THE ENVIRONMENT PARTNERSHIP

GLAN CLWYD HOSPITAL

BODELWYDDAN

ECOLOGICAL ASSESSMENT (SITE 2)

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Executive Summary

1. TEP was commissioned by BAM Construction Ltd in March 2020 to carry out an ecological assessment of a site within the campus of Glan Clwyd Hospital in Bodelwyddan, Denbighshire ("Site 2"). This assessment was requested to inform proposals for the construction of a new multi-storey car park.

2. A revised planning application for the construction of the multi-storey car park is due to be submitted in early 2023. TEP was therefore recommissioned by BAM Construction Ltd in January 2023 to update the ecological assessment for Site 2, given the time elapsed since the report was last updated.

3. Site 2 predominantly comprises an area of hardstanding, with small areas amenity grassland, tall ruderal, scattered scrub and running water also present. Several scattered broad-leaved trees and a species-poor defunct hedgerow, a habitat of principal importance, and are also present on site. The proposed development will be constructed on the existing hardstanding habitat. All other habitats will be retained.

4. No impacts to any statutory or non-statutory designated sites are anticipated from the proposals.

5. All retained trees on and adjacent to the site will be protected from incidental damage and disturbance during construction in accordance with current standards (BS5837:2012).

6. A ditch (Ditch 2) is present immediately to the east of the site. The implementation of best practice pollution prevention measures will be required to minimise impacts to the ditch and its associated species.

7. No protected (listed under Schedule 8 of the Wildlife and Countryside Act 1981) or invasive (listed under Schedule 9 of the Wildlife and Countryside Act 1981 or Invasive Alien Species (Enforcement and Permitting) Order 2019) plant species were identified on site.

8. A sensitive lighting design will be required to ensure there are no adverse impacts on nocturnal species using the site such as bats following completion of the development.

9. A nesting bird check will be required if clearance of suitable nesting habitat, namely the hedgerow and scattered broad-leaved trees, is undertaken during the nesting bird season (March - August inclusive).

10. Ditch 2 has suitability to support water vole although no evidence of water vole was found within this ditch during the latest water vole surveys in 2021. Although no works are expected to fall within 5 m of this ditch, if this changes and works to this ditch is required in future, updated water vole surveys will be required. Depending on the findings of these surveys, a licence from Natural Resources Wales may be required.

11. There are opportunities to manage and enhance this ditch for water voles as part of post-development biodiversity enhancement measures.

12. Further recommendations for biodiversity enhancement in line with local planning policy are outlined in Chapter 5.

1.0 Introduction

1.1 TEP was commissioned in March 2020 by BAM Construction Ltd to carry out an ecological assessment of a parcel of land within the campus of Glan Clwyd Hospital in Bodelwyddan, Denbighshire. The ecological assessment was requested to inform an outline planning application for the construction of a new multi-storey car park (MSCP) (hereafter referred to as "Site 2").

1.2 An outline planning application for the proposed multi-storey car park on Site 2 and a new Adult and Older Person's Mental Health Unit (AOPMHU) on a site in the west of the hospital campus (Site 1) was submitted to Denbighshire County Council in October 2020 (Planning Application Ref: 40/2020/0813). Planning permission was refused in January 2021 owing to the proximity of the proposed development on Site 1 to existing residential properties.

1.3 In light of this decision, the location of Site 1 was subsequently amended and TEP was commissioned in March 2021 to produce an updated ecological assessment of each site to inform a new planning application.

1.4 Submission of the revised planning application was delayed and is now due to be submitted to Denbighshire County Council in early 2023. TEP was therefore recommissioned by BAM Construction Ltd in January 2023 to update the ecological assessments for Sites 1 and 2, given the time elapsed since the reports were last updated.

1.5 This report has the following objectives:

- To describe the existing vegetation and give an overview of the habitats present on site;
- To identify whether there are any features of conservation value such as legally protected species or habitats of biodiversity importance;
- To advise of further surveys or mitigation requirements that may be needed prior to development on the site; and
- To identify opportunities to provide biodiversity enhancement within the proposed development.

Site Description

1.6 Site 2 (central grid reference SJ 00472 76103) is approximately 1 ha in size and is located in the north-east corner of the Glan Clwyd Hospital campus. The site is bounded to the north, south and west by existing hospital access roads, and to the east by a single carriageway main road (Rhuddlan Road).

1.7 The wider area surrounding the hospital campus comprises agricultural land to the north, east and west of the campus, and residential development to the south. The main A55 dual carriageway is located beyond the residential area.

1.8 The extent of the area covered by the ecological assessment is represented by the red line boundary in the site location plan (Figure 1).

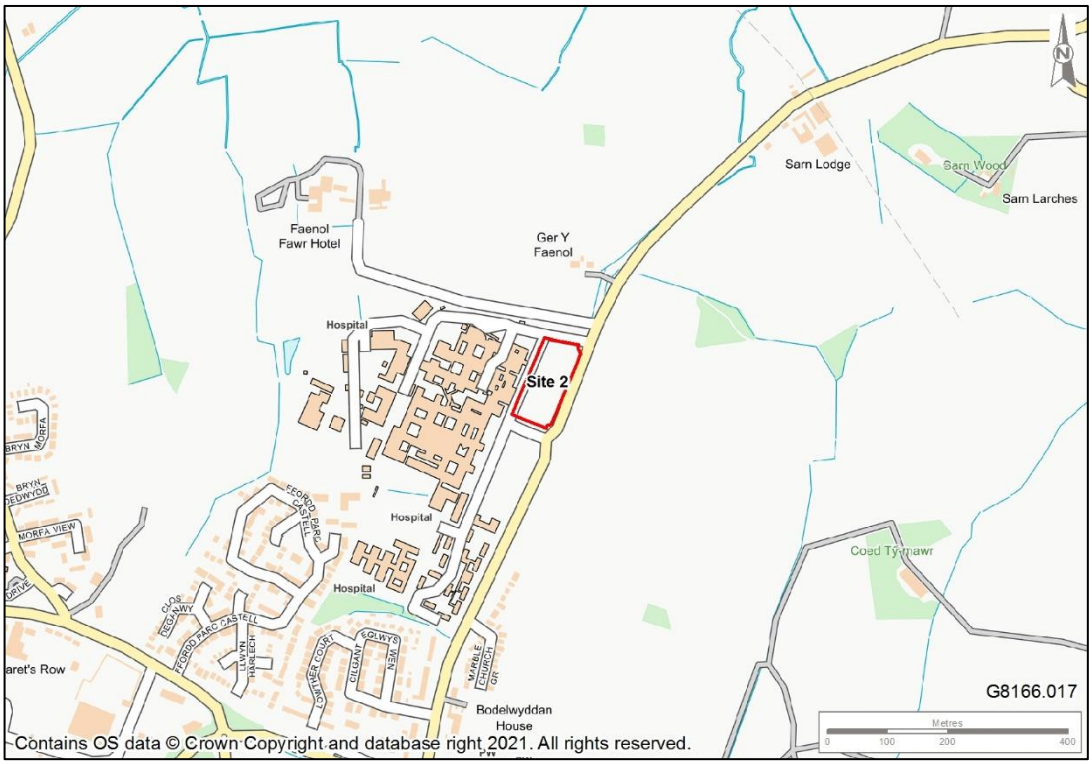

Figure 1: Site location and local context.

2.0 Methods

Ecology Desk Study

2.1 Information regarding planning policies, historic species records and protected sites within a 2 km buffer, as a minimum, of the site was collated from a variety of sources (Table 1).

Table 1: Sources and details of desk study information obtained.

Source of Information	Nature of Information
MAGIC Map: Multi-Agency Geographic Information for the Countryside	Online mapping system identifying statutory protected sites, habitat designations etc.
North Wales Environmental Information Service (COFNOD)	Designated nature conservation sites and protected/notable species
Wales Biodiversity Partnership	Lists habitats and species considered to be locally important and the plans that are in place to help conserve them
Denbighshire County Council Local Development Plan (adopted 4th June 2013)	Local planning policy
Ordnance Survey/Google Maps	OS and aerial imagery

Extended Phase 1 Habitat Survey

2.2 An extended Phase 1 habitat survey of Site 2 was undertaken by TEP ecologist John Crowder on 21st April 2020. The survey was carried out following the Phase 1 habitat survey method, which standardises the way habitats and characteristic vegetation are recorded (JNCC, 2010). Habitat types were subsequently mapped and both dominant and invasive vegetation species were recorded in the form of target notes.

2.3 The extended Phase 1 habitat survey method also assesses habitats for their suitability and potential to support both protected species, species of conservation concern and invasive species, following the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017).

Limitations

2.4 The Phase 1 habitat survey was undertaken within the recommended survey season of mid-April to mid-October and access was available to all parts of Site 2. Therefore no limitations with regard to seasonality or access were encountered.

Updated Extended Phase 1 Habitat Survey

2.5 An updated extended Phase 1 habitat survey of the site was carried out on 16th March 2021 by ecologist Damian Young. A further updated survey was undertaken by TEP ecologist Cameron Campbell on 25th January 2023.

2.6 The aim of the updated surveys was to assess if habitats had changed and to search for signs indicating the presence of protected species, in particular badger. The same methods, as outlined above and below, were employed during the survey.

Limitations

2.7 The updated Phase 1 habitat surveys were completed outside the recommended survey season of mid-April to mid-October. Although enough vegetation was visible during the updated surveys to enable a broad categorisation of the habitats present, there is a risk some protected (i.e. those listed under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) and invasive non-native species (i.e. those listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and/or Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019) could have been missed during the update. However, as the original 2020 survey was undertaken at an optimal time of year, this is not considered to be a significant constraint.

Bats

Preliminary Roost Assessment for Bats

2.8 A ground-level inspection of all trees within Site 2, including those along the site boundary, was undertaken to assess their potential to support roosting bats. The inspection was completed concurrently with the Phase 1 habitat surveys. This was undertaken in line with Bat Conservation Trust (BCT) guidance (Collins, 2016).

2.9 In addition, the habitats within and surrounding the survey area were assessed for their potential to support foraging and commuting bats.

2.10 Following the daytime inspection trees and habitats were categorised based on the criteria listed within Table 2 below.

Table 2: Evaluation criteria for the potential suitability of trees and habitats for bats (taken from Table 4.1 of the BCT guidance)

Suitability	Roosting habitats	Commuting/foraging habitats
Negligible	No potential roost features are present that are likely to be used by bats.	No features present that are likely to be used by commuting or foraging bats. A general lack of linear features and low habitat, structural or floristic diversity.
Low	A tree of sufficient size and age to contain potential roost features but none seen from the ground or features seen with only limited roosting potential.	Habitat that could be used by small numbers of commuting bats (e.g. a gappy hedgerow or an unvegetated stream) or foraging bats (e.g. a lone tree or small patch of scrub) but which is isolated from the surrounding countryside.
Moderate	A tree with one or more potential roost features that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat, but which is unlikely to support a roost of high conservation status (maternity or hibernation).	Continuous habitat connected to the wider landscape that could be used by bats for commuting (e.g. lines of trees or scrub or linked back gardens), or foraging bats (e.g. trees, scrub, water, grassland).

Suitability	Roosting habitats	Commuting/foraging habitats
High	A tree possessing one or more potential roost features that are suitable for use by larger numbers of bats on a regular bases and potentially for longer periods of time, due to their size, shelter, protection, conditions and surrounding habitat.	Continuous high quality habitat that is strongly connected with the wider landscape that is likely to be used regularly by commuting bats (e.g. river valley, vegetated stream, woodland edge, hedgerow with trees) or foraging bats (e.g. broad-leaved woodland, grazed parkland, tree-lined watercourses or ponds).

Limitations

2.11 There are no strict seasonal constraints for ground-level tree inspections, however visibility could be restricted by the presence of foliage and vegetation during the summer months. As the inspections were undertaken in winter and early spring no such constraints, nor any other significant limitations, were encountered.

3.0 Results

Ecology Desk Study

3.1 A summary of the key findings from the desk study are outlined below. Full results of the desk study, as well as maps of designated sites and habitats of importance, are set out in Appendix A.

Planning Context

3.2 Neither the site nor any adjacent land is currently allocated for biodiversity purposes under the Denbighshire County Council Local Development Plan (adopted 4th June 2013).

3.3 The following policies relating to biodiversity are most relevant to this assessment:

- Policy RD1 - Sustainable Development and Good Standard Design;
- Policy VOE1 - Key Areas of Importance; and
- Policy VOE5 - Conservation of Natural Resources.

Designated Sites

Statutory Designations

3.4 There are five internationally designated sites within 10 km of the site.

3.5 Elwy Valley Woods Special Area of Conservation (SAC) is located approximately 4.1 km south of the site and is designated for its woodland habitats.

3.6 Liverpool Bay Special Protection Area (SPA) is located approximately 5.3 km to the north of the site and is designated for its breeding populations of little tern and common tern, as well as its overwintering population of common scoter, red-throated diver, little gull, red-breasted merganser and great cormorant.

3.7 The Dee Estuary (Wales) Ramsar, SAC and SPA are all located approximately 10 km to the north-east of the site.

3.8 Dee Estuary (Wales) Ramsar is designated for its intertidal habitats, its breeding population of natterjack toad, and its overwintering bird species, including breeding dunlin and black-tailed godwit.

3.9 Dee Estuary (Wales) SAC is designated for its intertidal habitats as well as its population of sea lamprey, river lamprey and petalwort.

3.10 Dee Estuary (Wales) SPA is designated for its breeding population of common tern and little tern, population of migratory sandwich tern and redshank and overwintering bird species, including bar-tailed godwit.

3.11 There is one nationally designated site within 5 km of the site.

3.12 Coedydd Ac Ogofau Elwy a Meirchion Site of Special Scientific Interest (SSSI) is located approximately 4.1 km to the south of the site and is designated for its woodland habitats and its assemblage of bryophytes and rare flowering plants, as well as the geological features of its cave system.

3.13 There is one statutory locally designated site within 2 km of the site.

3.14 Rhuddlan Pond LNR is located approximately 2 km to the north-east of the site and is designated for its habitats.

Non-Statutory Designations

3.15 There are four non-statutory locally designated sites within 2 km of the site.

3.16 Coed Pen y Garreg Local Wildlife Site (LWS) is located approximately 1.2 km to the south-west of the site and is designated for its ancient woodland habitat.

3.17 Clwyd Estuary and Adjacent Fields LWS is located approximately 1.3 km to the north-east of the site and is designated for its estuarine habitats and its population of overwintering wader and wildfowl species.

3.18 Coed Parc Kinmel LWS is located approximately 1.6 km to the west of the site and is designated for its coniferous woodland habitats.

3.19 Morfa Rhuddlan LWS is located approximately 1.8 km to the north-west of the site and is designated for its grazing marshland habitat.

Habitats and Flora

3.20 The ecology desk study identified no priority habitats (i.e. those listed under Section 7 of the Environment (Wales) Act 2016) on or immediately adjacent to the site.

3.21 The site is located within an area of residential/green space habitat, as identified on Natural Resources Wales LANDMAP.

3.22 The 2023 survey update revealed minor changes to the habitats previously identified. The habitats present within Site 2 are described below and mapped in TEP Drawing G8166.031. More detail is provided in the Target Notes at Appendix B.

Trees and Scrub

Scattered broad-leaved trees

3.23 Several scattered broad-leaved trees are located along the eastern boundary of the site. These trees are young to semi-mature in age and comprise occasional maple *Acer sp.*, ash *Fraxinus excelsior and* wild cherry *Prunus* avium (**TN2**). Crack willow *Salix x fragilis* and wych elm *Ulmus glabra* trees are rare. Some of the trees have light ivy *Hedera helix* cover.

3.24 Immediately adjacent to the site, to the south, are several scattered broad-leaved trees, including ash, wild cherry and rowan *Sorbus aucuparia*.

Scattered scrub

3.25 Scattered rose *Rosa sp.* scrub is present to the east of the site (**TN3**).

Hedgerows

Species-poor defunct hedgerow

3.26 A defunct species-poor hedgerow dominated by common hawthorn *Crataegus monogyna* is located along the eastern boundary of the existing car park (**TN2**). Rose and maple species are also occasionally present within the hedgerow.

Grassland

Amenity grassland

3.27 In the east of the site, adjacent to Rhuddlan Road, there is an area of amenity grassland. Perennial rye-grass *Lolium perenne* is abundant, with frequent Yorkshire-fog *Holcus lanatus* and white clover *Trifolium repens*. Cock's foot *Dactylis glomerata*, yarrow *Achillea millefolium* and creeping buttercup *Ranunculus repens* are occasional (**TN2**).

3.28 Two small areas of amenity grassland are present in the north-west and south-west corners of the car park, comprising abundant perennial rye-grass with frequent red fescue *Festuca rubra* and Yorkshire-fog. Daisy *Bellis perennis*, germander speedwell *Veronica chamaedrys* and dandelion *Taraxacum officinale* agg. are occasionally present (**TN1**).

3.29 A narrow strip of amenity grassland of similar species composition extends along the northern boundary of the car park area, adjacent to one of the hospital access roads.

3.30 Immediately adjacent to the site, to the south, is a larger area of amenity grassland.

Tall Herb

Tall ruderal

3.31 An area of tall ruderal vegetation, predominantly comprising abundant willowherb species *Epilobium sp*., is present immediately to the east of the site (**TN3**). Ivy is also abundant in this area. The ground flora comprises frequent cleavers *Galium aparine* and unidentified mosses, with occasional common nettle *Urtica dioica* and lesser celandine *Ficaria verna*.

3.32 During the 2023 survey update it was noted that a narrow strip of the tall ruderal habitat had been strimmed.

Running Water

Running water

3.33 A ditch with approximately 5 cm deep, slow-flowing water is located within a fenced-off area to the east of the site (**TN3**). The banks of the ditch are steep-sided, and the ditch is culverted at both ends.

Other Habitats

Hardstanding

3.34 The majority of the site comprises a hardstanding car park which is in active use.

Protected and Non-native Invasive Plant Species

3.35 The protected plant species native bluebell *Hyacinthoides non-scripta* (WCA8) has been recorded within 2 km of the site. The closest record of bluebell is located approximately 1.2 km from the site.

3.36 The invasive plant species montbretia *Crocosmia x crocosmiiflora* (WCA9), Japanese knotweed *Reynoutria japonica* (WCA9), small-leaved cotoneaster *Cotoneaster microphyllus* (WCA9), Himalayan balsam *Impatiens glandulifera* (WCA9; IAS), water fern *Azolla filiculoides* (WCA9), variegated yellow archangel *Lamium galeobdolon ssp. galeobdolon* (WCA9) and giant hogweed *Heracleum mantegazzianum* (WCA9; IAS) have all been recorded within 2 km of the site. The closest record of an invasive plant species is montbretia, located approximately 0.6 km from the site.

3.37 No Schedule 8[1] protected plant species or Schedule 9[2]and/or IAS[3] invasive plant species were identified on Site 2 at the time of survey.

Connectivity with the Wider Landscape

3.38 Site 2 has limited connectivity with habitats in the wider area as it is bordered on all sides by hardstanding roads. Immediately to the east of this site is a main road, and immediately to the north, south and west are internal access roads within the hospital campus which are regularly used. Beyond these access roads is development associated with the hospital.

Fauna

3.39 The potential for the site to support legally protected and notable species has been assessed using the results of the desk study and observations made during the site survey of habitats within and immediately surrounding the site. Habitats present within the Site are suitable for the following species; further consideration is given below to the likelihood for these species to be present within the site:

- Amphibians;
- Bats;
- Badger;
- Birds;
- Invertebrates;
- Otter/water vole;
- Reptiles; and
- Hedgehog.

3.40 The site does not provide suitable habitat for other protected or notable species beyond those listed above. These other species will not be considered further within this report.

[1] Species listed on Schedule 8 of the Wildlife Countryside Act 1981, as amended.
[2] Species listed on Schedule 9 of the Wildlife Countryside Act 1981, as amended.
[3] Species listed on Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019.

Amphibians

3.41 Records of great crested newt *Triturus cristatus* (EPS[4], WCA5[5], S7[6] LBAP[7]) and common toad *Bufo bufo* (S7) were returned within the 2 km desk study search. The closest record of great crested newt is approximately 0.4 km to the south-east. Other amphibians recorded within 2 km of the site include smooth newt *Lissotriton vulgaris* and palmate newt *Lissotriton helveticus*.

3.42 There are four waterbodies within the wider Glan Clwyd Hospital campus and two waterbodies within 500 m of the campus (TEP Drawing G8166.005C). The closest waterbody to Site 2 is P1, located approximately 320 m to the south-west.

3.43 During the 2023 habitat suitability index (HSI) assessment, the ponds within the hospital campus (P1 - P4) ranged from below average to excellent suitability for supporting breeding great crested newts. Although the two off-site ponds were not accessed, these were assessed to have below average to good suitability for supporting breeding great crested newts in 2020. One pond previously recorded as dry (P1) was found to be holding water during 2023 HSI survey.

3.44 Great crested newt eDNA and traditional surveys were undertaken on waterbodies P2 - P6 in 2020. During these surveys, three ponds tested positive for the presence of great crested newt DNA (P2, P3 and P5) and great crested newts were sighted in two of the ponds (P2 and P3).

3.45 Full results of the 2020 great crested newt habitat suitability index assessment, eDNA and traditional surveys are presented in Appendix C.

3.46 The species-poor hedgerow and tall ruderal habitats to the east of Site 2 provides suitable terrestrial habitat for foraging and sheltering great crested newts and other common amphibians. However, there is extremely limited terrestrial connectivity between this site and the ponds to the west where breeding great crested newts are present as the intervening land predominantly comprises hardstanding roads and hospital buildings.

Badger

3.47 Badger *Meles meles* (PBA[8], LBAP) have been recorded within 2 km of the hospital campus.

3.48 No evidence of badger activity was found on or adjacent to Site 2 during the site survey. The habitats on Site 2 are unsuitable for supporting sett-building, foraging or commuting badger.

Bats

3.49 Within the 2 km search radius, the following bat records have been reported:

- Common pipistrelle *Pipistrellus pipistrellus* (EPS, WCA5, S7, LBAP);
- Soprano pipistrelle *Pipistrellus pygmaeus* (EPS, WCA5, S7, LBAP);

[4] Species listed under Schedule 2 of The Conservation of Habitats and Species Regulations 2017.
[5] Species listed under Schedule 5 of the Wildlife and Countryside Act 1981, as amended.
[6] Species listed under Section 7 of the Environment (Wales) Act 2016.
[7] Species listed under Denbighshire Local Biodiversity Action Plan (as identified by COFNOD)
[8] Protection of Badgers Act 1992 (as amended)

- Myotis bat *Myotis sp.* (EPS; WCA5);
- Noctule *Nyctalus noctula* (EPS, WCA5, S7, LBAP); and
- Whiskered/Brandt's bat *Myotis mystacinus* (EPS, WCA5).

3.50 None of the trees on Site 2 were assessed to have suitability for supporting roosting bats. No features such as cracks or crevices that could support roosting bats were identified.

3.51 During previous surveys two maple *Acer sp.* trees in the east of the site were assessed as having Low suitability to support roosting bats, due to ivy cover. However, during the 2023 survey update it was noted that the level of ivy cover had reduced and this is highly unlikely to provide suitable cover for roosting bats.

3.52 The hedgerow, scattered broad-leaved trees, amenity grassland and tall ruderal habitats in the east of the Site 2, particularly those adjacent to the ditch, provide some foraging and commuting habitat for bats. However, due to the presence of the adjacent road and associated street lighting the use of these habitats for foraging and commuting by bats is likely to be limited.

Birds

3.53 Numerous bird records have been reported within 2 km of the site, including:

- Barn owl *Tyto alba* (WCA1[9], LBAP)
- Black-headed gull *Chroicocephalus ridibundus* (S7, BRd[10])
- Bullfinch *Pyrrhula pyrrhula* (S7, BAm[11], LBAP);
- Common gull *Larus canus* (BAm);
- Dunnock *Prunella modularis* (S7, BAm);
- House sparrow *Passer domesticus* (S7, BAm);
- Linnet *Linaria cannabina* (S7, BRd, LBAP); and
- Starling *Sturnus vulgaris* (S7, BRd).

3.54 Herring gull *Larus argentatus* (S7, BRd) have previously been recorded within the hospital campus.

3.55 The scattered broad-leaved trees and hedgerow habitats on Site 2 provide suitable nesting and foraging opportunities for several common bird species.

3.56 There are no habitats on or adjacent to site suitable for supporting any ground-nesting bird species, however, as the site is subject to regular disturbance.

3.57 Invertebrates

3.58 Within the 2 km search radius, a number of invertebrate records have been reported, including August thorn *Ennomos quercinaria* (S7), buff ermine *Spilosoma lutea* (S7), cinnabar *Tyria jacobaeae* (S7), dingy skipper *Erynnis tages* (S7) and white ermine *Spilosoma lubricipeda* (S7).

[9] Species listed under Schedule 1 of the Wildlife and Countryside Act 1981, as amended
[10] Red listed Birds of Conservation Concern in Wales (BoCC 4, December 2022)
[11] Amber listed Birds of Conservation Concern in Wales (BoCC 4, December 2022)

3.59 The scattered broad-leaved trees, scattered scrub, species-poor defunct hedgerow, tall ruderal and amenity grassland habitats on Site 2 provides breeding, foraging and sheltering opportunities for invertebrates.

Otter/water vole

3.60 Otter *Lutra lutra* (EPS, WCA5, S7, LBAP) and water vole *Arvicola amphibius* (WCA5, S7, LBAP) have both been recorded within 2 km of the site. The closest record for otter is approximately 1.9 km to the south of the site, and the closest record for water vole is approximately 1.1 km to the north-west.

3.61 The ditch in the east of Site 2 (D2, TEP Drawing G8166.005C) is considered unsuitable for supporting otter as it does not offer suitable foraging opportunities and has limited connectivity to other watercourses in the area. However, this ditch does provide some, albeit limited, burrowing and foraging opportunities for water vole.

3.62 Water vole surveys of D2 were undertaken by TEP in 2020 and 2021. Evidence of water vole activity was identified in Ditch 2 during the June 2020 survey, but no evidence of water vole activity was recorded during the August 2020 visit. A precautionary walkover of D2 was undertaken in June 2021, owing to the presence of positive field signs in 2020. However, as the proposed MSCP development is over 5 m from the ditch and no works to this ditch are anticipated, a second survey was not required.

3.63 Full results of the 2021 water vole survey are presented in Appendix D.

Reptiles

3.64 Within the 2 km search radius, the following reptile records have been reported:

- Common lizard *Zootoca vivipara* (WCA5, S7, LBAP); and
- Grass snake *Natrix natrix* (WCA5, S7, LBAP).

3.65 There are no habitats on Site 2 that are suitable for supporting foraging, basking or sheltering reptiles and there is limited connectivity between this site and suitable reptile habitat in the wider area.

Hedgehog

3.66 Hedgehog *Erinaceus europaeus* (S7) have been recorded within 2 km of the site. The closest record for hedgehog is approximately 175 m to the south of the site. Site 2 offers limited sheltering, foraging and dispersal opportunities for this species.

4.0 Conclusions

Site Proposals

4.1 This section will conclude the potential impacts on the ecological receptors of the development proposed at Site 2. The proposals are for the construction of a new multi-storey car park (Bourne Parking Site Layout - Grade Level Drawing E-4201-001 Rev P01).

Planning Context

4.2 The site is not allocated for biodiversity purposes under the Denbighshire County Council Local Development Plan (adopted 4th June 2013).

4.3 Biodiversity-related planning policies from the Denbighshire County Council Local Development Plan (adopted 4th June 2013) are applicable to the site.

4.4 Under Policy RD1 of the Denbighshire County Council Local Development Plan, developments are expected to protect and enhance the natural environment and incorporate appropriate landscaping to enhance biodiversity.

4.5 Policy VOE1 expects developments to protect and enhance both statutory and non-statutory sites of nature conservation, as well as local sites designated for their biodiversity value.

4.6 Policy VOE5 requires any developments that may impact a protected species or site of nature conservation value to provide mitigation or enhancement for any feature impacted, in line with the Denbighshire county goal to conserve, enhance and restore habitats and species. These measures must be outlined in a biodiversity statement.

4.7 Under the Planning Policy Wales Edition 11 (2021), opportunities to provide a net benefit for biodiversity within developments should be pursued.

4.8 If the recommendations outlined within Chapter 5 of this document are implemented and biodiversity enhancements are incorporated into the scheme it is anticipated that the requirements of the biodiversity-related planning policies will be met.

Designated Sites

Statutory Designations

4.9 Elwy Valley Woods SAC is designated for its woodland habitats. Given the distance between this designation and the site (4.1 km), no impacts to this internationally designated site are anticipated from the proposals.

4.10 Liverpool Bay SPA, Dee Estuary (Wales) Ramsar, Dee Estuary (Wales) SAC and Dee Estuary (Wales) SPA are all located over 5 km from the proposals. Due to the distance between the site and these designations, and the lack of suitable habitat on site for the qualifying bird species associated with the Liverpool Bay SPA, Dee Estuary (Wales) Ramsar and Dee Estuary (Wales) SPA, no impacts on these internationally designated sites are anticipated as a result of the proposals.

4.11 Coedydd Ac Ogofau Elwy a Meirchion SSSI is located approximately 4.1 km to the south of the site and is designated for its woodland habitats, assemblage of bryophytes and its geological features. Given the distance between this designation and the site, no impacts to this designation are anticipated from the proposals.

4.12 Rhuddlan Pond LNR is located approximately 2 km to the north-east of the site and is designated for its habitats. Given the nature of the proposals and the distance between the site and this designation, no impacts to this LNR are anticipated from the proposed development.

Non-Statutory Designations

4.13 There are four non-statutory locally designated sites within 2 km of the proposals. These designations are all located over 1 km from the site and are all designated for their habitats. Clwyd Estuary and Adjacent Fields LWS, located approximately 1.1 km to the north-east, is additionally designated for supporting overwintering wader and wildfowl species.

4.14 Given the distance between the site and these designations, as well as the nature of the proposals and absence of suitable habitat on site for supporting the species associated with Clwyd Estuary and Adjacent Fields LWS, no impacts to any non-statutory designation are anticipated as a result of the proposed development.

Habitats and Flora

4.15 Site 2 is identified on Natural Resources Wales LANDMAP as falling within an area of residential/green space habitat. This habitat does not qualify as S7 priority habitat. However, the hedgerow in the east of the site does qualify as a S7 habitat of principal importance. As no works to this hedgerow are proposed and as works will be over 5 m from this feature, no impacts to any priority habitats are anticipated from the proposals.

4.16 The site predominantly comprises hardstanding habitat, which has negligible ecological value. The indicative development proposals show that construction of the MSCP will be undertaken within the footprint of the hardstanding and as such the loss of this habitat type will not result in a reduction of the ecological value of the site.

4.17 All other habitats currently present on and immediately adjacent to the site, namely the hedgerow, amenity grassland, tall ruderal, running water, scattered broad-leaved trees and scattered scrub, are due to be retained.

4.18 Currently, the proposals do not illustrate any post-development landscaping. However, enhancement of these retained habitats or enhancement of habitats elsewhere within the wider hospital campus should be considered in order to satisfy the requirements of local and national planning policy.

Protected and Non-native Invasive Plant Species

4.19 No protected or invasive plant species were identified on site. Therefore there are no implications for the proposals with regard to protected or invasive plant species.

Connectivity with the Wider Landscape

4.20 Connectivity with habitats to the north will be more restricted following completion of the development. However, the amenity grassland to the east of the site will be retained, enabling some connectivity to the north to be retained.

Fauna

4.21 The results of the desk study, Phase 1 habitat survey and protected species assessment highlighted the potential presence of several protected species or species of conservation concern within the Site, or within the immediate surroundings of the Site. These include amphibians, badger, bats, birds, invertebrates, otter/water vole, reptiles and hedgehog. The legal protection afforded to these species is outlined below and, where appropriate, the requirement for further survey and/or mitigation measures is identified.

Amphibians

4.22 Great crested newts are a European Protected Species under The Conservation of Habitats and Species Regulations 2017 and are afforded protection under Schedule 5 of the Wildlife and Countryside Act 1981. Common toad is a species of principal importance under Section 7 of the Environment (Wales) Act 2016.

4.23 The great crested newt surveys undertaken on ponds within 500 m of the site in 2020 confirmed that great crested newts are present within P2, P3 and P5. Given the time elapsed since these surveys were undertaken, and as P1 which was dry in 2020 is now holding water, updated great crested newt surveys will be undertaken in 2023.

4.24 However, given there are no habitats suitable for supporting breeding great crested newts within Site 2 and as there is extremely limited terrestrial connectivity between Site 2 and confirmed great crested newt breeding ponds, it is considered highly unlikely that GCN are present on site. The nearest confirmed breeding pond is located over 300 m to the south-west of the site, beyond existing hospital development and roads. Great crested newt are therefore highly unlikely to range into the site. Therefore, no implications with regard to great crested newts are anticipated from the development proposed at Site 2.

4.25 The terrestrial habitats on and adjacent to Site 2 are suitable for supporting other common amphibian species, including common toad. The risk of encountering common amphibians on Site 2 is considered low, however, given the small area of suitable amphibian habitat on site and as works will be confined to an area of hardstanding with negligible suitability for supporting amphibians. No implications for the proposals with regard to amphibians is therefore anticipated.

Badger

4.26 Badgers and their setts are protected under the Protection of Badgers Act 1992.

4.27 No impacts to badger are anticipated from the development at Site 2, owing to the lack of suitable sett-building or foraging habitat for badger on or adjacent to the site.

Bats

4.28 Bats are designated as European Protected Species under The Conservation of Habitats and Species Regulations 2017 and are afforded protection under Schedule 5 of the Wildlife and Countryside Act 1981.

4.29 No trees within or immediately adjacent to the site were assessed as having suitability to support roosting bats. Therefore, no impacts on roosting bats are currently anticipated from the proposals.

4.30 Although the hedgerow, scattered broad-leaved trees, tall ruderal and amenity grassland habitats along the eastern boundary of Site 2 provide suitable foraging and commuting habitat for bats, this is of limited value as it is regularly illuminated by adjacent street lighting. Lighting of the proposed MSCP should be designed to ensure the value of these retained habitats to foraging and commuting bats is not diminished.

Birds

4.31 Under the Wildlife and Countryside Act, 1981 (as amended) it is an offence to take, damage or destroy the nest of any wild bird whilst it is in use or being built.

4.32 The species-poor defunct hedgerow and scattered broad-leaved trees along the eastern boundary of the site provide nesting opportunities for several bird species. These habitats are due to be retained. However, if the proposals change and works to these features are required such as pruning or removal, there will be impacts with regard to nesting birds if site clearance works are undertaken within the nesting bird season (March to August inclusive).

Invertebrates

4.33 The scattered broad-leaved trees, scattered scrub, species-poor defunct hedgerow, tall ruderal and amenity grassland habitats on Site 2 provide breeding, foraging and sheltering opportunities for invertebrates of local provenance. These habitats are due to be retained under current proposals and therefore there are no implications with regard to invertebrates from development of Site 2.

4.34 There are opportunities to provide additional foraging resources for invertebrates through landscape planting.

Otter and Water Vole

4.35 Otter are designated European Protected Species and are afforded protection under The Conservation of Habitats and Species Regulations 2017 and Schedule 5 of the Wildlife and Countryside Act 1981. Water voles are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Both otter and water vole are species of principal importance under Section 7 of the Environment (Wales) Act 2016.

4.36 D2 to the east of the site is unsuitable for supporting otter, given its small size, lack of food sources and limited connectivity to other watercourses. Therefore, no impacts to otter are anticipated as a result of the proposals.

4.37 Evidence of water vole activity was found in D2 during the first water vole survey visit in June 2020 but no further signs indicating the presence of water voles was found during subsequent surveys in August 2020 and June 2021. Construction works in Site 2 will be undertaken on hardstanding habitat over 5 m from the top of the banks of this ditch, therefore no direct negative impacts to water voles are anticipated from the proposals.

4.38 If the proposals change and any works to the ditch are required, updated water vole surveys will be required and, if confirmed to be present, appropriate measures to prevent adverse impacts on water voles will need to be implemented under a licence from Natural Resources Wales.

4.39 There is potential for indirect impacts to occur to any water voles which may be present in D2 as a result of run-off from construction activities. There are also opportunities to manage D2 for water voles, which would benefit this species.

Reptiles

4.40 Slow worm, common lizard, grass snake and adder are reptile species afforded protection under Schedule 5 of the Wildlife and Countryside Act 1981.

4.41 Site 2 is unsuitable for supporting reptiles and there is a lack of connectivity between this site and suitable reptile habitat. Therefore, there are no implications with regard to reptiles and the proposed development at Site 2.

Hedgehog

4.42 Hedgehog are a species of principal importance under Section 7 of the Environment (Wales) Act 2016.

4.43 Hedgehog are unlikely to be present in Site 2, as there is limited terrestrial connectivity between Site 2 and other habitats in the wider area where hedgehog are likely to be present. Therefore, there no implications with regard to hedgehog are anticipated from the proposals at Site 2.

5.0 Recommendations

5.1 This section sets out appropriate recommendations for impact avoidance, mitigation and enhancement as stated in Section 4.0. Further survey requirements are also described where relevant.

Planning Context

5.2 The development should be undertaken with due consideration to policies RD1, VOE1 and VOE5 of the Denbighshire County Council Local Development Plan (adopted 4th June 2013) and Planning Policy Wales Edition 11 (2021).

Habitats and Flora

5.3 All retained trees and hedgerows on and adjacent to the site will be protected from incidental damage and disturbance during construction in accordance with current standards (BS 5837:2012 Trees in relation to design, demolition and construction – recommendations).

5.4 Best practice pollution prevention measures should be implemented to ensure any indirect impacts on Ditch 2 adjacent to the site and its associated species, such as water vole, will be avoided.

5.5 If any trees or areas of scrub are lost to facilitate the development, these should be replaced as these areas provide valuable habitat for several species, including breeding birds. This could be done by tree or scrub planting, using native species, within areas of open space within the completed development, for example to the rear of the new multi-storey car park. These measures would also enable the requirements of Policy RD1 of the Denbighshire County Council Local Development Plan to be met.

Fauna

Bats

5.6 New lighting on the new multi-storey car park should be designed in line with the Institution of Lighting Professionals Guidance Note 08/18 Bats and Artificial Lighting in the UK. A Sensitive Lighting Strategy should also be produced to avoid impacts of lighting on nocturnal species, primarily bats.

Birds

5.7 If the proposals change and any works to the species-poor hedgerow or scattered broad-leaved trees are required, works should be timed to avoid the nesting bird season (March to August inclusive). If this is not possible, works must be subject to a nesting bird check prior to works commencing. The nesting feature will be checked by a suitability qualified ecologist no more than 24 hours prior to any clearance works. If nests are identified, works must cease in that area and an appropriate buffer zone established around the nest until the young have fledged. This will require monitoring by an ecologist who will advise when works within the buffer zone can proceed.

5.8 Any loss of nesting bird habitat should be mitigated through replacement of appropriate habitat in order to maintain or increase the amount of breeding and nesting habitat available to birds. This could include tree planting, scrub planting and planting fruiting tree and shrub species to provide additional foraging resources and/or installing nest boxes on retained trees or the new built structure.

Water vole

5.9 If any works fall within 5 m of D2 or if any works to D2 are required, updated water vole surveys will be required to inform the licence application. Two visits will be required; one between mid-April and the end of June and one between July and September. Visits must be spaced two months apart.

5.10 A management strategy for Ditch 2 should be produced to enhance this ditch for water voles. Measures could include rotational strimming of the bankside habitats (one bank per year) and in-channel vegetation during the winter months (November to February inclusive) to 15 cm height to prevent scrub encroachment and shading, and therefore encourage native marginal and aquatic vegetation favoured by water vole.

5.11 If water vole presence is confirmed, a licence from Natural Resources Wales will be required. Displacement of voles to prevent killing or injury can only be undertaken between mid-February and mid-April, or from mid-September to the end of October. Any losses of bank habitat will need to be compensated by enhancement for water voles elsewhere on the ditch concerned.

Biodiversity Enhancement

5.12 Under the Planning Policy Wales Edition 11 (2021) and in line with Welsh Government guidance on securing biodiversity enhancements[12], developments should aim to minimise impacts on biodiversity and provide net benefit for biodiversity.

5.13 Any new landscape planting could be focussed to the rear of the new multi-storey car park in Site 2. Planting should aim to utilise native species appropriate to the local area and should maximise berry-bearing and nectar and pollen rich species. These can provide a valuable foraging resource for a range of pollinators and other invertebrates, which in turn benefits wildlife such as bats, small mammals and many bird species. Native wildflower seed mixes, suitable to the soil type at the application site, are available commercially and could be planted on site. This would also be beneficial to invertebrates such as bees and butterflies.

[12] Welsh Government (2019). *Securing Biodiversity Enhancements* [Online] Available at: https://www.gov.wales/biodiversity-enhancements-guidance-heads-planning [Accessed 03.02.23].

5.14 If new landscape planting is not viable, there are opportunities instead to provide enhancement of retained habitats within and immediately adjacent to the site or within the wider hospital campus. The amenity grassland habitats to the east of the site could be seeded with a wildflower mix, which will increase the species diversity on site. Further tree planting and gap planting of the hedgerow along the eastern site boundary could also be undertaken using native species. This will also meet the requirements of Denbighshire County Council Policy RD1, to enhance the local environment by providing landscaping that will improve biodiversity.

5.15 Bat and bird boxes could be incorporated onto the new multi-storey car park structure to provide roosting opportunities for bat species and nesting opportunities for birds. Nest boxes should be appropriate to species that occur locally. Bat and bird boxes should be located at an appropriate height and aspect (north-east for birds and south-west for bats), with suitable lighting levels and close to vegetation.

References

Chartered Institute of Ecology and Environmental Management (2017). *Guidelines for Preliminary Ecological Appraisal - Second Edition* [online]. Available at: https://www.cieem.net/data/files/Publications/Guidelines_for_Preliminary_Ecological_Appraisal_Jan2018.pdf.

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

Joint Nature Conservation Committee (1994). UK Biodiversity Action Plan. London: HMSO.

Joint Nature Conservancy Committee (2010). *Handbook for Phase 1 habitat survey: A technique for environmental audit* [online]. Available at: http://jncc.defra.gov.uk/PDF/pub10_handbookforphase1habitatsurvey.pdf.

Environment (Wales) Act 2016 (anaw 3). London: HMSO.

The Conservation of Habitats and Species Regulations 2017. S.I. 2017/1012. London: HMSO.

Wildlife and Countryside Act 1981 (c.69). London: HMSO.

APPENDIX A: Ecology Desk Study (Confidential)

APPENDIX B: Target Notes Report

Target Notes Report - Site 2

KEY - D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare

Target Note 01

Large hardstanding car park with small areas of amenity grassland planting in the north-west and south-west corners.

Lolium perenne	Perennial rye-grass	A
Festuca rubra	Red fescue	F
Holcus lanatus	Yorkshire-fog	F
Bellis perennis	Daisy	O
Dactylis glomerata	Cock's-foot	O
Taraxacum officinale agg.	Dandelion	O
Veronica chamaedrys	Germander speedwell	O
Cirsium vulgare	Spear thistle	R
Juncus inflexus	Hard rush	R

Target Note 02

Defunct species-poor hawthorn hedgerow and scattered broad-leaved trees growing along the eastern edge of the car park, to the east of which is a strip of amenity grassland with scattered broad-leaved trees adjacent to the main road.

Crataegus monogyna	Common hawthorn	D
Festuca rubra	Red fescue	A
Lolium perenne	Perennial rye-grass	A
Mosses	Moss species	A
Galium aparine	Cleavers	F
Holcus lanatus	Yorkshire-fog	F
Trifolium repens	White clover	F
Acer campestre	Field maple	O
Achillea millefolium	Yarrow	O
Dactylis glomerata	Cock's-foot	O
Ficaria verna	Lesser celandine	O
Fraxinus excelsior	Ash	O
Hedera helix	Ivy	O
Prunus avium	Wild cherry	O
Ranunculus repens	Creeping buttercup	O
Rosa sp.	Rose species	O
Salix species	Willow species	O
Iris foetidissima	Stinking iris	R
Salix x fragilis	Crack willow	R
Ulmus glabra	Wych elm	R

Target Note 03

Ditch flowing along the eastern edge of the car park, culverted at either end. The banks of the ditch are steep and colonised by ivy and tall ruderal species, with occasional scattered scrub.

Epilobium sp.	Willowherb species	A
Hedera helix	Ivy	A
Galium aparine	Cleavers	F
Mosses	Moss species	F
Ficaria verna	Lesser celandine	O
Fraxinus excelsior	Ash	O
Plantago lanceolata	Ribwort plantain	O
Rosa sp.	Rose species	O
Taraxacum officinale agg.	Dandelion	O
Urtica dioica	Common nettle	O

APPENDIX C: Great Crested Newt Survey (2020)

THE ENVIRONMENT PARTNERSHIP

GLAN CLWYD HOSPITAL, BODELWYDDAN

GREAT CRESTED NEWT SURVEY

TEP Technical Report July 2020

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Prepared for	BAM Construction Ltd
Prepared by	TEP - Warrington
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Date	July 2020
Checked	John Crowder
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Version	Date	Modified by	Check / Approved by	Reason(s) issue	Status

CONTENTS

1.0 Summary

1.1 Amphibian surveys have been undertaken at ponds within 500 m of Glan Clwyd Hospital in Bodelwyddan, Denbighshire. The surveys have been undertaken to inform proposals for the construction of a new mental health unit (site 1), a new multi-storey car park (site 2), a new helipad (site 3) and a new open-air car park (site 4) within the hospital campus.

1.2 Data searches, Habitat Suitability Assessments, eDNA sampling, torch surveys, netting and egg searches were carried out. Surveys were undertaken within the appropriate season and under the recommended conditions so no survey limitations were encountered.

1.3 Several historic records of great crested newt were found within 2 km of the site.

1.4 Great crested newts were identified in 2no. ponds within the site and 1no. ponds within 500m of the site. The ponds form a single meta population with a small population size class. A Natural Resources Wales (NRW) development licence will be required to permit development of sites 1, 3 and 4.

1.5 Smooth newt were also recorded in ponds within the site and ponds offsite.

1.6 No further amphibian surveys are required at this time.

2.0 Method

Scope

2.1 Glan Clwyd Hospital is located in Bodelwyddan, Denbighshire. Within the wider hospital campus (hereby known as "the site") are four sites, which will be developed as follows:

a. Site 1 – New Mental Health Unit

b. Site 2 – New Multi-Storey Car Park

c. Site 3 – New Helipad

d. Site 4 – Conversion of existing helipad into an open-air car park

2.2 There are 4 no. ponds within the site boundaries, 1 no. pond within 250m of the site boundaries and 1 no. pond within 250m to 500m. The site boundaries are illustrated in Figure 1 and the locations of the ponds are shown in Drawing G8166.005.

Figure 1: Site boundaries

2.3 A review of mapping and satellite imagery identified the A55 dual carriageway (grid reference SH 99943 75398), located approximately 525 m to the south of the site, as a barrier to amphibian dispersal. There are no barriers to amphibian dispersal to the north, east or west of the site.

2.4 The surveys are designed to determine whether or not great crested newts *Triturus cristatus* are breeding within the site or in ponds within ranging distance of the site. Where great crested newt (GCN) are present survey effort is designed to allow population size class to be assessed. This information is required to inform development proposals including the design of any mitigation and consideration of any relevant legislation and policies. Although surveys target great crested newt other amphibian species will also be detected by the methods employed, these species if encountered are recorded and the results presented in this report.

2.5 All 4 no. ponds within the site (P1 to P4) have been included in the field survey scope. Within 500 m of the site boundaries access was granted from third parties to survey 2 no. ponds (P5 to P6).

Data Search

2.6 A data request was submitted to North Wales Environmental Information Service (COFNOD) in April 2020 to ascertain if any records of great crested newts (GCN) are within influencing distance of the site. The search zone included the site and within 2 km of the site boundaries.

2.7 A web-based search undertaken in April 2020 indicated that habitat adjacent to Site 1 had potential to support GCN.

Habitat Suitability Index (HSI) Assessments

2.8 HSI surveys were undertaken at all 6 no. ponds where access had been granted. HSI surveys were undertaken on 21st April 2020 (P1-5) and 4th May 2020 (P6).

2.9 HSI[1] is a standard measure of calculating the suitability of a pond to support breeding great crested newts, based on an assessment of ten characteristics (indices), including size, shading, depth and vegetation profile. The assessment generates a number between 0 and 1 for each of the indices which are combined to provide an overall assessment of a pond's suitability to support GCN on a categorical scale (Table 1). The assessment has not been designed for or tested on other waterbodies such as ditches.

2.10 Ponds with a score of below average, average, good or excellent were subject to a full survey. Any ponds assessed to have a 'poor' suitability were reviewed and where sufficient justification could be made, these ponds were scoped out of further surveys.

1: ARG UK Advice Note 5 (May 2010) Great Crested Newt Habitat Suitability Index

Table 1: Pond habitat suitability index scoring

HSI Score	Suitability	Predicted GCN Occupancy of Ponds in each Category
< 0.5	poor	3%
0.5 to 0.59	below average	20%
0.6 to 0.69	average	55%
0.7 to 0.79	good	79%
> 0.8	excellent	93%

Qualifications

2.11 HSI surveys were undertaken by John Crowder who has held a Natural Resources Wales GCN survey licence since 2007.

eDNA

2.12 Environmental DNA (eDNA) sampling was undertaken at 2no. ponds (P4, P5) on 27th April 2020 and 1no. pond (P6) on 4th May 2020.

2.13 Pond P1 was found to be dry and therefore was unsuitable for this survey method. GCN were sighted within Ponds P2 and P3 prior to the eDNA survey, thereby confirming the presence of this species and as such eDNA sampling of these ponds was not required.

2.14 Sample collection was undertaken by TEP. Sample kits and analysis was provided by ADAS. Both organisations followed the relevant sections of the method set out in the DEFRA funded study endorsed by Natural England[2]. In summary the sampling protocol is as follows:

- 20 samples were taken from around the entire perimeter of the waterbody.
- The surveyor stayed out of the water while taking the samples (extension poles were used in situations where open/sufficiently deep water was at a distance from the dry banks.
- Survey locations were distributed around the pond perimeter but micro-siting was used to select locations most likely to be used by GCN.
- At each sample location the water column was stirred prior to taking the sample but care was taken to avoid disturbing the sediment on the base of the pond.
- Once all 20 samples were taken, 15ml of the total sample were pipetted into each of the 6 sampling tubes, whilst ensuring that the water in the sample bag was mixed before taking each 15ml sample and that only one sample tube was opened at any one time.

2: Biggs et al 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford

- At all times the surveyor ensured that the risk of contaminating the sampling equipment was minimised by avoiding the placement of the ladle or pipette on the ground or on any otherwise potentially contaminated surfaces and by changing gloves between the initial sampling stage and the pipetting stages of the method.

Chain of custody

2.15 On receipt from ADAS the sampling kits were registered on a central database using the unique bar codes. Immediately prior to survey, sampling kits were issued to surveyors with individual Sample Forms using the unique bar code as identification. The site name and date of issue was also recorded on this form (and on the central database). Once in the field and at the ponds, the surveyor confirmed that the appropriate field survey sheet was being completed by checking the bar code on the box and double checking the corresponding bar codes on the sample tubes. The surveyor then filled in the date of survey and the pond ID number (as well as other information relating to survey conditions) on the Sample Form.

2.16 On returning to the office the Sample Forms were signed to confirm for each sample who received the samples and checked them into the fridge and the temperature of the fridge. The pond IDs on each form were checked against a site map confirming which ponds had been sampled and this map was stored with the Sample Forms. All this information was also recorded on the central database. The sample preserving tubes were stored in a fridge until the morning of collection by the courier. The Sample Forms and the central database were updated to confirm the date of collection by the courier.

2.17 The unique bar codes were used by ADAS to report results. All results were recorded in the central database by one member of staff and cross checked by a second member of staff before issuing to the project leader for review.

Qualifications

2.18 TEP Associate Director (Ecology) Elizabeth Seal underwent training on the eDNA sampling method with Dr Jeremy Biggs of the Freshwater Habitats Trust[3] on 11th April 2014. A copy of the certificate of this training can be provided on request. Following this Elizabeth devised a TEP internal training course covering theoretical and field based modules on eDNA sampling method, biosecurity measures and record keeping procedures. Only those TEP ecologists with GCN survey licences who have successfully undertaken this course are tasked with eDNA sampling.

Torch, Net Surveys and Eggs Searches

2.19 In line with Natural England (NE) guidance[4] and advice previously received from Natural Resources Wales (NRW), a combination of torch surveys and egg searches were used to determine presence/absence and/or assess population size class.

3: Dr Briggs authored the 2014 DEFRA funded report on the eDNA survey method for great crested newts.
4: Great crested newt mitigation guidelines (2001), English Nature

Where pond turbidity prevented torch survey, hand netting was used instead. Bottle trapping was not used as a survey technique following previous guidance received from NRW.

2.20 Surveyors worked in pairs with at least one Natural Resources Wales licensed surveyor in each team. Surveys were undertaken between mid-March and mid-June with at least two visits in the core period of mid-April to mid-May. To ensure effective detection rates torch and bottle surveys were undertaken when nighttime air temperatures were >5ºC and when rain and wind conditions did not affect visibility (only relevant to torch surveys).

2.21 Dates and surveyor details are provided at Tables 2 and 3.

Torch survey

2.22 Torch surveys were undertaken at all ponds holding water within 250 m of the site (P2, P3, P5). P4 was also surveyed during Visit 1, was discounted from all further surveys following receipt of a negative eDNA result. Torch surveys were replaced with netting at pond P5 from Visit 2 onwards due to poor visibility.

2.23 Ponds were surveyed by walking the perimeter. Torch surveys were carried out after dusk with a powerful torch (one million candle power). The number, species and (where possible) sex and age class of amphibians seen were recorded. It is not always possible to achieve 100% coverage along pond margins using the torch surveys because of access difficulties, for example dense vegetation or boggy banks. Access was only taken where it was safe to do so. Estimates of the percentage of shoreline of each waterbody surveyed and other factors affecting torching were recorded.

Egg search

2.24 Egg searches were undertaken on all survey visits at P2, P3, P4 and P5. GCN lay their eggs on the leaves of submerged (live or dead) vegetation, folding the vegetation over the egg to form a protective 'purse'. Aquatic vegetation was searched by walking or wading the shoreline of a waterbody and looking for the characteristic shape of folded leaves. Unwrapping eggs (to identify the species) increases larval failure rates therefore egg searching in any waterbody was ceased as soon as a GCN egg was found.

Hand netting

2.25 Hand netting was only used at ponds where an alternative third survey method was required. At pond P5 netting replaced torching. Netting can be undertaken at any time of the day but in this instance were carried out at night when adult GCN are more likely to be in open water. The standard procedure for hand netting[5] was used; this required a long handled D-net to be swept vigorously through the water in 2m sweeps with a survey effort of at least 15 minutes per 75 m of shoreline.

5: Froglife (2003) Advice Sheet 11 Surveying for (Great Crested) Newt Conservation. Froglife, Halesworth

Qualifications and survey dates

2.26 Table 2 summarises the timing of the surveys and Table 3 shows the qualifications of the lead surveyors.

Table 2: Survey details

Pond ID	Lead Surveyor and Survey Date					
	Visit One	Visit Two	Visit Three	Visit Four	Visit Five	Visit Six
P1	-	-	-	-	-	-
	-	-	-	-	-	-
P2	27.04.20	04.05.20	11.05.20	18.05.20	26.05.20	01.06.20
	J. Crowder	J. Crowder	J. Crowder	J. Crowder	J. Crowder	J. Crowder
P3	27.04.20	04.05.20	11.05.20	18.05.20	26.05.20	01.06.20
	J. Crowder	J. Crowder	J. Crowder	J. Crowder	J. Crowder	J. Crowder
P4	27.04.20	-	-	-	-	-
	J. Crowder	-	-	-	-	-
P5	27.04.20	04.05.20	11.05.20	18.05.20	26.05.20	01.06.20
	J. Crowder	J. Crowder	J. Crowder	J. Crowder	J. Crowder	J. Crowder
P6	-	-	-	-	-	-
	-	-	-	-	-	-

Table 3: Lead surveyor details

Surveyor	Current Licence	Licence held since
J. Crowder	S085340/1	2007

Summary

2.27 An overview of the survey methods employed at each pond is presented in **Table 4**.

Table 4: Summary of field survey methods

Pond ID	Survey method used at pond and number of survey visits				
	eDNA Survey	Torch Survey	Bottle Survey	Netting Survey	Egg Survey
P1	-	-	-	-	-
P2	-	6	-	-	6

Pond ID	Survey method used at pond and number of survey visits				
	eDNA Survey	Torch Survey	Bottle Survey	Netting Survey	Egg Survey
P3	-	6	-	-	6
P4	Yes	1	-	-	1
P5	Yes	1	-	5	6
P6	Yes	-	-	-	-

Limitations

2.28 The surveys were completed within the recommended survey season and there were no access restrictions to any of the ponds. Therefore there were no survey limitations.

3.0 Results

Data Search

3.1 Table 5 presents the findings of the data search. Records identified to the south of the A55 dual carriageway are not shown in this table. Further details are available in the Ecology Desk Study (TEP Report Ref: 8166.001).

Table 5: Data search results

Distance From Site	Direction From Site	Notes
Great Crested Newt		
100 m	North-West (associated with P5)	Low numbers, 2008
375 m	North-East (associated with P6)	GCN and larvae sighted, 2009
600 m – 1500 m	West	Low numbers and juveniles sighted in various ponds between 1993 and 2009
Other Newt		
1300 m	North-West	Smooth newt – adult male and female 2009
1700 m	South-East	Smooth newt – recorded between 2006 and 2008
Common Toad		
1700 m	South-East	3x adults recorded 2009
Common Frog		
None recorded		

2.29 A web-based search undertaken in April 2020 indicated that ponds P2 and P3 were created as amphibian mitigation ponds as part of construction of the buildings immediately to the north of site 1. The planning application for these buildings was submitted in 2012 (Denbighshire Planning Application Ref: 40/2012/0230). These ponds were designed after great crested newt were confirmed to be present in P5, in surveys undertaken for an unrelated development prior to 2009 (details unknown).

Habitat Suitability Index (HSI) Assessments

3.2 Pond descriptions and photographs are provided in Table 6 and the results of the HSI surveys are presented in Table 7.

3.3 The suitability of ponds within the site to support GCN ranged from Average to Excellent. The suitability of ponds offsite site to support GCN ranged from Below Average to Good.

Table 6: Pond descriptions and photos

Pond	Grid Ref.	Description	Photograph
P1	SJ 00116 75938	Completely scrubbed over. Dry pond – no water visible. No further survey requirements.	
P2	SJ 00038 76073	Lined mitigation pond with fencing around it. Some *Typha* and algae within the pond. Terrestrial habitat surrounding the pond comprises rough grassland and hedge. GCN sighted within the pond.	
P3	SJ 00039 76083	Lined mitigation pond with fencing around it. Less *Typha* and algae within the pond (compared to P2). Terrestrial habitat surrounding the pond comprises rough grassland and hedge. GCN sighted within the pond.	
P4	SJ 00044 76156	Large pond, heavily vegetated with *Typha*. Outflow suggests it is a drainage pond. Very shallow. Surrounded by steep grassy embankment with scrub and hedge.	

Pond	Grid Ref.	Description	Photograph
P5	SH 99952 76279	Large field pond used as a drinking hole by cows. Poached edges but drying out in these areas. Small area of bramble and hawthorn scrub adjacent to pond. Pondweed, forget-me-not, hard rush and common reed within the pond.	
P6	SJ 00898 76335	Very shallow field pond, where water has gathered in a field depression.	

Table 7: HSI assessment results

Pond Ref	SI1 Location		SI2 Pond Area		SI3 Permanence		SI4 Water Quality		SI5 Shade		SI6 Waterfowl		SI7 Fish		SI8 Pond Density		SI9 Terrestrial Habitat		SI10 Macrophyte Cover		Overall HSI	
	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	HSI	Suitability
P1	POND DRY – NOT SURVEYED																					
P2	A (optimal)	1	<50	0.05	Rarely	1	Good	1	0	1	Absent	1	Absent	1	1.91	0.81	Moderate	0.67	90	0.9	**0.69**	**average**
P3	A (optimal)	1	<50	0.05	Rarely	1	Good	1	0	1	Absent	1	Absent	1	1.91	0.81	Moderate	0.67	5	0.35	**0.63**	**average**
P4	A (optimal)	1	950	0.96	Rarely	1	Poor	0.33	5	1	Absent	1	Absent	1	1.91	0.81	Moderate	0.67	100	0.8	**0.82**	**excellent**
P5	A (optimal)	1	550	1	Rarely	1	Poor	0.33	5	1	Absent	1	Absent	1	1.91	0.81	Poor	0.33	50	0.8	**0.77**	**good**
P6	A (optimal)	1	100	0.2	Annually	0.1	Moderate	0.67	5	1	Absent	1	Absent	1	2.23	0.85	Moderate	0.67	5	0.35	**0.55**	**below average**

eDNA

3.4 The results of the eDNA surveys are presented in Table 8 and included on Drawing G8166.011. Great crested newt eDNA was identified in pond P5 offsite.

Table 8: eDNA survey results

Pond Ref	Survey Date	Surveyor	Score	GCN Present? (Y/N)
P1	-	-	-	-
P2	-	-	-	-
P3	-	-	-	-
P4	28/04/2020	J. Crowder	0/12	N
P5	28/04/2020	J. Crowder	9/12	Y
P6	04/05/2020	J. Crowder	0/12	N

Torch, Net Surveys and Eggs Searches Summary

3.5 The results of the torch surveys are presented in Table 9, the netting survey results are presented in Table 10 and the egg searches in Table 11. These results are also included on Drawing G8166.011. The codes M, F, J and T are used to denote male, female, juvenile and tadpole where known.

3.6 Great crested newts were identified in ponds P2 and P3 within the site. No great crested newts were identified in any of the offsite ponds during these surveys.

3.7 Smooth newts *Lissotriton vulgaris* were also identified within ponds P2 and P3 on site. No smooth newts were identified in any of the offsite ponds during these surveys. No other amphibian species were recorded in any pond.

Table 9: Torch survey results

Pond Ref	Date	Air Temp °C	Water Temp °C	Turbidity (0-5)	Vegetation Cover (0-5)	Shoreline covered %	GCN adult	Smooth/ Palmate newt adult	Toad	Frog	Fish?	Weather Conditions/ Comments
P1	Not surveyed											
P2	27.04.20	9	17	1	4	100	1 (M)	0	0	0	No	No rain or wind.
	04.05.20	10	12	2	4	100	0	4 (1M, 3F)	0	0	No	No rain, light wind. More algae noted in pond than previously.
	11.05.20	7	9	1	4	100	2 (M)	2 (F)	0	0	No	No rain or wind.
	18.05.20	15	18	2	4	100	1 (M)	2 (M)	0	0	No	No rain, light wind.
P2	26.05.20	16	19	2	3	100	0	4 (M)	0	0	No	No rain, light wind.
	01.06.20	14	17	2	3	100	0	1 (F)	0	0	No	No rain, light wind. Water level has dropped slightly.

Pond Ref	Date	Air Temp °C	Water Temp °C	Turbidity (0-5)	Vegetation Cover (0-5)	Shoreline covered %	GCN adult	Smooth/ Palmate newt adult	Toad	Frog	Fish?	Weather Conditions/ Comments
P3	27.04.20	9	17	0	1	100	5 (2M, 3F)	4 (2M, 2F)	0	0	No	No rain or wind
	04.05.20	10	12	3	4	100	0	3 (2M, 1F)	0	0	No	No rain, light wind. More algae noted in pond than previously.
	11.05.20	7	9	3	4	100	0	1 (F)	0	0	No	No rain or wind.
	18.05.20	15	18	2	4	100	0	0	0	0	No	No rain, light wind.
P3	26.05.20	16	19	2	3	100	0	4 (3M, 1F)	0	0	No	No rain, light wind.
	01.06.20	14	17	2	3	100	0	1 (F)	0	0	No	No rain, light wind. Water level has dropped slightly.
P4	27.04.20	9	17	1	4	100	0	0	0	0	No	No rain or wind
	04.05.20	Not surveyed – negative eDNA result										
	11.05.20	Not surveyed – negative eDNA result										
	18.05.20	Not surveyed – negative eDNA result										
P4	26.05.20	Not surveyed – negative eDNA result										
	01.06.20	Not surveyed – negative eDNA result										
P5	27.04.20	9	17	5	1	100	0	0	0	0	No	No rain or wind. Bullocks in field.
	04.05.20*	10	12	5	2	90	N/S	N/S	N/S	N/S	No	No rain, light wind. Pond not torched due to turbidity and bullocks in field.

Pond Ref	Date	Air Temp ºC	Water Temp ºC	Turbidity (0-5)	Vegetation Cover (0-5)	Shoreline covered %	GCN adult	Smooth/ Palmate newt adult	Toad	Frog	Fish?	Weather Conditions/ Comments
												Water level noted to have dropped since last visit.
	11.05.20*	7	9	5	2	90	N/S	N/S	N/S	N/S	No	No rain or wind. Pond not torched due to turbidity. Water level has dropped again.
	18.05.20*	15	18	5	2	90	N/S	N/S	N/S	N/S	No	No rain, light wind. Pond not torched due to turbidity. Water level has dropped again.
P5	26.05.20*	16	19	5	2	70	N/S	N/S	N/S	N/S	No	No rain, light wind. Pond not torched due to turbidity. Water level has dropped again.
	01.06.20*	14	17	5	3	70	N/S	N/S	N/S	N/S	No	No rain, light wind. Pond not torched due to turbidity. Water level has dropped again.
P6	Not surveyed											

*Netting survey only, see Table 10

N/S – Not surveyed

Table 10: Netting survey results

Pond Ref	Survey Date	Great crested newt	Smooth/ Palmate newt	Toad	Frog
P1	Not surveyed				
P2	Not surveyed				
P3	Not surveyed				
P4	Not surveyed				
P5	27.04.20	N/S	N/S	N/S	N/S
	03.05.20*	0	0	0	0
	11.05.20*	0	0	0	0
	18.05.20*	0	0	0	0
	26.05.20*	0	0	0	0
	01.06.20*	0	0	0	0
P6	Not surveyed				

*Pond information is conveyed in Table 9.

N/S – Not surveyed

Table 11: Egg search results

Pond Ref	Great crested newt	Smooth/ Palmate newt	Toad	Frog
P1	Not surveyed			
P2	No	No	No	No
P3	Yes	No	No	No
P4	No	No	No	No
P5	No	No	No	No
P6	Not surveyed			

Results Summary

3.8 Table 13 summarises the amphibian survey results including the species recorded and the method by which it was recorded. The full amphibian survey results, are illustrated in G8166.011 (all presence/absence survey methods).

Table 13: Summary of pond survey results

TEP Pond Ref	HSI Category	GCN	Small Newt	Common Frog	Common Toad
P1	Dry	N/S	N/S	N/S	N/S
P2	Average	Present (T)	Present (T)	Absent (T, E)	Absent (T, E)
P3	Average	Present (T, E)	Present (T)	Absent (T, E)	Absent (T, E)
P4	Excellent	Absent (D, T, E)	Absent (T, E)	Absent (T, E)	Absent (T, E)
P5	Good	Present (H, D)	Absent (T, E, N)	Absent (T, E, N)	Absent (T, E, N)
P6	Below average	Absent (D)	N/S	N/S	N/S

The methods referred to are historic data search (H), eDNA (D), torch survey (T), egg searching (E for eggs, L for larvae) and hand netting (N). N/S denotes not surveyed.

4.0 Meta Population and Population Size Class Assessments

Meta Population Assessment

4.1 Great crested newts often exist as a series interlinked subpopulations where individuals disperse between a cluster of ponds. This system is called a meta population. Small, isolated populations based on a single pond are normally less likely to persist in the long term. As such, impacts on a single pond may have knock-on effects on newts in nearby ponds. Studies reveal variation in dispersal distances, but great crested newts commonly move between ponds that are within around 250m of each other.

4.2 One meta population has been identified within the influence of the site and this is illustrated in Drawing G8166.011.

Population Size Class Assessment

4.3 The size class is determined by the peak count on any one survey visit using any single survey method at a single pond and then adding these totals together for all ponds within a met population. Population size classes are classified as follows:

- 'small population' for a maximum peak count up to 10 GCN,
- 'medium population' for a maximum peak count between 11 and 100 GCN,
- 'large population' for a maximum peak count over 100 GCN.

4.4 Table 14 details those ponds supporting GCN and states the associated population size class based on the peak count.

Table 14: GCN Population Size Class Assessment

Pond Grouping	Method of Identifying GCN	Peak Counts	Population Size Class
P2, P3 & P5	T (P2, P3, P5) N (P5 only)	5+2+0	Small

5.0 Further Requirements

Additional Surveys

5.1 There are currently no additional survey requirements. The survey scope and timing is sufficient to inform development proposals and review legal and policy requirements. The surveys have confirmed great crested newts are present in both onsite and offsite ponds and the survey data has been used to make a population size class estimate.

5.2 Great crested newt surveys are valid for at least 2 years and potentially 4 years or more depending on the specific use of the data, local conditions and the potential impact predicted on GCN. When data is greater than 2 years old advice should be sought from an appropriately experienced ecologist.

Licensing / Reasonable Avoidance Measures

5.3 Great crested newts have been recorded on site and are likely to be affected by development proposals at Sites 1, 3 and 4. A NRW licence will be required to legally permit works on site. Mitigation for impacts on GCN will be required. Drawing G8166.011 presents the locations of the confirmed GCN ponds along with 50m, 250m and 500m impact zones[6].

5.4 Great crested newts have been recorded approximately 375 m to the west of site 2. However, given the presence of the hospital development between the pond and this site, and the level of disturbance from traffic and pedestrians, it is highly unlikely that GCN will range into this site therefore no implications with regard to GCN are anticipated from development of site 2.

6: The zones used in Natural England's Rapid Risk Assessment, within the "GCN method statement for EPS licence application, form WML-A114-2 (December 2015)

DRAWINGS

- Pond Location Plan (G8166.005)
- GCN Survey Results (G8166.011)

300000

301000

376000

P5

P6

P4

Inset 1

P1

Inset 1

P3

P2

Metres
0 5 10 20

Metres
0 100 200 400

300000

301000

KEY

Approximate site location

Approximate site locations - 500m buffer

Approximate pond location

Note:
The locations of ponds are indicative.

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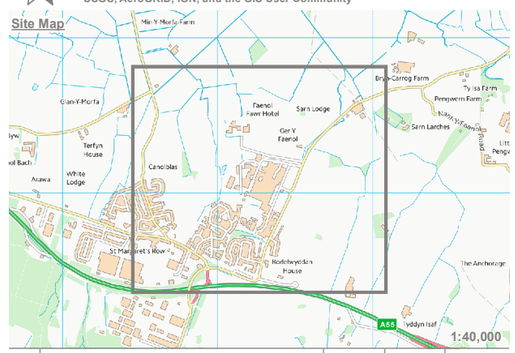
Site Map



Rev	Description	Drawn	Approved	Date

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Project
Glan Clwyd Hospital, Bodelwydda

Title
Pond Location Plan - **Aerial**

Drawing Number
G8166.005

Drawn	Checked	Approved	Scale	Date
CW	MK	CC	1:5,500 @ A3	15/04/2020

299356 299856 300356 300856

376451

375951

P5 P6 Site 4 P4 P3 P2 Site 2 Inset 1 Site 1 Site 3 P1

P4 P3 P2 Site 1 Inset 1 1:3,000

Metres
0 100 200 400

375451

KEY

- Site boundary
- Pond
- Dry pond

GCN Traditional Survey Results

- Present

eDNA Results

- Positive
- Negative
- Not surveyed

GCN Buffer Zones

- Core habitat (0-50m)
- Intermediate habitat (50-250m)
- Distant habitat (250-500m)

Note:
The locations of ponds are indicative.

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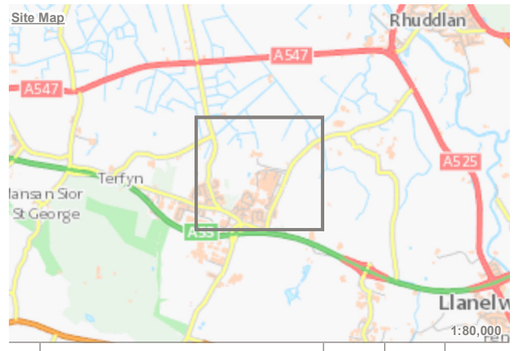
Site Map



Rev	Description	Drawn	Approved	Date

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Project
Glan Clwyd Hospital, Bodelwydda

Title
GCN Survey Results

Drawing Number
G8166.011

Drawn	Checked	Approved	Scale	Date
CW	SA	CC	1:5,500 @ A3	02/07/2020

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APPENDIX D: Water Vole Survey (2021)

THE ENVIRONMENT PARTNERSHIP

GLAN CLWYD HOSPITAL

BODELWYDDAN

WATER VOLE - TECHNICAL REPORT

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Document Title	Water Vole - Technical Report
Prepared for	BAM Construction Ltd
Prepared by	TEP - Warrington
Document Ref	8166.006

Author	Cameron Campbell
Date	April 2022
Checked	Peter Bonney
Approved	Peter Bonney

Amendment History					
Version	Date	Modified by	Check / Approved by	Reason(s) issue	Status
1.0	August 2020	CC	AE	Original issue	Superseded
2.0	April 2022	CC	PB	Updated to include results of 2021 surveys	Current

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APPENDIX B: Survey Design

APPENDIX C: Field Sign Surveys - One Survey or Two?

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G8166.020 - Water Vole Survey Results - Visit 1

G8166.021 - Water Vole Survey Results - Visit 2

G8166.022 - Water Vole Survey Results - Visit 3

Powell Dobson Architects Drawing - Adult and Older Persons Mental Health Unit Block Plans (July 2021)

Executive Summary

1. TEP was commissioned by BAM Construction Ltd in June 2021, to carry out an updated water vole *Arvicola amphibious* presence/absence survey of suitable watercourses and waterbodies at two sites within the Glan Clwyd Hospital campus in Bodelwyddan, Denbighshire. The updated surveys were required owing to a change in the location of one of the sites.

2. One pond (P4) and one ditch (D2) were identified for survey. Water vole surveys of P4 and D2 were previously undertaken by TEP in 2020. This report supersedes the findings of the 2020 surveys.

3. All surveys followed the new Water Vole Mitigation Handbook 2016 (*Dean et al* 2016). The pond and ditch was assessed to be suitable for supporting water vole.

4. The 2021 surveys confirmed that water voles are present within P4. The field signs observed indicate that the pond supports a low to medium population density of water voles.

5. The type of proposed development works determines the baseline survey data required to prove presence or likely absence of water vole. The indicative development proposals show that there is potential for impacts to occur to water voles and water vole habitat within P4, although the extent and permanence of these impacts is not yet clear.

6. A site-specific development licence for water voles will therefore be required from Natural Resources Wales to enable development to proceed. A conservation net gain must be demonstrated as part of any licence application, and there are opportunities to achieve this within the pond or elsewhere in the hospital campus. The method required to achieve conservation net gain will depend on the nature of the impacts.

7. There is also scope for habitat enhancement and creation by sympathetic clearance and management of areas of encroaching scrub along the banks of the pond.

8. If works have not commenced within 12 months of the date of this report (i.e. by April 2023), an updated water vole survey should be undertaken.

1.0 Introduction

1.1 The Environment Partnership (TEP) Ltd was commissioned in March 2020 by BAM Construction Ltd to provide ecology services in relation to four sites within the Glan Clwyd Hospital Campus in Bodelwyddan, Denbighshire.

1.2 A full planning application for the construction of a new adult and older person's mental health unit (AOPMHU) on Site 1 and a multi-storey car park (MSCP) on Site 2 was submitted to Denbighshire County Council in 2020. Water vole surveys of two ditches adjacent to each site (D1 and D2) were undertaken by TEP in June and August 2020 to inform the planning application.

1.3 Planning permission was refused in December 2020, owing to the proximity of the AOPMHU proposals to neighbouring residential properties. An alternative location was subsequently sought for the proposed AOPMHU and site 1 was relocated in February 2021. No changes to the proposed MSCP development on Site 2 have been made.

1.4 TEP was re-commissioned by BAM Construction Ltd in June 2021 to undertake updated water vole surveys, to inform a new planning application for Site 1 and Site 2. The new planning application is due to be submitted to Denbighshire County Council in 2022.

1.5 The water vole *Arvicola amphibious* survey forms part of a suite of ecology services to provide input into the planning application. This assessment has been requested to inform future decisions regarding the proposed developments on Sites 1 and 2. Plans for Sites 3 and 4 are currently on hold and are not included within the scope of the updated surveys.

1.6 The current development plans have indicated that there is potential for the garden areas associated with the proposed AOPMHU to impact water voles and water vole habitat in Pond 4, adjacent to the new building location (Powell Dobson Architects Drawing - Adult and Older Persons Mental Health Unit Block Plans (July 2021)).

1.7 The results of the 2021 water vole survey are included in this report as drawings G8166.020 to G8166.022. This report supersedes the findings of the 2020 surveys.

Site Location and Description

1.8 Site 1 (central grid reference SJ 00100 76154) is approximately 0.95 ha in size and is located in the north-west corner of the Glan Clwyd Hospital campus. The site is bounded to the south and east by existing hospital buildings and access roads, to the west by an existing drainage pond and to the north by agricultural land.

1.9 Site 2 (central grid reference SJ 00472 76103) is approximately 1 ha in size and is located in the north-east corner of the Glan Clwyd Hospital campus. The site is bounded to the north, south and west by existing hospital access roads, and to the east by a single carriageway road.

1.10 The wider area surrounding the hospital campus comprises agricultural land to the north, east and west of the campus, and residential development to the south. The main A55 dual carriageway is located beyond the residential area.

1.11 The boundaries of Site 1 and Site 2 are represented by the red line boundaries in the site location plan (Figure 1).

Figure 1 - Site Location Plan

Legislation

1.12 In England and Wales water voles are listed on Schedule 5 of the Wildlife and Countryside Act (WCA) 1981, receiving full protection since 2008. The WCA 1981, together with amending legislation, lists the following as offences:

- Intentionally killing, taking or injuring a water vole (Section 9(1));
- Possessing or controlling any live or dead water vole, or any part or derivative (Section 9(2));
- Intentionally or recklessly damaging or destroying a water vole's place of shelter or protection (Section 9(4)(a));
- Intentionally or recklessly disturbing a water vole whilst it is occupying a structure or place which it uses for shelter or protection (Section 9 (4)(b));
- Intentionally or recklessly obstruction access a water vole's place of shelter or protection (Section 9(4)(c));
- Selling, offering for sale, or possessing or transporting for the purposes of sale, any live or dead water vole, or any part or derivative, or advertising any of these for buying or selling (Section 9(5).

1.13 There is no provision under the WCA 1981 (as amended) for licensing what would otherwise be offences for the purpose of maintenance or land management.

1.14 Prior to February 2016 if it could be demonstrated that any action that would otherwise have been an offence was the “incidental result” of a lawful operation and could not reasonably have been avoided, this would have constituted as a defence against prosecution. However; since 2016 displacement activities (excluding justifiable mowing) are no longer covered by the “incidental result” defence. Therefore any displacement activities now require a licence.

1.15 In England and Wales a licence to displace water vole, will be issued for the purpose of conservation. The proposed project will therefore need to deliver a conservation benefit for water vole. Legal protection for water voles in Scotland differs to that of England and Wales.

2.0 Methodology

Desktop Study

2.1 Desktop records were gathered in May 2021 from North Wales Environmental Information Service (COFNOD) up to 2km from the Site. These records were initially used to inform the Ecological Assessments for Site 1 (TEP Report Ref: 8166.007) and Site 2 (TEP Report Ref: 8166.003v2).

Field Survey

2.2 The water vole surveys were led by experienced ecologist Peter Bonney on 24th June 2021 and 9th September 2021, accompanied by a health and safety assistant.

2.3 The standard methodology as outlined within the latest guidance by Dean *et al*. (2006)[1] and Strachan *et al* (2011)[2] was followed, to complete a thorough search for evidence which would indicate the presence of water vole and other riparian mammals both on the site and locally, which include:

- Burrows;
- Feeding remains;
- Droppings;
- Footprints;
- Incidental evidence of other riparian mammals (including otter *Lutra lutra* and North American mink *Neovison vison*)

2.4 The weather during the first survey in June was overcast, with light rain at the start of the survey. Weather during the second survey in September was dry and warm. No significant rainfall had occurred in the 48 hours preceding the surveys.

Survey Design

2.5 The type of proposed development works determines the baseline survey data required to prove presence or likely absence of water vole.

2.6 Table 1 outlines the watercourses and waterbodies adjacent to each development site, and identifies which of these were included in the 2021 survey scope.

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

[2] Strachan, R., Moorhouse, T. & Gelling, M. (2011) Water vole conservation handbook (3rd Ed.). Wildlife Conservation Research Unit, Oxford

Table 1: 2021 Survey Scope

Site	Watercourse / Waterbody Ref	Location in relation to site	Suitable water vole habitat?	Included within survey scope	Rationale for inclusion/exclusion
1	D1	Along western boundary	No - heavily shaded	No	Unsuitable habitat present and located over 5 m from proposed development works.
	D5	Along eastern boundary	No - ditch is dry	No	Unsuitable habitat present and located over 5 m from proposed development works.
	P4	Situated in the west of the site	Yes	Yes	Suitable habitat present and located within 5 m of proposed development works.
2	D2	Along the southern half of the eastern boundary	Yes	No	Located over 5 m from proposed development works.

2.7 A precautionary walkover of D2 was undertaken in June 2021, as water voles were recorded along this watercourse during the 2020 surveys. However, as the proposed MSCP development is over 5 m from the ditch, a second survey was not required.

2.8 The full suite of two surveys of P4 was undertaken, given the proximity of the proposed development to the eastern bank of the pond. All accessible areas of the pond were subject to survey. The survey areas are shown on Drawing 1.

2.9 It was noted during the first survey visit on 24th June 2021 that many of the latrines and feeding remains identified within P4 had been inundated by water, making their identification difficult. As such, ten 60 cm x 30 cm latrine rafts were deployed at 10 m intervals around the edge of P4 during the second survey visit on 9th September 2021. Water voles are naturally inquisitive and will leave droppings and latrines on rafts quite quickly and will use them as feeding platforms if tucked into vegetation (refer to Section 3.3.13 of Water Vole Mitigation Handbook 2016 for more information).

2.10 Latrine rafts were positioned within the areas of standing water in P4 and on bankside habitat close to the edge of the water. The rafts were left in situ for seven days and inspected by TEP Ecologists Cameron Campbell and Danielle Langton on 16th September 2021, immediately prior to their retrieval.

2.11 The water vole survey was designed taking into account the proposed development and The Water Vole Mitigation Handbook 2016, see Appendix 1 for full details.

Survey Constraints

2.12 Access to the full perimeter of the pond was not possible due to dense vegetation cover along the southern bank. The pond was accessed as far as possible and where the surveyors could not survey from within the pond, bankside observations were made.

2.13 Although set out to be flush with the water or vegetation surface, several of the latrine rafts were found to have popped up at the time of collection. However, these remained stable enough to provide opportunities for latrine creation and also created habitat underneath that water voles could utilise for additional shelter. As such, this was not considered to be a significant limitation

3.0 Results

Desktop Study

3.1 The desk study identified two historic records of water vole within 2 km of the site, from 2009 and 2016. The closest record is approximately 1.3 km to the north-west of the site.

3.2 A single water vole was historically sighted on Ditch 3 within the hospital campus in 2013, during vegetation clearance works as part of another development (AEDC Ltd Ref: 0696-GCH/AEDC/QU-09). Ditch 3 is associated with a future development site and is not included within the scope of this assessment.

3.3 Surveys undertaken by TEP in 2020 recorded several latrines of adult and juvenile water vole in D2 in June 2020. A single water vole latrine was recorded in P4 during the June and August 2020 surveys.

Field Survey

Habitat Suitability

3.4 Full results of the habitat suitability of all the watercourses and ponds subject to survey are provided in the Appendix A.

3.5 In summary; D2 and P4 were found suitable for water vole.

3.6 D2 is a steep-sided ditch located in the east of site 2, between the site and Rhuddlan Road. Tall ruderal vegetation, predominantly rosebay willowherb *Chamerion angustifolium*, dominates the banks and is shading the ditch channel. The ditch is culverted at both ends and holds slow-flowing water, which is approximately 5 cm deep. It is possible that the northern culvert connects the ditch with another, located approximately 120 m to the north.

3.7 P4 is a large SUDS pond located within Site 1. This pond was originally created when the adjacent pathology building was constructed. It is a large waterbody and is heavily vegetated with greater reedmace *Typha latifolia*, frequent marsh marigold *Caltha palustris*, fleabane *Pulicaria dysenterica*, great willowherb *Epilobium hirsuitum* and occasional purple loosestrife *Lythrum salicaria*. Two outfalls present in the north of the pond suggests it is a drainage pond. The banks are steep and vegetated with scrub including willow *Salix sp.* and bramble *Rubus fruticosus agg.*. The water level in the pond is generally shallow, with deeper patches (up to 0.5 m).

Water Vole Presence/Likely Absence

3.8 The results of the water vole presence or likely absence surveys are presented in Table 1 and Table 2 below (refer to Drawings G8166.020/021 for detailed maps). The findings from each latrine raft deployed on P4 are presented in Table 3 and Drawing G8166.003.

Table 2 - Water Vole Survey Results (first survey round)

ID	Water Vole Field Evidence:	Date:	24/06/2021
D2	No evidence of water vole.		
P4	3x latrines (one appears to be in regular use).		

Table 3 - Water Vole Survey Results (second survey round)

ID	Water Vole Field Evidence:	Date:	09/09/2021
D2	Not surveyed		
P4	3x feeding remains (fresh), 1x feeding remains (old), 2x piles droppings, 1x burrow (confirmed water vole), 2x burrow (possible water vole)		

Table 4 - Water Vole Survey Results (third survey round)

ID	Water Vole Field Evidence:	Date:	16/09/2021
P4 - Latrine Raft 1	No evidence of water vole.		
P4 - Latrine Raft 2	No evidence of water vole.		
P4 - Latrine Raft 3	No evidence of water vole.		
P4 - Latrine Raft 4	1x pile droppings (14 individual droppings)		
P4 - Latrine Raft 5	No evidence of water vole.		
P4 - Latrine Raft 6	No evidence of water vole.		
P4 - Latrine Raft 7	No evidence of water vole.		
P4 - Latrine Raft 8	No evidence of water vole.		
P4 - Latrine Raft 9	No evidence of water vole.		
P4 - Latrine Raft 10	1x pile droppings (6 individual droppings)		
P4 - Wooden plank	1x pile droppings (16 individual droppings)		

Relative Population Density (RPD)

3.9 It is not possible to calculate the number of individual water voles from the number of latrine counts; however, the number of latrines indicates a level of water vole activity and density at the site, which can be used to assess potential impacts of the proposed development and to design appropriate avoidance and mitigation (if required).

3.10 The number of latrines present give an indication of the relative water vole population size. The number and location of latrines also identify areas of the site most valuable for water vole. The survey area can then be divided into three categories that support water voles at a “high”, “medium” or “low” density.

3.11 Relative water vole population density is calculated by combining the number latrines and other confirmatory field signs per 100m of bankside habitat during the first and second survey.

3.12 Table 4, below explains the relative population density calculation of water vole taken from The Water Vole Mitigation Handbook 2016 (page 16), with the actual assumed population density based on survey results explained in Table 4.

Table 5 - Relative Population Density (RPD)

First half of Survey season (mid-April - June)	Second half of survey season (July - September)	Relative Population Density (RPD)
10 or more	20 or more	**HIGH**
3 to 9	6 to 19	**MEDIUM**
Less than 2 or none, but with other confirmatory field signs	Less than 5 or none, but with other confirmatory field signs	**LOW**

3.13 Given the nature of P4, it is not possible to assess population density using the conventional method described above. Across the survey visits, three latrines were identified during the spring visit and three piles of droppings during the second survey visit. Droppings were also identified on three of the ten latrine rafts deployed around the pond. This suggests that there is a low to medium population of water voles present within the pond and associated banks.

Summary

3.14 The habitat within P4 is highly suitable for water voles. Positive evidence of water vole was recorded within P4, with a variety of field signs recorded. Water vole presence was also confirmed within the pond in 2020.

3.15 Although D2 provides suitable habitat for water voles, no evidence of their presence was recorded during the 2021 surveys. As evidence was found in June 2020, it is likely water voles are using the wider ditch network rather than this watercourse as a standalone habitat.

3.16 No incidental evidence of otter or mink were recorded in D2 or P4 during the survey

4.0 Photographs

Figure 2: Overview of P4, looking south-west

Figure 3: Water vole droppings within P4

Figure 4: Water vole burrow on east bank of P4

Figure 5: Water vole feeding remains in P4

Figure 6: Water vole droppings

Figure 7: Latrine raft with droppings

Figure 8: Water vole droppings on plank of wood within P4

Figure 9: Example of latrine raft on bankside habitat

5.0 Evaluation

5.1 The survey consisted of two separate site visits on the 24th June and 9th September 2021, to enable adequate coverage of P4 within Site 1. A single visit of D2 adjacent to Site 2 was also undertaken on 24th June 2021.

5.2 The first survey was carried out towards the end of June when water vole activity would be almost at its peak with extensive breeding activity and colony creation. The second survey visit was carried out in early September, towards the end of the season when colony dispersal and contraction occurs.

5.3 No evidence of water vole activity was found in D2. Although D2 provides suitable habitat for water voles and there is potential for water voles to utilise this ditch in future, given the proposed MSCP works will be over 5 m from the banks of D2, no impacts to water voles are anticipated from the development of Site 2.

5.4 Field signs and activity recorded P4 indicates a low to medium density of water voles, with sufficient suitable habitat within the pond for colony expansion and dispersal.

5.5 The habitat within P4, primarily the eastern and western banks, is highly suitable for water voles. However, some areas along the banks were found to be scrubbed over with dense willow sp. *Salix sp.* and bramble *Rubus fruticosus agg.* In addition, the nature of the waterbody meant some field signs were inundated with water. Latrine rafts were deployed following the survey on 9th September to mitigate for these limitations. Rafts were set at 10m intervals within the pond to better inform the overall results. The rafts were inspected and collected on 16th September 2021.

5.6 Water vole activity was confirmed within the pond during both survey visits. The highest concentration of water vole activity across both survey visits was in the eastern half of the pond, and associated bankside habitats. Some of this bankside habitat will be impacted by the proposed AOPMHU development at Site 1.

5.7 Water voles are highly transient and mobile and can move quite easily within suitable habitat within the catchment. Although there is limited connectivity between the pond and the wider ditch network, it is considered that the water vole population within the pond will readily occupy all areas of the catchment at some time, depending on environmental conditions.

5.8 No incidental evidence of otter *Lutra lutra* was identified during the water vole surveys undertaken on site in 2020 or 2021.

6.0 Recommendations

6.1 The survey confirmed water vole presence and activity within P4. The mitigation for the works at Site 1 will be determined to avoid incidental harm to the water vole population (refer to Appendix B). This follows guidance outlined in The Water Vole Mitigation Handbook (2016).

6.2 Whilst the preference to avoid potential impacts to existing water vole populations and loss of habitat is to maintain a minimum buffer of 3-5 m from the toe of the bank of the pond, owing to the size of the proposed AOPMHU and the physical constraints of Site 1 it is not possible to achieve this. As such, there is potential for destruction and disturbance of water voles, and their habitat to occur.

6.3 The indicative development plans (Powell Dobson Architects Drawing - Adult and Older Persons Mental Health Unit Block Plans (July 2021)) show approximately 100m^2 (0.01 ha) of the eastern bank of the pond will be directly impacted by the proposed development. Although it is currently unclear whether this habitat will be permanently or temporarily lost, the proposed works will directly affect suitable and active water vole habitat.

6.4 As the survey identified a low to medium density of water voles within P4, and as the eastern bank provides habitat for water vole burrows, a suitable mitigation strategy and method statement will be required to inform an application for a Site Specific licence from Natural Resources Wales (NRW). The licence application will need to demonstrate a conservation gain, therefore suitable riparian habitat enhancement will need to be demonstrated within the near catchment, prior to the commencement of works, for displacement of water voles from the impacted habitat.

6.5 There are opportunities to achieve conservation net gain within the pond or within the wider hospital campus. The method chosen will depend on the permanence of the impacts to the bankside habitat.

6.6 Provided the planning application is approved, construction of the new Mental Health Unit is due to commence in December 2023. Measures to achieve conservation net gain will therefore need to be established prior to Spring 2023 to enable the habitat to develop and establish over the summer months, prior to works commencing on site.

6.7 There is also scope for habitat enhancement and creation by sympathetic clearance and management of areas of encroaching scrub along the banks of the pond.

6.8 Given that water vole are very dynamic within the riparian catchment, and the site is suitable for this species, it is recommended that a repeat of the survey should be undertaken if, after 12 months from the date of this report (i.e. by April 2023), no works have occurred on site.

References

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.

Government Circular: Biodiversity & Geological Conservation – Statutory Obligations and their impact within the Planning System. ODPM Circular 0/2005, Defra Circular 01/2005 downloadable at http://www.communitied.gov.uk/publications/planningandbuilding/circularbiodiversity[1]

Strachan, R., Moorhouse, T. & Gelling, M. (2011) Water vole conservation handbook (3rd Ed.). Wildlife Conservation Research Unit, Oxford.

The Wildlife & Countryside Act 1981 (As amended)

UK Biodiversity Steering Group (1995) Biodiversity – the UK Steering Group Report. Volume 2: Action Plans. P89 SAP for Pipistrelle. London, HMSO.

APPENDIX A: Habitat Suitability of Ditches (100m Sections)

D2	Description:
Bank Profile:	Steep, vegetated banks.
Bank Substrate:	Soft earth.
Water Depth:	< 0.2 m
Fluctuations:	Possible
Shading:	Some shading from bankside and in-channel vegetation
Bank Vegetation:	Tall ruderal
In-Channel Vegetation:	Parts of channel are dominated by tall ruderal vegetation
Management:	Engineered culvert outfalls at either end of the ditch. No other obvious management activities observed.
Constraints:	N/A
Suitability:	**YES**

P4	Description:
Bank Profile:	Steep, vegetated banks. Pond is approx. 50 m long and 20 m wide.
Bank Substrate:	Soft earth
Water Depth:	Up to 0.5 m
Fluctuations:	Possible
Shading:	Overhanging trees and scrub in places
Bank Vegetation:	Grassland, scrub and tall ruderal
In-Channel Vegetation:	Dominated by greater reedmace
Management:	Engineered culvert outfalls in the north-west and north-east corners of the pond. No other obvious management activities observed.
Constraints:	A thorough search of the southern banks was not possible owing to scrub growth. Inundation of water dissolves latrines.
Suitability:	**YES**

APPENDIX B: Survey Design

Survey Design. (*The Water Vole Mitigation Handbook, Box 1, Page 9*)

1. Type of works: *Very small-scale works affecting up to 15m of watercourse*	
Example project	Construction of an outfall, bridge repair works, or installation of pipes up to 15m long within a narrow field drains (where these do not form part of a larger development)
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas plus 100m upstream and downstream. A comprehensive desk study exercise will not necessary be required.
Additional information (if water voles present)	Micro-mapping of the habitat and burrow locations to allow design to minimise impacts (when relevant). Further data may be needed to ensure that there is sufficient alternative habitat available to displace water voles into. This may be obtained through desktop study or a habitat assessment combined with 'spot checks' for water voles over a wider area (1-2km upstream and downstream of the works.

2. Type of works: *Works temporarily affecting up to 50m of watercourse*	
Example project	Pipeline crossing a watercourse
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas, plus 200m upstream and downstream of the works. A comprehensive desktop study exercise will not necessarily be required.
Additional information (if water voles present)	Micro-mapping of the habitat and burrow locations to allow design to minimise impacts (when relevant). Further data may be needed to ensure that there is sufficient alternative habitat available to displace water voles into. This may be obtained through desktop study or a habitat assessment combined with 'spot checks' for water voles over a wider area (1-2km upstream and downstream of the works.

3. Type of works: *Works temporarily affecting more than 50m of watercourse*	
Example project	Watercourse re-profiling or repair/reinstatement of bank stabilisation structures
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas, plus at least 200m upstream and downstream of the works. For works affecting more than 500m of watercourse, the study area should increase to 500m upstream and downstream of the works. A comprehensive desk study exercise will not necessarily be required, but would be advisable for works affecting ≥ 250m of watercourse.
Additional information (if water voles present)	Desk study – Site and up to 2-5km around it (or a habitat assessment combined with 'spot checks' for water voles) to inform the approach to mitigation and the assessment of fragmentation effects. The study area should be proportionate to the length of habitat affected.

4. Type of works: *Works with permanent impacts affecting 15-50m of watercourse*	
Example project	Bank side revetment works
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas, plus 100-200m upstream and downstream of the works (proportionate to the length of watercourse affected). Desk study – site and up to 2km around it (or a habitat assessment combined with 'spot checks' for water voles).
Additional information (if water voles present)	Sufficient information is likely to have been provided by the 'presence/likely absence' surveys.

5. Type of works: *Works with permanent impacts affecting more that 50m of watercourse OR Works requiring permanent culverting of watercourse*	
Example project	Bank side revetment works OR Highway schemes or some residential/mixed-use developments
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas, plus 200-500m upstream and downstream of the works (proportionate to the likely fragmentation effects). Desk study – site and up to 2-5km around it, or a habitat assessment combined with 'spot checks' for water voles.
Additional information (if water voles present)	The study area for the desk study (or habitat assessment combined with 'spot checks' for water voles) may need to be increased to inform the approach to mitigation.

6. Type of works: *Very large scale works*	
Example project	Coastal re-alignment projects (where there are reasonable grounds to expect the presence of water voles)
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas, plus approximately 1km around it. Desk study – site and up to 10km around it (or a habitat assessment combined with 'spot checks' for water voles.
Additional information (if water voles present)	The study area for the desk study (or habitat assessment combined with 'spot checks' for water voles) may need to be increased to inform the approach to mitigation.

APPENDIX C: Field Sign Surveys - One Survey or Two?

Field sign surveys - one site visit or two?

The Water Vole Mitigation Handbook (Page 15)

The water vole is a mobile species that responds to habitat changes over the course of the breeding season: a single visit can therefore be insufficient to confirm likely absence in many cases. In addition, where water voles are present, survey data based on two visits will allow a more robust assessment of the impacts of the project, particularly where water voles use different parts of a site during different parts of the breeding season. This can also be important in determining the most appropriate approach to mitigation. These guidelines therefore recommend that two field survey visits are routinely undertaken. However, it is recognised that the second visit may not be required in some cases, and it may therefore be possible to make a case for an assessment based on one visit. Examples of scenarios where a single visit (before submitting a planning application) may be sufficient as follows:

1. Water vole presence is confirmed during the first survey visit.

A second visit may not be needed where the assessment of effects on water voles can be made on a precautionary basis (i.e. water voles are present throughout the site at the maximum density that the habitat could support), and the approach to mitigating incidental mortality (displacement, relocation by trapping, off-site translocation, etc.) can be determined from the first visit alone.

The assessment of the quality of the habitat, and therefore the likely maximum density of water voles, will need to consider changes to the habitat in different parts of the breeding season as a result of natural processes (e.g. changes to water level) and management activities. This can be a difficult assessment to make for many sites.

2. Water vole presence is not confirmed during the first survey visit.

A second visit may not be needed where the habitat is of very low suitability for water voles and there is a very low likelihood that water voles are present in the surrounding area - up to 2km from the area of the proposed works, or less where significant barriers to water vole dispersal are present.

The assessment of the suitability of the habitats will need to consider changes to the habitat in different parts of the breeding season as a result of natural processes and management activities. This can be a difficult assessment to make for many sites. It will be difficult to make a robust case for not undertaking a second survey where access to surrounding areas is limited or impossible.

A second visit may also not be needed where the assessment of effects on water voles can be made on a precautionary basis (as per point 1 above)

In all cases, a second visit would be advisable prior to commencing works.

DRAWINGS

G8166.020 - Water Vole Survey Results - Visit 1
G8166.021 - Water Vole Survey Results - Visit 2
G8166.022 - Water Vole Survey Results - Visit 3
Powell Dobson Architects Drawing - Adult and Older Persons Mental Health Unit Block Plans (July 2021)

KEY

Site boundary

Water Features

Swamp

Water Vole Evidence

Feeding remains

Droppings

Latrine

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Site Map

Rev	Description	Drawn	Approved	Date

THE ENVIRONMENT PARTNERSHIP

Genesis Centre, Birchwood Science Park, Warrington WA3 7BH
Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project
Glan Clwyd Hospital, Bodelwydda

Title
Water Vole Survey 2021
Site 1, Visit 1 - 24th June 2021

Drawing Number
G8166.020

Drawn	Checked	Approved	Scale	Date
MK	CW	CC	1:700 @ A3	07/12/2021

KEY

Site boundary

Water Features

Swamp

Water Vole Evidence

Burrow

Burrow (inactive)

Feeding remains

Droppings

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Site Map

Rev	Description	Drawn	Approved	Date

THE ENVIRONMENT PARTNERSHIP

Genesis Centre, Birchwood Science Park, Warrington WA3 7BH
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Project
Glan Clwyd Hospital, Bodelwydda

Title
Water Vole Survey 2021
Site 1, Visit 2 - 09th September 2021

Drawing Number
G8166.021

Drawn	Checked	Approved	Scale	Date
MK	CW	CC	1:700 @ A3	07/12/2021

KEY

Site boundary

Water Features

Swamp

Water Vole Evidence

Plank of wood with droppings

Raft Locations

Raft with droppings

Raft with no evidence

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Site Map

Rev	Description	Drawn	Approved	Date

THE ENVIRONMENT PARTNERSHIP

Genesis Centre, Birchwood Science Park, Warrington WA3 7BH
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Project
Glan Clwyd Hospital, Bodelwydda

Title
Water Vole Survey 2021
Site 1, Visit 3 - 16th September 2021

Drawing Number
G8166.022

Drawn	Checked	Approved	Scale	Date
MK	CW	CC	1:700 @ A3	07/12/2021

I CAN

Law yn llaw at iechyd meddwl

Together for mental health

Adult and Older Persons Mental Health Unit

Block Plans

22nd July 2021

bam

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GIG CYMRU NHS WALES

Bwrdd Iechyd Prifysgol
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University Health Board

Adeiladu GIG i Gymru
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For:

Betsi Cadwaladr University Health Board

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Bwrdd Iechyd Prifysgol Betsi Cadwaladr University Health Board

Date: 22.07.2021

Author: Arwel Hughes

Revision: -

Job No.: 19095

Checked: RD

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Contents

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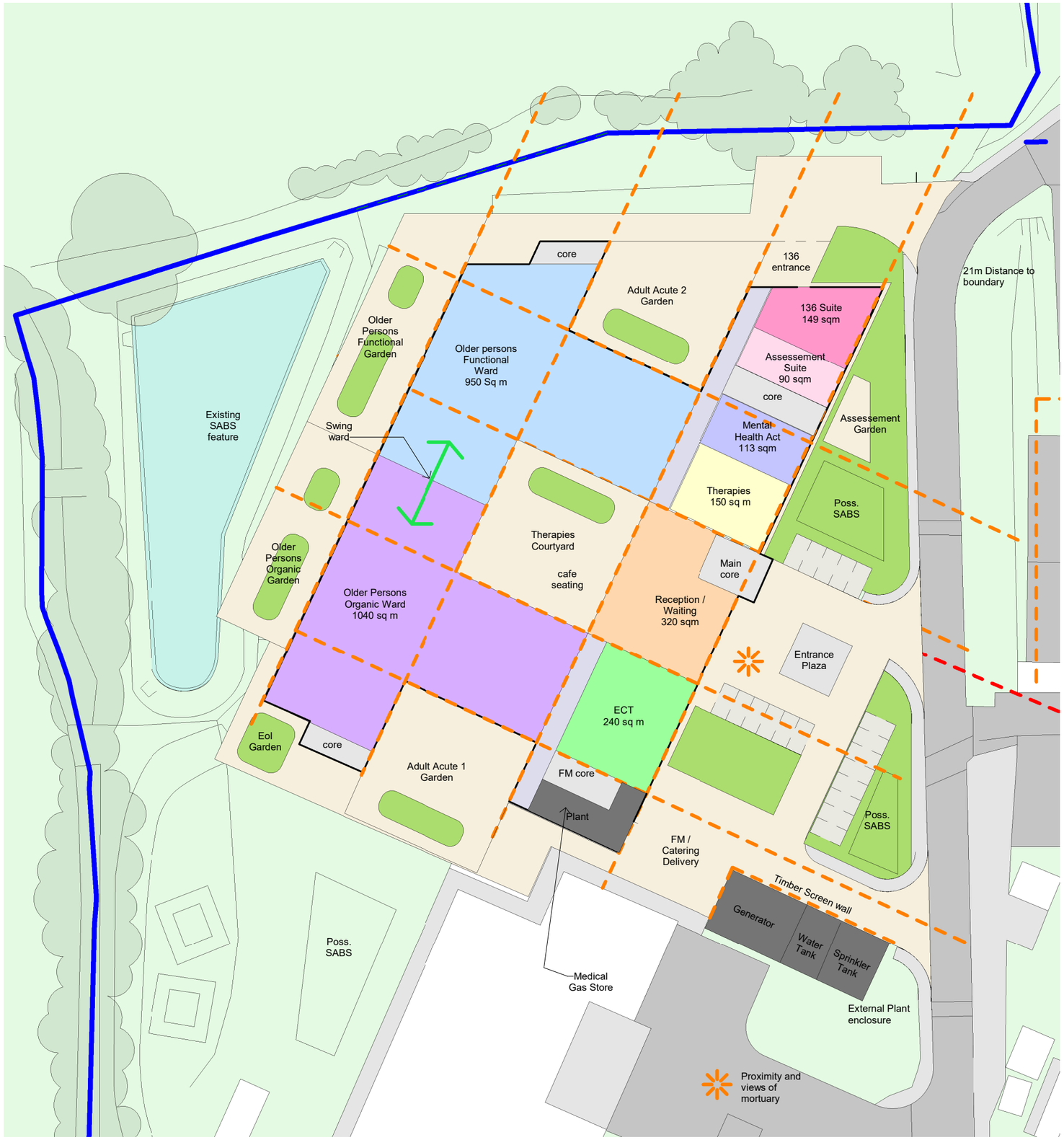
ARCHITECTS

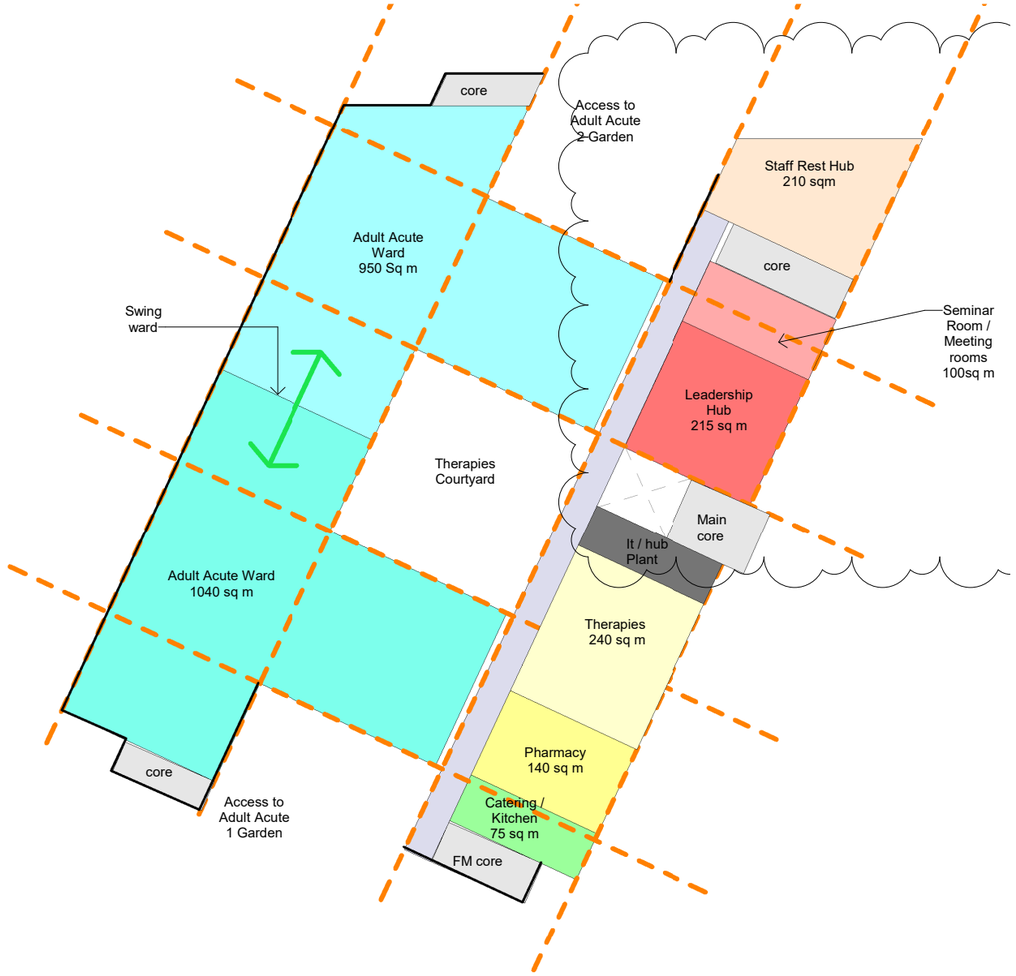
1.0 Preferred Option

1.1 Ground Floor Plan



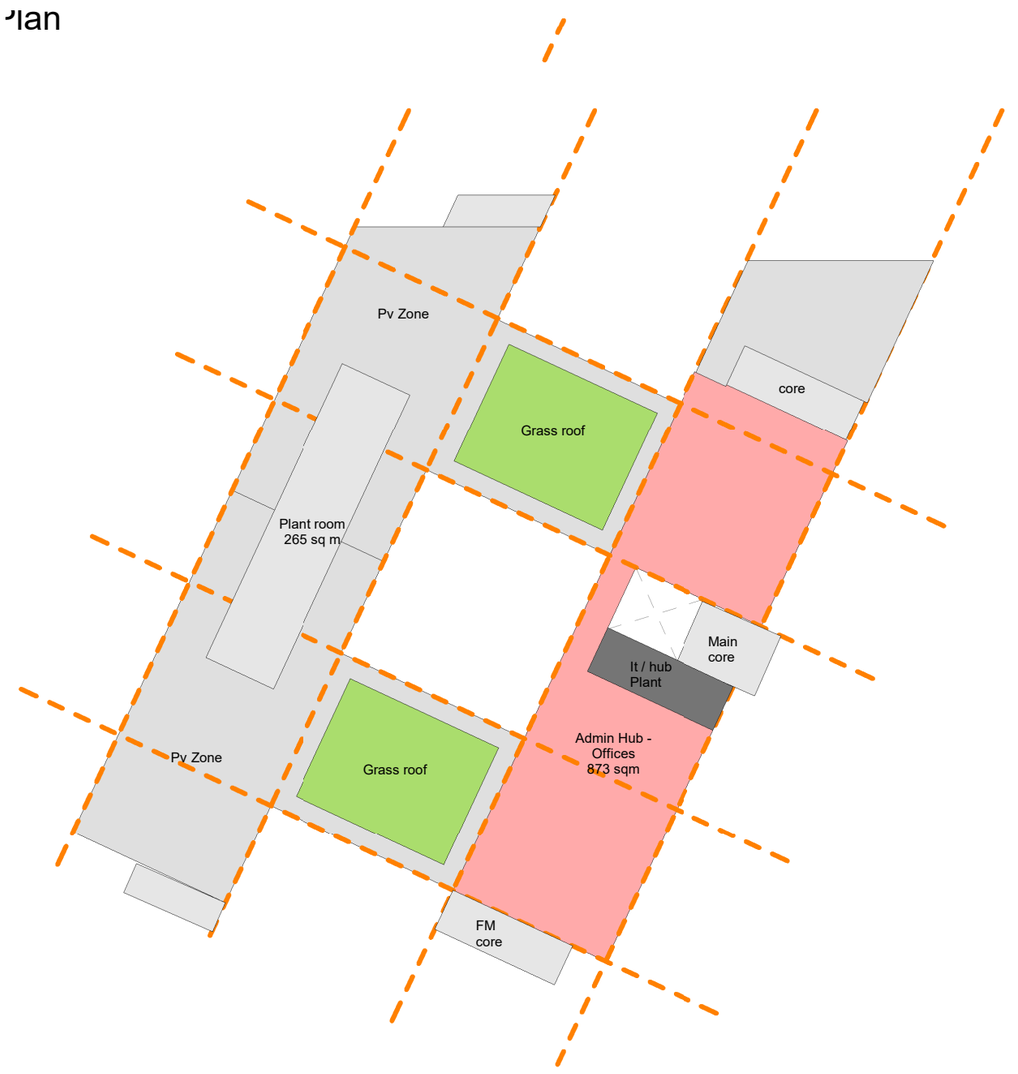
Ground Floor

1.2 First Floor Plan



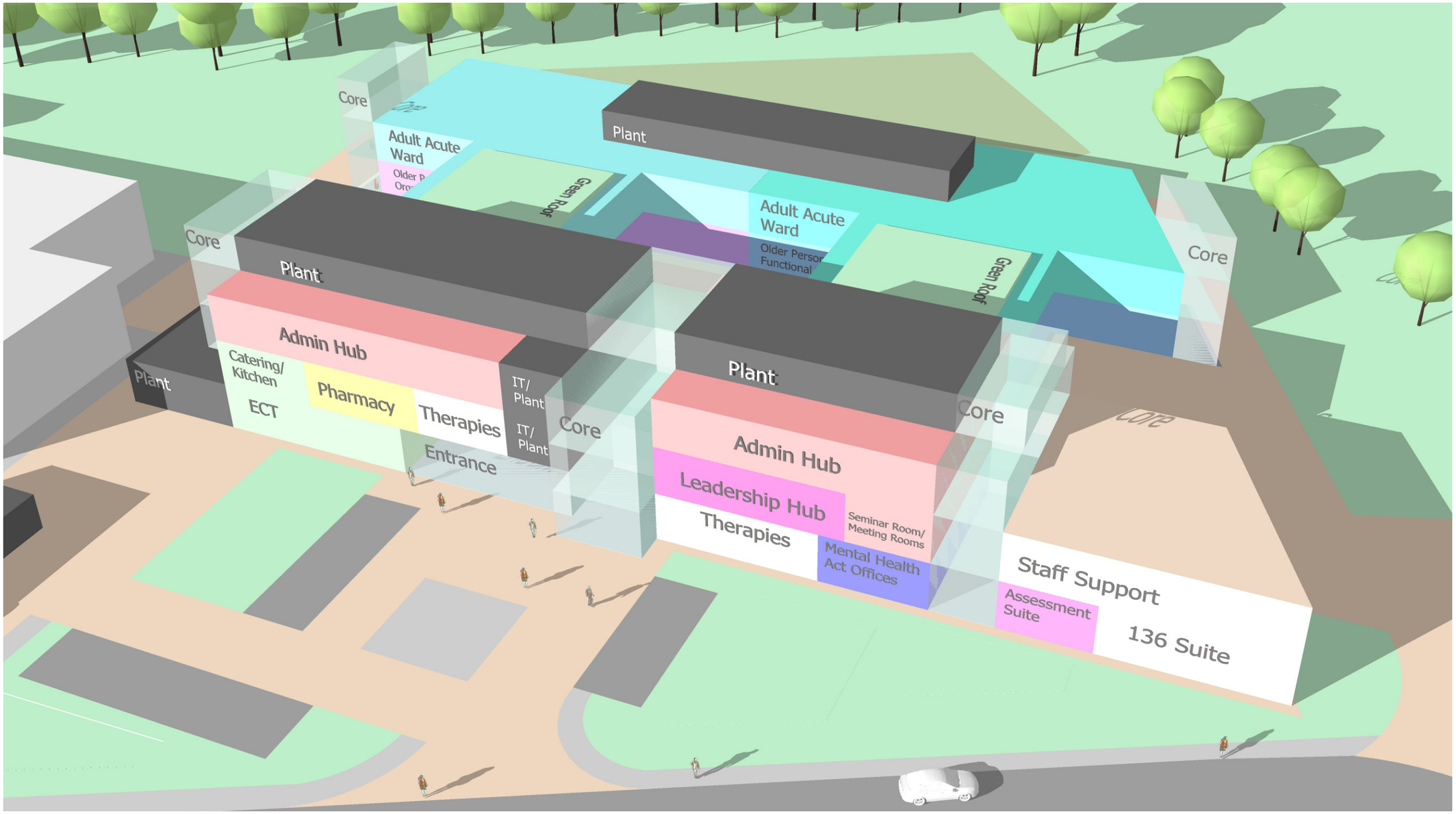
First Floor

1.3 Second Floor Plan



Second Floor

1.4 Massing


Core
Adult Acute Ward
Plant
Green Roof
Core
Plant
Admin Hub
Catering/ Kitchen
Pharmacy
Therapies
IT/ Plant
IT/ Plant
Core
Plant
Entrance
Adult Acute Ward
Older Person Functional
Green Roof
Core
Plant
Core
Admin Hub
Leadership Hub
Seminar Room/ Meeting Rooms
Therapies
Mental Health Act Offices
Staff Support
Assessment Suite
136 Suite

THE ENVIRONMENT PARTNERSHIP

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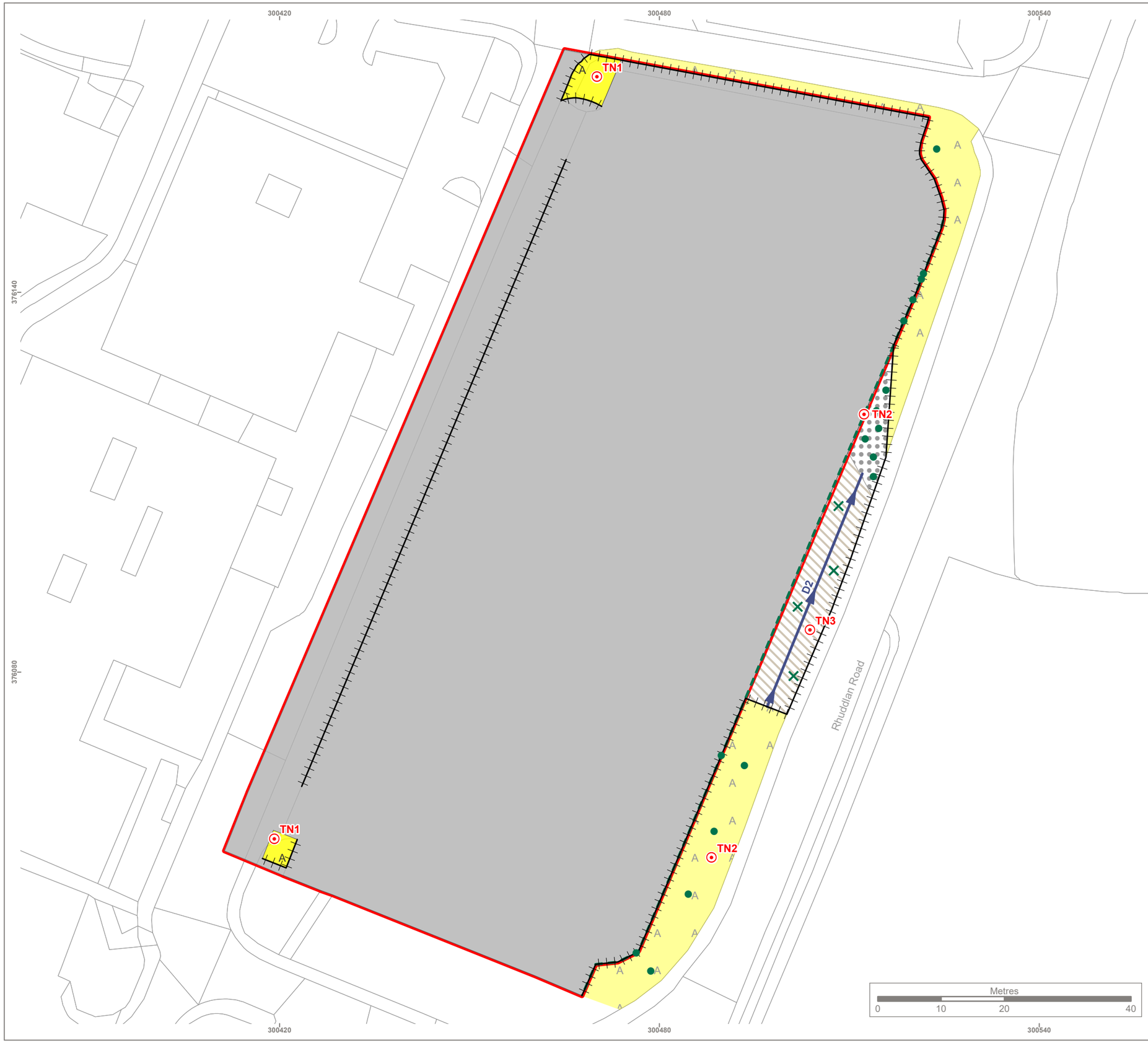
DRAWINGS

Drawing 1 - G8166.031 - Phase 1 Habitat Survey (Site 2)
Drawing 2 - G8166.005C - Pond Location Plan
Drawing 3 - Bourne Parking Drawing E-4201-001 Rev P01 - Site Layout - Grade Level



KEY

- Site boundary
- Target note
- Scattered scrub
- Scattered broad-leaved tree
- Running water
- Species-poor defunct hedge
- Fence
- Tall ruderal
- Amenity grassland
- Bare ground
- Hardstanding

Note:
The locations of habitats and habitat features are indicative.

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Site Map

Rev	Description	Drawn	Approved	Date

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Project
Glan Clwyd Hospital, Bodelwyddan

Title
Phase 1 Habitat Survey
Site 2

Drawing Number
G8166.031

Drawn	Checked	Approved	Scale	Date
SP	CB	CC	1:600 @ A3	01/02/2023

KEY

- Approximate site location
- Approximate site locations - 500m buffer
- Approximate ditch location
- Approximate dry ditch location
- Approximate pond location

Note:
The locations of ponds and ditches are indicative.

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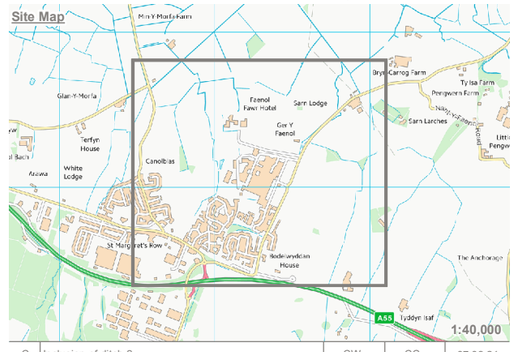
Site Map



Rev	Description	Drawn	Approved	Date
C	Inclusion of ditch 2.	CW	CC	07.09.21
B	Amendments to the RLB and 500m buffer	JK	CC	15.03.21

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Project
Glan Clwyd Hospital, Bodelwydda

Title
Pond and Ditch Location Plan - **Aerial**

Drawing Number
G8166.005C

Drawn	Checked	Approved	Scale	Date
CW	MK	CC	1:5,500 @ A3	07/09/2021

DO NOT SCALE - ORIGINAL DRAWING SIZE A1 734x547mm

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NOTES:
Do not scale from this drawing.
All dimensions to be checked on site by the contractor.
Report all drawing errors, omissions and discrepancies to the Bourne.
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Bourne accepts no liability for any such alterations or additions to the background information or arising out of changes to background information which occur prior to alterations of additions being made.

Glan Clwyd

Reconfigured DDA Parking

Stair 1

Stair 2

4.8m

2.4m Typical

4.8m Typical

6m

8.45m
Clear Ramp
Width

4.8m

6m

4.8m

6m

Bridged Bay

Rhuddlan Rd

Rev No.	Rev mark	Revision Description	Revision Date
P01		Issued for Approval	13.01.23

bourne PARKING

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Client	BAM Construction			
Project	Glan Clwyd Hospital Multi Storey Car Park,			
	SCALE: 1:200			@A1
Date: 12.01.23	Drawn by: MJS	Checked: BB	Approved: SW	
Drawing Title	Site Layout - Grade Level			
Bourne Drawing No	-001			Revision
Drawing Reference	E-4201-0001			P01

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