BORRAS PARK COMMUNITY

PRIMARY SCHOOL:

PRELIMINARY ECOLOGICAL APPRAISAL & PRELIMINARY ROOST ASSESSMENT

DATE	ECOLOGIST	APPROVED	VERSION	COMMENTS
23/03/2020	Lucy Boyett	Tim Yardley	V1	Original
01/04/2020	Lucy Boyett	Tim Yardley	V2	Addition of enhancement plan in Section 9
01/05/2020	Lucy Boyett	Rhian Hughes	V3	Update of Sections 6, 7, 8 & 9 to account for GCN eDNA testing and updated landscaping plan

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Executive Summary

Site	Borras Park Community Primary School, LL12 7TH	**OS Grid Reference:**	SJ 3512 5196
Surveyor(s)	Lucy Boyett ACIEEM	**Survey Date:**	11/03/2020
Type of Survey	Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA)		
Summary of Proposed work	Extension to two existing car parking areas, a possible new vehicular entrance, the removal of two portable classrooms and a section of the main junior school building, the addition of two extensions and two Multi Use Games Areas (MUGA).		
Habitats affected **Buildings affected**	Amenity grassland, hard standing and scattered broad-leaved trees Removal of two portable classrooms. Removal of a section of the main junior school building and an extension to another section.		
Designated sites affected	No statutory or non-statutory designated sites to be affected by the proposed works.		
Main results of survey	Phase 1 habitats included amenity grassland, buildings, hardstanding, broad-leaved scattered trees, species poor hedgerow, ponds and scrub. No potential roosting features for bats were found within the building sections or trees, which are to be affected by the works.		
Survey conclusions	There will be a loss of amenity grassland and scattered broad-leaved trees. Species rich grassland and broad-leaved trees will be planted across the site to mitigate for this loss and to enhance the site. The building sections and trees, which are to be affected by the works had negligible potential for roosting bats. Birds are likely to nest within the scattered broad-leaved trees and bats may use them for foraging.		
Further Surveys Required	No further surveys required		
RAMs and Mitigation	Mitigation measures have been recommended for nesting birds and bats and enhancement measures have been recommended to achieve biodiversity net gain.		

1.0 Introduction

1.1 Enfys Ecology Limited were commissioned by TACP Architects on behalf of Wrexham County Council to undertake a Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA) of Borras Park Community Primary School, Wrexham

1.2 The proposed works comprise an extension to two existing car parking areas, a possible new vehicular entrance, the removal of two portable classrooms and a section of the main junior school building and the addition of two extensions and two Multi-Use Games Areas (MUGA).

1.3 Enfys Ecology carried out a Preliminary Ecological Appraisal (PEA) of the site, including a phase 1 habitat survey, protected species survey and a desk study examining local ecological records held for the area by Cofnod, the local environmental record centre for the North Wales region; a PRA of the school building sections to be affected by the works.

1.4 The surveys were commissioned to determine whether the proposed works would affect protected species: specifically, great crested newts (GCN), bats and nesting birds. The surveys were also to gain baseline ecological data on the species and habitats present on the site, identify any potential ecological constraints to potential development arising from the site or surrounding area, and recommend suitable general mitigation and/or compensation strategies for these issues, as appropriate.

1.5 The survey work to inform this report was carried out on 11th March 2020. This is outside the optimal time of year to carry out habitat assessment as many annual plants are only starting to develop at this time, and animals may have reduced activity; however, an assessment of the habitats and potential of the site can still be made. Habitats and species found within a discrete area of land are subject to change; this report should therefore be considered valid for a period of two years (from March 2020) in accordance with best practice.

2.0 Site Description

2.1 *Survey area*

2.1.1 Borras Park Infant and Junior school comprised two main school buildings (infants site to the south and junior site to the north), two prefabricated portable classrooms, car parking areas, a large playing field and two conservation/outdoor classroom areas (Figure 2.1).

2.2 *Surrounding habitats and features*

2.2.1 The site is on the north eastern outskirts of Wrexham, surrounded by residential areas on all sides. Within the residential areas, there are a number of small amenity grassland areas, scattered trees and vegetation within gardens. Approx. 300m to the west is Acton Park, a large area of parkland with scattered trees, broad-leaved woodland and a fishing lake. The A5156, approx. 250m to the north, marks the boundary between the residential area of

Borras to the south and the non-residential area to the north including Wrexham Golf Club, Borras Quarry and agricultural land (Figure 2.2).

FIGURE 2.1. SITE LOCATION - THE APPROXIMATE SURVEY AND SITE BOUNDARY IS SHOWN IN RED
IMAGE © GOOGLE 2020

FIGURE 2.2. WIDER SITE LOCATION - THE APPROXIMATE SURVEY AND SITE BOUNDARY IS SHOWN IN RED
IMAGE © GOOGLE 2020

3.0 Methodology

3.1 *Desk study*

The desk study comprised a consultation with Cofnod, the local environmental record centre for North Wales, to determine the presence of statutory and non-statutory sites for nature conservation, and records of protected, notable, or (formerly) Biodiversity Action Plan (BAP) species and habitats from within a 1km radius of the site. The records were used to inform the survey and recommendations, and to provide context for evaluating the species and habitats found during the survey. The desk study data can be found in Appendix B, and any relevant species results from the desk study will be referred to in Sections 4 and 6.

3.2 *Extended Phase 1 Habitat Survey*

3.2.1 A survey was conducted by an experienced ecologist walking over the site and immediately adjacent areas (where access permitted). All habitat types on site were visited. Notes were taken on the habitat types present, and their suitability for protected species, and target notes were used to record any habitats or features of particular note, following the standard methodology (JNCC 2010). A list of floral species was recorded.

3.2.2 A search for evidence of protected species was carried out, including amphibians (including great crested newt (*Triturus cristatus*)), bats, and reptiles. Evidence of badgers (*Meles meles*) including setts, dung pits, hairs, footprints, and scratching posts or trees was searched for.

3.3 *Preliminary Bat Roost Assessment (PRA)*

3.3.1 The sections of building, which are going to be affected by the proposed works, were assessed for any signs of bats; these include droppings, feeding remains, and other indicative marks, plus features of potential use to bats such as crevices, cracks and other holes, and any potential access points into the building. High-powered torches were used to inspect any identified features, and an endoscope was used to investigate any gaps or crevices, where appropriate.

3.4 The extended phase 1 habitat survey and the preliminary roost assessment were conducted on the 11th March 2020 by Lucy Boyett (accredited agent on bat survey licence S087351/1), a suitably experienced professional ecologist. Conditions were bright and dry with a light breeze.

3.5 *Great crested newt eDNA testing*

3.5.1 The single pond within the infant site conservation area and the four ponds within the junior site conservation areas, were tested for the presence of GCN by using eDNA testing. Samples were collected on 17th April 2020 (Infant site pond) and 24th April 2020 (Junior site ponds), following the standard methodology set out within DEFRA Technical Report WC1067.

3.6 *Limitations*

3.6.1 The results of this survey consist only of those species encountered during a short space of time on one day; during the survey. 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. Descriptions of plant species concentrate on the most obvious and abundant species present as determinant of habitats present. Where possible an attempt has been made to list all species present in Appendix A, but this is not exhaustive. Any rare or notable protected or invasive species are identified.

3.6.2 The survey took place in early March, which is outside the optimal time of year for habitat survey. At this time a proportion of vegetation is not in flower and can be hard to identify, and annual plants may have died back and so are not present to record, including some invasive non-native species. Many animal species will be overwintering and there may be less evidence of their presence available. The results of this survey should therefore be assessed with these considerations in mind. Nevertheless, the survey will still provide a valid assessment of the habitats present and the likely impact of the proposed works, however if thought necessary, additional surveys may be recommended at appropriate times of year.

3.7 *Report and Terminology*

3.7.1 For the purposes of this report, the terms ‘site’ and ‘survey area’ are used to refer to the area surveyed on the ground by the ecologist at the clients request, which usually includes the entire area subject to the proposed development. ‘Search area’ is used to refer to the wider 1km radius from which records were sought for the desk study.

3.7.2 English species names are generally used in the text, Latin names generally being given after the first appearance of a species in the report, however these may be repeated where useful for clarity. English names are also used for plant species in the habitat descriptions, but all Latin names are provided in the species list in the Appendices.

4.0 Survey Results: Preliminary Ecological Appraisal

4.1 *Statutory and Non-Statutory Designated Sites*

4.1.1 Cofnod returned details of two non-statutory designated sites (of ecological relevance) within 1km of the survey area. Borras Bog Wildlife site is located approx. 220m to the north of the site and is designated for its acid bog habitat. Pant-yr-Ochain Wildlife Site is approx. 840m to the north and is designated for its birds.

4.2 *Extended Phase 1 Habitat Survey*

4.2.1 *Habitat Types*

The following phase 1 habitat and feature types were recorded within and adjacent to the site:

- A2.1 Dense Scrub
- A3.1 Scattered Broad-leaved Trees
- A3.2 Scattered Coniferous Trees
- G1 Standing Water (Pond)
- J1.2 Amenity Grassland
- J2.1.2 Intact species poor hedge
- J2.4 Fence
- J3.6 Buildings
- J4 Bare Ground
- Hardstanding

TABLE 4.1. APPROXIMATE AREA COVERED BY EACH HABITAT WITHIN THE SITE

Phase 1 habitat	Approx. Area (m^2)	Percentage Area (%)
Amenity Grassland (J1.2)	16,084	54
Hardstanding	8,336	28
Buildings (J3.6)	3,166	11
Scrub (A2.1)	2,050	7
Bare Ground (J4)	245	0.8
Standing Water (Pond) (G1)	28	0.09

4.2.2 A phase 1 habitat map of the site is provided in Figure 4.1. A description of the habitats including some species information and details of target notes from the map are provided below. Photographs of the site are included with the text.

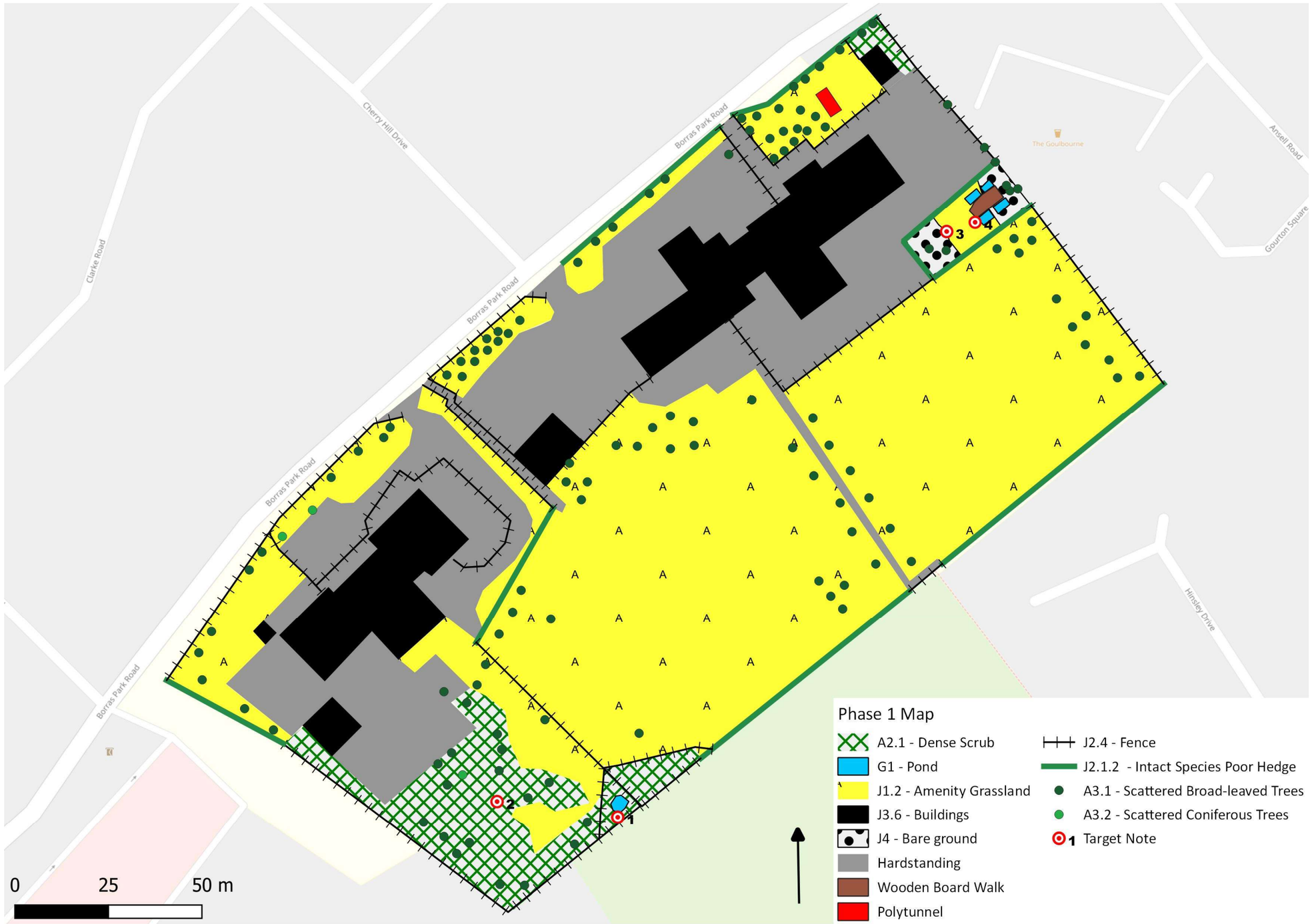


FIGURE 4.1 PHASE 1 HABITAT MAP OF SURVEY AREAS. TARGET NOTES AND DESCRIPTIONS OF THE HABITATS FOLLOW IN THE SUBSEQUENT SECTIONS.

4.3 *Target Notes*

TABLE 4.2 TARGET NOTES, NUMBERED TO CORRESPOND WITH FIGURE 4.1

Target note (TN)	Description	Photo
1	Pond within the infant site conservation area (description within Table 4.3)	 

Target note (TN)	Description	Photo
2	Infant Site Conservation Area This area was the result of a number of conservation projects and currently serves as an outdoor classroom and educational resource. The area comprised amenity grassland, scrub and scattered trees including bramble (*Rubus fruticosus*), holly (*Ilex aquifolium*), hazel (*Corylus avellane*), birch (*Betula* sp.), cherry (*Prunus* sp.), willow (*Salix* sp.), ash (*Fraxinus excelsior*), rowan (*Sorbus aucuparia*), field maple (*Acer campestre*), scots pine (*Pinus sylvestris*) and larch (*Larix* sp.). There was a pond in the north eastern corner (Target Note 1) which is described in Table 4.3). A historic, single badger sett entrance, which was filled in, was located towards the centre of the conservation area. At the time of the survey, a member of staff said that it had not been used for a number of years.	 

Target note (TN)	Description	Photo
3	Junior Site Conservation Area This area comprised areas of amenity grassland, bare ground, scrub and a series of wooden steps, board walks and benches. It was surrounded by a tall, mature, species poor hedgerow comprising field maple and holly, which shaded much of the area. To the centre of the area was a board walk with four small preformed ponds (two on each side), which were partially sunk into the ground and were covered by large pieces of trellis for safety purposes. Further description of the ponds is given in Table 4.3.	 

Target note (TN)	Description	Photo
4	Four Ponds within Junior Site Conservation Area (Description within Table 4.3)	 

4.4 *Habitat descriptions*

4.4.1 The majority of the habitat within the site was amenity grassland (54%) followed by hardstanding and buildings (40%). There were also scattered broad-leaved trees and species poor hedgerows across the site. A description and species list (not exhaustive) of each habitat is given in Table 4.3.

TABLE 4.3 HABITAT DESCRIPTIONS

Description	Photo
Amenity Grassland	
The southern half of the site was predominantly a large area of amenity grassland playing fields, which were well maintained and regularly mown (Photos 4.1). A small horticulture area in the northern corner of the site, comprised an area of amenity grassland with scattered broad-leaved trees, empty wooden planters and a poly tunnel (Photo 4.2). There were small strips of amenity grassland between the car park areas and the main road, along the northern boundary of the site.	  ***PHOTO 4.1 & 4.2***

Description	Photo
Intact species-poor hedgerow	
The mature hedgerow surrounding the junior site conservation area was approx. 4m in height and comprised predominantly field maple and holly (Photo 4.3) There were two small gaps for pedestrian gateways but it was otherwise intact. There was a species poor hedgerow along the southern boundary of the site, comprising predominantly hawthorn (Photo 4.4). It was approx. 1.5m in height and had many gaps along its length. There was a hawthorn hedge, which ran about halfway along the northern boundary between the school and the main road.	 ***PHOTO 4.3***  ***PHOTO 4.4***

Description	Photo
Scattered Trees	
There were scattered broad-leaved trees along the northern boundary of the site, within the small areas of amenity grassland. Species included rowan, cherry, field maple, cypress (*Cupressus* sp.), birch and hawthorn (Photo 4.5). A cluster of broad-leaved trees in the northern corner of the site included poplars (*Populus* sp.), rowan, field maple, birch and willow. There was a cluster of hybrid poplars towards the centre of the site and along a pedestrian walkway through the playing fields (Photo 4.6). Scattered trees on the outer edges of the playing field included *Sorbus* sp., cherry, *Malus* sp., birch, ash, maple (*Acer* sp.) and willow.	 ***PHOTO 4.5***  ***PHOTO 4.6***

Description	Photo
	Ponds
A small, lined pond was located within a fenced area in the north eastern corner of the Infants site conservation area. There were willow saplings around the pond edge and limited vegetation within the pond itself. Many tadpoles were seen during a visit in April 2020. There were four small, preformed ponds within the junior site conservation area. These measured approx. 1.5m x 1m and were partially sunk into the ground, within a wooden frame. Each pond was covered by a large removable piece of wooden trellis for safety purposes. The ponds were approx. 60cm deep but were at least half full with leaf litter. Duckweed was present but there were no other aquatic plants and a small number of tadpoles were seen during a visit in April 2020.	 ***PHOTO 4.7***   ***PHOTOS 4.8 & 4.9***

Description	Photo
	Buildings
There were two main school buildings, one of which was single story (infant site) and the other was mostly single storey but with some two-story sections (junior site) (Photo 4.10). These were both constructed of brick and were flat roofed. There were also two portable classrooms, one within the centre of the site (Photo 4.11) and the other within the northern corner.	 ***PHOTOS 4.10***  ***PHOTO 4.11***

Description	Photo
	Hard Standing
The majority of the site comprised hardstanding; playgrounds (Photo 4.12) and car parking areas for both infant (Photo 4.13) and junior sites.	 ***PHOTO 4.12***  ***PHOTO 4.13***

4.5 *Invasive Species*

4.5.1 No invasive species were observed, though due to the time of year they could have been missed. The closest records of invasive non-native species were giant hogweed (*Heracleum mantegazzianum*) (386m) and Japanese knotweed (*Reynoutria japonica*) (587m) within Acton Park to the west.

4.6 *Fauna*

4.6.1 No notable or protected species, or signs of their presence, were found within the site; there was limited suitable habitat within the site and as it was within a residential area, it was isolated from the wider landscape. The survey results for species recorded within 1km of the survey are described in Table 4.4 below.

TABLE 4.4 RESULTS OF PROTECTED SPECIES SURVEY

Species	Presence/ Evidence of presence	Suitability of habitat	Nearest record to site within last 20 years
Amphibians – Great crested newts (GCN)	None	The ponds do provide potential breeding habitat for amphibians and tadpoles were seen during a visit in April 2020. eDNA testing of the ponds confirm that GCN do not use the ponds for breeding and so are unlikely to be present within the site. The next nearest water body was approx. 300m to the north with residential properties and a large main road (A5156) between. The habitats surrounding the ponds (within the conservation areas) did provide suitable foraging habitat for common amphibians, with areas of grassland, scrub and scattered trees. The remaining school grounds and the surrounding area contained unsuitable habitat.	Nearest record is 250m to the north of the site boundary, within Borras Bog Wildlife Site. Here there were a number of records between 2000 and 2003.

Badger	None	There was evidence of a historic single sett entrance (filled in) within the infant site conservation area and this area also provided suitable habitat for foraging. The other areas within the site, provided limited foraging potential and was not suitable for sett building.	475m north west of site
Reptiles	None	Poor reptile habitat in exposed amenity grassland areas and limited potential for hibernacula. Possible refuge in hedgerows and scrub within the infant site conservation area but there was limited connectivity to further suitable habitat.	Grass snake 309m (2016) and Adder 432m (<2009) to the north, both within Borras Bog Wildlife Site.
Bats	None	Due to the species and age of the trees within the site, there were limited potential roosting features for bats. Within the infant site conservation area, scattered trees and hedgerows do provide habitat for foraging bats, however the site has limited connectivity to further suitable areas. It is therefore of low suitability for foraging and commuting bats. Building potential will be discussed in Section 5.	Common pipistrelle (*Pipistrellus pipistrellus*) and *Myotis* sp. bat species recorded 629m to the south in 2017.

Birds	None	Birds observed in trees around site. Suitable nesting areas in hedgerows and trees within the site. No specially protected bird species are likely to use this site.	Large number of bird records within 1km radius. Records are concentrated within Acton Park, 300m to the west and 250m to the north of the A5156. Multiple swift (*Apus apus*) records across the whole 1km search radius between 2006 and 2015.

5.0 Survey Results: Preliminary Roost Assessment

5.1 *Building Description*

5.1.1 Two portable classrooms (Buildings 1 and 2 in Figure 5.1) and a section of the junior school building (Building 3 in Figure 5.1) will be removed as part of the proposed works. A section of the junior school will also be extended (Building 4 in Figure 5.1). Table 5.1 provides a description of these buildings and any potential roosting features present.

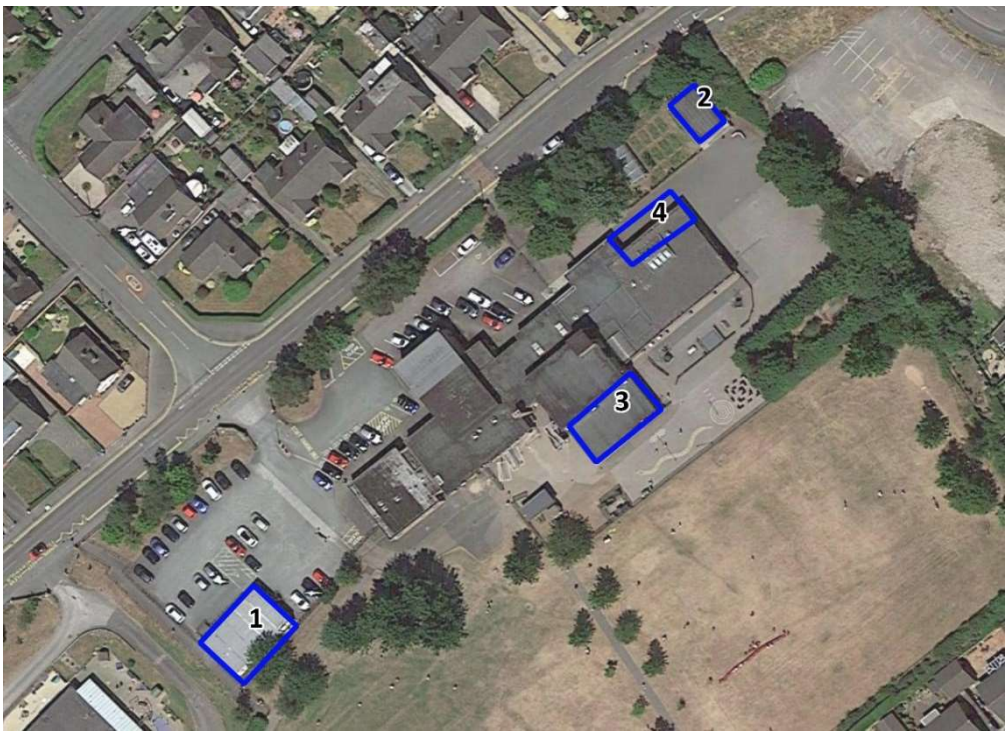


FIGURE 5.1 BUILDINGS TO BE AFFECTED BY THE PROPOSED WORKS

TABLE 5.1 BUILDING DESCRIPTIONS AND POTENTIAL ROOSTING FEATURES (PRFS)

Building No. (Figure 5.1)	Building Description and potential roosting features	Photo
1	This building, towards the centre of the site, was a standard prefabricated portable classroom, stood on hardstanding. It was in good condition and the fascia boards were intact with no gaps behind. No potential roosting features were identified.	
2	This building in the northern corner of the site, was a standard prefabricated portable classroom, stood on hardstanding. The building was in good condition and the fascia boards were intact with no gaps behind. No potential roosting features were identified.	

3	This section of the main junior school building was brick built, flat roofed with wooden cladding along the top of the walls. The brick work and wooden cladding were in good condition with no gaps or crevices identified. No potential roosting features were identified.	
4	This section was brick built, flat roofed with wooden cladding along the top of the walls. The brick work and wooden cladding were in good condition with no gaps or crevices identified. No potential roosting features were identified.	

6.0 Discussion and Conclusions

6.1 The proposed works comprise an extension to two existing car parking areas, the removal of three sections of buildings, the addition of two extensions, possible new vehicular entrance and two Multi Use Games Areas (MUGA).

6.2 *Nature Conservation Sites*

6.2.1 No statutory or non-statutory designated sites are within the proposed development area. The nearest designated site was Borras Bog Wildlife site, approx. 220m to the north and is designated for its acid bog habitat. The works will not have any detrimental impact on this designated site, or the habitats or species within it.

6.3 *Habitats*

6.3.1 Under the proposed plans, areas of amenity grassland will be lost along the northern boundary of the site and areas of playing field will also be lost to accommodate extensions to the existing car parking areas and the creation of two 'MUGA' play areas. The amenity

grassland had limited plant diversity (although the survey was carried out at a suboptimal time of year, this assessment is still valid) and is considered to have limited ecological value.

6.3.2 A large number of broad-leaved trees, will be removed to accommodate the additional car parking areas, the extensions to the school buildings and the MUGA play areas. Tree species, which are due to be removed include hybrid poplar, cherry, *Sorbus* sp., *Malus* sp., birch, field maple and rowan. Although this will result in a proportion of this ecological valuable habitat being lost, the majority of the trees to be removed have been classed as 'Category C – Trees of low quality' (BS5837:2012) and a smaller number classed as 'Category B – Trees of moderate quality'. Site enhancements will see that the trees lost, will be replaced with trees of greater ecological value. These will be planted in targeted areas of the site, which once matured, will increase the biodiversity and ecological value associated with this habitat type.

6.3.3 A small area of scrub will be lost within the infant site conservation area, where a MUGA area is to be built. Planting within the remaining conservation area will be undertaken to mitigate for this loss.

6.3.4 The majority of the habitats of ecological value such as the hedgerows and ponds will not be affected by the proposed works, however the hedgerow surrounding the junior school conservation area will be removed allowing for the conservation area to be enhanced and extended. Currently this is extremely shaded from the hedgerow with very little light getting into the area.

6.4 *Flora*

6.4.1 Floral diversity of the site was low and species were those typically associated with the habitats on site. None of the species recorded during the survey are protected by the Wildlife and Countryside Act 1981 (as amended), Section 7 of the Environment (Wales) Act, 2016 or are included in the UK Post-2010 Biodiversity Framework. In addition, no nationally or locally rare species were recorded.

6.5 *Fauna*

6.5.1 *Great Crested Newts (GCN)*
There is a negligible to low risk of GCN being present within the site, as eDNA testing has shown that GCN do not use the ponds for breeding. The nearest pond, which also has records of GCN, is 300m to the north, however due to the residential nature of the area, the lack of connectivity and the series of main roads between the pond to the north and the site, it is therefore unlikely that GCN would travel between these areas.

6.5.2 *Bats*
No potential roosting features were identified within any of the buildings, which are to be affected by the proposed works and therefore the building is regarded as having negligible

potential for roosting bats (Collins, J., 2016). As this is the case, no further surveys are required.

No potential roosting features were identified within any of the trees, which are due to be removed as part of the proposed works.

In the unlikely event that bats are encountered during the works, all works to the building **must** cease immediately and a suitably licenced bat ecologist called. A licence from NRW must then be obtained in order for the works to continue.

The removal of the broad-leaved trees within the centre of the site and the reduction of trees along the northern boundary, will represent a loss of potential foraging habitat for bats. However, bats are more likely to use the boundary features of the site, which have better connectivity and ecological value. Site enhancements will include the planting of a variety of trees with greater ecological value and will be focused in areas where they will have the greatest benefit to bats and other fauna. Hedgerow creation and improving existing hedgerows, will also enhance the connectivity within the site and in the wider landscape.

Bats using the surrounding tree lines to commute and forage may be disturbed by any increased noise and light spillage that may occur during the works. General site RAMs are provided in Section 7.

6.5.3 *Badger*

There were no active badger setts within the site, however, badgers may enter the site on occasion to forage within the infant site conservation area or along hedgerows. The proposed works will not disturb badgers or remove any potential foraging habitat.

6.5.4 *Nesting Birds*

The removal of broad-leaved trees will result in the loss of nesting habitat for birds in the area. The planting of a wider variety of trees, the creation of new hedgerows and the enhancement of existing poor-quality hedgerows will provide a better-quality habitat for nesting. There are a large number of birds recorded within a 1km radius, including swifts. Enhancement recommendations for nesting birds, including swifts, have been provided in Section 8.

6.5.5 *Reptiles*

The site has low suitability for reptile species. The amenity grassland is too exposed for them to forage, and although the hedgerows could provide refuge, the site is isolated with limited connectivity to any further suitable habitat. Any reptiles that may enter the site could potentially use any materials stored on the grassland so the RAMs provided in Section 8 should be followed.

7.0 Mitigation

7.1 *Nesting birds*

7.1.1 The removal of any trees should ideally take place outside the bird breeding season, (March to September inclusive). If it proves necessary to work during the breeding season then a survey must be carried out immediately prior to works starting (no more than 48 hours beforehand) to ensure that no active nests will be affected. If active nests are found then work must be delayed until all chicks have fledged.

7.2 *Bats*

7.2.1 In the unlikely event that bats are encountered during the removal of the portable classrooms or works to the main building sections, all works to the building **must** cease immediately, a suitably licenced bat ecologist called and a licence from NRW must be obtained.

7.2.2 During the construction phase, 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 trees and boundary edges.

7.2.3 The guidance on lighting below must be used when designing the lighting plan for the site, to reduce the impact on bats.

General Lighting Guidance

- There must be no lights focused on individual trees or boundary edges.
- Lights along pathways should be placed as far apart as possible to minimise the illuminated area, this lighting should be baffled in order to prevent light going upwards.
- The times during which the lighting is on should be limited to provide some dark periods during the night. Ideally the lighting should be motion activated in order to provide maximum darkness when not needed as well as providing safe lighting conditions of pedestrians when required.

The following luminaire specifications are provided by Bat Conservation Trust and Institute of Lighting Professionals (2018) and must be incorporated into the lighting plan for the proposed development.

- All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used.

- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.

- A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component.

- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.

- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.

- The use of specialist bollard or low-level downward directional luminaires to retain darkness above can be considered. However, this often comes at a cost of unacceptable glare, poor illumination efficiency, a high upward light component and poor facial recognition, and their use should only be as directed by the lighting professional.

- Column heights should be carefully considered to minimise light spill.

- Only luminaires with an upward light ratio of 0% and with good optical control should be used.

- Luminaires should always be mounted on the horizontal, ie no upward tilt.

- Any external security lighting should be set on motion-sensors and short (1min) timers.

- As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.

7.3 *General Site*

7.3.1 Suitable RAMs will be implemented to reduce the potential to impact to amphibians, bats, nesting birds, and other species that may be found on site. All measures in this section should be implemented as appropriate.

7.3.2 *Reasonable Avoidance Measures*

The following measures should be implemented at all times during the works:

- Working areas should be kept to the minimum required.

- 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 hedgerows or tree lines.

- Should it be necessary to have any excavation left open (even within the hard standing) these excavations should be securely covered overnight. These excavations must be thoroughly checked prior to back filling, or if leaving them open is unavoidable, a suitable ramp (such as a plank or batter) must be provided to allow animals to escape.

- Trenches must be checked each morning (by site operatives) prior to works commencing to ensure that small mammals/reptiles *etc*. are not present.

- Storage of fuel must follow best practice. Potential pollutants should be restricted to site compounds and hardstanding areas.

- All materials brought onto site are to be stored on hard standing ideally, or the amenity grassland (NOT adjacent to any hedgerows) if this is not possible. Materials will be stored on raised pallets or bagged, to prevent amphibians (or other wildlife) from taking refuge beneath them.

- If at any point in the works an amphibian or reptile is found within the works area all works in the vicinity of the sighting must immediately cease. Common amphibians should be moved from the working area by site workers (wearing gloves) and placed in a nearby hedgerow. Reptiles will usually retreat to a safe area of their own accord.

- Any terrestrial mammals seen 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.

8.0 Enhancement

8.1 Planning Policy Wales (PPW) and the Welsh Government state that 'development should not cause any significant loss of habitats or populations of species, locally or nationally and **must** provide a net benefit for biodiversity' in accordance with Section 6 Duty of the Environment (Wales) Act 2016* (See below).

> ***Section 6 – Biodiversity and resilience of ecosystems duty**
> Section 6 under Part 1 of the Environment (Wales) Act 2016 introduced an enhanced biodiversity and resilience of ecosystems duty (the S6 duty) for public authorities in the exercise of functions in relation to Wales.
>
> *6. Biodiversity and resilience of ecosystems duty*
> *(1)A public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions.*

8.2 Although the proposed works will result in a loss of amenity grassland and scattered broad-leaved trees, the works will not have a significant detrimental effect on biodiversity in the area. There are areas within the site where this loss can be mitigated and be enhanced to increase the sites overall ecological value as shown in Figure 8.1.

8.3 Bats

8.3.3 Three groups of three bat boxes (nine boxes in total) will be erected, with the box type and placement agreed with an ecologist. Two groups will be placed within the infant site conservation area and the other group within the junior site conservation area.

8.4 *Birds*

8.4.1 In order to enhance the site for birds, it is recommended that at least six bird boxes are erected. Boxes should include:

- Boxes with a 32mm entrance (sparrow boxes), and
- for smaller birds (25-28mm), or
- 45mm opening (starling box)

8.4.2 Ideally, boxes should be inbuilt or mounted on to the buildings, however if this is not possible then these should be securely mounted on trees using non-harmful nails (non-rusting – ideally aluminium). The boxes should face north/northeast.

8.4.3 We strongly recommend inbuilt boxes rather than external boxes where possible, as they will be longer lasting and cannot be removed at a later date. If this is not possible externally mounted boxes are appropriate; these should ideally be woodcrete or woodstone boxes rather than wooden boxes as they will last longer with limited maintenance.

8.4.4 Bird boxes should be inspected annually in October. Defective or damaged boxes should be replaced like for like at this time. Boxes should be inspected and cleaned with warm water before being returned to situ. Boxes must remain undisturbed at all other times.

8.4.5 There are a number of records of swifts within 1km of the site; swifts are a migratory species that travel to the UK to breed and are in serious decline, potentially due to the reduction in breeding sites. It is recommended that at least 4 multicavity swift boxes are erected or swift bricks incorporated within the two-story junior school building as shown in Figure 8.1). Examples of swift nest boxes that can accommodate multiple breeding pairs of swifts are Habi Sabi double swift box and No. 17A Schwegler swift nest box, both available from www.nhbs.com**.**

8.4.6 The swift boxes should be placed at least 5m from the ground and be grouped together (60 – 100cm apart) as swifts prefer to nest in colonies; preferably not on a south facing

elevations as the boxes can get too warm, unless white boxes (as recommended) are used so they do not absorb too much heat.

FIGURE 8.1 SITE LANDSCAPING PLAN

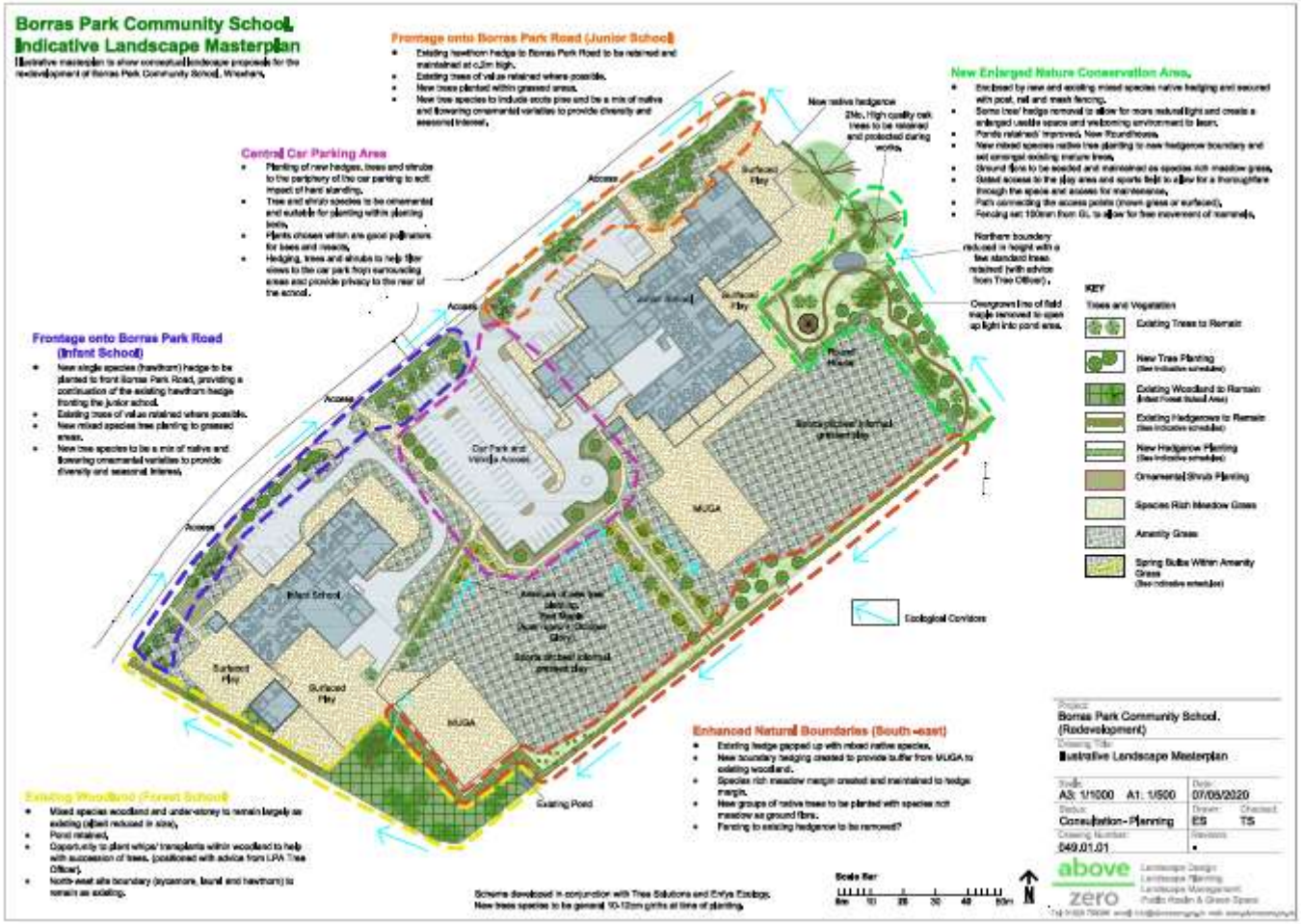
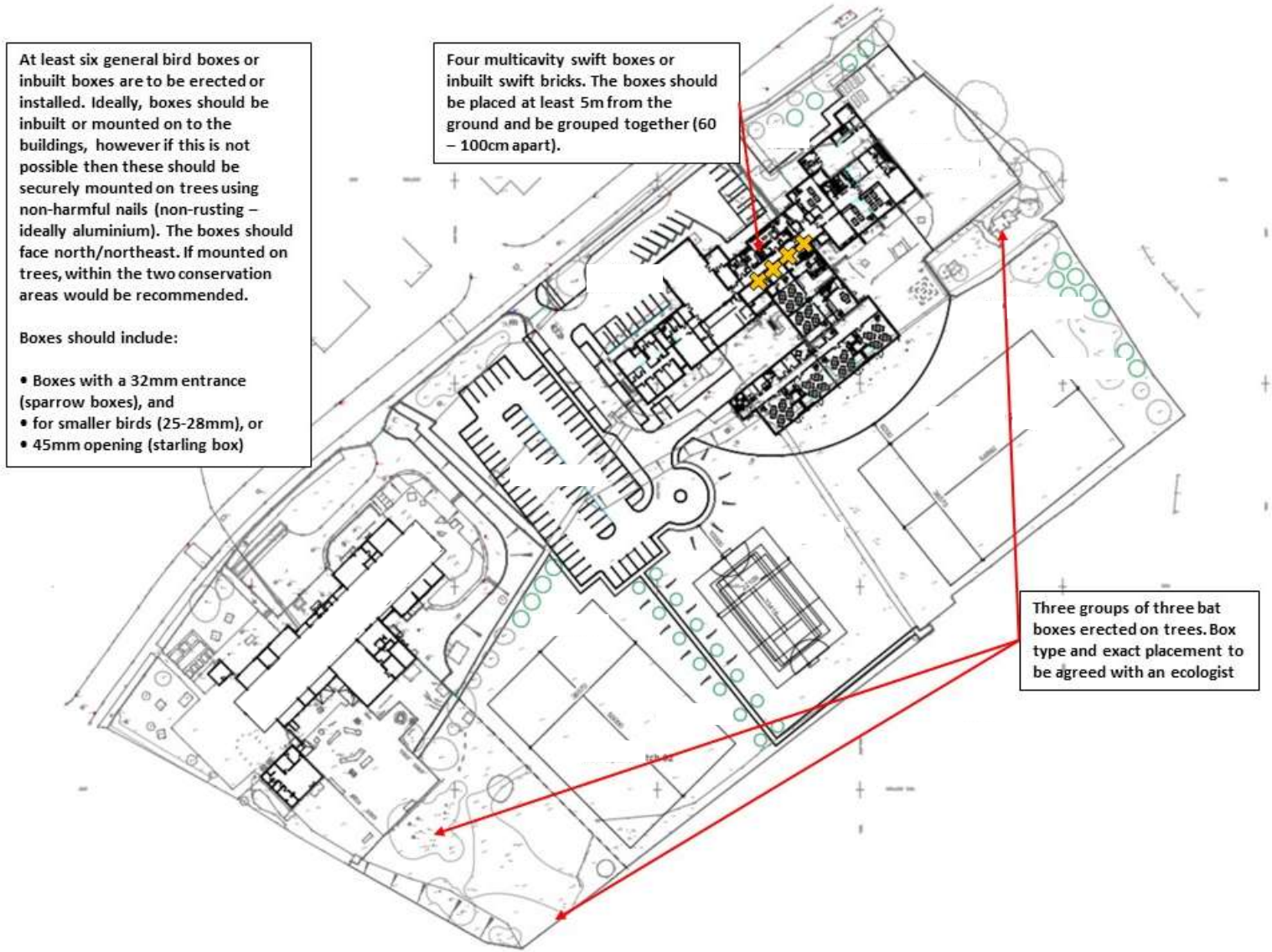


FIGURE 8.2 SITE MITIGATION AND ENHANCEMENT FOR BATS AND BIRDS



8.5 *Grassland*

8.5.1 Areas of grassland with a greater species diversity, including wildflowers, will created and managed appropriately. This will include strips along existing hedgerows and boundaries, areas within infant and junior site conservation areas, the south-eastern corner of the site and other unused areas of the playfields and also seeding under areas of trees with a shade tolerant seed mix. A management plan will be implemented to retain diversity and prevent degeneration into rough grassland.

8.6 *Hedgerows*

8.6.1 New native species hedgerows will be created along the eastern boundary of the site, along the new MUGA area bordering the infant site conservation area and along the western side of the northern boundary. This will improve connectivity across the site for a wide variety of species, increase biodiversity and provide a wider range of food sources for birds and invertebrates. Table 8.1, includes some suggested species to use in these hedgerows. We do not recommend the use of ash (*Fraxinus excelsior*) due to the potential presence of ash dieback.

8.6.2 The existing hedgerow along the southern boundary is currently predominantly hawthorn and has many large gaps. This hedge will be enhanced by the addition of a variety of native hedge species, to create a continuous hedge which will provide better connectivity and greater species biodiversity.

8.6.3 The large field maple hedge, surrounding the junior site conservation area, will be removed to allow for the extensions of the conservation area, and also to allow light into the site.

8.7 *Trees*

8.7.1 New tree planting, to replace the trees lost, is proposed across the site. Areas where new trees will be planted include along the eastern side of the playing field and along the new pedestrian pathway running through the middle of the playing fields. Trees will be planted in areas where they can improve connectivity such as within hedgerows and along boundary edges. Trees planted should comprise native and wildlife friendly species. Suggested species are included in Table 8.1, below.

TABLE 8.1 SUGGESTED HEDGEROW SPECIES. NOT ALL MAY BE APPROPRIATE AT A SCHOOL SITE, A LANDSCAPE PLAN SHOULD BE PREPARED BY A LANDSCAPE ARCHITECT

Latin name	Common name
Crataegus monogyna	Hawthorn
Corylus avellana	Hazel
Acer campestre	Field maple
Rosa canina	Dog rose
Cornaceae	Dogwood
Euonymus europaea	Spindle
Viburnum opulus	Guelder rose
Viburnum lantana	Wayfaring tree
Sorbus torminalis	Wild service tree
Sorbus aucuparia	Mountain ash/rowan
Sorbus aria	Whitebeam
Prunus avium	Wild Cherry
Prunus padus	Bird Cherry
Pyrus pyraster	Wild Pear
Prunus domesticus	Denbigh Plum
Prunus domesticus	Damson
Ilex aquifolium	Holly

9.0 References and Information Sources

Bat Conservation Trust (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition. Bat Conservation Trust, London.

JNCC (2010) *Handbook for Phase 1 Habitat Survey: a technique for environmental audit.* JNCC, Peterborough.

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

10.0 Appendices

Appendix A. Plant Species List.

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

Amenity Grassland

English Name	Scientific Name
Clover	*Trifolium* sp.
Common grounsel	*Senecio vulgaris*
Creeping butterup	*Ranunculus repens*
Daffodil	*Narcissus* sp.
Daisy	*Bellis perennis*
Dandelion	*Taraxacum officinale* agg.
Hawkbit	*Leontodon* sp.
Perennial rye grass	*Lolium perenne*
Ribwort plantain	*Plantago lanceolate*
Snowdrops	*Galanthus* sp.
Spear thistle	*Cirsium vulgare*
Springy turf moss	*Rhytidiadelphus squarrosus*
Yarrow	*Achillea millefolium*

Scattered Trees

English Name	Scientific Name
Ash	*Fraxinus excelsior*
Birch	*Betula* sp.
Cherry	*Prunus* sp.
Field Maple	*Acer campestre*
Hawthorn	*Crataegus monogyna*
Hazel	*Corylus avellane*
Malus	*Malus* sp.
Oak	*Quercus sp.*
Poplar	*Populus* sp.
Rowan	*Sorbus aucuparia*
Scots pine	*Pinus sylvestris*
Willow	*Salix* sp.

Scrub

English Name	Scientific Name
Ash	*Fraxinus excelsior*
Bramble	*Rubus fruticosus*
Holly	*Ilex aquifolium*
Nettles	*Urtica dioica*
Willow	*Salix* sp.

Hedgerow

English Name	Scientific Name
Hawthorn	*Crataegus monogyna*
Field Maple	*Acer campestre*
Holly	*Ilex aquifolium*
Bramble	*Rubus fruticosus*

Appendix B: Desk study Data: - See attached document.