

RPS

**PRELIMINARY ECOLOGICAL
APPRAISAL AND INTERIM
PROTECTED SPECIES SURVEY
REPORT**

Gatewen Road, Wrexham
Glyndwr University

15 June 2018

This report is to be considered a draft and therefore any recommendations and mitigation are subject to change upon the completion and results of further surveys.

DRAFT

QUALITY ASSURANCE

Prepared by:	Phillipa Mudd
Surveyors:	Joseph Dance and Phillipa Mudd
Reviewed by:	Peter Watson
Authorised by:	Peter Watson
Date:	15/06/18
Project Number/Document Reference:	ECO00246 (Previously OXF10388/02)
Client:	Glyndwr University, Wrexham

COPYRIGHT © RPS

This report is the copyright of RPS. It remains the property of RPS until such time as payment in full for the services conducted as per the contract of RPS' appointment has been compensated. Unauthorised reproduction or usage by any person is prohibited.

LIABILITY:

The material presented in this report is confidential. This report has been prepared for the exclusive use of Glyndwr University and shall not be distributed or made available to any other company or person without the knowledge and written consent of Glyndwr University or RPS.

To achieve the study objectives stated in this report, we were required to base our conclusions on the best information available during the period of the investigation and within the limits prescribed by our client in the agreement.

No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. Thus, we cannot guarantee that the investigations completely defined the degree or extent of e.g. species abundances or habitat management efficacy described in the report.



St Paul's House, Enterprise Way, Jubilee Business Park, Stores Road, Derby DE21 4BB
T +44(0) 1332 387650 W rpsgroup.com



RPS
Preliminary Ecological Appraisal, Gatewen Road, Wrexham
Glyndwr University

June 2018
Page 3 of 35

1 Executive Summary

RPS Planning and Development Ltd was instructed by Glyndwr University to carry out a Preliminary Ecological Appraisal of the land off Gatewen Road to inform a planning application for development of the site as residential units. The Preliminary Ecological Appraisal was conducted in 2017, with the client (Glyndwr University) instructing the initial surveys at Gatewen Road in 2018. This report provides interim ecological information pending completion of surveys due to planning application time constraints. An addendum detailing any outstanding survey results will be submitted upon completion

Recommendations for mitigation and compensation based on the protected species surveys completed to date are outlined below to negate or minimise potential ecological impacts:

Table 1: Summary of recommendations

Notable Ecological Feature	Consideration	Further Surveys Required ¹	Mitigation, Compensation and Enhancement	Optimal Timings
Bats	Bat boxes present along northern boundary of site attributed to mitigation for adjacent colliery site, some of which are likely to be in place as part of a European Protected Species Mitigation Licence	ACTIVITY SURVEYS CURRENTLY UNDERWAY Emergence surveys of bat boxes if recommendations cannot be met	TO BE CONFIRMED Avoid any adverse impacts to bats such as increased lighting levels or noise disturbance to bat boxes adjacent to the northern site boundary Introduction of bat boxes to enhance site to roosting bats	ONGOING Prior to works During works
Nesting birds	Potential for nesting birds to be present in areas of scrub and trees	No	Vegetation to be cleared outside of nesting season or any areas to be affected to be checked for active nests by the ecologist prior to removal Introduction of bird boxes and landscape features targeting birds of conservation concern to introduce biodiversity enhancements	October – February During works
Badgers	Potential for badgers to excavate a sett within site Potential for badgers to cross construction site	Yes; pre-commencement inspection No	To be confirmed following results of survey Best-practice working methodologies (i.e. mammal ladders etc.)	In the two months prior to work starting During works

¹ Please note that all further surveys should be completed before a planning application is submitted / works commence on site

Notable Ecological Feature	Consideration	Further Surveys Required ¹	Mitigation, Compensation and Enhancement	Optimal Timings
Reptiles	Potential for small numbers to be present in some locations across the site	No	Sympathetic vegetation clearance methods such as 2 phase cut should be implemented at the site alongside supervision by an ecological clerk of works.	During works

DRAFT

CONTENTS

1	EXECUTIVE SUMMARY	4
2	INTRODUCTION AND BACKGROUND	7
3	METHODOLOGY	12
4	RESULTS.....	18
5	EVALUATION	26
6	RECOMMENDATION AND MITIGATION	29
7	REFERENCES.....	32

FIGURES

Figure 1: Site location plan	8
Figure 2: Aerial image of the site and local landscape	9
Figure 3: Dense scrub along northern boundary of site	20
Figure 4: Scattered scrub in centre of site	20
Figure 5: Scattered broad-leaved trees	21
Figure 6: Improved Grassland Field	21
Figure 7: Tall ruderal vegetation along southern boundary of site	22
Figure 8: Post-and-wire fence along western boundary of site	22
Figure 9: Wall within site	22
Figure 10: Bat boxes adjacent to site	24

TABLES

Table 1: Summary of recommendations	4
Table 2: Consulted resources	13
Table 3: Survey visit dates and weather conditions	15
Table 4: Assessment of site value for bats, based on the occurrence of habitat features	15
Table 5: Summary of survey dates and conditions for walked transects	16
Table 6: Summary of Survey Dates and Conditions for Static Monitoring	16
Table 7: Statutory designated sites	18
Table 8: Non-statutory designated sites	18
Table 9: Summary of protected and notable species records	18
Table 10: Summary of recommendations for ecological enhancement	31

APPENDICES

Appendix A: Phase 1 Habitat Plan	33
Appendix B: Species List	34
Appendix C: Bat Activity Plan	
Appendix D: eDNA Results	

2 Introduction and Background

2.1 Purpose and Scope of this Report

RPS Planning and Development Ltd (RPS) was commissioned to assess the potential impacts of a proposed residential development of the land off Gatewen Road, Wrexham. To complete an ecological impact assessment of the proposals, a desk based assessment, Extended Phase 1 Habitat Survey, and a preliminary protected species assessment were carried out. Taken together, in common with the Chartered Institute of Ecology & Environmental Management's (CIEEM) 2017 publication this is termed as a Preliminary Ecological Appraisal Report (PEAR). This assessment is considered 'preliminary' until any required protected species, habitat or invasive species surveys can be completed and the results are then updated into a final 'Ecological Appraisal' or Environmental Impact Assessment (EiA) which can be used to lawfully determine a planning application in line with current planning policy².

The Preliminary Ecological Appraisal was conducted in 2017, with the client (Glyndwr University) instructing the initial surveys at Gatewen Road in 2018. This report provides interim ecological information pending completion of surveys due to planning application time constraints. An addendum detailing any outstanding survey results will be submitted upon completion.

This report is based on a review of the development proposals provided by the client, desk study data (third party information) a survey of the site and initial protected species surveys. This report pertains to these interim 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 Figure 1 and Phase 1 Habitat plan (Appendix 1) plus a buffer zone extended to include the Zone of Influence (Refer to Section 2.3) of the proposals (hereafter referred to as the "site").

The aims of this report are to:

- Classify the habitat types at the sites based on standard Phase 1 Habitat survey methodology;
- Evaluate any potential for protected species to be present;
- Identify any significant ecological impacts likely to result from the proposed development; and,
- Provide recommendations for mitigation and compensation based on the protected species surveys completed to date.

This report pertains to these results only; recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS. The surveys and desk based assessments undertaken as part of this review and subsequent report including the Ecological Appraisal Notes are prepared in accordance with the British Standard for Biodiversity Code of Practice for Planning and Development (BS42020:2013).

2.2 Proposed Site Plans

Current proposals are for the development of approximately 110 residential units and associated infrastructure. Approximately 4.8n hectares of open grassland would be lost to facilitate the works with existing trees being retained under current proposals.

The currently proposed site plan is provided in Appendix B.

² 1Office of the Deputy Prime Minister Circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within The Planning System

2.3 Zone of Influence

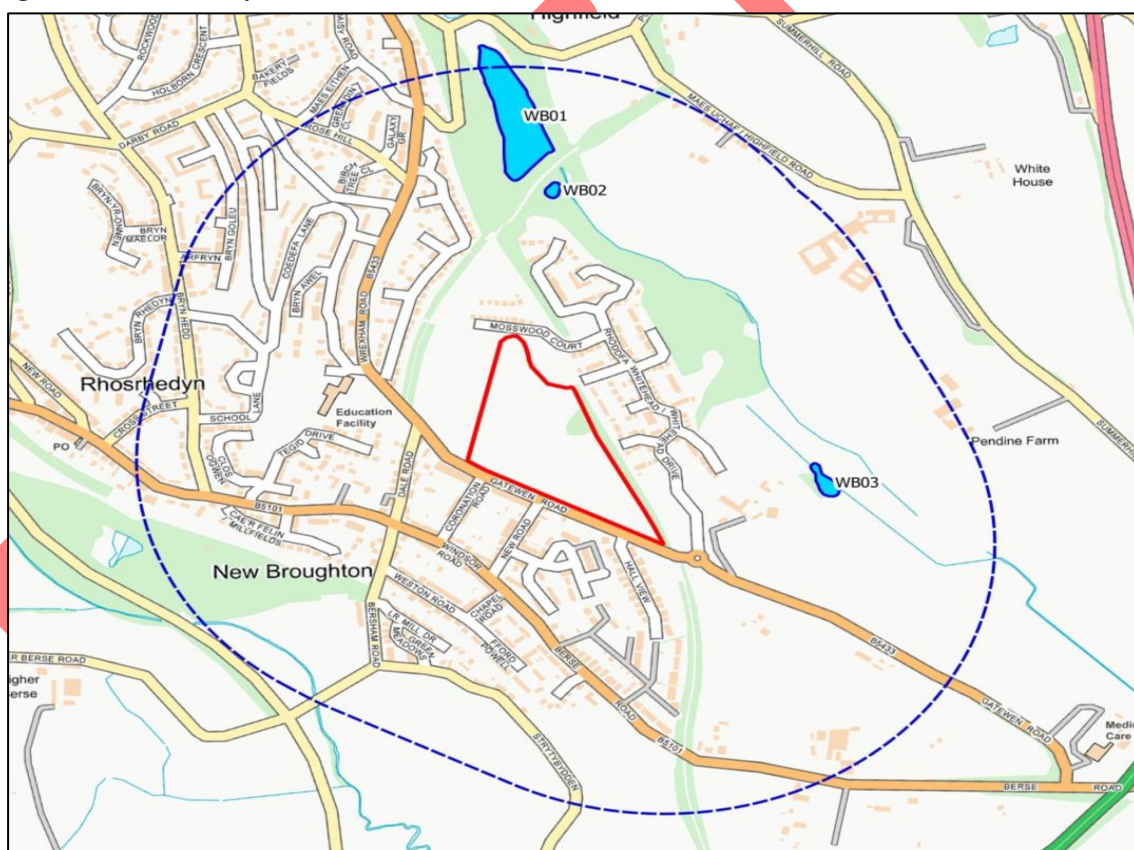
The term Zone of Influence is used to describe the geographic extent of potential impacts of a proposed development. The Zone is determined by the nature of the development and also in relation to individual species, depending on their habitat requirements, mobility and distances indicated in any best 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 comprises approximately 4.8ha of open pasture with tree lined boundaries and small copses to the north west of Wrexham, central grid reference SJ 31259 51578. At the time of survey, the site comprised horse-grazed pasture bound by tree lines. The adjacent land use is a mixture of residential development, pasture and woodland. The location in a local context is illustrated on Figure 1 below:

Figure 1: Site location plan



© Crown Copyright and Database Rights 2013 Ordnance Survey

(red line denotes site location and dotted blue line illustrates the zone of influence)

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 forms part of a mosaic of habitats within a mixed-use landscape. Lines of trees and areas of woodland also provide connectivity to distant parcels of woodland and water features. An ongoing residential development site also sits to the immediate east of the site and has been subject to ecological surveys and mitigation.

Figure 2: Aerial image of the site and local landscape

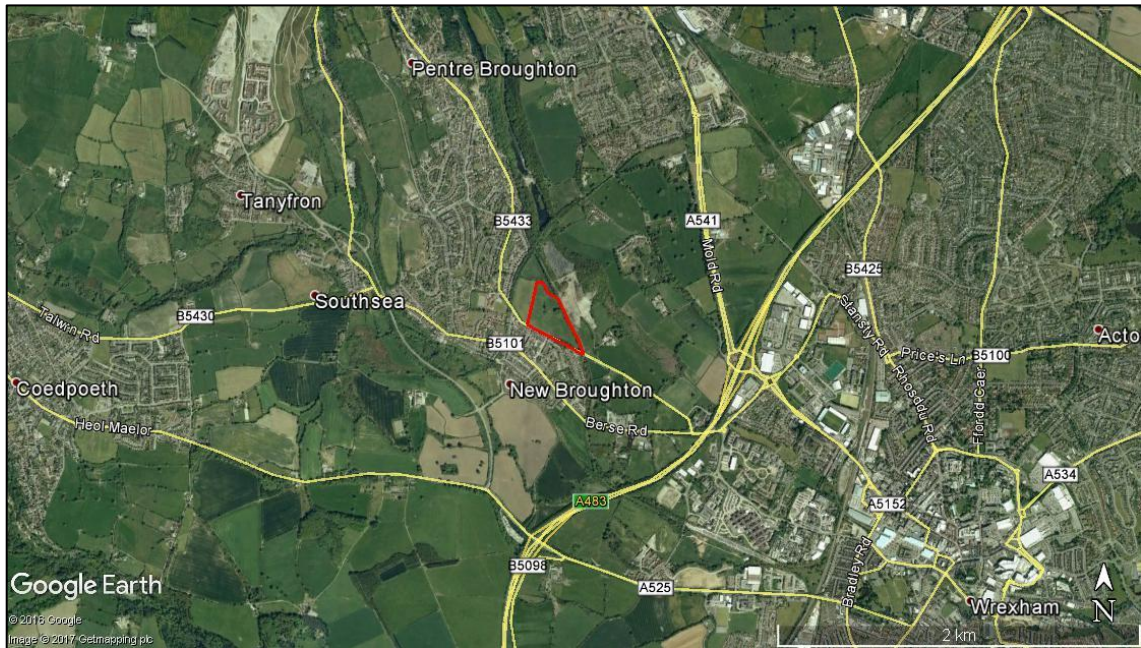


Image reproduced from Google Earth Pro.

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 City Council);
- The Conservation of Habitats and Species Regulations 2017;
- 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.

2.5.2 Great Crested Newt (GCN)

GCN are fully protected under Schedule 2 of the Conservation of Species and Habitats Regulations (2010) and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Combined, these acts make it an offence to:

- Kill, injure or take a great crested newt (or attempt to);
- Destroy any place where they live or breed;
- Damage any one of the above places (or any part of it);
- Obstruct access to these places;
- Disturb a great crested newt in any place it uses for shelter;
- Disturb the species such that it affects its ability to hibernate or migrate;
- Sell/ exchange (or offer for sale/exchange) any part of a great crested newt, live or dead.

Offences can be deliberate, intentional or reckless and penalties for any of the above include fines of up to £5k and imprisonment of up to 6 months, per animal affected.

At the local level, the site falls within the area covered by the Bedfordshire and Luton Biodiversity Action Plan (BAP), in which GCN are identified as a Priority Species. GCN are also listed in Section 41 of the NERC Act 2006 as Species of Principal Importance; national objectives & targets include the maintenance of the geographical range and viability of existing great crested newt populations to ensure that it remains in favourable conservation status.

Under the NPPF the presence of a protected species such as GCN is a material planning consideration. The Framework states that impacts on protected species arising from development proposals must be avoided where possible or adequately mitigated for and that opportunities for ecological enhancement should be sought.

2.5.3 Bats

All UK species of British bats are fully protected under *The Conservation of Habitats and Species Regulations 2010* (as amended). The Regulations prohibit:

- Intentionally, recklessly or deliberately kill, injure or take a bat;
- The deliberate disturbance of any bat species in such a way as to be significantly likely to affect:
 - Their ability of to survive, hibernate, migrate, breed, or rear or nurture their young; or;
 - The local distribution or abundance of that species.
- Damage or destruction of a breeding site or resting place (roost);
- The possession or transport of bats or any other part of.

Bats are also protected under the *Wildlife and Countryside Act 1981* (as amended) through their inclusion in Schedule 5. Under the Act, they are protected from:

- Intentional or reckless disturbance (at any level);
- Obstruction of access to any place of shelter, breeding or rest;
- Selling, bartering or exchange of these species, or parts of.

Seven British bat species are listed as Species of Principal Importance (SPI) under the *Natural Environment and Rural Communities (NERC) Act 2006*. These are barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, greater horseshoe *Rhinolophus ferrumequinum* and lesser horseshoe *Rhinolophus hipposideros*.

2.5.4 Badger

Badgers are protected under the Protection of Badgers Act 1992. This act is based on the need to protect badgers from baiting and deliberate harm or injury. The act makes it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so;

- 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 routes.

A sett is defined as “any structure or place that displays signs indicating current use by a badger”.

2.5.5 Birds

The Wildlife & Countryside Act 1981 (as amended) protects wild birds, their nests and young. The Act makes it an offence to intentionally or recklessly kill, injure or take any wild bird, or damage or destroy the nest whilst being built or in use, or the eggs of breeding birds. Species listed on Schedule 1 of the Act, including barn owl, are further protected to include the intentional or reckless disturbance of birds and their dependant young whilst at or near the nest as an offence.

DRAFT

3 Methodology

3.1 Impact Appraisal

The overall ecological appraisal is based on the standard best practice methodology provided by the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017). 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.

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

The methodology for evaluation of the nature conservation value of ecological features affected by development (ecological receptors) is adapted from the current Chartered Institute of Ecology & Environmental Management guidelines for Ecological Impact Assessment (CIEEM, 2016). These guidelines recommend assignment of value (or potential value) to ecological receptors in accordance with the following scale:

- I. International;
- II. UK;
- III. National (i.e. England/Northern Ireland/Scotland/Wales);
- IV. Regional;
- V. County (or Metropolitan - e.g. in London);
- VI. District (or Unitary Authority, City, or Borough);
- VII. Local or Parish; and/or
- VIII. within immediate zone of influence only.

Following on from the above, 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

In appraising any impacts, the review considers the client's site proposals and any subsequent recommendations made are proportionate and appropriate to the site and have considered the Mitigation Hierarchy as identified below:

Avoid: Provide advice on how the development may proceed by avoiding impacts to any species or sites by either consideration of site design or identification of an alternative option.

Mitigate: Where avoidance cannot be implemented mitigation proposals are put forward to minimise impacts to species or sites as a result of the proposals. Mitigation put forward is proportionate to the site.

Compensate: Where avoidance cannot be achieved any mitigation strategy will consider the requirements for site compensatory measures.

Enhance: The assessment refers to planning policy guidance (e.g. NPPF) to relate the ecological value of the site and identify appropriate and proportionate ecological enhancement in line with both national and local policy.

When describing impacts on ecosystem structure and function, reference is made to the following aspects where appropriate:

- I. extent;
- II. magnitude;
- III. duration;
- IV. reversibility;
- V. timing and frequency; and
- VI. cumulative effects.

Understanding the nature of the impact enables determination of the effect on the ecological integrity of the ecological receptor. This in turn is assessed against the importance of the receptor to determine the significance of the effect on nature conservation interests as being (i) not significant, or (ii) a significant positive or adverse impact.

3.2 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 ³	Statutory Site Designations	International	5km
		National	2km
	NERC 2006 Habitats of Principal Importance		1km

3.3 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).

3.3.1 Surveyor

The habitat survey was carried out by Joseph Dance BSc Hons GradCIEEM and Michelle Cullimore-Pike BSc (Hons) MSc. Both have been professional ecologists for over three years and are appropriately experienced to carry out this type of survey.

The protected species surveys were led by Phillipa Mudd BSc (Hons) MSc and assisted by Rose Poston-Saynor and Lucy Boyer. Phillipa has been a professional ecologist for three years and is appropriately qualified to carry out this type of survey.

3.3.2 Hedgerow Assessments

Hedgerows on site were assessed using the Hedgerow Evaluation and Grading System (HEGS) (Clements & Tofts, 1992). This method of assessment includes noting canopy species composition, associated ground flora and climbers, structure of the hedgerow including height, width and gaps, associated features including number and species of mature trees, banks, ditches and grass verges.

Each hedgerow is given a grade using HEGS with the suffixes '+' and '-', representing the upper and lower limits of each grade respectively. These grades represent a continuum on a scale from 1+ (the highest score and denoting hedges of the greatest nature conservation priority) to 4- (representing the lowest score and hedges of the least nature conservation priority) as follows:

- Grade 1 – High to very high value
- Grade 2 – Moderately high to high value
- Grade 3 – Moderate value

³ Multi Agency Geographic Information for the Countryside Interactive GIS Map.

- Grade 4 – Low value

Hedgerows graded 1 or 2 are considered to be a priority for nature conservation.

The hedgerows were also assessed against the Wildlife and Landscape criteria contained within The Hedgerow Regulations 1997 to determine whether they qualified as 'Important Hedgerows' under the Regulations. This was achieved using a methodology in accordance with both the Regulations and DEFRA guidance.

3.4 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.

3.4.1 Great Crested Newt (GCN)

Environmental DNA

Environmental DNA (eDNA) testing is a survey technique that can determine the presence or absence of great crested newt (GCN) in ponds. GCN DNA is released into aquatic environments through shed skin cells, urine, faeces and saliva. It can persist in water for several weeks and a test has been developed for detecting the eDNA of the species in water samples.

Water samples must be gathered between 15th April and 30th June and sent to an accredited laboratory⁴ for analysis, which can take up to several weeks. To avoid potential timing issues associated with the processing of the eDNA, presence/absence surveys were conducted alongside the testing to avoid delays if a positive result was received. The survey methods and conditions are detailed below.

Presence / Likely Absence Surveys

The survey followed industry standard best practice guidelines (English Nature, 2001) and comprised two survey visits during the period May to June 2018.

As GCN were recorded within the ponds within 500m of the site, six survey visits were carried out to allow a population size class estimate to be made.

The survey methods comprised a combination of the following approaches:

- Torching – 1 million candlepower torches was used to illuminate the pond after dusk and any amphibians seen were recorded. Particular attention was paid to any marginal vegetation or potential display areas within the pond;
- Bottle trapping – bottle traps were placed along the accessible margins of areas of open water around the edge of the pond, approximately every 2m. Traps were set early in the evening and collected early the following morning. Any animals captured were identified and immediately released back into the pond.
- Egg search – vegetation along the water margin was searched for the presence of newt eggs. Due to the invasive nature of this survey method, egg searching is discounted following discovery of the first GCN egg in any pond.

⁴ An accredited laboratory analyses eDNA according to Technical Advice Note WC1067 and participates in Natural England's Proficiency Testing Scheme.

Where any of these above methods was not possible, then netting was used as an alternative. Environmental variables such as overnight temperature, turbidity of water and vegetation cover were noted on survey forms.

Numbers of any GCN encountered were recorded on each occasion, together with life-stage (adult/ juvenile) and sex, where this could be determined.

In accordance with Natural England guidance, the highest adult count from the six visits / per metapopulation recorded was then used to estimate GCN population size class. Population size classes are defined as follows:

- Small: maximum counts of up to 10 adults;
- Medium: maximum counts between 11 and 100 adults;
- Large: maximum counts of over 100 adults.

Records of other species were also noted, including any fish or common amphibians, such as smooth newt *Lissotriton vulgaris* or palmate newts *L. helveticus*, common frogs *Rana temporaria* and common toads *Bufo bufo*.

Table 3: Survey visit dates and weather conditions

Visit	Date	Min overnight temp	Weather	Surveyors ⁵
1	29 th May 2018	13°C	6/8cc, no rain, B1	Phillipa Mudd (licence no. 2018-34243-CLS-CL) & Rose Poston- Saynor
2	6 th June 2018	12°C	2/8cc, no rain, B1	Rose Poston-Saynor & Lucy Boyers

3.4.2 Bats

Nocturnal Bat Activity Surveys (Transect and Automated Monitoring)

The overall value of the site for foraging and/or commuting bats was assessed based on the occurrence and connectivity of suitable habitat features, as detailed in the standard best practice methodology (Collins, J., 2016). A summary of the site value assessment and associated habitat features are outlined in Table 4 below.

Table 4: Assessment of site value for bats, based on the occurrence of habitat features

	Description of feature
Low	No features likely to be used by bats (for roosting, foraging or commuting) Small number of potential (opportunistic) roost sites (i.e. probably not maternity roosts or hibernacula). Isolated habitat that could be used by foraging bats (e.g. a lone tree or patch of scrub – not parkland) Isolated site not connected by prominent linear features to suitable adjacent/other foraging habitat Several potential roost sites in buildings, trees or other structures Habitat could be used by foraging bats (e.g. trees, shrub, grassland or water) Site is connected with the wider landscape by linear features that could be used by commuting bats (e.g. lines of trees and scrub or linked gardens) Buildings, trees or other structures (e.g. mines, caves, tunnels, ice houses and cellars) of particular significance to roosting bats Site includes habitat of high quality for foraging bats (e.g. broadleaved woodland, tree-lined watercourses and grazed parkland)

⁵ For every licensed surveyor, an additional assistant was used for health and safety purposes.

High	Site is connected with the wider landscape by strong linear features that could be used by commuting bats (e.g. river valleys, streams, hedgerows) Site is close to known roosts Bats recorded or observed using an area for foraging or commuting close to a potential roost
Confirmed presence	Evidence indicates that a building, tree or other structure is used by bats (e.g. bats seen roosting or observed flying from a roost or freely in the habitat; droppings, carcasses, feeding remains etc. found; and/or bats heard 'chattering' inside a roost on a warm day or at dusk.

Transect Surveys

A nocturnal transect route taking in all the habitat types at the site was devised. The initial transect survey was conducted on 14th June 2018. The surveyors were equipped with a hand-held BatBox Duet II bat detector for identification of bats in the field and an EM3+ with the capability to record bat calls for later sonogram analysis.

The transect commenced at sunset and continued for approximately 2 hours. Fixed point counts were taken for periods of approximately five minutes at appropriate intervals during each transect to effectively assess activity within different areas at the site.

Table 5: Summary of survey dates and conditions for walked transects

Date	Surveyors	Start / end time	Sunrise / sunset time	Survey conditions
15.06.18	Rose Poston-Saynor & Amy Tose	21:39 – 11:44	21.39	1/8cc, B1, no rain

Static Monitoring

Two AnaBat SD2 automated bat detectors were left in situ at the site to record bat calls at two specific points along the transect route for a period of 5 days.

Table 6: Summary of Survey Dates and Conditions for Static Monitoring

Dates	Start/ end time	Sunrise / sunset time	Survey conditions
9.10.2017- 23.10.2017	21:09 – 05:15	Sunset: 21.39 Sunrise: 04:45	TBC

3.5 Limitations

3.5.1 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.

3.5.2 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's boundaries could not be directly accessed to survey so a thorough visual inspection was made where views permitted.

Due to the late commission of the presence/absence surveys, the two surveys conducted on the ponds at Gatewen Road were not conducted during the peak survey window of mid-April to mid-

May. Given that eDNA testing provided a negative result for GCN presence within the ponds, the slight delay in presence/absence surveys is not considered to be a significant constraint.

3.5.3 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 two years, notwithstanding any considerable changes to the site conditions.

DRAFT

4 Results

4.1 Desk Based Assessment

Two statutorily designated sites were recorded within the search area identified in Section 3.1. Details of these are provided in Table 7 below.

Table 7: Statutory designated sites

Site name	Designation	Location	Brief description
Gatewen Marsh	SSSI ⁶	220m E	Significant example of the “southern mesotrophic mires” wetland type
Johnstown Newt Sites	SAC ⁷	4.1km S	Noted for its nationally significant Great Crested Newt (GCN) population

Five non-statutorily designated sites were also identified, details of which are provided in Table 8.

Table 8: Non-statutory designated sites

Site name	Designation	Location	Brief description
Moss Valley (site ref: W311)	LWS ⁸	50m to N	Well wooded valley slopes with adjoining grassland
New Broughton Meadow (site ref: W334)	LWS	280m to SW	Site with variety of semi-natural habitats, including pond and wet alder/willow carr
Berse Drelincourt (site ref: W335)	LWS	650m to S	Small site with mosaic of semi-natural habitats, including grassland and woodland with a stream
Higher Berse Marsh (site ref: W333)	LWS	680m to SW	Marsh and marshy grassland
Afon Gwenfro (site ref: W213)	LWS	1km to W	Reclaimed coal site with grasslands and scrub

The closest NERC (2006) Habitat of Principal Importance is deciduous woodland, located c. 50m from the survey area.

Protected species records were received from COFNOD. A summary of the records considered most relevant to the site are provided in Table 9. A full species list is available on request.

Table 9: Summary of protected and notable species records

Species	Most Recent record	Closest Record to Site	Total Number of Records	Conservation Status
Amphibian				
Great crested newt	2017	270m to N	113	Fully protected EPS9, NERC 2006
Palmate newt	2017	270m to N	2	Partially protected under WCA 1981 ¹⁰

⁶ SSSI – Site of Special Scientific Interest

⁷ Special Area of Conservation

⁹ European Protected Species (EPS), protected by the Conservation of Habitats and Species Regulations 2010 (as amended) and the wildlife and countryside act 1981

¹⁰ Protected from sale and advertising for sale under the Wildlife and Countryside Act 1981 (as amended)

Species	Most Recent record	Closest Record to Site	Total Number of Records	Conservation Status
Smooth newt	2017	1.2km to NNE	47	Partially protected under WCA 1981
Mammal				
Soprano pipistrelle	2015	Adj to site ¹¹	3	Fully protected EPS, NERC 2006
Common pipistrelle	2013	0.4km to NW	9	Fully protected EPS
Unknown bat species	2002	0.5km to NW	5	Fully protected EPS
Noctule	2015	0.6km to SSE	1	Fully protected EPS, NERC 2006
Brown long-eared bat	1999	1.1km to SSW	1	Fully protected EPS, NERC 2006
Badger	2017	Over 600m from site	8	PBA12
Reptile				
Common lizard	2010	1.6km to NE	1	Partially protected under WCA 1981 ¹³ , NERC 2006
Birds				
Bullfinch	2017	450m to ESE	6	Amber List (BoCC ¹⁴)
Mistle thrush	2015	480m to NW	6	Red List (BoCC)
Song thrush	2015	480m to NW	9	Red List (BoCC)
Starling	2015	480m to NW	7	Red List (BoCC)
Swift	2015	480m to NW	21	Amber List (BoCC)
Tree sparrow	2013	480m to NW	1	Red List (BoCC)
Dunnock	2015	640m to SSW	10	Amber List (BoCC)
House sparrow	2016	640m to SSW	13	Red List (BoCC)
Kestrel	2016	640m to SSW	7	Amber List (BoCC)
Cuckoo	2013	1.8km to ENE	4	Red List (Birds of Conservation Concern – BoCC)

Full species records are available to view upon request.

4.2 Habitat Survey Results

The site was dominated by species-poor pasture but also contained a narrow range of several different habitat types, as described under the individual sub-headings below. No protected, notable or invasive plant species were recorded.

4.2.1 Dense Scrub

Several patches of this habitat type were recorded around the boundaries of the site; most notably along the northern boundary where the marginal vegetation of the adjacent woodland had spilled over the fencing into the site; see Figure 3. These areas were largely dominated by hawthorn *Crataegus monogyna* but with some occasional blackthorn *Prunus spinosa*. Other occasional species within this compartment were elder *Sambucus nigra*, bramble *Rubus fruticosus* agg., holly *Ilex aquifolium*, hazel *Corylus avellana* with some sycamore *Acer pseudoplatanus* and hornbeam *Carpinus betulus* trees. The ground flora in this area was noted to comprise Spanish or

¹¹ A small soprano pipistrelle roost was recorded in a disused railway bridge adjacent to the site in 2007; this roost was subsequently dismantled

¹² Protection of Badgers Act 1992

¹³ Protected from killing and injury under the Wildlife and Countryside Act 1981 (as amended)

¹⁴ Birds of Conservation Concern

hybrid bluebells *Hyacinthoides sp.*, wild mustard *Sinapis arvensis*, hedge bindweed *Calystegia sepium*, common hogweed *Heracleum sphondylium*, cleavers *Galium aparine* and dog's mercury *Mercurialis perennis*. The woodland adjacent to the site was outside of the site's boundaries so was not surveyed.

A small strip of dense bramble scrub was also noted along the southern boundary of the site adjacent to Gatewen Road.

Figure 3: Dense scrub along northern boundary of site



4.2.2 Scattered Scrub

Small patches of loose hawthorn scrub were noted along the western boundary of the site adjacent to the fence line. Another patch of scattered scrub was noted in the centre of the site, growing on a west-facing bank. The species present in this area were hawthorn, elder, immature ash *Fraxinus excelsior* and sycamore trees and saplings and some blackthorn. The ground cover in this area varied between bare earth and grassland but with some dense patches of wild garlic *Allium ursinum* and native bluebells; see Figure 4 below for an overview of this area.

The remnants of a red brick building were also recorded within this area and this area is discussed, along with photographs, in Section 4.3 of this report. For location see Target Note 01 (TN01) in Appendix B.

Figure 4: Scattered scrub in centre of site



4.2.3 Scattered Broad-leaved Tree

A small copse of broad-leaved trees was recorded along the eastern boundary of the site and was an extension of the woodland which ran along the entirety of the eastern boundary; see Figure 5. The species present within were sycamore, ash and oak *Quercus sp.*, with a ground cover of sparse elder and hawthorn. The remnants of an old red brick circular structure were also recorded in this area; a photograph and discussion of this feature is provided in Section 4.3. For location see TN02 in Appendix B.

Figure 5: Scattered broad-leaved trees



4.2.4 Improved Grassland

This habitat type dominated the coverage of the site and the structure of the grassland was predominantly short-sward but with some unmanaged areas that had a richer diversity of species. The field was subject to apparently regular horse grazing. The species composition was dominated by meadow buttercup *Ranunculus acris*, and meadow foxtail *Alopecurus pratensis* with frequent cock's foot *Dactylis glomerata*, creeping buttercup *Ranunculus repens*, ribwort plantain *Plantago lanceolata* (locally abundant), greater plantain *Plantago major*, ragwort *Jacobaea vulgaris*, daisy *Bellis perennis*, red clover *Trifolium pratense* (locally abundant), common sorrel *Rumex acetosa*, Yorkshire fog *Holcus lanatus*, sweet vernal grass *Anthoxanthum odoratum* (locally abundant, most notably in the northwest), common mouse-ear *Cerastium fontanum*, chickweed *Stellaria media*, dandelion *Taraxacum officinale* sp., yarrow *Achillea millefolium*, forget-me-not *Myosotis* sp., speedwell *Veronica* sp., and some cow parsley *Anthriscus sylvestris* around the margins.

Figure 6: Improved Grassland Field



4.2.5 Tall Ruderal Vegetation

Narrow strips of this habitat type were noted along the southern boundary of the site and also around the perimeter of the scattered scrub in the centre of the site. The species present were common nettle *Urtica dioica*, broad-leaved dock *Rumex obtusifolius*, meadow buttercup, creeping thistle *Cirsium arvense* and common hogweed.

Figure 7: Tall ruderal vegetation along southern boundary of site



4.2.6 Wall / Fence

A combination of post-and-wire and post-and-rail fencing comprised the boundaries of the site and the walls of a partially-demolished brick structure were also recorded within the site; see Figures 8 and 9.

Figure 8: Post-and-wire fence along western boundary of site



Figure 9: Wall within site



4.3 Preliminary Protected / Notable Species Assessment

4.3.1 White-clawed Crayfish, Water Vole and Otter

No aquatic habitat with the potential to support any of these species was recorded either within or adjacent to the site and the likelihood of the presence of this species within the site is, therefore, considered to be negligible. There would be no adverse impacts on these species as a result of any development within the site and there is no recommendation for further survey, mitigation or licensing. They will not be considered further in this report.

4.3.2 Great Crested Newt (GCN)

Terrestrial Habitat Assessment

During the initial PEA conducted in 2017 (ref: OXF10388_02), a total of three standing bodies of water were identified within the 500m Zone of Influence. Of these waterbodies, WB02 had previously been subject to presence/absence surveys for GCN in 2007 in relation to an adjacent development¹⁵. A single GCN was recorded in this waterbody across the survey visits and as a result, a GCN mitigation licence was acquired in order for the adjacent development at the former colliery site to proceed (development ref: BRO P/2008/1066 and BRO P/2007/0700). WB01 and WB03 were not previously surveyed. Desk study also highlighted the widespread presence of this species in the surrounding landscape. The mitigation package for the adjacent colliery development site included details for the provision of waterbodies which were identified as retention ponds during the 2018 surveys. Of these ponds, only one contained water at the time of the surveys and was added to the survey effort.

The grassland across the site was considered to be of little value to this species due to the short-sward and open nature but the areas of dense scrub and woodland along the northern boundaries of the site were considered to provide suitable commuting corridors, along with providing suitable foraging habitat. In addition, the rubble piles and brick foundations associated with the brick structures within the site were also considered to provide suitable refugia and hibernacula sites.

Presence/Absence and eDNA

During the presence/absence surveys, no GCN were recorded within any of the ponds identified within 500m of the proposed development. In conjunction, the results of the eDNA testing for all four ponds was negative. Results of the eDNA testing can be found in Appendix D.

4.3.3 Birds

The majority of the site comprised short-sward grassland which was considered to be unsuitable for all species of nesting birds, although this grassland would provide suitable foraging habitat for a range of red-listed species such as song thrush, starling (a number of young fledglings were observed in trees on the northern boundary of the site), mistle thrush and over-wintering Schedule 1 species fieldfare *Turdus pilaris* and redwing *Turdus iliacus*.

The areas of scattered/dense scrub within the site and trees directly adjacent to it were, however, noted to provide suitable habitat for a range of nesting birds, including those listed under the Amber and Red List of Birds of Conservation Concern, i.e. bullfinch, dunnock, song thrush and mistle thrush. Cuckoo was also identified within 2km of the site by desk study and research¹⁶ has shown that this species utilises dunnock nests as a host for its own egg. The likelihood of the presence of this species within the site is considered to be very low, however, given the residential nature of the neighbouring landscape. Similarly, the likelihood of the presence of hobby within the site is considered to be very low.

¹⁵ Report ref: Hiremade Furbs and Fifers 11 Ltd – Gatewen Colliery, Wrexham: Great Crested Newt Mitigation Strategy – Background and Supporting Information – dated February 2009.

¹⁶ Ferguson-Lees, J., Castell, R. & Leech, D. (2011) *A field guide to monitoring nests*. BTO

4.3.4 Badgers

No badger setts or other evidence of badger activity was recorded either within or adjacent to the site, although suitable habitat for sett excavation was recorded with areas of scattered/dense scrub and also in the adjacent woodland. The grassland across the site was also considered to provide suitable foraging habitat for this species.

4.3.5 Bats

Buildings and Trees

None of the built structures or trees within the site contained any features with the potential to support roosting bats and they were, therefore, considered to provide **Negligible** roosting potential. The mature trees outside of the southern and northern boundaries of the site were not fully inspected to ascertain their potential to support roosting bats so the presence of roosting bats within these trees cannot be ruled out.

A large number of bat boxes (both summer roost and hibernation roost boxes) were recorded on trees adjacent to the northern boundary of the site (for approximate location see TN03 in Appendix B); see Figure 10 below. Some of these boxes are likely to have been installed in association with the mitigation package for the licence associated with the adjacent development site. A review of the documentation for the adjacent development showed the mitigation was compensation for a small soprano pipistrelle roost which was present within a disused railway bridge adjacent to the site that was subsequently removed as part of the works.

Figure 10: Bat boxes adjacent to site



Bat Foraging Habitat

The majority of the site was open, short-sward grassland which was considered to provide very low value for foraging and commuting bats. The northern and part of the southern boundary of the site was tree-lined and connected to adjacent woodland, thus providing suitable connectivity to adjacent land and a foraging resource in itself. The areas of trees and scrub within the site were also noted for their suitability for foraging/commuting bats.

Based on the presence of small amounts of suitable foraging habitat within the site and connectivity to adjacent land through strong linear features, the site was assessed as providing **Moderate** value for foraging bats but this was associated with the northern and southern boundaries.

Transect Survey Results

14.06.2018

Activity commenced at 22:06 during the transect, with activity continuing throughout the survey. The majority of the calls recorded during the survey were common pipistrelle *Pipistrellus Pipistrellus*, with Soprano pipistrelles and Noctule also recorded. A total of 30 bat calls were recorded during the survey.

The route of each transect is depicted in Appendix C along with the locations of the bat calls recorded during the surveys. Not all bat activity was observed (i.e. bats heard but not seen) and whilst the location of the bat recording has been mapped, this reflects the position of the recording device and only an approximate location of individual bats.

Static Monitoring

PENDING DATA COLLECTION

4.3.6 Reptiles

The short-sward grassland within the site was considered to be sub-optimal for all species of reptile given the lack of cover from predators. The area of scattered scrub in the centre of the site was, however, considered to provide suitable habitat for basking (i.e. in association with rubble piles) and also refugia/hibernacula. The woodland edge along the northern boundary of the site may also provide a commuting route for reptiles through the landscape. No reptiles were recorded during previous surveys of the adjacent colliery site¹⁷; with a single record of common lizard over 1.6km from the site identified in the desk study.

4.3.7 Other Notable Fauna Species

A medium-sized population of palmate newts was recorded in WB02 through the presence/absence surveys conducted in 2007 and as with GCN, the site contained habitat with the potential to support this species but this was largely restricted to the northern boundary and areas of scattered trees and scrub within the site.

¹⁷ Report ref: Hiremade Furbs and Fifers 11 Ltd – Gatewen Colliery, Wrexham: Ecological Appraisal – dated February 2009.

5 Evaluation

5.1 Habitats and Botanical Value

5.1.1 Designated Conservation Sites (Statutory and Non-Statutory)

The statutory and non-statutory sites identified within the search parameters defined in Section 3.1 are considered to be sufficiently distant to avoid any indirect impacts as a result of the proposed development. The SAC (Johnstown Newt Site) identified 4km from the site is considered to be of sufficient distance from the site to avoid any adverse impacts to GCN populations present. It is therefore considered that the development does not pose any negative impact to the designated sites and therefore no further constraints apply to this regard.

It should be noted that the site is located within a SSSI Impact Risk Zone but does not fall into the criteria for developments which would require further consideration.

5.1.2 Semi-natural Broad-leaved Woodland

The woodland was recorded outside of the site's boundary, therefore there would be no direct impacts on the habitat as a result of the development. The lighting design for the construction and operational phase of the development must, however, avoid any direct light spillage greater than 1 lux onto this habitat given its value for nocturnal species such as bats. This is discussed further in Section 5.2.3 of this report.

5.1.3 Scattered Trees

Although afforded no specific protection, the trees within the site provide important habitat structure for wildlife and should be retained where possible, as is currently proposed. Where this is not possible, it would be best-practice to replace any tree loss on a like-for-like basis to ensure there is no net loss in the biodiversity value of the site as a result of the proposed development; see Section 6.

5.2 Protected and Notable Species

5.2.1 Great Crested Newts

During surveys conducted in 2007, a small population of GCN was confirmed present in WB02 located approximately 260m to the north of the site with habitats on site considered to offer some limited terrestrial habitat for GCN. As such, eDNA testing and two initial presence/absence surveys were conducted on the three ponds identified in 2017, plus an additional pond identified in 2018.

The results of the eDNA testing were negative for all of the ponds surveyed, with no instances of GCN being recorded in the two presence/absence surveys conducted. As such, it is considered that GCN are not breeding in the ponds within 500m of the site and therefore it is considered highly unlikely GCN be present within the proposed development.

No further investigation for GCN is considered necessary at this time.

5.2.2 Bats

Roosting

No features with the potential to support roosting bats would be directly impacted as a result of the proposed development and there would be no constraints to this regard for any removal of trees or brick structures within the site.

It is considered the bat boxes adjacent to the northern site boundary have the potential to support roosting bats, therefore any works that may impact these boxes such as increased light levels, increased noise disturbance through nearby construction activity and for bats to be prevented from accessing a roost site if construction activity completely deters bats from roosting in these boxes. Any of these consequences would be an offence under current legislation. If impacts to these bat boxes cannot be avoided, further surveys may be required (see Section 6.1.1).

Foraging

The site was assessed as offering **Moderate** foraging habitat for bats. As the planning design could not comply with the recommended retention of a 20m strip of wildlife corridor along northern boundary of site to protect roosting bats and to retain value of site to foraging/commuting bats, bat activity surveys were recommended to assess the levels of bat activity within the site.

FURTHER EVALUATION FOR FORAGING BATS WILL BE PROVIDED UPON COMPLETION OF RECOMMENDED SURVEYS

A sympathetic lighting design must also be implemented throughout the construction and operational phase of the proposed development to ensure the value of the site to foraging/commuting bats is retained; see Section 6.

There is also opportunity to enhance the site for roosting bats through the introduction of bat boxes on retained trees or incorporated into new residential units; see Section 6 for enhancement measures.

5.2.3 Nesting Birds

The vast majority of the site comprises short-sward grassland which offers negligible potential as nesting habitat. Development within this habitat would, therefore, have no impact on nesting birds and there is no recommendation for further mitigation to this regard.

The outline proposals supplied indicate the retention of the boundary features (i.e. dense scrub, trees) and habitats within the site (i.e. scattered scrub, trees) which offer suitable nesting habitat for a wide range of birds. Overall, therefore, there would be no residual adverse impact on nesting birds as a result of the proposed development but mitigation measures must be put in place for any necessary vegetation clearance to ensure all active nests are protected; see Section 6.

It is considered the proposed development provides an opportunity to enhance the site for nesting birds through the introduction of nest boxes targeting species of conservation concern, which would otherwise not nest within the site; see Section 6. Similarly, the implementation of a sympathetic landscape scheme for the site would also enhance the value of the site to nesting birds; see Section 6.

The introduction of rear gardens would also inevitably increase the value of the site to foraging birds through the introduction of insect-attracting plants and bird feeders; enhancement measures have also been recommended in Section 6 to further increase the value of the site to foraging birds wherever possible.

If the mitigation and enhancement measures outline in this report can be implemented in full, it is considered that there would be a net gain in the value of the site to both nesting and foraging birds.

5.2.4 Badgers

Although no evidence of badger activity was recorded during the survey, habitat with the potential to support sett excavation was recorded both within and adjacent to the boundaries of the site and this species is known to be present in the surrounding landscape. There is, therefore, potential for a sett to be excavated between the time of reporting and the commencement of development. A pre-commencement inspection for this species is, therefore, considered necessary to ensure no active setts are impacted as a result of any development within the site; see Section 6.

Although the site was not identified as supporting foraging activity, there is potential for this species to commute across the site. As such, mitigation for the protection of badger and other mammals during the construction phase have been provided in Section 6.2.4.

5.2.5 Reptiles

The site contained a small amount of habitat which was noted to be suitable for reptiles, most notably along the woodland edge along the northern boundary of the site and amongst the areas

of scattered scrub and rubble piles. The vast majority of the site (i.e. short sward grassland) was, however, considered to be unsuitable so any development within the site would not significantly reduce the amount of suitable habitat in the local area and the woodland adjacent to the site would continue to provide a suitable commuting corridor for all species of reptile, thus preventing habitat fragmentation.

As there is some potential for reptiles to be present within the central area of scattered scrub and dense scrub along the northern boundary, however, any vegetation clearance or removal of brick foundations/rubble piles in these areas should be conducted in a manner so as to eliminate the potential of killing or injuring any reptiles, which would be an offence under the Wildlife and Countryside Act; see Section 6.

If the mitigation measures outlined in Section 6 can be implemented in full, it is considered that there would be no overall adverse impacts on the local reptile population; if this is not achievable, further investigation for reptiles may be required.

5.2.6 Other Notable Faunal Species

Small populations of smooth newts were recorded within WB02 and WB04. Whilst this species is only partially protected under the Wildlife and Countryside Act, the habitats which are of value to this species (i.e. scrub, woodland, thick grassland) are also of value to a wide range of other fauna and any site enhancements for this species would also serve to enhance the site for wildlife in general. Recommendations have, therefore, been made for the design of the 'wildlife' buffer along the northern boundary of the site to maximise its value for smooth newts and other wildlife; see Section 6.

DRAFT

6 Recommendation and Mitigation

6.1 Further Investigations Required

6.1.1 Roosting Bats

If the impacts outlined in Section 5.2.3 cannot be implemented, nocturnal surveys of the bat boxes installed adjacent to the northern site boundary should be conducted in order to establish presence/likely absence of roosting bats. It is proposed the nocturnal surveys could be conducted in line with the transect surveys. The result of these surveys would inform any further mitigation or licencing requirements at the site.

6.1.2 Foraging Bats

The site was assessed as providing **Moderate** habitat value for foraging and commuting bats. As the recommended mitigation measures for the retention of a 20m wildlife corridor could not be met, activity surveys at the site were started. The first of these surveys was conducted on 15.06.18 with it being recommended that these surveys be continued once per month up to and including October.

MITIGATION FOR FORAGING BATS WILL BE PROVIDED UPON COMPLETION OF RECOMMENDED SURVEYS

6.1.3 Badger

Due to the transient nature of badgers and the time delays associated with the commencement of works on site, a pre-commencement badger check should be conducted prior to the start of works. Further recommendations for badger will be made as a result of this survey where necessary.

6.2 Mitigation

It should be noted that the mitigation and enhancement measures outlined in this report are indicative at this stage and should be used to inform the finalised site layout and landscape scheme/management of the developed site. Once a final layout has been developed, these mitigation measures should be re-visited and made more specific where necessary to ensure that there are no residual adverse impacts on any species or species groups as a whole.

6.2.1 Herptile

Construction Phase

Sympathetic vegetation and rubble clearance methods such as 2 phase cutting should be implemented and supervised by an ecological clerk of works during the construction phase of the proposed works within the site to protect any reptiles or amphibians which may be present.

Operational Phase

Consideration should also be given to the replacement of any thick scrub/shrub habitat to offset the loss of the suitable foraging/refugia habitat currently present.

Modified kerbs around gully pots should also be installed throughout the developed site to prevent the risk of herptiles becoming trapped. The ACO Wildlife Kerb is a suitable example of such a kerb.

It is also recommended that a 'wildlife' corridor is retained along the northern boundary of the site to ensure that reptiles and amphibians still have a commuting route through and around the site and are not 'trapped' by the introduction of new residential development; see Section 6.2.5 below.

6.2.2 Bats

Roosting Bats

As it is likely that roosting bats are present within the bat boxes along the northern boundary of the site, it is recommended that emergence surveys are implemented at the site to establish usage of the bat boxes present.

RECOMMENDATIONS FOR ROOSTING BATS WILL BE MADE UPON THE COMPLETION OF BAT ACTIVITY SURVEYS

Foraging Bats

RECOMMENDATIONS FOR SYMPATHETIC LIGHTING SCHEMES WILL BE MADE UPON THE COMPLETION OF BAT ACTIVITY SURVEYS

Bats are adept to foraging in low light intensities, therefore it is considered the following guidance for the reduction of impacts caused by the lighting of bat roost / foraging / commuting features, in line with the Bat Conservation Trust (BCT 2009¹⁸) should be adhered to during the construction phase:

- No direct illumination of any new or existing roost entrances, whether bat boxes or features on trees;
- Individual lamps should be hooded and directed where needed to avoid unnecessary light spillage – luminaires have been chosen to minimise light spillage and direct light onto the playing surface;
- The area affected by light spill should be considered, taking into account height of lighting columns and lighting angle – the impacts of light spillage modelled at 1.8m height has been considered;
- The use of asymmetric beam floodlights to reduce horizontal spill – as second point above.
- Low level lighting such as LED's are preferable as they reduce the levels of light spillage (Stone, 2013).

In order to reduce impacts to common and widespread bat species as far as possible, proposed light spillage onto the tree lines has been reduced to as low a lux level as possible. Under the current lighting scheme, lux levels on the trees along the northern boundary have been reduced to 18.4 lux at 1.8m above ground level. It is considered the trees along this section of the site provide the most foraging potential for bats at the site therefore minimising illumination of these trees is important.

6.2.3 Nesting Birds

The proposed development would not incur a significant adverse impact on the value of the site to breeding birds but there is potential for nesting birds to be encountered during the clearance of any scrub or trees so mitigation is considered necessary to protect any active nests. To achieve this, it is recommended that all vegetation clearance is conducted outside of the nesting season (which runs from March – September) to avoid this constraint. Alternatively, if any clearance of trees/scrub is required within the nesting season, all areas to be affected must be checked for active nests by a suitably experienced ecologist. If an active nest is encountered, a suitable 'no-work' buffer zone must be implemented around the nest until all chicks have fledged; RPS can provide further advice in this instance.

¹⁸ Bat Conservation Trust and Institution of Lighting Engineers (2009) Bats and Lighting in the UK Bats and the Built Environment Series (3rd edn.) London: The Bat Conservation Trust

6.2.4 Badgers

It is considered that badgers and other mammals may use the site for commuting purposes. It is therefore recommended that the following precautions are observed during construction;

- 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.

6.2.5 Habitats

It is recommended that a wildlife friendly soft landscaping scheme be adopted by the site to ensure that wildlife (including mammals, herptiles and bats) has continued access through the site and is kept away from the disturbance of the adjacent development. As part of this, the development should look to retain wildlife corridors where possible. The final details of the structure and management of this zone should be implemented within any Landscape Management Plan for the site but the key principles should include irregular management and introduction of a wildflower mix to increase floristic diversity.

6.3 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 10: Summary of recommendations for ecological enhancement

Recommendation	Rationale
Introduction of nest boxes targeting house sparrow, starling and swift on new residences/retained trees within the site	Birds of Conservation Concern – Red List and Amber List
Introduction of bat roost features on new residences/retained trees within the site	NPPF; all developments to provide net gains in biodiversity value wherever possible
Landscape scheme for the site to include climbers (e.g. ivy, honeysuckle) and thick shrubs to provide nesting and foraging habitat for birds, along with increases in invertebrate numbers to enhance site for foraging bats	NPPF; all developments to provide net gains in biodiversity value wherever possible

7 References

British Standards Institution, 2013. BS 42020:2013 *Biodiversity. Code of practice for planning and development*. Milton Keynes: BSI.

Chartered Institute of Ecology and Environmental Management, 2017. *Guidelines for Preliminary Ecological Appraisal*. 2nd ed. Winchester: CIEEM.

Chartered Institute of Ecology and Environmental Management, 2013. *Competencies for Species Survey in Britain and Ireland*. Winchester: CIEEM.

Chartered Institute of Ecology and Environmental Management, 2017. *Guidelines for Ecological Report Writing*. Winchester: CIEEM.

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

Clements, D.K., & Tofts, R.J.(1992). *Hedgerow Evaluation and Grading System (HEGS): A methodology for the ecological survey, evaluation and grading of hedgerows*. Countryside Planning and Management.

Collins, J. (ed.), 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn.). London: The Bat Conservation Trust.

Department of Communities & Local Government, 2012. *National Planning Policy Framework*, London: DCLG.

English Nature , 2001. *Great Crested Newt Mitigation Guidelines*. Peterborough: English Nature.

Joint Nature Conservancy Council , 2010. *Handbook for Phase 1 habitat survey*. Peterborough: JNCC.

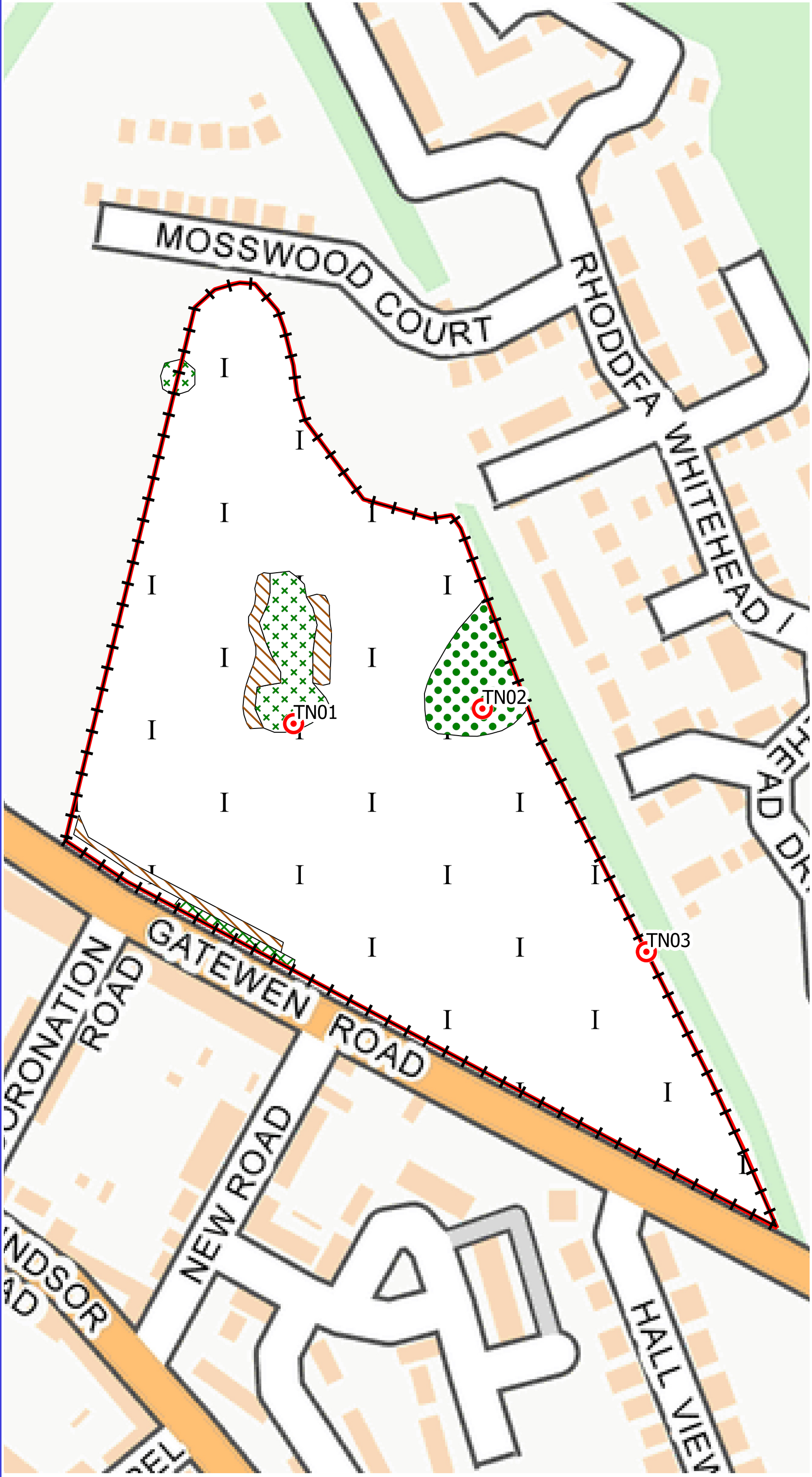
Mitchell-Jones, A.J., & McLeish, A.P. Ed., 2004. *3rd Edition Bat Workers' Manual*, 178 pages b/w photos, softback, ISBN 1 86107 558 8.

Office of the Deputy Prime Minister, 06/2005. *Government Circular: Biodiversity and Geological Conservation - Statutory Obligations and their impact within the planning system*. London: ODPM.

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

Stace, C., 2010. *New Flora of the British Isles*. 3rd Edition. Cambridge University Press.

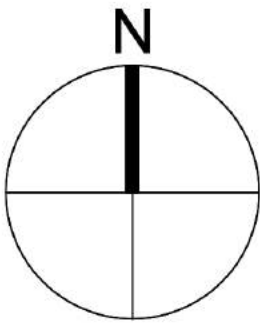
The Conservation of Habitats and Species Regulations 2017. Planning Act 2008, Regulation 110.



Legend

- Site Boundary
- Phase 1 Habitat - Line
- J2.4 - Fence
- Phase 1 Habitat - Area
- A2.1 - Scrub - dense /continuous
- A2.2 - Scrub - scattered
- A3.1 - Broadleaved scattered trees
- B4 - Improved grassland
- C3.1 - Tall ruderal vegetation
- Target Note

Rev	Date	Description	Checked	Authorised		
Issue / Revision						
Original Scale 1:1500 @			Drawn 23.06.2017			
Project title OXF10388 Glyndwr University (Gatewen 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						
Drawing number OXF10388_02 (Gatewen Road)				Rev 0		



Key

	Type A - 4 Bed Detached House	19 no.
	Type B - 4 Bed Semi/Detached House	17 no.
	Type C - 3 Bed Semi-Detached House	24 no.
	Type D - 3 Bed Detached House	24 no.
	Type E - 2 Bed Affordable House	28 no.
Type E - 2 Bed Affordable House		112 no.

Housing Mix

- 4 Beds = 32%
- 3 Beds = 43%
- 2 Beds (Affordable) = 25%



GENERAL NOTES:

- DAY Architectural Ltd accepts no responsibility for any costs, losses or claims whatsoever arising from these drawings, specifications and related documents unless there is full compliance with the Client or any unauthorised user of the following:
- All boundaries, dimensions and levels are to be checked on site before construction and any discrepancies reported to the Architect / Designer.
 - Partial Service: Any discrepancies with site or other information is to be advised to the Architect / Designer and direction and / or approval is to be sought before the implementation of the detail.
 - Block and site plans are reproduced under license from the Ordnance Survey.
 - Do not scale this drawing.
 - For the purpose of coordination, all relevant parties must check this information prior to implementation and report any discrepancies to the Architect / Designer.

DRAWING NOTES:

A	Amendment of layout	11.06.2018
STATUS	REVISION	DATE

CLIENT	Wrexham Glyndwr University	
PROJECT	Campus 2025	

DRAWING		Gatewen Road - Proposed Masterplan	
SCALE	1:1000	PAPER SIZE	A1
DATE	June 2018	DRAWN BY	LB
DRAWING No.	AL-00-001	REVISION	A
		PROJECT No.	531-17-5
DRAWING STATUS		PLANNING	
Information contained on this drawing is the sole copyright of DAY Architectural Ltd, and is not to be reproduced without their permission.			

DAY

ARCHITECTURAL LTD

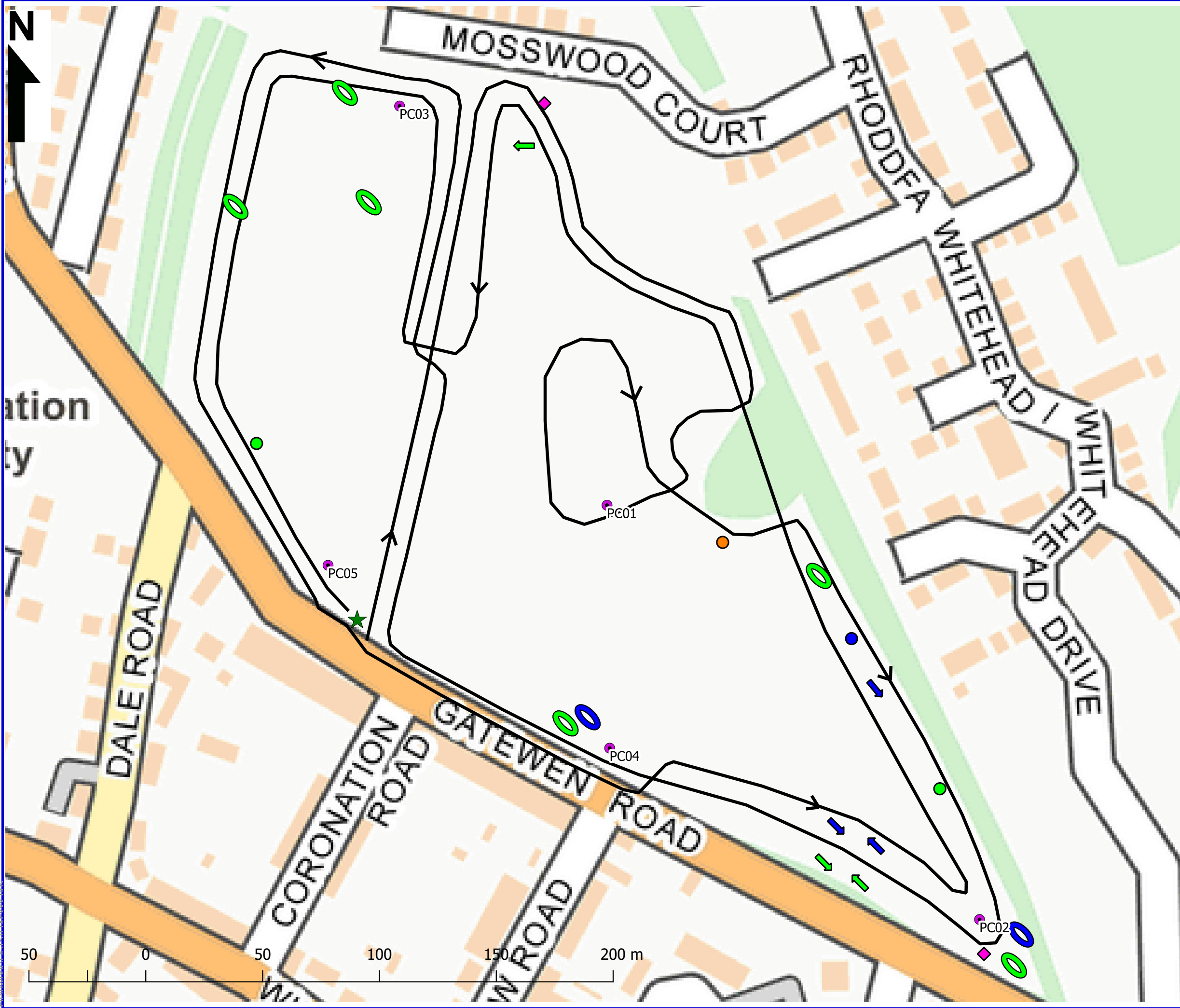
DAY ARCHITECTURAL LTD.

61 BURLINGTON STREET

LIVERPOOL

L3 6LG

0151 203 9703, info@day-architectural.com, www.day-architectural.com



Legend

- Transect Route
- ★ Start/finish
- ◆ Static Detectors
- Point count
- Bat Pass
 - Common Pipistrelle Pass (Bat Not Seen)
 - Soprano Pipistrelle Pass (Bat Not Seen)
 - Noctule Bat Pass (Bat Not Seen)
- Bat Commuting
 - ↑ Common Pipistrelle Pass
 - ↑ Soprano Pipistrelle Pass
- Bat Foraging
 - Common Pipistrelle Foraging
 - Soprano Pipistrelle Foraging

Date Drawn June 2018	Date Reviewed June 2018
Drawn By RP-S	Reviewed By PW
Project Title ECO00246 Glyndwr University, Gatewen Road	
Drawing Title Bat Activity Plan 14.06.2018	
Client Glyndwyr University	
Issue Appendix C	Revision DRAFT
Scale 1:1560 @A3	

Folio No: E3095
Report No:
Order No: 0308525
Client: RPS GROUP
Contact: Phillipa Mudd
Contact Details: phillipa.mudd@rpsgroup.com
Date: 06/06/2018

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

Date sample received at Laboratory: 30/05/2018

Date Reported: 06/06/2018

Matters Affecting Results:

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
2797	Gatewen Road, Pond 3	-	Pass	Pass	Pass	Negative	0
2798	Gatewen Road, Pond 2	-	Pass	Pass	Pass	Negative	0
2799	Gatewen Road, Pond 1	-	Pass	Pass	Pass	Negative	0

SUMMARY

When Great Crested Newts (GCN); *Triturus cristatus* inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (eDNA) traces to confirm GCN habitation, or establish GCN absence.

The water samples detailed below were submitted for eDNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the

Folio No: E3213
Report No:
Order No: 0308525
Client: RPS GROUP
Contact: Phillipa Mudd
Contact Details: phillipa.mudd@rpsgroup.com
Date: 12/06/2018

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

Date sample received at Laboratory: 07/06/2018

Date Reported: 12/06/2018

Matters Affecting Results:

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
3119	Gatewen Road	SJ 312 519	Pass	Pass	Pass	Negative	0

SUMMARY

When Great Crested Newts (GCN); *Triturus cristatus* inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (eDNA) traces to confirm GCN habitation, or establish GCN absence.

The water samples detailed below were submitted for eDNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

RESULTS INTERPRETATION

Lab Sample No.- When a kit is made it is given a unique sample number. When the pond samples have been taken and the kit has