

**Chepstow Quarry**  
Preliminary Ecological Appraisal

BLANK PAGE

## Issuing office

Merlin House | No 1 Langstone Business Park | Newport | NP18 2HJ  
T: 01633 509000 | W: www.bsg-ecology.com | E: info@bsg-ecology.com

<b>Client</b>	Radcliffes Construction Consultants Ltd
<b>Project</b>	Chepstow Quarry, Preliminary Ecological Appraisal
<b>Version</b>	FINAL
<b>Project number</b>	P21-838 - Chepstow Quarry NDAC PEA

	<b>Name</b>	<b>Position</b>	<b>Date</b>
<b>Originated</b>	Kirsty Rogers Rachel Taylor	Senior Ecologist Principal Ecologist	25 October 2021
<b>Reviewed</b>	Owain Gabb	Director	02 November 2021
<b>Issued to client</b>	Rachel Taylor	Principal Ecologist	03 November 2021

### Disclaimer

This report is issued to the client for their sole use and for the intended purpose as stated in the agreement between the client and BSG Ecology under which this work was completed, or else as set out within this report. This report may not be relied upon by any other party without the express written agreement of BSG Ecology. The use of this report by unauthorised third parties is at their own risk and BSG Ecology accepts no duty of care to any such third party.

BSG Ecology has exercised due care in preparing this report. It 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 BSG Ecology assumes no liability for any loss resulting from errors, omissions or misrepresentation made by others.

Any recommendation, opinion or finding stated in this report is based on circumstances and facts as they existed at the time that BSG Ecology performed the work. The content of this report has been provided in accordance with the provisions of the CIEEM Code of Professional Conduct. BSG Ecology works where appropriate to the scope of our brief, to the principles and requirements of British Standard BS42020.

Nothing in this report constitutes legal opinion. If legal opinion is required the advice of a qualified legal professional should be secured. Observations relating to the state of built structures or trees have been made from an ecological point of view and, unless stated otherwise, do not constitute structural or arboricultural advice.

## **Contents**

1	Summary .....	2
2	Introduction.....	3
3	Methods.....	4
4	Results.....	6
5	Conclusions and Recommendations.....	13
6	References .....	18
7	Figures.....	19
7	Bat roost assessments and Target Notes (TN).....	20
	Appendix 1: Summaries of Relevant Policy, Legislation and Other Instruments .....	31

# 1 Summary

<b>Report purpose</b>	Preliminary Ecological Appraisal of land at Chepstow Quarry as part of a due diligence exercise to inform future development. The report includes details of a desk-based study, extended Phase 1 habitat survey, and external inspection of buildings and trees.
<b>Client and commission date</b>	Radcliffes Construction Consultants Ltd, October 2021.
<b>Date and methods of survey</b>	Extended Phase 1 habitat survey and external building and tree inspections (for bat roost potential) completed by Kirsty Rogers, Senior Ecologist, on 14 October 2021.
<b>Key findings</b>	<p>The combination of desk study and field survey work identified that the Site supports a range of common and widespread habitats, and more unique site-specific features (such as the quarry cliffs, slopes and void).</p> <p>Broadleaved woodland and open mosaic habitats of brownfield land within the Site meet the criteria to qualify as habitats of principal importance for the conservation of biodiversity in England (NERC Act, 2006). Lowland Mixed Deciduous Woodland and Lowland Beech and Yew Woodland appear to be good examples of their type, although both cover small areas (approximately 3.9 ha and 0.1.5 ha respectively). Vegetated areas of OMH appeared reasonably species poor, with one area in the northwest having higher species diversity. Recommendations for condition surveys of HPIs in the optimal survey season are provided.</p> <p>These and other habitats on Site have potential to support protected species such as bats, dormouse, great crested newts, reptiles, badger and Schedule 1 (Wildlife and Countryside Act, 1981) birds.</p> <p>Seventy buildings were assessed for bat roost potential. Of these 51 were found to have low potential, and three moderate potential for roosting bats; all other buildings had negligible bat roost potential. Groups of trees within the Site are mature enough to have low potential features for roosting bats, but no such features were identified during the survey. There is also a partially vegetated cave mid-way up the quarry face with moderate potential for hibernating bats. Bat boxes and dormouse boxes have been installed on trees to the north-east of the Site entrance.</p> <p>The quarry faces provide suitable habitat for nesting birds, including Schedule 1 species such as peregrine which records suggest has bred on Site in the past.</p>
<b>Potential impacts</b>	<p>Potential impacts on protected species arising from future development may include injury or disturbance of roosting bats, breeding birds, badger and dormouse (if present).</p> <p>Impacts and any appropriate mitigation measures will be dependent on future development plans. Where possible, features suitable for use by protected species should be retained.</p>
<b>Recommendations for further survey</b>	<p>Further survey may be required to confirm the condition and extent of HPIs and presence / absence of roosting bats, breeding birds, badger, great crested newts and dormouse.</p> <p>The need for further survey will be dependent on the nature and scale of any proposed development, and its potential to impact on habitats and species.</p>
<b>Opportunities for biodiversity enhancement</b>	<p>National planning policy requires all development in England delivers proportionate biodiversity gain as part of the scheme. Opportunities for biodiversity enhancement could include:</p> <ul style="list-style-type: none"> <li>• Provision of roosting and nesting features for birds and bats</li> <li>• Inclusion of native species green roofs on new buildings and/or smaller structures such as bike shelters</li> <li>• Provision of rain gardens or other natural flood/drainage management systems planted with native species.</li> <li>• Inclusion of fruiting native tree species.</li> <li>• Inclusion of pollinator strips and/or wildflower meadows i.e., strips of native wildflower species in free standing planters and/or landscaped areas around the new buildings</li> <li>• Use of a species-rich flowering lawn mix within amenity grassland areas.</li> </ul> <p>Other opportunities for biodiversity enhancement may be suggested during the design of future development (depending on type and extent of the proposals).</p>

## 2 Introduction

- 2.1 BSG Ecology was commissioned in October 2021 by Radcliffes Construction Consultants Ltd to complete a Preliminary Ecological Appraisal to inform future development of Chepstow Quarry, Tiddenham.

### Site description

- 2.2 The Site is a former quarry that has been allowed to flood and is now the site of the National Diving Academy and Activity Centre (NDAC). The quarry void and its immediate surrounds accounts for approximately half of the area within the Site boundary. There are 70 buildings within the Site Those in active use comprise offices, holiday lets (wigwams) and storage buildings. A number of disused / derelict structures are also present. Large numbers of shipping containers are scattered throughout the Site, with some stacked up to six high. The rest of the area comprises a mixture of established semi-natural habitats and areas of regularly disturbed and / or compacted ground. There is lighting throughout the Site, particularly associated with the holiday lets.
- 2.3 The Site is located northeast of Chepstow (central Ordnance Survey Grid Reference ST 55430 95858) on a peninsula of land between the River Wye approximately 1.2 km to the west, and the River Severn approximately 1.2 km to the east, which tapers to a point to the south where the two rivers meet. Tiddenham Manor and cottages are adjacent to the eastern Site boundary. The surrounding land is predominantly arable in nature, with farms, villages and small holdings throughout. Mature trees along railway lines form strong linear corridors, and there is a woodland to the southeast.

### Purpose of this report

- 2.4 The purpose of this report is to identify potential ecological constraints and opportunities associated with the Site which may be material to future planning applications, and to make recommendations for further survey which may be appropriate depending on the type and extent of a future planning application.

### 3 Methods

#### Desk study

3.1 A desk-based study was undertaken to collate existing ecological information on the Site and its wider ecological context. Information collated included:

- The presence of statutory designated sites of nature conservation interest within 2 km of the Site boundary. Data were sourced from the Magic website (<http://magic.defra.gov.uk/>, accessed August 2021).
- Records of non-statutory designated sites and protected/notable species and habitats within 2 km of the Site boundary from the South East Wales Biodiversity Records Centre (SEWBReC) and Gloucestershire Centre for Environmental Records (GCER) in October 2021.
- Aerial photographs and mapping (Bing Maps, accessed August 2021) of the Site and its surroundings. These were reviewed to identify any ponds within 250 m and to assess the context and connectivity of the Site with regard to semi-natural habitats in the local landscape.

#### Field survey

3.2 An extended Phase 1 habitat survey of the Site was undertaken on 14 October 2021.

3.3 The survey involved an experienced botanical surveyor walking the Site to identify and map the habitats present using the habitat categories and guidance described in the Handbook for Phase 1 Habitat Survey (JNCC, 2010). The survey was extended to include an assessment of the potential of the Site to support protected or otherwise notable species<sup>1</sup>, and record the presence of non-native invasive species. A large proportion of this work comprised an external inspection of the buildings to determine their potential to support roosting bats (see below) by a licenced bat ecologist.

#### *Building and tree inspection*

3.4 External inspections were completed of buildings and trees within the Site to assess their potential for roosting bats. A high-powered torch, endoscope and binoculars were used to identify any potential roost features (PRF).

3.5 Each building/tree was described individually or in groups<sup>2</sup> and assigned a category indicating their potential suitability for roosting bats in accordance with Table 1 below, as adapted from BCT (2016: Table 4.1, p. 35).

Table 1: Categories of bat roost suitability of buildings, structures and trees.

Level of bat roost suitability	Rationale
Negligible	Structure or tree with negligible habitat features likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically and is unlikely to be used for breeding and/or hibernation. A tree of sufficient age and size to support potential roost features (PRFs) but with none seen from the ground.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection and surrounding habitat but unlikely to support a roost of high conservation significance.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis due to their size, shelter, protection and surrounding habitat.
Confirmed Roost	Presence of bats or evidence of recent use by bats.

<sup>1</sup> Section 7 (Environment (Wales) Act, 2016) or LBAP species.

<sup>2</sup> For example where a group of trees are of a similar age and condition, these may be assessed together.

### Limitations to methods

- 3.6 Access to some areas of the Site was restricted due to health and safety restrictions, difficult topography and dense vegetation. This includes the quarry basin / water's edge, quarry cliffs / cliff edges and areas of dense scrub. These habitats were viewed from safe vantage points using binoculars. Whilst this survey effort was sufficient to identify broad habitat types and obvious signs of protected species, species lists are not exhaustive and less conspicuous signs of protected species may have been missed.
- 3.7 Asbestos reports for the existing buildings were not available at the time of survey. Building inspections were therefore restricted to external areas. Access to some aspects of buildings was additionally restricted due to health and safety reasons (proximity to quarry edge), secured (fenced-off) areas, or dense vegetation. Where restrictions to access applied, these are clearly identified in this report, and a precautionary assessment is made.
- 3.8 The external inspections are considered sufficient to provide an initial assessment of the potential of buildings to support roosting bats and to determine the required scope of more detailed surveys; as potential access points could be identified, and internal features (such as loft spaces) were predictable (in terms of size and shape). The lack of internal inspection is not considered to be a significant limitation to the survey.
- 3.9 The Phase 1 survey was completed outside of the growing season for most plants. Habitats on Site support species that can be recognised through vegetative growth / have persistent seed heads and the categorisation of habitats is not considered to be limited. It is possible that some early flowering species (such as bluebell or orchids) could be under recorded or missed at this time of year. Recommendations for further survey to determine the presence of such seasonal species and confirm the quality of the habitats are made in the relevant section of this report.

### Personnel

- 3.10 Kirsty Rogers ACIEEM: Kirsty is a Senior Ecologist at BSG Ecology. She has worked as a professional ecologist since 2013 and has experience in the delivery of numerous ecological assessments for projects of varying scale and complexity, including bat roost assessments. She holds a bat survey licence with Natural Resources Wales (S089761/1). Kirsty was responsible for carrying out the field work for this project and is the author of this report.
- 3.11 Rachel Taylor ACIEEM Principal Ecologist at BSG Ecology, co-authored this report. Rachel regularly writes and reviews technical reports including preliminary ecological appraisals and has over 8 years of consultancy experience. She also holds an NRW licence for bat survey (licence number SO89955-1).
- 3.12 This report has been reviewed by Owain Gabb CEnv., MIEEM. He has worked as a professional ecologist since 1999 and as an ecological consultant since 2003. Owain has technically directed or managed the ecological inputs for a range of projects including renewable energy schemes, grid connection projects, power stations (new nuclear and decommissioning proposals), energy from waste plants, parkland restoration schemes, residential and mixed-use developments, and provided support to local planning authorities in evaluating the ecological evidence base for large planning applications.
- 3.13 Further details of each surveyor's experience can be found at <http://www.bsg-ecology.com/people/>.



## 4 Results

4.1 Desk study and field survey results are presented in this section. A summary of legislation and policy relevant to designated areas, habitats and species is contained in Appendix 1.

### Designated sites

#### Statutory sites

4.2 Statutory designated sites within 2 km of the Site boundary are described below:

- Caerwood and Ashberry Goose House Site of Special Scientific Interest (SSSI) is one of a series of SSSIs that form part of the Forest of Dean and Wye Valley Bat Sites Special Area of Conservation (SAC); these component sites are in both Gloucestershire and Monmouthshire. The SAC and its component SSSIs support breeding and hibernation roosts for lesser horseshoe *Rhinolophus hipposideros* and greater horseshoe bats *Rhinolophus ferrumequinum*. Caerwood and Ashberry Goose House SSSI is notified for its nationally important breeding roosts of lesser horseshoe bats and is approximately 980 m northwest of the Site. The Site is outside the Juvenile Sustenance Zone<sup>3</sup> for lesser horseshoe bats using Caerwood and Ashberry Goose House SSSI.
- The Severn Estuary SAC, Ramsar, Special Protection Area (SPA) and SSSI are approximately 1230 m to the east south-east of the Site. The sites afford varying protection to areas of intertidal shore and estuarine habitats, associated internationally / nationally important populations of breeding, overwintering and migratory birds, several species of migratory fish, and otter *Lutra lutra*.
- Wye Valley Woodlands SAC is approximately 1.2 km west of the Site. It contains abundant and near-continuous semi-natural woodland along the gorge. These habitats are the primary reason for SAC selection. Lesser horseshoe bat is also a reason for designation.
- River Wye SAC is approximately 1.2 km west of the Site. It is designated for 'water courses of plain to montane levels with the *Ranunculion fluitantis* and *CallitrichoBatrachion* vegetation'. The River Wye (lower Wye) SSSI which covers the same area represents a large, linear ecosystem which acts as an important wildlife corridor, an essential migration route and a key breeding area for many nationally and internationally important species including several species of migratory fish, and otter *Lutra lutra*.
- Lower Wye Gorge SSSI overlaps Wye Valley Woodlands SAC in part and is approximately 1.2 km west of the Site. It is notified for its ancient semi-natural woodlands and mosaic of other seminatural habitats. It is of importance as a varied and species-rich area of limestone gorge woodland, with floristic affinities to some other gorge sites in southwest England. Of particular interest at the western edge of the site is the transition from saltmarsh to valley woodland bordering the tidal River Wye.

#### Non-statutory sites

4.3 There are six Local Wildlife Sites (LWS) and one Site of Importance for Nature Conservation (SINC) within the 2 km search radius for the Site. These are listed in the table 2 below, along with their reasons for selection.

**Table 2:** Non-statutory sites within 2 km.

Name of site	Distance and direction from Site	Reason for selection
Ashberry House & Caerwood Meadows LWS	600 m northwest	Semi-natural grassland
Park Grove LWS	698 m southeast	Ancient semi-natural broadleaved woodland

<sup>3</sup> Lesser horseshoe roost Juvenile Sustenance Zone = area within 600m of a maternity roost (SSSI) that is particularly important for foraging bats – impacts within this area could have an effect on the integrity of the maternity roost.

Tintern Quarry	1.29 km northwest	Carboniferous limestone sequence
Ladysmith LWS	1.29 km southeast	Ancient semi-natural broadleaved woodland
Walter's Weir LWS	1.6 km west	Semi-natural grassland with plant interest
Lancaut Farm LWS	1.79 km northwest	Semi-natural limestone grassland with RDB Vulnerable & Nationally scarce lesser calamint.
Piercefield Park SINC	1.9 km west	Historic parkland.

**Habitats**

4.4 Phase 1 habitats within the survey area are described in the sections below. Habitats, buildings and target note locations are shown on Figure 1a-c (with Figure 1c being a smaller scale to show southwest building numbers) and accompanying photographs and target notes are provided in Section 8.

**Buildings, bare ground and ephemeral/short perennial vegetation**

4.5 Approximately 35% of the Site comprises operational and disused buildings / structures, un-vegetated bare-ground, and roads / tracks.

4.6 Ephemeral/short perennial vegetation has colonised small undisturbed areas of hard-standing and loose gravel scattered across the Site. Characteristically for this habitat type, botanical composition is variable and lacks a clear dominant species. The most frequently encountered species include annual grasses such as annual meadow grass *Poa annua*, cock’s-foot *Dactylis glomerata* and occasional creeping bent *Agrostis stolonifera*.

4.7 These are accompanied by a low range of herbs typical of disturbed ground and/or shallow soils including frequent herb Robert *Geranium robertianum*, greater plantain *Plantago major*, ribwort plantain *P. lanceolata*, wild carrot *Daucus carota*, black medic *Medicago lupulina*, white clover *Trifolium repens*, common sow-thistle *Sonchus oleraceus*, and pineappleweed *Matricaria discoidea* with occasional immature butterfly-bush *Buddleja davidi*.

4.8 In the northern part of the Site, ephemeral/short perennial vegetation has colonised an area of loose stone / rubble, to the north and west of B13. This area was more species diverse than other areas of short ephemeral vegetation (suggesting it may have been left undisturbed for longer amount of time than other areas). Additional species found here included abundant broad-leaved willowherb *Epilobium montanum* with frequent ragwort *Senecio jacobaea*, black mustard *Brassica nigra*, Canadian fleabane *Erigeron canadensis*, creeping cinquefoil *Potentilla reptans*, self-heal *Prunella vulgaris*, spear thistle *Cirsium vulgare* and bristly ox-tongue *Helminthotheca echioides*. Occasional scarlet pimpernel *Anagallis arvensis*, great mullein *Verbascum thapsus*, teasel *Dipsacus fullonum*, and oxeye daisy *Leucanthemum vulgare* were also noted. Creeping buttercup *Ranunculus repens*, apple mint *Mentha suaveolens* and butterbur *Petasites hybridus* were present in localised damp areas.

4.9 The potential for areas of ephemeral / short perennial vegetation to qualify as Open Mosaic Habitats on Previously Developed Land (OMH) was assessed. In order to qualify as an OMH Habitat of Principal Importance (HPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (England) they must meet the five criteria listed in Table 3.

**Table 3:** Criteria for Open Mosaic Habitats on Previously Developed Land HPI (adapted from JNCC, 2010).

Criterion	
1	The area of OMH is at least 0.25 ha in size.
2	Known history of disturbance or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added.

3	Site contains some vegetation comprising early successional communities consisting mainly of stress tolerant species. Early successional communities are composed of a) annuals, or b) mosses/liverworts, or c) lichens, or d) ruderals, or e) inundation species or f) open grassland, or g) flower-rich grassland, or h) heathland.
4	The site contains un-vegetated, loose bare substrate and pools may be present.
5	The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a-h) above (criterion 3) plus bare substrate within 0.25 ha.

4.10 Areas of connected ephemeral / short perennial vegetation, and uncompacted bare ground in the northern part of the Site covers approximately 0.74 Ha, has historically been disturbed, and contains early successional annual vegetation and loose bare substrate within 0.25 ha across the area.

4.11 This meets the criteria for Open Mosaic Habitats on Previously Developed Land HPI under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (England)

4.12 Areas of ephemeral / short perennial vegetation in the south of the Site are small-isolated pockets within heavily compacted areas of bare ground (with very little loose substrate). These areas do not meet the criteria for Open Mosaic Habitats on Previously Developed Land HPI.

**Quarry with open water**

4.13 The Site is formed around a flooded limestone quarry basin which covers approximately 35% of the Site, comprising bare ground (as above), steep cliffs, scree, scattered scrub, and a large open-water basin. The cliffs reach a height of approximately 70 m and the flooded quarry (fed by natural springs) is approximately 80 m deep.

4.14 Vegetation associated with the quarry is restricted to scattered scrub established along the top of the basin, partially vegetated rock shelves within cliff faces and scree. Butterfly-bush is dominant with frequent silver birch *Betula pendula*, immature hazel *Corylus avellana*, dogwood *Cornus sanguineus*, traveller's-joy *Clematis vitalba* and Italian alder *Alnus cordata* (the latter more so along the western quarry edge).

4.15 No submerged or emergent vegetation was recorded within the open / standing water, however access to the quarry basin was restricted (see Limitations).

4.16 This habitat does not meet the definition of any priority habitat (Maddock, 2011) or local designation (Gwent Wildlife Trust, 2009).

**Woodland**

4.17 Woodland is found along the eastern, western and northern boundaries of Site / quarry basin. Several types of woodland were recorded, and these are described separately below.

**Broad-leaved semi-natural woodland**

4.18 Broadleaved semi-natural woodland is present along a disused rail corridor towards the western edge of the Site and extending beyond it (TN 1), and an area of less mature broad-leaved woodland is present in the south-eastern area of the Site (TN 5). The areas of broadleaved semi-natural woodland have a varying age range, but no obvious over mature trees. The woodland does not appear to be actively managed (no pruning wounds or felled material was recorded), most trees were in good condition, and no signs of damage were seen from the ground (see section 4.37, ground level tree assessment for more information).

4.19 The woodland canopy comprises frequent hazel, sycamore *Acer pseudoplatanus*, ash *Fraxinus excelsior*, hawthorn *Crataegus monogyna* and field maple *Acer campestre* with occasional English oak *Quercus robur*, silver birch, crack willow *Salix fragilis*, Lombardy poplar *Populus nigra*, white poplar *Populus alba* and blackthorn *Prunus spinosa*.

- 4.20 The understory has dense scrub stands, comprising butterfly bush, dog-rose *Rosa canina*, dog wood, holly *Ilex aquifolium* and bramble *Rubus fruticosus* agg. scrub, with more open areas comprising male fern *Dryopteris filix-mas*, ivy *Hedera helix*, wood avens *Geum urbanum*, enchanter's nightshade *Circaea lutetiana*, hart's-tongue fern *Asplenium scolopendrium* and common nettle *Urtica dioica*. It is possible that some woodland understorey species have been missed due to the timing of the survey work.
- 4.21 The broad-leaved semi-natural woodland is a good example of mixed deciduous woodland, it is reasonably small in extent but covers approximately 20 % of the Site (approximately 3.9 ha). It is well connected to other woodland within the Site, and outside it via a disused railway track which provides a link to the extensive woodland areas within the River Wye valley.
- 4.22 A small area (approximately 0.2 ha) of mature beech *Fagus sylvatica* dominant woodland is present to the north of a public footpath along the northern boundary of the Site (TN 13). The woodland has an open understory with occasional patches of holly, and ivy present amongst the leaf litter. This area is a typical lowland beech woodland.
- 4.23 Broad-leaved semi-natural woodland on Site meets definitions for Lowland Mixed Deciduous Woodland and Lowland Beech and Yew Woodland Habitats of Principal Importance (Maddock, 2011).

#### Coniferous plantation woodland

- 4.24 A small area of mature coniferous plantation woodland is present along the northern (TN 15) and eastern boundary of the Site (extending off-Site to the east), comprising dominant European larch *Larix decidua*. There is very little age variation in the larch, but there are occasional immature sycamore and hazel stands throughout. Understory is open, and comprises butterfly bush scrub, ivy, enchanter's nightshade, herb Robert and wood avens. There was no visible damage to the trees.
- 4.25 This habitat does not meet the definition of any priority habitat (Maddock, 2011).

#### Mixed plantation woodland

- 4.26 Mixed plantation woodland borders the northern, north-eastern (TN 12) and part of the western edge of the Site. The woodland is fairly mature with little age variation between trees and comprises abundant European larch, frequent ash and beech, with occasional hazel, silver birch, sycamore, Leyland cypress *Cupressus x leylandii*, goat willow *Salix caprea* and Scot's pine *Pinus sylvestris*. The understory comprises dense bramble and butterfly-bush patches. There was no visible damage to the trees.
- 4.27 This habitat does not meet the definition of any priority habitat (Maddock, 2011).

#### Scrub

- 4.28 Scrub is frequent across the Site. It occurs as scattered plants (see paragraph 4.13 above) and dense areas around the edges of the quarry basin and woodland habitats. Butterfly-bush is the most frequently encountered species, with occasional bramble, goat willow, immature ash and hazel, dogwood *Cornus sanguineus*, elder *Sambucus nigra*, traveller's-joy, aspen *Populus tremula*, white poplar and Italian alder.
- 4.29 This habitat does not meet the definition of any priority habitat (Maddock, 2011) The dense and scattered scrub is likely to provide cover and foraging opportunities for a range of species.

#### Amenity grassland

- 4.30 Amenity grassland occurs in isolated patches within the south-west of the Site. These are closely mown and species poor, dominated by false oat grass *Arrhenatherum elatius*, Yorkshire fog *Holcus lanatus* with occasional perennial rye grass *Lolium perenne*, annual meadow-grass, cock's-foot and creeping bent *Agrostis* and a small number of common herb species tolerant of regular mowing such

as daisy *Bellis perennis*, dandelion *Taraxacum officinale* agg., creeping buttercup, wild strawberry *Fragaria vesca*, silver weed *Potentilla anserina*, lesser trefoil *Trifolium dubium*, yarrow *Achillea millefolium* and cat's ear *Hypochaeris radicata*. Grassland managed in this way has very low ecological value as species diversity remains low and the sward does not provide cover for small mammals / reptiles etc.

4.31 This habitat does not meet the definition of any priority habitat (Maddock, 2011).

#### **Scattered trees**

4.32 Scattered trees occur occasionally throughout the Site, including an area of broad-leaved scattered trees at TN 7, and throughout dense scrub patches. A Leyland cypress tree belt is present to the south of the Site. The scattered trees are immature with no signs of damage.

4.33 Species include ash, silver birch, Italian alder, rowan *Sorbus aucuparia*, white poplar, field maple, aspen and cherry *Prunus avium*. These species are likely to provide some cover, nesting and foraging opportunities for a range of species, however their importance within the context of the Site is likely to be limited given the extent of the more mature woodland areas.

4.34 This habitat does not meet the definition of any priority habitat (Maddock, 2011) or local designation (Gwent Wildlife Trust, 2004).

#### **Invasive species**

4.35 A small stand of wall cotoneaster *Cotoneaster horizontalis* is present within amenity grassland at the south-western corner of the Site (near B1g adjacent to amenity grassland).

#### **Species**

4.36 The potential of the Site to support protected or priority species is set out in the following sections.

#### **Bats**

##### **Desk study and inspection survey**

4.37 The Record Centres returned 85 bat records within 2 km of the Site. Most of these records are associated with bat counts at protected sites. Species recorded in the search area include noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, Daubenton's bat *Myotis daubentonii*, whiskered bat *Myotis mystacinus*, brown long-eared bat *Plecotus auratus*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, lesser and greater horseshoe bat. The closest roosts to the Site are in Tidenham Railway Tunnel which is a hibernation roost with records of greater and lesser horseshoe bat, serotine, whiskered / Brandt's bat, brown long-eared bat and Daubenton's bat. Tiddenham Tunnel is approximately 400 m to the northwest of the Site and is connected to it via a band of broadleaved woodland along Netherhope Lane.

4.38 A total of seventy buildings were assessed during the survey. External features suitable for use by roosting bats were recorded on fifty-four of the buildings. Building locations, detailed results of the building inspections and photographs are provided in Section 9. Building numbers and subsequent survey locations are shown on **Figure 2**.

4.39 The ground-level assessment of trees found the majority of woodland and scattered trees were of a suitable size and age to support PRFs, but none were seen from ground level. A cave within the quarry wall is present at TN 2. Positioned mid-way up the cliff face, it was not accessible but has been assessed as being of medium suitability for roosting bats in both the active and hibernation period based on the extent visible from the ground. Bat boxes have been installed in woodland in the southeast of the Site (TN5).

4.40 Most of the Site is likely to be of low value for foraging or commuting bats, given the lack of vegetation, the disturbed environment and associated lighting. The wooded areas and woodland margins are of

moderate foraging and commuting potential, as the range of plant species and its structural diversity suggest it is likely to support prey species throughout the year. The woodland also provides a dark linear corridor along the western side of the Site that links to woodland and arable fields off-site.

- 4.41 The flooded quarry may also be used for drinking / foraging on calm nights, it is the largest area of freshwater aside from the River Wye and the River Severn in the local area, although small ponds and streams are present locally.

#### ***Dormouse***

- 4.42 The Record Centres returned 187 records of hazel dormouse *Muscardinus avellanarius* within 2 km. The closest record (from 2009) is an individual in a (bird) nest box in a hedgerow approximately 345 m from the Site. This hedgerow is connected via other hedgerows to the western areas of woodland within the Site. Woodland and scrub habitats around the boundary of the Site are suitable for use by dormouse and the species appears to be widespread in the local landscape.

- 4.43 Dormouse boxes were noted within woodland at TN 5.

#### ***Great crested newt***

- 4.44 There are two great crested newt *Triturus cristatus* records within 2 km of the Site. One record from 1966 is located approximately 760 m to the north and the other identifying a small breeding population approximately 1 km northwest of the Site from 1999.

- 4.45 Aside from the flooded quarry, which is considered unsuitable for great crested newts due to its size and lack of vegetation, there are two ponds within 250 m of the Site<sup>4</sup> (located 130 m southwest of the Site boundary). Boundary woodland and scrub is suitable for terrestrial use by great crested newts.

#### ***Badger***

- 4.46 Record Centres returned five records for badger *Meles meles* within a 2 km search radius, all of which were from over 20 years ago. Wooded habitats around the boundary of the Site have potential for foraging and sett building, but potential for excavation in the central part of the Site is limited by compaction of ground and the lack of vegetation. The only access for badger to the flooded area is via an exposed access track, no evidence of badger was recorded along this track.

- 4.47 Badger droppings were recorded at TN 6, which is situated on the interface between semi-natural broadleaved woodland and scrub in the southeastern area of the Site. further east are a mixture of gardens and arable land. No other evidence of badger activity was recorded in accessible areas of the Site (see 3.6 for limitations).

#### ***Birds***

- 4.48 The Record Centres hold 302 bird records from within 2 km of the Site. The majority of records are associated with the Gwent Wildlife Trust reserves of Lancaut (1 km west) and Ban-y-Gor wood (1.1 km northwest).

- 4.49 The buildings, mature trees, and dense areas of scrub provide suitable nesting habitat for a variety of common bird species as well as potentially supporting protected and priority species. An example of the latter that has been recorded within 2 km of the Site is hobby *Falco subbuteo*. The species is associated with mature deciduous trees / conifers with open crown structure (such as pines) on woodland edge and can also nest mature field boundary trees.

---

<sup>4</sup> Great crested newts spend at least half of their time on land and can travel a long way from ponds during this time. As studies have determined that GCN typically remain within a 250 m radius of ponds, guidance recommends that ponds within 250 m of a development are surveyed to confirm presence / absence of GCN. If GCN are present, it would be assumed that they may use terrestrial habitats within the development site.

4.50 The quarry face may provide nesting opportunities for cliff nesting species such as peregrine *Falco peregrinus*, and a record from within the Site was returned for March 2011 of a pair and potential eyrie, and of a single bird in November 2016.

4.51 Other species for which records were returned for the Site included the following:

- Species for which there is typical nesting habitat on Site (including on the buildings) such as song thrush *Turdus philomelos*, mistle thrush *Turdus viscivorus*, linnet *Linaria cannabina*, dunnock *Prunella modularis*, starling *Sturnus vulgaris*, house sparrow *Passer domesticus*, bullfinch *Pyrrhula pyrrhula*, herring gull *Larus argentatus*, lesser black-backed gull *Larus fuscus* and house martin *Delichon urbicum*
- Species for which there is typical nesting habitat near to (but not inside) the Site such as grey partridge *Perdix perdix*, meadow pipit *Anthus pratensis* and skylark *Alauda arvensis*.
- Species likely to have been recorded on passage / in flight over the Site but are unlikely to be reliant on it for nesting or foraging such as yellow wagtail *Motacilla flava*, tree pipit *Anthus trivialis*, redwing *Turdus iliacus* and hawfinch *Coccothraustes coccothraustes*.
- Species that may use the quarry void and surrounding habitats on an irregular basis such as mallard *Anser platyrhynchos*, shelduck *Tadorna tadorna* and grey wagtail *Motacilla cinerea*.

### Reptiles

4.52 Six reptile records were returned within 2 km of the Site, five for slow worm *Anguis fragilis* and one for grass snake *Natrix helvetica*. The closest record is of slow worm, a 1.1 km west of the Site.

4.53 Most of the Site boundary habitats are suitable for reptiles, offering cover or foraging opportunities, with brash and wood piles at TN 10 and 11 providing potential hibernaculum.

### Invertebrates

4.54 There are no invertebrate records associated with the Site itself. However, 107 records for invertebrates were returned by the Record Centres; 40 of the records were associated with the county moth recorder (from a light trap in Tiddenham and the Gwent Wildlife Trust reserves). Most of the moth species recorded are priority species associated with woodland / woodland edge habitats. Most of the other records were recorded to the west of the River Wye, and are largely comprised of beetles, true flies and moths.

4.55 Habitats on site are likely to support a variety of invertebrate species including the priority species of moth that are recorded locally.

### Other species

4.56 Records of hedgehog *Erinaceus europaeus*, smooth newt *Lissotriton vulgaris*, common frog *Rana temporaria* were also provided within the desk study data. Hedgehog was recorded within the Site in 2006. There are suitable habitats along the boundaries of the Site for hedgehog and amphibians.

4.57 Otter has been recorded on the River Wye at Chepstow (2 km to the south) and it is generally accepted that otter use most of the river. There is no clear pathway for otter between the River Wye and the Site, there are no watercourses connecting the two and woodland is intersected by gardens and roads. The quarry is not stocked and is unlikely to be used as a foraging resource for otter.

## 5 Conclusions and Recommendations

5.1 Conclusions on the habitats recorded and species likely to be using the Site are given below, alongside an indication of the further survey that may be necessary to inform future impact assessments.

5.2 These recommendations may vary based on the nature and scale of future development proposals, and their potential impacts, and are indicative only.

### **Designated sites**

5.3 There are eight statutory designated sites and seven non-statutory sites within 2 km of the Site. It is unlikely that on site development will result in any direct impacts on sites that have been designated for their habitats / botanical interest; however indirect impacts such as potential for changes in air quality / aerial deposition, hydrology or increased visitor pressure on them may need to be considered, depending on the nature and scale of the proposals.

5.4 For sites that have mobile species as a reason for designation (such as lesser horseshoe bats at Caerwood and Ashberry Goose House SSSI) direct impacts (such as loss of foraging habitat) will need to be considered alongside indirect impacts (such as disturbance caused by changes to lighting / noise baseline).

5.5 Any potential impacts on SACs, SPAs or Ramsar Sites are likely to trigger the need for a Habitat Regulation Assessment.

### **Recommendations for further survey**

5.6 No recommendations for further survey are given at this time. Further survey may be necessary to inform a planning application / HRA, depending on the type and extent of future development. Potential for impacts designated sites should be considered during design.

### **Habitats**

5.7 The Site supports a variety of established habitats (such as woodland) in undisturbed areas, alongside early successional habitats (scrub, short ephemeral vegetation) in more regularly disturbed areas. Although this is typical of previously developed land, it is composition of habitats that is not common within the landscape local to the Site. Open mosaic habitat (the mix of successional habitats and loose bare ground), lowland mixed deciduous woodland and lowland beech and yew woodland are Habitats of Principal Importance (HPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (England). Impacts to HPIs (such as reduction in extent) should be limited through design, as such impacts will be difficult to mitigate / compensate for and biodiversity gains on Site will be difficult to deliver if priority habitats are lost (though it is noted that the Environment Bill has not been enacted and therefore the current need for net gain depends on local policy – the Bill is scheduled to be enacted soon). Such impacts are likely to be a material planning consideration.

5.8 Other woodland, scrub, buildings, and quarry habitats (including the waterbody) on Site are likely to support a range of protected species and impacts to these habitats (and the species using them) will need to be carefully considered as designs progress.

### **Recommendations for further survey**

5.9 If future development is likely to result in direct impacts (e.g., loss or modification) or indirect impacts (i.e., degradation) on HPIs further survey is recommended during optimal survey periods to confirm the condition and extent of these habitats. For woodlands the optimal survey period is between April and early June, for OMH this period is between June and early September. The results of the survey would inform appropriate mitigation / compensation actions.



If a biodiversity gain assessment is required for the development, we would recommend extending the above to include a condition assessment of all habitats between late - April and September as this information is needed in the calculation of biodiversity gain<sup>5</sup>.

### **Bats**

- 5.10 Bats are protected under the Wildlife & Countryside Act 1981 and the Habitats and Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (see Appendix 1 for details). It is likely that bats use the Site as a foraging resource and there are opportunities for roosting bats throughout the Site. It is likely that an assessment of impacts on bats will be necessary for the future development of the Site, and that further survey will be needed to inform an assessment.

#### ***Recommendations for further survey***

- 5.11 If future development will result in the modification or demolition of buildings, or the management or removal of trees with potential for roosting bats, further survey will be needed to confirm whether roosts are present. This may include internal and external inspection (where safe access can be provided) or night-time survey. Surveys of this type should be completed between April and September (with at least one survey between May and August). The number of surveys required will be dependent on the roosting potential of the building / tree affected.
- 5.12 If future development is likely to result in impacts on the available foraging / commuting resource for bats (such as vegetation removal or additional lighting), bat activity surveys are likely to be necessary to assess potential impacts on bats. Surveys would involve static detectors (left on Site at fixed locations for a set period of time) and walked surveys (with surveyors walking the site recording numbers of bats). It is likely that surveys would be completed at least monthly between April and October.

### **Dormouse**

- 5.13 Dormouse is protected under the Wildlife & Countryside Act 1981 and the Habitats and Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (see Appendix 1 for details). Habitats on site are suitable for dormouse and they are present in the local area. If impacts to habitats with potential for use by dormouse are expected, further survey will be necessary to confirm presence / absence and inform an assessment. If impacts can be demonstrably avoided, survey may not be needed.

#### ***Recommendations for further survey***

- 5.14 If future development is likely to result in an impact on woodland or scrub habitats (e.g. through vegetation removal or lighting), survey will be necessary to assess potential impacts on dormouse and inform licencing requirements. Survey is likely to include installing additional dormouse next tubes throughout suitable habitats and checking for evidence of use between March and November.

### **Great crested newt**

- 5.15 Great crested newt is protected under the Wildlife & Countryside Act 1981 and the Habitats and Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (see Appendix 1 for details). There are habitats on Site suitable for terrestrial use by GCN, if impacts on these habitats are predicted further survey of suitable waterbodies within 250 m of the development are likely to be necessary to confirm presence / absence and inform an assessment.

---

<sup>5</sup> The Biodiversity Metric 3.0 provides a way of measuring and accounting for biodiversity losses and gains resulting from development or land management change. The use of this system will be mandatory for most planning applications in England upon the passing of the Environment Bill. Use of the metric is already requested by several County Councils in England.

**Recommendations for further survey**

- 5.16 If future development is likely to impact terrestrial habitats suitable for use by great crested newts, surveys of ponds within 250 m of the development site are recommended to confirm whether an impact on great crested newt is likely (i.e. if they are likely to be present).

**Badger**

- 5.17 Badger is protected under the Protection of Badgers Act 1992, which makes it any offence to wilfully kill, injure or take a badger (or attempt to do so), or intentionally or recklessly damage or destroy a badger sett, or obstruct access to it. Habitats on Site are suitable for used by badger and a badger latrine was recorded in woodland in the south-eastern corner of the Site.
- 5.18 If impacts on habitats suitable for sett building are predicted further survey in advance of construction activities is likely to be necessary to confirm badger is absent from the area.

**Recommendations for further survey**

- 5.19 Further survey is recommended in advance of any construction works to confirm that there are no badger setts within 30 m of any construction area, as badgers are mobile species and can create new setts relatively quickly. Further survey may require some vegetation reduction to allow access to dense vegetation.

**Birds**

- 5.20 Birds are subject to different levels of protection depending on the species present; all bird nests (completed or in the process of being built) are protected during the nesting season (March to end of August inclusive) under the Wildlife & Countryside Act 1981. Schedule 1 species and dependent young are also protected from disturbance whilst they are nest building or near an active nest. There are habitats suitable for nesting birds, including Schedule 1 species on Site, and further survey is likely to be necessary in order to assess the impacts of future developments.

**Recommendations for further survey**

- 5.21 If future development is likely to result in impacts on woodland, scrub, trees or the quarry faces (e.g. vegetation removal, increased noise or vibration, etc.) specific survey for birds using these habitats may be necessary to assess potential impacts. Survey may include breeding bird surveys in each month between April and July and / or specific survey for raptors.
- 5.22 In addition, any construction work should aim to be completed outside of this period to limit impacts of disturbance on nesting birds (that could lead them to abandon a nest).

**Reptiles**

- 5.23 Reptiles are protected from killing and injury under the Wildlife & Countryside Act 1981. Habitats such as woodland, scrub and OMH are suitable for use by reptiles, and if impacts on these habitats are predicted further survey may be necessary to inform assessment.

**Recommendations for further survey**

- 5.24 If future development is likely to have impacts (e.g. vegetation removal) on habitat suitable for use by reptiles further surveys may be necessary. Survey would include setting out of artificial refugia and checking this refugia on seven occasions to confirm presence absence. The optimal time for survey is April / May and September.

**Invertebrates**

- 5.25 The OMH, scrub, quarry and woodland habitats on Site that are likely to support a range of invertebrate species. If the development is likely to have direct or indirect impacts on these habitats

further surveys may be required to confirm the invertebrate assemblage at the Site and identify any notable species.

#### **Recommendations for further survey**

- 5.26 Further survey for invertebrates will be dependent on the condition / quality of the OMH and woodlands (see paragraph 5.9), as habitats in good condition are likely to support more diverse invertebrate species. The need for survey will also be dependent on the type and extent of future development, and whether impacts on invertebrates / OMH, scrub and woodland habitats is predicted. If invertebrate surveys are recommended the optimal survey period is likely to be between May and September.

#### **Other species**

- 5.27 Habitats on Site are suitable for use by hedgehog and amphibians, and potential impacts of future development on these species should be considered as the design progress. Further survey is unlikely to be required for these species.
- 5.28 Wall Cotoneaster is a non-native invasive species<sup>6</sup> listed on Schedule 9 of the Wildlife and Countryside Act (WCA) 1981 as amended. Under Section 14(2) of the WCA 1981 amended it is an offence to plant or cause to grow in the wild any plant species listed on Schedule 9. The area of cotoneaster should be appropriately marked during construction to avoid spread (and be removed by a trained contractor if appropriate),

#### **Opportunities for biodiversity gain**

- 5.29 The National Planning Policy Framework encourages net gains for biodiversity to be sought through planning policies and decisions. Biodiversity net gain delivers measurable improvements for biodiversity by creating or enhancing habitats in association with development. Whilst it is not clear whether the use of the Defra biodiversity gain metric will be needed for this development, the council will look to achieve proportionate biodiversity gains within the scheme.
- 5.30 Appropriate measures to allow for biodiversity gains within the Site may include:
- Provision of roosting and nesting features for bats and birds within the design of the new buildings, tailored to both species recorded locally.
  - Inclusion of green roof/s sown with a suitable native meadow seed mixture on new buildings and/or smaller structures such as bike shelters to increase foraging opportunities for invertebrates, bats, and birds.
  - Provision of rain gardens or other natural flood/drainage management systems planted with native species.
  - Inclusion of native tree species within Site landscaping, including berry producing species to provide food for wintering migrant birds such as redwing.
  - Creation of pollinator strips and/or wildflower meadow i.e., strips of native wildflower species in free standing planters and/or landscaped areas around the new buildings to create new foraging habitat for invertebrates.
  - Use of a species-rich flowering lawn mix within amenity grassland areas to provide additional foraging areas for invertebrates.
  - Sensitive lighting of new nesting / roosting features and vegetated areas.
  - Creation of open mosaic habitats using left over construction / quarried materials and substrate.

---

<sup>6</sup> animals, plants or other organisms that are introduced into places outside their natural range, negatively impacting native biodiversity, ecosystem services or human well-being.

- 5.31 There may be alternative / additional measures recommended depending on the type and extent of the development proposed, recommendations are indicative only.

## 6 References

- Collins, J. (ed.) (2016). *Bat surveys for professional ecologists: good practice guidelines* (3rd edn). The Bat Conservation Trust, London.
- JNCC (2010). *Handbook for Phase 1 habitat survey. A technique for environmental audit*. Joint Nature Conservancy Council. Peterborough.
- Maddock, A. 2011. UK Biodiversity Action Plan Priority Habitat Descriptions. [online] <https://data.jncc.gov.uk/data/2728792c-c8c6-4b8c-9ccd-a908cb0f1432/UKBAP-PriorityHabitatDescriptions-Rev-2011.pdf> . Accessed 29 October 2021 .
- Stace, C. (2019). *New flora of the British Isles* (4th edn.). C&M Floristics, Suffolk.

## **7 Figures**

(overleaf)



Legend

- Red line boundary
- Target note
- × Scattered scrub
- Tree
- Fence
- Broadleaved woodland - semi-natural
- Coniferous woodland - plantation
- Mixed woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- Standing water
- Quarry
- Cultivated/disturbed land - ephemeral/short perennial
- Buildings
- Bare ground
- Area not accessed

**BSG** | ecology

OFFICE: NEWPORT  
T: 01633 509000

JOB REF: P21-838

PROJECT TITLE  
Chepstow Quarry NDAC

DRAWING TITLE  
Figure 1a: Phase 1 Habitat Survey Results 2021  
(Map 1 of 3)

DATE: 29/10/2021      CHECKED: RT      SCALE: 1:1,850  
DRAWN: SL      APPROVED: RT      VERSION: 1.1

Copyright © BSG Ecology

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

This drawing may contain: Ordnance Survey material by permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown Copyright 2021. All rights reserved. Reference number: 100048980

Aerial Photography © Bing, Microsoft Bing Maps screen shot reprinted with permission from Microsoft Corporation.

Projection: OSGB 1936/British National Grid - EPSG 27700

Sources: BSG Ecology survey data



- Legend
- Red line boundary
  - Target note
  - x Scattered scrub
  - Tree
  - Fence
  - Broadleaved woodland - semi-natural
  - Scrub - dense/continuous
  - Scrub - scattered
  - Coniferous Parkland/scattered trees
  - Standing water
  - Quarry
  - Cultivated/disturbed land - amenity grassland
  - Cultivated/disturbed land - ephemeral/short perennial
  - Buildings
  - Bare ground
  - Area not accessed



OFFICE: NEWPORT  
 T: 01633 509000  
 JOB REF: P21-838

PROJECT TITLE  
 Chepstow Quarry NDAC

DRAWING TITLE  
 Figure 1b: Phase 1 Habitat Survey Results 2021  
 (Map 2 of 3)

DATE: 29/10/2021      CHECKED: RT      SCALE: 1:1,700  
 DRAWN: SL      APPROVED: RT      VERSION: 1.1

Copyright © BSG Ecology

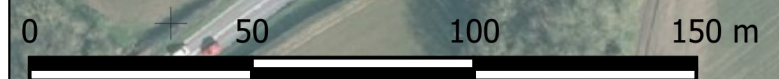
No dimensions are to be scaled from this drawing and are to be checked on site.  
 Area measurements for indicative purposes only.

This drawing may contain: Ordnance Survey material by permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office © Crown Copyright 2021. All rights reserved. Reference number: 100048980

Aerial Photography © Bing, Microsoft Bing Maps screen shot reprinted with permission from Microsoft Corporation.

Projection: OSGB 1936/British National Grid - EPSG 27700

Sources: BSG Ecology survey data



Graphics Ref No.: 00147