

Preliminary Ecological Appraisal

**Glyndwr University (Dean Road),
Wrexham,**

Day Architectural Ltd



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1 Executive Summary

1.1 The Project and Commissioned Work

RPS Planning and Development Ltd (RPS) was instructed by Day Architectural Ltd, on behalf of Glyndwr Wrexham University to carry out a preliminary ecological appraisal comprising of an extended Phase 1 habitat survey of land off Dean Road, Wrexham (hereafter referred to as the 'site').

The proposals for the site include the construction of residential units with associated infrastructure.

The survey followed best practice methodology and was carried out in May 2017 by an experienced ecologist.

1.2 Findings and Recommendations

No notable habitats were recorded within the site and it was largely dominated by species-poor amenity grassland, which was considered to offer very little ecological value for the majority of the protected species targeted by this appraisal, although the vegetated boundaries may provide a suitable commuting corridor for bats. A small area of Japanese knotweed was also recorded within the site. On this basis, the following recommendations have been made:

Table 1: Summary of recommendations

Notable Ecological Feature	Consideration	Further Surveys Required	Mitigation, Compensation and Enhancement	Optimal Timings
Roosting bats	Potential for bat roost(s) to be present within boundary trees	Yes; if mitigation measures cannot be followed	Retention of 10m buffer around all boundary trees	May – September (for surveys – if required)
Foraging bats	Bats may use boundary features for commuting/foraging	No	Retention of 10m buffer around boundaries of site and implementation of sympathetic lighting scheme	During construction and operational phase
Japanese knotweed	Japanese knotweed present within site	Yes; full invasive species survey to establish extent and distribution	To be confirmed following results of survey but will involve the careful eradication of all Japanese knotweed within the site, along with a suitable management plan and future monitoring	April – October
Nesting birds	Potential for active nests to be encountered during construction phase of works	No	All clearance of scrub habitats across the site to be conducted outside of nesting season or an ecologist to check all areas to be affected if this is not possible	October – February (nesting bird season March to September)
Badgers	Potential for badgers to cross site during construction phase	No	Best-practice working methodologies to avoid trapping any badgers during construction phase	During works
Habitats	Net loss in biodiversity value of site	No	Replacement of any native scrub habitats on a like-for-like basis following completion of the works	During works

Notable Ecological Feature	Consideration	Further Surveys Required	Mitigation, Compensation and Enhancement	Optimal Timings
Nesting birds, roosting bats	Best-practice measures to enhance value of site to protected species where possible	No	Introduction of bat roost boxes and bird nest boxes targeting species of conservation concern	During works

It should be noted that the assessments within this report have been made to inform the final layout for the developed site. These assessments should, therefore, be re-evaluated following completion of the finalised site layout to more accurately determine likely ecological impacts, along with suitable mitigation measures.

CONTENTS

1	EXECUTIVE SUMMARY.....	3
1.1	The Project and Commissioned Work.....	3
1.2	Findings and Recommendations.....	3
2	INTRODUCTION AND BACKGROUND.....	6
2.1	Purpose and Scope of this Report.....	6
2.2	Proposed Site Plans.....	6
2.3	Zone of Influence	6
2.4	Site Context and Location	6
2.5	Legislation and Planning Policy	8
3	METHODOLOGY	9
3.1	Desk Based Assessment	9
3.2	Extended Phase 1 Habitat Survey	9
3.3	Protected / Notable Species Scoping.....	9
3.4	Limitations.....	10
4	RESULTS.....	11
4.1	Desk Based Assessment	11
4.2	Habitat Survey Results	13
4.3	Preliminary Protected / Notable Species Assessment.....	17
5	EVALUATION.....	19
5.1	Habitats and Botanical Value	19
5.2	Protected and Notable Species.....	19
5.3	Invasive Species	20
6	RECOMMENDATIONS	21
6.1	Further Investigations Required	21
6.2	Mitigation.....	21
6.3	Compensation.....	22
6.4	General Recommendations for Enhancement	22

APPENDICES

Appendix A	References
Appendix B	Proposed Site Plan
Appendix C	Phase 1 Habitat Plan

2 Introduction and Background

2.1 Purpose and Scope of this Report

RPS Planning and Development Ltd (RPS) was commissioned to carry out a preliminary ecological appraisal of land off Dean Road, Wrexham to inform planning prior to proposed development for housing. This appraisal is based on a review of the development proposals provided by the client, desk study data (third party information) and a survey of the site. This report pertains to these results only; recommendations included within this report are the professional opinion of an experienced ecologist, based on their personal interpretation of legislation and planning policy.

The study area is defined as shown in the enclosed site plan (Figure 1) and Phase 1 Habitat plan plus a buffer zone extended to include the Zone of Influence (see below) of the proposals (hereafter referred to as the “site”).

2.2 Proposed Site Plans

Finalised site plans were unavailable at the time of reporting but an outline concept masterplan was provided to RPS to assist in the assessment of potential ecological impacts. This plan has been reproduced at Appendix B. It is our current understanding that the proposed works would involve the construction of residential units across the whole of the site, along with new access roads and associated infrastructure.

2.3 Zone of Influence

The term Zone of Influence is used to describe the geographic extent of potential impacts of a proposed development. The Zone is determined by the nature of the development and also in relation to individual species, depending on their habitat requirements, mobility and distances indicated in any best practice guidelines.

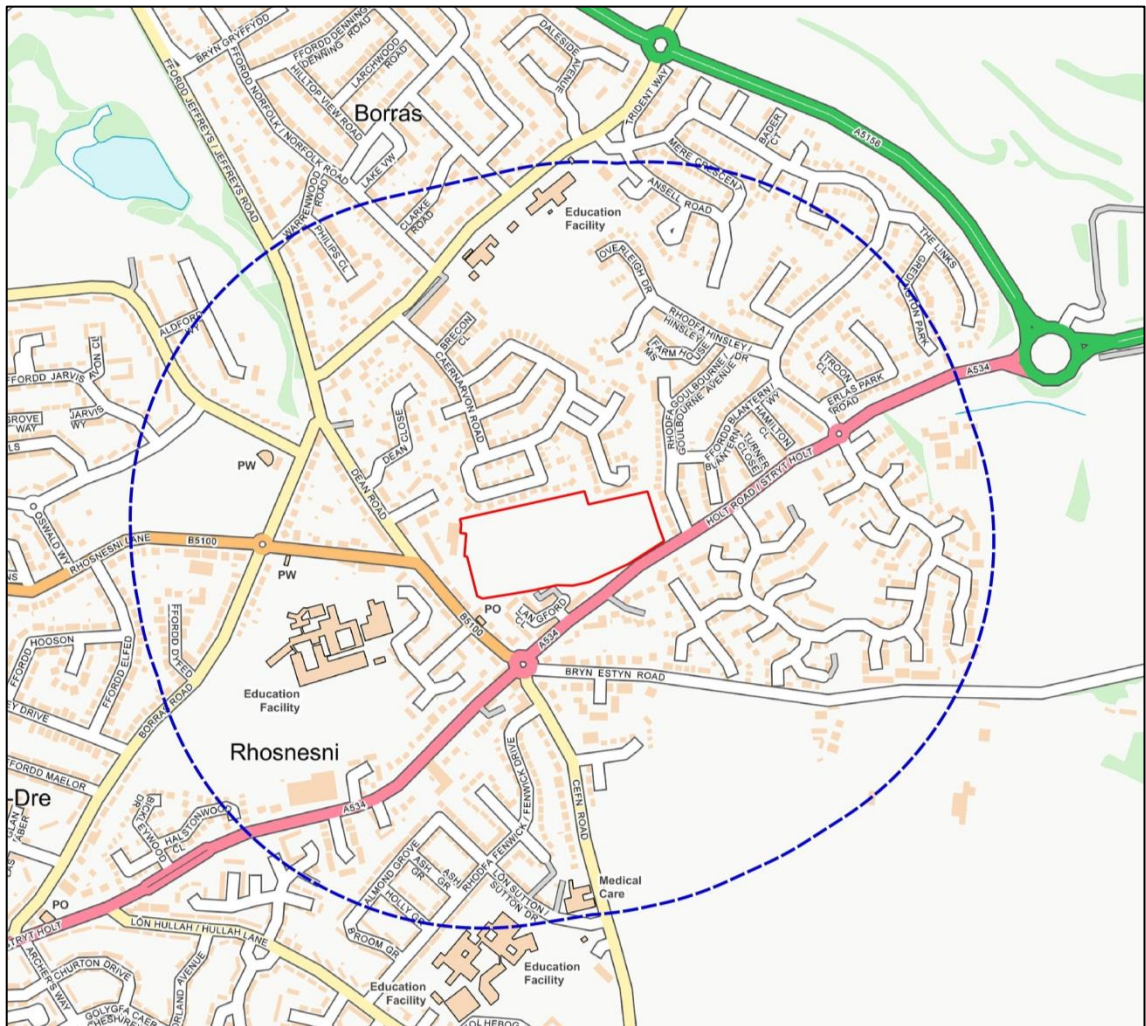
For this site, the Zone of Influence is considered to be land on and immediately adjacent to the site and, specifically in respect of great crested newts *Triturus cristatus*, land within 500m of the site boundary as illustrated on the location plan.

2.4 Site Context and Location

The site comprised approximately 3.5ha of predominantly amenity grassland situated in the northeast of Wrexham, central grid reference SJ 35188 51444. At the time of survey, the site comprised short-sward amenity grassland in use as public playing fields. The adjacent land to all directions was residential development with associated road networks. The location in a local context is illustrated on Figure 1 overleaf.

Aerial imaging available via Google Earth Pro was also reviewed to assess the site in relation to its context in the wider landscape. As illustrated on Figure 2, the site sits towards the edge of a predominantly urban landscape, with vast expanses of residential development to the east and open farmland and industrial development to the west. Connections to the wider landscape are few and restricted to well-lit road networks.

Figure 1: Site location plan (red line denotes site location and dotted red blue illustrates the zone of influence)



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Figure 2: Aerial image of the site and local landscape



Image reproduced from Google Earth Pro.

2.5 Legislation and Planning Policy

2.5.1 General

Articles of British wildlife and countryside legislation, policy guidance and both Local and National Biodiversity Action Plans (BAPs) are referred to throughout this report. Their context and application is explained in the relevant sections of this report. The relevant articles of legislation are:

- The National Planning Policy Framework (NPPF, 2012);
- ODPM Circular 06/2005 (retained as Technical Guidance on NPPF 2012);
- Local planning policies (Wrexham County Borough Council);
- The Conservation of Habitats and Species Regulations 2010 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- EC Council Directive on the Conservation of Wild Birds 79/409/EEC;
- National Parks and Access to the Countryside Act 1949;
- The Protection of Badgers Act 1992;
- The Countryside and Rights of Way Act 2000;
- The Hedgerow Regulations 1997;
- The Natural Environment and Rural Communities Act 2006;
- Local Biodiversity Action Plan for Wrexham

Under the National Planning Policy Framework 2012 the presence of any protected species is a material planning consideration. The Framework states that impacts arising from development proposals must be avoided where possible or adequately mitigated/ compensated for and that opportunities for ecological enhancement should be sought.

3 Methodology

3.1 Desk Based Assessment

Data regarding statutory and non-statutory designated sites, plus any records of protected or notable species and habitats was obtained from the local ecological records centre and online resources, details of which are provided in Table 2 below.

Table 2: Consulted resources

Consultee/ resource	Data sought	Search radius from boundary
COFNOD – North Wales Environmental Information Service	Site designations, protected/notable species records	2km
www.magic.gov.uk ¹	Statutory Site Designations	2km
	NERC 2006 Habitats of Principal Importance	1km

3.2 Extended Phase 1 Habitat Survey

An extended Phase 1 habitat survey of the site was carried out on 10th May 2017. Habitats were described and mapped following standard Phase 1 habitat survey methodology (JNCC, 2010), which categorises habitat type through the identification of individual plant species, botanical community and habitat conditions.

Nomenclature follows Stace (Stace, 2010) for vascular plant species and uses the DAFOR scale for relative abundance (D = dominant, A = abundant, F = frequent, O = occasional and R = rare/infrequent).

The habitat survey was carried out by Michelle Cullimore-Pike BSc Hons MSc who is appropriately experienced to carry out this type of survey.

3.3 Protected / Notable Species Scoping

The habitats on site were assessed for their suitability to support any legally protected or notable species that may present constraints to the proposed development. This includes invasive non-native plant species such as Japanese knotweed *Fallopia japonica*, giant hogweed *Heracleum mantegazzianum* and Himalayan balsam *Impatiens glandulifera*.

Any incidental sightings of individual species or field signs such as footprints, latrines or feeding remains identified during the survey were noted.

In the case of bats, specific quantitative assessment methodologies have been adopted industry wide and details of these are provided below.

3.3.1 Appraisal Methodology

The overall ecological appraisal is based on the standard best practice methodology provided by the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2013). The assessment identifies sites, habitats, species and other ecological features that are of value based on factors such as legal protection, statutory or local site designations such as Sites of Special Scientific Interest (SSSI) or Local Wildlife Sites (LWS) or inclusion on Red Data Book Lists or Biodiversity Action Plans. Ecological value is considered in the context of international, national, regional or local scale and potential constraints to development are identified on that basis, with recommendations for further more detailed surveys made as appropriate, for example to fully investigate botanical value or to confirm presence / likely absence of a protected species.

The assessment also refers to planning policy guidance (e.g. NPPF) where relevant to relate the value of the site and potential impacts of development to the planning process, identifying

¹ Multi Agency Geographic Information for the Countryside Interactive GIS Map.

constraints and opportunities for ecological enhancement in line with both national and local policy.

3.4 Limitations

3.4.1 Desk Based Assessment

The desk study data is third party controlled data, purchased for the purposes of this report only. RPS cannot vouch for its accuracy and cannot be held liable for any error(s) in these data.

3.4.2 Survey

It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation could ensure the complete characterisation and prediction of the natural environment.

The protected/notable species assessment provides a preliminary view of the likelihood of these species occurring on the site, based on the suitability of the habitat, known distribution of the species in the local area provided in response to our enquiries and any direct evidence on the site. It should not be taken as providing a full and definitive survey of any protected/notable species group.

The entirety of the land within 30m of the site could not be accessed due to private ownership. This land could, however, be viewed from the site's boundaries, allowing for a thorough visual inspection.

3.4.3 Accurate Lifespan of Ecological Data

The majority of ecological data remain valid for only short periods due to the inherently transient nature of the subject. The survey results contained in this report are considered accurate for 2 years.

4 Results

4.1 Desk Based Assessment

No statutory sites were identified within the search area highlighted in Section 3.1 but a total of 3 non-statutory sites were identified, details of which are provided in Table 3.

Table 3: Non-statutory designated sites

Site name	Designation	Location	Brief description
Borras Bog (site ref: W315)	LWS ²	730m to N	An acid bog with a canopy of birch
Pant-yr-Ochain (site ref: W312)	LWS	1.4km to N	A series of ponds and lakes which are of primary interest for birds
Cefn Park	LWS	1.6km to SE	Series of broad-leaved woodlands

The closest NERC (2006) Habitat of Principal Importance is deciduous woodland, located over 750m to the east of the survey area.

Protected species records were received from COFNOD. A summary of the records considered most relevant to the site and/or proposed development are provided in Table 4.

Table 4: Summary of protected and notable species records

Species latin name	Species	Most recent record	Closest record to site	Total no. of records	National conservation status	Wrexham LBAP
Amphibians						
<i>Lissotriton vulgaris</i>	Smooth newt	1995	1.5km to N	6	Partially protected under WCA 1981 ³	
<i>Triturus cristatus</i>	Great crested newt	2009	1.6km to SSE	34	Fully protected EPS ⁴ , NERC 2006	✓
Mammals						
<i>Chiroptera</i> sp.	Unidentified bat sp.	2004	0.1km to NWN	9	Fully protected EPS ⁵	
<i>Pipistrellus pipistrellus</i>	Common pipistrelle	2015	0.1km to ESE	8	Fully protected EPS	
<i>Plecotus auritus</i>	Brown long-eared bat	1996	0.4km to SW	2	Fully protected EPS, NERC 2006	
<i>Meles meles</i>	Badger	2007	Over 500m from site	9	PBA ⁶	✓
<i>Nyctalus noctula</i>	Noctule bat	2015	1.6km to WSW	1	Fully protected EPS, NERC 2006	
<i>Pipistrellus</i> sp.	Pipistrelle bat	2004	1.7km to SW	1	Fully protected EPS	

² Local Wildlife Site

³ Protected from sale and advertising for sale under the Wildlife and Countryside Act 1981 (as amended)

⁴ European Protected Species (EPS), protected by the Conservation of Habitats and Species Regulations 2010 (as amended) and the wildlife and countryside act 1981

⁵ European Protected Species (EPS), protected by the Conservation of Habitats and Species Regulations 2010 (as amended)

⁶ Protection of Badgers Act 1992

Species latin name	Species	Most recent record	Closest record to site	Total no. of records	National conservation status	Wrexham LBAP
Reptiles						
<i>Natrix natrix</i>	Grass snake	2016	0.8km to N	5	Partially protected under WCA 1981 ⁷ , NERC 2006	
<i>Vipera berus</i>	Adder	2009	0.9km to N	1	Partially protected under WCA 1981, NERC 2006	

155 Records of Schedule 1 bird species were returned in the desk study, but the site contained very little habitat with the potential to support these species in terms of nesting or foraging, so there would be no adverse impacts on these species, and they have, therefore, been omitted from this report. Records of water vole were returned but also omitted as there is no habitat with the potential to support this species either within or adjacent to the site. Full details of both can be made available upon request, however.

⁷ Protected from killing and injury under the Wildlife and Countryside Act 1981 (as amended)

4.2 Habitat Survey Results

The site comprised a mosaic of several different habitat types, as described under the individual sub-headings below. No protected plant species were recorded, but two patches of the invasive non-native species Japanese Knotweed *Fallopia japonica* were found on site.

4.2.1 Dense Scrub

A single area of dense scrub was located within the site, at the western end of the southern site boundary. The dominant species within the area was bramble *Rubus fruticosus*, with common nettle *Urtica dioica* and broad-leaved dock *Rumex obtusifolius* also occurring fairly frequently. Rosebay willowherb *Chamerion angustifolium* occurred occasionally. Unidentified bamboo species and cherry laurel *Prunus laurocerasus* were also found within the scrub, and it is likely these were an invasion from the adjacent gardens.

Figure 3: Area of dense scrub



4.2.2 Scattered Scrub

An area of scattered scrub was located within the site at the eastern end of the northern site boundary, and it comprised of a mixture of dog rose *Rosa canina*, hawthorn *Craaegus monogyna*, bramble *Rubus fruticosus*, and broom *Cytisus scoparius*.

Figure 4: Scattered scrub within site



4.2.3 Scattered Broad-leaved Tree

There were no mature trees located within the site. However, there were multiple trees found around the outside of the site boundary that were overhanging into the site from adjacent gardens. These trees included ash *Fraxinus excelsior*, goat willow *Salix caprea*, oak *Quercus robur*, cherry *Prunus* sp, sycamore *Acer pseudoplatanus*, buddleia *Buddleja davidii*, hazel *Corylus avellana*, and silver birch *Betula pendula*.

Figure 5: Overhanging broad-leaved tree



4.2.4 Tall Ruderal

A small area of tall ruderal vegetation was located in the south-western corner of the site, directly adjacent to the area of dense scrub. Common nettle *Urtica dioica* and cleavers *Galium aparine* were the dominant species, with bramble *Rubus fruticosus* occurring rarely.

Figure 6: Tall ruderal vegetation



4.2.5 Amenity Grassland

The majority of the site comprised a shortly mown amenity grassland playing field, subject to regular disturbance; see Figure 7. The grassland species included speedwell *Veronica* spp, common daisy *Bellis perennis*, ribwort plantain *Plantago lanceolata*, dandelion *Taraxacum officinale* agg, meadow grass *Poa* sp., creeping buttercup *Ranunculus repens*, meadow buttercup *Ranunculus acris*, Yorkshire fog *Holcus lanatus*, sweet vernal grass *Anthoxanthum odoratum*, yarrow *Achillea millefolium*, false oat-grass *Arrhenatherum elatius*, and perennial rye-grass *Lolium perenne*.

Along the edge of the amenity grassland were tussocky areas in which a number of other species were located. These included bluebell *Hyacinthoides* sp., cow parsley *Anthriscus sylvestris*, common nettle *Urtica dioica*, and bugle *Ajuga reptans*.

Figure 7: Amenity grassland

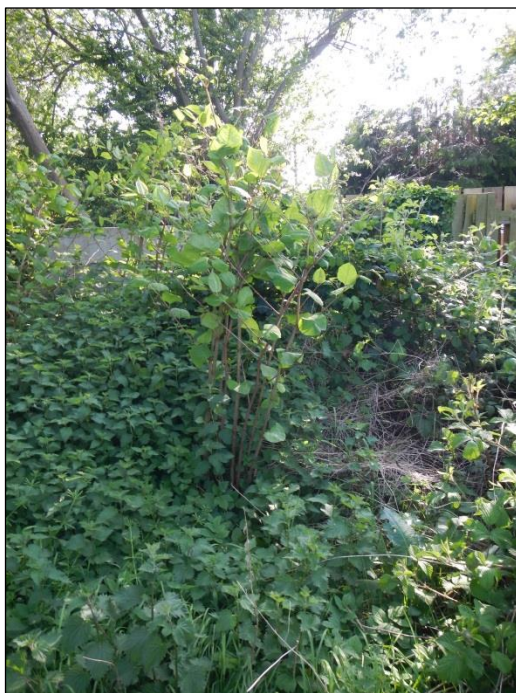


4.2.6 Invasive Species

Two areas of Japanese knotweed were recorded within the site. Both areas were along the southern site boundary, with the first area located within the patch of tall ruderal vegetation, and the second area located within the patch of dense scrub. The first area included four stands with 3-9 stems, approximately 1-1.5m tall (Target Note 1, on the Phase 1 Habitat plan in

Appendix B). The second area included 5 stands with 1-5 stems, approximately 0.5-1m tall (Target note 2). Figure 8 provides an overview of the two stands.

Figure 8: Japanese Knotweed within site



4.3 Preliminary Protected / Notable Species Assessment

4.3.1 White-clawed Crayfish, Water Vole and Otter

No aquatic habitat required to support these species was recorded either within or adjacent to the site and the likelihood of the presence of these species within the site is, therefore, considered to be Negligible. It is considered that there would be no adverse impacts on these species as a result of the proposed development and they will not be considered further in this report.

4.3.2 Great Crested Newt (GCN)

No standing waterbodies were identified within 500m of the site, although the presence of garden ponds cannot be ruled out. The site comprised a large area of shortly mown amenity grassland that provided poor quality habitat for GCN due to the lack of shelter from predators. However, the tussocky areas around the edge of grassland and the areas of scrub were considered to provide some suitable refuge opportunities. The site is bound by residential development and consequently there are very few opportunities for GCN dispersal to the site. Desk study returned a number of records of this species within the surrounding landscape, although the nearest record was over 1.6km distant.

4.3.3 Reptiles

The majority of the site comprised amenity grassland, which was considered to provide very limited habitat for reptiles due to the lack of shelter from predators. Although the areas of tall ruderal vegetation and scrub around the boundaries of the site were considered to offer more favourable habitat for reptiles, the likelihood of reptiles being present within these habitats is considered to be exceptionally low given the lack of dispersal corridors to the site from the surrounding rural landscape (in which several records of grass snake and adder were identified).

4.3.4 Birds

The majority of the site comprised amenity grassland, providing no nesting opportunity for birds, although the small areas of scrub at the edge of the site may provide suitable nesting habitat for a narrow range of bird species. The overhanging trees adjacent to the site peripheries may also provide suitable nesting habitat.

4.3.5 Badgers

No badger setts were recorded on site, and the generally flat nature of the site, being dominated by shortly mown amenity grassland was considered to be sub-optimal for sett excavation. The site was also considered to provide sub-optimal foraging opportunities, however it could not be ruled out that badgers, and other mammals, may occasionally use the site for commuting through (i.e. to the adjacent garden habitats). Desk study also highlighted the presence of this species within the surrounding landscape.

4.3.6 Bats

No trees were located on site; however, several were located overhanging into the site from adjacent gardens. A full preliminary roost assessment of these trees was not conducted as it was beyond the scope of this survey; therefore it cannot be confirmed that there are no bat roosts within the boundary trees as some were heavily clad in ivy (see Figure 5 in this report), thus potentially concealing roost features.

Bat Foraging Habitat

The majority of the site comprised open, short-sward amenity grassland which was considered to provide habitat of very low value to foraging/commuting bats. The tree-lined boundaries of the site were, however, noted for their suitability as a navigable commuting feature and also a sheltered environment which foraging bats would favour. In addition, the site is isolated within a complex of residential development and as such, connections to the surrounding land are poor.

On this basis, the site was assessed overall as providing Low quality habitat for foraging/commuting bats, with the quality being confined to the vegetated boundaries of the site.

5 Evaluation

5.1 Habitats and Botanical Value

5.1.1 Designated Conservation Sites (Statutory and Non-Statutory)

All of the statutory and non-statutory sites identified by the desk study are considered to be sufficiently distant to avoid any adverse impacts as a result of the proposed works and there is no recommendation for further consideration to this regard.

5.1.2 Invasive Species

Section 14(2) of the Wildlife and Countryside Act 1981 (as amended) states that it is illegal for any person to plant or otherwise cause to grow in the wild any plant listed on part 2 of Schedule 9 of this Act (which includes Japanese knotweed). Therefore, as the works are located within the area that contains potentially viable rhizomes (the area of knotweed and a 7m buffer), the works may result in spreading this species, resulting in an offence under this Act. A full invasive species survey and subsequent management plan, should therefore be undertaken to further establish the extent and distribution of these species, along with a suitable eradication programme; see Section 6.

5.2 Protected and Notable Species

5.2.1 Herptiles

The vast majority of the site comprised short-sward amenity grassland in use as playing fields. This habitat was considered to be unsuitable for amphibians and reptiles and consequently, the likelihood of their presence across the site is considered to be Negligible. Although the boundaries of the site contained more favourable habitat for herptiles (i.e. scrub/tall ruderal vegetation), the likelihood of these species being present in these habitats is considered to be exceptionally low given the isolation of the site within a residential landscape, thus providing no potential dispersal corridors.

Given the absence of water features to offer potential breeding sites for GCN within the zone of influence and lack of dispersal opportunities to the site, it is considered that there would be no adverse impacts on herptiles as a result of the proposed development and there is no recommendation for further mitigation or surveys.

5.2.2 Bats

Roosting

No features with the potential to support roosting bats were recorded within the site, although a full preliminary roost assessment of the boundary trees was not conducted and the presence of roosting bats therein cannot be discounted. Should any works be required within 10m of these trees, further surveys to more accurately establish the presence/likely absence of roosting bats within would be required to assess likely ecological impacts; see Section 6.

Foraging

The outline proposals for the site involve residential development across the site, which would remove the short-sward amenity grassland currently present. Whilst this would not incur an adverse impact on foraging/commuting bats given the poor quality of the existing habitat, consideration should be given to the retention of the vegetated boundary features within the site to ensure any bats which may utilise these features are not disturbed during both the construction and operational phase of the proposed works. Mitigation measures have been recommended to this regard in Section 6.

If these mitigation measures can be implemented in full, it is considered that there would be no adverse impacts on foraging/commuting bats as a result of the proposed development. Rather, the proposed development provides an opportunity to enhance the site for roosting and

foraging/commuting bats and enhancement measures to this regard have been made in Section 6 of this report.

5.2.3 Nesting Birds

The proposed development would result in the loss of the vast majority of the amenity grassland across the site. The likelihood of nesting birds being present within this habitat is considered to be negligible so there is no recommendation for further mitigation or surveys prior to works in this habitat.

The scrub, tall ruderal vegetation and trees around the boundaries of the site do, however, provide potential habitat for nesting birds, including those of Conservation Concern (i.e. song thrush, recorded by desk study). In addition to the mitigation required for any necessary clearance of these habitats, the proposed development should also seek to replace any loss of these habitats on a like-for-like basis to retain the biodiversity value of the site as far as is reasonably practicable; see Section 6.

It is considered that if the mitigation measures outlined in this report can be implemented in full, there would be no adverse impacts on the likely breeding assemblage of birds at this site. Rather, the proposed development provides an opportunity to enhance the site for nesting birds through the introduction of bird nest boxes targeting species of conservation concern; see Section 6.

5.2.4 Badgers

Whilst the site offers very little habitat to support sett excavation, habitat exists which may be utilised by commuting badger and the likelihood of badgers occasionally crossing the site in search of foraging ground cannot be discounted. It is, therefore, recommended that mitigation measures are implemented during the construction phase of the works to protect any badgers which may cross the construction site; see Section 6.

As the site offers little habitat suitable for foraging/commuting badger, it is considered that there would be no overall adverse impact on the favourable conservation status of the local badger population as a result of the proposed development.

5.3 Invasive Species

Japanese knotweed was recorded within the site so it must be removed as soon as possible to avoid the further spread of this species. A management plan and eradication programme must, therefore, be implemented prior to any works commencing in the site; see Section 6.

6 Recommendations

6.1 Further Investigations Required

6.1.1 Bats

Roosting Bats

Should any works be required within 10m of any boundary trees, additional surveys would be required to further establish the presence/likely absence of roosting bats therein. In the first instance, this should involve a full preliminary roost assessment by a suitable experienced surveyor, followed by a nocturnal survey or endoscopic inspection where potential for roosting bats is recorded. RPS can provide further advice in this instance.

6.1.2 Invasive Species

A full invasive species survey should be conducted across the site in optimal season to fully ascertain the extent and distribution of invasive species (most notably Japanese knotweed) across the site. Following the results of this survey, a management plan for the eradication of this species must be implemented prior to any works starting on site.

6.2 Mitigation

6.2.1 Nesting Birds

The removal of any scrub habitat or trees within the site should be conducted outside of the bird nesting season (March – September) to avoid destroying/damaging active bird nests. Where this is not possible, the works should be preceded by a check by an ecologist to establish whether any birds are nesting within the areas to be cleared. If any active nests are recorded, a suitable 'no-work' buffer zone (to be determined by a suitably experienced ecologist) must be installed around the nest until all chicks have fledged. Only when an ecologist has confirmed the nest is no longer active may works proceed in the area. RPS can provide further advice in this instance.

6.2.2 Badgers

It is considered likely that mammals (including badger) will use the site for foraging during the construction phase of the works. Therefore, during construction phase the presence of open excavations, pipes and site equipment has the potential to cause harm to animals in the local area. To that end, it is recommended that the following precautions are observed;

- Mammal ladders (such as a plank) or earth ramps to be placed in any open excavations at the end of each day;
- Any open pipework to be capped overnight to prevent larger mammals such as badger from accessing the pipe work and becoming stuck;
- Night work should be avoided where possible, and any flood lighting should face away from the site boundaries; and
- Any chemicals or machinery are to be stored in a secure compound.

6.2.3 Bats

Foraging Bats

The vegetated boundaries of the site offer suitable foraging habitat for bats and it would, therefore be best-practice to ensure a suitable buffer corridor (i.e. 10m) is maintained around the boundaries of the site to retain the value of these features to foraging/commuting bats as far as is reasonably practicable. The proposals for the site, however, include the introduction of new access roads into the site along the southern boundary. As this would result in a gap along this boundary, which may interrupt a bat commuting corridor, it is recommended that the gap is

no greater than 10m and, where possible, trees should be introduced as close as possible to the edge of this gap to encourage bat use.

Whilst there would be no significant adverse impacts on foraging/commuting bats if these measures cannot be implemented, given the Low value of the site to foraging/commuting bats, planning policy encourages the retention of valuable biodiversity features to ensure there is no overall loss in biodiversity value through developments.

It should be noted, however, that the introduction of rear gardens and residential units would introduce navigable features within the site, which commuting bats can utilise. This would, in turn, increase connectivity around the site and provide an enhancement for foraging bats. To ensure that the value of these features is maximised, it is recommended that a sympathetic lighting scheme for the site is developed, which would include the following measures:

- Avoid illumination of scrub/trees along the site boundaries;
- No direct illumination of any new roost entrances, whether bat boxes or features on new buildings;
- Use light sources that emit minimal ultraviolet light and avoid white or blue wavelengths to avoid attracting lots of insects (attracting insects to lamps may reduce their abundance in darker foraging areas favoured by bats);
- Individual lamps should be hooded and directed where needed to avoid unnecessary light spillage;
- Use motion detectors to activate security lamps rather than continual flood lighting and if any CCTV security system is proposed, Infra-Red lighting would be preferential.

To avoid impacts to foraging bats night work should be avoided where possible.

It should be noted that the mitigation measures outlined in this report should be used to inform the finalised site layout. They should be revisited upon completion of the final site layout to ensure they are proportionate to the proposals and will remain effective.

6.3 Compensation

6.3.1 Habitats

Any scrub habitat within the site to be lost as a result of the proposals should be replaced on a like-for-like basis. This can be achieved through the introduction of thick shrub (i.e. *Berberis* sp.) within the landscape scheme for the site.

6.4 General Recommendations for Enhancement

In addition to any specific mitigation required to compensate for impacts on protected species or habitats, both national and local planning policy encourages ecological enhancement in all development. Based on the existing ecological value of the site and information available about the proposed development, consideration should be given to the following options.

Table 5: Summary of recommendations for ecological enhancement

Recommendation	Rationale
Introduction of bird nest boxes for Starling	Listed on Red List of Birds of Conservation Concern; in population decline
Introduction of bird nest boxes for House Sparrow	Listed on Red List of Birds of Conservation Concern; in population decline
Introduction of roosting features for bats	Best-practice to increase biodiversity value of site

Appendix A: References

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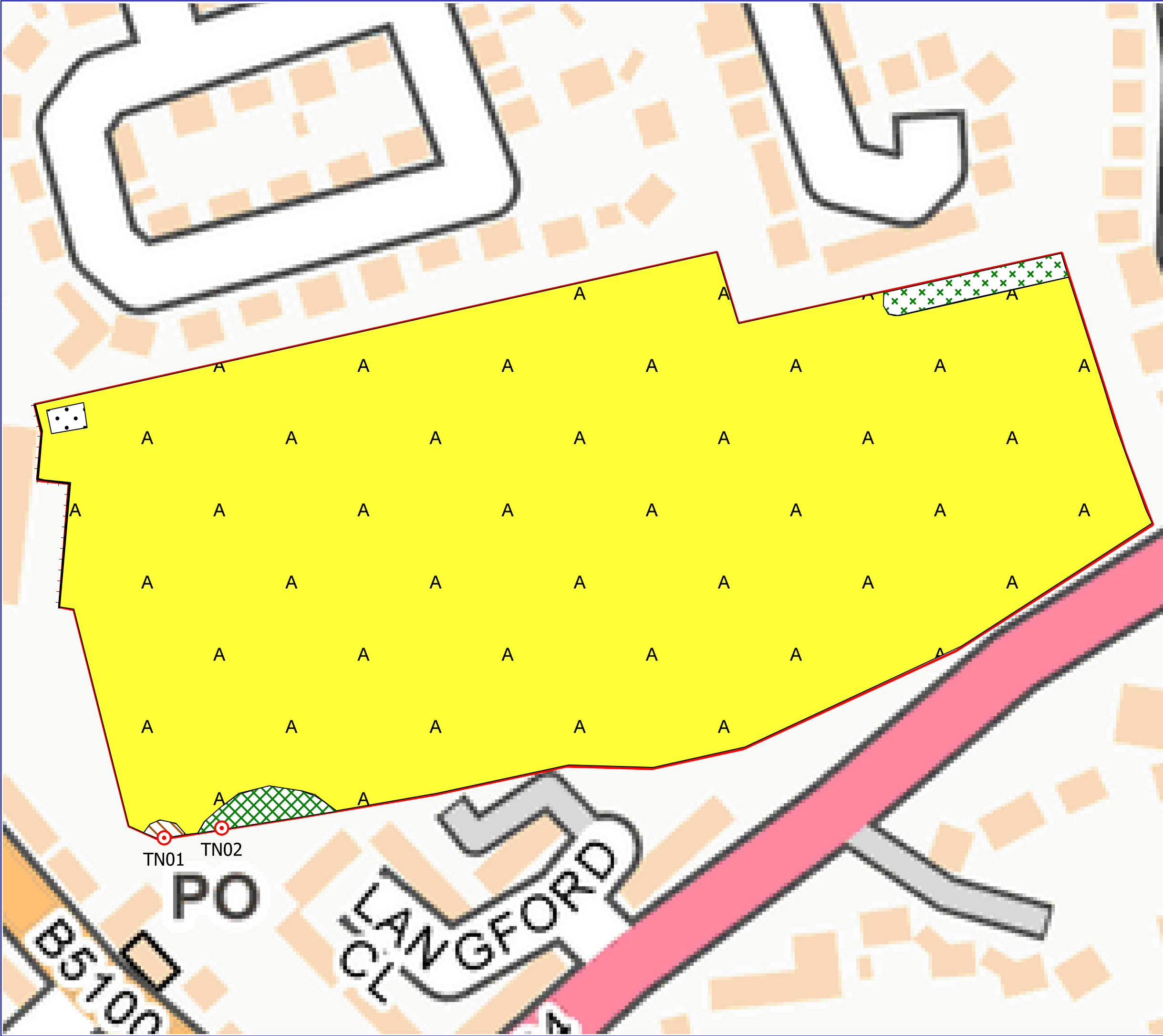
Potential Site Options

Potential Proposed Housing Scheme

Land North of Dean Road, Wrexham



14 | Site Reviews - Wrexham Glyndwr University



Legend

- Site Boundary
- Phase 1 Habitat - Area
 - A2.1 - Scrub - dense/continuous
 - A2.2 - Scrub - scattered
 - C3.1 - Tall ruderal vegetation
 - J1.2 - Amenity grassland
 - J4 - Bare ground
- Phase 1 Habitat - Line
 - J2.4 - Fence
- Phase 1 Habitat - Target Note

Rev	Date	Description	Checked	Authorised
Issue / Revision				
Original Scale			Drawn	
1:1000 @ A3			19.05.2017	
Project title				
OXF10388 Glyndwr University (Dean Road)				
Drawing title				
Appendix C: Phase 1 Habitat Plan				
Client				
Day Architectural Ltd.				
RPS St Paul's House, Enterprise Way, Jubilee Business Park, Stores Road, Derby DE21 4BB T +44(0) 1332 387650 W rpsgroup.com Contains OS data © Crown copyright and database right 2017				
Drawing Number				Rev
OXF10388_01 (Dean Road)				0