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Breach Common Ecological Appraisal and Opportunities Plan

Breach Common, Shaftesbury

December 2020

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The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct.		
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It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to works.

EXECUTIVE SUMMARY

Darwin Ecology Ltd. was commissioned to undertake an ecological appraisal of the land at Breach Common, Shaftesbury to identify the key habitats on site, the potential for (or evidence of) protected species and identify opportunities for management of the site to enhance its biodiversity and increase its value for protected / notable species in the future.

Initial management actions required as a matter of some urgency in order to prevent the further loss of habitats and maintain momentum on areas of work already undertaken include:

- Reduction of bramble scrub in areas intended to be restored to grassland allowing grassland to begin to re-establish and to facilitate continued control of Himalayan balsam in these areas in 2021;
- Ongoing management of the pond areas already cleared to maintain the open conditions and further enhance these as required;
- Creation of additional scrapes within the site to create new ponds and management work in the ponds outside the site with appropriate permission to ensure that they remain suitable for great crested newts; and
- Addition of the second area of Japanese knotweed on site to the ongoing management undertaken by Dorset Council to begin to control this patch and prevent any further spread.

The actions described in this report comprise only outline recommendations and opportunities identified to enhance the value of the site for people and wildlife. In order to inform ongoing management it is recommended that a full management plan is drafted and finalised following public consultation.

A full management plan will form a basis for the long-term management of the site, and provide a basis for funding applications for grant funding towards ongoing management and any necessary infrastructure on the site.

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1. SUMMARY

Breach Common is an area of traditional common land on the western edge of Shaftesbury, providing recreational and amenity opportunities for local people.

The common has not been subject to formal management for a number of years and although commoners rights are still associated with many properties locally, Commoners are not actively involved in the common and none have exercised their grazing rights in more than 25 years.

The lack of grazing has resulted in the dominance of scrub and invasive plant species over the site and the loss of grassland and open habitats. This has reduced the ecological value of the site and resulted in a decline in the use of the site as a recreational area for the local community.

It has potential to support a range of wildlife from locally notable plant and invertebrate species to bats, hedgehogs, reptile species and a wider range of bird species.

It is of particular importance for the declining local great crested newt population, being located very close to known ponds which are used by this species and which have reducing suitability due to lack of management in recent years.

The management of the site presents a range of opportunities to enhance the area for nature conservation making it a beautiful and peaceful public space for people and wildlife.

2. SITE OVERVIEW

2.1. Breach Common is an area of common land on the western edge of Shaftesbury (Figure 1), part of the more extensive complex of St James's and Breach Commons which comprises a number of historic green lanes and holloways and to the south and west of Shaftesbury (Figure 2).



Figure 1: The location of Breach Common at the western edge of Shaftesbury (Copyright Google 2020).

2.2. The common is included within Dorset's ecological network, identified as an area of wildlife value which contributes to the total value of natural habitats in the local area. It provides both a corridor and reservoir for biodiversity in the local area and has the potential to be enhanced to provide greater benefits associated with a cohesive and robust ecological network.

2.3. Benefits of an enhanced ecological network may include:

- Economic benefits:
 - Habitat supporting beneficial species such as pollinators and pest predators with value for local agriculture;
 - Enhanced local environment providing additional recreational value for visitors.
- Social benefits:
 - Local greenspace benefitting physical and mental health of residents;
 - Conserving and recording historic features and local heritage;

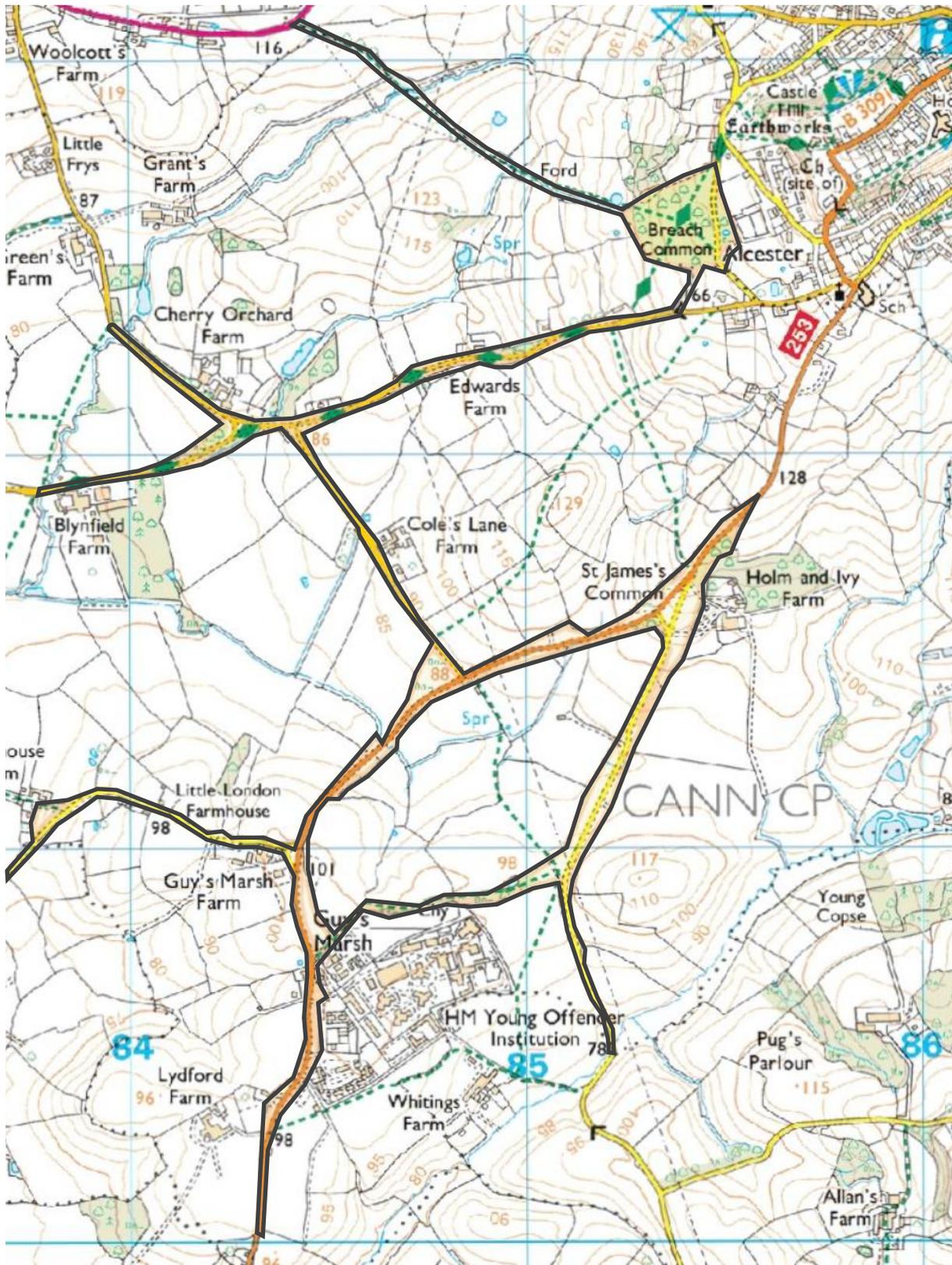


Figure 2: The extent of the St James's and Breach Commons south-west of Shaftesbury (Copyright Ordnance Survey 2020).

- Engaging local people with their natural environment and providing opportunity for social activities through voluntary involvement.
- Environmental benefits:
 - Protecting and creating habitat for wildlife and biodiversity;
 - Supporting local populations of scarce and threatened species.

2.4. There are a number of nationally and locally designated sites in close proximity to Breach Common including Breach Fields Site of Special Scientific Interest (SSSI), Castle Hill Local Community Nature Reserve (LCNR) and Site of Nature Conservation Interest (SNCI) and Long Cross and Breach Fields South SNCI (Table 1).

Site name	Reason for designation	Approximate distance from site
Breach Fields SSSI	Unimproved species rich neutral grassland, rare both in Dorset and nationally. Damp seepages and mixed hedgerows and scrub contribute to the diversity of habitats and species present.	Immediately to south-west
Long Cross SNCI	Unimproved neutral grassland, similar to those fields designated as part of the Breach Fields SSSI and representing a continuation of those habitats and their ecological value.	Immediately to north-west
Castle Hill LCNR & SNCI	A variety of habitats including grassy slopes, wetland areas and well developed woodland.	< 100 m north-east
Breach Fields South SNCI	Semi-improved neutral grassland on undulating, gently sloping and south facing area. A continuation of the grassland habitats designated as part of the Breach Fields SSSI.	Approximately 300 m south

Table 1: Designated sites adjacent to Breach Common

Sites of Nature Conservation Interest (SNCI)

SNCI are locally designated sites that have been identified as being of **inherent wildlife interest** and some are specifically designated because they support particular rare or notable species of plants or animals.

They are often of importance in local wildlife networks and in providing connectivity between areas of natural habitats divided by human development and infrastructure. As such they are protected by local planning and development policies and **enhancement of these sites have the potential to have wide-ranging benefits to wildlife beyond the boundaries of the site.**

2.5. The ecological value of Breach Common lies in its position within the network of local designated sites and in the diversity of habitats present within the site.

- 2.6. It lies at the centre of a matrix of valuable grassland habitats, providing connectivity and cohesion within the existing ecological network and together these sites provide an ecological value greater than the sum of their parts. The traditional management of the site through grazing by commoners would have historically maintained the majority of the open areas of the common as grassland of similar composition and diversity to the surrounding designated sites.



Above: Grassland of Breach Fields SSSI (left) and Long Cross SNCI (right) immediately adjacent to Breach Common.

- 2.7. The common slopes down from the eastern side, towards the wooded western and northern boundaries. The habitats present on the site comprise broadleaved woodland and scrub with some remnant areas of wet grassland. The open areas of the site which would once have been open grassland have become dominated by bramble scrub and bracken. There has been some tree planting on the site in previous years with planted fruit trees and native species such as oak also present. Natural succession is also evident with the growth of self-seeded trees within the scrub, particularly sycamore.



Above: Bramble and bracken scrub dominating the eastern and central parts of Breach Common.

- 2.8. The areas of woodland at the western and northern edges of the site comprise mature deciduous woodland. A line of large mature oak trees is present with a hazel understory of former coppice stools. Several mature sycamore and other tree species are also present and wetter areas of the site include dense willow stands. There is extensive fallen and standing dead wood within the woodland.



Above: Hazel coppice woodland at western side of the site (left) and typical deciduous woodland at the north-western boundary of the site with connectivity to further woodland outside of the site boundary (right).

- 2.9. There are two seasonally wet ponds at the eastern side of the site adjacent to the road, both of which were subject to management in spring 2020 to remove overhanging vegetation and cut back encroaching willow in order to provide more light to support existing aquatic vegetation communities and retain open water. Seasonally wet hollows and seepages are also present within the wooded areas of the site to the west.



Above: Pond at eastern edge of the site subject to management in March 2020. Shown prior to management work with extensive overhanging willow which forms dense canopy cover in summer months (left) and following management work with open water and unshaded aquatic vegetation (right).

- 2.10. The non-native invasive species Himalayan balsam is ubiquitous throughout the site and there are several significant areas of Japanese knotweed present within the site including a

large area on a spoil heap at the southern end of the site and an area close to the road near the northern end of the site. A programme of hand pulling to begin to control the Himalayan balsam was initiated by Darwin Ecology and the Friends of Breach Common in 2020 with local volunteers. The area of Japanese knotweed adjacent to the road has been subject to repeated management by Dorset Council in the last year.

- 2.11. A large patch of Canadian goldenrod is also present at the eastern edge of the site, adjacent to the road. Although this species is not currently recognised as invasive and can provide a nectar resource for pollinator species, it can form dense stands and dominate over native species if allowed to grow unchecked and management is likely to be necessary in the longer term.
- 2.12. Key species and indicator species present on site have been identified in order to assess the value of the habitats and communities present. A formal botanical survey of the site has not been undertaken at this stage but will be undertaken in spring - summer 2021 to provide a baseline assessment of the plant species and communities on site.



Above: Germination of Himalayan balsam seed at the site of a dense stand in March 2020 (left) and the same plant in flower at the peak of its growth in August 2020 (right).



Above: Dry stems of the dense unmanaged stand of Japanese Knotweed on spoil heap at southern end of the site (left) and area of Canadian goldenrod adjacent to the road at eastern edge of the site (right).

Non-native plant species

Not all non-native species are problematic but some can have a **negative impact** by occupying niches that our native plants would normally colonise. Some very successful species can dominate and are classed as **invasive** due to their ability to spread quickly and impact on local biodiversity.



Himalayan balsam (*Impatiens glandulifera*) is present throughout much of the site and is listed on *Schedule 9, Part II of the Wildlife and Countryside Act (1981)*. Under Section 14(2) of the Act it is an offence to 'plant or otherwise cause to grow in the wild' any plants listed. It is an annual which spreads by seed which are broadcast over large areas by its 'explosive' seed heads.

Japanese knotweed (*Fallopia japonica*) is present in two areas of the site is listed on *Schedule 9, Part II of the Wildlife and Countryside Act (1981)*. It is a highly invasive perennial which spreads rapidly via rhizomes and can grow from tiny fragments of rhizome. Contaminated soil must be disposed of at registered sites. Regular control using herbicides and systemic weedkillers are required over a period of at least three years to control this plant and prevent regrowth.



Canadian goldenrod (*Solidago canadensis*) is present on site and although not considered to be invasive in the UK, where it is allowed to grow unchecked it is known to form dense stands which dominate over native vegetation. It spreads to new sites by seed and where fragments of roots are moved in soil. Once established, clumps spread quickly by an extensive system of rhizomes underground.



Target Notes:

- TN1: Woodland with mature hazel *Corylus avellana* coppice stools.
- TN2: Pond known to support breeding great crested newts *Lissotriton cristatus* with a record for one egg found in 2010 (outside boundary of the common).
- TN3: Line of mature oak *Quercus robur* trees.
- TN4: Pond with potential for being enhanced for great crested newts (outside boundary of the common).
- TN5: Woodland with mature hazel coppice stools.
- TN6: Natural gap in tree line with potential for introducing access for grazing cattle.
- TN7: Japanese knotweed *Fallopia japonica* patch - currently being treated by Dorset Council.
- TN8: Existing pond/wet area managed in 2020 to clear encroaching willow *Salix sp.* .
- TN9: Existing bench and former viewpoint.
- TN10: Area dominated by Canadian goldenrod.
- TN11: Existing pond managed in 2020 to reduce overhanging vegetation, remove encroaching willow and manage adjacent scrub.
- TN12: Small area of remaining grassland with flora characteristic of wetter areas including common fleabane *Pulicaria dysentrica* and wild angelica *Angelica sylvestris*. Himalayan balsam *Impatiens glandulifera* is ubiquitous.
- TN13: Area of unmanaged Japanese knotweed on spoil heap at boundary with adjacent property.
- TN14: Dripping pipe with foul smelling discharge into Holloway.

*NOTE Areas are indicative and are not shown to exact scale.

-  Site Boundary
-  Footpath through site
-  Road
-  Area of site where Himalayan balsam management was undertaken in 2020. Further areas have also been cleared by individuals and smaller groups outside the main sessions.
-  Holloways and green lanes adjoining the site



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Project: Breach Common, Shaftesbury

Figure 4: Site walkover and overview

Date: 10/12/2020

3. IMPORTANT AND NOTABLE SPECIES

The habitats present are suitable for supporting a range of notable and protected species:

- The woodland and mature trees within the site may provide suitable roosting opportunities for bat species and the open habitats, scrub, ponds and wet areas will provide suitable **foraging habitat for bats**;
- Rough grassland, scrub and woodland with dead wood provide suitable foraging habitat and refugia for **reptile and amphibian species** as well as for **hedgehogs and small mammals**;
- The ponds within and adjacent to the site provide suitable **breeding habitat** for amphibian species including **great crested newts, frogs and toads**;
- The woodland and scrub habitats with well developed understory provide suitable **habitat for dormice**; and
- The open footpath edges, remnant areas of grassland and other flower rich habitats on of the site are suitable for a diverse community of invertebrate species including **pollinators such as bees, butterflies and moths** and for many species that require a range of plant species for different stages of their lifecycles;
- The tree lines, green lanes and linear habitats of the extended common land provide commuting routes and connectivity, connecting the site for all species present.

3.1. Data provided by Dorset Environmental Records Centre (DERC) returned a number of relevant notable or protected species records within a 5 km radius of Breach Common, including:

- Records of a number of notable invertebrate species including butterfly species such as wall, small heath, marsh fritillary, essex skipper, silver -washed fritillary, dark green fritillary and brown argus;
- Notable indicator plant species for priority habitats including woodland species such as moschatel, English bluebell, sanicle, wood anemone, wood speedwell, yellow archangel, wood millet and wood spurge;
- Grassland species such as pepper saxifrage, mouse-ear hawkweed, lesser hawkbit, common knapweed, common bird's-foot trefoil, tormentil and dyer's greenweed;

- Species of wet habitats such as corky-fruited water-dropwort, meadowsweet, lesser spearwort and ragged robin.
- There are recent records for great crested newt from 10 ponds in the local area, with records from two ponds within 200m of the site;
- Common amphibian species including common toad, common frog and smooth newt as well as reptile species including slow-worm and grass snake;
- Records for seven bat species within five km of the site include common, soprano and Nathusius pipistrelle, noctule, Leisler's and serotine and brown long-eared bats;
- Further records include bird species such as willow tit, skylark, linnet, bullfinch and kestrel, which may use habitats on site for nesting and foraging;
- Hedgehogs and badgers have also been recorded in the local area.

3.2. Darwin Ecology have recorded a number of additional species and new locations for these species in additional to those provided by the records centre.

- One great crested newt was found in a pond approximately 150m south-east of the site in 2019; and one great crested newt was found hibernating beneath a lined pond which was restored in 2019 approximately 500m south-east of the site;
- In July 2020, a grass snake was observed basking within one of the cleared areas of scrub adjacent to one of the ponds that was managed in early 2020;
- A large active badger sett was identified approximately 50m south of the site, within and adjacent to the green lane leading south from the common;
- The flowering plants on site support a number of pollinator species including hoverflies, native solitary bee and bumblebee species, and beetle species including longhorn beetles.

3.3. Based on the discovery of single great crested newts in the local area on two recent occasions, both in ponds which had low suitability for breeding due to lack of management it is considered that the local populations are likely to be threatened by a lack of suitable breeding habitat. This is therefore a priority for the management of the site.



Above: Great crested newt *Triturus cristatus* found on a nearby site during pond restoration works in 2019 (left) and a black and yellow longhorn beetle *Rutpela maculata* found on Breach Common in July 2020 (right).

A Local Records Centre data search presents an opportunity to identify species of importance in the local area and help identify specific targets for habitat management.

However, the data held is not comprehensive and will not provide a complete picture of the species likely to be present.

The data they hold is usually from a range of sources including:

- Systematic surveys undertaken for specific species and species groups;
- Informal sightings from local wildlife enthusiasts; and
- Ecological reports submitted through the planning process.

There is often a bias towards well recorded groups such as birds and moths while other invertebrates, mammals and plants are often poorly recorded.

Local Environmental Records Centres are dependent on individuals and organisations submitting ecological data in order to be able to provide this information to inform management planning and also local planning and development.

Local recording and monitoring of the site and submission of any species data obtained to the Bristol Regional Environmental Records Centre (BRERC) should be encouraged.

4. ECOLOGICAL OPPORTUNITIES

- 4.1. Appropriate and targeted management has the potential to increase biodiversity by enhancing the habitats on site for a wide variety of wildlife and creating an attractive natural environment for people to enjoy.

What is biodiversity?

Biodiversity is the richness of life on earth and it is threatened globally by human development and activities. Species across the globe are being lost at an alarming rate and many species in Britain are declining, being squeezed into smaller areas of less suitable habitat.

The key to ecological enhancement is to maximise diversity in habitats and vegetation structure, providing opportunities for all kinds of wildlife in all their life stages and accommodating a variety of seasonal requirements.

Why is it important?

Biodiversity is essential for a healthy ecosystem. Ecosystems are dynamic networks of interactions between species, each with a unique role to play in providing ecosystem services that support life on earth.

At a local level the conservation of ecosystems and habitats is essential for maintaining a functioning, healthy local environment, promoting food production, pollution management, mitigation of extreme weather events, protection of water supplies and much more.

Opportunities to spend time in nature and natural habitats also has proven benefits for mental health and wellbeing.

- 4.2. Management of the open areas of the site should aim to restore grassland and reduce the dominance of bramble scrub to encourage greater botanical diversity, enhancing the habitats on site for a range of invertebrate groups including bees, butterflies and other pollinating insects. This will in turn increase the value of the site for all other species groups such as birds, reptiles, amphibians and mammals, which feed on insects and other invertebrates.
- 4.3. Restoring selected areas of the site to grassland will also enhance the amenity and social value of the site for residents and visitors, returning the common to its traditional roots as an open area of green space shared by the community.

- 4.4. The scrub habitats and woodland will support a range of species and management of these habitats should aim to retain these opportunities. Successional scrub will be retained at the margins of the site adjacent to hedgerows and tree lines and surrounding open grown trees within the site. Patches of scrub within the grassland areas should also be encouraged to provide a mosaic of diverse habitat structures throughout the site. Scrub management to obtain a dynamic succession of age and structure will ensure that vegetation at all stages of growth is present on site.
- 4.5. The woodland habitats require relatively little management intervention, however, a return to selective coppicing of hazel stools and selective removal of introduced species such as sycamore to favour regeneration of slower growing native species such as oak is recommended. Coppicing is a traditional woodland management method which increases structural diversity and opens up areas of the woodland floor, favouring specialist woodland ground flora and providing an understory suitable for species such as dormice.
- 4.6. The ponds on site should be managed to enhance their suitability for great crested newts and provide a range of aquatic habitats for breeding amphibians and aquatic invertebrates such as dragonflies and damselflies among others. Opportunities to create new ponds and wet scrapes on site will enhance the existing network of habitats and increase the diversity of opportunities present on site for wildlife while small scale management works to existing ponds will enhance their value for wildlife while retaining the existing floral and faunal communities.
- 4.7. Two other ponds are present immediately outside the site boundary to the east. One of these is known to have supported breeding great crested newts in 2010 but has become overgrown with willow scrub and reeds in recent years. The other is identified as having potential to be enhanced for great crested newts as part of the wider management of this breeding pond network for the local population. Opportunities to undertake some management on these ponds as part of the habitat creation and management on Breach Common should be explored.
- 4.8. The site can be easily enhanced for a range of species including reptiles, amphibians and small mammals by the creation of habitat piles comprising dead wood piles and brash piles. These provide shelter and support invertebrate communities which provide food resources for higher vertebrates. Dead wood and retained tree stumps are also valuable for rare and threatened stag beetles and other dead wood reliant invertebrates.
- 4.9. Creation and maintenance of compost heaps and grass piles on site will also provide opportunities for insects, as well as egg laying habitat to enhance the site for grass snakes.

- 4.10. There are numerous opportunities for adding additional value for a range of other species including bats, breeding birds and dormice by the installation of nesting and roosting opportunities in the form of bat boxes, bird boxes and dormouse boxes. These features can also be monitored as part of a long term study of the presence and populations of these species on site.
- 4.11. Baseline and ongoing monitoring surveys for amphibians, reptiles, bats and dormice can also be established and provide an opportunity for engaging local people with the site and its biodiversity and ecology.
- 4.12. There are also number of opportunities to enhance the site for public access including reinstatement of the holloways and green lanes to the south and west of the site. This appraisal focusses on the ecological opportunities present but the potential for amenity enhancement of the site should also be reviewed and a long-term management plan must include these aims and the appropriate management required.
- 4.13. Opportunities for restoration and reopening of these historic routes can be considered and the ecological impacts of this should be assessed and used to inform any action undertaken.

5. AIMS & OBJECTIVES OF MANAGEMENT

5.1. There are three main aims for the management of the site:

- 1. To increase the opportunities for wildlife through appropriate habitat management and creation.**
- 2. To increase the diversity of the species using the site by providing better quality habitats.**
- 3. To provide a dynamic and multi-functional public green space valued by both people and wildlife.**

5.2. There are ten major objectives in order to achieve the desired management aims:

- 1) The management of open habitats to recover areas of grassland and reduce scrub dominance to increase diversity of habitats on site;
- 2) The management of open grassland areas to encourage botanical and floral diversity;
- 3) The management of scrub and selective retention of native trees within open habitats to create transitional habitat opportunities;
- 4) The maintenance of a dynamic mosaic of open and scrub habitats on site;
- 5) Coppice management of areas of woodland habitat to introduce a more diverse structure and vegetation communities;
- 6) The retention of any mature native trees, and standing and fallen deadwood where possible;
- 7) Management of existing ponds and creation of new ponds where appropriate to safeguard the existing metapopulation of great crested newts in the local area;
- 8) The creation and maintenance of new habitat features to enhance the value of the site for native wildlife;
- 9) The removal and control of non-native plant species; and
- 10) The management of human impacts on the site such as littering, fouling or antisocial behaviour.

6. RECOMMENDED MANAGEMENT ACTIONS

6.1. The approximate management areas described are shown in Figure 4.

Scrub

6.2. Scrub dominance on site should be reduced in order to allow the restoration of grassland and enable more extensive control of non-native Himalayan balsam. This is currently established throughout the scrub habitats making management by hand pulling difficult and time-consuming.

6.3. Initial clearance is recommended to be undertaken using an excavator (up to 2 tonnes only) with a root/brush rake to pull up bramble by the roots and to minimise direct harmful impacts on the site and species using the scrub habitats. Further clearance of smaller areas can be undertaken either by hand either with volunteers using hand tools by using brush cutters to cut and roll the bramble.

6.4. Use of a tractor with cutting attachment should be avoided as this will be a high impact method necessitating tracking over the site repeatedly and risking harm to animals which may be sheltering or hibernating within the scrub. It will also result in the mulching and depositing of cut material on the ground which will encourage further bramble growth and inhibit grassland restoration by increasing nutrient load on the site.

6.5. All brush should be removed and piled on site in suitable locations adjacent to scrub and tree lines.

6.6. Scrub management should be undertaken as soon as possible during the winter, prior to the breeding bird season in order to encourage establishment of grassland in the spring and summer and to facilitate continued management of Himalayan balsam across the site.

Manager's notes:

Use of a flail or other mulching machinery without a collector should be avoided as this results in the cut material being left on the ground where it will rot down and increase the nutrient load of the soil. It will also provide a mulch that will smother new growth and encourage ruderal species such as nettles and docks.

By using hand tools or using an excavator with root rake or brush rake, the ground beneath the cleared scrub is exposed, creating the perfect conditions for the re-establishment of grassland.

A flail or other cutting machinery also carries a higher risk of injuring or killing any animals such as hedgehogs, birds or reptiles that may be sheltering within the scrub.

Open grassland

- 6.7. The dominant bramble scrub within the central and eastern parts of the site should be managed to restore open grassland. Grassland should be managed to maximise diversity and reduce dominance of ruderal species where this is found to be an issue.
- 6.8. Long-term, the preferred management method for maintaining the grassland on site would be by low intensity cattle grazing. In the short term, mechanical methods using a cut and collect mower are likely to be required to establish grassland and open habitats. Wherever grassland is desired, any vegetation cut must be removed to prevent a build-up of thatch and reduce the nutrient load of the site. Reduced nutrient loading allows a more diverse community of plant species to develop.
- 6.9. Opportunities to integrate grazing of the common with the existing grazing management of the adjacent SSSI and SNCIs should be explored with a possible solution involving the creation of a gateway to the existing grazing fields to allow cattle to access the site and provide low intensity grazing as part of the larger grazing unit (Figure 4).
- 6.10. Introduction of grazing to the site will require maintenance of stockproof fencing and installation of cattle grids at each end of the access road to allow cattle to roam freely across the site and prevent escape. Impacts on accessibility of the site will also need to be considered but this solution provides the greatest opportunity for sustainable low cost long-term management of the habitats on site.

Manager's notes:

Removal of grass cuttings removes nutrients from the soil - essential to encourage more delicate floral species and reduce competition from vigorous grasses and ruderal species.

Removed material should be piled on site to create egg laying habitat for grass snakes (see below).

The locations of grass piles should be chosen to avoid the leaching of nutrients downslope into areas of good quality grassland and should be away from water courses and water bodies to prevent the leaching of nutrients which may impact on downstream habitats beyond the common.

An early summer cut will reduce the vigour of ruderal species and cause more stored energy to be used in generating regrowth. Where greater control is desired, additional targeted cutting through the growing season can be carried out.

Cutting some areas of grassland twice will produce a greater diversity in grassland structure on the site and encourage later flowering within the areas subject to an early summer cut extending the flowering period for some plants and extending availability of floral resource for pollinators.

Management tools:

Removal of grass cuttings and other arisings are essential in promoting increased floral diversity by preventing the build up of thatch and removal of nutrients from the soil allowing less vigorous plants to thrive.

Cut and collect mowers make this easier and are suitable for routine management of all amenity grassland and road verges to enhance the ecological value of these often overlooked habitats.

Cut and collect ride on mowers

E.g. Grillo FD 2200TS with collection box



A suitable mower should use a flail cutting attachment suitable for longer grass while a topper deck can be used for regular cutting of shorter amenity grassland areas.

A large collector capacity with hydraulic tipping action will make it easy to quickly and easily discharge cuttings in the appropriate location.

Smaller machines have good manoeuvrability and good stability on slopes, ideal for any smaller areas of grassland.

Cut and collect heavy duty flail mowers

E.g. Ryetec Contractor Heavy Duty Flail Mower Collectors



A tractor mounted heavy duty flail is best for managing larger areas of longer grassland and suitable for sloping and undulating ground.

It can also be used for cutting and removal of scrub and woody vegetation although caution should be used to ensure that no animals that may be sheltering are harmed.

As above, a high tipping collector will allow easy discharge of cuttings to the appropriate location.

Excavator with root / brush rake



A root rake or brush rake attachment on an excavator is the perfect tool for sensitive removal of bramble or other dense scrub. The vegetation is not mulched and the machinery does not track over the area to be cleared.

Instead a skilled driver can pull and uproot plant material within the reach of the arm and gather and compress material into a compact pile for removal to an appropriate location on site.

Many insects including solitary bee species and moths use old bramble stems to overwinter and mulching this material will impact these species. Removal of more intact plant material and piling means that these species can safely over winter. This will also provide better structured brush piles with plenty of gaps and hollows suitable for small mammals, reptiles and amphibians.

Trees and woodland

- 6.11. The established woodland areas do not require much management in order to retain their ecological value. Non-intervention will be favoured here in general. Dead trees should be retained as standing deadwood if possible. If tree removal or reduction is required for safety reasons, all material should be retained on site and used to create and maintain habitat piles.
- 6.12. However, there are opportunities in some areas to undertake small scale coppice management of existing areas of former hazel coppice. The coppice should include small areas of cutting on a 5 - 10 year rotation. This will increase diversity of structure and provide suitable habitat for dormice and benefit woodland ground flora by increasing the penetration of light to the woodland floor.
- 6.13. Mature oak trees and other open grown trees within the open areas of the site will be retained, with self-sown quick growing non-natives such as sycamore selectively removed where appropriate to promote the growth and establishment of native species or open grassland. It is desirable to restore the view from the bench in the centre of the common towards Duncliffe wood - identified by many local volunteers as being a favourite location when the common was more open.
- 6.14. Where trees are retained within open habitats, an island of uncut vegetation should be retained around the tree during grassland and scrub management. This will provide protection for the growing tree and also allow a natural succession from open grassland to scrub and wooded areas.

Manager's notes:

Coppicing is a traditional management technique which can be applied to most tree species but is particularly suited to species such as hazel, alder, willow, ash and elm with smaller diameter trunks.

Coppicing involves cutting back selected trees to a few inches above ground level, to encourage new growth from the base. This reduces the density of canopy cover, letting more light reach the ground below. It also increases the density of understorey vegetation which is valuable as foraging and commuting habitat for wildlife.

Management should be undertaken on a **"less is more"** basis when it comes to trees. **It is easier to remove more vegetation at a later stage than to try and rectify the effects of excessive clearance.** Impacts should be monitored and the management adjusted accordingly.

Ponds and waterbodies

- 6.15. Two ponds on site have been identified as having potential value for aquatic species and in particular for great crested newts if enhanced to provide suitable breeding habitat. Some works have already been undertaken to reduce shading and encourage the development of aquatic vegetation.
- 6.16. Scraping out areas of these ponds to provide increased depth are likely to be of value in providing ponds that are wet throughout the year. Suitable locations for additional scrapes

Manager's notes:

The gradation between two adjoining habitats such as the transition from grassland through scrub to mature woodland is known as an 'Ecotone'.

These should comprise a gradual change from one habitat to the other and structure is all important - the wider and more varied the structure the better. Management of the scrub habitats and natural regeneration of trees within the site should aim to achieve a natural succession with the management undertaken providing the disturbance required to maintain a dynamic transition.



Left: A natural ecotone between open grassland and a well developed hedgerow/ tree line. In this example, the habitats are managed by grazing which generates soft margins. Browsing at the edges of the scrub areas naturally results in scrub regeneration and a varied age structure. Where grazing is not possible, human intervention is required to simulate the effects of a natural grazing system by varying cutting regimes and using cyclical management to maximise structural diversity.

and ponds have been identified within the site (Figure 4) to replace those waterbodies being lost to succession. Succession and silting of ponds is a natural process and provides valuable habitats in their own right. Due to the established flora and fauna, it is generally not desirable to completely excavate existing ponds and this may impact their ability to hold water.

- 6.17. Where new ponds are created, techniques such as use of a clay lining can be used to ensure water retention, and they will contribute to a wider habitat network within the local area.

Habitat enhancement features

- 6.18. There are a number of opportunities to enhance the site for a range of wildlife providing shelter, foraging and breeding opportunities for species including reptiles such as grass snake, hedgehogs and other small mammals, saproxylic invertebrates, birds and bats.
- 6.19. Grass piles and compost heaps should be created in a mixture of sunny and shaded areas away from water courses and should be maintained with the regular addition of the arisings from grassland cutting. Compost heaps created in sunny locations will provide suitable nesting sites for grass snakes.

- 6.20. Habitat piles consisting of the wood and brash arisings from habitat management works will be created throughout the woodland and at the woodland edge. They will be located in a variety of part-shaded and sunny positions, within long grass adjacent to areas of scrub with some adjacent to compost heaps. These habitat piles will be maintained with fresh logs and brash as the wood rots down and loses its structure.
- 6.21. Bat boxes, bird boxes and dormouse boxes can be installed on the trees and woodland within the site to provide additional roosting opportunities for bat species and nesting opportunities for bird species and dormice in the local area. Suitable boxes can be purchased that are made of long-lasting woodcrete and suitable for monitoring, with a lifetime of more than 25 years. Alternatively shorter lasting wooden boxes can be easily made according to simple designs by volunteers.

Invasive species

- 6.22. The invasive species **Himalayan balsam** is ubiquitous throughout the site and is dominant in many places, particularly within woodland areas where competition with other native species is reduced. This annual must be controlled in order to allow native plant species to thrive. Its presence will have a negative long-term impact on native plant, animal and invertebrates species, due to its ability to dominate and out compete native plant species.
- 6.23. Control of this plant in high density requires a sustained programme of hand pulling over a period of 2-3 years by repeated pulling of any plants present in June and July when they are in flower and prior to setting seed. All plants visible should be pulled and disposed of appropriately. They can be composted or mulched but should not be allowed to re-root or set seed and the removal should be repeated annually. The seed remains viable in the seed bank for only 2-3 years and once controlled, ongoing management should include vigilance and pulling of any new plants annually as required to prevent re-establishment. Growth in grassland and open habitats can also be managed by cutting or grazing.
- 6.24. Any excavated soil and plant material resulting from management works must be retained on site and managed to prevent the further spread of himalayan balsam. These materials must not be placed adjacent to the watercourse where seeds may potentially fall into the stream and be carried downstream.
- 6.25. Japanese knotweed is known to be present in two locations across the site. This highly invasive species requires professional control using repeated application of targeted herbicides over at least 3 years to kill the rhizomes and prevent spread.

- 6.26. One patch is currently being managed by Dorset Council, it is recommended that the other area should also be managed under the same regime by trained council operatives.
- 6.27. Monitoring for regrowth and targeted herbicide application in future years will be required to ensure that the plant does not re-establish once controlled. Complete elimination is very difficult and vigilance is required.

There is often some concern over the removal of Himalayan balsam due to the obvious popularity of the flowers with foraging bumblebees and honeybees.

Although it provides a good source of nectar for honey bees and bumble bees, it will often attract these species preferentially and have a negative impact on native plant species through reduced pollination. Encouraging a diverse and flower rich native habitat will not result in any net loss of foraging habitat for these species.

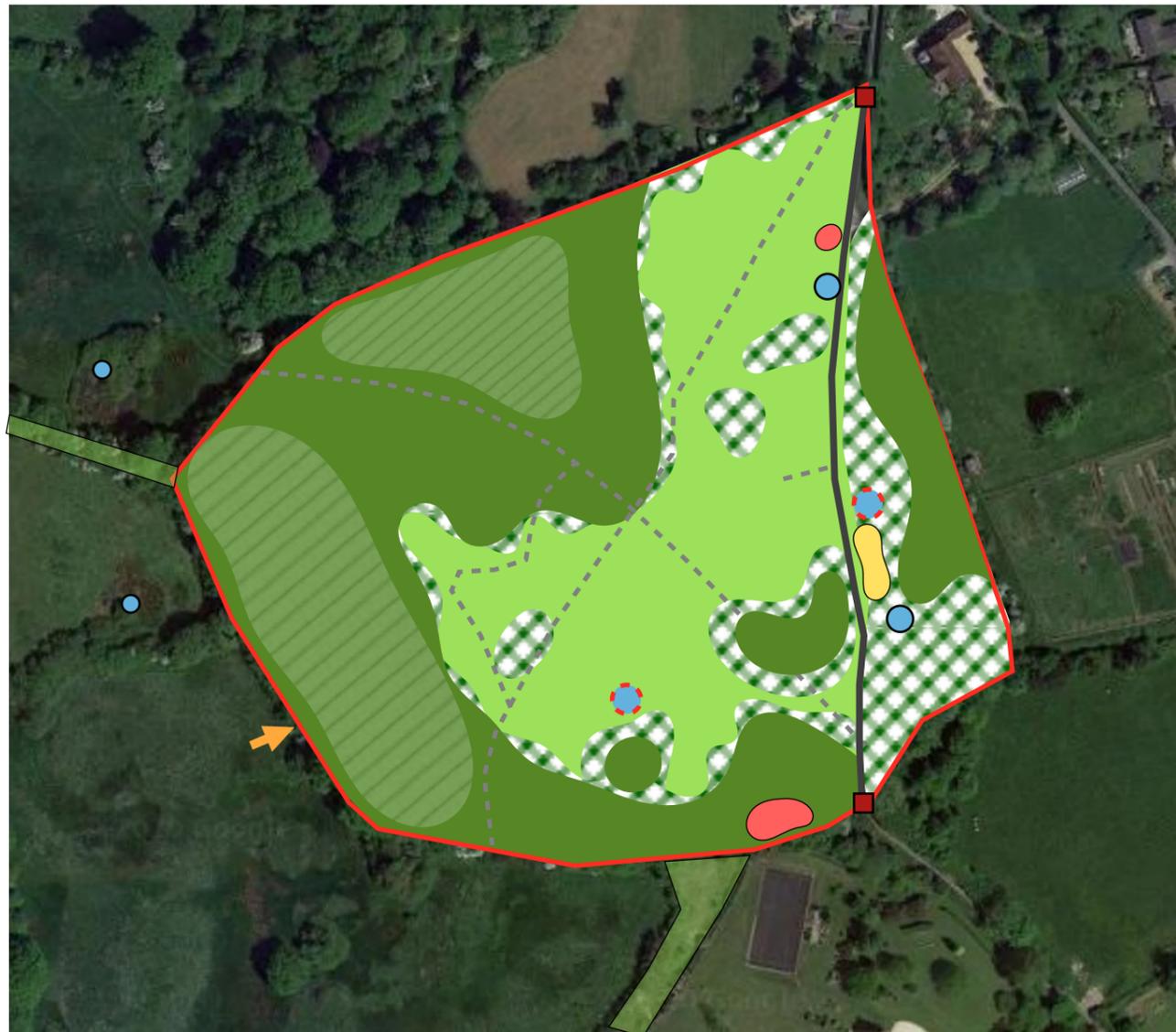
In addition, honey bees and bumblebees comprise only ~25 species of over 250 species of native bees, many of which have close specialised relationships with native plant species. The dominance of Himalayan balsam and reduction in plant species diversity will have wider impacts on all insect species which rely on our native flora and will result in an overall loss of diversity.

All honeybees in the UK comprise only one species, the European honeybee *Apis mellifera* and almost all are established from imported European stock and are a domestic species. Although important commercially and for providing pollination services for crops due to their huge populations, wild bees provide a far more important role in our native plant diversity and a relatively unmeasured role in commercial pollination. It is important that we protect this diversity for future generations.

- 6.28. **Canadian goldenrod** is a non-native species which can be invasive in places due to the dense stands it forms once established. It spreads rapidly by rhizomes and also by seed.
- 6.29. The area present on site should be monitored and managed if considered necessary to limit its spread and prevent it becoming dominant over a larger area. Management can be undertaken by cutting during the growing season between May and September to remove top growth and weaken the rhizome.
- 6.30. There is potential for further non-native species to also be present on site and these will be identified during further surveys and management recommended if necessary.

Litter and anti-social behaviour

- 6.31. The management of the site for public access is likely to result in some accumulation of litter within the site. This should be monitored and can be managed by volunteers during management action days.
- 6.32. These impacts can be reduced through engagement encouraging local people to take ownership of the site and have pride in its value and natural environment.
- 6.33. Where greater amounts of litter are found or any ongoing issues with litter, fouling or antisocial behaviour are identified, action should be taken to address these issues and to avoid impacts on the habitats present.



Scrub management

Reduction of bramble scrub in central and eastern parts of the site to open up the site and restore grassland. The aim should be to achieve a grassland scrub mosaic in this area with mature trees retained and a dynamic successional gradient of habitats.

Key features of good scrub management:

- Removal of scrub from the margins of the grassland to create a naturalistic scalloped edge.
- Use of hand tools, hand cutting or an excavator (up to 2 tonnes only) with a root rake to cut and remove vegetation rather than mulching.
- Being sensitive of the potential presence of wildlife such as hedgehogs, birds and reptiles which may shelter in scrub.
- Timing of works to avoid impacting nesting birds.

Rationale: Scrub management maintains a diverse age structure and range of successional habitats across the site to maximise biodiversity value. Maintaining a scalloped edge to areas of scrub maximises the 'edge habitats' favoured by wildlife, providing shelter and foraging opportunities for a range of species. Sensitive management and removal of brash will open areas of ground, reduce nutrient loading and encourage floral diversity as well as minimise the risk of injuring or killing animals using the scrub habitats.

Grassland management

Initial management of the grassland should include control of regenerating and encroaching scrub. Ongoing management should include an annual meadow cut with removal of arisings in September / October. Where there are areas with less desirable ruderal species or coarser grasses dominating, more frequent cutting may be necessary to reduce vigour and allow greater diversity to develop. A scalloped uncut margin should be retained adjacent to the scrub. Long term management should seek to introduce regular low intensity grazing as a low cost sustainable management method to retain open grassland areas on the site.

Rationale: To maintain good quality grassland areas with cutting at the end of the flowering season to remove excess nutrients and thatch, encouraging an open and diverse sward. To provide an undisturbed area of vegetation for overwintering animals and insects following the cutting of the majority of the grassland at the end of the summer.

Invasive species: Sustained control must be undertaken in a systematic manner across the whole site to control and eliminate Himalayan balsam and Japanese knotweed from the site.

*NOTE Areas are indicative and are not shown to exact scale.

	Site Boundary.		Woodland.
	Footpath through site.		Hazel coppice management areas.
	Road.		Scrub and transitional habitat.
	Holloways and green lanes adjoining the site.		Grassland and wood pasture with scattered trees and scrub mosaic.
	Location of Japanese knotweed on site.		Location of existing ponds requiring management.
	Location of Canadian goldenrod on site.		Location of proposed new pond / scrape.
	Location of potential stock permeable gateway to allow grazing on the common.		Location of cattle grids required to allow grazing of the site.



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Project: Breach Common, Shaftesbury

Figure 4: Opportunities for site management

Date: 10/12/2020

7. IMPLEMENTATION & ASSESSMENT

- 7.1. Table 2 summarises the main management actions and timing of the works as described above and below.

Assessment

- 7.2. A full botanical survey will be undertaken by Darwin Ecology in 2021 to assess the baseline species presence on site prior to ongoing management.

- 7.3. The management undertaken should be recorded and monitored to assess the effectiveness of the regime. An annual walkover survey by a suitably qualified person should be undertaken in May - September to assess the success of the ongoing management of the site in terms of increasing floral diversity, managing human impacts and creating diverse habitats.

- 7.4. Small changes to the management actions undertaken the following year should be made if required in response to the findings.

- 7.5. After five years of management, a more detailed botanical walkover survey should be undertaken and the site assessed against the aims and objectives identified.

- 7.6. The management plan should be reviewed and the objectives and management schedule and actions modified if appropriate. This review should be repeated on a five yearly cycle to ensure that the management continues to deliver the desired outcomes.

Species monitoring

- 7.7. Long-term monitoring of several species groups on the site is recommended in order to assess the impact of the management undertaken.

Manager's notes:

Monitoring and assessment of management success is an essential part of effective site and habitat management. This allows reactive adjustments in management regimes to be made where necessary. The management of natural areas cannot blindly follow a schedule and must be sensitive to the needs of the species and structure of the site. Growth rates and flowering times can vary year on year according to weather and climatic conditions and changing management will impact the species using the site.

Habitat and species specific monitoring must be undertaken by appropriately qualified people. Walkover surveys and habitat assessment should be undertaken by someone with appropriate knowledge and understanding of the habitats and species present.

A Natural England Survey Licence is required for some surveys of protected species including monitoring of bat boxes which involves opening of bat boxes or disturbance of bats using artificial light, monitoring of dormouse boxes where dormice are known to be present and surveys of great crested newts which involves capture or physical handling of newts.

Local volunteers can be trained to undertake and assist with monitoring surveys.

- 7.8. **Great crested newt surveys** will be undertaken in 2021 by Darwin Ecology to assess the current suitability of the ponds within and adjacent to the site for great crested newts and to survey for the presence of great crested newts.
- 7.9. Surveys will comprise daytime egg searches and torching surveys undertaken at night during the breeding season for this species to search for evidence of their presence. Bottle trapping surveys can also be undertaken by suitably qualified surveyors where appropriate and if conditions allow.
- 7.10. **Reptile surveys** will identify the presence and populations of reptile species known to be present and likely to be present on site. Artificial refugia should be positioned across the site in areas of suitable reptile habitat during the first year of management. These will form a transect which will be surveyed monthly in March - October. Suitable weather conditions should be met, with air temperatures between 9°C and 18°C and no rain or strong winds, following the guidelines set out by Froglife (1999) and JNCC (2012).
- 7.11. **Dormouse surveys** can be undertaken, initially using a network of 50 dormouse nest tubes set out on site and checked on a monthly basis between April and November inclusive to identify whether dormice are likely to be present on site. This can be used in conjunction with a hazel nut search which comprises searching for gnawed hazel nuts and examining them for the characteristic smooth round opening indicating that they have been eaten by dormice.
- 7.12. If dormice are found to be present a longer term monitoring scheme can be established using dormouse nest boxes to monitor populations and provide additional nesting habitat for this species.
- 7.13. **Bat surveys** can be undertaken comprising bat transect walks to identify bat species present on site using acoustic bat detectors. These can be undertaken as part of public walks to engage local people with the wildlife of the site. Static bat detectors can also be deployed to record bat calls within the site over a longer time period of days - weeks.
- 7.14. Installation and monitoring of bat boxes can also be undertaken by a suitably qualified person. A monthly check to record evidence of uptake and species present is recommended.



Above: A grass snake and a slow worm found beneath artificial refugia as part of a reptile monitoring survey (left) and a brown long-eared bat found in a bat box as part of a bat monitoring survey *Survey carried out under NE Licence* (right).

8. INITIAL ACTIONS AND FURTHER RECOMMENDATIONS

- 8.1. Initial management actions required as a matter of some urgency in order to prevent the further loss of habitats and maintain momentum on areas of work already undertaken will include:
- Reduction of bramble scrub in areas intended to be restored to grassland allowing grassland to begin to re-establish and to facilitate continued control of Himalayan balsam in these areas in 2021;
 - Ongoing management of the pond areas already cleared to maintain the open conditions and further enhance these as required;
 - Creation of additional scrapes within the site to create new ponds and management work in the ponds outside the site with appropriate permission to ensure that they remain suitable for great crested newts; and
 - Addition of the second area of Japanese knotweed on site to the ongoing management undertaken by Dorset Council to begin to control this patch and prevent any further spread.
- 8.2. The actions described in this report comprise only outline recommendations and opportunities identified to enhance the value of the site for people and wildlife. In order to inform ongoing management it is recommended that a full management plan is drafted and finalised following public consultation.
- 8.3. A full management plan will form a basis for the long-term management of the site, and provide a basis for funding applications for grant funding towards ongoing management and any necessary infrastructure on the site.

9. REFERENCES

Bat Conservation Trust (2016). *Bat Surveys – Good Practice Guidelines*. Second Edition. BCT London.

Bright, P., Morris, P. and Mitchell-Jones, T. (2006). *The Dormouse Conservation Handbook*. English Nature.

Chanin, P., (2003). *Ecology of the European Otter*. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.

Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

Edgar, P., Foster, J. and Baker, J. (2010). *Reptile Habitat Management Handbook*. Amphibian and Reptile Conservation, Bournemouth.

English Nature (1995) *Species Conservation Handbook. Badgers*. English Nature

English Nature (2001). *Great Crested Newts – Mitigation Guidelines*. English Nature.

Forestry Commission & Natural England (2019). *Manage and protect woodland wildlife*.

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

Froglife (2001). *Great Crested Newt Conservation Handbook*.

Joint Nature Conservation Committee (2004) *Common Standards Monitoring Guidance for Reptiles and Amphibians, Version February 2004*. JNCC, Peterborough.

Magic website. <http://www.magic.gov.uk>

Natural England (2011). *Reptile Mitigation Guidelines*. Natural England.

Rose, F., (2006). *The Wildflower Key*. Fredrick Warne.

Schofield, H. W. & Mitchell-Jones, A.J. (2004). *The Bats of Britain and Ireland*. Vincent Wildlife Trust, Ledbury.

Wembridge, D. (2011). *The State of Britain's Hedgehogs*. British Hedgehog Preservation Society and Peoples Trust for Endangered Species.

APPENDIX 1 - PROTECTED SPECIES LEGISLATION

Bats

In England and Wales, all bat species and their roosts are legally protected under the Wildlife and Countryside Act (1981) (as amended); the Countryside and Rights of Way Act, 2000; the Natural Environment and Rural Communities Act (NERC, 2006); and by the Conservation of Habitats and Species Regulations (2010). You will be committing a criminal offence if you:

- Deliberately capture, injure or kill a bat
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time)
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat
- Intentionally or recklessly obstruct access to a bat roost

Barbastelle, Bechstein's, greater horseshoe, lesser horseshoe, brown long-eared, soprano pipistrelle, and noctule bats are all priority species under the UK Biodiversity Action Plan (UK BAP) and have also been adopted as species of principal importance in England under Section 41 of the NERC Act 2006.

Badgers

Badgers and their setts are afforded strict protection under the Protection of Badgers Act 1992. This Act consolidates past badger legislation and, in addition to protecting the badger itself, makes it an offence to damage, destroy or obstruct badger setts. Badgers are also protected under Schedule 6 of the Wildlife and Countryside Act 1981 (as amended), and listed under Appendix III of the Bern Convention, as a species that is in need of protection but may be hunted in exceptional instances. Only badger setts that are currently in use are covered by wildlife legislation.

Birds

All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy the nest or its eggs.

Some bird species, such as the barn owl *Tyto alba*, are listed in Schedule 1 of the 1981 Act and receive further protection, making it an offence to intentionally or recklessly disturb these birds whilst building a nest or in, on or near a nest containing eggs or young; or to disturb dependent young of such a bird.

The NERC Act (2006) inserts a new schedule into the Wildlife and Countryside Act (1981) to protect the nests of some bird species that regularly re-use their nests, even when the nests are not in use. This protection currently applies to golden eagle, white-tailed eagle and osprey.

Reptiles

All British reptiles are listed under schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are therefore protected from intentional killing or injury. This is largely as a consequence of a national decline in numbers associated with habitat loss.

Two scarcer native British reptiles (smooth snake *Coronella austriaca* and sand lizard *Lacerta agilis*), are afforded 'full' protection. This legislation makes it an offence to intentionally or recklessly kill, injure, disturb, take, possess or sell these species (in all life stages). It is also illegal to damage, destroy or obstruct access to places they use for breeding, resting, shelter and protection.

All species of reptile are priority species in the UKBAP and have been adopted as Species of Principal Importance under Section 41 of the NERC Act (2006) in England (Section 42 in Wales).

Amphibians

Great crested newts (GCN's) *Triturus cristatus* and their habitats are fully protected by the Conservation of Habitats and Species Regulations (2010) and partially protected under the Wildlife and Countryside Act 1981 (as amended). This legislation makes it an offence to kill, injure or capture GCN's, their young or eggs, or destroy / damage their ponds or places of shelter used for breeding or protection. The great crested newt is also a Priority species in the UK Biodiversity Action Plan (UKBAP), and had been adopted as a Species of Principle Importance in England under Section 41 of the NERC Act 2006.

The natterjack toad *Epidalea calamita* is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of The Conservation of Habitats and Species Regulations 2010 making it a European Protected Species. The natterjack toad is also a priority species under the UK Biodiversity Action Plan.

The pool frog *Rana lessonae* is protected under the Conservation (Natural Habitats &C.) Regulations 1994 (as amended). As a European protected species the deliberate capturing, disturbing, injuring or killing of this species is prohibited, as is damage or destruction of its breeding sites or resting places. The pool frog is also a priority species under the UK Biodiversity Action Plan due to a 100% decline over 25 years (1980-2005).

Common toads *Bufo bufo* are also designated UKBAP species due to a serious decline of populations across large areas of southern, eastern and central England, thought to be mainly due to changes in habitat management, mortalities on the roads, and climate change.

Dormice

Common dormice *Muscardinus avellanarius* and their habitats are fully protected by both the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations (2010). This legislation makes it an offence to kill, injure, disturb or capture dormice, or destroy or obstruct their resting or breeding places.

The dormouse is also a priority species under the UK Biodiversity Action Plan and has been adopted as a species of Principal Importance in England under Section 41 of the NERC Act 2006 (section 42 in Wales) and so is protected from any adverse effects as a result of development.

Otters

Otters *Lutra lutra* are protected by both the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2010. This legislation makes it is illegal to; deliberately or recklessly kill, injure or capture an otter, deliberately or recklessly disturb or harass an otter, damage, destroy or obstruct access to a breeding site or resting place of an otter.

The otter is also a UK BAP Priority Species and has been adopted as a Species of Principal Importance in England under Section 41 of the NERC Act 2006 (Section 42 in Wales) and the Conservation (Scotland) Act in Scotland.

Water Voles

Water voles *Arvicola terrestris* are fully protected under the Wildlife and Countryside Act 1981 (as amended). This legislation makes it an offence to kill or injure water voles, and to damage, destroy or obstruct access to places used for protection or shelter, and to disturb water voles whilst they occupy such a place.

The water vole is also a Priority species in the UK Biodiversity Action Plan, and had been adopted as a Species of Principle Importance in England under Section 41 of the NERC Act 2006.

White-clawed Crayfish

The white-clawed crayfish *Austropotamobius pallipes* is protected under the Wildlife and Countryside Act 1981 (as amended), making it a criminal offence to; intentionally or recklessly kill or injure a white-clawed crayfish, or sell or

attempt to sell any part of this species. The Habitats Regulations (2010) provide further protection through the declaration of Special Areas of Conservation (SAC). This protection aims to prevent commercial harvesting of white-clawed crayfish and prohibits their capture without a licence.

The white-clawed crayfish is also a Priority species in the UK Biodiversity Action Plan (BAP), and has been adopted as a Species of Principal Importance in England under Section 41 of the NERC Act 2006.

Hedgehogs

Hedgehogs are UK Biodiversity Action Plan (BAP) species, and therefore must be taken into consideration as part of development planning. A recent report (Wembridge, 2011) shows that hedgehog numbers have declined by 25% in the last ten years.