



THE
ENVIRONMENT
PARTNERSHIP



GLAN CLWYD HOSPITAL BODELWYDDAN ECOLOGICAL ASSESSMENT (SITE 3)

TEP
Genesis Centre
Birchwood Science Park
Warrington
WA3 7BH

Tel: 01925 844004
Email: tep@tep.uk.com
www.tep.uk.com

Offices in Warrington, Market Harborough, Gateshead, London and Cornwall

Document Title	Ecological Assessment (Site 3)
Prepared for	BAM Construction Ltd
Prepared by	TEP - Warrington
Document Ref	8166.004

Author	Cameron Campbell
Date	June 2023
Checked	Mike Walker
Approved	Mike Walker

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CONTENTS	PAGE
Executive Summary	2
1.0 Introduction	4
2.0 Methods	6
3.0 Results	9
4.0 Conclusions.....	20
5.0 Recommendations	25
References	28

TABLES	PAGE
Table 1: Sources and details of desk study information obtained.	6
Table 2: Evaluation criteria for the potential suitability of trees, buildings and habitats for bats (taken from Table 4.1 of the BCT guidance).....	7

FIGURES	PAGE
Figure 1: Site location and local context.	5
Figure 2: B1 (rear) and B8 (front) as viewed within the site	13
Figure 3: B2 (near) and B3 (far) within the fenced off yard on site.....	13
Figure 4: B4, viewed from the south.....	13
Figure 5: B5, viewed from the west	13
Figure 6: B7, looking north	14
Figure 7: B7, viewed from the west	14
Figure 8: Existing hospital buildings to the north of the site	14
Figure 9: Existing hospital buildings to the east of the site, looking north	14
Figure 10: Dead tree with low suitability for roosting bats.....	17

APPENDICES
APPENDIX A: Ecology Desk Study (Confidential)
APPENDIX B: Target Notes Report
APPENDIX C: Great Crested Newt Survey (2020)

DRAWINGS

Drawing 1 - G8166.034 - Phase 1 Habitat Survey (Site 3)

Drawing 2 - G8166.005C - Pond and Ditch Location Plan

Drawing 3 - Powell Dobson Architects Drawing NMC-PDA-ZZ-00-DR-A-20100 Rev P09 -
Ground Floor Plan

Executive Summary

1. TEP was commissioned by BAM Construction Ltd in March 2023 to carry out an ecological assessment of a site within the campus of Glan Clwyd Hospital in Bodelwyddan, Denbighshire ("Site 3"). This assessment is required to inform proposals for the construction of a new Nuclear Medicine Centre.
2. Site 3 comprises an area of hardstanding and amenity grassland, with areas of dense and scattered scrub, tall ruderal, species-poor modified neutral grassland and introduced shrub. A species-poor intact hedgerow with trees, dry ditch and several scattered broad-leaved trees are also present within the site. The proposed development will result in the partial loss of all habitats except the dry ditch, which will instead be partially culverted under the new building.
3. No impacts to any statutory or non-statutory designated sites are anticipated from the proposals.
4. 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).
5. The proposals will lead to the loss of a section of hedgerow priority habitat. Replacement hedgerow planting using native species will be required on site or elsewhere within the hospital campus to mitigate for the loss of this habitat.
6. A dry ditch (D3) is present within the site boundary. The implementation of best practice pollution prevention measures will be required to minimise impacts to this habitat.
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 Precautionary Working Method Statement (PWMS) for common amphibians and hedgehogs will be required to ensure any common amphibians and hedgehogs that may be present are suitably protected during construction.
9. One tree on site was assessed to have low bat roost habitat suitability. This tree will be felled to facilitate construction of the Nuclear Medicine Centre. In line with BCT Guidelines, this tree should be soft-felled under supervision of a licenced bat ecologist. A PWMS will also be required to fell or work on the tree.
10. A sensitive lighting design will be required to ensure there are no adverse impacts on nocturnal species such as bats using the site following completion of the development.
11. A nesting bird check prior to construction works is required if clearance of suitable nesting habitat is undertaken during the nesting bird season (March - August inclusive).

12. Ditch D3 was assessed to be unsuitable for supporting water voles owing to a lack of foraging, commuting and burrowing opportunities. However, water vole are known to be present within the wider catchment, therefore there are opportunities to enhance the retained section of ditch for this species.
13. Further recommendations for biodiversity enhancement in line with local planning policy are outlined in Chapter 5.

1.0 Introduction

- 1.1 TEP was commissioned by BAM Construction Ltd in March 2023 to carry out an ecological assessment of a parcel of land within the campus of Glan Clwyd Hospital in Bodelwyddan, Denbighshire (hereafter referred to as 'the site' or 'Site 3').
- 1.2 This ecological assessment has been requested to inform a planning application for the construction of a new Nuclear Medicine Facility (Powell Dobson Architects Ground Floor Plan Drawing NMC-PDA-ZZ-00-DR-A-20100 Rev P09).
- 1.3 TEP has previously prepared ecological assessments for two other sites within the wider hospital campus, for the construction of a new Adult and Older Persons Mental Health Unit (TEP Report Ref: 8166.007v2, February 2023) ('Site 1') and multi-storey car park (TEP Report Ref: 8166.003v4, February 2023) ('Site 2'). The planning application for these developments is currently in determination.
- 1.4 This report has the following objectives:
 - To describe the existing vegetation and give an overview of the habitats present on site 3;
 - 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

- 1.5 Site 3 (central grid reference SJ 00251 75935) is approximately 0.3 ha in size and is located near the centre of the Glan Clwyd Hospital campus. The site is bounded to the north, east and west by existing hospital buildings and access roads, and to the south by a hardstanding car park.
- 1.6 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.
- 1.7 The extent of the area covered by the ecological assessment is represented by the red line boundary in the site location plan (Figure 1).

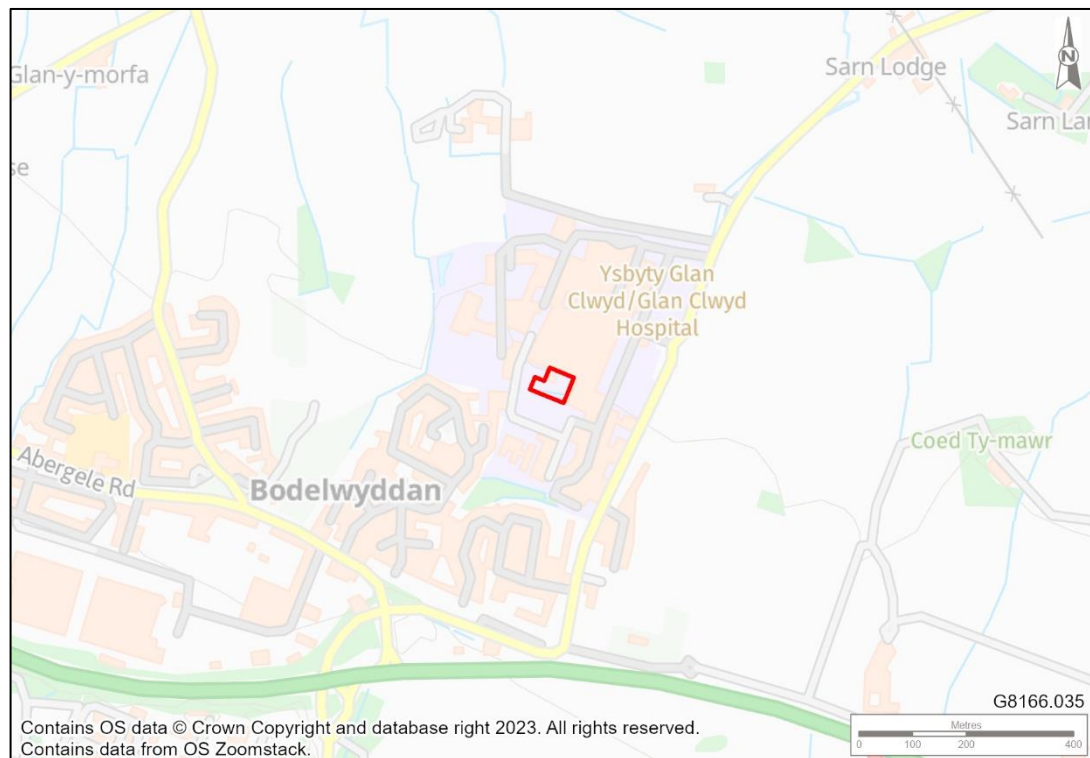


Figure 1: Site location and local context.

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 3 was undertaken by TEP ecologist Cameron Campbell (FISC Level 3) on 22nd May 2023. 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).

Preliminary Roost Assessment for Bats

- 2.4 A ground-level inspection of all trees within Site 3 was undertaken to assess their potential to support roosting bats. The inspection was completed concurrently with the habitat survey. This was undertaken in line with Bat Conservation Trust (BCT) guidance (Collins, 2016).
- 2.5 A preliminary roost assessment (PRA) of all built structures on and immediately adjacent to the site was also undertaken to assess their suitability to support roosting bats. The survey included a detailed examination of the exterior of built structures from ground-level for any evidence of use by bats and any potential roost features (PRFs), which may provide suitable roosting habitat.

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

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

Table 2: Evaluation criteria for the potential suitability of trees, buildings 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 structure or tree with one or more potential roost features that could be used by individual bats opportunistically, but which do not offer sufficient space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats.	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 structure or 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).
High	A structure or tree possessing one or more potential roost features that are suitable for use by larger numbers of bats on a regular basis 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

2.8 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 inspection was undertaken in spring a precautionary approach was taken with the roost categorisation, based on the age and size of the tree and features visible, in order to overcome this limitation.

2.9 The assessment of the suitability of buildings immediately adjacent to the site for supporting roosting bats was based on the presence of potential roost features on the aspect of the building facing into the site only. As these buildings are not due to be directly impacted by the proposals, this is not considered to be a significant limitation.

- 2.10 No internal access to the buildings was permitted. However, this is not considered a significant limitation as, given the nature of the buildings present on site, it was possible to categorise the bat roost habitat suitability of the buildings from the exterior only.

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 found 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 mosaic habitat, as identified on Natural Resources Wales LANDMAP.
- 3.22 The habitats present within Site 3 are described below and mapped in TEP Drawing G8166.034. More detail is provided in the Target Notes at Appendix B.

Trees and Scrub

Scattered broad-leaved trees

- 3.23 In the south of the site there is a line of five semi-mature hybrid black poplar *Populus x canadensis* trees (**TN2**). The tree in the centre of the row is dead. Several tree stumps are present to the east of the row of trees, indicating more trees were previously present in this area.
- 3.24 Several semi-mature ash *Fraxinus excelsior* trees are present on the bank of a dry ditch, near the western boundary of the site (**TN6**).
- 3.25 Two young trees, comprising alder *Alnus glutinosa* and an ornamental variety, are present in the far west of the site (**TN5**).
- 3.26 A single, young maple *Acer sp.* is located near the north-west corner of the site, adjacent to an existing building.

Dense scrub

- 3.27 On the northern bank of a dry ditch in the centre of the site is an area of dense scrub, comprising abundant wych elm *Ulmus glabra* with occasional rose *Rosa sp.*, willow *Salix sp.* and cherry *Prunus sp.*, and rare gorse *Ulex europaeus* (TN1). The ground flora comprises frequent ivy *Hedera helix*, with occasional bristly ox-tongue *Helminthotheca echioides*, and rare spear thistle *Cirsium vulgare*.

Scattered scrub

- 3.28 Scattered bramble *Rubus fruticosus* agg. scrub is present along the length of the southern bank of the ditch (TN1). At the western end of the ditch there is a single stand of elder *Sambucus nigra*.
- 3.29 To the north of the ditch several scattered wych elm and blackthorn *Prunus spinosa* individuals are present (TN3).

Grassland

Species-poor modified neutral grassland

- 3.30 In the west of the site around three parking bays there is a small area of species-poor modified neutral grassland¹, which is likely to have formed from an area of unmanaged amenity grassland. Red fescue *Festuca rubra* is abundant, with frequent meadow grass *Poa sp.* (TN5). White clover *Trifolium repens*, ribwort plantain *Plantago lanceolata* and daisy *Bellis perennis* are frequent, with occasional black medick *Medicago lupulina* and creeping buttercup *Ranunculus repens*.
- 3.31 Small areas of modified neutral grassland comprising a similar species mix are also present in the north and east of the site.
- 3.32 Within a fenced off compound in the centre of the site, there is a small area of unmanaged species-poor modified neutral grassland adjacent. Cock's foot *Dactylis glomerata* is abundant, with frequent creeping thistle and occasional creeping cinquefoil, nettle, ivy and cleavers (TN3). Building materials are being stored on and adjacent to this grassland.

Amenity grassland

- 3.33 The south of the site comprises a large triangular area of amenity grassland (TN2). The grassland is mown short, and a well-used path has been worn diagonally through the grassland. Perennial rye-grass *Lolium perenne*, smooth meadow grass *Poa pratensis* and cock's foot are frequent, along with daisy and creeping buttercup. Black medick, white clover and broad-leaved dock *Rumex obtusifolius* are also occasionally present.

¹ The neutral grassland categories detailed within the Phase 1 Habitat Survey Handbook are concentrated on grassland associated with rural situations (pastures and meadows), as such it was agreed with JNCC in 2005 (P. Gateley, pers. comm.) that neutral grassland habitats that don't easily fit within these categories, usually within urban or industrial areas, can be referred to as modified neutral grassland –

'Modified neutral grassland is not derived from agricultural grassland and the terms semi-improved and improved do not apply. Some modified neutral grassland may be species-rich but many swards are dense, coarse and species-poor. Modified neutral grassland naturally regenerates on disturbed ground and is unmanaged. It most commonly occurs in urban areas and on post-industrial land'.

- 3.34 In the north and east of the site, adjacent to existing hospital buildings, there are narrow strips of amenity grassland comprising abundant red fescue and white clover, with occasional daisy, cock's foot and black medick, amongst other species (TN4).

Tall Herb

Tall Ruderal

- 3.35 Tall ruderal vegetation is present along the southern bank of the dry ditch in the south of the site. Rosebay willowherb *Chamaenerion angustifolium* is abundant, with frequent cleavers *Galium aparine* and creeping thistle *Cirsium arvense* and occasional broad-leaved dock, ivy and nettle *Urtica dioica* (TN1).

Running and Standing Water

Dry Ditch

- 3.36 A dry ditch with steep banks intersects the centre of the site. The channel was heavily vegetated at the time of survey, comprising abundant rosebay willowherb, with frequent watercress *Nasturtium officinale* and occasional water mint *Mentha aquatica* and cock's foot (TN1).

Hedgerow

Species-poor intact hedgerow with trees

- 3.37 An outgrown hedgerow dominated by wych elm (TN6) extends through the centre of the site. The hedge appears to have been formed from young planted wych elm trees which has now become outgrown. Blackthorn, rose and willow species are also occasionally present within the hedgerow. The ground flora predominantly comprises ivy, with occasional spear thistle and broad-leaved dock.

Other Habitats

Introduced shrub

- 3.38 In the west of the site adjacent to car park bays there is an area of introduced shrub comprising a variety of ornamental species including snowberry *Symphoricarpos albus*, honeysuckle *Lonicera sp.*, spindle *Euonymus sp.* and viburnum *Viburnum sp.* (TN5).

- 3.39 In the south-east of the site adjacent to an existing hospital building there is a narrow strip of recently planted Wilson's honeysuckle *Lonicera nitida*.

Hardstanding with ephemeral/short perennial vegetation

- 3.40 In the centre of the site there is a large, fenced off yard. The habitats within this area predominantly comprise hardstanding. Ephemeral/short perennial vegetation and scattered scrub and introduced shrub species are present around the edges along the fenceline, including buddleia *Buddleja davidii*, bristly ox-tongue, black medick, scarlet pimpernel *Lysimachia arvensis*, broad-leaved dock and willow.

Buildings

- 3.41 Several built structures are located within the fenced-off yard in the centre of the site (Figures 2 - 7). The largest of these buildings is a single-storey modular building with a pitched roof made from corrugated metal (B1). A small flat-roofed extension is located on the east side of the building and a metal walkway is present along the west.
- 3.42 Three of the buildings within the yard comprise single-storey cabins with flat roofs. One of these houses a scanning facility (B7), one houses an office (B6), whilst the other comprises a temporary toilet block (B8). The remainder of the structures on site are metal cabins which are used for storage (B2, B3, B4, B5).
- 3.43 The site is located immediately adjacent to existing hospital buildings. Along the northern edge of the site the hospital buildings are between one and two storeys high, with concrete cladding running along the top of the ground floor windows. A single-storey modern extension is present at the eastern end of the building (Figure 8). The buildings bordering the eastern site boundary are single storey with a flat roof and panelled walls, with the exception of the central section which is a two-storey brick structure with curved metal roof (Figures 9).



Figure 2: B1 (rear) and B8 (front) as viewed within the site



Figure 3: B2 (near) and B3 (far) within the fenced off yard on site



Figure 4: B4, viewed from the south



Figure 5: B5, viewed from the west



Figure 6: B7, looking north



Figure 7: B7, viewed from the west



Figure 8: Existing hospital buildings to the north of the site



Figure 9: Existing hospital buildings to the east of the site, looking north

Protected and Non-native Invasive Plant Species

- 3.44 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.
- 3.45 The invasive plant species montbretia *Crocasmia 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.
- 3.46 No Schedule 8² protected plant species or Schedule 9³ or IAS⁴ invasive non-native plant species were identified on site at the time of survey.

Connectivity with the Wider Landscape

- 3.47 The site has limited connectivity with habitats to the north, south and east due to the presence of existing hospital and residential development. There is some, albeit limited, connectivity with habitats to the west, however, beyond the internal hospital access road.

² Species listed on Schedule 8 of the Wildlife Countryside Act 1981, as amended.

³ Species listed on Schedule 9 of the Wildlife Countryside Act 1981, as amended.

⁴ Species listed on Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019.

Fauna

- 3.48 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;
- Birds;
- Invertebrates;
- Water vole;
- Reptiles; and
- Hedgehog.

- 3.49 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.

Amphibians

- 3.50 Records of great crested newt *Triturus cristatus* (EPS⁵, WCA5⁶, S7⁷, LBAP⁸) 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 helvetica*.
- 3.51 There are four waterbodies within the wider Glan Clwyd Hospital campus and two waterbodies within 500 m of the campus (TEP Drawing G8166.005C). During the 2023 habitat suitability index (HSI) assessment, the ponds within the campus (P1 - P4) ranged from below average to excellent suitability for supporting breeding great crested newts. The two off-site ponds were assessed to have below average to good suitability for supporting breeding great crested newts. One pond previously recorded as dry (P1) was found to be holding water during the 2023 HSI survey.
- 3.52 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). Updated great crested newt surveys are being undertaken in 2023.
- 3.53 Full results of the 2020 great crested newt habitat suitability index assessment, eDNA and traditional surveys are presented in Appendix C.

⁵ Species listed under Schedule 2 of The Conservation of Habitats and Species Regulations 2017.

⁶ Species listed under Schedule 5 of the Wildlife and Countryside Act 1981, as amended.

⁷ Species listed under Section 7 of the Environment (Wales) Act 2016.

⁸ Species listed under Denbighshire Local Biodiversity Action Plan (as identified by COFNOD)

- 3.54 The species-poor intact hedgerow and trees, dense scrub, tall ruderal and outgrown species-poor modified neutral grassland habitats on site provides suitable terrestrial habitat for sheltering, hibernating, foraging and commuting amphibians, including great crested newt. There is also potential for amphibians to hibernate under the cabins within the fenced-off yard on site.
- 3.55 There is 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 car parks.

Bats

- 3.56 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);
 - Myotis bat *Myotis sp.* (EPS; WCA5);
 - Noctule *Nyctalus noctula* (EPS, WCA5, S7, LBAP); and
 - Whiskered/Brandt's bat *Myotis mystacinus* (EPS, WCA5).
- 3.57 The built structures on site are all unsuitable for supporting roosting bats. The metal portacabins within the fenced-off compound (B2, B3, B4, B5) do not offer any potential roost features. The structures housing the site office (B6) and the screening cabin (B7) are well-sealed with no potential access or egress points for bats.
- 3.58 The toilet block cabin (B8) on site has a small opening on the western façade where a small vent was located. However owing to the nature of the structure (metal with flat roof), it is considered highly unlikely to offer any suitable roosting opportunities for bats.
- 3.59 The large modular building (B1) on site is a relatively modern construction and is well-sealed with clad walls and pitched, corrugated roof. There is a small, exposed area on the south side of the building where pipes are entering the roof space, and a round opening is present in the wall of the small extension on the east side. However, given the construction of the building, it is considered unlikely that bats would use these features for roosting. As such this building has also been assessed as having Negligible suitability for roosting bats.
- 3.60 The existing hospital buildings immediately adjacent to the site are of relatively new construction and are well sealed, with no obvious roost features present on the aspects facing into the site. As such these buildings have been assessed as having Negligible suitability for roosting bats.
- 3.61 The dead tree in the centre of the row of trees in the south of the site contains lifted bark and small cracks up the main stem, which may offer sheltering opportunities for individual bats (Figure 10). As such, this tree has been assessed to have Low suitability for roosting bats.



Figure 10: Dead tree with low suitability for roosting bats

- 3.62 The remaining hybrid black-poplar trees within the row of trees do not contain suitable roost features for bats. All other trees within the site are considered too young to provide potential roost features for bats. As such, these trees are assessed to have negligible bat roost habitat suitability.
- 3.63 The site offers limited opportunities for foraging and commuting bats. This is predominantly confined to the habitats along the dry ditch, namely the species-poor intact hedgerow with trees, dense scrub and tall ruderal. Furthermore, given the location of the site within the centre of the hospital campus these habitats are likely to be impacted by light spill. Therefore the site is assessed to have negligible suitability for supporting foraging and commuting bats.

Birds

- 3.64 Numerous bird records have been reported within 2 km of the site, including:
- Barn owl *Tyto alba* (WCA1⁹, LBAP)
 - Black-headed gull *Chroicocephalus ridibundus* (S7, BRd¹⁰)
 - Bullfinch *Pyrrhula pyrrhula* (S7, BAm¹¹, LBAP);
 - Common gull *Larus canus* (BAm);
 - Dunnock *Prunella modularis* (S7, BAm);
 - House sparrow *Passer domesticus* (S7, BAm);
 - Linnet *Linaria cannabina* (S7, BRd, LBAP); and

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)

- Starling *Sturnus vulgaris* (S7, BRd).

- 3.65 Herring gull *Larus argentatus* (S7, BRd) have previously been recorded within the hospital campus.
- 3.66 The species-poor intact hedgerow with trees, scattered broad-leaved trees and areas of dense scrub habitat on site provides suitable opportunities for nesting birds. The buildings on site also offer suitable nesting habitat for birds, and a blue tit *Cyanistes caeruleus* carrying food was observed entering one of the structures on site (B8), indicating it was nesting within this structure at the time of survey. An old house martin *Delichon urbicum* nest was also observed under the eaves of the two-storey section of the building located immediately to the east of the site.
- 3.67 The habitats on site are unsuitable for supporting ground-nesting bird species. The site is additionally subject to high levels of anthropogenic disturbance which would likely deter ground-nesting species from nesting.

Invertebrates

- 3.68 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).
- 3.69 The species-poor intact hedgerow with trees, scattered broad-leaved trees, dense scrub, tall ruderal, species-poor modified neutral grassland, amenity grassland and introduced shrub habitats on site provide breeding, foraging and sheltering opportunities for invertebrates.

Water vole

- 3.70 Water vole *Arvicola amphibius* (WCA5, S7, LBAP) has been recorded within 2 km of the site. The closest record is approximately 1.1 km to the north-west. A historic record of water vole was recorded on D3 within the site during surveys undertaken by AEDC Ltd in 2013 during vegetation clearance works for an adjacent development (AEDC Ltd Report Ref: 0696-GCH/AEDC/QU-09).
- 3.71 Ditch D3 within the site is dry and heavily vegetated with tall ruderal vegetation, with occasional water mint and watercress. The ditch is also likely to be subject to some shading from the hedgerow and trees along the northern bank at certain times of the day. As such, there are limited foraging opportunities for water vole. The banks of the ditch are steep and vertical in places and vegetated with tall ruderal and scrub species, meaning they are sub-optimal for supporting water vole burrows. The absence of water in the ditch also means there are limited commuting opportunities. As such, the ditch is considered unsuitable for supporting water voles.
- 3.72 Water vole surveys of D3 were initially undertaken by TEP in 2020. At the time of survey the ditch was dry and no evidence of water voles was found within the ditch. Water vole presence was confirmed in P4, approximately 250 m to the north-west of the site, during surveys undertaken in 2021, confirming the presence of this species in the wider catchment. Updated water vole surveys are being undertaken in 2023.

Hedgehog

- 3.73 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.
- 3.74 The species-poor intact hedgerow with trees, dense scrub, species-poor modified neutral grassland and amenity grassland habitats on and adjacent to the site provides potential foraging and sheltering opportunities for hedgehog and may also offer limited dispersal opportunities to the south and west.

4.0 Conclusions

Site Proposals

- 4.1 This section will conclude the potential impacts on the ecological receptors of the development proposed at Site 3. The proposals are for the construction of a new single-storey building housing a Nuclear Medicine Facility (Powell Dobson Architects Ground Floor Plan Drawing NMC-PDA-ZZ-00-DR-A-20100 Rev P09).

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 or adjacent to the site for the qualifying bird species associated with these designations, 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 proposals and these sites, as well as the nature of the proposals and lack of suitable habitat on and adjacent to the 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 3 is identified on Natural Resources Wales LANDMAP as falling within an area of mosaic habitat. This habitat does not qualify as S7 priority habitat. However, the species-poor intact hedgerow with trees that crosses the centre of the site does qualify as a S7 habitat of principal importance. As this hedgerow will be removed to facilitate the development, there will be implications for the proposals with regard to priority habitats.
- 4.16 The site predominantly comprises areas of hardstanding and amenity grassland, with smaller areas of dense scrub, tall ruderal, species-poor modified neutral grassland habitat and introduced shrub. A dry ditch and species-poor intact hedgerow crosses through the centre of the site. In addition, several young to semi-mature broad-leaved trees are scattered throughout the site and a small number of built structures are also present.
- 4.17 The indicative development proposals indicate that the development will lead to the permanent loss of large areas of amenity grassland, dense scrub, tall ruderal and species-poor modified neutral grassland habitats on site. The species-poor intact hedgerow with trees will also be partially removed to facilitate the new building. The hybrid black poplar trees in the south of the site will also be felled and with the exception of B8, the buildings and built structures in the centre of the site will be removed or demolished. The dry ditch will be partially culverted under the new building.

- 4.18 No post-development landscaping proposals were available at the time of writing. However, replacement hedgerow planting and enhancement of retained habitats in the south-west and to the east of the site, or elsewhere within the 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 non-native plant species were identified on site. Therefore, there are no implications for the proposals with regard to protected or invasive non-native plant species.

Connectivity with the Wider Landscape

- 4.20 Connectivity with habitats to the west of the site will be maintained as a result of the retention of these habitats within the site.

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, bats, birds, invertebrates, water vole 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 within the site suitable for supporting breeding great crested newts and there is limited terrestrial connectivity between the site and confirmed great crested newt breeding ponds, it is considered highly unlikely that great crested newts are present on site. The nearest confirmed breeding pond is located approximately 210 m to the north-west of the site, beyond existing hospital development and access roads. Great crested newt are therefore highlight unlikely to range into the site. Therefore, no implications with regard to great crested newts are anticipated from the proposed development.

- 4.25 The terrestrial habitats on site, namely the areas of dense scrub, species-poor intact hedgerow with trees, species-poor modified neutral grassland and tall ruderal are suitable for supporting common amphibian species such as common toad. The dry ditch on site may also support common amphibians at times when it is holding water. Given the small area of suitable habitat present on site, and the location of the site within the centre of the hospital grounds, the risk of encountering common amphibians is considered to be low. However, as habitats suitable for supporting common amphibians will be directly impacted by the proposals, there may be implications for the proposed development with regard to this species group.

Bats

- 4.26 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.
- 4.27 No impacts to roosting bats are anticipated to arise from the demolition or removal of the buildings on site, owing to a lack of suitable roost features in these structures. Additionally, the facades of the buildings immediately adjacent to the site offer no potential roost features for bats, therefore no impacts on bat flight lines are anticipated from the proposals.
- 4.28 One tree in the south of the site was assessed to have Low suitability for supporting roosting bats. As this tree will be felled to facilitate construction of the Nuclear Medicine Centre, there will be implications for the proposals with regard to roosting bats.
- 4.29 The species-poor intact hedgerow with trees, dry ditch and bankside habitats comprising dense scrub and tall ruderal vegetation, provide suitable limited foraging and commuting habitat for bats. However, given the small area of suitable foraging and commuting habitat on site, and as they will be subject to light spill from the adjacent hospital buildings, these habitats will provide limited foraging and commuting opportunities. There is also an abundance of suitable foraging and commuting habitat to the north and west of the hospital campus. Impacts on foraging and commuting bats are therefore anticipated to be negligible.

Birds

- 4.30 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.
- 4.31 The species-poor intact hedgerow with trees, scattered broad-leaved trees, dense scrub habitat and buildings on site provide suitable nesting opportunities for birds. These habitats are all due to be partially lost under current proposals. Therefore there will be implications for the proposals with regard to nesting birds.

Invertebrates

- 4.32 The species-poor intact hedgerow with trees, scattered broad-leaved trees, dense scrub, tall ruderal, modified neutral grassland, amenity grassland and introduced shrub provide breeding, foraging and sheltering opportunities for invertebrates of local provenance. Given the small area of suitable habitat to be lost and the abundance of suitable habitat in the wider area, including the retained habitats in the west of the site, this loss is not considered to be significant. Therefore, there are no implications with regard to invertebrates from the proposed development.
- 4.33 There are opportunities to provide additional foraging resources for invertebrates through landscape planting.

Water vole

- 4.34 Water voles are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are listed as species of principal importance under Section 7 of the Environment (Wales) Act 2016.
- 4.35 Although water vole were historically recorded on D3 in 2013, it is now considered unsuitable for supporting water voles, with limited foraging, commuting and burrowing opportunities. No evidence of water vole activity was found within D3 during water vole surveys undertaken by TEP in 2020.
- 4.36 The proposals indicate that a section of this ditch will be culverted under the new Nuclear Medicine Centre building. As water voles are highly unlikely to be present within this ditch, no implications are anticipated from the proposals with regard to water vole. However, as water vole are known to be present within the wider catchment, there are opportunities to enhance the retained section of ditch for this species.

Hedgehog

- 4.37 Hedgehog are a species of principal importance under Section 7 of the Environment (Wales) Act 2016.
- 4.38 The species-poor intact hedgerow with trees, dense scrub, species-poor modified neutral grassland and amenity grassland habitats on and adjacent to the site offers suitable foraging and sheltering opportunities for hedgehog. These habitats will be partially lost to facilitate the proposed development, with small areas of amenity grassland, hedgerow and dense scrub habitat being retained. Given the abundance of alternative foraging habitat for hedgehog in the wider area, this loss is not considered to be significant. However, there is potential for injury to occur to individual hedgehogs that may be present within the site. Therefore, there will be implications for the proposals with regard to hedgehog.

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 each 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 The proposals will lead to the loss of a section of hedgerow priority habitat. Replacement hedgerow planting should be undertaken within the site or elsewhere within the hospital campus to mitigate for the loss of this habitat. Native species should be used in any replacement hedgerow planting and the length of the replacement planting should equal or exceed the length of hedgerow being lost.
- 5.5 Best practice pollution prevention measures should be implemented to ensure any indirect impacts on the ditch habitat on site are avoided.
- 5.6 The trees and areas of dense scrub that are to be lost to facilitate construction of the Nuclear Medicine Facility 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 wider site or elsewhere within the hospital campus. These measures would also enable the requirements of Policy RD1 of the Denbighshire County Council Local Development Plan to be met.

Fauna

Amphibians

- 5.7 A Precautionary Working Method Statement (PWMS) for common amphibians will be required to ensure that killing or injury of any common amphibians that may be present within the site, such as common toad, are avoided during vegetation clearance works. The RAMMS will need to include methods such as staged strimming, hand searching and removal to a safe location of any amphibians found.

Bats

- 5.8 Tree T2 on site is assessed to have Low suitability for roosting bats. In line with BCT guidelines, trees with low bat roost habitat suitability do not require further nocturnal survey but these trees should instead be soft-felled under supervision of a licenced bat ecologist. A PWMS will also be required to fell or work on the tree, which will include a requirement for each potential roost feature to be inspected by the licenced bat ecologist immediately prior to felling.
- 5.9 New lighting on the Nuclear Medicine Centre building 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 and crepuscular species, primarily bats.

Birds

- 5.10 Any vegetation clearance undertaken during the nesting bird season (March to August inclusive) 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.
- 5.11 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/or the installation of nest boxes on retained trees or the new building.

Hedgehog

- 5.12 A hedgehog PWMS will be required to ensure that killing or injury of hedgehog that may be present is avoided during site clearance. This RAMMS can be combined with the amphibian RAMMS and will include methods to prevent entrapment of hedgehogs, including closure of excavations overnight and providing an escape route, as well as safe relocation of any hedgehogs found.
- 5.13 Upon completion of the development, it is recommended that approximately 13 cm diameter holes are cut into the bottom of fences, where applicable, to allow hedgehogs and other small mammals to pass freely through the completed development. Hedgehogs need easy and safe access over a large area, but fences, walls and other barriers reduce the habitat available to them and force them into dangerous situations such as crossing roads. Linking open spaces with access gaps provides valuable habitat links for hedgehogs.

Biodiversity Enhancement

- 5.14 Under the Planning Policy Wales Edition 11 (2021) and in line with Welsh Government guidance on securing biodiversity enhancements¹², developments should aim to minimise impacts on biodiversity and provide net benefit for biodiversity.
- 5.15 New landscape planting could be focussed within retained areas of amenity grassland or along the banks of the retained section of ditch in the west of the site. 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.
- 5.16 Management of the retained section of D3, including rotational strimming of the bankside habitats (one bank per year) and strimming of the in-channel vegetation during the winter months (November to February inclusive) to 15cm height, would help to prevent shading of the ditch and encourage the growth of native marginal and aquatic vegetation favoured by water vole.
- 5.17 Bat and bird boxes could be incorporated onto the new building 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 facing for birds and south-west for bats), with suitable lighting levels and close to vegetation.

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

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APPENDIX A: Ecology Desk Study (Confidential)

APPENDIX B: Target Notes Report

Target Notes Report

Site 3

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

Target Note 01

Dry ditch with steep banks extending through the centre of the site. The ditch is culverted at either end with a grill over the eastern culvert. A secondary outfall, now disused, is present on the northern bank at the eastern end of the ditch. The ditch channel and southern bank is primarily vegetated with tall ruderal vegetation and scattered scrub, whilst the banks on the north comprise dense scrub. There are historical records of water vole in this ditch.

<i>Chamaenerion angustifolium</i>	Rosebay Willowherb	A
<i>Rubus fruticosus</i> agg.	Bramble	A
<i>Ulmus glabra</i>	Wych Elm	A
<i>Cirsium arvense</i>	Creeping Thistle	F
<i>Galium aparine</i>	Cleavers	F
<i>Hedera helix</i>	Ivy	F
<i>Nasturtium officinale</i>	Watercress	F
<i>Calystegia</i> sp.	Bindweed species	O
<i>Dactylis glomerata</i>	Cock's-foot	O
<i>Helminthotheca echioides</i>	Bristly Oxtongue	O
<i>Mentha aquatica</i>	Water Mint	O
<i>Prunus</i> sp.	Cherry species	O
<i>Rosa</i> sp.	Rose species	O
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O
<i>Salix</i> species	Willow species	O
<i>Urtica dioica</i>	Nettle	O
<i>Cirsium vulgare</i>	Spear Thistle	R



Target Note 02

A triangular area of amenity grassland in the south of the site. Five semi-mature scattered hybrid black poplar trees are present within the grassland, with three tree stumps also present indicating that additional trees were previously present. The grassland has been mown in places and a path has been worn between the trees. A picnic bench and electrical equipment are present in the south-east corner of the grassland.

<i>Agrostis stolonifera</i>	Creeping Bent	F
<i>Bellis perennis</i>	Daisy	F
<i>Dactylis glomerata</i>	Cock's-foot	F
<i>Lolium perenne</i>	Perennial Ryegrass	F
<i>Populus x canadensis</i>	Hybrid Black Poplar	F
<i>Ranunculus repens</i>	Creeping Buttercup	F
<i>Medicago lupulina</i>	Black Medick	O
<i>Plantago lanceolata</i>	Ribwort Plantain	O
<i>Potentilla reptans</i>	Creeping Cinquefoil	O
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O
<i>Trifolium repens</i>	White Clover	O
<i>Veronica sp.</i>	Veronica species	O
<i>Geranium molle</i>	Dove's-foot Cranesbill	R
<i>Vicia sp.</i>	Vetch species	R



Target Note TN03

Fenced off hardstanding yard with several cabins, which are currently unused. A nesting blue tit was observed flying through a small gap into one of the cabins during the survey. Building materials are stored in the south of the yard and an area of overgrown species-poor modified neutral grassland is present adjacent to one of the storage areas.

<i>Dactylis glomerata</i>	Cock's-foot	F
<i>Calystegia sp.</i>	Bindweed species	O
<i>Cirsium arvense</i>	Creeping Thistle	O
<i>Fraxinus excelsior</i>	Ash	O
<i>Galium aparine</i>	Cleavers	O
<i>Hedera helix</i>	Ivy	O
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	O
<i>Medicago lupulina</i>	Black Medick	O
<i>Populus nigra</i>	Black Poplar agg.	O
<i>Potentilla reptans</i>	Creeping Cinquefoil	O
<i>Prunus spinosa</i>	Blackthorn	O
<i>Ulmus glabra</i>	Wych Elm	O
<i>Urtica dioica</i>	Nettle	O
<i>Vicia sp.</i>	Vetch species	O
<i>Buddleja davidii</i>	Buddleia	R
<i>Helminthotheca echioides</i>	Bristly Oxtongue	R
<i>Lonicera nitida</i>	Wilson's Honeysuckle	R
<i>Salix caprea</i>	Goat Willow	R
<i>Salix species</i>	Willow species	R



Target Note TN04

Small areas of amenity grassland, species-poor modified neutral grassland and introduced shrub between the yard and existing hospital buildings and structures.

<i>Festuca rubra</i>	Red Fescue	A
<i>Trifolium repens</i>	White Clover	A
<i>Bellis perennis</i>	Daisy	O
<i>Dactylis glomerata</i>	Cock's-foot	O
<i>Lonicera nitida</i>	Wilson's Honeysuckle	O
<i>Medicago lupulina</i>	Black Medick	O
<i>Plantago lanceolata</i>	Ribwort Plantain	O
<i>Ranunculus repens</i>	Creeping Buttercup	O
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O
<i>Taraxacum officinale</i> agg.	Dandelion	O
<i>Veronica</i> sp.	Veronica species	O
<i>Vicia</i> sp.	Vetch species	O
<i>Jacobaea vulgaris</i>	Common Ragwort	R



Target Note TN05

Small area of species-poor modified neutral grassland and introduced shrub around three parking bays to the south of the Emergency Department.

<i>Festuca rubra</i>	Red Fescue	A
<i>Bellis perennis</i>	Daisy	F
<i>Lonicera</i> sp.	Honeysuckle species	F
<i>Plantago lanceolata</i>	Ribwort Plantain	F
<i>Poa annua</i>	Annual Meadow-grass	F
<i>Poa</i> sp.	Meadow-grass species	F
<i>Trifolium repens</i>	White Clover	F
<i>Arrhenatherum elatius</i>	False Oat-grass	O
<i>Euonymus europaeus</i>	Spindle	O
<i>Medicago lupulina</i>	Black Medick	O
<i>Ranunculus repens</i>	Creeping Buttercup	O
<i>Rumex crispus</i>	Curled Dock	O
<i>Symphoricarpos albus</i>	Snowberry	O
<i>Taraxacum officinale</i> agg.	Dandelion	O
<i>Viburnum</i> sp.		O
<i>Vicia</i> sp.	Vetch species	O
<i>Alnus glutinosa</i>	Alder	R



Target Note TN06

Species-poor intact hedgerow with trees between the fenced-off yard and dry ditch. The hedge appears to have started as a row of young wych elm that has become outgrown over time.

<i>Ulmus glabra</i>	Wych Elm	D
<i>Hedera helix</i>	Ivy	A
<i>Cirsium vulgare</i>	Spear Thistle	O
<i>Prunus spinosa</i>	Blackthorn	O
<i>Rosa sp.</i>	Rose species	O
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O
<i>Salix species</i>	Willow species	O
<i>Ulex europaeus</i>	Gorse	R



APPENDIX C: Great Crested Newt Survey (2020)



THE
ENVIRONMENT
PARTNERSHIP



GLAN CLWYD HOSPITAL, BODELWYDDAN GREAT CRESTED NEWT SURVEY

TEP Technical Report July 2020

TEP

Genesis Centre
Birchwood Science Park
Warrington
WA3 7BH

Tel: 01925 844004
Email: tep@tep.uk.com
www.tep.uk.com

Offices in Warrington, Market Harborough, Gateshead, London and Cornwall

Author	Cameron Campbell
Date	July 2020
Checked	John Crowder
Approved	Lee Greenhough

[illegible]

CONTENTS

1.0	Summary	1
2.0	Method.....	2
3.0	Results	9
4.0	Meta Population and Population Size Class Assessments	11
5.0	Further Requirements	12

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:
- Site 1 – New Mental Health Unit
 - Site 2 – New Multi-Storey Car Park
 - Site 3 – New Helipad
 - 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 HSI¹ 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 England². 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 Trust³ 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) guidance⁴ 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 $>5^{\circ}\text{C}$ 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 netting⁵ 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.

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 <i>Typha</i> 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 <i>Typha</i> 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 <i>Typha</i> . 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.

THE ENVIRONMENT

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.

THE ENVIRONMENT

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
												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 zones⁶.
- 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)

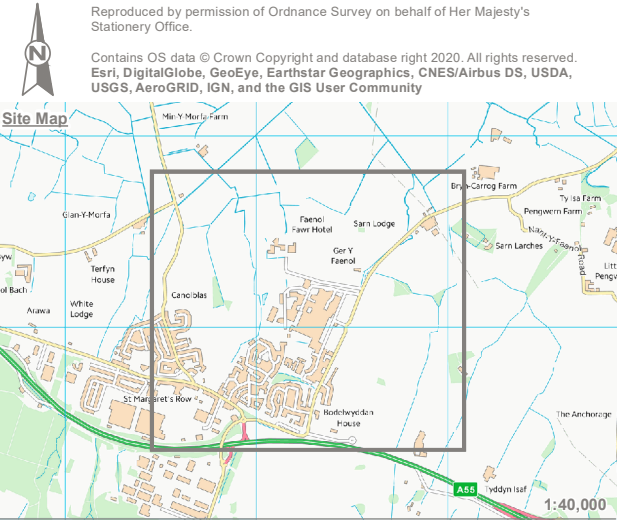


KEY

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

Note:

The locations of ponds are indicative.



Rev	Description	Drawn	Approved	Date



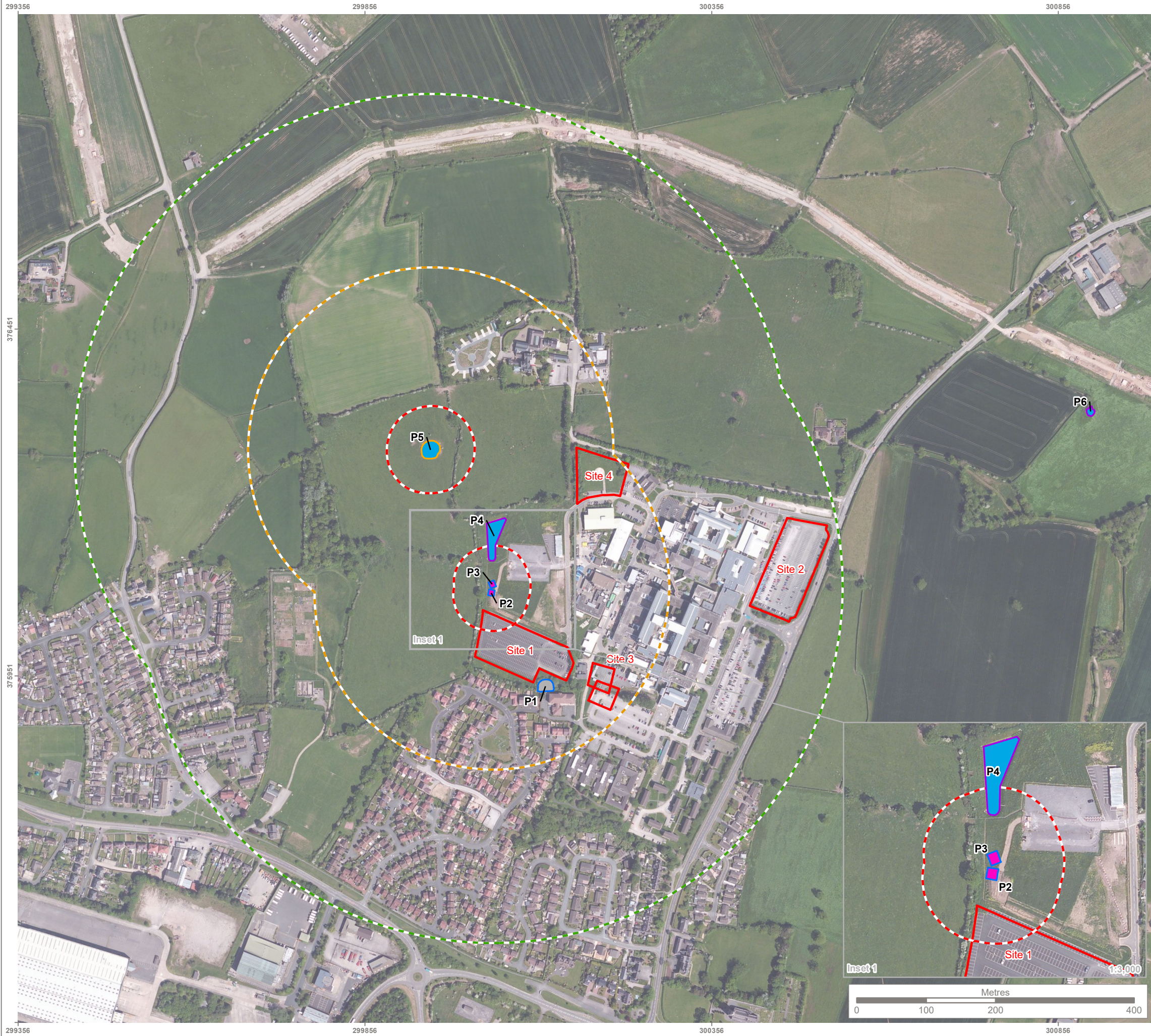
Genesis Centre, Birchwood Science Park, Warrington WA3 7BH
Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project
Glán Clwyd Hospital, Bodelwydd

Title
Pond Location Plan - Aerial

Drawing Number
G8166.005

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



KEY

- Site boundary
- Pond
- Dry pond

GCN Traditional Survey Results

- Present

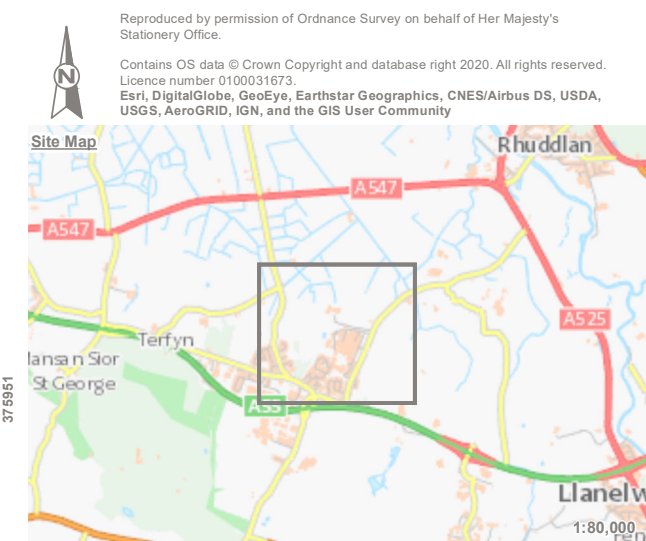
eDNA Results

- 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.



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, Bodelwydd

Title
GCN Survey Results

Drawing Number
G8166.011

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



**HEAD OFFICE
WARRINGTON**

Genesis Centre,
Birchwood Science Park,
Warrington
WA3 7BH

Tel: 01925 844004
E-mail: tep@tep.uk.com

**MARKET
HARBOROUGH**

The Reynard Suite,
Bowden Business Village,
Market Harborough,
Leicestershire,
LE16 7SA

Tel: 01858 383120
E-mail: mh@tep.uk.com

GATESHEAD

Office 26, Gateshead
International Business
Centre,
Mulgrave Terrace,
Gateshead
NE8 1AN

Tel: 0191 605 3340
E-mail: gateshead@tep.uk.com

LONDON

8 Trinity Street,
London
SE1 1DB

Tel: 020 3096 6050
E-mail: london@tep.uk.com

CORNWALL

4 Park Noweth,
Churchtown,
Cury,
Helston
Cornwall
TR12 7BW

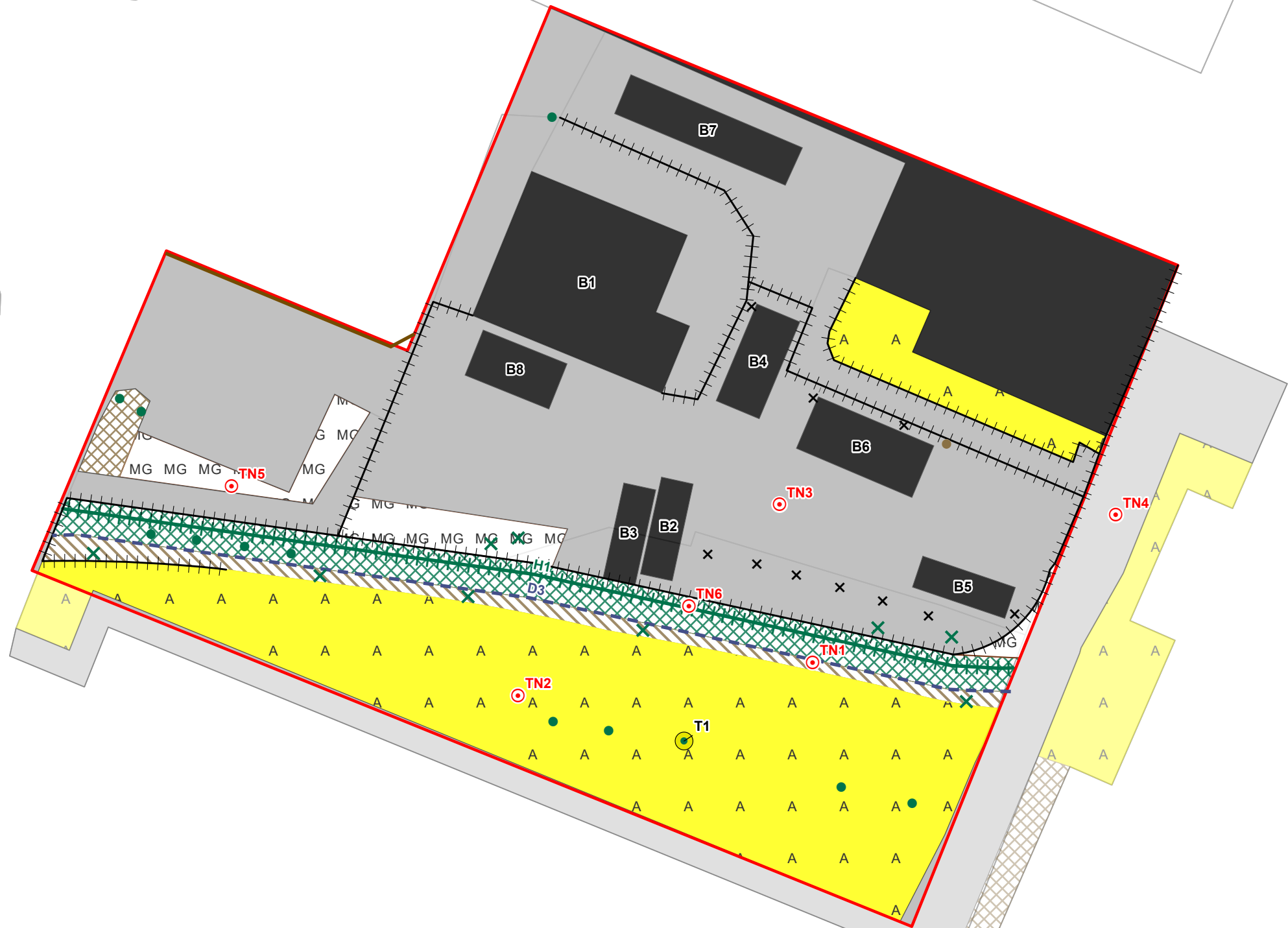
Tel: 01326 240081
E-mail: cornwall@tep.uk.com

DRAWINGS

Drawing 1 - G8166.034 - Phase 1 Habitat Survey (Site 3)

Drawing 2 - G8166.005C - Pond and Ditch Location Plan

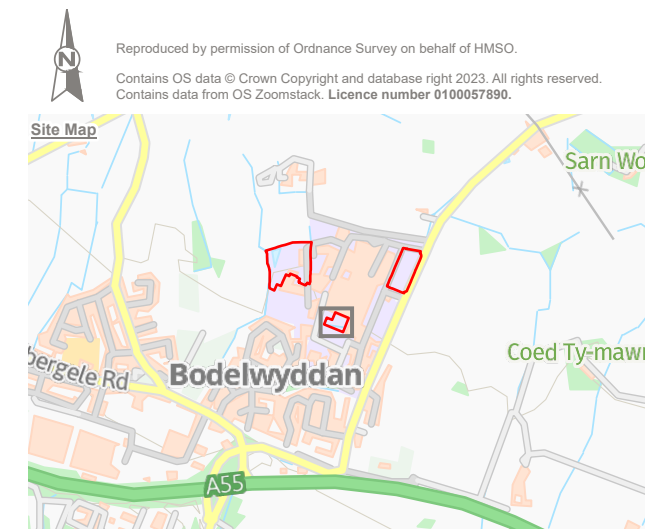
**Drawing 3 - Powell Dobson Architects Drawing NMC-PDA-ZZ-00-DR-A-20100
Rev P09 - Ground Floor Plan**



KEY

- Site boundary
- Target note
- Scattered scrub
- Scattered broad-leaved tree
- Broad-leaved tree with low bat suitability
- Ephemeral/short perennial
- Scattered introduced shrub
- Species-poor hedge and trees
- Fence
- Wall
- Dry ditch
- Dense/continuous scrub
- Species-poor modified neutral grassland
- Tall ruderal
- Amenity grassland
- Introduced shrub
- Building
- Hardstanding

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



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
Phase 1 Habitat Survey
Site 3

Drawing Number
G8166.034

Drawn	Checked	Approved	Scale	Date
IJ	BJ	CC	1:350 @ A3	15/06/2023



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

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

THE ENVIRONMENT PARTNERSHIP

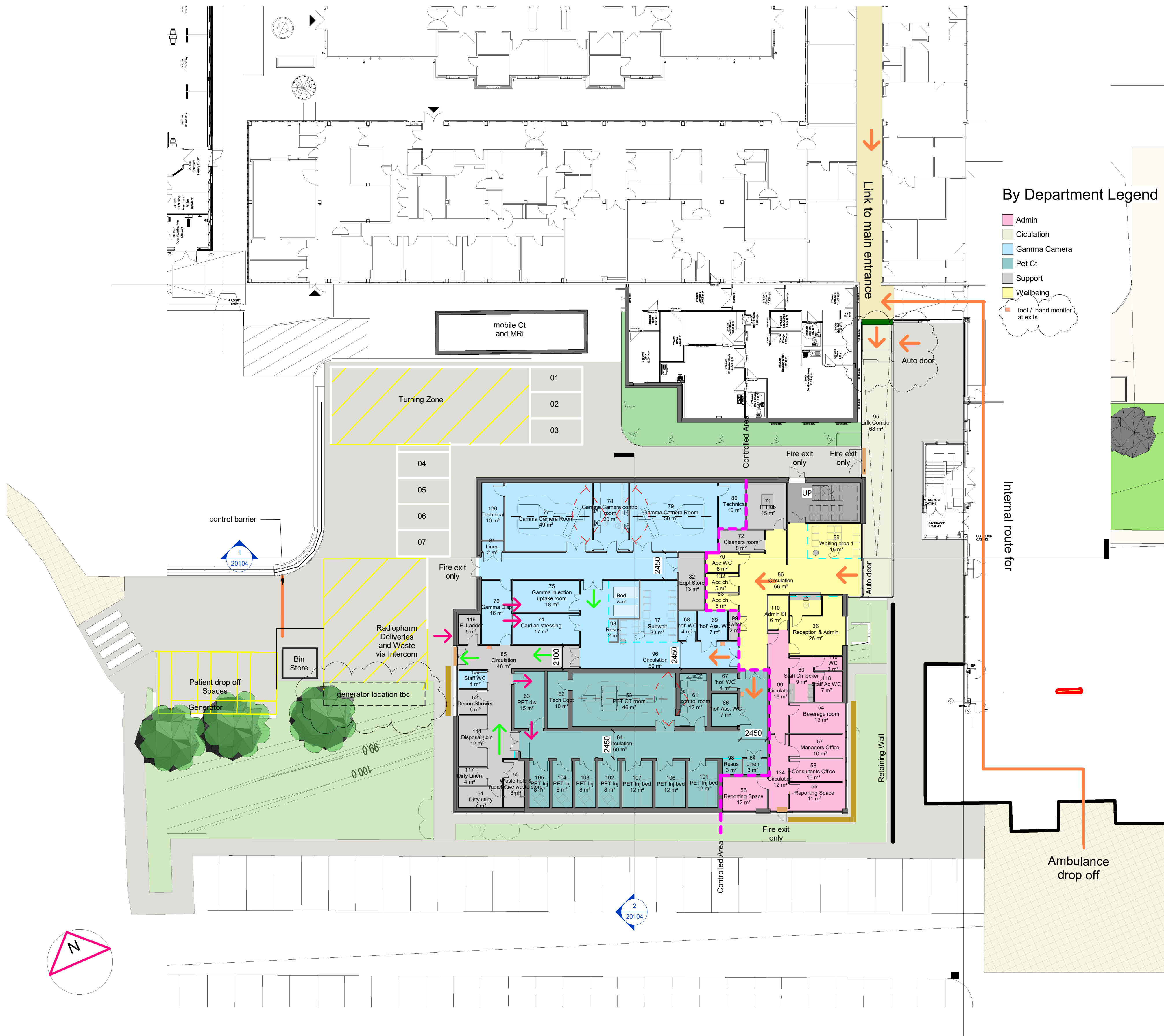
Genesis Centre, Birchwood Science Park, Warrington WA3 7BH
Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project
Glan Clwyd Hospital, Bodelwydda

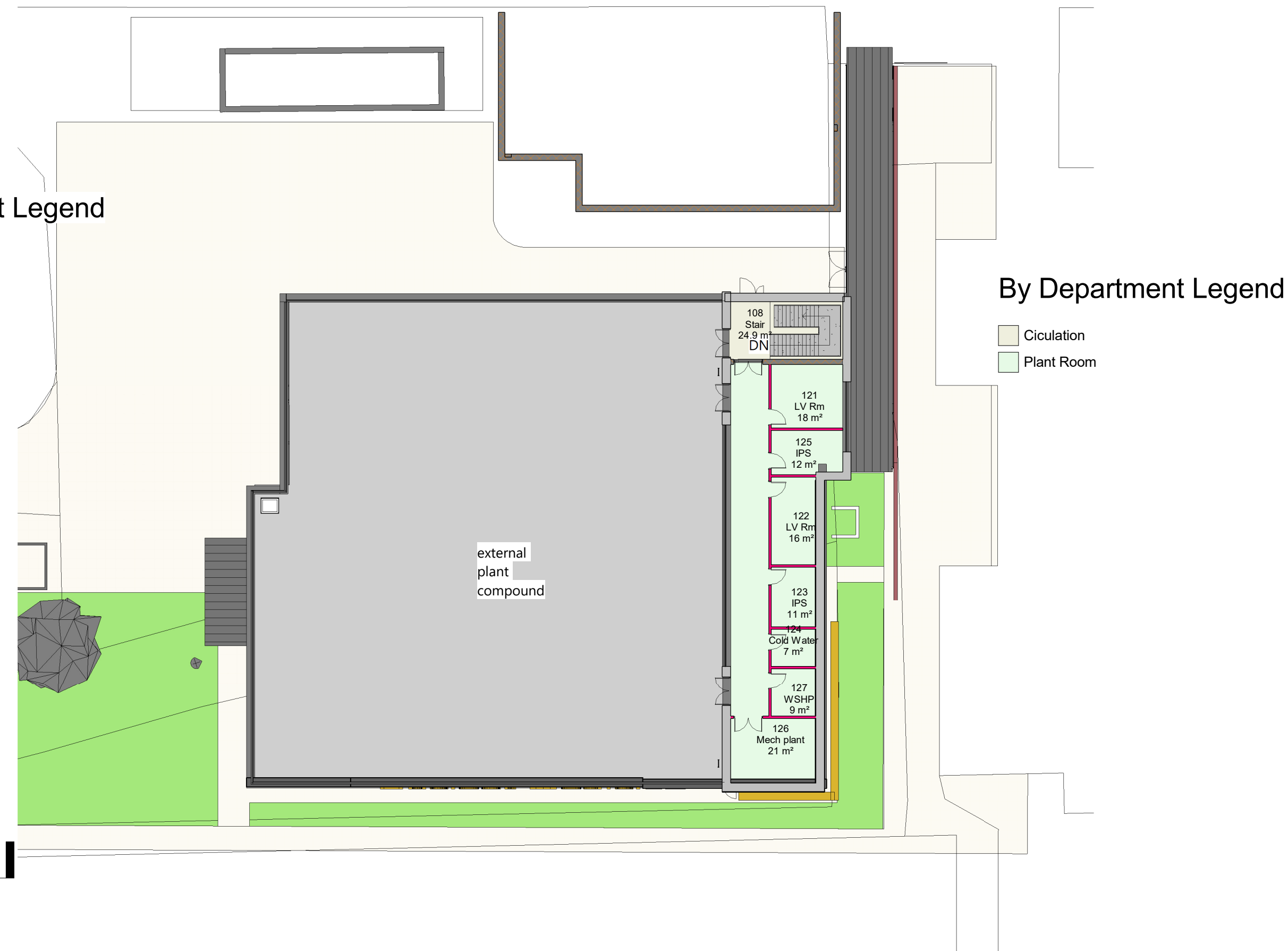
Title
Pond and Ditch Location Plan - Aerial

Drawing Number
G8166.005C

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



1 Ground Floor Plan
1 : 200



2 Plant room Plan
1 : 250

This drawing must not be scaled.
Figured dimensions and levels to be used.
Any inaccuracies must be notified to the architect.
Detail drawings and large scale drawings take precedence over smaller drawings.

Rev:
P07 Changing rooms moved, beverage bay door moved, Pet CT tech room reduced, bin store and generator moved following MEP and Civils feedback
P08 Site arrangement amended following MEP and civils feedback
P09 Automatic doors moved, generator location shown as TBC, escape doors added back to stair and link, hand & foot monitoring locations indicated

Chk'd:

28-04-23
02-04-23
03-05-23

STATUS

S2 - Issued for Information

powelldobson
ARCHITECTS

Cardiff, Swansea, London

t +44 (0)33 33 201 001

www.powelldobson.com

@PDArchitects

PDA Job No: 22045	REV P09
NMC - PDA - ZZ - 00 - DR - A - 20100	
UPRN	ORIGINATOR VOLUME LEVEL TYPE ROLE CLASS NUMBER

Contract: Nuclear Medicine
Ysbyty Glan Clwyd
Title: GA Ground Floor Plan

Scale: As indicated
Date: 11/03/23
Drawn: RD
Checked: RD



HEAD OFFICE

Genesis Centre,
Birchwood Science Park,
Warrington
WA3 7BH

Tel: 01925 844004
E-mail: tep@tep.uk.com

**MARKET
HARBOROUGH**

No. 1 The Chambers,
Bowden Business Village,
Market Harborough,
Leicestershire,
LE16 7SA

Tel: 01858 383120
E-mail: mh@tep.uk.com

GATESHEAD

Office 26, Gateshead
International Business
Centre,
Mulgrave Terrace,
Gateshead
NE8 1AN

Tel: 0191 605 3340
E-mail: gateshead@tep.uk.com

LONDON

8 Trinity Street,
London,
SE1 1DB

Tel: 020 3096 6050
E-mail: london@tep.uk.com

CORNWALL

4 Park Noweth,
Churchtown,
Cury,
Helston
Cornwall
TR12 7BW

Tel: 01326 240081
E-mail: cornwall@tep.uk.com
