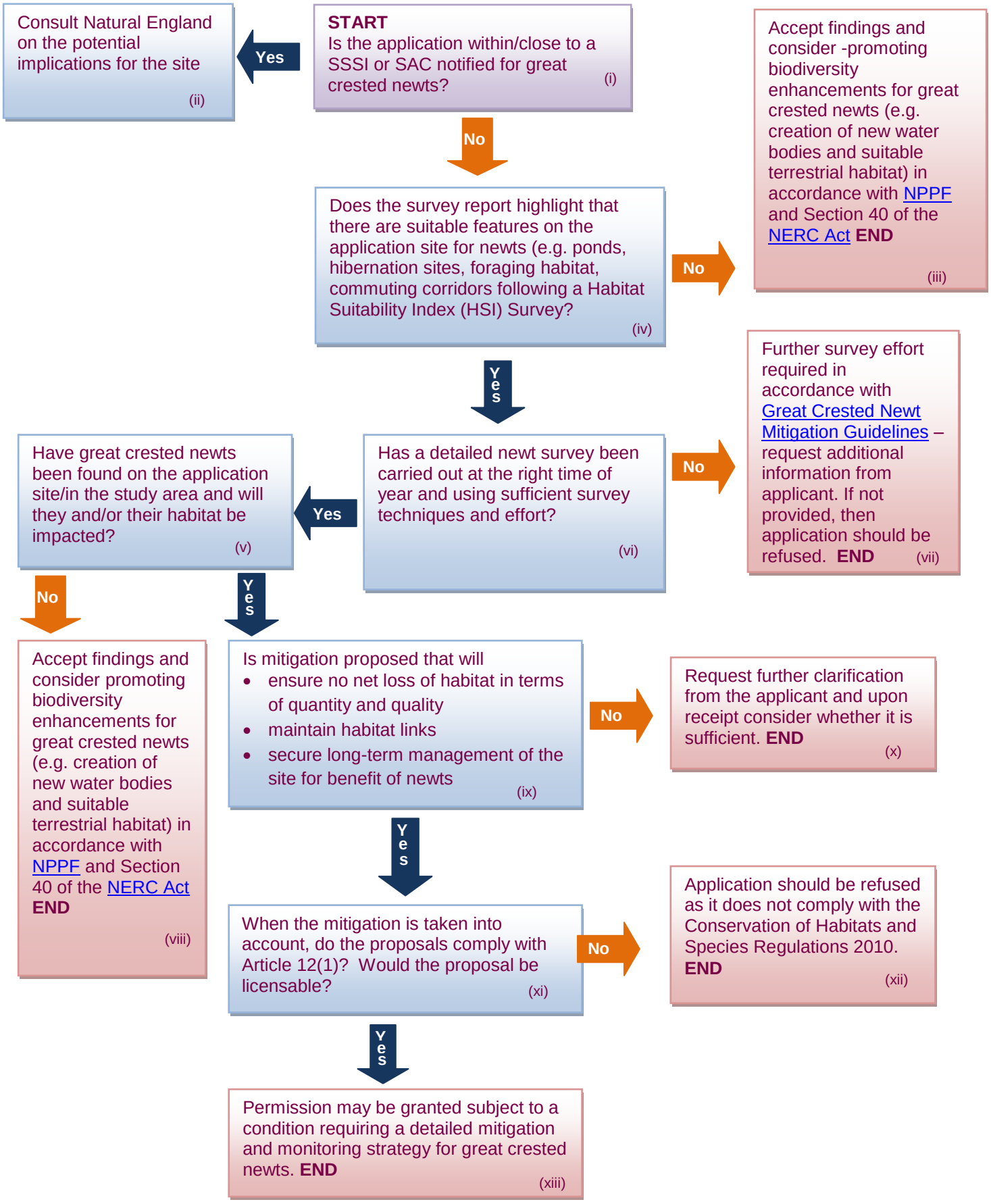
Field assessment of great crested newt Triturus cristatus mitigation projects in England
http://publications.naturalengland.org.uk/publication/9021

An evaluation of the effectiveness of great crested newt *Triturus cristatus* mitigation project
http://publications.naturalengland.org.uk/publication/133004

The Great Crested Newt Conservation Handbook
http://www.froglife.org/documents/GCN_Conservation_Handbook.pdf

Guidance on how to assess a great crested newt survey and mitigation strategy

(the numbers at the end of each box are to assist in referencing a decision trail rather than being a numerical sequence through the flow chart)



APPENDIX E – Natural England Standing Advice Reptiles

Standing Advice Species Sheet: Reptiles

1. Typical Habitat/Features Used

1.1 Typical reptile habitats include brownfield sites, allotments, compost heaps, railway/road embankments, south facing banks, chalk grassland, rough grassland and areas where there is a diverse structure such as grassland with scrub edges. Grass snakes will often favour habitats near wetland areas and ponds. Sand lizards and smooth snakes are more often associated with dry heathland. Woodland sites can often be important hibernation areas for reptiles.

1.2 The UK Biodiversity Action Plan contains reptile Species Action Plans (SAP). For further information, please visit www.ukbap.org.uk

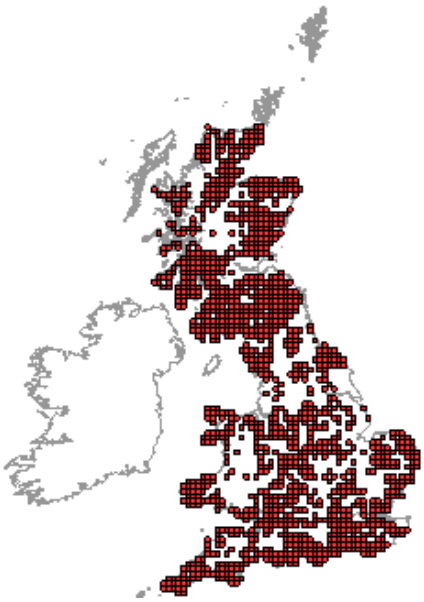
2. Distribution

2.1 The adder, common lizard, grass snake and slow worm are relatively widespread across England, though they can be locally very patchy, especially the adder. The sand lizard and smooth snake have a much more restricted distribution.

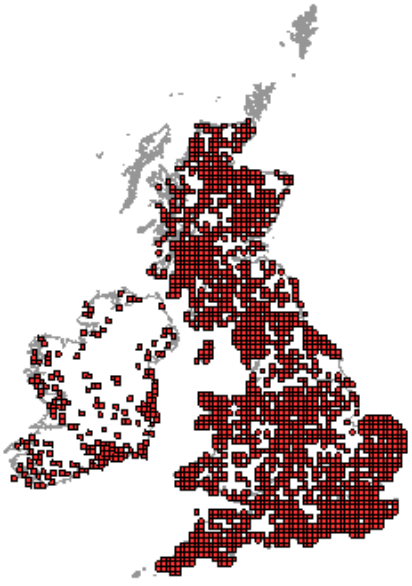
2.2 The adder, common lizard, grass snake and slow worm are relatively widespread across England, though they can be locally very patchy, especially the adder. The sand lizard and smooth snake have a much more restricted distribution.

2.3 Distribution maps based upon submitted records can be viewed on the National Biodiversity Network Gateway website at http://data.nbn.org.uk/directory/browseTGLevel1.jsp?consFilter=0&dataFilter=1. It should however be noted that the absence of a record from a particular area does not mean the species is absent. There are other explanations for no recorded presence, notably that no survey has taken place. Not all records are available on the NBN Gateway and so planners are advised also to consult the Local Records Centre. The LRC and local amphibian experts should be able to give a view on the likely presence of the species in a given area. Liaison with Amphibian and Reptile Conservation (ARC) is advised for cases involving sand lizard and smooth snake.

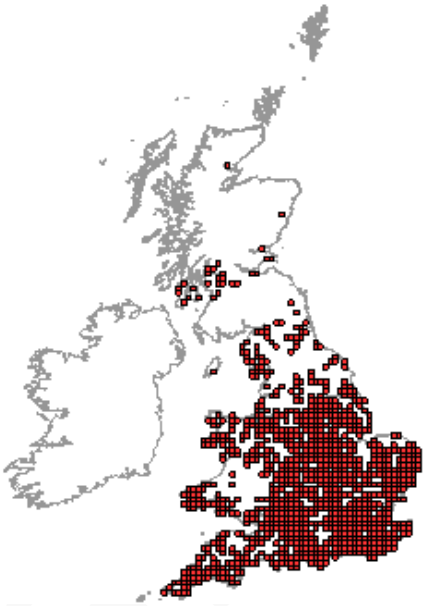
2.4 Distribution maps for reptiles in England are given below. Note that these whilst these maps correctly reflect the broad distribution, note that they contain some questionable records of the species outside their current range. These may be misidentifications, escapes from captivity, very old records or data errors.



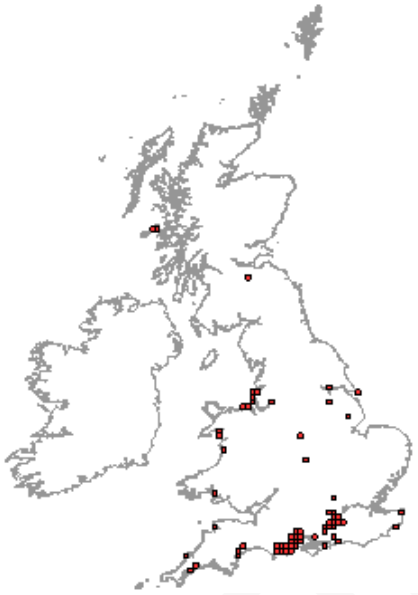
Adder distribution



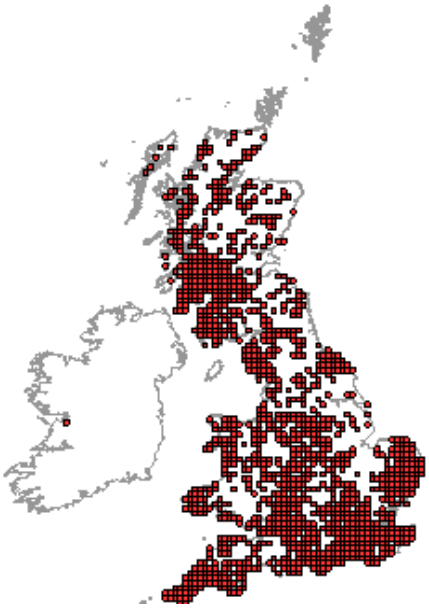
Common lizard distribution



Grass snake distribution



Sand lizard distribution



Slow worm distribution

Smooth snake distribution

3. Legislation

3.1 The adder, common lizard, grass snake and slow worm are protected against intentional killing or injuring under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). The sand lizard and smooth snake are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of The Conservation of Habitats and Species Regulations 2010 making them European Protected Species. Details of the legislation can be found at
Wildlife and Countryside Act
http://www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1981/cukpga_19810069_en_1
The Countryside and Rights of Way Act:
http://www.opsi.gov.uk/acts/acts2000/ukpga_20000037_en_7#pt3-pb8-l1g81
The Conservation of Habitats and Species Regulations 2010
http://www.opsi.gov.uk/si/si2010/uksi_20100490_en_1

3.2 A summary of the protection afforded to species can be found in the main text of the standing advice.

4. Survey Requirements

4.1 All surveys should be undertaken by suitably experienced, and where necessary, licensed surveyors. All surveys should be undertaken by suitably experienced, and where necessary, licensed surveyors. Generally speaking, reptiles are most effectively surveyed in April, May and September. Surveys should not be undertaken during times of inactivity, which are typically from November to February inclusive, and occasionally during very hot, dry weather in July-August. There can be variation in these timings due to local weather patterns or species differences.

4.2 Depending on the species searched for and the habitats present, surveys will normally be a combination of direct daytime searches and the use of "artificial refuges." The latter are objects such as corrugated iron sheets, placed in suitable warm areas; reptiles may hide underneath or bask on top of such refuges.

4.3 Assessment of habitat quality can give a general view as to the likelihood of reptile presence, especially when combined with information on local recorded distribution.

4.4 Natural England is currently producing technical guidance on reptile surveys for the purpose of mitigation. This standing advice will be updated when this guidance is available to reflect the good practice guidelines.

4.5 **It should be noted that the information provided above is a brief summary of the good practice guidelines and does not replace such guidelines. It is intended as an overview for Local Authority Planning Staff and whilst is may provide useful information for applicants and ecological consultants, surveys should be carried out in accordance with the current good practice guidelines.**

5. Avoidance of Impacts and Mitigation required

5.1 Mitigation is usually the term used for the combination of avoidance measures (such as careful timing to remove the impacts), mitigation (actions to limit the impact) and compensation (measures to compensate for any residual impacts such as replacement habitat).

5.2 Mitigation should include, where necessary, timing the works or changing the design of the proposals to avoid impacts. Further mitigation for reptiles may sometimes require their translocation from the development site (or part of it) and removal to a suitable receptor site but this should only be considered as a last resort when they cannot be accommodated on the application site.

5.3Compensation should ensure that once completed, there will be no net loss of breeding or resting sites. In fact where significant impacts are predicted there will be an expectation that compensation will provide an enhanced habitat (in terms of quality or area) compared with that to be lost. Compensation should also remedy any loss of connectivity brought about through the development.

5.4 Whilst there is much existing guidance currently available which provides excellent guidance on mitigation and licensing requirements, below are some key points for the Council to consider when reviewing a planning application where reptiles may be adversely affected.

5.5 Mitigation – Key points to consider

5.5.1 A flow chart to help assess the quality of survey and appropriateness of the mitigation proposed is provided at the end of this document.

5.6 Direct impacts

5.6.1 Breeding sites or resting places – key points to consider:

- Can the impacts be avoided? For example.

- Through redesigning the scheme, can breeding sites or resting places be avoided thereby securing them and avoiding direct impacts?
- Can reptiles be accommodated within existing/newly created habitats on the application site (this is always preferable to off-site translocations)? This is especially important for adders and grass snakes, which cannot tolerate being translocated.

- If impacts are not avoidable, can they be lessened? For example...
  - Is it possible to create better linkages to the wider environment, allowing movement of reptiles?
  - Can key networks be maintained across the site (for larger scale schemes)?
  - Is the on-site receptor site capable of supporting the population of reptiles to be moved there and is the site secure against future development in the long-term?

- Compensatory measures - are there still residual impacts after undertaking avoidance and minimisation measures? For example...
  - Where the impacts of the development cannot be fully compensated for on-site, is an off-site receptor area identified which has long-term security against future development?
  - Is the off-site receptor area capable of supporting the population of reptiles to be translocated?

- Enhancements – can these be secured? By, for example...
  - Creation of new linkages to wider habitat supporting reptiles
  - Enhancement of neighbouring habitat which may support reptiles or act as a corridor to movement.

5.7 Indirect impacts – key points to consider

5.7.1 As well as direct impacts upon reptiles and their breeding sites or resting places, development activities may result in indirect impacts and these should be fully considered at the application stage. Such indirect impacts could include:

- Connectivity
  The building of a new road or building may sever the summer and hibernation sites for reptiles and, since much of the survey effort for reptiles is focussed on summer sites, it is important to consider possible hibernation sites for the wider ranging snake species in particular.

5.8 Habitat linkages

If key habitat linkages such as hedgerows, woodland shaws and shelter belts, rough grassland, heathland and scrub are to be lost or severed, this may have indirect impacts upon the reptile habitat.

5.9 Receptor sites – key points to consider

5.9.1 Where reptiles cannot be accommodated within the development footprint, then off-site receptor sites will need to be identified. Whilst it is accepted that these need to be considered on a case by case basis, below are a few key points which should be considered when off-site translocation is proposed.

- **Location**
  The receptor site should be as close to the application site as possible, and preferably within the same Local Planning Authority Boundary to ensure that any conditions appended to the planning consent can be effectively enforced, if required.
- **Size and function**
  The size of the receptor site should generally, as a minimum, be the same as that which is to be lost but where high quality habitat is impacted, significantly more land will be required. This increase in area is necessary to compensate for the lower quality of habitat which the receptor site will offer in relation to that which is to be lost. In exceptional cases, the receptor site many be smaller than the area to be lost, but only where there is substantial increase in habitat quality. The function of the receptor site should replicate that which is to be lost. For example – if the application site has hibernation features used by reptiles, the receptor site would need to include such features.

- **Aspect and environmental conditions**
  The aspect and other environmental conditions should mimic, as closely as possible, those which are to be lost from the application site and provide similar features such as waterbodies, structural diversity of habitat and hydrological conditions, for example.
- **Habitat enhancements - timing**
  Where habitat enhancements are required to a receptor site to create habitat capable of supporting the species of reptile that are to be translocated, these need to be undertaken in advance of any animals being released. This is important to allow the habitat time to establish structural diversity and sufficient prey for the translocated reptiles to feed upon when released. In some situations, this may need to be undertaken more than a single growing season in advance of the translocation.
- **Management**
  Any receptor site should be subject to long-term security from future development. In addition, the site should be managed for the benefit of reptiles in the long-term with sufficient funding secured from the applicant to secure the implementation of the management in the long-term.

5.10 Translocating reptiles – key points to consider

- Significant capture and translocation effort may be required for an application site and with some populations, this may need to be extended over several capture seasons.
- Capture should generally be undertaken during the Spring and early Autumn, avoiding periods of frost and the hotter months of July and August.
- Capture and translocation effort should be restricted to periods of appropriate weather conditions (see survey section above for guidance) with animals released the same day.

6. European Protected Species Development Licensing (issued under Regulation 53(2)(e) of The Conservation of Habitats and Species Regulations 2010)

6.1 Article 16 contains derogations from Article 12. This is transposed by Regulation 53 which allows licences to be issued under certain circumstances. The effect of these licences is to make an activity that would otherwise be an offence, lawful if carried out in accordance with the provisions of the licence.

A European Protected Species (EPS) Licence may be required for any activity which:

- Is likely to result in the deliberate capture, injury or killing of a smooth snake or sand lizard;
- Will result in the deliberate disturbance of smooth snakes or sand lizards. Disturbance of animals includes in particular any disturbance which is likely to:
  - (a) impair their ability to
    - (i) survive, breed, reproduce or rear or nurture their young; or
    - (ii) in the case of animals of hibernating or migratory species, to hibernate or migrate: or
  - (b) affect significantly the local distribution or abundance of the species to which they belong.
- Will damage or destroy a breeding site or resting place used by smooth snakes or sand lizards.

A licence can only be granted if the following tests can be met:

- The consented operation must be for 'preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment';
- There must be 'no satisfactory alternative'; and
- The action authorised 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their range'.

6.2 For further information regarding licences that can be issued in respect of a development or proposed activity please visit our website at http://www.naturalengland.org.uk/conservation/wildlife-management-licensing/docs/wlms-faqs.pdf.

6.3 Local authority responsibilities in relation to European Protected Species
All competent authorities, when exercising their functions must have regard to the requirements of the Habitats Directive (See Regulation 9(5) of the 2010 Habitats Regulations). Planning authorities are competent authorities and are exercising a function in deciding whether or not to grant planning permission. The judgement in the recent case of Morge (FC) (Appellant) v Hampshire County Council [2011] UKSC 2 considered the application of this duty. It came to the conclusion that, if the Planning Authority concludes that the carrying out of the development for which permission has been applied for even if it were to be conditioned, would be likely to offend Article 12(1), by for instance, causing the disturbance of a species with which that Article is concerned, then it must consider the likelihood of a licence being granted. The licensing authority is Natural England. When considering the likelihood of a licence being granted it may be helpful for local authorities to view our guidance on how Natural England applies the 3 tests listed above when considering licence applications.

Please see the section on Legislation and Policy Guidance for more information. We will be producing guidance on how we apply the tests above to licence applications in due course.

7. Useful references

Reptiles: guidelines for developers

http://publications.naturalengland.org.uk/publication/76006?category=31018

Froglife Advice Sheet 10: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation

http://www.froglife.org/documents/FroglifeAdviceSheet10.pdf

Protected Reptiles and Development (Kent Reptile and Amphibian Group, Kent Wildlife Trust and English Nature)

http://www.kentarg.org/index.php?option=com_docman&task=cat_view&gid=36&Itemid=41

Nature conservation advice in relation to reptiles and roads

http://www.standardsforhighways.co.uk/dmrb/vol10/section4/ha11605.pdf

Maintaining best practise in reptile mitigation/translocation programmes: Herpetofauna Groups of Britain and Ireland.

http://www.arguk.org/index.php?option=com_docman&task=cat_view&gid=13&Itemid=17

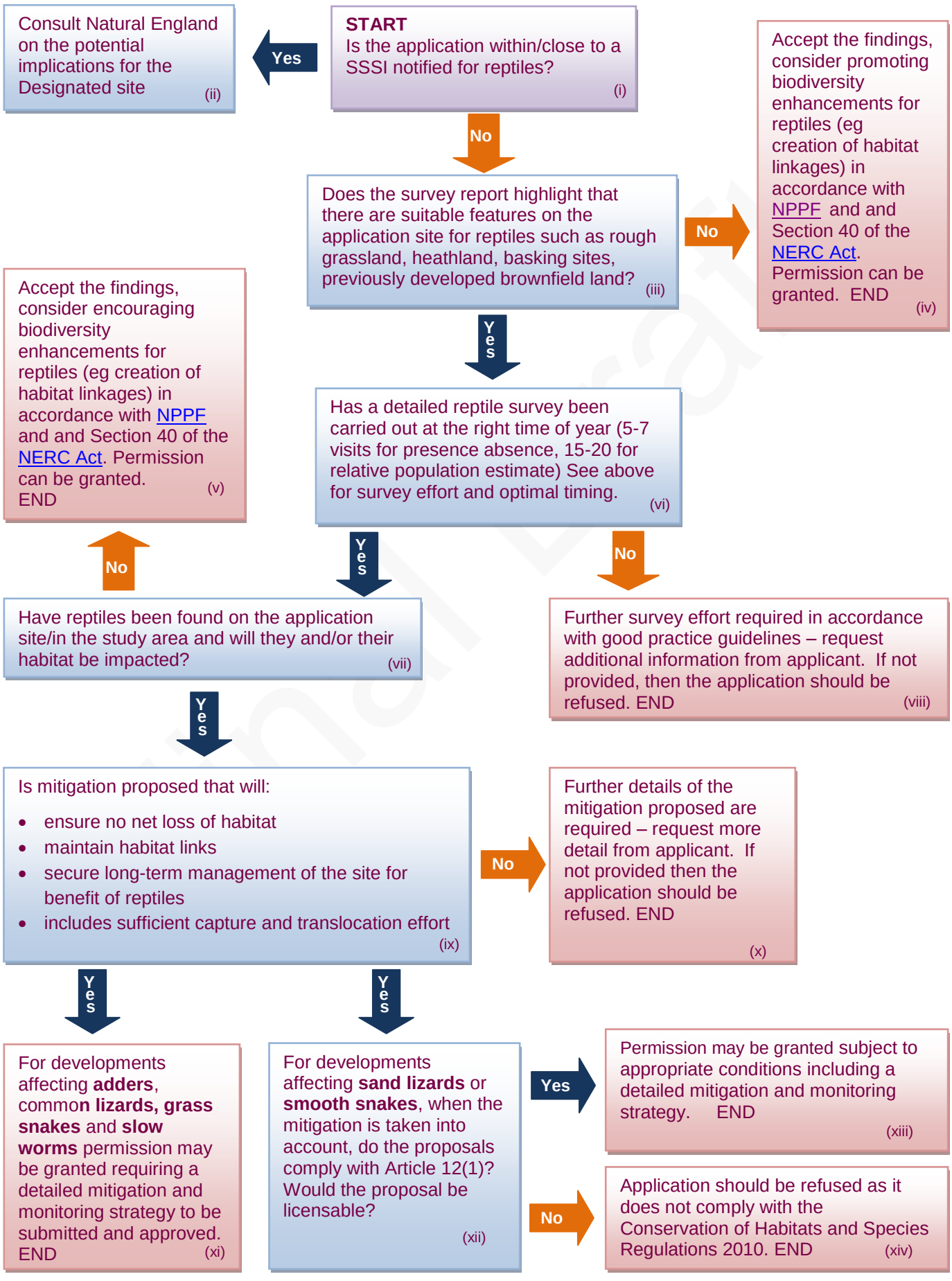
Evaluating local mitigation/translocation programmes: Maintaining Best Practice and lawful standards. HGBI advisory notes for Amphibian and Reptile Groups (ARGs)

New guidance on reptiles and development is due to be published soon by Natural England. This species sheet will be updated when that guidance is available.

Referencing: For ease of reference, if you are quoting from the standing advice, we recommend you refer to the relevant paragraph/box number preceded by the three figure reference code in the top left hand corner of the species sheet

Guidance on how to assess a reptile survey and mitigation strategy

(the numbers at the end of each box are to assist in referencing a decision trail rather than being a numerical sequence through the flow chart)



APPENDIX F – Grassland Survey Report (updated FPCR August 2020)

IM Land

Land off The Valley, Radford Semele

GRASSLAND SURVEY

August 2020

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APPENDICES

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1.0 EXECUTIVE SUMMARY

- FPCR Environment and Design Ltd were commissioned by IM Land to undertake a grassland survey at a site located to the northeast of The Valley, Radford Semele, Warwickshire.
- A Phase 1 Habitat survey in 2016 had concluded that the grassland was representative of species-poor semi-improved grassland. The grassland was then subject to further assessment in 2017 with the objective or re-assessing the grassland using a repeatable survey methodology as opposed to the general walkover survey used to make the initial assessment. A detailed botanical survey was undertaken on 11th July 2017 with an updated survey undertaken 11th August 2020.
- The 2017 assessment was undertaken using two types of survey methodology. One to consider the presence of specific grassland communities as described in the National Vegetation Classification system (NVC survey), and a second to consider the presence of semi-improved neutral grassland (FEP survey).
- It was not possible to undertake a survey using the NVC methodology during the site visit in 2020, as the field had been cut within the previous month. It was considered that there was sufficient re-growth to survey the grassland using the FEP methodology.
- Unimproved grassland represents species-rich semi-natural grassland that has not been improved by agricultural intensification. This type of grassland is a priority habitat for nature conservation and certain grassland communities within the NVC define unimproved grassland. Semi-improved grasslands are those that have had some agricultural improvement, but still retain a suite of species which are indicative of their former origins as unimproved grassland. The term 'semi-improved grassland' encompasses different levels of quality based on species composition and abundance.
- The 2017 NVC survey concluded the grassland was a particularly species-poor example of MG1 false oat-grass grassland NVC type; possibly one of its sub-communities, the MG1a red fescue sub-community. Although minor differences in the community were noted between the two survey dates, it is considered that the grassland is accurately described as a species-poor example of MG1 grassland. To be representative of Lowland Meadow Habitat of Principal Importance (which is a priority for conservation) the grassland should be clearly representative of one of eight listed NVC communities. As these eight communities do not include MG1 and MG1a the survey has concluded that the grassland is not representative of Lowland Meadow HPI.
- The FEP surveys conducted both in 2017 and 2020 concluded that the grassland was species-poor improved grassland. This type of grassland is of little or no conservation value and is of a lower ecological value than species-poor semi-improved grassland, which previous assessment had classified it as.
- The overriding conclusions of the survey are that the grassland:
    - Is not Lowland Meadow HPI;
    - Is not good quality semi-improved neutral grassland as defined by the Warwickshire, Coventry and Solihull LBAP Lowland Neutral Grassland Priority Habitat and by the Local Wildlife Site selection guidelines for Warwickshire;

  - Is not species-poor semi-improved grassland (as concluded by previous surveys) but species-poor improved grassland;
  - Is not of any significant nature conservation value for its botanical interest.

- The biodiversity offsetting calculations which have been used to ensure that the development does not result in a net loss of biodiversity should be recalculated using 'improved grassland' rather than 'species-poor semi-improved grassland' habitat.

2.0 INTRODUCTION

2.1 IM Land commissioned FPCR Environment and Design Ltd. to undertake a grassland survey of an area of land approximately 6.6 ha in size, located to the east of The Valley, Radford Semele, Warwickshire.

2.2 The majority of the site is formed by a single grass field with a dwelling in the northwest corner forming the remainder of the site. Hedgerows form the east and south boundaries and garden boundaries form the west and north boundaries. The 'Ecological Appraisal', which has been submitted as supporting information to historic planning applications at the Site and provides further detail.

2.3 The Site has been the subject of two previous planning applications (W/16/1489 & W/17/0514), which were refused planning permission. An Ecological Appraisal supported the 2016 application, and this concluded that the grassland habitat was "…*poor semi-improved grassland of medium-low distinctiveness in poor condition, and this extends across the whole of the Site*…" This assessment was undertaken during May 2016 and subsequently re-used for the 2017 application. As this assessment involved a general walkover survey FPCR were commissioned to undertake a more detailed botanical survey of the grassland in 2017 with the objective to make an assessment of its ecological value based on a repeatable survey methodology.

2.4 The findings of this report update and supplement the previous grassland survey undertaken on the Site in 2017.

3.0 METHODOLOGY

Introduction

3.1 It was considered that the survey methodology should produce data that could subsequently be used to evaluate the grassland against the criteria for:

- Lowland Meadow – Habitat of Principal Importance (HPI);
- Lowland Meadow – Warwickshire, Coventry and Solihull Local Biodiversity Action Plan Priority Habitat (LBAP); and
- Warwickshire Local Wildlife Sites.

Lowland Meadow HPI

3.2 Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006)[1] lists the 'Habitats and Species of Principal Importance'. In England, these are all the habitats that were identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and are referred to as Priority Species and Habitats in the subsequent 'Biodiversity 2020: A Strategy for England's wildlife and ecosystem services'[2] and the 'UK Post-2010 Biodiversity Framework'[3]. The descriptions used for these priority habitats within the former UK BAP[4] remain valid for the corresponding Habitats of Principal Importance. As such, any references to UK BAP habitats within this report correspond with Habitats of Principal Importance.

3.3 The description for Lowland Meadow states:

"A wide-ranging approach is adopted in this plan to lowland grasslands treated as lowland meadows. They are taken to include most forms of unimproved neutral grassland across the

enclosed lowland landscapes of the UK. In terms of National Vegetation Classification plant communities, they primarily embrace each type of Cynosurus cristatus - Centaurea nigra grassland, Alopecurus pratensis - Sanguisorba officinalis floodplain meadow and Cynosurus cristatus - Caltha palustris flood-pasture"

These National Vegetation Classification (NVC) plant communities are: MG5 Crested Dog's-tail *Cynosurus cristatus* – Common Knapweed *Centaurea nigra*; MG4 Meadow Foxtail *Alopecurus pratensis* – Great Burnet *Sanguisorba officinalis* grassland; and, MG8 Crested Dog's-tail – Marsh marigold *Caltha palustris* grassland.

3.4 The NVC is a vegetation classification system based entirely on plant species composition and abundance, which has been produced following detailed studies of the vascular plant, bryophyte (mosses and liverworts) and lichen species that occur within distinct vegetation types. The system covers nearly all natural, semi-natural and some major artificial vegetation communities.

3.5 After the original publication of the NVC grassland communities and the UK BAP description for Lowland Meadows Rodwell *et al* (2007)[5] considered that the more species-rich sub communities of MG1 *Arrhenatherum elatius* grassland were worthy of inclusion within the Lowland Meadows priority habitat. Continued research has led to the conclusion that in addition to the NVC grassland communities MG4, MG5 and MG8, other NVC communities should be considered as representative of Lowland Meadows HPI. JNCC have embraced this conclusion within the revised Guidelines for the Selection of Biological SSSIs[6] . These guidelines now consider that the more species-rich sub communities of MG1 False Oat-grass *Arrhenatherum elatius* grassland (MG1c Meadowsweet *Filipendula ulmaria* sub-community; MG1d Wild Parsnip *Pastinaca sativa* sub-community and MG1e *Centaurea nigra* sub-community); MG2 *Arrhenatherum elatius - Filipendula ulmaria* tall-herb grassland; and MG7c-related *Alopecurus pratensis* – Rough Meadow-grass *Poa trivialis* – Cuckooflower *Cardamine pratensis* floodplain grassland, represent Lowland Meadow HPI. The MG7c related community has only recently been described by Wallace and Prosser (2014)[7]. Consequently, these additional NVC communities should also be considered to represent Lowland Meadow HPI.

3.6 MG5, MG4, MG8 and these additional NVC communities, are all now listed by the JNCC as being representative of Lowland Meadow UK BAP Priority Habitat[8]. Therefore, to make an assessment to determine whether the grassland represented Lowland Meadow HPI required a survey using the NVC survey methodology for grasslands.

Warwickshire Local Wildlife Site

3.7 Within Warwickshire, sites with a non-statutory biodiversity designation are referred to as Local Wildlife Sites (LWS). These represent Local Sites as referred to within National Planning Policy Framework (NPPF)[9] and Government Circular 06/2005[10].

3.8 The current guidelines for selection of Local Wildlife Sites (LWS) in Warwickshire[11] consider three categories of grassland:

- Unimproved grassland: Where agricultural improvement is absent or minimal. This is considered to now be very rare in Warwickshire;
- Semi-improved grassland: Where agricultural improvement has taken place but where species diversity and composition are…" *characteristic of their semi-natural grassland type"*; and

- Improved grassland: Semi-natural grassland that has been substantially altered by agricultural improvement so that species diversity is very low.

3.9 The guidelines indicate that unimproved and good examples of semi-improved grassland should be selected as Local Wildlife Sites but improved grassland "…*would not normally be selected on its own but may be included within the site if integral to another more species-rich habitat".*

3.10 The selection guidelines for Local Wildlife Sites in Warwickshire take a similar approach to those used nationally for the selection of biological Sites of Special Scientific Interest (SSSI) in as much as a list of scientific characteristics form the key elements – these are more generally referred to as the 'Ratcliffe Criteria':

- Diversity;
- Rarity;
- Size;
- Naturalness;
- Fragility;
- Typicalness;
- Ecological Position;
- Significant Populations; and,
- Potential Value.

3.11 These scientific characteristics are then supplemented by a suite of 'Cultural Characteristics'. Whilst these are important, the scientific characteristics are primary and sites are never selected solely on cultural characteristics.

3.12 The selection guidelines make it clear that it is considered unadvisable for third party ecological consultants to conduct a Local Wildlife Site survey. There are several reasons for this but of particular note is the reason given that:

"The Local Wildlife Site surveys for Warwickshire are specific to the sub-region requiring local knowledge of the natural, social and historical aspects of the area."

3.13 As a consequence, whilst results of this survey do infer conclusions against the assessment criteria they cannot be considered definitive as FPCR are 'third party ecological consultants' in this context. However, the survey methodology and results should provide the required survey data component element to enable evaluation of the site against the selection guidelines by others.

Warwickshire, Coventry and Solihull Local Biodiversity Action Plan Priority Habitat

3.14 Lowland Neutral Grassland is a Priority Habitat within the Warwickshire, Coventry and Solihull Local Biodiversity Action Plan. The habitat description[12] largely follows that for the Lowland Meadow HPI but introduces the term "semi-improved" grasslands and defines these as being grasslands which have "…*had some improvement, but still retain* a *suite of old grassland species, a frequent situation in this area."*

3.15 Defining semi-improved grassland can be problematic. Descriptions are provided for surveyors within the 'Handbook for Phase 1 Habitat Survey'[13] but these are open to wide interpretation. A more quantitative approach has been adopted by Natural England for identifying BAP habitats for the purpose of Environmental Stewardship agri-environment scheme agreements. This, or a very similar, approach is now utilised in some areas within Local Wildlife Site selection guidelines.

3.16 The methodology used by Natural England was therefore considered suitable to provide a mechanism to help with determining whether semi-improved grassland was present or not. Therefore, in addition to the NVC survey, survey work was undertaken using Natural England's survey methodology as detailed in the Farm Environment Plan (FEP) Manual[14].

Survey Methodology - 2017

3.17 Within the field there were narrow linear strips where recent disturbance had taken place; this was presumed to be associated with archaeological investigations associated with the proposed development. Ruderal vegetation had subsequently developed on these strips. In a few other areas, there were stands of tall ruderal herbs. The survey quadrats associated with the following surveys were not placed in these atypical areas.

NVC Grassland Survey

3.18 For the NVC survey sampling of the vegetation was guided by the methodology detailed in the NVC Users' handbook[15] and British Plant Communities Volume 3[16].

3.19 The stand was surveyed by recording within a series of 2m x 2m quadrats that were placed within what were visually considered to be stands of homogenous vegetation.

3.20 Each recorded species was then assigned a constancy score of I–V depending on the number of quadrats it occurred in. Within each quadrat, all vascular and lower plant species were recorded and given a quantitative measure of abundance using the DOMIN scale as shown in Table 1. This information was then used to construct a 'floristic table' (Table 2) which includes the frequency and abundance range for each species recorded within the sample quadrats.

Table 1: DOMIN Scale of cover/abundance

DOMIN SCALE	% COVER
10	91-100%
9	76-90%
8	51-75%
7	34-50%
6	26-33%
5	11-25%
4	4-10%
3	Several (10+) individuals
2	Many (4-10) individuals
1	Few (1-4) individuals

3.21 Additional information collected included:

- The position of each quadrat - determined using a hand held Global Positioning System (GPS) with an accuracy of within 3m; and,
- The average and maximum sward height, and the species forming the maximum height.

3.22 The location of each quadrat is given within Appendix 1 together with other supplementary information.

Natural England Farm Environment Plan - Assessment of Grassland Features

3.23 A structured walk was undertaken, which followed an approximately W-shaped route. Ten stops were made, and a 1m x 1m quadrat was surveyed at each stop. The location of each quadrat surveyed in 2017 is given in Appendix 2. The locations of each quadrat surveyed in 2020 is displayed on Figure 1, with photographs of the quadrats given in Appendix 3.

3.24 Within each quadrat all higher and lower plants present were recorded. Assessment of species cover was made for: perennial rye-grass *Lolium perenne,* white clover *Trifolium repens* and broadleaved herbs (excluding white clover, creeping buttercup *Ranunculus repens* and injurious weeds), as required by the methodology.

3.25 The location of each quadrat was recorded using a hand-held GPS. This information is provided in Appendix 2.

3.26 In accordance with the NE FEP methodology each species was assigned an abundance value on the basis of how many of the quadrats it occurred in, as follows.

- Occurs in 1-2 quadrats out of 10 = rare
- Occurs in 3-4 quadrats out of 10 = occasional
- Occurs in 5 or more quadrats out of 10 = frequent

Limitations

3.27 The survey was undertaken by N Law, a qualified and experienced botanist (BSBI Field Identification Skills Certificate Level 6) on 11th July 2017, which was within the optimal time-period for grassland surveys. At the time of the survey the standing hay crop was ready for imminent mowing. Therefore, there were no limitations to the survey.

Survey Methodology – 2020

3.28 The update survey was undertaken by I Hunter, a qualified and experienced botanist (BSBI Field Identification Skills Certificate Level 5) on 12th August 2020. This is outside the optimal period for grassland surveys. At the time of the survey the grassland had been cut within the previous month, with the arisings left uncollected. The surveyor determined that sufficient regrowth had occurred to undertake the FEP grassland survey, however as it was felt that accurate DOMIN scores could not be collected for all species and the detailed NVC survey of the field was not, therefore, repeated. These constraints are acknowledged and care has been taken to interpret any results together with the 2017 survey undertaken at during the optimum time period and condition.

4.0 RESULTS

Nomenclature & Abundances

4.1 Nomenclature follows Stace 2019[17].

4.2 ABUNDANCES: D – dominant; A – abundant; F – frequent; O – occasional; R – rare; L - locally

Description

2017 Survey

4.3 For much of the field, false oat-grass *Arrhenatherum elatius* dominated the sward with localised areas of tall ruderal herbs which predominantly were represented by hogweed *Heracleum sphondylium,* broad-leaved dock *Rumex obtusifolius* and creeping thistle *Cirsium arvense* and on the northern edge of the field by rosebay willowherb *Chamerion angustifolium.* There was a distinct lack of forbs, both in diversity and abundance.

4.4 The aforementioned narrow strips of disturbed supported a distinctly different flora, which was generally formed by scentless mayweed *Tripleurospermum inodorum*, redshank *Persicaria maculosa* and willowherbs (American willowherb *Epilobium ciliatum* and hoary willowherb *Epilobium parviflorum*).

4.5 In a narrow band along the southern side of a fence along the northern boundary (which separates a permissive footpath from the rest of the field), creeping bent *Agrostis stolonifera* and perennial rye-grass *Lolium perenne* were locally frequent.

2020 Survey

4.6 Although the field had been cut within the previous month, the general character of the grassland remained consistent with the previous survey undertaken on the site, namely of a species poor, infrequently / inappropriately managed grassland. The arisings from this year's cut were left uncollected with a thick layer of thatch (average 5cm) evident throughout the field, indicating that arisings have been left uncollected during previous management. Through this thatch the broad-leaved grasses false oat-grass and Yorkshire-fog *Holcus lanatus* were co-dominant, with Yorkshire-fog apparently increasing in abundance between the survey periods. As with the previous survey, forbs did not feature prominently within the sward and when present were generally limited to ruderal and injurious species such as creeping thistle, common hogweed, creeping buttercup *Ranunculus repens* and to the west of the site, hoary ragwort *Jacobaea aquatica*.

4.7 Scrub encroachment from the neighbouring hedgerow was evident to the south of the site, with the flailed stumps of blackthorn *Prunus spinosa*, bramble *Rubus fruticosus agg.*, ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna* showing some evidence of regrowth. Within this southern section wild angelica *Angelica sylvestris* was noted as locally frequent.

4.8 A small fire to the north-west of the site had resulted in a localised area of bare ground, over which ruderal species such as common nettle *Urtica dioica*, broad-leaved dock *Rumex obtusifolius* and knotgrass *Polygonum aviculare* were colonising.

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Results

2017 NVC 2m x 2m Quadrats

Table 2: 2017 NVC 2m x 2m Quadrats

SPECIES	COMMON NAME	QUADRAT NO. & DOMIN VALUES					Frequency	DOMIN Range
		A	B	C	D	E		
Arrhenatherum elatius	False Oat-grass	10	10	9	10	10	IV	(9-10)
Holcus lanatus	Yorkshire-fog	1	*	4	*	1	III	(1-4)
Poa trivialis	Rough Meadow-grass	1	1	*	1	*	III	(1)
Cirsium arvense	Creeping Thistle	*	*	5	1	*	II	(1-5)
Galium aparine	Cleavers	*	*	*	1	1	II	(1)
Jacobaea vulgaris	Common Ragwort	1	*	1	*	*	II	(1)
Rumex crispus	Curled Dock	*	*	4	*	*	I	(4)
Rumex obtusifolius	Broad-leaved Dock	2	*	*	*	*	I	(2)
Agrostis capillaris	Common Bent	*	1	*	*	*	I	(1)
Epilobium ciliatum	American Willowherb	*	*	*	1	*	I	(1)
Ranunculus repens	Creeping Buttercup	1	*	*	*	*	I	(1)
Rubus fruticosus agg.	Bramble	*	*	1	*	*	I	(1)
Urtica dioica	Common Nettle	*	*	*	*	1	I	(1)
Ervilla hirsuta	Hairy Tare	*	*	1	*	*	I	(1)

2017 FEP 1m x 1m Quadrats

- The FEP methodology only provides 3 levels of frequency (rare, occasional, and frequent). In many instances certain species are clearly abundant or have local frequency (e.g. locally abundant). The Field Abundance column provides a subjective assessment of the species abundance to account for this.

Table 3: 2017 FEP 1m x 1m Quadrats

SPECIES	COMMON NAME	QUADRAT No.												
		1	2	3	4	5	6	7	8	9	10	Frequency	Abundance	Field Abundance
Arrhenatherum elatius	False Oat-grass	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	F	A/D
Holcus lanatus	Yorkshire-fog	x	✓	✓	✓	x	x	x	x	✓	✓	5	F	
Galium aparine	Cleavers	x	x	x	x	✓	✓	x	x	✓	✓	4	O	
Agrostis capillaris	Common Bent	x	x	✓	✓	x	✓	x	x	x	x	3	O	
Alopecurus pratensis	Meadow Foxtail	✓	✓	x	✓	x	x	x	x	x	x	3	O	
Poa trivialis	Rough Meadow-grass	x	✓	✓	✓	x	x	x	x	x	x	3	O	
Rumex obtusifolius	Broad-leaved Dock	x	✓	x	x	x	✓	x	x	✓	x	3	O	
Cirsium arvense	Creeping Thistle	✓	x	x	x	x	x	x	✓	x	x	2	R	
Dactylis glomerata	Cock's-foot	x	✓	x	x	x	x	x	x	x	x	1	R	
Epilobium ciliatum	American Willowherb	x	✓	x	x	x	x	x	x	x	x	1	R	
Fraxinus excelsior (S)	Ash	x	x	✓	x	x	x	x	x	x	x	1	R	
Geum urbanum	Wood Avens	x	x	x	✓	x	x	x	x	x	x	1	R	
Heracleum sphondylium	Hogweed	x	x	✓	x	x	x	x	x	x	✓	1	R	
Jacobaea vulgaris	Common Ragwort	x	x	x	✓	x	x	x	x	x	x	1	R	
Urtica dioica	Common Nettle	x	x	x	x	✓	x	x	x	x	x	1	R	
Additional species recorded within the field but not within the survey quadrats														
Agrostis stolonifera	Creeping Bent													R (LF)
Epilobium hirsutum	Great Willowherb													R
Epilobium parviflorum	Hoary Willowherb													R
Galeopsis bifida	Bifid Hemp-nettle													R
Lolium perenne	Perennial Rye-grass													R (LF)

SPECIES	COMMON NAME	QUADRAT No.												
		1	2	3	4	5	6	7	8	9	10	Frequency	Abundance	Field Abundance
Persicaria maculosa	Redshank													LF
Phleum pratense	Timothy													R
Ranunculus repens	Creeping Buttercup													R
Rubus fruticosus agg.	Bramble													R
Rumex crispus	Curled Dock													O
Tripleurospermum inodorum	Scentless Mayweed													LF
Ervilla hirsuta	Hairy Tare													R

Table 4: 2017 1m x 1m quadrats species % covers & species/m^2

Quadrat Ref.	% Cover of Wildflowers & Sedges	% Cover Perennial Rye-grass	% Cover White Clover	% Cover Perennial Rye-grass White Clover	No. Species/ m^2
Q1	0	0	0	0	3
Q2	1	0	0	0	7
Q3	2	0	0	0	6
Q4	1	0	0	0	7
Q5	0	0	0	0	3
Q6	1	0	0	0	4
Q7	0	0	0	0	1
Q8	0	0	0	0	2
kQ9	0	0	0	0	4
Q10	10	0	0	0	4
AVERAGE	**1.5%**	**0%**	**0%**	**0%**	**4.1/m^2**

2020 FEP 1m x 1m Quadrats

- The FEP methodology only provides 3 levels of frequency (rare, occasional, and frequent). In many instances certain species are clearly abundant or have local frequency (e.g. locally abundant). The Field Abundance column provides a subjective assessment of the species abundance to account for this.

Table 5: 2020 FEP 1m x 1m Quadrats

SPECIES	COMMON NAME	QUADRAT No.												
		1	2	3	4	5	6	7	8	9	10	Frequency	Abundance	Field Abundance
Holcus lanatus	Yorkshire-fog	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	F	A
Arrhenatherum elatius	False oat-grass	✓	✓	✓	✓	x	✓	x	✓	✓	X	7	F	F-LA
Cirsium arvense	Creeping thistle	✓	X	✓	✓	x	x	✓	x	✓	x	5	F	O
Cerastium fontanum	Common mouse-ear	x	✓	x	✓	✓	x	✓	x	X	✓	5	F	O
Epilobium adenocaulon	American willowherb	x	✓	x	✓	✓	x	✓	x	x	x	4	O	
Heracleum sphondylium	Common hogweed	✓	x	x	✓	x	x	x	x	x	✓	3	O	
Ranunculus repens	Creeping buttercup	x	x	x	x	✓	x	x	✓	x	✓	3	O	
Angelica sylvestris	Wild angelica	x	x	x	x	✓	x		✓	✓	x	3	O	
Trifolium repens	White clover	x	x	x	x	✓	x	✓	✓	x	x	3	O	
Anthriscus sylvestris	Cow parsley	✓	x	✓	x	x	x	x	x	x	x	2	R	
Cirsium vulgare	Spear thistle	x	✓	✓	x	x	x	x	x	x	x	2	R	
Urtica dioica	Common nettle	x	✓	x	x	x	✓	x	x	x	x	2	R	
Agrostis stolonifera	Creeping bent	x	x	x	x	x	✓	x	x	✓	x	2	R	
Festuca rubra	Red fescue	x	x	x	x	x	✓	✓	x	x	x	2	R	
Jacobaea vulgaris	Common ragwort	x	x	x	x	x	x	✓	✓	x	x	2	R	
Dactylis glomerata	Cock's-foot	x	x	✓	x	x	x	x	x	x	x	1	R	
Fraxinus excelsior	Ash	x	x	x	✓	x	x	x	x	x	x	1	R	
Rumex obtusifolius	Broad-leaved dock	x	x	x	✓	x	x	x	x	x	x	1	R	
Agrostis capillaris	Common bent	x	x	x	✓	x	x	x	x	x	x	1	R	
Poa sp.	A meadow-grass	x	x	x	x	x	x	✓	x	x	x	1	R	
Alopecurus pratensis	Meadow foxtail	x	x	x	x	x	x	x	✓	x	x	1	R	

SPECIES	COMMON NAME	QUADRAT No.												
		1	2	3	4	5	6	7	8	9	10	Frequency	Abundance	Field Abundance
Rumex acetosa	Common sorrel	x	x	x	x	x	x	x	✓	x	x	1	R	
Jacobaea aquatica	Hoary ragwort	x	x	x	x	x	x	x	x	✓	x	1	R	
Lolium perenne	Perennial rye-grass	x	x	x	x	x	x	x	x	x	✓	1	R	
Taraxacum officinale agg.	Dandelion	x	x	x	x	x	x	x	x	x	✓	1	R	
Additional species recorded within the field but not within the survey quadrats														
Prunus spinosa	Blackthorn (seedling / suckers)													R
Trifolium pratense	Red clover													R
Anthoxanthum odoratum	Sweet vernal-grass													R
Epilobium parviflorum	Hoary willowherb													R
Rubus fruticosus agg.	Bramble													LF to S
Ranunculus acris	Meadow buttercup													R
Phleum pratense	Timothy													R
Ervum tetraspermum	Smooth tare													R
Calystegia sepium	Large bindweed													LF to N
Torilis japonica	Upright hedge-parsley													R
Crepis capillaris	Smooth Hawk's-beard													R
Polygonum aviculare	Knotgrass													R
Crataegus monogyna	Hawthorn (stump)													R

Table 6: 2020 1m x 1m quadrats species % covers & species/m²

Quadrat Ref.	% Cover of Wildflowers & Sedges	% Cover Perennial Rye-grass	% Cover White Clover	% Cover Perennial Rye-grass White Clover	No. Species/ m²
Q1	0	0	0	0	5
Q2	1	0	0	0	6
Q3	0	0	0	0	6
Q4	1	0	0	0	9
Q5	3	0	1	1	6
Q6	0	0	0	0	5
Q7	1	0	25	25	8
Q8	2	0	1	1	8
Q9	1	0	0	0	6
Q10	1	2	0	2	6
AVERAGE	**0.9%**	**0.2%**	**2.7%**	**2.9%**	**6.5/m²**

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5.0 ANALYSIS & DISCUSSION

NVC Communities – Lowland Meadow HPI

Methodology

5.1 Analysis of NVC survey data involves four elements:

- Use of a vegetation key;
- Computer analysis;
- Comparison of floristic tables and community descriptions; and
- Surveyor experience.

5.2 British Plant Communities Vol. 3[16] provides a key (largely a dichotomous key) which enables the user to arrive at a conclusion by answering a series of questions based on the floristic composition of the sampled stand.

5.3 The quantitative species data for the NVC communities and their sub-communities are summarised in a standardised format in the form of floristic tables. These include the frequency and abundance range for each species within the main community and any sub-communities. Floristic tables (e.g. Table 2 within this report) produced from the NVC survey were compared with the published NVC tables to look for any similarity between the two data sets which would then indicate the presence of a particular NVC community within the sampled areas.

5.4 The survey data was analysed using the TABLEFIT Version 2.0[18] software package. This program uses species lists where the frequency and abundance of the individual species have also been recorded, to assign the assemblage to an NVC type. It does this by looking for the association to a particular NVC type with the highest goodness-of-fit. The overall goodness-of-fit is the average of up to four individual goodness-of-fit values. These are detailed within Hill (2015)[19].

5.5 As with any with any similar vegetation analysis software, caution is needed with interpretation of the analysis results and Hill (2015)[19] highlights these and suggests that the goodness-of-fit ratings reproduced in Table 7 below should only be used as a guide.

Table 7: TABLEFIT Goodness-of-fit Ratings

GOODNESS-OF-FIT	RATING
80-100	Very good
70-79	Good
60-69	Fair
50-59	Poor
0-49	Very poor

5.6 A key element to achieving reliable results is ensuring that the data is complete, e.g. accurate full species lists from the quadrats, sufficient quadrats to provide frequency data and percentage cover values for species. These essential elements were all captured during the survey.

5.7 Each NVC community is given a full written description. These descriptions give context to the key and floristic tables and are of great value and importance as part of the analysis processes. Once

a decision has been made on the basis of the result of the keying exercise, comparison of floristic tables and computer analysis, it is imperative that the description for the NVC community which it is assumed to be present is then read to ensure that this reflects the sampled stand.

5.8 Surveyors with good experience of NVC surveys are able call upon their experience of a wide range of different stands of vegetation to assist with the above analysis ensuring the best diagnosis is reached.

Analysis

5.9 The constancy and dominance of false oat-grass within the sward and paucity of forbs were such that this was clearly some form of MG1 *Arrhenatherum elatius* grassland. This has been reflected in the TABLEFIT analysis which has returned MG1 grassland types in all of the top five associations (see Table 8 below). A similar result was returned for MG 1a *Arrhenatherum elatius* grassland *Festuca rubra* sub-community and MG 1 *Arrhenatherum elatius* grassland, although goodness-of-fit was 'poor' but only a few points off being 'fair'. For the other sub-communities the goodness-of-fit was 'very poor' showing a stronger confidence that the grassland was not representative of the MG1 grassland types that are considered a priority for conservation (e.g. MG1c & MG1d).

5.10 Although the software analysis has concluded that the frequency and abundance of species within the stand have a poor goodness of fit with NVC communities a strong affinity to MG1 *Arrhenatherum elatius* grassland or one of its sub-communities has been shown by the fact that the top five associations were MG1 types of grassland. Based on the surveyor's experience this is a particularly species-poor example of *Arrhenatherum elatius* grassland and the paucity of species has most likely led to the 'poor goodness-of-fit' result from the TABLEFIT analysis. MG1a is considered to be one of the most species-poor sub-communities of MG1.

Table 8: TABLEFIT Analysis of Survey Quadrats QA to QE

NVC Community	Overall GoF	GoF 1	GoF 2	GoF 3	GoF 4
MG 1a *Arrhenatherum elatius* grassland *Festuca rubra* sub-community	58	43	65	78	100
MG 1 *Arrhenatherum elatius* grassland	57	41	88	73	100
MG 1c *Arrhenatherum elatius* grassland *Filipendula ulmaria* sub-community	46	39	81	54	98
MG 1b *Arrhenatherum elatius* grassland *Urtica dioica* sub-community	44	43	53	56	89
MG 1d *Arrhenatherum elatius* grassland *Pastinaca sativa* sub-community	39	24	70	57	85

Conclusion

5.11 The grassland, as present in 2017, was a particularly species-poor example of MG1 *Arrhenatherum elatius* grassland but not one of the sub-communities that are considered a priority for conservation. A detailed NVC was not undertaken during 2020, due to the constraints outlined above. However, the community is broadly similar to that described in 2017, with the only material differences being an increased abundance of Yorkshire-fog throughout the sward and the local addition of wild

angelica to the south. Despite these differences it is considered that the community still sits comfortably with MG1 *Arrhenatherum elatius* grassland and has none of the associated species which are consistent with the sub-communities of higher conservation value.

Warwickshire Local Wildlife Site Selection Criteria

5.12 No evaluation of the grassland against the Local Wildlife Site Selection Criteria can be made, due to the guidance within the selection guidelines. However, the grassland is so species-poor that its inclusion within a LWS designation boundary would be unlikely.

Natural England Farm Environment Plan - Assessment of Grassland Features

5.13 The FEP Manual contains keys for the identification of species-rich grasslands. Using the data derived from the 1m x 1m quadrats for species composition, richness and abundance; and the percentage cover of key species; the surveyed grassland was processed through these keys using both the 2017 and 2020 survey data as shown in Table 9 overleaf.

5.14 The analysis across both survey occasions has concluded that the grassland represents species-poor improved grassland whereas the walkover survey in 2016 concluded that the grassland represented "*poor semi-improved* [our emphasis] *grassland of medium-low distinctiveness in poor condition,*"

Warwickshire, Coventry and Solihull Local Biodiversity Action Plan (LBAP) Priority Habitat

5.15 The LBAP description for Lowland Neutral Grassland Priority Habitat[12] introduces the term semi-improved grassland:

"This plan includes most forms of unimproved and neutral grassland across the enclosed lowland landscapes; also semi-improved grasslands i.e. those that have had some improvement, but still retain a suite of old grassland species (a frequent situation in our area).

...In terms of National Vegetation Classification plant communities, local examples comprise mainly crested dog's-tail (Cynosurus cristatus) – common knapweed (Centaurea nigra) MG5 grassland, great burnet (Sanguisorba officinalis) - meadow foxtail (Alopecurus pratensis) – MG4 [sic.] *floodplain meadow and crested dog's-tail – marsh-marigold (Caltha palustris) grassland MG8 flood pasture."*

5.16 From this extract it can be seen that great emphasis is given to correlating unimproved Lowland Neutral Grassland habitat with NVC grassland communities. This is logical given that the Lowland Meadow HPI descriptions relate to specific NVC communities.

5.17 Section 4 of the LBAP Lowland Neutral Grassland Priority Habitat is concerned with the current status of the habitat. Here the current resource is quantified as:

"Baseline data from the 1998-2001 Habitat Biodiversity Audit recorded that about 185ha of unimproved neutral grassland existed in Warwickshire, Coventry, and Solihull".

Interestingly, in the previous version of the LBAP this figure of 185ha was specifically referred to as "*unimproved/good semi-improved neutral grassland*". This seems to indicate that a decision has been made to include all 'good semi-improved neutral grassland' within the unimproved category, which seems to be a contradiction in terms. However, it does further highlight the fact that good semi-improved neutral grassland is considered a LBAP Priority Habitat.

5.18 As the grassland present within the site is species-poor improved grassland, it is not representative of the grassland types that are considered a priority for conservation by the LBAP as these only relate to unimproved/good semi-improved neutral grassland, not improved.

Warwickshire, Coventry and Solihull Biodiversity Offsetting Biodiversity Impact Assessment

5.19 The ecological assessment supporting the planning application has included a Biodiversity Impact Assessment calculation to inform mitigation proposals and thereby ensure that there would not be a resultant net loss of biodiversity. This calculation was undertaken on the basis that species-poor semi-improved grassland was present. The calculation has subsequently been re-run with the new data to ensure that an accurate result is achieved. (See appendices).

Table 9: Analysis of survey data using the FEP Manual Grassland Keys

SUMMARISED FEP KEY TO IDENTIFY BAP GRASSLAND FEATURES		
KEY	**2017**	**2020**
Key 2a Stage 1: Do at least two of the following apply? If YES = species-rich grassland and go to Key 2b; If NO got to next stage of key 2a		
i) Cover of rye-grasses and white clover <10%	Yes (0%)	Yes (2.9%)
ii) Sward is species-rich ; >15 species/m^2 – including grasses	No (4.1/m^2)	No (6.5/m^2)
iii) Cover of broadleaved herbs (wildflowers) and sedges is >30%, excluding white clover,	No (1.5%)	No (0.9%)
RESULT	**No - go to Key 2a Stage 2**	**No - go to Key 2a Stage 2**
Key 2a Stage 2: Do at least two of the following apply? If YES = semi-improved grassland & go to Key 2b; If NO go to Key 2a Stage 3		
i) Cover of rye-grasses and white clover <30%	Yes (0%)	Yes (2.9%)
ii) Sward is moderately species-rich, 9-15 species/m^2 – including grasses	No (4.1/m^2)	No (6.5/m^2)
iii) Cover of broadleaved herbs (wildflowers) and sedges is >10% or more; excluding white clover, creeping buttercup and injurious weeds.	No (1.5%)	No (0.9%)
RESULT	**No - go to Key 2a Stage 3**	**No - go to Key 2a Stage 3**
Key 2a Stage 3: Do at least two of the following apply? If YES = Species poor improved grassland; If NO = non-grassland habitat		
i) Cover of rye-grasses and white clover >30%	No (0%)	No (2.9%)
ii) Sward is species-poor, ≤8 species/m^2 – including grasses	Yes (4.1/m^2)	Yes (6.5/m^2)
iii) Cover of broadleaved herbs (wildflowers) and sedges is <10%; excluding white clover, creeping buttercup and injurious weeds.	Yes (1.5%)	Yes (0.9%)
RESULT	**Species-poor Improved Grassland**	**Species-poor Improved Grassland**
Key 2b Stage 1: (from 2a as species-rich grassland – potential Lowland Meadow BAP Habitat): Are at least two Lowland Meadow BAP indicator species frequent and two occasional in the sward? (Or one bold indicator and three occasional for flood plain meadows) If YES = Good-quality species-rich grassland. If NO = continue to Key 2b Stage 2.		
	N/A	**N/A**
RESULT	**N/A**	**N/A**
Key 2b Stage 2: (from 2b Stage 1): Are 4 indicator species from a BAP habitat feature list present, but below the required threshold frequency for the grassland type, or are 3 indicator species at least occasional? If YES = Species-rich grassland of moderate quality. If NO = continue to Key 2b Stage 3 as semi-improved grassland.		
RESULT	**N/A**	**N/A**
Key 2b Stage 3: (from 2a as semi-improved grassland or from 2b Stage 2 as insufficient indicators): Are four semi-improved grassland wildflower indicators and/or BAP grassland indicator species at least occasional in the sward? If YES – Good quality species-rich grassland. If NO = species-poor semi-improved grassland		
RESULT	**N/A**	**N/A**
GRASSLAND TYPE	**Species-poor Improved Grassland**	**Species-poor Improved Grassland**

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6.0 CONCLUSIONS

6.1 The NVC survey analysis of data from 2017, using the TABLEFIT software has shown that the grassland only has a poor to very poor goodness-of-fit with specific NVC grassland communities but MG1 *Arrhenatherum elatius* grassland and some of the MG1a *Festuca rubra* sub-community featured with the best goodness-of-fits. Use of the NVC key for mesotrophic grassland, and surveyor experience, indicate that the grassland surveyed in 2017 was clearly MG1 and that the poor goodness-of-fit derived from the TABLEFIT analysis is most likely due to the fact that this is a particularly species-poor example of *Arrhenatherum elatius* grassland.

6.2 Despite an updated NVC survey not being feasible during 2020, only minor differences to the community were evident and it was felt that the community remains within the bounds of the classification determined during the 2017 survey.

6.3 Because the grassland is not representative of MG1c, MG1d or MG1e it is not considered to be representative of Lowland Meadow Habitat of Principal Importance.

6.4 The FEP survey results undertaken in both 2017 and 2020 indicate that the grassland represents species-poor improved grassland and as such, is not representative of the Warwickshire, Coventry and Solihull LBAP Lowland Meadow Neutral Grassland Habitat, and the good quality semi-improved neutral grassland as referred to in the Local Wildlife Site selection guidelines.

6.5 The detailed botanical surveys have therefore concluded that the grassland is not of any significant nature conservation value for its botanical interest.

6.6 The Biodiversity Impact Assessment should be recalculated using this more accurate assessment of the grassland.

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8.0 APPENDICES

Appendix 1: 2017 2m x 2m quadrat locations & additional information

QUADRAT REF.	GRID REF.	AVERAGE SWARD HEIGHT (mm)	MAX. SWARD HEIGHT (mm)
A	SP 34581 63844	1,500	1,700 – *Arrhenatherum elatius*
B	SP 34600 63829	1,250	1,500 – *Arrhenatherum elatius*
C	SP 34608 63858	1,000	1,400 – *Arrhenatherum elatius*
D	SP 34609 63894	1,250	1,600 – *Arrhenatherum elatius*
E	SP 34860 63858	1,300	1,600 – *Arrhenatherum elatius*

Appendix 2: 2017 1m x 1m quadrat locations

Quadrat Ref.	Grid Ref.
Q1	SP-34552-63882
Q2	SP-34571-63860
Q3	SP-34585-63822
Q4	SP-34607-63845
Q5	SP-34606-63876
Q6	SP-34623-63880
Q7	SP-34637-63863
Q8	SP-34645-63847
Q9	SP-34657-63880
Q10	SP-34655-63960

Appendix 3: 2020 1m x 1m quadrat Photos

Quadrat Ref.	
Q1	
Q2	N/A

Q3	
Q4	
Q5	
Q6	
Q7	N/A
Q8	N/A
Q9	
Q10	N/A

Appendix 4: Biodiversity Impact Assessment Calculations

Existing	Habitat Area (ha)	Hedgerow impact (km)	Connectivity Features (km)	Habitat Biodiversity Value	Hedgerow Biodiversity Value	Connectivity Biodiversity Value
Onsite Biodiversity Impact	0.84	0.00	0.00	4.25	2.81	0.00
Indirect Biodiversity Impact	0.00	0.00	0.00	0.00	0.00	0.00
Total habitat / linear features impacted	**0.84**	**0.00**	**0.00**	**4.25**	**2.81**	**0.00**
Retained / Created / Enhanced						
Onsite biodiversity retained	0.00	0.00	0.00	0.00	2.81	0.00
Onsite Creation	0.84	0.17	0.00	0.58	1.50	0.00
Biodiversity retained and enhanced	0.80	0.23	0.00	5.15	0.59	0.00
Total biodiversity retained/enhanced	**1.64**	**0.40**	**0.00**	**5.73**	**4.90**	**0.00**
Trading Down	n/a	n/a	n/a	0.00	0.00	0.00
Biodiversity Impact	**n/a**	**n/a**	**n/a**	**1.48**	**2.09**	**0.00**

Habitat Impacts	Loss	Gain	Impact	%age losses	Compensatory Unit loss	Indicative Offset (ha)	WCC Offset units	WCC Indicative Offset Contribution
Woodland Habitat	0.16	0.42	0.26					
Grassland Habitat	1.44	2.60	1.16					
Wetland Habitat	0.00	0.27	0.27					
Other Habitat (incl. Built Env)	0.21	0.00	-0.21			Transferred to Wetland		
Total	1.81	3.29	1.48	0.00	0.00	0.00	0.00	£0
		Trading down	0.00					
			1.48					

Hedgerow Impacts	Loss	Gain	Trading down	Impact	Unit loss	Indicative Offset (km)	WCC Offset units	WCC Offset Contribution
Hedgerow	0.00	2.09		2.09				


Lewis Road
St Nicholas Road
Existing Pond
Existing Drainage Ditch
50m GCN Buffer to waterbody adjacent north eastern boundary
Existing bungalow to be Retained
Existing Grassland Habitat to be Retained
The Valley
Hedgerow and Tree Boundary to development edge restricting access to wider Grassland Habitat
Developable Area set back from Site Boundary
Tinker's Close
Hill Farm
Existing Pond
Site Boundary
Proposed Residential Area: 0.73 ha (Up to 20 Dwellings @ 27 dph)
Existing Vegetation / Hedgerows (To be retained)
Existing Grassland (To be retained)
Proposed Structural / Green Infrastructure
Proposed Indicative Vehicular Access
Proposed Site Access
Existing Public Right of Way
Proposed Footpath
Proposed Play (LAP) 0.01ha
Proposed Attenuation Basin (To engineers specification)
N
Scale: 1:1250 @ A3
0
50
100m
Pilcott Developments UK Ltd
Land off the Valley
Radford Semele, Warwickshire
DEVELOPMENT FRAMEWORK
7691-L-01 A

Key

- Site Boundary
- Buildings
- Built Environment: Gardens (lawn and planting)
- Improved grassland
- Other tall herb and fern - ruderal
- Scrub - scattered
- Standing water
- Intact hedge - native species-rich
- Fence
- Dry ditch

H1

H2

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client
IM Land

project
Land off The Valley, Radford Semele

drawing title
PHASE 1 HABITAT PLAN

scale
1:891

drawn
KO / IH

issue
14/8/2020

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Figure 1

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9679-E-01

Key

- Site Boundary
- Quadrat Locations

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K:\9600\9679\ECO\QGIS\Plans\9679-E-01 Grassland Survey Plan.qgs

client
IM Land

project
Land off The Valley, Radford Semele

drawing title
2020 GRASSLAND SURVEY PLAN

scale
1:891

drawn
IH

issue
12/8/2020

drawing / figure number
Figure 1

rev
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