Preliminary Ecological Appraisal

Land to the west of Hensingham House, Hensingham, Whitehaven, Cumbria, CA28 8QB

2022

Report commissioned by:

David Shankland
Corbrund Developments Ltd
The Studio
26 Corporation Rd
Carlisle
Cumbria
CA3 BXB

Report compiled by:

Sam Griffin ACIEEM
Hesketh Ecology
Stoneyside
Causewayhead
Silloth
Cumbria
CA7 4JG

Hesketh Ecology
Web; www.heskethecology.co.uk Email; info@heskethecology.co.uk
Tel; 016973 31986 Mob; 07786318302

THIS PAGE IS INTENTIONALLY LEFT BLANK

Quality Management

Job No	DS21PEA040	Doc No.		1	
Title	Preliminary Ecological Appraisal: Land to the west of Hensingham House, Hensingham, Whitehaven, Cumbria, CA28 8QB: 2021				
Location	Whitehaven, Cumbria				
Document Ref	DS21PEA040.001				
Revision	**Prepared by**	**Checked by**	**Issued to**	**Date**	**Signed**
DRAFT FOR CLIENT COMMENT / APPROVAL ONLY.	Sam Griffin	Vicky Griffin	David Shankland	20/04/2022	**UNSIGNED**
					UNSIGNED
FINAL	Sam Griffin	Vicky Griffin	David Shankland	09/02/2024	

Disclaimer

This report is issued to the client for their sole use and for the intended purpose as stated within this report (Section 1.3). This report may not be relied upon by any other party without the express written agreement of Hesketh Ecology. The use of this report by unauthorised third parties is at their own risk and Hesketh Ecology accepts no duty of care to any such third party.

Hesketh Ecology has exercised all reasonable skill and due care in preparing this report. Hesketh Ecology has not, unless specifically stated, independently verified information provided by others. No other warranty, express or implied, is made in relation to the content of this report and Hesketh Ecology assumes no liability for any loss resulting from errors, omissions or misrepresentation made by others.

No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. We therefore cannot guarantee that the investigations fully identified the degree or extent of e.g. species presence. Professional judgement and opinion has been utilised where required. All opinion is provided in good faith.

Nothing in this report constitutes legal advice or opinion. If legal opinion is required a qualified legal professional should be contacted for advice.

Contents

1. Introduction

1.1. Background and Pre-Existing Site Information

This report details a Preliminary Ecological Appraisal conducted at Land to the west of Hensingham House, Hensingham, Whitehaven, Cumbria, CA28 8QB (Nat. Grid Ref. NX 98507 16706 - Approx. centre of site).

DRAFT plans 'as proposed' have been provided (See Figure 2) and it is thereby understood that a proposal exists for a housing development consisting a total of 30no. detached dwellings - although the proposal is understood to be to phase the development, building 4no. Units initially, followed by the remaining 26no. Units.

A search of historic planning applications for the area was *attempted* on the Copeland Borough Council planning application search facility https://www.copeland.gov.uk/planning/application-search) on 24/02/2022. However, the Copeland Borough Council online search facility does not allow searches using a meaningful spatial reference (i.e. using post code or site name) and furthermore does not appear to hold historic planning details from pre- 2020. No details of any previous planning applications for the site itself nor surrounding properties have been identified and consequently no previous ecological survey data relating to the site itself nor surrounding properties has been identified.

This survey has been commissioned to complete a baseline preliminary ecological assessment of the site and specifically to identify;

- Any areas of potential conservation interest,
- Any potential impacts to legally protected species / species groups,
- Any likely impacts on statutory and non-statutory designated sites as a result of the proposal,
- The presence of any invasive species listed in Schedule 9 of The Wildlife and Countryside Act 1981 (as amended).
- Opportunities to enhance the biodiversity value of the site in line with the National Planning Policy Framework (2019)

Mr David Shankland of Corbrund Developments Ltd. commissioned Hesketh Ecology to complete this survey and report in January 2022. It is understood that this report will be used to accompany an outline planning application(s) for the construction of 4no. and 26no. Detached residential properties, plus associated infrastructure, on land to the west of Hensingham House, Hensingham.

1.2. Full Details of Proposed Works on Site

The DRAFT plans 'as proposed' (See Figure 2) show the proposal which is for a total of 30no. detached residential units, each set within its own private garden and with off street parking. The estate would be served by a new access road from the B5295 (Egremont Road) and would contain an area of dedicated 'public open space' and a children's play area.

Figure 1: *Location Plan showing site boundary in red.*

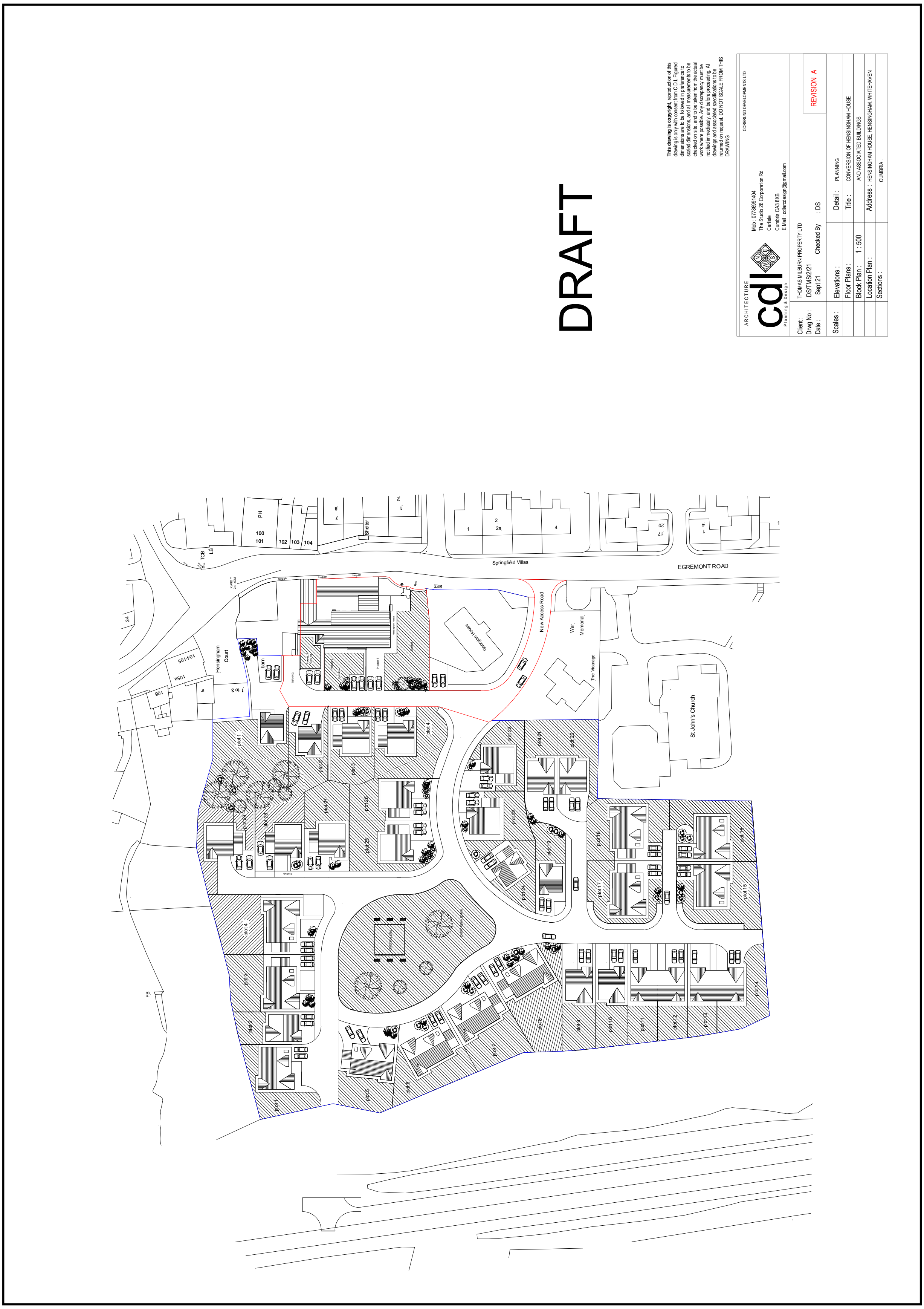


Figure 2: *Conversion of Hensingham House and associated buildings; Hensingham House, Hensingham, Whitehaven, Cumbria. Drawing Number DS/TMS/2/21 Revision A by Corbund Developments Ltd. NB - This report considers the proposed development within the BLUE line boundary. The conversion of Hensingham House - area within the RED line - is being considered separately.*

2. Legislation and Policy

2.1. Designated Sites

There are broadly 3 levels of designation currently in place to protect the most significant areas for habitats and wildlife. These are Internationally Designated Sites (Special Areas of Conservation, Special Protection Areas etc.), Domestically Designated Sites (Sites of Special Scientific Interest, National Nature Reserves etc.) and Locally Designated Sites (County Wildlife Sites, Local Nature Reserves etc.).

The Conservation of Habitats and Species Regulations 2017 provides safeguards for European Protected Sites and Species (as listed in the Habitats Directive). This has recently been amended by the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019 which continue the same provision for European protected species, licensing requirements, and protected areas after Brexit.

2.2. Internationally Designated Sites

Special Areas of Conservation (SACs) are areas which have been given special protection under the European Union's Habitats Directive. They provide increased protection to a variety of wild animals, plants and habitats. All SAC's are also designated as SSSI's. The legal requirements relating to the designation and management of SACs in England are set out in The Conservation of Habitats and Species Regulations 2017. The SAC designation is recognition that some or all of the wildlife and habitats are particularly valued in a European context.

Special Protection Areas (SPAs) are areas which have been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds found within European Union countries. They are European designated sites, classified under the 'Birds Directive 1979' which provides enhanced protection given by the Site of Special Scientific Interest (SSSI) status all SPAs also hold. The legal requirements relating to the management and protection of SPAs in England are set out in The Conservation of Habitats and Species Regulations 2017.

Natura 2000 is the centrepiece of EU nature & biodiversity policy. It is an EU wide network of nature protection areas established under the 1992 Habitats Directive. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. It is comprised of Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive, and also incorporates Special Protection Areas (SPAs) which they designate under the 1979 Birds Directive. Natura 2000 is not a system of strict nature reserves where all human activities are excluded. Whereas the network does include nature reserves most of the land is privately owned and the emphasis is on ensuring that future management is sustainable, both ecologically and economically.

The 'competent authority' is required to complete an Appropriate Assessment of a proposal, if the proposed activities would be likely to have a significant effect on the Natura 2000 site. An Appropriate Assessment aims to determine if the proposed development would have an adverse effect on the notified interest features of the SAC. The developer or proposers of the plan or project shall provide such information as the competent authority may reasonably require for the purposes of the assessment (Regulation. 43(2)).

2.3. Domestically Designated Site

Sites of Special Scientific Interest (SSSIs) are the country's very best wildlife and geological sites and give legal protection to these sites in England. Natural England now has responsibility for identifying and protecting SSSIs in England under the Wildlife and Countryside Act 1981 (as amended). The SSSI notification package includes a list of operations requiring Natural England's consent (formerly known as operations likely to damage the special interest). None of the listed operations can be carried out without Natural England's consent, or the consent of another public body (provided that the other body has formally consulted us). Operations listed on the list of operations requiring Natural England's consent (which are not already consented to) requires permission from Natural England. To obtain consent, a written notice must be submitted to Natural England containing the details of the operations in order for the proposal to be assessed and permission granted.

National Nature Reserves (NNRs) are all also designated as SSSIs. It is via this designation that legal protection is afforded to NNRs.

2.4. Locally Designated Sites

There are currently a number of different terms in use to describe Local Wildlife Sites, including Sites of Importance for Nature Conservation (SINCs), Sites of Nature Conservation Importance (SNCIs) and County Wildlife Sites. Local Wildlife Sites are usually selected within a local authority area and this process is often managed by the local Wildlife Trust together with representatives of the local authority and other local wildlife conservation groups. They support both locally and nationally threatened wildlife, and many sites will contain habitats and species that are priorities under the county or UK Biodiversity Action Plans (BAP).

In Cumbria, Local Wildlife Sites are known as 'County Wildlife Sites'. They are designated and reviewed at a county level by the Wildlife Selection Panel for the Cumbria Local Sites Partnership, administered by Cumbria Wildlife Trust. County Wildlife Sites are not afforded any legal protection.

2.5. Protected Species

The legislation protecting wildlife exists regardless of the requirements of any planning consent.

The legal protection of animals and plants in the United Kingdom is mainly provided for by:

- The Wildlife & Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000,
- The Habitats and Species Directive (92/43/EC) enacted through The Conservation of Habitats and Species Regulations 2017.
- The Protection of Badgers Act 1992.

The level of protection for each species varies according to the conservation status of the species.

The Conservation of Habitats and Species Regulations 2017 provides safeguards for European Protected Sites and Species (as listed in the Habitats Directive). This has recently been amended by the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019 which continue the same provision for European protected species, licensing requirements, and protected areas after Brexit.

The Countryside and Rights of Way Act 2000 supplemented existing legislation for wildlife protection by prohibiting reckless acts that result in the killing or injuring of protected species.

The Natural Environment and Rural Communities Act 2006 requires that every public authority in exercising its functions must have regard as far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. Section 41 of this Act requires the Secretary of State to have prepared lists of species and habitats which are considered to be of principal importance for the purpose of conserving biodiversity [The UK Biological Action Plan (BAP) species].

2.6. Schedule 2 - European Protected Species of Animal

Conservation of Habitats and Species Regulations 2010 (as amended): Schedule 2 Animals
Horseshoe bats *Rhinolophidae* - all species
Common bats *Vespertilionidae* - all species
Wild cat (*Felis silvestris)*
Dolphins, porpoises and whales *Cetacea* – all sp.
Dormouse (*Muscardinus avellanarius)*
Pool frog (*Rana lessonae)*
Sand lizard (*Lacerta agilis)*
Fisher's estuarine moth (*Gortyna borelii lunata)*
Great crested newt (*Triturus cristatus)*
Otter (*Lutra lutra)*
Lesser whirlpool ram's-horn snail (*Anisus vorticulus)*
Smooth snake (*Coronella austriaca)*
Sturgeon (*Acipenser sturio)*
Natterjack toad (*Epidalea calamita)*
Marine turtles (*Caretta caretta, Chelonia mydas, Lepidochelys kempii, Eretmochelys imbricata* and *Dermochelys coriacea)*

Table 1: *Conservation of Habitats and Species Regulations 2010 (as amended): Schedule 2 Animals*

These species are listed in Schedule 2 of the Habitat Regulations and in Schedule 5 of the Wildlife & Countryside Act 1981. The legislation makes it illegal to:

- Intentionally or deliberately kill, injure or capture (or take);
- Deliberately disturb;

- Recklessly disturb or obstruct access to any place used for rest and shelter
- Damage or destroy any place used for rest and shelter
- Possess or transport an animal or any part of, unless acquired legally,
- Sell (or offer for sale) or exchange

Work that disturbs Schedule 2 species is illegal without a Wildlife Development Licence issued by Natural England.

2.7. Schedule 5 - European Protected Species of Plants

Conservation of Habitats and Species Regulations 2010 (as amended): Schedule 5 – Plants
Shore dock (*Rumex rupestris)*
Killarney fern (*Trichomanes speciosum)*
Early gentian (*Gentianella anglica*)
Lady's-slipper (*Cypripedium calceolus*)
Creeping marshwort (*Apium repens)*
Slender naiad (*Najas flexilis)*
Fen orchid (*Liparis loeselii*)
Floating-leaved water plantain (*Luronium natans)*
Yellow marsh saxifrage (*Saxifraga hirculus*)

Table 2: *Conservation of Habitats and Species Regulations 2010 (as amended): Schedule 5 - Plants*

These species are listed in Schedule 5 of the Habitat Regulations and in Schedule 8 of the Wildlife & Countryside Act 1981. The legislation makes it illegal to pick, uproot, destroy, or trade in these plants.

2.8. Otters

Otters are protected under Section 39 of The Conservation of Habitats and Species Regulations 2017 as European Protected Species and Section 9 of the Wildlife and Countryside Act 1981 (as amended) (Schedule 5). It is an offence to:

- Deliberately capture, injure or kill an Otter;
- Intentionally or recklessly disturb an Otter in a place used for shelter or protection, or deliberately disturb Otters in such a way as to be likely significantly to affect (i) the ability of any significant group of Otters to survive, breed, rear or nurture their young, or (ii) the local distribution or abundance.
- Damage or destroy a breeding or resting place

- Intentionally or recklessly obstruct access to a place used for shelter or protection
- Possess an Otter (alive or dead), or any part of an Otter.

Work that disturbs otters is illegal without a Wildlife Development Licence issued by Natural England.

2.9. Badgers

Badgers are a protected species. In addition to The Wildlife and Countryside Act 1981, The Countryside and Rights of Way (CRoW) Act 2000 and The Conservation of Habitats and Species Regulations 2017, badgers and their setts are also covered by the provisions of the Protection of Badgers Act (1992). A sett is defined as "any structure or place which displays signs indicating current use by a badger". The legislation makes it illegal to:

- Intentionally or deliberately kill, injure or capture (or take) badgers;
- Damage a badger sett or any part of it;
- Destroy a badger sett;
- Obstruct access to, or any entrance of, a badger sett;
- Disturb a badger when it is occupying a badger sett;

Work that disturbs badgers is illegal without a Wildlife Development Licence issued by Natural England.

2.10. Breeding Birds

All wild birds (birds in a wild state resident in or visiting Great Britain) and their nests and eggs are protected under the Wildlife & Countryside Act 1981. Particular emphasis is given to the protection of breeding birds. With certain exceptions, it is an offence to:

- Kill, injure or take wild birds
- Take, damage or destroy the nest of wild birds while in use or being built
- Take or destroy the eggs of wild birds
- Disturb wild birds listed in Schedule 1 when nest building or at a nest containing eggs or young, or disturb dependent young of wild birds

2.11. Reptiles

Reptiles, including common lizards, slow worms and grass snakes, are protected under the Wildlife & Countryside Act 1981 against deliberate killing, injuring and sale (Sub-Sections 9 (1) and 9 (5)). These species are listed in Schedule 5.

2.12. Other Mammals

Mammal species not covered by the above legislation (rabbits, foxes, hares, moles etc) are protected by the Wild Mammals (Protection) Act 1996. This states; ‘any person [whom] mutilates, kicks, beats, nails or otherwise impales, stabs, burns, stones, crushes, drowns, drags or asphyxiates any wild mammal with intent to inflict unnecessary suffering he shall be guilty of an offence.’ This is potentially relevant in the case of burrowing animals on a development site.

2.13. Invasive Non-Native Species

In the UK, it is an offence under section 14(2) of the Wildlife and Countryside act 1981 to "plant or otherwise cause to grow in the wild" any plant listed in Schedule 9, Part II to the Act. This could include cutting the plant or roots and disturbing surrounding soil if not correctly managed.

An offence under the Wildlife and Countryside Act can result in a criminal prosecution. An infringement under the Environmental Protection Act can result in enforcement action being taken by the Environment Agency (EA) which can result in an unlimited fine.

Schedule 9 – List of Invasive plant species	
Australian swamp stonecrop or New Zealand pygmyweed (*Crassula helmsii)*	Small-leaved cotoneaster (*Cotoneaster microphyllus*)
Californian red seaweed (*Pikea californica*)	Three-cornered garlic (*Allium triquetrum*)
Curly waterweed (*Lagarosiphon major*)	Variegated yellow archangel (*Lamiastrum galeobdolon subsp. argentatum*)
Duck potato (*Sagittaria latifolia*)	Virginia creeper (*Parthenocissus quinquefolia*)
Entire-leaved cotoneaster (*Cotoneaster integrifolius*)	Wakame (*Undaria pinnatifida*)
False Virginia creeper (*Parthenocissus inserta*)	Giant salvinia (*Salvinia molesta*)
Fanwort or Carolina water-shield (*Cabomba caroliniana*)	Green seafingers (*Codium fragile*)
Few-flowered garlic (*Allium paradoxum*)	Himalayan cotoneaster (*Cotoneaster simonsii*)
Floating pennywort (*Hydrocotyle ranunculoides*)	Hollyberry cotoneaster (*Cotoneaster bullatus*)
Floating water primrose (*Ludwigia peploides*)	Hooked asparagus seaweed (*Asparagopsis armata*)
Giant hogweed (*Heracleum mantegazzianum*)	Hottentot fig (*Carpobrotus edulis*)
Giant kelp (Macrocystis spp.)	Hybrid knotweed (*Fallopia japonica × Fallopia sachalinensis*)
Giant knotweed (*Fallopia sachalinensis*)	Indian (Himalayan) balsam (*Impatiens glandulifera*)
Giant rhubarb (*Gunnera tinctoria*)	Japanese knotweed (*Fallopia japonica*)
Japanese rose (*Rosa rugosa*)	Wall cotoneaster (*Cotoneaster horizontalis*)
Japanese seaweed (*Sargassum muticum*)	Water fern (*Azolla filiculoides*)
Laver seaweeds (except native species) (Porphyra spp)	Water hyacinth (*Eichhornia crassipes*)
Parrot's-feather (*Myriophyllum aquaticum*)	Water lettuce (*Pistia stratiotes*)
Perfoliate alexanders (*Smyrnium perfoliatum*)	Water primrose (*Ludwigia grandiflora*)
Pontic rhododendron (*Rhododendron ponticum*)	Water primrose (*Ludwigia uruguayensis*)

Schedule 9 – List of Invasive plant species	
Red algae (*Grateloupia luxurians*)	Waterweeds (Elodea spp.)
Rhododendron (*Rhododendron ponticum x Rhododendron maximum*)	Yellow azalea (*Rhododendron luteum*)
Purple dewplant (*Disphyma crassifolium*)	

Table 3: *Schedule 9 – List of Invasive plant species*

2.14. Natural Environment and Rural Communities (NERC) Act (2006)

Beyond the legal protection afforded to species in the UK, the Natural Environment and Rural Communities (NERC) Act (2006) states;

> *'Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.'*
> NERC Act 2006 - Section 40.
>
> '*The Secretary of State must, as respects England, publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity.'*
>
> *'Without prejudice to section 40(1) and (2), the Secretary of State must—*
>
> > *(a) take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or*
> > *(b) promote the taking by others of such steps.'*
>
> NERC Act 2006 - Section 41

2.15. UK Biodiversity Action Plan (BAP) priority species / UK Post-2010 Biodiversity Framework

UK Biodiversity Action Plan (BAP) priority species were those that were identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (UK BAP). The original list of UK BAP priority species was created between 1995 and 1999. In 2007, however, a revised list was produced, following a 2-year review of UK BAP processes and priorities, which included a review of the priority species and habitats lists.

The UK BAP has now been superseded by the UK Post-2010 Biodiversity Framework. The UK Post-2010 Biodiversity Framework covers the period from 2011 to 2020, and was developed in response to two main drivers: the Convention on Biological Diversity's (CBD's) Strategic Plan for Biodiversity 2011-2020 and its five strategic goals and 20 'Aichi Biodiversity Targets', published in October 2010; and the EU Biodiversity Strategy (EUBS), released in May 2011. The UK Post-2010 Biodiversity Framework now serves to meet the

statutory obligation imposed by Section 41 of the NERC Act. The UK BAP list, as revised in 2007, was incorporated into the UK Post-2010 Biodiversity Framework with only minor alterations.

The Cumbria Biodiversity Action Plan (CBAP) was designed to implement national biodiversity targets set out in the UK BAP at a local level, with an emphasis on local priorities. At its inception the CBAP included 40 species / species groups, 21 of which had dedicated action plans with a further 19 without action plans. The original CBAP list was updated in 2010 to include all UK BAP species which occur in Cumbria.

2.16. National Planning Policy Framework (NPPF) 2019

The National Planning Policy Framework (NPPF) was originally published by the Department of Communities and Local Government in 2012, consolidating over two dozen previously issued documents called Planning Policy Statements (PPS) and Planning Policy Guidance Notes (PPG) for use in England. A revised NPPF was published by the UK Government's Ministry of Housing, Communities and Local Government in 2018 and then again in 2019. The revised National Planning Policy Framework sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous National Planning Policy Framework published in 2012, and revised in 2018.

Chapter 15 of the NPPF, Conserving and Enhancing the Natural Environment, states (NB the following is a summary only, selecting points which relate to biodiversity and species only, for the full text see National Planning Policy Framework; February 2019, Ministry of Housing, Communities and Local Government ;

> *'Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> - *protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
>
> - *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;'*
>
> Paragraph 170, Pg. 49.
>
> *To protect and enhance biodiversity and geodiversity, plans should:*
>
> - *Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*
>
> - *promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*

Paragraph 174, Pg. 50.

When determining planning applications, local planning authorities should apply the following principles:

- *if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*

- *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists;*

Paragraph 175, Pg. 50.

3. Methodology

3.1. Desk Based Investigation

Natural England's MAGIC website (http://www.magic.gov.uk) was consulted for information relating to statutory designated sites adjacent to the site or within the immediate area.

A data search was commissioned from Cumbria Biodiversity Data Centre for all records of rare, scare, protected or invasive non-native species and non-statutory designated sites within a 2km radius of national grid ref. NX 98507 16706 (the approximate centre of the site).

3.2. Field Survey

A daytime inspection of the site was conducted during which all areas of the site were inspected in detail during a walk over survey. A methodology based on that outlined in the JNCC Phase 1 Habitat Survey Guidelines was employed, as per the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2013). Areas immediately adjacent the site were inspected from public rights of way only. Mature trees were inspected from ground level only using binoculars and an AG80 20x- 60x spotting scope as necessary. The following evidence of potential for protected species is a brief summary only.

Bats

Evidence of potential for bats includes:

- Evidence of bats (droppings, seeing bats, smelling bats)
- Older trees/woodlands for foraging and roosting;
    - Woodpecker holes
    - Gap / crevices behind bark
    - Rot holes
    - Bird / bat boxes
    - Cracks associated with damaged limbs
- Linear landscape elements e.g. hedgerows and watercourses for commuting and foraging
- Built structures e.g. buildings and bridges for summer roosting or hibernation

In relation to bats, the survey methodology conformed with that laid out in '*Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London*'. Any buildings, woodland areas and standard trees within the site were categorised (negligible, low, medium or high) for their potential to support roosting bats.

The survey area for bats comprised all land within the site boundary.

Amphibians

Evidence of potential for protected amphibian species includes:

- Evidence of protected amphibian species (seeing great crested newts or natterjack toads)
- Ponds or other bodies of open standing water on site or within 500m of site
- Suitable terrestrial habitat including foraging habitat and / or hibernation potential

In relation to great crested newts, the survey methodology conformed with that laid out in '*English Nature (2001) Great crested newt mitigation guidelines Version: August 2001. English Nature. ISBN 1 85716 568 3*'. All ponds onsite or within 500m of the site boundary were identified using OS maps and a Habitat Suitability Index Score was calculated using '*Oldham R.S., Keeble J., Swan M.J.S., and Jeffcote M. (2000) Evaluating the suitability of habitat for the great crested newt. Herpetological Journal 10: 143-155*'.

The survey area for amphibians comprised accessible land within 500m of the site boundary.

Otter

Evidence of potential for otters includes:

- Evidence of otters (seeing otters, spraint, footprints, feeding remains)
- Watercourses / water bodies
- Woodland or rough grassland / scrub for holts and lying up

In relation to otter, the survey methodology conformed with that laid out in '*Chanin (2003) Monitoring the Otter*' and '*Liles (2003) Conserving Otter Breeding Sites*'. Any evidence of otter, such as places of rest (holts or couches), spraint sites, prints and slides, as well as any otter sightings would be recorded.

The survey area for otters comprised land within the site boundary.

Badger

Evidence of potential for badgers includes:

- Evidence of badgers (latrines, setts, footprints, fur, runs)
- Woodland for foraging and setts

In relation to badger, the survey methodology conformed with that laid out in '*Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.*'. Any evidence of badger, such as latrines, setts, footprints, fur and runs, as well as any badger sightings would be recorded.

The survey area for badgers comprised land within the site boundary.

Birds

Evidence of potential for breeding birds includes:

- Evidence of breeding birds (nests, nest building behaviour, courtship and display behaviour, distraction display, used nests or eggshells)

- Trees/woodlands for nesting
- Built structures for nesting
- Natural habitat features for nesting (watercourses, embankments, rough grassland)

In relation to breeding birds the survey methodology employed a simple 'look and see', Visual Encounter Survey technique in which the evidence identified above was recorded as encountered.

The survey area for birds comprised land within the site boundary and immediately adjacent the site boundary only.

Reptiles

Evidence for potential for reptiles includes:

- Evidence of reptiles (seeing reptiles, sloughed skin)
- Rough grassland
- South facing slopes

In relation to reptiles, the survey methodology involved a Habitat Suitability Assessment using the characteristics laid out in '*Natural England Technical Information Note TIN102 Reptile mitigation guidelines*' [WITHDRAWN].

The survey area for reptiles comprised land within the site boundary and immediately adjacent the site boundary only.

'Other Mammals'

Evidence for potential for 'other mammal' species:

- Evidence of 'other mammals' (seeing other mammals, droppings, burrows, mole hills)

In relation to 'other mammals', the survey methodology conformed with that laid out in '*The Mammal Society (2013). How to Find and Identify Mammals*'.

3.3. Timing

The survey was conducted on 3rd February 2022.

3.4. Weather conditions

Date	Activity	Weather conditions			
		Temp (°C)	Wind (Beaufort scale)	Cloud (%)	Precipitation
03/02/2022	Site inspection	10	1	80	None

Table 4: *Weather conditions.*

3.5. PERSONNEL

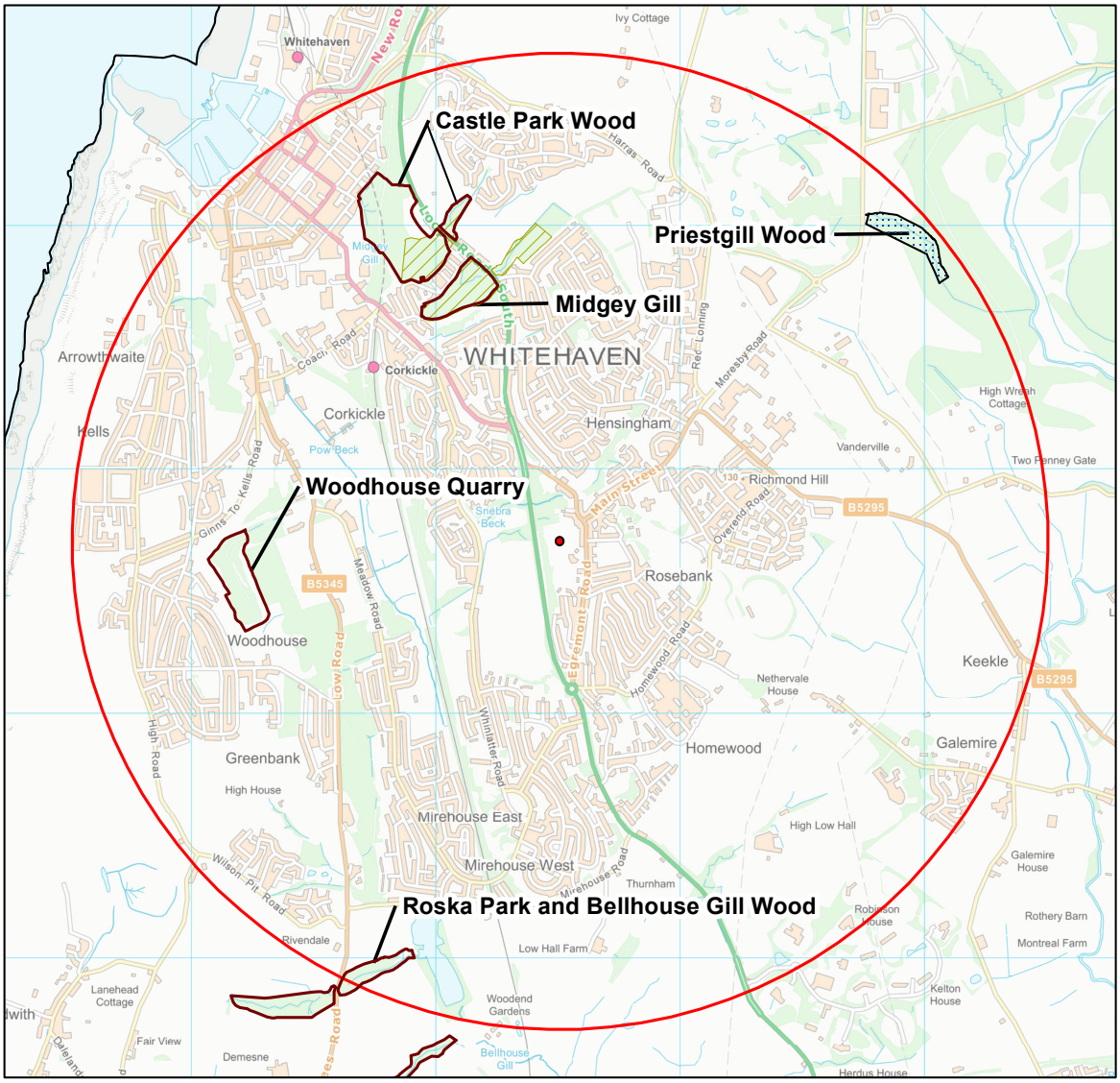
The site inspection was conducted by Sam Griffin BSc ACIEEM.

Cumbria Biodiversity Data Centre (CBDC): Non-Statutory Sites Search

For: Sam Griffin at Heskath Ecology

Centroid: NX 98507 16706
Site Name: Hensingham House, Hensingham, Whitehaven
Buffer: 2km
Search Date: 21/01/2022

N.B. Sites are displayed only if they exist within the search area



Any queries in the first instance contact:
Dr Moustafa Eweda
Biological Data Officer
Cumbria Biodiversity Data Centre (CBDC)

T. 01228 618770
E. dataofficer@cbdc.org.uk

Tullie House Museum and Art Gallery Trust

Figure 3: *Cumbria Biodiversity Data Centre (CBDC): Non-Statutory Sites Search - Centroid:* NX 98507 16706*, Site Name: Hensingham House, Hensingham, Whitehaven Search Buffer: 2km, Search Date: 21/01/2022.*

4. Results

4.1. Designated Sites

Internationally Designated Sites

A search for all designated sites on Natural England's MAGIC website (http://www.magic.gov.uk) conducted on 24/02/2022 has confirmed that no internationally designated sites exist anywhere within a 2km radius of the Site boundary.

Snebra Beck, a tributary of Pow Beck, flows east to west approximately 100m to the north of the Site. Pow Beck takes an obscure and highly modified path towards the coast and is culverted beneath developed areas of Whitehaven town centre for much of its course before reaching South Harbour. The Site is therefore not connected to any more remote internationally designated site via a watercourse or other distinct linear habitat feature.

As no internationally designated sites exist within 2km of the Site boundary and as the Site is not connected to any more distant internationally designated site, no impacts to internationally designated sites are anticipated.

Domestically Designated Sites

A search for all designated sites on Natural England's MAGIC website (http://www.magic.gov.uk) conducted on 24/02/2022 has confirmed that a single domestically designated site exists within a 2km radius of the Site boundary. This is St. Bees Head Site of Special Scientific Interest (SSSI) and lies approximately 2km to the west, north-west.

St. Bees Head SSSI is notified partly for its biological interest, but also for its geological interest. Unit 1 (only) of the SSSI lies at 2km from the Site. Unit 1 of St. Bees Head SSSI is notified solely for its geological interest which was last subject to a condition assessment in 2008 when it was considered to be in 'favourable' condition, with the following comment '*Geological unit only. CSM assessed from EA 2008 coast flight oblique aerial photos. Exposures still exposed with natural processes maintaining exposures*'.

As the site is 2km distant from Unit 1 of St. Bees Head SSSI - and as Unit 1 is notified for its geological features only - there is considered to be no risk of impacts to the notified interest features of the SSSI.

Locally Designated Sites

A detailed data search for all locally designated sites was commissioned from Cumbria Biodiversity Data Centre (CBDC) for all Locally Designated Sites within a 2km radius of Nat. Grid Ref. NX 98507 16706 (the approximate centre of the site). This revealed that the site is not designated as a County Wildlife Site but that a total of four County Wildlife Sites and a single Site of Invertebrate Significance exist within 2km of the site boundary. The details of these are as follows;

- Castle Park Wood County Wildlife Site (approximately 1.6km to the north, north west)
- Midgey Gill County Wildlife Site (approximately 1.2km to the north, north west)

- Woodhouse Quarry County Wildlife Site (approximately 1.2km to the west)
- Roska Park and Bellhouse Gill Wood County Wildlife Site (approximately 1.9km to the south, south west)
- Priestgill Wood Site of Invertebrate Significance (approximately 1.85km to the north east)

Due to the proximity of these locally designated sites and the lack of functional connectivity it is concluded that the proposed development will not impact upon any locally designated site.

4.2. Habitat Description

Hensingham Hall is marked on maps of the areas from 1863 (Cumberland Sheet LXVII) at which time the land to the west is marked as an enclosed field bounded by trees (as was typical of the grounds of larger properties at the time). St. John the Evangelist's church – designed and built c.1911 by J Slack - first appears on 1938 revision of OS 25 inch England and Wales, 1841-1952 and occupies the south east corner of the holding. The 1938 revision does not mark any trees on site. Throughout the latter part of the C.20th the site itself remains broadly unchanged until the 1980's when the Hensingham Bypass (an alteration to the route of the A595) was completed. This cuts across the former grounds of Hensingham Hall north / south, and with land taken for the carriageway itself, plus the land required to reprofile the verge on the east of the road, effectively halved the size of the holding. Since the completion of the Hensingham Bypass the site has remained unmanaged and undeveloped. Aerial photographs taken between 2003 and the present appear to show the uninterrupted succession of grassland toward scrub habitat on the Site.

Hensingham is a developed urban area which is a suburb of Whitehaven on the edge of Landscape Character Type 5 - Lowland; Sub-Type 5d - Urban Fringe, as defined in the 'Cumbria Landscape Character Guidance and Toolkit PART ONE Landscape Character Guidance, Cumbria County Council 2011'. This landscape type is found around the edges of Carlisle, Workington and Whitehaven.

Urban Fringe is characterised by;

- Long term urban influences on agricultural land
- Recreation, large scale buildings and industrial estates are common
- Mining and opencast coal workings are found around Keekle and Moor Row
- Wooded valleys, restored woodland and some semi-urbanised woodland provide interest

The ecological interest of this landscape type is presented as follows;

> '*Largely an urban influenced landscape with mainly species-poor hedgerows and occasional small areas of woodland. There are isolated areas of coastal grazing marsh around Carlisle and hay meadows in West Cumbria. In addition to this, derelict former industrial or other previously developed sites have the potential to support a range of habitats and species which may have colonised the site since the previous uses ended.'*
>
> Cumbria Landscape Character Guidance and Toolkit PART ONE Landscape Character Guidance, Cumbria County Council 2011, Pg. 79.

The Site is currently unused and unmanaged. It is bounded by fencing on all sides except the eastern boundary between the Site and the grounds of Hensingham Hall itself which is demarcated by a broadly intact beech (*Fagus sylvatica*) hedge. Beyond the northern boundary is an area of mature deciduous woodland set within a steep gill. Beyond the western boundary is immature deciduous woodland planted on the verge of the Hensingham Bypass. The southern boundary is shared with adjacent residential properties and St. John the Evangelist's church.

The Site boundary (See Figure 2 - blue line) does include a dilapidated barn which adjoins a neighbouring property on Hensingham Court. This building is in a poor state of repair and was not accessed as part of this survey. This barn is constructed of a mixture of red sandstone, brick and block and is externally rendered in a wet dash cementitious render. The roof is clad in slate and contains roof lights in the northern and southern pitch. The western gable is almost entirely obscured by dense, old ivy (*Hedera helix*) growth. This ivy covers the western gable end and a portion of the roof, obscuring the verge. Ivy is the dominant ground cover throughout a small area of sycamore (*Acer pseudoplatanus*) woodland which is in the north east corner of the site. Both the sycamore canopy and the ivy ground cover are dense and understory growth is therefore limited. Some small elder (*Sambucus nigra*), privet (*Ligustrum ovalifolium*) and gooseberry (*Ribes uva-crispa*) bushes do occur, with patches of Lords and Ladies (*Arum alpinum*), harts tongue fern (*Asplenium scolopendrium*) and pendulous sedge (*Carex pendula*). Towards the southern edge of the woodland some bramble (*Rubus fruticosus* sp. agg.), wood dock (*Rumex sanguineus*) and lesser celandine (*Ficaria verna*) occurs at the interface between the woodland and the scrub habitat beyond.

The majority of the site is dominated by thick bramble scrub. In the areas mapped as 'bramble scrub' this is <5m tall and continuous (>90%) cover. Although bramble is overwhelmingly the dominant ground cover, ruder species such as rose-bay willow herb (*Chamaenerion angustifolium*), great willow herb (*Epilobium hirsutum*), creeping thistle (*Cirsium arvense*), broadleaved dock (*Rumex obtusifolius*) and nettle (*Urtica dioica*) also occur. Much of the ground beneath the dense bramble scrub is essentially bare - as a consequence of the tight bramble cover - but lesser Celandine was emerging at the time of the site inspection. An area to the west of the neighbouring dwelling known as The Vicarage (and to the north of St. Johns Church) was found to contain a range of non-native and exotic species, possibly introduced to the site via dumped garden waste. Amongst the garden escapees identified here was Japanese rose (*Rosa rugosa*), which is a Schedule 9 invasive, non-native species. Other species included Crocosmia (*Crocosmia × crocosmiiflora*) and day Lilly (Hemerocallis sp.), but no other Schedule 9 species were identified.

Within the centre of the site is a small area of neutral grassland. It is apparent from aerial photography that the extent of bramble scrub has increased steadily over the years, which has in turn reduced the amount of grassland habitats on site. What remains is a very small area, entirely surrounded by dense bramble scrub. The grassland contains cocksfoot (*Dactylis glomerata*), false oat grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*), yarrow (*Achillea millefolium*), cow parsley (*Anthriscus sylvestris*), male fern (*Dryopteris filix-mas*), lady fern (*Athyrium filix-femina*), hogweed (*Heracleum sphondylium*), common cleavers (*Galium aparine*), common mouse ear (*Cerastium fontanum*), creeping buttercup (*Ranunculus repens*) and ragwort (*Jacobaea vulgaris*).

The woodland to the west of the site - planted on the landscaped verges of Hensingham bypass - contains pedunculate oak (*Quercus robur*) and sweet chestnut (*Castanea sativa*). A short and disconnected row of immature trees (not managed as, nor functioning as a hedge) extends out in to the Site from the woodland to the west. This appears to follow a former site access from the bypass. This consists of oak and hawthorn.

Habitats on the Site as a whole are of limited conservation interest in their own right being predominantly bramble scrub which is not a priority habitat. It does however contain a substantial area of scrub, which will be of benefit to invertebrates and offers suitable structure for breeding birds and a feeding resource for birds and mammals. Small mammals will undoubtably use the site; these may include species such as hedgehog (*Erinaceus europaeus*).

4.3. Legally Protected Species

A data search was commissioned from Cumbria Biodiversity Data Centre for all records of rare, scare, protected or invasive non-native species within a 2km radius of nat. grid. ref. NX 98507 16706 (the approximate centre of the site). The search was conducted on 21/01/2022. This detailed biological records search returned a total of 3170 records of 188 rare, scarce and protected species.

With 3440 individual historic records of 207 species; species of all taxon groups are well recorded in this search area. However, historic biological records are of use in identifying potential presence of a species in an area, but should never be taken to imply likely absence. A lack of records is more likely to suggest lack of recorder effort than likely absence. This being the case, each species / species group is considered individually in relation to the site and the features of the site which may offer potential for the species / species group.

Taxon Group	Number of historic records	Number of species
Fungus	0	0
Lichen	0	0
Moss	0	0
Conifer	3	1
Flowering Plant	23	9
Chromist	1	1
Mollusc	1	1
Crustacean	0	0
Spider	0	0
Insect	294	52
Jawless Fish	0	0
Boney Fish	1	1
Cartilagenous fish	0	0
Amphibian	17	3

Taxon Group	Number of historic records	Number of species
Reptile	38	2
Bird	2706	120
Marine Mammal	6	3
Terrestrial Mammal (including unidentified bat species)	350	14
TOTAL	**3440**	**207**

Table 6: *Summary of detailed biological records search from Cumbria Biodiversity Data Centre.*

4.4. BATS

Records obtained from Cumbria Biodiversity Data Centre include 8 historic records of bat species from within 2km of the site. These historic records positively identify only a single species, specifically common pipistrelle (*Pipistrellus pygmaeus*) but records of 'bats' and 'pipistrelle bat species' also exist.

Of the 8 historic records, 5 records explicitly refer to bat roosts with the remainder relating to 'field records', 'bat detector recordings' and 'dung/droppings/frass/pellets, etc.'. The vast majority of all bat records obtained for the search area come from residential properties in Whitehaven (Mirehouse area specifically) but a single record of an unidentified bat species roost in a culvert in Whitehaven also exists. The closest historic record of any bat species to the Site is c.0.7km from the site boundary. No bat roosts, nor individual bats, have been previously recorded on the Site itself.

The dilapidated barn in the extreme north east corner of the site is considered to offer 'low' bat roost potential (See Table 7 - below). The external walls are rendered and the slate roof is broadly intact. The western gable, and the verges on this elevation are obscured by old growth ivy which may obstruct access to any crevices within the structure of this section of the building, but also may provide suitable crevices within / between mature ivy stems. The building does have roof lights in the northern and southern pitch which will make the interior light during the day. The northern elevation is illuminated at night by adjacent street lights. The surrounding habitat to the north and east is suboptimal for bats, being developed areas with street lighting. The Site itself - which lies to the west of the building - is not illuminated at night, but is bounded along its western boundary by the Hensingham by-pass which is illuminated and is likely to act as a partial barrier to bat movement.

Trees within the deciduous (sycamore) woodland which lies adjacent to the dilapidated barn in the north east corner of the Site generally do not offer any significant level of bat roost potential. A large, multi-stemmed sycamore tree - which is in poor health and contains abundant standing deadwood - does exist on the eastern boundary of the Site. This tree offers an increased level of bat roost potential, but is in an state of active decay, with areas of flaking bark and rot being dynamic. It is noted from the DRAFT plan 'as proposed' (See Figure 2), that a number of trees will be retained throughout the development. It is unclear precisely

which trees will be felled; this will likely be determined, at least in part, by an arboricultural survey.

Away from the area of woodland, the Site does not contain any potential bat roost features. No other buildings or large mature trees exist on Site. However, buildings adjacent the Site boundary - e.g. The Vicarage, St. Johns Church etc. - may contain bat roosts. The Site represents a relatively isolated patch of suitable bat foraging habitat. As discussed above, partial barriers to bat dispersal do exist in the form of busy illuminated roads and residential areas. The Site may therefore be of some value to bats roosting in the area (either within the dilapidated barn and mature trees on Site, or in buildings which lie adjacent to Site boundary).

Suitability	Roosting Habitat	Commuting / Foraging Habitat
Negligible	No - very few - or very sub-optimal - habitat features likely to be used by roosting bats.	No - very few - or very sub-optimal - habitat features likely to be used by commuting or foraging bats.
Low	A built structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and / or suitable surrounding habitat to be used on a regular basis or by a larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).	Habitat that could be used by small numbers of commuting bats such as gaps hedgerows or unvegetated stream, but isolated, I.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A built structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions (i.e. temperature, humidity, height above ground, light levels, level of disturbance) and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only - the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A built structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree lined watercourses and grazed parkland. Site is close to and connected to known roosts.

Table 7: *Adapted from 'Table 4.1; Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement', Chapter 4, Pg. 35 - 'Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)'.*

The dilapidated barn in the extreme north east corner of the Site offers 'low' bat roost potential. Further survey effort is required to confirm presence / likely absence of bat roosts within this building.

Trees within the deciduous woodland adjacent the dilapidated barn in the extreme north east corner of the Site may offer bat roost potential. Once a final plan 'as proposed' has been prepared - informed by an arboricultural report - a detailed inspection of all the trees to be felled / pruned should be conducted to identify any potential roost features. If any tree is at that time found to contain potential roost features, further survey effort should be completed to confirm presence / likely absence of bat roosts in these trees.

As a relatively isolated patch of suitable bat foraging habitat, the Site may be of some significance to individual bats which are roosting within buildings adjacent the Site boundary. Bat activity surveys should be conducted to ascertain the level of bat activity on Site.

4.5. AMPHIBIANS

Records obtained from Cumbria Biodiversity Data Centre include 17 historic records of amphibians from within 2km of the site. These historic records include common toad (*Bufo bufo*), common frog (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*).

The majority of historic records within the search area are of common toads crossing Mirehouse Road (c.1.5km to the south west). This is a known toad crossing where 1000s of common toads cross Mirehouse Road between breeding ponds (Mirehouse Ponds) and terrestrial habitat to the west of Mirehouse West estate. This crossing has resulted in high mortality, particularly during the spring migration period and has been manned by volunteers off-and-on for a number of years.

All three species recorded in the search area have also been recorded throughout the wider area, including a single record of common frog which may have been collected on the Site itself.

No records of great crested newts within the search area have been obtained.

A review of data contained on Natural England's MAGIC website (http://www.magic.gov.uk) conducted on 01/03/2022 has identified 'Great Crested Newt Class Licence Returns' and 'Great Crested Newt Pond Surveys 2017 - 2019' results for sites within 2km of the Site boundary. All of these confirm 'likely absence'. The closest record of confirmed 'presence' of great crested newts to the Site is 4.1km to the south.

The Association of Local Government Ecologists (ALGE) trigger list for when protected species surveys may be required suggests that any pond within 500m of a major proposal (one that is more than 10 dwellings or more than 0.5 hectares) or within 100m of a minor proposal (fewer than 10 dwellings or less than 0.5 hectares) may require full survey work for great crested newts unless a barrier to dispersal exists. The site here considered can be considered as a 'major' proposal meaning that ponds within 500m of the site boundary should be identified and potentially surveyed for great crested newts if deemed to be suitable for this species.

No ponds or other bodies of open standing water were identified within 500m of the site boundary via OS maps. OS Maps rarely include garden ponds and it is possible that garden ponds do exist within the gardens of neighbouring properties. Terrestrial habitat within the site is theoretically suitable for great crested newts, but in the absence of any suitable waterbodies within 500m it is unlikely that the site would be occupied by great crested newts.

The risk of great crested newts occurring on site is considered to be 'nil' and consequently the risk of great crested newts being affected by the proposed works is also considered to be 'nil'.

4.6. OTTERS

Records obtained from Cumbria Biodiversity Data Centre include 4 historic record of otter (*Lutra lutra*) within 2km of the site. These records relate to 'field records' and 'dung/droppings/frass/pellets etc.' only. Otters have been previously recorded on Mirehouse Ponds and in Whitehaven Marina.

Otter are now widespread in Cumbria and are likely to at least occasionally use *any* watercourse. The site contains no ponds or other bodies of standing water. The habitat on Site is theoretically suitable for otters to lie-up, but in the absence of any suitable watercourses / waterbodies in close proximity to the Site, and considering the degree of isolation from larger / more suitable areas of habitat, it is considered highly unlikely that otter will use the Site.

No evidence of otters having been present on the site was discovered during the site inspection.

The risk of otter holts and / or couches being affected by the proposed works is considered to be 'nil' and the risk of individual otters being affected by the proposed works is also considered to be 'nil'.

4.7. BADGERS

Records obtained from Cumbria Biodiversity Data Centre include a single historic record of badger (*Meles meles*) within 2km of the site. This was a road casualty on Mirehouse Road in 1999.

The Site consists of large and broadly impenetrable stands of bramble scrub. This *could* be suitable habitat for a badger sett. However, the Site is quite isolated as it is surrounded on all sides by roads and developed residential areas. The habitat structure is very dense and dose not represent high quality badger foraging habitat. Although mammal paths were identified on site, these were exclusively through the southern boundary of the Site and in all instances contained roe deer (*Capreolus capreolus*) footprints only. No badger footprints, nor any other evidence of badgers, was discovered on Site during the site inspection.

No evidence of badgers having been present on the Site was discovered during the site inspection. Only a single historic record of badgers within 2km of the Site has been identified, this being a road casualty, 1.5km form the Site, and 23 years ago.

The risk of badger setts being affected by the proposed works is considered to be 'negligible' and the risk of individual badgers being affected by the proposed works is also considered to be 'negligible'.

4.8. REPTILES

Records obtained from Cumbria Biodiversity Data Centre contain 38 historic records of reptiles within 2km of the site. The species previously recorded are common lizard (*Zootoca vivipara*) and slow worm (*Anguise fragilis*).

All records of reptiles in this search area were collected by the author off this report. Slow worm and common lizard occur in good numbers on land around Corkickle Railway Station (c.0.9km to the north west). Further afield, both common lizards and slow worm are also known to occur in good numbers in coastal grassland and former industrial sites to the west.

The following list gives characters that influence reptile habitat suitability;

- Location in relation to species range
- Vegetation structure
- Isolation
- Aspect
- Topography
- Surface geology
- Connectivity to nearby good quality habitat
- Prey abundance
- Refuge opportunity
- Hibernation habitat potential
- Disturbance regime

The Site was inspected with a view to assessing each of the above habitat characters. The assessment of reptile habitat suitability is subjective and based on a personal experience of the surveyor, but considers all the above characters.

Although the Site is somewhat isolated, it does represent suitable reptile habitat. The vegetation structure is entirely suitable for slow worm and common lizard and the Site is sufficiently large to support a remnant population of common reptiles even in complete isolation. Prey species are abundant, refuge opportunities exist, hibernation features exist and the Site is unmanaged and therefore undisturbed.

The habitat on Site is considered to be suitable for reptiles. Further survey effort is required to confirm 'presence / likely absence' of common reptiles.

4.9. Breeding Birds

Records obtained from Cumbria Biodiversity Data Centre include 3440 records of birds relating to 207 species occurring within 2km of the site. The majority of species recorded are identified as either possible, probable or confirmed as breeding. The precise location of bird records, specifically nest sites, is rarely provided in historic data.

The site contains habitats which are entirely suitable for breeding birds. The tall ruderal and scrub habitats particularly - and the interface between dense tall ruderal / scrub specifically - offers suitable nesting habitat for a range of species.

All wild birds (birds in a wild state resident in or visiting Great Britain) and their nests and eggs are protected under the Wildlife & Countryside Act 1981. Particular emphasis is given to the protection of breeding birds. With certain exceptions, it is an offence to:

- Kill, injure or take wild birds
- Take, damage or destroy the nest of wild birds while in use or being built
- Take or destroy the eggs of wild birds

The risk of breeding birds being affected by the proposed works is considered to be 'high'. No further survey effort is deemed to be necessary, but mitigation measures should be observed to remove the risk of breeding birds being affected during site clearance (See Section 7).

4.10. Red Squirrels

Records obtained from Cumbria Biodiversity Data Centre included 191 records of red squirrels (*Sciurus vulgaris*) and 28 records of grey squirrels (*Sciurus carolinensis*) within 2km of the site. Red squirrels have been regularly recorded since 1990; grey squirrels have been recorded since 2004. Both red and grey squirrels have been previously recorded in suitable habitat throughout the wider area; the closest record to the Site is c.0.2km from the centre if the Site.

The proposed development site boundary contains a small area of mature sycamore woodland in the north east corner. It is understood that some of these will be felled / pruned and some will be retained throughout the works, but no detailed proposals have been provided. No evidence of squirrel dens or dreys was recorded during the site inspection. Red squirrels and their dens/dreys (resting places) receive full protection under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally or recklessly:

- kill, injure or take a red squirrel
- damage, destroy or obstruct access to a drey or any other structure or place which a red squirrel uses for shelter or protection
- disturb a red squirrel when it is occupying a structure or place for shelter or protection

This protection does not apply to areas where red squirrels only feed.

The risk of red squirrels being affected by the proposed works is considered to be 'low'.

4.11. Other Mammals

Records obtained from Cumbria Biodiversity Data Centre include records of roe deer (*Capreolus capreolus*), hedgehog (*Erinaceus europaeus*), weasel (*Mustela nivalis*), stoat (*Mustela erminea*), polecat (Mustela putorius), American mink (*Neovison vison*), common shrew (*Sorex araneus*), pygmy shrew (*Sorex minutus*) and rabbit (*Oryctolagus cuniculus*) from within 2km of the site.

The presence of brown rats (*Rattus norvegicus*), rabbits and roe deer on site was confirmed during the site inspection and other small mammal species are certain to occur.

'Other mammals', including burrow dwelling species may occur on site. There is a risk that 'other mammals' will be affected by the proposed works.

4.12. Invasive Non-Native Species

Records obtained from Cumbria Biodiversity Data Centre include historic records of three Schedule 9 - Invasive Plant Species occurring within 2km of the site. These are Japanese knotweed (*Fallopia japonica*), Pontic rhododendron (*Rhododendron ponticum*) and Himalayan balsam (*Impatiens glandulifera*). Japanese rose (*Rosa rugosa*) was identified growing on Site during the site inspection.

Non-native ornamental species were found to be growing on Site, particularly adjacent the eastern boundary where garden waste has been dumped. This presents a theoretical risk that in addition to the identified stand of Japanese rose, other Schedule 9 invasive non-native species could occur on site, but that they are either inconspicuous, being obscured by dense vegetation growth or that they are dormant within the seed bank and could become obvious when the site is cleared or when the seed bank is stimulated to germination through soil movement. This risk is theoretical and cannot be quantified.

In the absence of any mitigation, the risk of spreading Japanese rose within or beyond the Site boundary is considered to be 'high'.

The risk of invasive non-native species being identified on, or introduced to the site and then spread within or beyond the site boundary is considered to be 'low'.

5. Photographs

Figure 4: *Showing the intact beech hedgerow which bounds the eastern side of the site, with inset showing bird nest discovered in this hedge.*

Figure 5: *Showing the dilapidated barn which adjoins a neighbouring property on Hensingham Court in the north east corner of the site. This building offers 'low' bat roost potential and requires a dedicated bat survey.*

Figure 6: *Showing ivy as the dominant ground cover throughout a small area of sycamore (Acer pseudoplatanus) woodland which exists in the north east corner of the site.*

Figure 7: *Showing dense bramble scrub which dominates the majority of the site.*

Figure 8: *Showing small islands of grassland habitat which exist within the centre of the site, surrounded by dense bramble scrub.*

Figure 9: *Showing roe deer slots identified on well trodden mammal paths accessing the site from the west.*

Figure 10: *Showing dense scrub at the southern end of the site.*

Figure 11: *Showing identified stand of Japanese Rose within dense scrub at the southern end of the site.*

6. Impact Assessment

6.1. Summary of Predicted Impacts

This survey has identified potential ecological impacts to;

- Bats
- Reptiles
- Breeding birds
- Red squirrels
- 'Other Mammals'
- Invasive Non-Native Species

Each of these features will be discussed below.

6.2. Bats

The dilapidated barn in the extreme north east corner of the Site offers 'low' bat roost potential. Further survey effort is required to confirm presence / likely absence of bat roosts within this building.

Trees within the deciduous woodland adjacent the dilapidated barn in the extreme north east corner of the Site may offer bat roost potential. Once a final plan 'as proposed' has been prepared - informed by an arboricultural report - a detailed inspection of all the trees to be felled / pruned should be conducted to identify any potential roost features. If any tree is at that time found to contain potential roost features, further survey effort should be completed to confirm presence / likely absence of bat roosts in these trees.

As a relatively isolated patch of suitable bat foraging habitat, the Site may be of some significance to individual bats which are roosting within buildings adjacent the Site boundary. Bat activity surveys should be conducted to ascertain the level of bat activity on Site.

In the absence of any survey data for the Site (and appropriate mitigation measures if necessary), the potential impacts to bats as a result of the proposed development include;

- Destruction of / disturbance to a bat roost and / or harm to individual bats. *If* bat roosts do occur on site there is a risk that these could be destroyed during the demolition of the existing building or the felling / pruning of trees within the woodland on Site.

- Disturbance / displacement of individual foraging / commuting bats. Bats using roost sites in adjacent buildings (particularly St. Johns Church) may forage over the Site. As a relatively isolated area of suitable foraging habitat, this area may be of some significance to bats in the wider area.

6.3. Reptiles

The habitat on Site is considered to be suitable for reptiles. Further survey effort is required to confirm 'presence / likely absence' of common reptiles.

In the absence of dedicated reptile presence / likely absence survey effort it is not currently possible to assess any likely impacts to reptiles. The potential impacts to reptiles (if present on Site) include;

- Harm to common reptiles. *If* common reptiles (slow worm and / or common lizards) occur on Site, these could be harmed during the clearance of the Site ahead of any development.

6.4. Breeding Birds

The risk of breeding birds being affected by the proposed works is considered to be 'high'. No further survey effort is deemed to be necessary, but mitigation measures should be observed to remove the risk of breeding birds being affected during site clearance (See Section 7).

Potential impacts to breeding birds as a result of activities on site include;

- Disturbance / destruction of active nest sites and harm to nesting birds. Clearance of vegetation during the bird nesting season would risk disturbing / destroying active nest sites and harming nesting birds. This would only be a risk during the bird breeding season (March - September inclusive).

6.5. Red Squirrels

The risk of red squirrels being affected by the proposed works is considered to be 'low'.

Potential impacts to red squirrels as a result of activities on site include;

- Destruction of / disturbance to a red squirrel den / drey, and / or harm to individual red squirrels. *If* red squirrel dens / dreys are found to be present within any tree which will be felled or pruned, there is a risk that these could be destroyed during the site clearance. If squirrels are present within these features at the time the work is completed, there would be a risk of harming red squirrels.

6.6. 'Other Mammals'

'Other mammals', including burrow dwelling species may occur on site. There is a risk that 'other mammals' will be affected by the proposed works.

The proposed works could have the following impacts;

- Harm to burrow dwelling mammals. Burrow dwelling mammals (i.e. rabbits) could be crushed or asphyxiated in burrows if heavy plant is operated on ground above active burrows.

6.7. Invasive Non-Native Species

In the absence of any mitigation, the risk of spreading Japanese rose within or beyond the Site boundary is considered to be 'high'.

The risk of invasive non-native species being identified on, or introduced to the site and then spread within or beyond the site boundary is considered to be 'low'.

The potential risks as regards invasive non-native species are as follows;

- Spread of Japanese rose within or beyond the site boundary. As Japanese rose has been identified on Site, without appropriate mitigation there is a high risk that this species could be spread across the site, or beyond the site boundary during site clearance. Seeds or vegetative material could be spread by heavy plant clearing the Site through mud adhering to vehicles containing viable seeds / vegetative material which is later deposited away from the identified stand.
- Discovery of / Introduction of invasive non-native species to the site, leading to spread of invasive non-native species on / off site. There is a risk that invasive non-native species could either be discovered on site or could be introduced to the site via seeds or vegetative material adhering to plant, equipment or materials delivered to site. Should this occur, there would then be a risk that these species could be spread within the site during works, or beyond the site boundary via seed or vegetative material adhering to plant / equipment leaving the site.

7. Mitigation / Recommendations

The following potential impacts have been identified;

- Bats*
  - Destruction of / disturbance to a bat roost and / or harm to individual bats.
  - Disturbance / displacement of individual foraging / commuting bats.

- Reptiles*
  - Harm to common reptiles.

- Red Squirrel*
  - Destruction of / disturbance to a red squirrel den / drey, and / or harm to individual red squirrels.

- Breeding Birds
  - Disturbance / destruction of active nest sites and harm to nesting birds.

- 'Other Mammals'
  - Harm to burrow dwelling mammals

- Invasive Non-Native Species
  - Spread of Japanese rose within or beyond the site boundary.
  - Spread of invasive non-native species on / off site.

* - *Ecological receptors requiring further survey effort to confirm potential impacts.*

7.1. BATS

<u>*Further survey work required to confirm presence / likely absence*</u>

<u>Destruction of / disturbance to a bat roost and / or harm to individual bats.</u>

- The dilapidated barn building is considered to offer 'low' bat roost potential and therefore - in line with published best practice guidelines - **a single activity survey is required to confirm presence / likely absence** (see - 'Table 7.3 - Recommended minimum number of survey visits for presence / absence surveys to give confidence in a negative result for structures' - Pg. 52 of 'Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition)'). It is currently unclear which trees will be felled / pruned and therefore an appropriate survey methodology cannot be recommended at this stage, but any tree felling / pruning must be informed by a further, dedicated bat inspection to identify any potential roost features likely to be affected by any tree feeling / pruning. Should such features be identified in trees, further activity surveys will be required.

  - The bat activity survey of the dilapidated barn should consist of a single evening emergence (or dawn reentry) survey conducted during suitable weather conditions and at a suitable time of year (April - September, dependant on mild temperatures in April). The emergence survey must employ sufficient surveyors to achieve unobstructed views of each elevation simultaneously from a distance of no more than 50m. This will require a minimum of three surveyors. The bat survey must be con-

ducted before any demolition works commence on site and the results of the survey used to inform an impact assessment and mitigation strategy (as appropriate). If a bat roost is identified, further survey visits may be required to confirm the nature and status of the roost, in order to provide sufficient information to inform a European Protected Species Mitigation Licence (EPSML) application. The application process for an EPSML can take up to 6 weeks and the licence must be in place before any roost is affected.

- The bat surveys of trees to be felled / pruned, must be informed by a detailed 'plan as proposed' and arboricultural report. Once it is confirmed which trees will be affected by the proposed works, a Preliminary Ground Level Roost Assessment of all trees affected should be conducted. Any trees found to contain potential roost features should then be subject to presence / likely absence surveys and Roost Characterisation Survey as appropriate. If a bat roost is identified, further survey visits may be required to confirm the nature and status of the roost, in order to provide sufficient information to inform a European Protected Species Mitigation Licence (EPSML) application. The application process for an EPSML can take up to 6 weeks and the licence must be in place before any roost is affected.

Disturbance / displacement of individual foraging / commuting bats.

- Transect surveys and automated / static surveys should be conducted on Site to identify the level and nature of bat activity on Site. In-line with published best practice guidelines - **one survey visit per season (spring – April/May, summer – June/July/August, autumn – September/October) in appropriate weather conditions for bats should be conducted.** Further surveys may be required if these survey visits reveal higher levels of bat activity than predicted by habitat alone. Automated/static bat detector surveys should also be conducted; **One location per transect, data to be collected on five consecutive nights per season (spring – April/May, summer – June/July/August, autumn – September/October) in appropriate weather conditions for bats.** (see - 'Table 8.3 - Guidelines on the number of bat activity surveys recommended to achieve a reasonable survey effort in relation to habitat suitability' - Pg. 58 of 'Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition)').

7.2. REPTILES

Further survey work required to confirm presence / likely absence

Harm to common reptiles.

- A reptile presence / likely absence survey should be completed to inform an impact assessment and mitigation strategy (as appropriate). This should involve a maximum of 14no. site visits between March - June. The survey should incorporate Artificial Cover Object (ACO) / Natural Cover Object (NCO) surveys, using refugia placed at a density of 10/ha and Visual Encounter Survey (VES) techniques so as to achieve an accurate picture of reptile presence / absence, habitats and habitat features used by hibernating reptiles and reptile usage of habitat within the works area and immediately adjacent the works area.

7.3. Red Squirrels

<u>*Further survey work required to confirm presence / likely absence*</u>

<u>Destruction of / disturbance to a red squirrel den / drey, and / or harm to individual red squirrels.</u>

- Once a final plan 'as proposed' has been prepared - informed by an arboricultural report - a detailed inspection of all the trees to be felled / pruned should be conducted to identify any squirrel dens / dreys. If any tree is at that time found to contain potential dens / dreys, further survey effort should be completed to confirm presence / likely absence of red squirrels in these trees.

7.4. Breeding Birds

The recommended mitigation measures to reduce the risk to breeding birds are as follows;

<u>Disturbance / destruction of active nest sites and harm to nesting birds</u>

- Vegetation clearance should occur outside of the bird nesting season (March - August). ***NB - No habitat clearance should occur before bat, reptile and red squirrel presence / likely absence surveys have been completed and any required mitigation measures relating to species / species groups have been implemented.***

- If any vegetation clearance must occur during the bird breeding season, a breeding bird survey must be conducted immediately prior to vegetation clearance commencing. Should evidence of active nest sites (or dependant young) be identified, no work will be possible until the nest can be confirmed as no longer active or the young have fledged and / or moved out of the works area. This should be conducted by a suitably experienced ecologist.

7.5. 'Other Mammals'

The recommended mitigation measures to reduce the risk to 'other mammals' are as follows;

<u>Harm to burrow dwelling mammals</u>

- All plant operatives will be vigilant for mammal burrows. If burrows are discovered, no plant will operate within 5m of any burrow entrance until an experienced ecologist can confirm if the burrow is active. If burrows are found to be active, measures will be taken to exclude mammals before works in the area may proceed.

7.6. Invasive Non-Native Species

<u>Spread of Japanese rose within or beyond the site boundary.</u>

The recommended mitigation measures to reduce the risk of spreading Japanese rose on / off site are as follows;

- The identified stand of Japanese rose should be eradicated prior to any vegetation clearance or excavation commencing on site. This should involve the physical removal of all above ground growth and roots (using a riddle bucket) to a radius of 3m around the identified stand. All material must be disposed of in an appropriate manner - I.e. as contaminated waste.

- The Site must then be monitored throughout the construction phase for any reappearance of this species (or any other Schedule 9 invasive non-native species). A monitoring regime and appropriate response procedure should be devised, and records held on site for inspection upon request.

Spread of invasive non-native species on / off site.

The recommended mitigation measures to reduce the risk of spreading invasive non-native species on / off site are as follows;

- All plant and equipment (including boots and hand tools) will be washed to remove any mud or debris prior to being delivered to site.

- All loose aggregates delivered to site must be clean and free from contamination with seeds or vegetative material from invasive non-native species and certified as such by the supplier.

- All top soil delivered to site must be clean and free from contamination with seeds or vegetative material from invasive non-native species and certified as such by the supplier. Imported top-soil should conform to Section N.6.4.5 of BS 3882:1994; The British Standard for Topsoil.

- All plant and equipment (including boots and hand tools) will be thoroughly washed to remove any mud or debris prior to being removed from the site.

- No arisings from vegetation clearance work should be removed from the site unless confirmed as being free of invasive non-native species, or otherwise to an appropriate facility as contaminated waste.

- No spoil (top soil, sub-soil, aggregate etc.) will be removed from the site unless confirmed as being free of invasive non-native species, or otherwise to an appropriate facility as contaminated waste.

8. Summary

8.1. Summary of development and mitigation

This report details a Preliminary Ecological Appraisal conducted at Land to the west of Hensingham House, Hensingham, Whitehaven, Cumbria, CA28 8QB (Nat. Grid Ref. NX 98507 16706 - Approx. centre of site).

DRAFT plans 'as proposed' have been provided (See Figure 2) and it is thereby understood that a proposal exists for a housing development consisting a total of 30no. detached dwellings - although the proposal is understood to be to phase the development, building 4no. Units initially, followed by the remaining 26no. Units.

Habitats on the Site as a whole are of limited conservation interest in their own right being predominantly bramble scrub which is not a priority habitat. It does however contain a substantial area of scrub, which will be of benefit to invertebrates and offers suitable structure for breeding birds and a feeding resource for birds and mammals. Small mammals will undoubtably use the site.

The dilapidated barn in the extreme north east corner of the Site offers 'low' bat roost potential. Further survey effort is required to confirm presence / likely absence of bat roosts within this building. Similarly a number of trees will be felled to facilitate the development; these must be subject to further survey effort for bats and red squirrels.

The bramble scrub and grassland which occupies the remainder of the Site offers potential for foraging / commuting bats and reptiles. Further survey effort is required to confirm presence / likely absence of reptiles and the relative abundance of bats on site

The following potential impacts have been identified;

- Bats*
  - Destruction of / disturbance to a bat roost and / or harm to individual bats.
  - Disturbance / displacement of individual foraging / commuting bats.

- Reptiles*
  - Harm to common reptiles.

- Red Squirrel*
  - Destruction of / disturbance to a red squirrel den / drey, and / or harm to individual red squirrels.

- Breeding Birds
  - Disturbance / destruction of active nest sites and harm to nesting birds.

- 'Other Mammals'
  - Harm to burrow dwelling mammals

- Invasive Non-Native Species
  - Spread of Japanese rose within or beyond the site boundary.
  - Spread of invasive non-native species on / off site.

* - *Ecological receptors requiring further survey effort to confirm potential impacts.*

Provisional mitigation measures have been presented in Section 7 to address identified risks to breeding birds, ‘other mammals’ and invasive non-native species.

10. References / Bibliography

Andrews, H. (2018). Bat /roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals, Pelagic Publishing.

Bat Conservation Trust (2009). Bats and Lighting in the UK. Bat Conservation Trust, London http://www.bats.org.uk/data/files/bats_and_lighting_in_the_uk_final_version_ version_3_may_09.pdf

Barn Owl Trust https://www.barnowltrust.org.uk/

Biodiversity 2020: A strategy for England's wildlife and ecosystem services http://www.defra.gov.uk/publications/2011/08/19/pb13583-biodiversity-strategy-2020/

Bright, P., Morris, P. & Mitchell-Jones, T. (2006). The dormouse conservation handbook. (2nd edition) Peterborough, English Nature

Bright, P (1998) Behaviour of specialist species in habitat corridors: arboreal dormice avoid corridor gaps. Animal Behaviour 56 (6): 1485-1490

Chanin, P.R.F. (1985). The Natural History of Otters.

Cheffings, C.M. & Farrell, L. (eds), Dines, T.D., Jones, R.A., Leach, S.J., McKean, D.R., Pearman, D.A., Preston, C.D., Rumsey, F.J., Taylor, I. 2005. The Vascular Plant Red Data List for Great Britain. Species Status No. 7. JNCC, Peterborough, ISSN 1473-0154.

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

Cumbria Biological Data Network (2010) Version 1.2 - Cumbria Biodiversity Evidence Base information

Defra (2007). Hedgerow Survey Handbook. A standard procedure for local surveys in the UK. Defra. London

English Nature (2002) Badgers and Development

English Nature (2001) Great crested newt mitigation guidelines

English Nature (1999) Water vole. Guidance for planners and developers.

Gent A and Gibson S (1998), Herpetofauna Workers Manual, Joint Nature Conservation Committee, Peterborough.

Gunnell, K., Murphy, B. and Wiiliams, C. (2013). Designing for Biodiversity: A technical guide for new and existing buildings. London

HMSO (1981). Wildlife and Countryside Act 1981, Schedule One

HMSO (2000). Countryside and Rights of Way Act 2000.

Institute of Ecology and Environmental Management, Professional Guidance Series (CIEEM http://www.cieem.net/) [Members only]

Institute of Ecology and Environmental Management (2006) Guidelines for Ecological Impact Assessment in the United Kingdom (CIEEM website – as above)

Institute of Environmental Assessment (1995) Guidelines for Baseline Ecological Assessment. E & FN Spon. London.

JNCC (eds) 2001 Habitat Management for Bats

Joint Nature Conservation Committee (2010 Ed.). Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit. JNCC. Peterborough

Joint Nature Conservation Committee Phase 1 Habitat Classification http://jncc.defra.gov.uk/page-4258

Langton, T, Beckett, C. and Foster J. (2001) Great Crested Newt: Conservation Handbook. Froglife, Suffolk.

Mitchell-Jones, A. J. & McLeish A. P. (eds) 2004 Bat Workers Manual JNCC

Mitchell-Jones, A.J. (2004) Bat Mitigation Guidelines. Natural England, Peterborough.

Natural Environment and Rural Communities (NERC) Act (2006) (http://www.opsi.gov.uk/acts/acts2006/ukpga_20060016_en_1)

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

Porter M. and Halliday G. (2014) The Rare Plant Register of Cumbria. Trollius Publications. ISBN: 9780953971855

RSPB (2009) Birds of Conservation Concern 3. RSPB Sandy, Beds. http://www.rspb.org.uk/Images/BoCC_tcm9-217852.pdf

Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.

Stace, C (2010) New Flora of the British Isles. 3rd edn. Cambridge University Press, Cambridge, UK.

Streeter, D (2016) Collins Wild Flower Guide 2nd end. William Collins. ISBN 10: 0008156743.

The National Planning Policy Framework http://www.communities.gov.uk/publications/planningandbuilding/nppf

TSO (2010) The Conservation of Habitats and Species Regulations 2010.

Wild Mammals (Protection) Act 1996.

Wildlife Trust for Cumbria: Biodiversity Action Plan document