BRYMBO HERITAGE AREA, PROPOSED CAR PARK

ECOLOGICAL ASSESSMENT

DATE	ECOLOGIST	APPROVED	VERSION	COMMENTS
15/03/2024	Richard Cutts	Tim Yardley	1	
04/10/2024	Richard Cutts	Tim Yardley	2	Inclusion of additional survey area

Report Ref EE.672.24a.RC

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Executive Summary

Site	Brymbo Heritage Area	**OS Grid Reference:**	SJ 29536 53561
Surveyor(s)	Richard Cutts	**Survey date:**	08/03/2024; 19/06/2024
Type of survey	Ecological assessment		
Summary of proposed work	Car parking area for visitors, staff and volunteers		
Habitats affected	Ephemeral/short perennial, species-poor semi-improved grassland		
Designated sites affected	Brymbo Fossil Forest Site of Special Scientific Interest is immediately south of the site, but will be unaffected by the works. The site is also within 1km of two designated non-statutory ecological sites which will be also unaffected by the proposed works.		
Main results of survey	Birds are known to nest in the retaining wall that forms part of the north-western site boundary, and both bats and birds likely use the area for occasional foraging. Other protected species, including common lizards that are present in the Fossil Forest Area to the south, may occasionally use the site.		
Survey conclusions	A limited ecological impact is anticipated through some loss of habitat, but as plans have not been seen this could not be quantified. The proposed works should not result in significant long term impacts on protected species, although there is a risk of disturbance of animals during any works.		
Further surveys required	None recommended.		
Reasonable Avoidance Measures	Reasonable avoidance measures are recommended for amphibians and reptiles, bats, nesting birds, and other protected species, including lighting recommendations, timing constraints, pre-works checks and general measures if animals are found within the works area.		

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1.0 Introduction

1.1 Enfys Ecology Limited were commissioned by TACP Architects on behalf of Brymbo Heritage Trust to undertake an ecological assessment of a small parcel of land at the entrance to Brymbo Heritage Area for which planning permission is being sought to convert it into an area of staff/volunteer and visitor parking. This area is referred to as the 'car park' area throughout this report.

1.2 Enfys Ecology have previously carried out several ecological surveys of the Brymbo Heritage Area and in addition to ongoing monitoring of great crested newt (GCN) populations within the site, have previously produced ecological reports including:

- A Preliminary Ecological Appraisal (PEA) of the wider Brymbo Heritage Area, last updated in July 2022 (Cutts, 2022).
- Bat and nesting bird surveys of the Foundry Area, immediately west of the proposed car park, last updated in December 2023 (Cutts, 2023a).
- Reptile surveys of the Fossil Forest Area, a short distance to the south of the proposed car park (Cutts, 2023b).

1.3 Enfys Ecology have not seen detailed plans for the proposed car park, but understand that it will involve landscaping and the creation of hardstanding, with some associated clearance of vegetation and waste materials. Enfys Ecology also understand that there are currently no plans to provide artificial lighting within the car park area.

1.4 The car park area has not been directly covered by the previous ecological reports, and this survey was therefore commissioned to determine the ecological impact of the proposed works and whether they would affect protected species. The survey work to inform this report was carried out on 8th March 2024.

1.5 Following the initial ecological assessment of the proposed car park area, an additional area immediately to the north was proposed as an overflow parking area. A survey of this area was carried out on 19th June 2024. This report is valid for a period of two years from this date in accordance with best practice.

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2.0 Site Description

2.1 *Survey Area*

The car park area consists of a relatively flat and open area consisting of short vegetation and bare ground/hardstanding, separated from the rest of the Brymbo Heritage Area by metal fencing (Figure 2.1). Similar habitat continues west into the Foundry Area, where hardstanding and buildings become increasingly predominant, and south towards the Fossil Forest area.

2.2 *Surrounding Habitats and Features*

The site is located in a rural area on the southern outskirts of Brymbo village. To the south and west of the site is a large area of fields bounded by scattered trees and hedges. Part of the former steelworks lies to the east of the survey area, beyond a trunk road, and has a similar mix of habitats to those on the eastern edge of the Brymbo Heritage Area (bare ground with patchy vegetation, semi-improved grassland and scattered scrub).



Figure 2.1. 'Car Park' at Brymbo Heritage Area, with the approximate survey areas shown by the red outlines

Background Image © Google Maps 2024

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FIGURE 2.2. WIDER SITE LOCATION - THE APPROXIMATE SURVEY AREA IS SHOWN BY THE RED STAR
BACKGROUND IMAGE © GOOGLE MAPS 2024

2.2 *Designated Sites*

There is one statutory designated site within 1km of the survey area, which is the Brymbo Fossil Forest Site of Special Scientific Interest (SSSI); it is located within the Brymbo Hertiage Area and is immediately adjacent to the south-western corner of the car park area. There are also two non-statutory designated ecological sites within 1km of the survey area.

TABLE 2.3. DESIGNATED SITES WITHIN 1KM OF THE SURVEY AREA.

Designation and name	Distance from survey area (approx.)	Reason for designation
Coedwig Ffosil Brymbo/Brymbo Fossil Forest (SSSI)	0m (south)	Palaeobotany of international importance
Brymbo Pony Fields (Wildlife Site)	360m (north-east)	Improved grassland and dense/continuous scrub
Mount Zion (Wildlife Site)	740m (west)	Semi-improved and marshy grassland

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3.0 Methodology

3.1 *Desk Study*

A search of biological records was not carried out for this report, but has previously been undertaken as part of the desk study for the Preliminary Ecological Appraisal of the wider Brymbo Heritage Site (Cutts, 2022). The records have been used to inform the survey and recommendations, and to provide context for evaluating the species and habitats found during the survey. Any relevant species results from the previous desk study and ecological surveys will be referred to in Section 4.

3.2 *Ecological Walkover*

A survey was conducted by a suitably experienced ecologist walking over the site and viewing the immediately adjacent areas. Notes were taken with respect to the habitat types present, and their suitability to support protected species, and any habitats or features of particular note. The survey was conducted following the standard Phase 1 habitat survey methodology and guidelines (JNCC, 2010; CIEEM, 2017).

3.3 *Survey Details*

The initial ecological walkover of the site was conducted on the 8st March 2024 by Richard Cutts, a suitably experienced professional ecologist. Conditions were dry, but breezy and cold. The survey of the northern extension of the site was conducted on the 19st June 2024 by Jez Squire, a suitably experienced professional ecologist. Conditions were warm and dry.

3.4 *Limitations*

3.4.1 The survey work to inform the initial report was carried out in March 2024, outside of the optimal time of year for habitat surveys (generally considered to be April to September). However, while the southern area was not revisited when the additional survey was carried out (June 2024; within the optimal survey season), no significant changes were noted and species recorded in the northern area were consistent with those observed during the March survey.

3.4.2 The results of this survey consist only of those species encountered during a short space of time on one day. Species that use the site infrequently or at different times of the year may not be recorded, and the absence of species from the results of a single survey should not be taken as indicating the species' definite absence from the area in question. Any rare or notable, protected, or invasive, species that were observed are identified; while every reasonable effort is made, Enfys Ecology cannot guarantee that all protected and invasive species have been identified and that the survey results are definitive.

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4.0 Survey Results

4.1 *Introduction*

The walkover survey was focussed on the car park area and proposed overflow area to the north. A habitat map is shown in Figure 4.1, with several features of interest annotated; note that transitions between the predominantly ephemeral/short perennial habitat and areas of bare ground or grassland were very subtle, and the habitat boundaries were only approximated during the survey. Site boundary features, which were almost entirely metal fences, are not shown but are mentioned where relevant in the following sections.

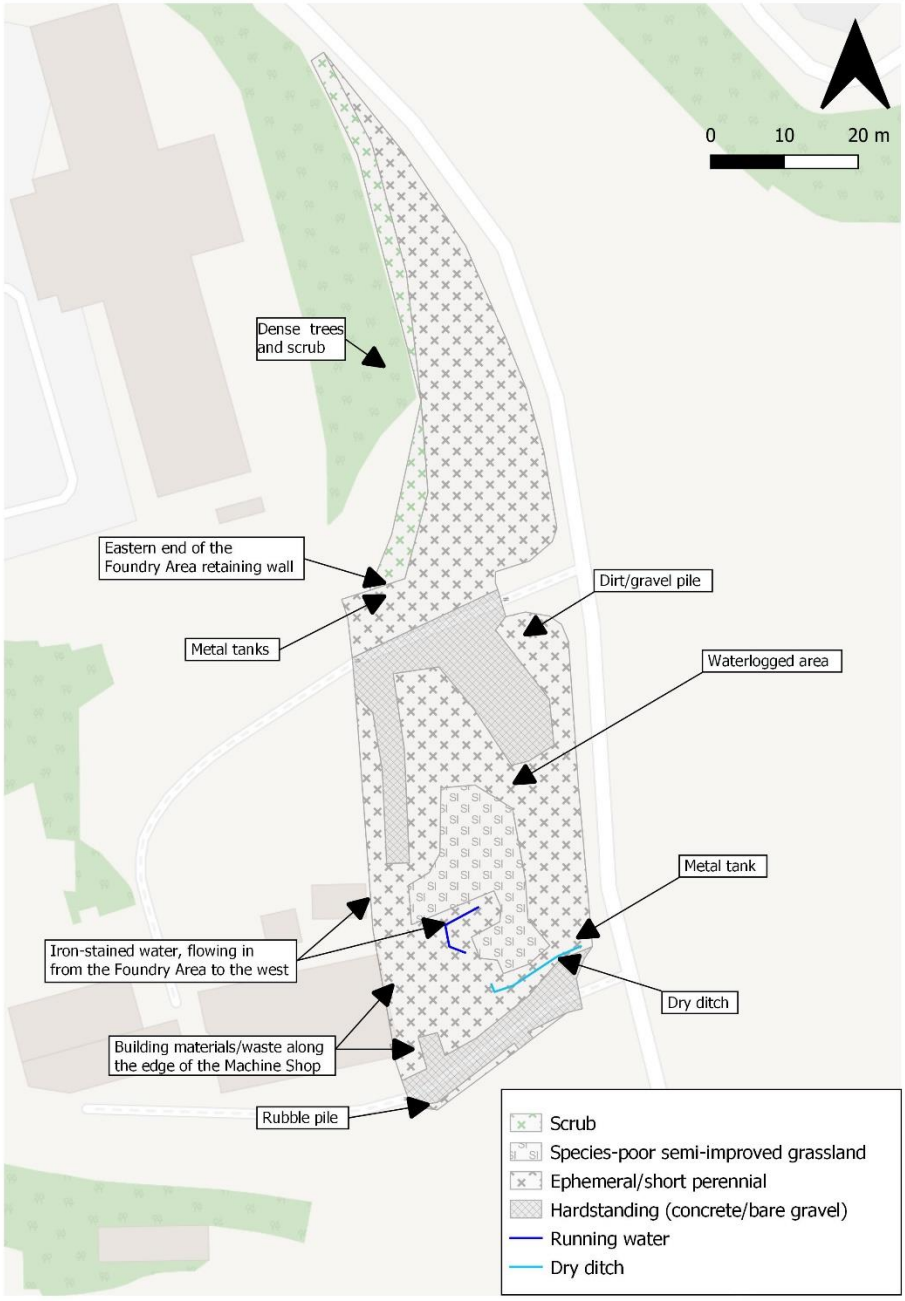


Figure 4.1. General distribution of habitats in the survey areas
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4.2 *Habitats and Flora*

4.2.1 The main habitat in the survey area was ephemeral/short perennial vegetation. This was characterised by a diverse, but typically sparse, flora over a coarse soil and/or gravel substrate; this included both flat areas across the site and raise embankments towards the edges of the site. A range of species that are commonly associated with disturbed ground were present, including coltsfoot (which was locally abundant), ragwort, ox-eye daisy, bittercress, chickweed, herb-Robert, black medick and dandelion. Mosses were also frequently present, locally forming dense carpets, particularly towards the eastern edge of the site. Grasses were occasionally present but increased in density towards the centre of the site. A list of plant species recorded during the survey is provided in Appendix A. No protected species were observed.

4.2.2 Taller vegetation was mostly scattered around the site margins, and included birch and ash saplings and Buddleja, a non-native and often invasive species that generally thrives on disturbed land. Cotoneaster, a non-native invasive plant species (INNS), was observed at the north-western and south-western corners of the initial (southern) survey area, and in places along the western edge of the northern part of the survey area.

4.2.3 Towards the centre of the southern part of site, the ephemeral/short perennial habitat transitioned into species-poor grassland that had a short but uneven sward. Grasses (Yorkshire fog, cock's foot) and white clover were the dominant plants, with scattered sorrel, creeping buttercup and ephemeral/short perennial species.

4.2.4 The northern part of the site had generally higher vegetation, with more ruderal species and locally abundant grasses. Vegetation was tallest along the western margin of this area, where ruderal species and scrub dominated, transitioning into an area of well-established trees on the eastern slope of the Foundry Area retaining wall. This area was unenclosed, expect for metal fencing along the southern edge separating it from the initial survey area.

4.2.5 A ditch in the southern part of the site was receiving heavily iron-stained water from the Foundry Area, via an underground culvert, at the time of the survey. Part of the ditch was choked with algae, and a small amount of soft rush was present, but otherwise no aquatic or aquatic-marginal plants were apparent.

4.2.6 A brief description of the habitats on site is provided in Table 4.1 below.

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TABLE 4.1: HABITAT DESCRIPTIONS

Ephemeral/short perennial	
Ephemeral/short perennial habitat occupied the majority of the site. This habitat generally consisted of a patchy collection of plants of a substrate ranging from bare earth/gravel to larger rubble. This included raised embankments close to the margins of the site, and flatter areas in the central parts of the site. The vegetation was diverse, with a range of species often associated with disturbed ground such as coltsfoot, ragwort, ox-eye daisy, bittercress, chickweed, herb-Robert, black medick and dandelion. Most of these were widespread, however some were locally dominant; for example, large concentrations of coltsfoot were present on parts of the embankments. Grasses were occasionally present in this habitat and were locally abundant, increasing in proportion towards the centre of the site where this habitat subtly transitioned into grassland. Mosses were another important component of the habitat, and formed dense carpets of short vegetation in some of the flatter areas. Where mosses were dominant there were scattered ephemeral/short perennial plants and grasses, and this floral assemblage has been included in ephemeral/short perennial habitat.	   

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Buddleja and small saplings (birch and ash) were established on some of the embankments/rubble piles, particularly along the northern and western edge of the site. Shrubby cotoneaster were also observed in the north-western and south-western corners of the site.

Ephemeral/short perennial habitat was also predominant on the northern extension of the site, which had a lot of bare ground and several scattered ruderal species. Species were broadly similar to those seen in the southern part of the site. Grasses were locally dominant, forming patches which could be considered closer to low-diversity grassland than to ephemeral/short perennial habitat.

Vegetation was generally higher in this area than it was to the south and diversity was also slightly higher, with additional species observed in this area. This was likely due to both the timing of the surveys and less intensive management in this area, rather than reflecting a fundamental difference in the habitats.









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Species-poor semi-improved grassland	
Ephemeral/short perennial habitat transitioned into species-poor grassland towards the centre of the site. The grassland had a short sward almost entirely dominated by grasses (Yorkshire fog and cock's foot were the most apparent species) and white clover. Mosses were present in places, with higher abundance towards the edges of the grassland. Other flora were scattered throughout the grassland, and consisted of very low numbers of a range of species that were also present within the ephemeral/short perennial habitat.	 

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Hardstanding	
Hardstanding, which for convenience includes surfaces dominated by unvegetated gravel, was present throughout the site. Scattered grasses, mosses and ephemeral/short perennial plants occurred in parts of the hardstanding areas. There were four distinct areas of hardstanding: • Two west-east concrete tracks, near to the northern and southern ends of the site. • An incomplete north-south concrete track on the western edge of the site, partially connecting the two west-east tracks. • A large area of bare gravel near the north-eastern end of the site and extending towards the centre.	 
Scrub and tall ruderal	
In the northern area, there was a marked change in both vegetation and topography between the low-lying ephemeral/short perennial habitat and the adjacent eastern slope of the Foundry Area retaining wall, which was largely occupied by dense trees and scrub growth. The two habitats were separated by a transitional strip of taller ruderal vegetation and low scrub (bramble, Buddleja and saplings). This transitional zone was not surveyed in detail, and for simplicity has been shown as 'scrub' in Figure 4.1, which reflects the dominant vegetation type.	

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Ditches	
Two ditches were the other notable habitat feature on the site. A roughly crescent-shaped ditch was present in the south-central part of the site. It was connected to the Foundry Area to the west by an underground concrete culvert, which entered the ditch at its north-western corner and was discharging heavily iron-stained water into the ditch. Water was flowing southwards within the ditch. The north-eastern end of the ditch, with lower water flow, was choked by algae. No aquatic or aquatic marginal vegetation, with the exception of scattered patches of soft rush, were observed and the ephemeral/short perennial habitat extending to the water line over a gravel substrate. A concrete culvert at the south-eastern end of the ditch connected it to a second ditch running west-east further south in the site. Although water was freely flowing into the culvert at the time of the survey, there was limited discharge into the second ditch which had a waterlogged substrate but held no standing water.	   

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4.3 *Fauna*

4.3.1 No signs of protected species were seen. The potential for the site to support protected species is discussed below and includes information biological records provided by Cofnod, the local environmental record centre for North Wales, for the original Preliminary Ecological Appraisal for the wider Brymbo Heritage Area (Cutts, 2022).

4.3.2 *Amphibians including Great Crested Newts*

Great Crested Newts (GCN) and smooth newts were recorded in the northern part of Brymbo Heritage Area prior to 2004. In 2004, GCN were translocated into Brymbo Heritage Area from the nearby Brymbo commercial development site under a Welsh Government great crested newt (GCN) derogation licence. Mitigation ponds were created in the western part of the Brymbo Heritage Area, approximately 175m west of the car park area, are separated from the Steelworks (which includes the car park) and Fossil Forest by permanent newt fencing. The ponds have been monitored for GCN by Enfys Ecology since 2018. A small but presumably breeding population of GCN (and other common newt species) was present at the time of the latest surveys (May/June 2023). The terrestrial habitat in the vicinity of the ponds is also highly suitable for GCN.

The habitats within the survey area would provide good foraging potential for amphibians; however, while there are places of shelter scattered around the site (scrub, waste material, coarse substrates) they are mainly concentrated around the edges and most of the southern part of the site is very exposed. The ditches are unsuitable for breeding as one lacked standing water and the other was too polluted. The only known ponds which may be suitable for breeding amphibians, the nearest of which are the ones inside the Brymbo Heritage Area, all lie to the west of the survey area and are separated from it by the newt exclusion fencing. It is therefore considered unlikely that amphibians, including GCN, are regularly using this site, although the presence of individuals cannot be entirely ruled out.

4.3.3 *Reptiles*

The presence of a small, but likely breeding, population of common lizards within the Fossil Forest area of Brymbo Heritage Area was confirmed by surveys carried out in 2023 (Cutts, 2023b). There is a direct habitat connection between the survey area and the Fossil Forest, and reptiles can therefore freely move between the two areas; as such it is very likely that lizards will move freely between the two areas. Habitats within the car park area would provide good foraging and basking opportunities for reptiles, with suitable shelter mainly restricted to near the western site boundaries.

4.3.4 *Bats*

Small numbers of several bat species (common pipistrelle, lesser horseshoe and brown long-eared) have been observed foraging and/or roosting in the Foundry Area to the west of the site (Cutts, 2023a). The car park area itself lacks vegetation or structures with suitable features for roosting bats, with the exception of a small section of the foundry retaining wall in the north-western corner (which may have suitable crevices), and the eastern wall of the Machine Shop, which forms part of the western site boundary. No bats or evidence of bats was observed during previous surveys of the Machine Shop (Cutts, 2023a). The habitats in

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the survey area would provide limited foraging opportunities for bats, and higher quality foraging habitat is present in the immediate vicinity, so it is unlikely that large numbers of bats would be using the site but individuals may fly thorough the area. Street lighting close to the eastern boundary may also act as an additional barrier or deterrent to more light-sensitive bat species.

4.3.5 *Birds*

Several bird species have been recorded within both Brymbo Heritage Area and the former steelworks area to the east, and have previously been summarised in the Preliminary Ecological Appraisal for Brymbo Heritage Area (Cutts, 2022). A barn owl has previously been observed nesting to the west of the Foundry Area and swallows have been known to nest in the Machine Shop (Cutts, 2023a). Jackdaws nest in the northern retaining wall of the Foundry Area, part of which forms the boundary in the north-western corner of the survey area; several jackdaws were observed in this area during the survey, and a blackbird was seen entering crevices in the wall. Except for the well-established trees and scrub along the western boundary of the northern part of the survey area, the car park area lacks taller or dense vegetation which could be suitable for nesting birds.

4.3.6 *Badgers*

Badgers have previously been reported from within the Brymbo Heritage Area (Cutts, 2022). The car park area offers limited opportunities for foraging and is not suitable for sett building, so while it may be accessible to the nearby badger population it is considered unlikely that they would regularly use this area in preference to more suitable and convenient habitats elsewhere within the Brymbo Heritage Area.

4.4 *Invasive Non-Native Species*

4.4.1 Five invasive non-native species (INNS) were recorded from a 1km grid square overlapping the site, described as 'Brymbo Steelworks', in 2010; these include Himalayan cotoneaster, Japanese knotweed (described as 'widespread') and Japanese rose, which are all invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) as plants which cannot be spread in the wild. Portugal laurel and white stonecrop were also recorded and while invasive under certain conditions, are not included in Schedule 9 as controlled plants.

4.4.2 During the survey two small patches of cotoneaster, most likely Himalayan cotoneaster, were identified in the southern part of the site (Figures 4.2 and 4.3), and cotoneaster was also observed amongst the taller vegetation in the northern part of the site. All varieties of cotoneaster except for native cotoneaster (*Cotoneaster cambricus*; restricted in the wild to a single site) are highly invasive and are listed under Schedule 9 of the WCA 1981.

4.4.3 Buddleja was observed scattered throughout the site, although mainly close to the western boundary. Buddleja species (in particular *Buddleja davidii*) can be highly invasive.

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FIGURE 4.2: COTONEASTER IN THE NORTH-WESTERN CORNER OF THE SITE



FIGURE 4.3: COTONEASTER IN THE SOUTH-WESTERN CORNER OF THE SITE (ARROW)

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5.0 Discussion and Conclusions

5.1 *Proposed Works*

5.1.1 The proposed works involve the creation of a car park. Enfys Ecology have not seen detailed plans for the proposed car park, but understand that it will involve landscaping and the creation of hardstanding, with some associated clearance of vegetation and waste materials.

5.2 *Designated Sites*

5.2.1 The Brymbo Fossil Forest SSSI is located immediately adjacent to the south-western corner of the car park area, but despite its proximity it will be unaffected by the work; note this site is desginated for palaeobotanical rather than ecological features. There are two non-statutory designated sites within 1km of the survey area which will also be unaffected by the proposed works.

5.3 *Habitats and Flora*

5.3.1 The habitats in the survey area were ephemeral/short perennial and species-poor semi-improved grassland, along with various hardstanding/bare gravel surfaces; similar habitats are present in the immediate vicinity both within the Brymbo Heritage Area to the west and south (Foundry Area and Fossil Forest) and the wider former steelworks area to the east. A small amount of transitional tall ruderal/scrub vegetation was present all the western edge of the northern section of the site.

5.3.2 Enfys Ecology have not seen detailed plans for the car park, but it is anticipated that there will be loss of areas of low-diversity grassland and higher diversity ephemeral/short perennial habitat.

5.4 *Amphibians and Reptiles*

5.4.1 The car park area offers relatively low-quality habitat for both amphibians and reptiles. Amphibians, including great crested newts, may be present in small numbers but their distribution is restricted by the presence of newt exclusion fencing between their breeding ponds and this habitat. However, this area is a continuation of foraging habitat for a population of common lizards that is known to be present a short distance to the south (within Brymbo Fossil Forest) and reptiles are able to freely move into the area. It is recommended that Reasonable Avoidance Measures (RAMs) are put in place to reduce any risk to individual amphibians or reptiles within the site (see Section 6.1).

5.5 *Bats*

5.5.1 The site provides low quality foraging habitat for bats and few roosting opportunities, although the presence of bat roosts within boundary features (the retaining wall and the external wall Machine Shop) cannot be entirely ruled out. With known bat populations immediately to the west (albeit low numbers of individuals) it is likely that individual bats

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forage within or commute through parts of the site, and it is therefore recommended that Reasonable Avoidance Measures (RAMs) are put in place to reduce any risk of disturbance to bats within the site (see Section 6.2).

5.6 *Nesting Birds*

5.6.1 The site provides limited nesting habitat and foraging opportunities for bird species. However, birds are known to nest in the retaining wall that forms part of the north-western site boundary. All nesting birds (and their nests) are legally protected under the Wildlife and Countryside Act 1981 (as amended) and it is an offence to intentionally take, damage or destroy the nest of any wild bird while it is in use or being built (as well as kill or injure wild birds or their eggs). Reasonable Avoidance Measures (RAMs) should be put in place to minimise disturbance to any nesting birds in the vicinity of any works (see Section 6.3).

5.7 *Invasive Non-Native Species*

5.7.1 Two invasive non-native plant species (INNS) were observed on site during the survey. Therefore, biosecurity procedures are recommended in order to help control the spread of these species (see Section 7).

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6.0 Reasonable Avoidance Measures (RAMs) and Recommendations

6.1 *Amphibians and Reptiles*

6.1.1 There is a risk of amphibians (including great crested newts) and reptiles being present within working areas. This risk is considered to be low as amphibians are unlikely to be present but their presence cannot be entirely ruled out (see Section 4.3.2). Common lizards may be present but risk to them is partially offset by the fact that, as long as work is carried out in suitable temperatures (see Section 6.1.5 below), common lizards are highly mobile and will attempt to move out of the area if they are disturbed. As a precaution, a series of Reasonable Avoidance Measures (RAMs) are recommended in order to minimise the risk to any amphibians or reptiles that are present.

6.1.2 A 'toolbox talk' should be provided to all site workers, which must then form part of staff inductions to site. This will include the presence of reptiles and amphibians on site, the relevant legislation, and the following RAMs.

6.1.3 An ecologist should check any areas of short vegetation for the presence of reptiles or GCN, and give the go ahead for the works once declared clear. Any areas of longer vegetation that need to be cleared will be strimmed to 10cm (where possible), after which the ecologist will search the area. Following the search, the vegetation will be strimmed to ground level to discourage amphibians and reptiles from using it.

6.1.4 Habitat piles, for example piles of brash, waste, coarse gravel or rubble, must be dismantled by hand under supervision of an ecologist. The material must be removed from the works area or stored off the ground to prevent amphibians and reptiles from using it.

6.1.5 Additional RAMs for reptiles and amphibians include:

- Strimming and other destructive works should be carried out between March and October and only when the air temperature has risen above 10°C, as disturbing amphibians and reptiles during 'cold' weather may result in fatalities.

- All construction materials must be stored on hard standing as far away from the edge of the site as possible. Materials should be stored off the ground (e.g. on pallets) to prevent amphibians and reptiles from taking refuge in them.

- In the unlikely event that amphibians or reptiles are encountered at any point during the works, contractors must stop work immediately in that area and contact an ecologist. Common amphibians should be moved to suitable habitat or an artificial hibernaculum outside of the works area, but reptiles and GCN must only be moved by contractors if they are at immediate risk of harm. Gloves must be worn if it is necessary to handle any reptiles or amphibians.

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6.2 *Bats*

6.2.1 The works can be carried out at any time of year (subject to nesting bird restrictions), but there is likely to be some bat activity within and immediately adjacent to the site. To avoid disturbance to bats during the works, reasonable avoidance measures with regards to noise and lighting should be followed at all times during all works. These are set out in Section 6.4, below.

6.2.2 If, in the unlikely event bats are encountered at any point during any works, all works must immediately stop and a licenced ecologist must be called.

6.3 *Nesting Birds*

6.3.1 There is some potential for birds to be nesting in and around the site; therefore, any vegetation removal should take place outside the bird nesting season (from March to September inclusive). If it is necessary to work during the bird breeding season then a thorough check for nests must be carried out immediately prior to works starting to ensure that no active nests will be affected. If active nests are found then work must be delayed until all chicks have fledged.

6.3.2 There is a high risk of disturbance to birds nesting in the northern retaining wall. No works should take place within at least 10m of the retaining wall during the bird nesting season, and contractors should avoid entering the area during this time.

6.3.3 Reasonable avoidance measures with regards to noise and lighting should also be followed at all times during all works (see Section 6.4).

6.4 *Lighting*

6.4.1 The habitats surrounding the site are used by bats and potentially other nocturnal species. Therefore, any lighting associated with the development, both during and after the works, has the potential to impact nocturnal mammals and birds.

ILP (2023) conclude that for bats, artificial lighting at night (ALAN) is thought to increase the chances of predation by avian predators (such as owls and hawks) and in lit areas, bats are known to modify their behaviour, potentially in response to this threat. Illuminating a bat roost can cause disturbance and this may result in the bats deserting the roost, or even becoming entombed within it. Lighting would therefore be considered an obstruction under the legislation protecting bats and their roosts. In addition, artificial lighting can also affect the feeding behaviour of bats.

6.4.2 General lighting guidance which must be followed for the site includes:

- There must be no lights focused on any surrounding trees (west and south of the site) or the northern retaining wall. Light spill into the Foundry Area should also be minimised. There must be no illumination of any bat and bird boxes once the works are complete.

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- Construction should start at least one hour after dawn and finish at least one hour before dusk during the summer months (May – August) to prevent light and noise levels disturbing bats using the site.

- Any external or security lighting should be limited to provide some dark periods during the night. Ideally the lighting should be motion activated, and not stay on longer than one minute, in order to provide maximum darkness when not needed as well as providing safe lighting conditions when required.

6.4.3 Additional lighting guidance for Brymbo Heritage Area has been summarised in the Preliminary Ecological Appraisal (Cutts, 2022) and bat survey report (Cutts, 2023a) for the site. The ILP (2023) 'Bats and Artificial Lighting at Night' guidance includes further information on the impacts of ALAN on bats and guidance for lighting design.

6.5 There is the potential for the works to alter the site the drainage, and a therefore a risk of polluted water from the Foundry Area being released/bypassing the site. This should be addressed through the site design including, if necessary, a drainage scheme and/or a Construction Environmental Management Plan (CEMP).

6.6 *General Reasonable Avoidance Measures*

6.6.1 Additional Reasonable Avoidance Measures (RAMS) should be implemented to reduce the potential of any works to impact to other species that may be found on site.

The following measures should be implemented at <u>all times</u> during any works:

- Working areas should be kept to the minimum required.

- Storage of fuel must be properly bunded and machinery provided with drip trays, especially when refuelling. Refuelling and storage of potential pollutants should be restricted to hardstanding areas, well away from the stream, so that runoff can be prevented from entering the watercourse.

- Works should be avoided within 1 hour of dawn and dusk where possible to avoid disturbance to nocturnal animals. If works outside this time are needed, all lighting should be directional and be directed away from the adjacent habitats.

- Any terrestrial mammals, for example badgers or otters, must be allowed to leave the area on their own. If this is not possible, e.g. the animal is injured or trapped, then an ecologist must be called.

- Trenches should be covered overnight, to prevent animals becoming trapped in them. If it is not possible to cover excavations, a suitable ramp must be provided to allow an escape route for any amphibians or mammals that enter them.

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7.0 Biosecurity

7.1 Biosecurity means taking measures to ensure that good practices are in place to minimise the risk of importing and spreading invasive non-native species (INNS), pests and infectious disease. As non-native species or diseases could be transmitted in any water or material, a good biosecurity routine is essential, even if invasive non-native species are not apparent.

7.2 General good-practice biosecurity measures include:

- A toolbox talk detailing INNS identified in the risk assessment should be delivered to all workers, showing the various life stages and how to recognise these plants.
- A cleaning station should be set up at the site exits including facilities to wash boots and vehicles.
- **All** footwear of staff leaving site (for **any** reason and no matter for how short a time) should be cleaned (i.e., visually free of soil and debris) before leaving site.
- Soil and vegetation should be washed off with clean water (and brushes). Water (which should not be contaminated with any disinfectant or other pollutants) should then be disposed of by pouring on site to soak away, ensuring this does not enter the watercourse.
- The wheels or tracks (and any other part which has come into contact with the soil) of all vehicles which have entered the area must be thoroughly washed and be free of soil and debris before leaving the site.
- No one should remove any soil or vegetation from the working area for any reason.

7.3 Table 7.3 summarises the risks associated with the INNS known to be present on site and in the immediate vicinity, and suggested control measures.

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TABLE 7.1: BIOSECURITY RISKS AND OPERATIONAL PROCEDURES

Species	Potential contamination route	Likelihood of risk	Operational procedure
Cotoneaster	Species spread by machinery and movement of soil/plant material.	Moderate. Groundworks will be required but may not affect areas with cotoneaster.	Ensure contractors, staff and volunteers know what cotoneaster look like. Plants should be cut back close to the ground. Herbicide should be directly applied to cut stumps.
	Introduction/spreading via natural dispersal of seeds.	High. Cotoneaster is present on site. Natural dispersal by birds.	Any material from the cotoneaster or containing cotoneaster waste must be chipped/burnt on site, or removed to licensed landfill as controlled waste.
Buddleja	Introduction/spreading via natural dispersal of seeds	Very high. Buddleja is present across the site and in adjacent areas. Seeds rapidly spread via wind dispersal and colonised disturbed ground.	Ensure contractors, staff and volunteers know what buddleja look like. Plants should be cut back close to the ground. Herbicide should be directly applied to cut stumps. Stem injection of herbicide may be effective. Any material from the buddleja should be chipped/burnt on site.

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8.0 Legislation

8.1 *Reptiles*

All British reptiles are protected from intentional killing, injuring and sale under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). These are as follows:

- Adder, *Vipera berus*
- Grass snake, *Natrix helvetica* (formerly listed as *N. natrix*)
- Slow worm, *Anguis fragilis*
- Common lizard, *Zootoca vivipara*

This legislation aims to protect them from persecution and also from exploitation in the pet trade, and for which the following are offences:

- Intentional killing, injuring or taking
- Intentionally or recklessly damaging/destroying a place of shelter/protection
- Intentionally or recklessly disturbing an animal in its place of shelter/ protection
- Intentionally or recklessly obstructing access to its place of shelter/protection
- Possession (live or dead, including derivatives), sale and offering for sale

8.2 *Great Crested Newts*

GCN are protected under the Conservation of Habitats and Species Regulations 2017, known as the 'Habitats Regulations', because they have declined throughout Europe in recent decades.

Under the Habitats Regulations, it is an offence to:

- Deliberately capture, injure or kill any wild animal of an EPS;
- Deliberately disturb wild animals of any such species;
- Deliberately take or destroy the eggs of such an animal; or
- Damage or destroy a breeding site or resting place of such an animal.

Disturbance includes, but is not limited to, any disturbance which is likely:

- To impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or (in the case of animals of a hibernating or migratory species) to hibernate or migrate; or
- To affect significantly the local distribution or abundance of the species to which they belong.

Under the Wildlife and Countryside Act 1981(as amended) it is illegal to:

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- Intentionally or recklessly disturb any great crested newt while it is occupying a structure or place which it uses for shelter or protection, 9(4)(b).
- Intentionally or recklessly obstructs access to any structure or place used by a great crested newt for shelter or protection, 9(4)(c).
- Sell, offer or expose for sale any great crested newt, 9(5).

It is, however, legal for you to tend a disabled GCN with the intention of releasing it, or to kill a GCN that cannot recover, as long as the injury was not a result of your unlawful act (Habitat Regulations 44(2); W&CA 10(3)(a)(b)).

8.3 *Bats*

The Wildlife and Countryside Act 1981 (as amended) forms the key legislation protecting habitats and species in the UK. All UK bat species are fully protected under the 1981 Act through inclusion on Schedule 5. All bats are also listed under Schedule 2 of the Conservation of Habitats and Species Regulations (2017) which transcribes the EC Habitats Directive into UK law. In combination, this legislation makes it an offence to:

- Deliberately or recklessly take, injure or kill a bat;
- Deliberately or recklessly damage or destroy a place or structure used by bats for shelter or protection;
- Deliberately or recklessly obstruct access to a bat roost; or
- Deliberately or recklessly disturb bats while occupying a roost.

Bat roosts are protected under these laws whether the animals are present at the time of survey or not. Under both laws Natural Resources Wales are empowered to issue licences to carry out work to bat roosts for reasons of overriding public interest. It is not illegal to tend to a disabled bat pending recovery.

8.4 *Birds*

Under the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000, all wild birds, their nests and eggs are protected. This makes it an offence to:

- Intentionally kill, injury or take any wild bird.
- Take, damage or destroy the nest of a wild bird included in Schedule ZA1.
- Take, damage or destroy the nest of any wild bird while that nest is in use or being built.
- Take or destroy an egg of any wild bird.

8.5 *Badgers*

The Protection of Badgers Act 1992 fully protects badgers and their setts. Offences include:

- Killing, injuring and taking (or attempting these)
- Possession of a dead badger (or derivative)
- Cruelly ill-treating a badger

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- Damaging a badger sett or any part of it
- Destroying a badger sett
- Obstructing access to/entrance of a badger sett
- Causing a dog to enter a badger sett
- Disturbing a badger whilst occupying a sett

Badgers are also listed on Schedule 6 of the Wildlife and Countryside Act 1981, which prohibits certain methods of killing and capture.

8.6 *Invasive Non-Native Species*

Invasive non-native species are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), for which the following are offences:

- Release into the wild, or to allow the escape of, any animal which is not ordinarily resident, or a regular visitor to, Great Britain in a wild state, or which is included in Part 1 of Schedule 9.
- Plant in the wild, or otherwise cause to grow there, any plant included in Part 2 of Schedule 9.

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9.0 References

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10.0 Appendices

Appendix A. Plant species list.

This list is not exhaustive. No protected or notably rare species were found.

English Name	Scientific Name
Alder	*Alnus glutinosa*
Ash	*Fraxinus excelsior*
Birch	*Betula* sp.
Black medick	*Medicago lupulina*
Bramble	*Rubus fruticosus* agg.
Bristly oxtongue	*Helminthotheca echioides*
Broad-leaved dock	*Rumex obtusifolius*
Broad-leaved willowherb	*Epilobium montanum*
Buddleja	*Buddleja davidii*
Bush vetch	*Vicia sepium*
Cat's-ear	*Hypochaeris radicata*
Chamomile	*Anthemis arvensis*
Chickweed	*Stellaria media*
Cleavers	*Galium aparine*
Cock's foot	*Dactylis glomerata*
Coltsfoot	*Tussilago farfara*
Common figwort	*Scrophularia nodosa*
Common knapweed	*Centaurea nigra*
Common mugwort	*Artemesia vulgaris*
Common vetch	*Vicia sativa*
Cornsalad	*Valerianella locusta*
Cotoneaster	*Cotoneaster* sp.
Cranesbill	*Geranium* sp.
Creeping bent	*Agrostis stolonifera*
Creeping buttercup	*Ranunculus repens*
Creeping cinquefoil	*Potentilla reptans s.l.*
Creeping thistle	*Cirsium arvense*
Curled dock	*Rumex crispus*
Cut-leaved cranesbill	*Geranium dissectum*
Daisy	*Bellis perennis*
Dandelion	*Taraxacum officinale*
Dog rose	*Rosa canina s.l.*
Field speedwell	*Veronica arvensis*
Field thistle	*Cirsium arvense*
Fox-and-cubs	*Pilosella aurantiaca*

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Garden columbine	*Aquilegia vulgaris*
Glaucous sedge	*Carex flacca*
Goat willow	*Salix capr*
Grass vetchling	*Lathyrus nissola*
Greater bird's-foot trefoil	*Lotus pedunculatus*
Hairy bittercress	*Cardamine hirsuta*
Hedge bindweed	*Calystegia sepium*
Hedge mustard	*Sisymbrium officinale*
Herb-Robert	*Geranium robertianum*
Hogweed	*Heracleum sphondylium*
Honeysuckle	*Lonicera periclymenum*
Ivy	*Hedera helix*
Kidney vetch	*Anthyllis vulneraria*
Lesser burdock	*Arctium minus*
Meadow buttercup	*Ranunculus acris*
Mosses	*Bryophyta* sp.
Mouse-ear chickweed	*Cerastium fontanum*
Mullein	*Verbascum thapsus*
Nettle	*Urtica dioica*
Ox-eye daisy	*Leucanthemum vulgare*
Pendulous sedge	*Carex pendula*
Perennial ryegrass	*Lolium perenne*
Ragwort	*Senecio jacobaea*
Red clover	*Trifolium pratense*
Red valerian	*Centranthus ruber*
Ribbed melilot	*Melilotus officina*
Ribwort plantain	*Plantago lanceolata*
Smooth hawk's beard	*Crepis capillaris*
Sorrel	*Rumex acetosa*
Soft rush	*Juncus effusus*
Spiny sowthistle	*Sonchus asper*
Stinking iris	*Iris foetidissima*
Sycamore	*Acer pseudoplatanus*
White clover	*Trifolium repens*
Wild carrot	*Daucus carota*
Willowherb	*Epilobium/Chamaenerion* sp.
Wood sage	*Teucrium scorodonia*
Yarrow	*Achillea millefolium*
Yorkshire fog	*Holcus lanatus*

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