Coleg Gwent Crosskeys Campus,
Crosskeys

Preliminary Ecological Appraisal

May 2023

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REPORT CONTENTS

DRAWINGS

PLANS

APPENDICES

Document Verification Table

Crosskeys Campus, Coleg Gwent, Crosskeys Preliminary Ecological Appraisal and Preliminary Roost Assessment				
Revision	Date	Prepared by	Checked by	Verified by
1.0	04 May 2023	Charley Kennedy Assistant Ecologist	Daisy Smith Assistant Ecologist	Paul Hudson MCIEEM Principal Ecologist

Summary

Brief and Site Location	Acer Ecology Ltd. were commissioned by Coleg Gwent to conduct a preliminary ecological appraisal of land at Coleg Gwent Crosskeys Campus, Crosskeys, NP11 7ZA, within the boundary of the Caerphilly County Borough Council (Ordnance Survey Grid Reference centred at: ST 2231 9168).
Development Proposals	The development proposals are yet to be finalised at the time of the preliminary ecological appraisal. At the time of writing, preliminary proposals involve some clearance of the site, work to the current buildings and new builds on site to develop a CO_2 net zero campus.
Impacts to Key Receptors	The development is not considered to have any adverse impacts to statutory on non-statutory nature conservation sites. No habitats on site are likely to be greater than site value. Whilst the loss of the on-site habitats would be unlikely to have a significant impact outside of the context of the site, it would nevertheless be desirable that the impacts be either minimised or appropriately mitigated where possible. Provided appropriate precautionary and mitigation measures detailed in Section 4 are implemented, the development is not anticipated to result in adverse impacts to any protected sites, habitats, and species.
Further Surveys	Further surveys are recommended so that the potential for further impacts can be established.
Recommendations	The following provisional recommendations have been developed based on the development proposals available at the time of writing. They may be subject to change upon receipt of the final design: • Further Survey: • Bat emergence/re-entry surveys (one survey visit for buildings with low roost suitability, comprising one dusk emergence or dawn re-entry survey; this survey should be undertaken from May to August. Two separate survey visits for buildings with moderate roost suitability, comprising one dusk emergence and a separate dawn re-entry survey; these surveys should be undertaken from May to September, with at least one of the surveys between May and August.) • Precautionary measures – Good Construction Practices for Badgers and Hedgehogs; Good Construction Practices for Otters; Species Deterrence Measures for Reptiles and Hedgehogs. • Mitigation measures – Sustainable Lighting Plan; Sustainable Urban Drainage Systems (SuDS); CEMP Recommendations; and • Compensation and enhancement measures – Bird and Bat Boxes.
Licensing Requirements	European protected species mitigation licences may be required upon completion of further surveys. A bat development licence may be required from NRW upon completion of further surveys.
Conclusions	The full extent of ecological impacts and potential constraints of the proposed development cannot be fully determined, based on the results of the preliminary ecological appraisal survey alone. Further survey work will be required before such assessments can be comprehensively made. At this stage, the site's ecological value is not considered to represent a fundamental in-principal constraint to the proposed development.

	If development works do not begin within eighteen months to two years of the date of this report of this report, an update survey is likely to be required in accordance with guidance from Natural Resources Wales (NRW) (CIEEM, 2019) and BS 42020:2013, to determine if conditions have changed since those described in this report.

1. Introduction

1.1. Brief and Site Location

Acer Ecology Ltd. were commissioned by Coleg Gwent to conduct a preliminary ecological appraisal of the buildings and land at Coleg Gwent Crosskeys Campus, within the boundary of Caerphilly County Borough Council (Ordnance Survey Grid Reference centred at: ST 2231 9168)[1]. The assessment documents the baseline ecological condition of the survey area, which is shown by the red line boundary on Plan 1. Designated sites, habitats, protected and notable species of conservation interest that could be affected by the proposed works are identified, and subsequent recommendations provided.

This assessment will provide initial recommendations based on the development proposals available at the time of writing. They should be revised upon finalisation of the design.

1.2. Site Description

The site proposed for development measures approximately 6ha, and comprises fifteen buildings which make up the college, with scattered trees and ornamental garden plantations also present. The site lies in the village of Crosskeys, a small urban area typified by open backed terraced housing and limited tree coverage. The site is also located 8km north-east of the town of Caerphilly. The site is situated 0.1km north of Waunfawr Park and approximately 0.2km south of the Monmouthshire and Brecon Canal. The River Ebbw lies 0.3km to the south-west of the site. The A467 is situated 0.5km south of the development site. The surrounding landscape comprises large areas of grasslands, mature woodland, and agricultural pastures lined by hedgerows. The location of the site is shown on Plan 1: Location Plan.

1.3. Proposed Works

The development proposals are yet to be finalised at the time of survey. Preliminary proposals involve the demolition of blocks A, B, E, F, G, K and Z, as well as the small boiler house to the west of block E. Blocks C, S and T, as well as the Energy Centre to the east of block R, are to be refurbished. Blocks J, R and X, along with the western extension of block C, will be retained. The works aim is to develop a CO_2 net zero campus.

A planning application has not been submitted at the time of writing.

1.4. Scope of the Study

The study comprised the following:

- A desk study to identify existing information on statutory and non-statutory sites of nature conservation interest, and records of notable or protected habitats or species within the site and its environs;

[1] Latitude and Longitude: 51.618628, -3.123423 / what3words: darker.imitate.fabric

- A Phase 1 Habitat Survey of the site, extended to search for evidence of, and potential for, protected fauna;
- Identification of potential ecological constraints to the proposed works at the site and assessments of impacts including appropriate mitigation measures where necessary; and
- A daytime internal and external inspection of the buildings on site, searching for signs of bats and nesting birds, and assessing the potential for bats to roost on site.

1.5. Review of Historic Site Data

A relevant historic report exists for the proposed development site:

Acer Ecology conducted a PRA assessment for Blocks B, F and K in 2020. One soprano pipistrelle (*Pipistrellus pygmaeus*) bat was observed emerging and re-entering a gap around the wooden cladding of Block K.

1.6. Reporting

This report aims to:

- Outline the methodology used during the survey;
- Present the baseline ecological information;
- Provide an ecological evaluation of on-site habitats, including an assessment of the potential for protected species;
- Assess the potential impacts of the development proposals on ecological receptors;
- Assess the potential ecological constraints to the proposals; and
- Provide recommendations for further survey, avoidance, mitigation, and enhancement where appropriate.

2. Methods

The survey was undertaken following standard methods as detailed in the Chartered Institute of Ecology and Environmental Management (CIEEM) Preliminary Ecological Appraisal 2017 guidelines, and the Phase 1 Habitat Survey manual (Joint Nature Conservation Committee, 2010). The methodology utilised for the survey work comprised a desk study, habitat survey and a survey of protected and notable species.

2.1. Desk Study

2.1.1. Protected Sites, Habitats and Species

Information on designated sites and protected species was obtained from the sources detailed in Table 2. The legislation and policy relating to statutory and non-statutory designated sites can be found in Appendix 1. Plans 2 and 3 show the protected sites in relation to the proposed development site.

Table 1: Summary of Designated Sites and Other Abbreviations

Abbreviations	
Special Areas of Conservation	SAC
Special Protected Area	SPA
Site of Special Scientific Interest	SSSI
National Nature Reserve	NNR
Local Nature Reserve	LNR
Site of Importance for Nature Conservation	SINC
Ancient Semi-Natural Woodland	ASNW
Restored Ancient Woodland Site	RAWS
Plantation on Ancient Woodland Site	PAWS
Natural Resources Wales	NRW
South East Wales Biological Records Centre	SEWBReC

Table 2: Sources of Data

Source	Data	Radius of Search
NRW Geographical Information Systems (GIS) Layers	Statutory and non-statutory nature conservation designated sites ASNW, RAWS and PAWS	Ramsar/SACs/SPAs/SSSIs/NNRs/LNRs – 2km[2] SACs (designated for bats) - 10km. 2km.
SEWBReC	Protected species records (SEWBReC unique reference: 0223-977) SINCs	1km. 1km.

All available records of bat roosts, badger, dormouse, amphibians and reptiles were considered. For other species, only records collected within the last 10 years were considered relevant.

[2] The citations of all the SSSIs and SACs within 2km of the site were consulted to determine if any of them had features or species which could be affected by the development proposals.

Page 15 of CIEEM's Guidelines for Preliminary Ecological Appraisals states that 'Existing ecological information for the site and adjacent areas should extend to at least 1km from the site boundaries (or 0.5km for sites of approximately 1ha or less). The search for desk study information will need to extend further beyond the site boundaries to ensure that all information of relevance to the assessment has been collected. In this instance a 1km data search for protected species is considered appropriate.

2.1.2. Landscape Context

The site and wider landscape were assessed and characterised using aerial images, Ordnance Survey maps and SEWBReC data. The presence of off-site features and habitats, which add to the ecological value within the wider area (for example, ponds within 0.5km of the site) were identified. Where appropriate, such features were scoped into the detailed assessment of impacts presented in Section 3.

2.1.3. Ancient Woodland

Although ancient woodland is not a designated site as such, it is often listed as a designated site due to its ecological significance and associated protection. Ancient woodland has therefore been included within the non-statutory designated site section of this report.

2.1.4. Planning Authority

The Caerphilly County Borough Council Planning portal[3] was consulted to determine if any previous survey information was available for the site, or immediate surroundings.

2.2. Field Study

2.2.1. Personnel

The field survey was undertaken in good weather on the 4th April 2023 by Yasmine Garland[4], Charley Kennedy[5] and Rebecca Corley[6].

2.2.2. Vegetation and Habitats

The vegetation and habitat types present within the survey area were categorised and mapped in accordance with the standard[7] Phase 1 Habitat assessment methodology (Joint Nature Conservation

[3] hiips://www.caerphilly.gov.uk/Services/Planning -and-building-control/Search,-track-and-comment-on-planning-applications

[4] Yasmine graduated with a degree in Zoology BSc from Swansea University and a MSc in Environmental Consultancy from the University of Plymouth. She is experienced in undertaking protected species surveys working as an Assistant Ecologist, gaining ecological surveying experience. She is listed as an accredited agent on Paul Hudson's Welsh bat licence (S091671-1). Further details of her qualifications and experience can be found at hiips://www.linkedin.com/in/yasmine -garland-1a2128115.

[5] Charley graduated with an upper second-class Bachelor of Sciences in Natural History and Media, from the University of South Wales, in July 2022. She is currently working for Acer Ecology as an Assistant Ecologist and completing her training in habitat and protected species survey techniques, including dusk emergence/ dawn re-entry surveys and preliminary roost assessments. Further details of her qualifications and experience can be found at: hiips://www.linkedin.com/mwlite/in/charley -kennedy-1bab3a193

[6] Rebecca graduated with a degree in Biological Science from the University of Birmingham and an MSc in Global Ecology and Conservation from Cardiff University. Rebecca is currently in her first season of habitat and protected surveying, working as an Assistant Ecologist and receiving training from Acer Ecology. She is listed as an accredited agent on Paul Hudson's bat licence (S091671-1). Further details of her qualifications and experience can be found at hiips://www.linkedin.com/in/rebecca -corley-b33b61138.

[7] Some additional categories were also used if applicable e.g. hard standing and Japanese knotweed.

Committee, 2010), dominant and conspicuous plant species were recorded for each habitat. Target notes were used to record information on features of ecological interest, such as evidence of, or habitats with potential to support protected species or where any features of interest too small to map were recorded. Following the completion of the survey, a colour-coded habitat plan was digitised using QGIS to show the extent and distribution of the different habitat types present within the site (see Plan 7).

Section 7 habitats (Environment Wales Act 2016) and Priority Habitats of the UK Biodiversity Action Plan (BAP) (Biodiversity Reporting & Information Group, 2007) were identified and assessed to determine if the site meets the non-statutory designated site criteria (SINC).

Hedgerows within the site were not formally assessed against the definitions within the Hedgerow Regulations 1997, as this was beyond the scope of the assessment.

Invasive plant species listed on Schedule 9[8] of the Wildlife and Countryside Act 1981 (as amended), such as Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*) and Japanese knotweed (*Fallopia japonica*) were also noted during the survey, if present.

2.2.3. Protected and Notable Species

Evidence of, and habitats with, potential to support protected or notable species were noted, especially species meeting any of the following criteria:

- Listed under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) ['CHSAEU'] Regulations 2019;
- Listed under Section 7 of the Environment (Wales) Act 2016 as being of principal importance for maintaining and enhancing biodiversity in Wales;
- Listed as a local priority for conservation, for example in the relevant Local Biodiversity Action Plan (LBAP);
- Red Listed using International Union for the Conservation of Nature (IUCN) criteria (e.g. in one of the UK Species Status Project[9] reviews, in the Species of Conservation Concern Red, Amber or Near Threatened List[10], Birds of Conservation Concern in Wales[11], or, where a more recent assessment of the taxonomic group has not yet been undertaken, listed in a Red Data Book);
- Listed as a Nationally Rare or Nationally Scarce species (e.g. in one of the Species Status Project reviews) or listed as a Nationally Notable species where a more recent assessment of the taxonomic group has not yet been undertaken; and/or
- Endemic to a country or geographic location (it is appropriate to recognise endemic sub-species, phenotypes, or cultural behaviours of a population that are unique to a particular place).

[8] Schedule 9 species of plants and animals are ones that do not naturally occur in Great Britain but have become established in the wild and represent a threat to the natural fauna and flora.

[9] The Species Status project is the successor to the JNCC's Species Status Assessment project, providing up-to-date assessments of the threat status of various taxa using the internationally accepted Red List guidelines (hiip://jncc.defra.gov.uk/page -1773).

[10] Eaton *et al*. (2015) Birds of conservation concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. British Birds 108: 708-746.

[11] Johnstone, I. and Bladwell, S. (2016) Birds of Conservation Concern in Wales 3: the population status of birds in Wales. Birds in Wales 13 (1).

Only those species with potential to be present on-site are mentioned within this report. The methodologies used were as follows:

Birds

Any birds observed during the field survey were recorded, in addition to features capable of supporting nesting birds (e.g. trees, hedgerows, buildings, bramble, ruderal vegetation and rough grassland etc.). The site was also assessed for its actual and potential suitability to support Wildlife and Countryside Act 1981 (as amended) Schedule 1 species.

A comprehensive bird survey, such as a breeding bird survey, was not undertaken as this was beyond the scope of the assessment.

Bats

Preliminary Ground-level Roost Assessment

A preliminary ground-level roost assessment of the trees within the survey area was undertaken, looking for features that bats could use for roosting (Potential Roost Features[12] (PRF) and evidence of bats (i.e. droppings in, around or below a PRF; odour emanating from a PRF; audible squeaking at dusk or during warm weather; or staining below the PRF). A systematic inspection was carried out around all accessible aspects of the tree, from both close to the trunk and further away. The location of the trees is shown on 7.

The trees were assessed for their suitability to support roosting and hibernating bats in accordance with Table 4.1 of the Bat Conservation Trusts Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) (See Appendix 6). A high-powered torch (Clulite), binoculars and a ladder were used as appropriate during the survey.

Daytime Internal and External Building Inspection

A systematic search of the exterior and interior of the buildings was undertaken, looking for features that bats could use for entry/ exit and roosting[13] and to search for the presence of bats or evidence of bat use, such as droppings, feeding remains, urine staining, scratch marks and the remains of dead bats. The survey was undertaken on the 5th April 2023 by Charley Kennedy, Rebecca Corley, and Yasmine Garland.

A high-powered torch (Clulite), binoculars and a ladder were used as appropriate during the survey.

The locations of the buildings are shown on Plan 8.

[12] Potential Roost Features that bats may use identified by Andrews include: woodpecker-holes; squirrel-holes; knot-holes; pruning-cuts; tear-outs; wounds; cankers; compression-forks; butt-rots; lightning strikes; hazard-beams; subsidence-cracks; shearing cracks; transverse cracks; welds; lifting bark; frost-cracks; fluting and ivy.
[13] Bats may utilise gaps as small as 8mm by 20mm (Bat Conservation Trust, Cluster flies leaflet)

Terrestrial Habitat Assessment

A preliminary assessment of the value of the site for bats (and any potential roost sites therein) was made in accordance with Table 4.1 of the Bat Surveys for Professional Ecologists (Collins, 2016) (see Appendix 5). The assessment was based on the relative abundance and quality of habitat features within the site, and surrounding landscape, suitable for roosting, foraging and commuting bats.

Dormice

The hedgerows on site assessed for their suitability to support dormice (*Muscardinus avellanarius*). The structure and composition of these habitats within the site was assessed with respect to the presence of flower, fruit or nut-bearing food-plants such as hazel (*Corylus avellana*) (a favoured food-plant of dormice), oak (*Quercus* sp.), honeysuckle (*Lonicera periclymenum*), bramble (*Rubus fruticosus* agg.) and sycamore (*Acer pseudoplatanus*), as well as other trees and shrubs listed in the Dormouse Conservation Handbook (Bright, Morris & Mitchell-Jones, 2006) as being of value to dormice. In addition, connectivity to other areas of suitable habitat in the wider landscape, such as hedgerows and woodland, was assessed.

No hazel was present on site and therefore it was not possible to undertake a search for hazelnut shells to determine if they had been opened by dormice. Additionally, a full nest tube/box/footprint tunnel survey was not undertaken as this was beyond the scope of the assessment.

Great Crested Newts

The survey area was appraised for its suitability to support great crested newts (*Triturus cristatus*) (GCN). The assessment was based on guidance outlined in the Herpetofauna Workers' Manual (Joint Nature Conservation Committee, 2003) and the Great Crested Newt Conservation Handbook (Langton, Beckett & Foster, 2001).

Ordnance Survey maps and aerial images of the land surrounding the site were consulted to determine if any water bodies were present within the site or within 0.5km of it.

The Ebbw River lies within 0.5km of the study area. However, fast flowing water is considered to act as a barrier to GCN migration (English Nature, 2001). This water body was therefore deemed unsuitable for supporting GCN.

The potential for newts to disperse onto the development site is considered to be negligible due to the distance from any suitable ponds. Given the lack of suitable waterbodies both on site and within 0.5km, as well as the absence of any GCN records provided by SEWBReC, the overall likelihood of GCN being present on site is considered to be negligible and no adverse impacts are subsequently anticipated. They are therefore not mentioned further in this report.

Otters and Water Voles

The nearest suitable water body for otters comprises the Ebbw River, which lies approximately 0.3km to the south of the proposed development site. SEWBReC returned a total of four otter records made in 2012,

approximately 0.3km to the south-east of the site, and one water vole record in 2011, approximately 0.4km away towards the north-west of the site. Although the River Ebbw is known to support otters and water voles (SEWBReC, 2023), no records exist in the immediate vicinity of the site itself. Although no direct impacts to otters and water voles are anticipated, good construction practices are advised for these species. Details of precautionary measures are outlined in Section 4 of this report.

Badgers

Earth embankments, wooded copses, hedgerows and dense bramble beds are habitat features that often contain evidence of badgers (*Meles meles*). Where present on-site, these and other suitable habitat features were searched for such evidence. Where present, the location of badger signs such as setts, runs, dung pits or latrines, prints, hair and foraging snuffle holes were recorded.

Reptiles

An assessment of the suitability of on-site habitats to support reptiles was made. Reptiles require a diverse range of habitats to meet their needs such as hedgerows, scrub, rough grassland, woodpiles, rubble, banks and compost heaps. The potential of the site to provide hibernation opportunities and spring/ summer/autumn habitat was also assessed, with reference to guidance provided in the Herpetofauna Workers' Manual (Joint Nature Conservation Committee, 2003), the Reptile Management Handbook (Edgar, Foster & Baker, 2011) and the Reptile Mitigation Guidelines Technical Note TIN 102 (Natural England, 2013). The following factors were considered: vegetation type and structure; insolation (sun exposure); slope aspect; topography; surface geology; habitat connectivity; habitat size; prey abundance; refuge opportunity; hibernation opportunity; egg-laying potential for grass snake (*Natrix helvetica*); public pressure; percentage of shade; levels of disturbance and management regime.

A targeted presence/likely absence reptile survey was not undertaken as it was beyond the scope of this assessment.

Hedgehogs

The sites potential to support hedgehog was assessed using guidance on habitats of importance in Hedgehogs and Development (Peoples Trust for Endangered Species, 2022)[14] with the following habitats particularly favoured: dense scrub to build hibernation nests in during the winter; short grass to forage in for invertebrate prey; longer grass to forage in and to make nests in during the summer; areas of leaf litter to collect and use for hibernation nests; log piles and decaying vegetation to forage in and hibernate in; and hedgerows and boundary vegetation that are important corridors for travel and nesting sites.

Other Species

General habitat suitability and incidental sightings of other animal species were also noted.

14 hiips://www.hedgehogstreet.org/wp -content/uploads/2022/08/PTES-BHPS-Hedgehogs-and-development-guide-2022.pdf

2.2.4. Assessment of Ecological Value

The value of the habitats and features of the site have been provisionally evaluated and graded in accordance with a geographical frame of reference as detailed in Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (CIEEM, 2018). The level of value of specific ecological receptors is assigned using a geographic frame of reference, i.e. international value being most important, then national, regional, county, district, local and, lastly, within the immediate zone of influence of the site only. Brief descriptions of how Acer Ecology interprets these categories are set out in Appendix 4.

2.2.5. Limitations

General Temporal Limitations

Any ecological survey can only identify what was present on-site at the time the survey was conducted and habitat usage by species can change over time.

Survey Restrictions due to Health and Safety

Due to health and safety considerations, not all parts of the buildings could be inspected during the preliminary roost assessment. Voids within C block and a second void within T block were deemed unsafe to enter; however, the survey is only slightly constrained, as further survey work has been recommended. Therefore, this is not considered to have significantly affected the accuracy of the assessment.

Survey Restrictions due to Building Height

Chimneys are present on the roof of Block S; however, the building is too high to see any potential features that could be used by roosting or foraging bats. However, the survey is only slightly constrained, and this is not considered to have significantly affected the accuracy of the assessment.

Restricted Access Due to Presence of Suspended Ceiling

Due to the presence of a suspended ceiling, the loft void of B block could not be fully accessed. Therefore, a search for evidence of bats was constrained to areas near the loft hatch of the suspended ceiling only. The survey is only slightly constrained, as further survey work has been recommended. Therefore, this is not considered to have significantly affected the accuracy of the assessment.

Incomplete Survey Information

Full surveys for the protected species listed previously have not yet been carried out. For some species of fauna for which evidence has been found or which are considered likely to occur on site, further targeted survey is advisable at a more appropriate time of year (see Section 4).

3. Baseline Ecological Conditions, Evaluation and Development Impacts

The baseline conditions and evaluation of the *in-situ* habitats and the actual/ potential presence of protected species are discussed in this section. Potential impacts on protected sites, *in-situ* habitats and protected or notable species arising from the proposed development are identified, including both direct and indirect impacts, and those associated with construction and operational stages.

A summary of relevant legislation and planning policies relating to protected sites, habitats and species is provided in Appendices 1 and 2.

3.1. Statutory Nature Conservation Designated Sites

Table 3: SAC Catchment near Development Site

SAC Catchment	Description	Distance and Direction from Development Site	Likely Phosphate Impacts	Requirements
The River Usk[15]	A large linear ecosystem which acts as an important wildlife corridor, an essential migration route and key breeding area for many nationally and internationally important species. Neither the SAC or SSSI was specifically designated for bats but the citation states that the frequent tree cover provides valuable feeding and roosting habitats for several bat species including Daubenton's bat.	14km to the north-west.	Unlikely to be any impacts due to distance from site.	The proposals should be screened by the LPA through a Habitats Regulations Assessment (HRA, to determine whether they are likely to have a significant effect on the SAC. The LPA should be consulted at the earliest stage of the project.

Statutory Sites (SACs or SSSIs) Designated for Bats within 10km of Site

The proposed development site lies within 10km of the following sites that have been specifically designated for bats:

[15] hiips://naturalresources.wales/media/628526/SAC_UK0013007_Register_Entry001.pdf

Table 4: Statutory Sites Designated for Bats Within 10km

Site Name	Description	Distance and Direction from Development Site
Ruperra Castle and Woodlands SSSI[16/17]	The site is of special interest as the only known nursery roost for the greater horseshoe bat (*Rhinolophus ferrumequinum*) in the Mid and South Glamorgan area and only one of only five known nursery roosts of this species in Wales. The SSSI supports a colony of greater horseshoe bats of national and international importance.	4.4km to the south of the site.
The River Usk[18/19] (Lower Usk) SAC and SSSI	A large linear ecosystem which acts as an important wildlife corridor, an essential migration route and key breeding area for many nationally and internationally important species. Neither the SAC or SSSI was specifically designated for bats but the citation states that the frequent tree cover provides valuable feeding and roosting habitats for several bat species including Daubenton's bat (*Myotis daubentonii*)'.	9km to the south-east of the site.

SSSIs and LNRs within 2km of Site

The proposed development site lies within 2km of the following statutory sites:

Table 5: Statutory Sites Designated Within 2km

Site Name	Description	Distance and Direction from Development Site
Dan y Graig Quarry, Risca SSSI[20]	Designated for its geological interest. The quarry is in the area of the South Wales Coalfield where the River Ebbw flows out of the coalfield through a gorge in the Carboniferous and Old Red Sandstone rocks.	1.2km south-east of the site.
Coed y Darren SSSI[21]	Designated for its criticality in understanding the geological evolution of the South Wales basin. Coed y Darren complements the sections seen at Wern Ddu Claypit near Caerphilly.	1.5km north-east of the site.
Flatwood Meadows LNR[22]	Contains 'some of the few remaining examples of species rich grasslands in the Sirhowy Valley'. The meadows provide ideal habitat for moths and butterflies. 'In the evening Daubenton's and noctules (Nyctalus noctula) bats flit across the meadow'.	1.5km south-west of the site.

3.2. Non-statutory Nature Conservation Designated Sites

SINCs

The proposed development site lies within 2km of the following non-statutory sites:

[16] hiips://naturalresources.wales/media/669047/SS SI_2987_Citation_EN001bc78.pdf
[17] hiips://naturalresources.wales/media/669052/SSSI_2987_Map001f803.pdf
[18] hiips://naturalresources.wales/media/628526/SAC_UK0013007_Register_Entry001.pdf
[19] hiips://naturalresources.wales/media/662000/SSSI_1232_Citation_EN001606d.pdf
[20] hiips://naturalresources.wales/media/654054/SSSI_0876_Citation_EN0019fcb.pdf
[21] hiips://naturalresources.wales/media/656873/SSSI_1000_Citation_EN00141f7.pdf
[22] hiips://greenspacescaerphilly.co.uk/flatwoods -meadows/

Table 6: Non-Statutory Sites Designated Within 2km

Site Name	Designation	Description	Distance and Direction from Development Site	Development Impacts
Monmouth to Brecon Canal[23]	SINC	The whole of the canal has been included within this SINC as it forms an important linear corridor for a variety of species. It is divided by several roads and short dry sections, but still represents a significant length of wetland habitat. The most abundant canal vegetation comprises fringing stands of reed sweet-grass (*Glyceria maxima*), hemlock water dropwort (*Oenanthe crocata*), greater willowherb (*Epilobium hirsutum*), and young alders (*Alnus glutinosa*), but a wide range of other wetland plants occurs along its length. Aquatic plants occur in a few places, including water lilies, duckweeds, water soldier (*Stratiotes aloides*) and curled pondweed (*Potamogeton crispus*). The wooded embankments have a mature canopy of beech (*Fagus sylvatica*), sycamore (*Acer pseudoplatanus*) and other species.	0.1km to the north.	Due to the close proximity of the development site to the SINC, there could potentially be adverse impacts to nearby areas of the SINC as a result of the development, including increased disturbance and habitat degradation along the SINC boundary. Recommendations to mitigate these impacts are outlined in Section 4 of this report.
River Ebbw[24]	SINC	This SINC comprises the full length of the River Ebbw within the county borough and adjacent semi-natural habitats. This is one of three main watercourses in the county borough and represents a significant linear wildlife corridor. The river and the adjacent semi-natural habitats have been included to incorporate the whole of the river corridor for ecological connectivity purposes.	0.3km to the south.	Due to the close proximity of the development site to the SINC, there could potentially be adverse impacts to nearby areas of the SINC as a result of the development, including increased disturbance and habitat degradation along the SINC boundary. Recommendations to mitigate these

[23] hiip://citations.lercwales.org.uk/sinc/cly/SINC196.pdf
[24] hiip://citations.lercwales.org.uk/sinc/cly/SINC198.pdf

				impacts are outlined in Section 4 of this report.
Coed Mam-Gu[25]	SINC	A mix of broadleaved woodland, bracken and scrub. The eastern part of the site is classified as cleared ancient woodland, although a good number of semi-natural woodland indicator species are still present. A former quarry lies in the centre of the site, which is largely shaded by woodland species. The SINC also includes two small fields of sheep-grazed semi-improved acid grassland with anthills.	0.3km to the north.	Due to the localised nature of the works, no adverse impacts are anticipated to the protected sites.
River Sirhowy[26]	SINC	This SINC comprises the full length of the River Sirhowy within the county borough and adjacent semi-natural habitats. This is one of three main watercourses in the county borough and represents a significant linear wildlife corridor. The river valley is lined by trees along most of its length, and flows in a largely natural, rocky channel. Japanese knotweed occurs alongside most of the river.	0.4km to the south-west.	
Mynydd y Lan Woodlands, Cwmcarn[27]	SINC	A mixed area of woodland on sloping valley-sides, including stands of ancient broadleaved woodland and replanted ancient woodland. The oldest stands are of mature beech woods with occasional areas of sessile oak (*Quercus petraea*). The relatively sparse ground flora of these areas includes a number of plants indicative of semi-natural woodland. Younger stands of alder, downy birch (*Betula pubescens*) and sessile oak are also present with brambles forming a large component of the understorey. The site includes areas of conifer plantation and some of these have been planted on ancient woodland. Areas of felled conifer plantation are regenerating a ground flora	0.5km to the north-west.	Due to the distance of the development site from the protected sites and the localised nature of the works, no adverse impacts are anticipated.

[25] http://citations.lercwales.org.uk/sinc/cly/SINC144.pdf
[26] hiip://citations.lercwales.org.uk/sinc/cly/SINC199.pdf
[27] hiip://citations.lercwales.org.uk/sinc/cly/SINC140.pdf

		including a high proportion of Bracken, birch and bluebells with broadleaved tree species including sessile oak and rowan.		
Darran woodland, Fernlea[28]	SINC	Broadleaved woodland with areas of bracken and scrub, and a small, sheep-grazed field of semi-improved acid grassland. The main woodland area and the hedge beside Darren Road include a good number of semi-natural woodland indicator species.	0.8km to the west.	Due to the distance of the development site from the protected sites and the localised nature of the works, no adverse impacts are anticipated.
Mynydd Machen, West of Risca[29]	SINC	An area of sheep-grazed common, largely covered by a mix of bracken, acid grassland and heath. Bracken dominates most of the hillsides with heath comprising mainly bilberry, and heather is more common on the steeper parts and on the top of the hill. A field of short-grazed semi-improved acid grassland is present on the north-facing side near Gelli-ffiniog. Calcareous grassland occurs in association with former quarries at the far east site of the site. Mature trees of oak and beech occur on some of the steep north-facing slopes. Young downy birch scrub woodland is present in the eastern part of the site.	0.8km to the south.	
Mynydd y Lan, West of Cwmcarn[30]	SINC	An area of sheep grazed upland common, supporting a mix of bracken, acid grassland and heath. The top of the plateau area supports heathland comprising mainly bilberry and heather in the southern part of the SINC, while the more heavily grazed northern half supports a mix of purple moor-grass (*Molinia caerulea*) and soft rush (*Juncus effusus*). Bracken dominates most of the hillsides, especially close to the adjacent woodlands. Young trees of downy birch occur in a few places, generally in association with bracken. Two ponds and a number of dry	0.9km to the west.	

[28] hiip://citations.lercwales .org.uk/sinc/cly/SINC146.pdf
[29] hiip://citations.lercwales.org.uk/sinc/cly/SINC150.pdf
[30] hiip://citations.lercwales.org.uk/sinc/cly/SINC137.pdf

		ditches are also present. At the south of the site a disused quarry includes rock outcrops and acid grassland.		

Ancient Woodland Sites

The following table shows the ancient woodland sites within 2km of the site:

Table 7: Ancient Woodland Sites Within 2km

Ancient Woodland Site	Number within 2km of Site
Ancient Semi-Natural Woodland (ASNW)[73]	34
Restored Ancient Woodland Sites (RAWS)[74]	One
Plantations on Ancient Woodland Sites (PAWS)[75]	35
Ancient Woodland Sites of Unknown Category[76]	16
Nearest Area of Ancient Woodland	Two unnamed area of ASNW located 0.2km from the site, one located north and the other located to the south.
Development Impacts	None, due to the distances between these woodlands and the proposed development site

3.3. Habitats and Vegetation

The results of the general survey of habitats and vegetation are shown on Plan 4. A botanical species list is provided in Appendix 4.

The site consists of following elements which are described in detail overleaf. These comprise:

Table 8: On-Site Habitats

Phase 1 Habitat	UK Habs Habitat	Description	Ecological Value	Development Impacts
Scattered Broadleaved and Coniferous Trees (A3.1 and A3.2)	J5 Other Habitat	Multiple scattered broadleaved and coniferous trees are present within the development site. Detailed descriptions of these trees are included in Section 3.6.3. Their locations are shown on Plan 4.	Site Value	Development impacts cannot be assessed in the absence of development plans. Impacts will be assessed when the development plans are decided.
Amenity Grassland (J1.2)	g4 Modified grassland	Large patches of amenity grassland are located across the development site. Perennial rye-grass is dominant present (*Lolium perenne*). Dandelion (*Taraxacum officinale agg.*), red clover (*Trifolium pratense*), and Yorkshire fog (*Holcus lanatus*) are all abundant. Frequent daisy (*Bellis perennis*),	Site value	

		creeping buttercup (*Ranunculus repens*), yarrow (*Achillea millefolium*) and ribwort plantain (*Plantago lanceolata*) are all present throughout the amenity grassland, along with occasional bittercress species (*Cardamine* sp), lesser celandine (*Ficaria verna*), field woodrush (*Luzula campestris*), common cat's-ear (*Hypochaeris radicata*), red fescue (*Festuca rubra*), common ragwort (*Senecio jacobaea*), common vetch (*Vicia sativa*), bristly oxtongue (*Helminthotheca echioides*) and annual meadow-grass (*Poa annua*). The grassland located by the car park entrance is dominated by red fescue, with abundant dandelion, frequent daisy and ribwort plantain, and occasional bittercress species (*Cardamine* sp.).		

Introduced shrub (J1.4)	Urban Introduced Shrub	Various patches of introduced shrub occur across the development site. The fenced-off section within the amenity grassland at the centre of the site contained barberry (*Berberis vulgaris*), silver birch (*Betula pendula*), holly (*Ilex aquifolium*), cherry laurel (*Prunus laurocerasus*), cherry sp (*Prunus sp*), bramble (*Rubus fruticosus agg.*), willow spp (*Salix spp.*), Leyland cypress (*Cupressus x leylandii*), and ivy (*Hedera helix*). The introduced shrub sections to the south of X block comprise red-tip photinia (*Photinia x fraseri*). No other species are present within this plantation. Other sections of introduced shrub on the northern and eastern boundaries of the site included holly, ivy, garden cotoneaster (*Cotoneaster* sp.), Mexican orange-blossom (*Choisya ternate*), hazel (*Corylus avellana*), and traveller's-joy (*Clematis vitalba*). Sycamore (*Acer pseudoplatanus*) saplings, and ash (*Fraxinus excelsior*) saplings are also present.	Site Value.	
Hedgerow with Trees (J.2.3.1);	h2a hedgerow (Priority habitat)	The hedgerows on site largely comprise box-hedge planting (*Buxus sempervirens*). Young beech trees, laurel species (*Laurus* spp.), cherry trees and holly are frequently planted along the hedgerows. Blackthorn, ivy, red-tip photinia and silver maple (*Acer saccharinum*) are also present throughout the hedgerows.	High Local.	These hedgerows with trees are likely to be retained.
Fence (J3.4)	Urban-Built Linear Features	Metal and wooden fences are present throughout the development site. Some of these fences feature a small degree of ivy coverage.	Site Value.	No adverse impacts anticipated.

Buildings (J.3.6)	Urban - Developed land; sealed surface (u1b)	Approximately fifteen buildings are present on site, used as educational spaces, workshops and for chemical storage. Detailed building descriptions are provided in Section 3.5.3 below.	Site value .	At the time of writing, final plans are yet to be developed. Impacts should be reassessed once final plans are in place.
Hard Standing[13]	Urban - Developed land; sealed surface (u1b)	Hard standing in the form of pathways and car parking is abundant across the site.	Negligible value.	Could largely be retained as part of the development.

As the impact of the proposals are to be confined to the development footprint it is not anticipated that there will be any adverse impact to the habitats off site.

Photo 1: Example of Amenity Grassland (North of F Block)

Photo 2: Introduced Shrub

Photo 3: Species Rich Hedgerow with Trees

Photo 4: Fence

Photo 5: Buildings

Photo 6: Hard Standing

3.4. Invasive Plant Species

No invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded during the site visit.

3.5. Assessment of Ecological Value of Off-site Habitats

Survey Results

The off-site habitats surrounding the site largely consist of developed land, amenity grassland and urbanised environments. They are assessed as supporting low-grade and widespread habitats of value only within the immediate zone of influence (i.e of very low ecological significance). The site does, however, lie 0.1km to the south of the Monmouth and Brecon Canal SINC, which forms an important linear corridor for a variety of species. The SINC is separated from the site by several roads and short dry sections, but still represents a significant length of wetland habitat.

Assessment of Development Impacts

The areas of amenity grassland are assessed as being a low-grade and widespread habitat of value only within the immediate zone of influence (i.e of very low ecological significance).

No particularly noteworthy plant species were recorded from these habitats during the current survey. The grassland areas are probably of some minor value for fauna such as foraging birds, bats, small mammals, and invertebrates, but are considered unlikely to be of any greater than average value for these species.

3.6. Protected and Notable Species

3.6.1. Notable Plant Species

Data Trawl Results

SEWBReC returned records of 49 rare and/ or 'notable' plants (including species regarded as 'Locally Important', LBAP species and UK Red Data Book-listed species).
One priority plant species were recorded within 1km of the site, namely: bluebell (*Hyacinthoides non-scripta*).However, bluebell is mainly protected from sale via its listing under Schedule 8 of the Wildlife and Countryside Act.

Four plant listed as species of conservation concern were recorded within 1km of the site, namely: fritillary (*Fritillaria meleagris*), Welsh poppy (*Meconopsis cambrica*), grape-hyacinth (*Muscari neglectum*) and branched bur-reed (*Sparganium erectum*).

21 plant listed as locally important species were recorded within 1km of the site, namely: autumn lady's-tresses (*Spiranthes spiralis*), mistletoe (*Viscum album*), narrow-leaved water-plantain (*Alisma lanceolatum*), various-leaved water-starwort (*Callitriche platycarpa*), thin-spiked wood-sedge (*Carex strigosa*), rigid hornwort (*Ceratophyllum demersum*), common spotted-orchid (*Dactylorhiza fuchsii*), southern marsh-orchid (*Dactylorhiza praetermissa*), lesser celanine (*Ficaria verna var. bulbifer)*, small cudweed (*Filago minima*), hairy St John's-wort (*Hypericum hirsutum*), ivy-leaved duckweed (*Lemna trisulca*), tree-mallow (*Malva arborea*), round-leaved mint (*Mentha suaveolens*), spiked water-milfoil (*Myriophyllum spicatum*), yellow water-lily (*Nuphar lutea*), white water-lily (*Nymphaea alba*), common reed (*Phragmites australis*), river water-crowfoot (*Ranunculus fluitans*), yellow-rattle (*Rhinanthus minor*) and grey field-speedwell (*Veronica polita*).

23 plant listed as other plant species (i.e. invasive species) were recorded within 1km of the site, namely: butterfly-bush (*Buddleja davidii*), wall cotoneaster (*Cotoneaster horizontalis*), himalayan cotoneaster (*Cotoneaster simonsii*), montbretia (*Crocosmia pottsii x aurea = C. x crocosmiiflora*), bluebell (*Hyacinthoides non-scripta x hispanica = H. x massartiana*), *Lamiastrum galeobdolon subsp. argentatum*, cherry laurel (*Prunus laurocerasus*), japanese rose (*Rosa rugosa*), white stonecrop (*Sedum album*), cotoneaster (*Cotoneaster*), montbretia (*Crocosmia*), canadian waterweed (*Elodea canadensis*), nuttall's waterweed (*Elodea nuttallii*), new zealand willowherb (*Epilobium brunnescens*), japanese knotweed (*Fallopia japonica*), Spanish bluebell (*Hyacinthoides hispanica*), himalayan balsam (*Impatiens glandulifera*), curly waterweed (*Lagarosiphon major*), Himalayan honeysuckle (*Leycesteria formosa*), parrot's-feather (*Myriophyllum aquaticum*), rhododendron ponticum (*Rhododendron ponticum*), snowberry (*Symphoricarpos albus*) and greater periwinkle (*Vinca major*).

Field Survey Results

No plant species, which individually are considered to be of either of national, regional or local significance were recorded on the site.

3.6.2. Birds

Desk Study Results

SEWBReC returned records of 25 priority bird species within 1km of the site, namely: goshawk (*Accipiter gentilis*), skylark (*Alauda arvensis*), kingfisher (*Alcedo atthis*), tree pipit (*Anthus trivialis*), cuckoo (*Cuculus canorus*), peregrine (*Falco peregrinus*), kestrel (*Falco tinnunculus*), brambling (*Fringilla montifringilla*), linnet (*Linaria cannabina*), red kite (*Milvus milvus*), curlew (*Numenius arquata*), house sparrow (*Passer domesticus*), dunnock (*Prunella modularis*), bullfinch (*Pyrrhula pyrrhula*), starling (*Sturnus vulgaris*), redwing (*Turdus iliacus*), song thrush (*Turdus philomelos*), fieldfare (*Turdus pilaris*), barn owl (*Tyto alba*), lapwing (*Vanellus vanellus*), lesser redpoll (*Acanthis cabaret*), nightjar (*Caprimulgus europaeus*), crossbill (*Loxia curvirostra*), spotted flycatcher (*Muscicapa striata*) and wood warbler (*Phylloscopus sibilatrix*).

23 birds listed as species of conservation concern were recorded within 1km of the site, namely: common sandpiper (*Actitis hypoleucos*), long-tailed tit (*Aegithalos caudatus*), mallard (*Anas platyrhynchos*), meadow pipit (*Anthus pratensis*), swift (*Apus apus*), grey heron (*Ardea cinerea*), greenfinch (*Chloris chloris*), dipper (*Cinclus cinclus*), whitethroat (*Curruca communis*), snipe (*Gallinago gallinago*), swallow (*Hirundo rustica*), lesser black-backed gull (*Larus fuscus*), grey wagtail (*Motacilla cinerea*), wheatear (*Oenanthe oenanthe*), cormorant (*Phalacrocorax carbo*), willow warbler (*Phylloscopus trochilus*), green woodpecker (*Picus viridis*), goldcrest (*Regulus regulus*), whinchat (*Saxicola rubetra*), woodcock (*Scolopax rusticola*), mistle thrush (*Turdus viscivorus*), redstart (*Phoenicurus phoenicurus*) and sand martin (*Riparia riparia*).

SEWBReC also returned two birds listed as locally important species within 1km of the site, namely: buzzard (*Buteo buteo*) and British dipper (*Cinclus cinclus gularis*).

No birds listed as other bird species (i.e. invasive species) were recorded within 1km of the site.

Field Survey Results

A moderate number of birds were recorded on site, including blackbird (*Turdus merula*), buzzard, goldfinch (*Carduelis carduelis*), magpie (*Pica pica*), raven (*Corvus corax*), and wood pigeon (*Columba palumbus*).

A defunct nest was recorded in a cypress tree beside the visitor's car park (TN1, Plan 7). The species of origin is unknown.

Photo 7: Cypress Tree Containing Nest

Photo 8: Defunct Nest in Cypress Tree (Circled)

Evaluation of Ecological Value of Site for Birds

The areas of introduced shrub and scattered broadleaved trees provide nesting and foraging opportunities for a range of tree and shrub-nesting bird species, potentially including a range of UK BAP and Red List species which were recorded in this area; however, these features are widespread and common in the surrounding landscape, such as the Monmouth and Brecon Canal SINC 0.1km to the north of the site.

Impact Assessment of Proposed Development on Birds

Any clearance of hedgerows, scrub or tree felling has potential to destroy birds' nests if the works are undertaken between March – August. Disturbance effects are also a possibility if Schedule 1 birds are present on or adjacent to the site during any future construction or operational phases. It is considered that impacts could likely be mitigated relatively easily, particularly by retaining all boundary hedgerows. However, in the absence of detailed development proposals, it is not possible to fully assess the potential impacts on birds. This impact assessment must be reviewed and amended in light of detailed development proposals being made available.

3.6.3. Bats

Desk Study Results

SEWBReC returned a total of five records of bat roosts within 1km of the site. The roost records are summarised in the table below.

Table 9: Bat Roost Records

Species	Total Number of Records	Distance to Nearest Record	Most Recent Record	Maximum Count
Unidentified bats	Two	0.1km from the site.	2002	40
Pipistrelle bat species (*Pipistrellus sp.)*	Two	0.4km from the site.	1994	237
Common pipistrelle (*Pipistrellus pipistrellus*)	One	0.5km from the site.	2010	1

In addition to the roost records, SEWBReC returned many records of bats foraging or commuting within 1km of the site. These included: common pipistrelle, pipistrelle species, noctule, brown long-eared (*Plecotus auritus*), soprano pipistrelle, myotis species (*Myotis sp.*), Daubenton's bat, whiskered (*Myotis mystacinus*),

Nathusius's pipistrelle (*Pipistrellus nathusii*), lesser noctule (*Nyctalus leisleri*), Brandt's bat (*Myotis brandii*), serotine (*Eptesicus serotinus*), Natterer's (*Myotis nattereri*) and greater horseshoe.

Field Survey Results and Evaluation of Ecological Value of Site for Bats

Trees

All of the trees within the survey area were assessed for their suitability to support roosting bats. The majority of the scattered trees were semi-mature in age, with no PRFs. They were therefore assessed as having negligible bat roost potential and were scoped out of the assessment. They are therefore not mentioned further in this context in the report.

However, the trees marked T1-11 on Plan 5 comprised several trees ranging from semi-mature to mature in age. These have been described in detail in the table below and numbered on Plan 5, which should be read in conjunction with this section of the report.

Table 10: Trees Assessed for Bat Potential

No.	Description	Evidence of Roosting Bats	PRF	Suitability for Roosting Bats
T1	Mature cherry tree, single trunk	None.	Broken limb on south-western facing side, large hole in remaining limb section. Approximately 3.5m from ground height (Photo 9-10).	Moderate
T2	Mature willow-leaf cotoneaster (*Cotoneaster salicifolius*), single trunk	None	Dense ivy coverage on all elevations (Photo 11-12).	Low
T3	Mature cherry tree, single trunk	None.	Snapped limb on north-eastern side of the trunk (Photo 13-14).	Low
T4	Mature sycamore tree, single trunk	None.	Dense ivy coverage on all elevations (Photo 15).	Low
T5	Mature sycamore tree, single trunk	None.	Dense ivy coverage on all elevations (Photo 15).	Low
T6	Mature sycamore tree, single trunk	None.	Dense ivy coverage on all elevations (Photo 15).	Low
T7	Mature sycamore tree, single trunk	None.	Dense ivy coverage on all elevations (Photo 15). Bat box present.	Low
T8	Mature sycamore tree, single trunk	None.	Dense ivy coverage on all elevations (Photo 15-17).	Moderate
T9	Mature sycamore tree, single trunk	None.	Dense ivy coverage on all elevations (Photo 15).	Low
T10	Mature sycamore tree, single trunk	None.	Dense ivy coverage on all elevations (Photo 15).	Low
T11	Mature willow-leaf cotoneaster tree, single trunk	None.	Some knot holes on south-eastern elevation, bark is flaking and features multiple cracks/gaps (Photo 18).	Low

Photo 9: Mature Cherry Tree (T1)

Photo 10: Hole in Limb, T1 (PRF)

Photo 11: Mature Willow-Leaved Cottoneaster (T2)

Photo 12: Dense Ivy Coverage, T2 (PRF)

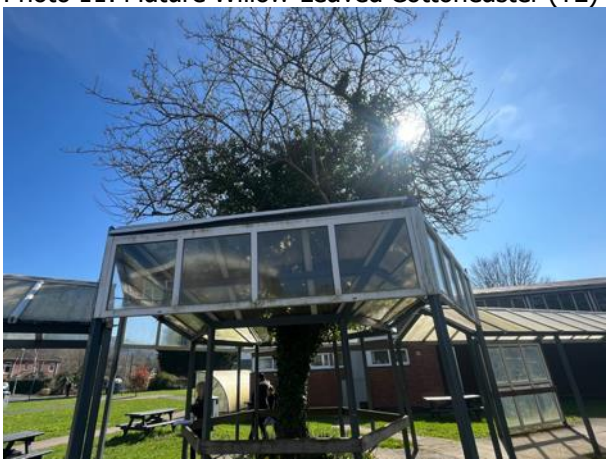


Photo 13: Mature Cherry Tree (T3)

Photo 14: Knot Hole (Circled), T3 (PRF)

Photo 15: T4-T10

Photo 16: Dense Ivy Growth, T8

Photo 17: Damaged Limb with Knot Holes, T8

Photo 18: Mature Willow-Leaf Cotoneaster Tree, T11

T2-7 and T9-11 have been assessed as having low potential to support roosting bats.

T1 and T8 have been assessed as having moderate potential to support roosting bats.

Buildings and Other Structures

Building Descriptions

Description of Block A

Block A is a red-brick building with areas of wooden cladding, which appears in good condition throughout (Photo 19). The UPVC windows are all well-sealed, fitting well into their apertures. Security lights are present on all elevations. The roof is pitched and comprises plastic sheeting, which appears to be in good condition. The uPVC soffits are mostly well-sealed, however a slight gap is present between the wall and the soffit box on the northern elevation (Photo 22). There are also gaps between the soffit box and external wall above the window on the western elevation and another on the southern elevation. A large hole is also present in the soffit on the southern elevation. These features all provide suitable roosting locations for bats. A metal garage door is present on the southern elevation, with a timber frame. This is well-sealed, with no gaps present. Two timber connecting structures are present between the A Block buildings, both of which contain small voids (Photo 99, Photo 100). The voids are very shallow in depth. Void 1 is well-

sealed, with no light ingress present. Void 2, however, has an open hatch, providing access to bats (Photo 21). There are sections of lifted lead flashing and loose panelling present on Void 2, which also provide suitable access points and roosting locations for bats.

Description of Block B

Block B features a similar composition to Block A, however the wooden cladding is in considerably poorer condition. The cladding is coming away from the wall on the eastern elevation, and in some sections has rotted away (Photo 31). This provides a potential roosting location for crevice-dwelling bats. Some bricks are missing in the wall on the eastern elevation, and multiple gaps are present in the mortar between the bricks (Photo 26). Some sections of lead flashing on the eastern elevation are lifted, and gaps are also present beneath the timber door (Photo 25). There are various holes in the wooden cladding on all elevations, which may provide suitable roosting locations for crevice-dwelling bats (Photo 27). There is also a large gap present in the soffit box on the eastern and southern elevations (Photo 29, Photo 30). Vents are present on all elevations, however the majority of these are grated, with the exception of an accessible vent on the eastern extension. The void present in B Block (Void 3) comprises a metal A-frame structure, with a plywood ceiling and foam insulatio. Rockwool insulation is present throughout the void in large quantities. A water tank is present within the void; this is covered (Photo 101). Considerable light ingress originates from the uncapped vent on the eastern elevation, which may also act as an access point for roosting bats (Photo 102). The floor is very clean, with minimal clutter. No evidence of bats was recorded during the survey.

Description of Block C

Block C is comprised of breezeblocks, which appear to be in good condition with no gaps in the mortar (Photo 33). However, some cavities are present in the wall on the western elevation, where the mortar has eroded away (Photos 34-35). The roof is flat, with no void present, and is constructed using metal sheeting. The uPVC windows fit well in their apertures, with no gaps present. A vent is present on the western elevation, which is well-sealed. Some gaps are present under the metal roof trim, however the thermal properties of the trim make this unsuitable for bats. The building is regularly used, and so experiences high levels of footfall and disturbance.

Description of Block E

Block E comprises red brick, with wooden panelling present on the connecting building (Photo 36, Photo 42). The soffits and fascias are composed of uPVC, and the roof is constructed using plastic panelling in a pitched formation. The extension on the western elevation features the same construction, however the roof is flat and comprises felt. A hole is present in the wall beneath the soffit on the western elevation, where the extension meets the main structure (Photo 37). Gaps are also present in the metal panels of the fascias on the northern and southern elevations; however, due to the thermal properties of the material, this is unlikely to be used as a roosting location by bats (Photo 38). There are numerous gaps in the brickwork on the northern elevation, which could be utilised by crevice-dwelling bats (Photo 40). There are

also access points into the soffits in the form of cracked seals above the uPVC windows on the northern elevation. No void is present within the roof.

Description of Block F

Block F is a wooden-clad structure with a flat roof and uPVC soffits (Photo 43). The wooden cladding is in very poor condition, with multiple small holes and gaps present on all elevations; these provide access and roosting locations for crevice-dwelling bats (Photo 44). Multiple panels are lifted or damaged (Photo 45-46). The uPVC soffits appear to be well-sealed, with no visible gaps present. No void is present within the roof.

Description of Block G

Block G comprises multiple conjoined buildings, including a similar red-brick structure to Block C, although the roof is flat with timber fascias (Photo 47). The wooden panelling is in good condition; however, small cavities are present between the bricks due to the eroded mortar on all elevations of the extension (Photo 48). A small porch is present on the southern elevation of the structure and is composed of timber and metal (Photo 49). This appears well sealed, with no potential access. The adjoining building features metal cladding with a brown render, and a brick main structure (Photo 50). uPVC windows are present throughout the block, all of which appear well sealed. The metal fascias appear well sealed on the western elevation, however gaps are present on all other elevations (Photo 53). The thermal properties of the metal make these unsuitable for crevice-dwelling bats. Timber fascias are present on the red-brick extension, and these feature some gaps and access points (Photo 52). Dense ivy coverage is present on the south-western elevation, which penetrates the timber soffits and provides both access and roosting features for bats (Photo 52). Some vents are present on various elevations, however these are all grated and do not provide access points. The void in G Block was locked and was therefore inaccessible at the time of the survey. It is unknown whether evidence of bats is present within the void.

Description of Block J

Block J is a newer-build construction. It comprises red-brick walls, with white uPVC cladding coating various sections of the walls (Photo 55). The roof comprises plastic panelling, with five pitches (Photo 55). The uPVC fascias are mostly well-sealed, however some small gaps are present on all elevations (Photo 56). There are large holes in the brickwork to the rear of the building, and some areas of mortar have also eroded away, providing roosting points for crevice-dwelling bats (Photo 59-61). The windows are uPVC and all fit well in their apertures. There are some gaps present in the metalwork of the roof, particularly at the apex of the pitches and the metal ridge tiles (Photo 58). However, the thermal properties of these make them unsuitable for roosting bats. The roofing was updated in 2019, with cladding completed in 2023. The cladding on the roof is well-sealed throughout the building.

Description of Block K

Block K features wooden cladding and a felt roof, which is symmetrically pitched (Photo 62). The windows have timber frames which are well-sealed, fitting well into their apertures. The soffit is damaged on the

western elevation, with a large hole present towards the northern end (Photo 64). There are also gaps in the wall on both the eastern and western elevations where the wooden panelling has rot away, which may be suitable for crevice-dwelling bats (Photo 63, Photo 65). The fascias, roof tiles and ridge tiles are all well aligned and well-sealed, and no lifted lead flashing is present. No void is present within the block.

Description of Block L/R

Block L/R is comprised of a red brick structure with sections of plastic cladding (Photo 67). The windows are composed of uPVC, and the bargeboards are constructed using metal. Some sections of the pitched roof are constructed using glass panelling and others using metal sheeting, which are all well-sealed throughout. Some very small gaps are present between the brickwork where mortar is missing; however, these gaps are too small to be utilised by bats (Photo 68). No voids are present within the block, as the rooms extend up to the roof of the building.

Description of Block S

Block S is a two-storey structure comprised of brick, with some areas of plastic cladding (Photo 69). The windows and doors are comprised of uPVC, all of which are well-sealed and fit well into their apertures. The roof is flat and made of metal cladding. Security lights are present on all elevations of the block. The lead flashing is generally in good condition, however some sections are lifted around the entryway of the northern elevation (Photo 70). Gaps are present in the soffits at the apex of the building on the northern elevation (Photo 71) There are also gaps in the trim of the soffit on the western elevation (Photo 72). No access to the loft hatch was available during the survey, therefore it is unknown whether evidence of bats is present. However, the void is deemed unsuitable for bats due to the metal cladding on the roof and the lack of access points.

Description of Block T

Block T is comprised of breezeblock, with plastic cladding. The roof is flat and comprises felt (Photo 76). The block is a two-storey structure with a one storey structure adjoining (Photo 73). Security lights are present on all elevations. The lead flashing appears to be raised on all elevations (Photo 77, Photo 81) A chimney is present, which is capped, and vents are also present on all elevations of the building. It is not clear whether these are guarded. The roof felt is lifted in some areas, creating gaps which bats could utilise for roosting and access into the building (Photo 76). The wooden porches on the northern and western elevations also feature some gaps caused by rotting timbers, which may be utilised by roosting bats (Photo 78). The southern elevation features very large gaps and sections of missing timbers from the wooden overhang, providing both roosting and hibernation potential (Photo 80). There are gaps present in the metal cladding and soffit on the northern elevation, however this is not considered suitable for bats due to its thermal properties. The loft void was visible only from the loft hatch, however no access points or light ingress were recorded. No evidence of bats was recorded during the survey. The void (Void 4) comprises breezeblock walls with plasterboard cladding (Photo 103). Timber floor beams are clear with minimal clutter, and metal pipework runs across the floor. No evidence of bats was recorded during the survey.

Description of Block X

Block X is constructed of breezeblock, with cement rendering and timber and metal cladding (Photo 83-84). The building is reasonably newly-constructed and is well sealed throughout. The roof is flat (Photo 90). In areas where the timber cladding meets metal, there are some gaps and lifting present, providing access to roosting bats (Photo 85). Gaps and holes are present in the timber cladding on the eastern elevation, where sections of timber have rotten away (Photo 86-87). There are also some lifted timber planks on the northern elevation (Photo 88). Vents and chimneys are present, however all are capped with no access available to bats. Security lights are present on all elevations. No voids are present, making the building wholly unsuitable for void-dwelling bats.

Description of Block Z

Block Z is constructed of brick and wooden cladding (Photo 91). Wooden soffits are present on all elevations, and the fascias are constructed using plastic (Photo 91). The roof is flat and made of felt. The building is reasonably well-sealed, however a very small cavity is present in the fascia board on the eastern elevation, and some areas of the soffit box are not flush to the surrounding wall on the southern elevation. These may provide access or roosting locations for crevice-dwelling bats. A large gap is also present between the soffit panels on the north-west elevation (Photo 92). No voids are present.

Description of Energy Centre

The Energy Centre is a small building situated between blocks X and L/R. It is comprised of brick, with a cement render (Photo 97). The roof is flat and made of metal sheeting, which is well-sealed. The building is newly constructed and well-sealed on all elevations.

Description of Chemical Store

The Chemical Store is a small building comprised of red brick, with wooden doors and a flat felt roof (Photo 94). The soffits are constructed using timber. There is a large gap present where the soffit meets the wall on the northern elevation, as well as a large gap where the timber fascia has come away from the on the eastern elevation (Photo 95-96). Both of these features could provide potential roosting or hibernation points for bats.

Photo 19: A Block External

Photo 20: Gap Between Timber Bargeboard and Metal Garage Door (A Block)

Photo 21: Open Void Panel, Connecting A Block Buildings

Photo 22: Gap Between Window Frame and Soffit Box (A Block)

Photo 23: A Block (Internal)

Photo 24: B Block (External)

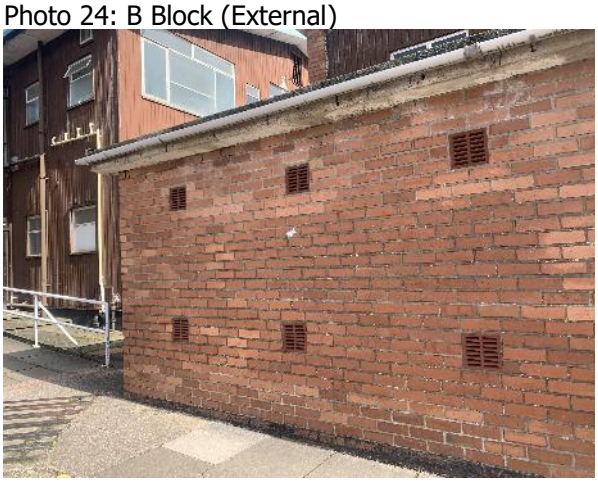


Photo 25: Gaps Beneath Lead Flashing (B Block)

Photo 26: Large Gaps in Brickwork (B Block)

Photo 27: Hole in Wooden Cladding (B Block)

Photo 28: Vents in Red Brick Building (B Block)

Photo 29: Large Gap in Soffit Box (B Block)

Photo 30: Gap in Soffit Box (B Block)

Photo 31: Damaged Wooden Panelling (Southern Elevation) (B Block)

Photo 32: Crevice Caused by Eroded Mortar (B Block)

Photo 33: C Block (External)

Photo 34: Small Cavity in Mortar (C Block)

Photo 35: Cavities in Mortar (C Block)

Photo 36: E Block Exterior

Photo 37: Hole in Brickwork Behind Soffit (E Block)

Photo 38: Raised Metal Trim on Fascia (E Block)

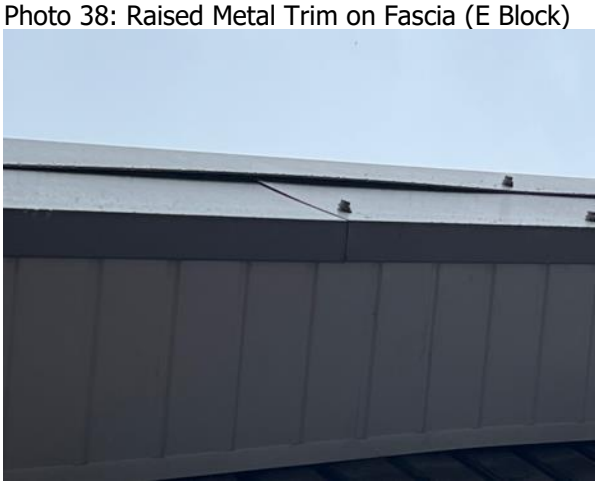


Photo 39: Hole in Wood Panelling (E Block)

Photo 40: Gaps in Brickwork Beneath Soffit (E Block)

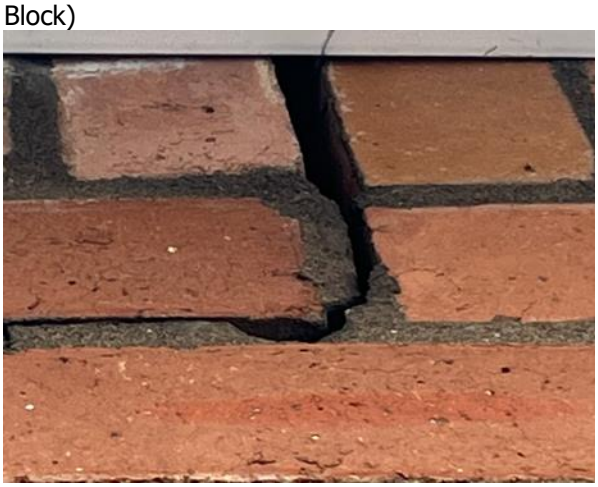


Photo 41: Crack in Plastic Soffit Trim (E Block)

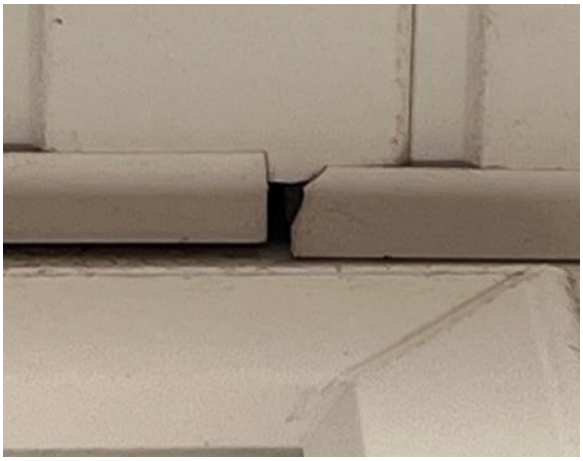


Photo 42: Connecting Building Between E and F Block with Damaged Wood Panelling

Photo 43: F Block (External)

Photo 44: Lifted Wood Panelling (F Block)

Photo 45: Missing Sections of Wooden Cladding (F Block)

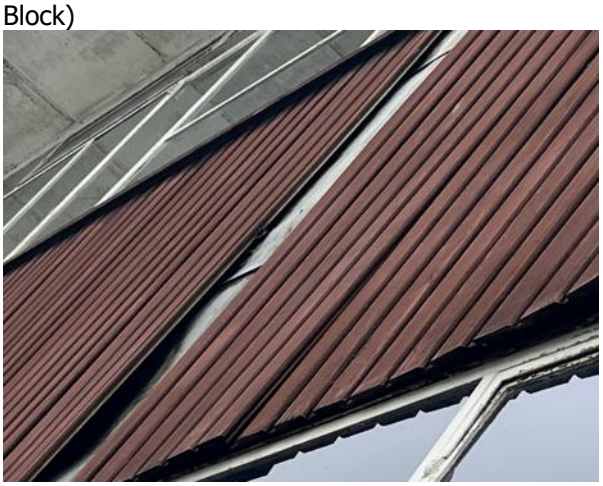


Photo 46: Damaged Wood Panelling (F Block)

Photo 47: G Block, Exterior

Photo 48: Eroded Mortar (G Block)

Photo 49: Timber Porch Overhang (G Block)

Photo 50: Cladding on Exterior of G Block

Photo 51: Rear of G Block with Dense Ivy Coverage (G Block)

Photo 52: Ivy Growing into Soffit (G Block)

Photo 53: Lifted Metal Trim, Southern Elevation (G Block)

Photo 54: Gaps Beneath uPVC Trim, Southern Elevation (G Block)

Photo 55: J Block (External)

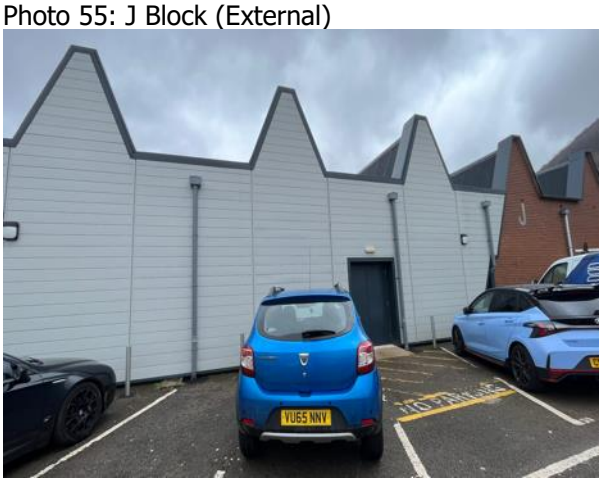


Photo 56: Gaps Between Bargeboards (J Block)

Photo 57: J Block Cladding and Roof Structure

Photo 58: Gaps in Ridge/End Tiles (J Block)

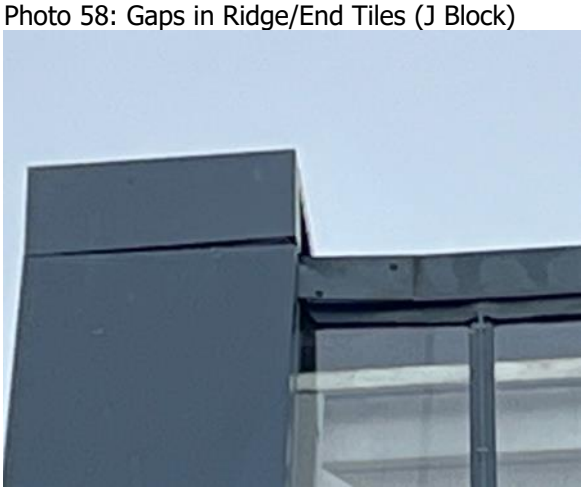


Photo 59: Missing Brick, Eastern Elevation (J Block)

Photo 60: Gap Above Drain Pipe, Northern Elevation (J Block)

Photo 61: Gaps in Brickwork, Northern Elevation (J Block)

Photo 62: K Block Exterior

Photo 63: Missing Wooden Cladding, Western Elevation (K Block)

Photo 64: Large Missing Section of Soffit (K Block)

Photo 65: Damaged Wooden Panelling (K Block)

Photo 66: Uncapped Vent (K Block)

Photo 67: Combined Blocks L and R

Photo 68: Gaps in Brickwork (Circled) (Block L/R)

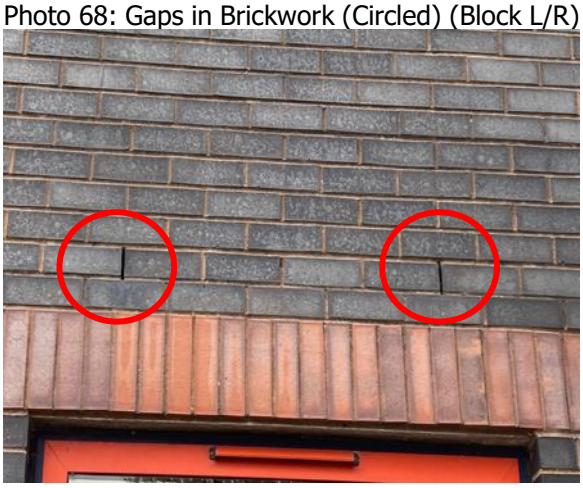


Photo 69: S Block Exterior (Block L/R)

Photo 70: Raised Lead Flashing (Block L/R)

Photo 71: Gaps Present in Soffits at Apex (Block L/R)

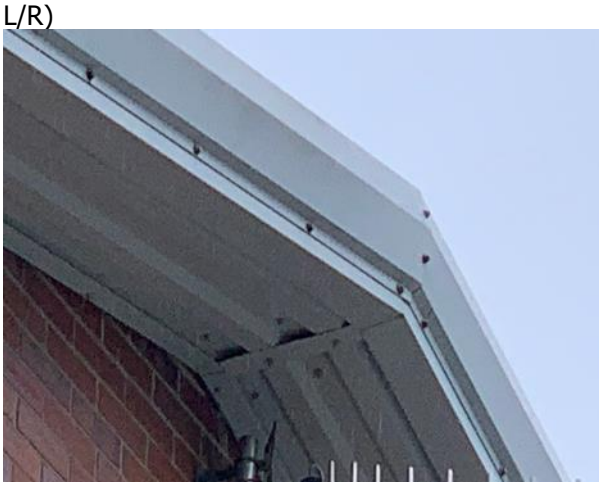


Photo 72: Gap in Trim of Soffit (Block L/R)

Photo 73: T Block (External)

Photo 74: Lifted Lead Flashing (T Block)

Photo 75: Lifted Roof Trim (T Block)

Photo 76: Gap Beneath Roofing Felt (T Block)

Photo 77: Lifted Lead Flashing (T Block)

Photo 78: Gap in Porch Surrounding Pillar (T Block)

Photo 79: Gap Beneath Soffit (T Block)

Photo 80: Damaged Timber Porch Cover (T Block)

Photo 81: Raised Lead Flashing (T Block)

Photo 82: Vents Present (Guarding Unknown) (T Block)

Photo 83: X Block (Exterior)

Photo 84: X Block (Exterior)

Photo 85: Gap Beneath Raised Timber Panel (X Block)

Photo 86: Gaps Between Wooden Panelling (X Block)

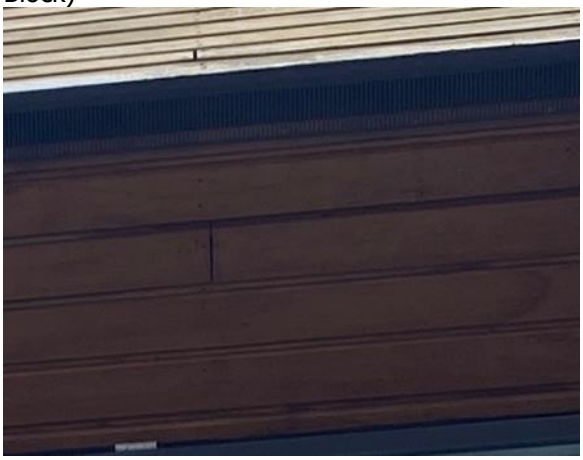


Photo 87: Damaged/Rotting Timber Panelling (X Block)

Photo 88: Lifted Wooden Panelling (X Block)

Photo 89: Gap in Wall Above Flat Roof (X Block)

Photo 90: X Block Roof

Photo 91: Z Block Exterior

Photo 92: Gap in Soffits (Z Block)

Photo 93: Damaged Soffit (Z Block)

Photo 94: Chemical Storage Buildings (Z Block)

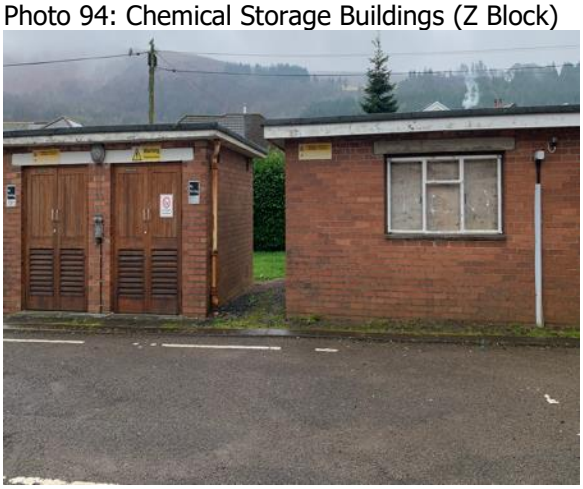


Photo 95: Damaged Timber Soffit (Z Block)

Photo 96: Lifted Fascia (Z Block)

Photo 97: Energy Centre (External)

Photo 98: Void Access to A Block Connecting Structure (Void 1)

Photo 99: Internal View of Void 1 (External)

Photo 100: Internal View of Void 2

Photo 101: Covered Water Tank in B Block (Void 3)

Photo 102: Uncovered Vent Allowing Access (Void 3)

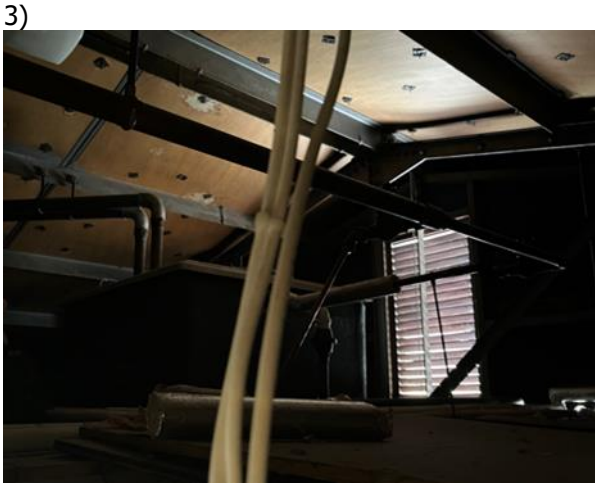
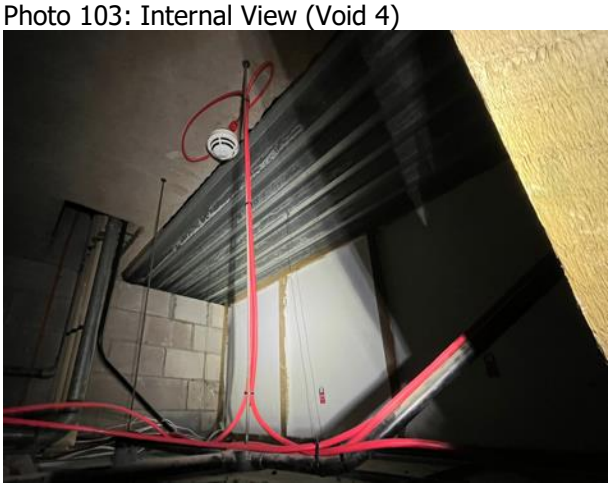


Photo 103: Internal View (Void 4)



Potential Building Roosts

B3, B9 and B14 have been assessed as having negligible potential to support roosting bats.

B1, B4, B6-8, B10, B12, B13 and B15 have all been assessed as having low potential to support roosting bats.

B2, B5 and B11 have been assessed as having moderate potential to support roosting bats.

Potential Tree Roosts

Many trees within the site have simple growth forms and an absence of associated potential bat roost features. However, the trees marked T1-11 on Plan 5 comprised several trees ranging from semi-mature to mature in age. Potential roosting features are present on T1-11. T1 features a broken limb on the south-western elevation, with a large hole in the remaining limb section. It has been assessed as having moderate potential. T2 has dense ivy coverage on all elevations, with low roosting potential, and T3 features a snapped limb on the north-eastern side of the trunk. T4-T10 feature dense ivy coverage and are therefore considered to have low roosting potential, with the exception of T8 which was deemed to be moderate. T11 has some knot holes on the south-eastern elevation, with flaking bark and multiple cracks/gaps in the bark. It has been assessed as having low roosting potential.

Potential Foraging and Commuting Habitat

The campus comprises large and relatively modern campus buildings on hard standing, with some areas of heavily managed amenity grassland and a small number of scattered trees. The habitats surrounding the campus includes a railway lined with dense trees to the north, which may act as an ecological corridor for foraging and commuting bats, connecting the campus buildings to the wider landscape. The Ebbw River is located to the south-west of the site and is lined by trees which may be used by foraging and commuting bats to travel between the campus and the wider woodland landscape. These features make the area of moderate-quality for foraging and commuting bats.

An assessment of the value of the habitats on site for foraging and commuting bats is given in the table below:

Table 11: Bat Habitat Suitability

On-site Habitat	Habitats Value for Commuting and Foraging Bats	Justification for Assessment
Amenity Grassland	Low	Amenity grassland is heavily managed and provides minimal features utilised by foraging and commuting bats.
Introduced Shrub	Low	The introduced shrub is scattered across the site, namely at the boundary edges and throughout the car park. All areas of introduced shrubbery are within highly urbanised areas, but could be used for commuting and foraging activity.
Species Rich Hedgerow With Trees	Moderate	The species-rich hedgerows with trees provide ecological connectivity to the surrounding environs, which have been assessed as having moderate potential for foraging and commuting bats. Some of the trees present within the hedgerows have also been assessed as providing potential roosting locations for bats. This is outlined in Table 10 above.
Scattered Broadleaved and Coniferous Trees	Moderate	Some of the scattered broadleaved and coniferous trees have been assessed as providing potential roosting locations for bats. This is outlined in Table 10 above.
Hard Standing	Negligible	No features of the hard standing habitat are suitable for utilization by commuting or foraging bats.

Overall, the site is assessed as having low potential for commuting bats. The boundary of the site features hedgerows with trees that are considered to be suitable for foraging bats, however these features are minimal throughout the rest of the site. The site is considered to have moderate potential for commuting bats due to the number of suitable trees and hedgerows on-site and the number of records of bats on-site previously. However, the amenity grassland is heavily managed and is therefore considered unsuitable for foraging bats.

Impact Assessment of Proposed Development on Bats

Development proposals are unavailable at the time of writing. However, the following direct impacts to bats may occur as a result of the development:

- Modifications to buildings B1, B2, B4, B5-8, B10-13 and B15 may result in the potential loss of roosting sites for bats. Buildings B2, B5 and B11 have been assessed as having moderate potential for bats and hence any works therefore may result in the death, injury, or disturbance to any bats present at the time of works, or the loss of the roost. Further survey will therefore be required on all buildings listed above, as detailed in section 4.
- The proposals may result in a small area of moderate-quality foraging and commuting habitat being lost, and these losses would be permanent in nature. Precautionary measures and mitigation strategies to counter these impacts are outlined in Section 4 of this report.

The following indirect impacts to bats may occur as a result of the development:

- T1-T11 are likely to be retained. However, there is a risk that they may be subject to root damage

as a result of heavy plant movement over the roost protection area, or accidental damage during general construction activities. T1 and T8 have been assessed as having moderate bat roost potential. Protective barriers will therefore be installed prior to any site work, to ensure that no such inadvertent impacts occur (see Section 4). These will be established in line with the tree root protection zones detailed in the arboriculture report that has been produced for the site. If an adequate barrier cannot be established around T2, this tree will require further survey, as detailed in Section 4;

- Increases in artificial lighting levels may occur, both during the construction phase and the operational phase of the development. If this lighting envelops the retained hedgerows and trees of the site, it could adversely affect foraging and commuting bats.

3.6.4. Badgers

Desk Study Results

SEWBReC returned two badger records within 1km of the site. This included:

- An observation of a dead individual some 0.4km from the proposed development site.
- An observation of a foraging individual some 0.8km from the proposed development site.

The nearest record was made in 2021, approximately 0.4km to the development site.

Field Survey Results

No setts or other signs of badgers were recorded on site.

Evaluation of Ecological Value of Site for Badgers

Although no evidence of badgers was recorded on site, there is considered to be some limited potential for them to venture onto the site from the surrounding landscape to forage sporadically. Badgers may pass through occasionally when foraging or commuting from Waunfawr Park, which lies 0.1km to the south of the site. They may also commute from the suitable surrounding landscape features, such as large areas of grassland, mature woodland, and agricultural pastures lined by hedgerows. However, due to the high levels of disturbance currently experienced on site and the urbanised nature of the site, this is considered to be highly unlikely.

Impact Assessment of Proposed Development on Badgers

No direct impacts to badgers are anticipated as a result of the development. However, there is still a chance that badgers may pass through the site occasionally when foraging or commuting. As badgers are nocturnal, the risk of encountering badgers on site during the works is considered to be negligible. However certain construction methods are recommended in Section 4 to ensure no badgers moving through the site are injured during the construction phase of the development.

3.6.5. Reptiles

Desk Study Results

SEWBReC returned two records of reptiles within 1km of the site. These included a record of slow-worm (*Anguis fragilis*), and one record of common lizard (*Zootoca vivipara*).

Field Survey Results

No direct evidence of reptiles was recorded on site.

Field Survey Results and Evaluation of Ecological Value of Site for Reptiles

The majority of the site is considered to be largely unsuitable for most reptiles due to the lack of suitable refuges and the urban nature of the site. The boundaries between the amenity grassland and intact hedgerows are superficially suitable for reptiles; however, it is considered unlikely that these areas would contain a significant reptile population due to the limited opportunities for basking.

Impact Assessment of Proposed Development on Reptiles

The presence of reptiles on site cannot be ruled out completely. The proposed work carries a low risk of inadvertently killing, injuring or disturbing reptiles. Considering the low likelihood of impacts, further survey is not recommended, although precautionary measures will need to be adopted, as detailed in Section 4.

3.6.6. Other Mammals

Desk Study Results

SEWBReC returned four records of other mammals within 1km of the site, comprising: one common hedgehog (*Erinaceus europaeus*), one brown hare (*Lepus europaeus*), two eastern grey squirrel (*Sciurus carolinensis*) within 1km of the site.

Field Survey Results and Evaluation of Ecological Value of Site for Other Mammals

No incidental sightings or field signs of other mammals were recorded on site. However it is likely that hedgehogs (*Erinaceus europaeus*) are present on site, occurring either as resident species or whilst foraging and/or commuting. The intact hedgerows surrounding the site are considered to provide valuable foraging habitat for hedgehogs.

Impact Assessment of Proposed Development on Other Mammals

The presence of other mammals on site cannot be ruled out completely. The following direct impacts may occur as a result of the development:

- Death or injury during vegetation clearance; and
- Habitat loss – permanent habitat loss will occur during the site clearance should the hedgerows not be retained.

The following indirect impacts to reptiles may occur as a result of the development:

- Increases in disturbance levels.

In order to mitigate these impacts, precautionary measures should be adopted, as detailed in Section 4.

3.6.7. Invertebrates

Desk Study Results

SEWBReC returned 34 notable invertebrate records from within the study area, comprising:
19 priority invertebrate species were recorded within 1km of the site, namely: grey dagger (*Acronicta psi*), knot grass (*Acronicta rumicis*), ear moth (*Amphipoea oculea*), dusky brocade (*Apamea remissa*), broom moth (*Ceramica pisi*), small heath (*Coenonympha pamphilus*), ghost moth (*Hepialus humuli*), grayling (*Hipparchia semele*), dot moth (*Melanchra persicariae*), white ermine (*Spilosoma lubricipeda*), buff ermine (*Spilosoma lutea*), cinnabar (*Tyria jacobaeae*), small phoenix (*Ecliptopera silaceata*), august thorn (*Ennomos quercinaria*), southern yellow splinter (*Lipsothrix nervosa*), scarce yellow splinter (*Lipsothrix nobilis*), brindled beauty (*Lycia hirtaria*), shaded broad-bar (*Scotopteryx chenopodiata*) and dark-barred twin-spot carpet (*Xanthorhoe ferrugata*).

Four invertebrate listed as species of conservation concern were recorded within 1km of the site, namely: *Dicranomyia aquosa*, *Ernodes articularis*, *Thaumastoptera calceata*, and *Tinodes unicolor*.

11 invertebrate listed as locally important species were recorded within 1km of the site, namely: silver-washed fritillary (*Argynnis paphia*), beautiful demoiselle (*Calopteryx virgo*), speckled bush-cricket (*Leptophyes punctatissima*), southern hawker (*Aeshna cyanea*), azure damselfly (*Coenagrion puella*), golden-ringed dragonfly (*Cordulegaster boltonii*), red wood ant (*Formica rufa*), blue-tailed damselfly (*Ischnura elegans*), emerald damselfly (*Lestes sponsa*), common darter (*Sympetrum striolatum*) and satin lutestring (*Tetheella fluctuosa*).

Field Survey Results

No incidental observations of invertebrates were recorded during the survey.

Evaluation of Ecological Value of Site for Invertebrates

Due to the habitats present it is assumed the site will support an assemblage of invertebrates but is unlikely to support notable or rare species.

Impact Assessment of Proposed Development on Invertebrates

The invertebrates using the site for habitat are unlikely to solely rely on the site for their continued survival. While some habitat loss will occur across the site, this can be more than offset by providing a range of new habitats within the development that will benefit invertebrates. Plans for widespread planting across the site have potential to greatly increase the floristic diversity of the site, therefore introducing more opportunity for a wider range of invertebrates to utilise the site post-development.

4. Recommendations and Conclusions

The following recommendations are likely to be secured through planning conditions. They have been developed based on the development proposals available at the time of writing. It should be noted that they may be subject to change upon receipt of the final design. The implementation of these recommendations will ensure compliance with the Planning Policy Wales version 11 (Welsh Government, 2021)[31], TAN 5 *Nature Conservation and Planning* (2009), Section 6 and 7 of the Environment Wales Act, 2016, the Conservation of Habitats and Species Regulations 2017 which has been updated by the Conservation of Habitats and Species (Amendment) (EU Exit) ['CHSAEU'] Regulations 2019 and the Caerphilly County Borough Local Development Plan (2021).

The recommendations aim to avoid or minimise adverse impacts on the environment and protected species, mitigate and compensate for losses where damage is unavoidable and promote opportunities to enhance biodiversity. There is a requirement that developments must provide net benefit for biodiversity.

4.1. Biodiversity Enhancement

Local Authorities have a duty (known as the Biodiversity and resilience of ecosystems duty) under the Environment (Wales) Act 2016 to seek to maintain and enhance biodiversity in the exercise of their functions. Where possible the existing on-site habitat will be retained to ensure that species are not adversely affected by the development. Native species of local provenance and grown in the UK will be used for any new planting on the site.

4.2. Further Work

It will not be possible to determine the planning application until the surveys outlined below have been carried out. Results from these surveys will inform and allow for targeted recommendations for the avoidance (timing of works), future mitigation and compensation measures required as part of the development, and determine if any protected species derogation licences are required.

4.3. Bats

Works should not commence until further bat surveys have been carried out. This will enable the likely impacts of the proposals on bats to be assessed, determine if a NRW bat development licence will be required, inform the avoidance measures (timing of works), and determine the requirement for mitigation (retention of roosts and access points) and/or compensation measures (creation of new replacement bat roosts).

[31] Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions … and in so doing promote the resilience of ecosystems. Development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity.

4.3.1. Buildings with Low Potential

B1, B4, B6-8, B10, B12, B13 and B15 (Blocks A, E, G, J, K, S, X, and Z, Chemical Storage) have all been assessed as having low potential to support roosting bats. Current best practice guidelines (Collins, 2016) state that one survey visit should be undertaken on buildings with low roost suitability comprising one dusk emergence or dawn re-entry survey. The survey should be undertaken from May to August.

Table 12: Building Potential and Surveyor Numbers

Building Number	Building Name	Roosting Potential	Number of Surveys Required	Number of Surveyors Required
B1	A Block	Low	One	Eight
B2 / B5	B Block / F Block	Moderate	Two	13
B3	C Block	Negligible	None	N/A
B4	E Block	Low	One	Seven
B6	G Block	Low	One	Eight
B7	J Block	Low	One	Eight
B8	K Block	Low	One	Six
B9	L/R Block	Negligible	None	N/A
B10	S Block	Low	One	Six
B11	T Block	Moderate	Two	13
B12	X Block	Low	One	13
B13	Z Block	Low	One	Six
B14	Energy Centre	Negligible	None	N/A
B15	Chemical Store	Low	One	Two

4.3.2. Buildings with Moderate Potential

B2, B5 and B11 (Blocks B, F and T) have been assessed as having moderate potential to support roosting bats. Current best practice guidelines (Collins, 2016) state that two separate survey visits should be undertaken on buildings with moderate roost suitability comprising one dusk emergence and a separate dawn re-entry survey[32]. The surveys should be undertaken from May to September, with at least one of the surveys between May and August.

4.3.3. Works to Trees

No works to any large trees are currently proposed as part of the works. If the development proposals change, however, the mature trees with low or moderate potential for supporting roosting bats, which are proposed for either felling or other arboricultural works (e.g. pruning, lopping, crown reduction etc.), should be subject to dawn re-entry surveys to better establish and quantify their use by roosting bats.

[32] See exceptions in Interim Guidance Note: Use of Night Vision Aids for Bat Emergence Surveys and Further Comment on Dawn Surveys (Bat Conservation Trust, 2022)

Any works affecting any trees which are known to or found to contain roosting bats would require an appropriate licence from the Natural Resources Wales issued under the Habitat Regulations.

4.4. Precautionary Measures

Full details of precautionary measures will be devised after completion of the further surveys detailed above and the finalisation of development proposals.

4.4.1. Good Construction Practices for Badgers and Hedgehogs

Any open trenches, steep sided holes and excavations associated with the development will either be closed and covered at night or a means of escape provided (e.g. plank or reinforced plywood board over 60cm wide at no greater angle than 30º or gently graded site wall of the same angle or equivalent) to prevent any badgers, hedgehogs or other animals falling in and becoming trapped). Any exposed pipes and trenches must be checked for trapped wildlife each morning before starting construction activities.

If there is a significant delay to development of the site (i.e. more than 12 months) an updated badger survey should be undertaken to determine if any new active setts have been created within the site.

4.4.2. Good Construction Practices for Otters

No direct mitigation is likely to be required; however, the following mitigation should be implemented in order to minimise disturbance:

- any and all lighting will be directed away from The Ebbw River to minimise disturbance as a result of light;
- there will be no night-time working;
- all materials will be stored within a secure otter proof fenced compound; and
- any excavations will be covered overnight or where this is not possible, a means of escape will be provided; and
- an appropriately experienced ecologist will be "on call" for the duration of the project in the unlikely event that an otter or otters are found on site, in which case the relevant work will cease immediately, NRW will be contacted. A development licence may be required prior to any further work being carried out. No further work will be undertaken without the approval of NRW.

4.4.3. Species Deterrence Measures – Reptiles and Hedgehogs

Features that could be utilised as refuges or hibernacula (e.g. log piles, earth mounds) should be de-constructed by hand.

Reptiles and hedgehogs may be present within the hedgerows. However, the proposed works area comprises well-grazed, poor semi-improved grassland, which is considered to be sup-optimal for use by reptiles, due to the paucity of potential refugia and/or hibernacula. To maintain the unsuitability of this

habitat for reptiles, vegetation within the construction footprint will be maintained in an equivalently short state by regular mowing.

If this cannot be achieved, there is a risk that colonisation by reptiles may occur. In this instance, 'species deterrence' measures will be required in the run-up to the commencement of works on-site and 'destructive searches', where required.

4.5. Mitigation Measures

Full details of mitigation measures will be devised after completion of the further surveys detailed above and the finalisation of development proposals.

4.5.1. Lighting

The following recommendations are made in the absence of detailed plans outlining the lighting design for the proposed development:

- High levels of lighting will be avoided and the lighting design for the site (during both construction and post-development stages) will be of a 'bat-friendly' specification and kept to the minimum level which meets the needs of security and health and safety;
- Lighting will be installed at low-level only (i.e. no higher than eaves level and lower than 2.4m) and directed downward (i.e. below the horizontal plane). Front and side hoods/shields or cowls will be installed to prevent upwards and horizontal light spill°. Lighting will not shine directly towards the northern site perimeter as this is likely to be used by commuting bats. This will ensure that a 'dark corridor' is maintained and disturbance to possible commuting bats is avoided/minimised;
- In general lighting around the perimeter of the site will be avoided;
- The installation of security lights is yet to be confirmed. However, any security lights used will operate off a passive infrared (PIR) motion sensor sensitive to large objects only, to avoid constant triggers by bat passes and with timers set on a short duration (i.e. a maximum 'on' time of two minutes; and
- Any newly installed lights will ideally be low intensity (i.e. circa 11 watts), glass-glazed and the light source will either be compact fluorescent light sources fitted with appropriate UV filters, low pressure sodium bulbs or warm light LED bulbs. White lighting sources including mercury or metal halide, CPO and CDO (ceramic discharge metal-halide) bulbs which have a significant effect on bats will be avoided.

4.5.2. Sustainable Urban Drainage Systems (SuDS)

As of 7th January 2019, all new developments of more than one dwelling house or where the construction area is 100m² or more are required to have SuDS to manage on-site surface water (whether they require

planning permission or not). These SuDS must be designed and constructed in accordance with the Welsh Government Standards for Sustainable Drainage[33].

There is scope to incorporate ecological enhancement measures into the design of the SuDs features, without compromising its core function.

4.5.3. CEMP

Appropriate pollution control measures will be employed during construction work.

It is advisable that this is detailed within a Construction and Environmental Management Plan (CEMP), conditioned as part of the planning consent. The CEMP will identify the responsibilities of various organisations and people to comply with legislation and ensure that mitigation measures are implemented as proposed.

The CEMP should include:

- General Site Management: details of the construction programme including timetable, details of site clearance;
- Details of site construction drainage, containments areas, appropriately sized buffer zones between storage areas (of spoil, oils, fuels, concrete mixing and washing areas) and any watercourse or surface drain;
- Resource Management: details of fuel and chemical storage and containment; details of waste generation and its management;
- Pollution Prevention: demonstrate how relevant Guidelines for Pollution Prevention and best practice will be implemented, including details of emergency spill procedures and incident response plan;
- Details of the persons and bodies responsible for activities associated with the CEMP and emergency contact details; and
- Landscape/ecological clerk of works to ensure construction compliance with approved plans and environmental regulations.

4.6. Compensation and Enhancement Measures

Full details of compensation and enhancement measures will be devised after completion of the further surveys detailed above and the finalisation of development proposals.

4.6.1. Bird and Bat Boxes

The site will be enhanced for nesting birds and roosting bats by the erection of two artificial bird boxes and two artificial bat boxes on suitable features at the perimeter of the site. A variety of durable, woodcrete

[33] hiips://gov.wales/sites/default/files/publications/2019 -06/statutory-guidance.pdf

bat and bird boxes, including maintenance free boxes suitable for trees, are available from Schwegler (see Appendices 7 and 8).

The bat boxes will be placed within linear features to allow bats undisrupted dispersal to local foraging habitat, and in positions where the entrance is not artificially illuminated at night (enabled by the provision of the 'dark corridor' outlined in section 5.1.1). Boxes will be positioned a minimum of 3m from the ground.
The bird boxes will also be located in secluded positions, ideally within dense cover and at a minimum height of 3 metres from ground level.
Specialised boxes that cater for specific bird species:

- Open fronted – Open fronted nest boxes cater for a range of bird species, including robin, dunnock, wren, pied wagtail, redstart and flycatcher. Due to the more exposed nature of these nest boxes, it is especially important to ensure that they are located in dense cover in order to avoid the attention of potential predators. Suitable locations could be within ivy coverage on the external building walls, or within the areas of broadleaved woodland; or
- Standard nest boxes – An entrance hole of 32mm will attract species such as great, blue and coal tits, along with nuthatch, flycatchers and sparrows. These nest boxes can be sited in a wide range of locations throughout the site. Typical places would be on trees within the areas of broadleaved woodland. Alternatively, boxes could be placed externally on building walls.

4.7. Licensing

It has not been possible to determine whether a NRW bat development licence with respect to bats will be required. This will be determined after the further targeted surveys detailed in Section 4.4 have been completed.

4.8. Longevity of Report

If development works do not begin within eighteen months to two years of the date of this report of this report, an update survey is likely to be required in accordance with guidance from NRW[34], (CIEEM, 2019) and BS 42020:2013[35], to determine if conditions have changed since those described in this report.

4.9. Conclusions

The full extent of ecological impacts and potential constraints of the proposed development cannot be fully determined in the absence of finalised architectural plans.

Further survey work will be required before such assessments can be comprehensively made, as detailed in Section 4.2.

[34] As set out in Point 5 of the NRW *Bat Surveys - Frequently Asked Questions* and Point 4 of the guidance included within the NRW European Protected Species Development Application Form.

[35] As set out in Section 6.2.1, point 7 which states that ecological information should not normally be more than two/three years old, or as stipulated in good practice guidance).

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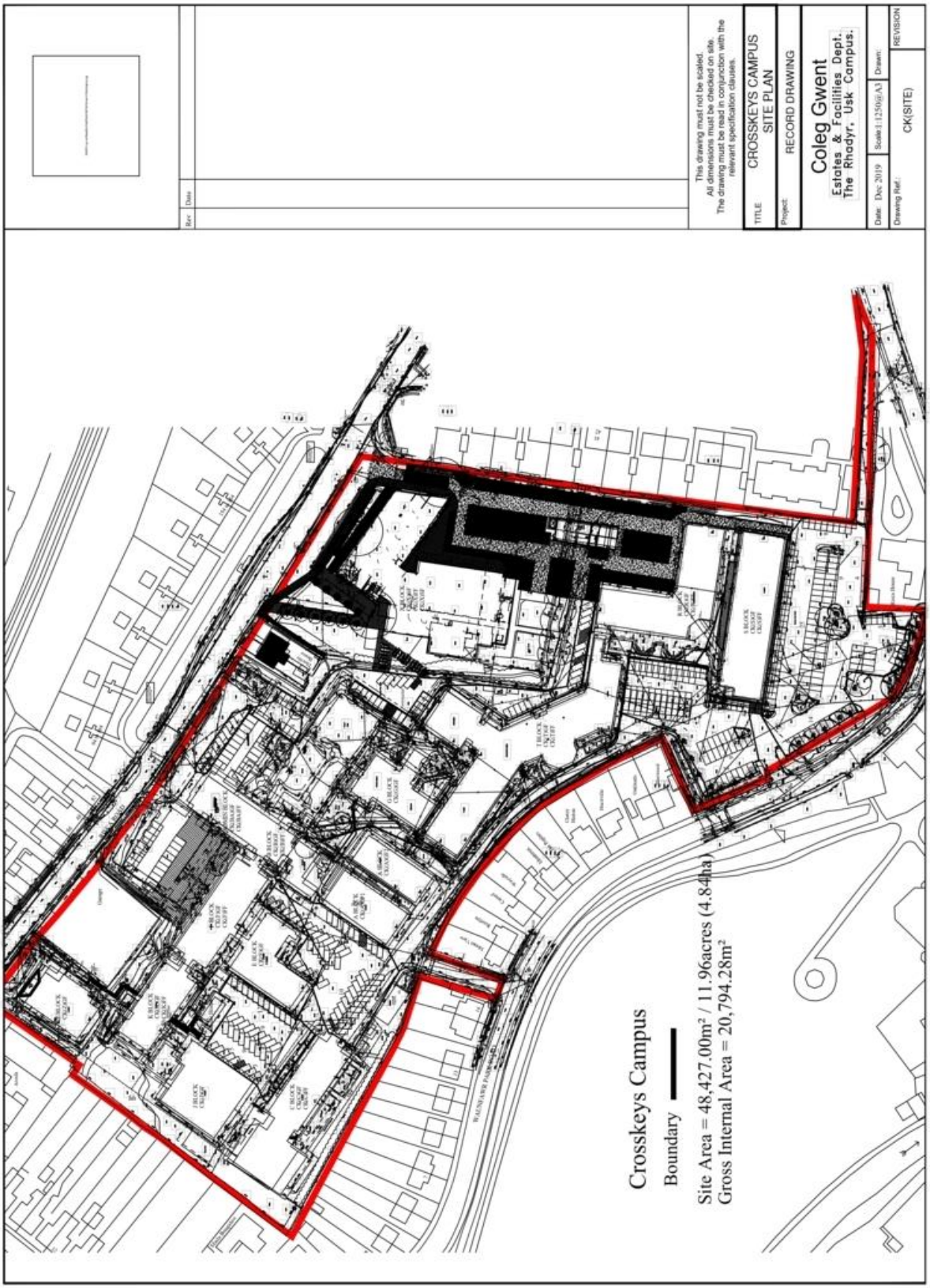
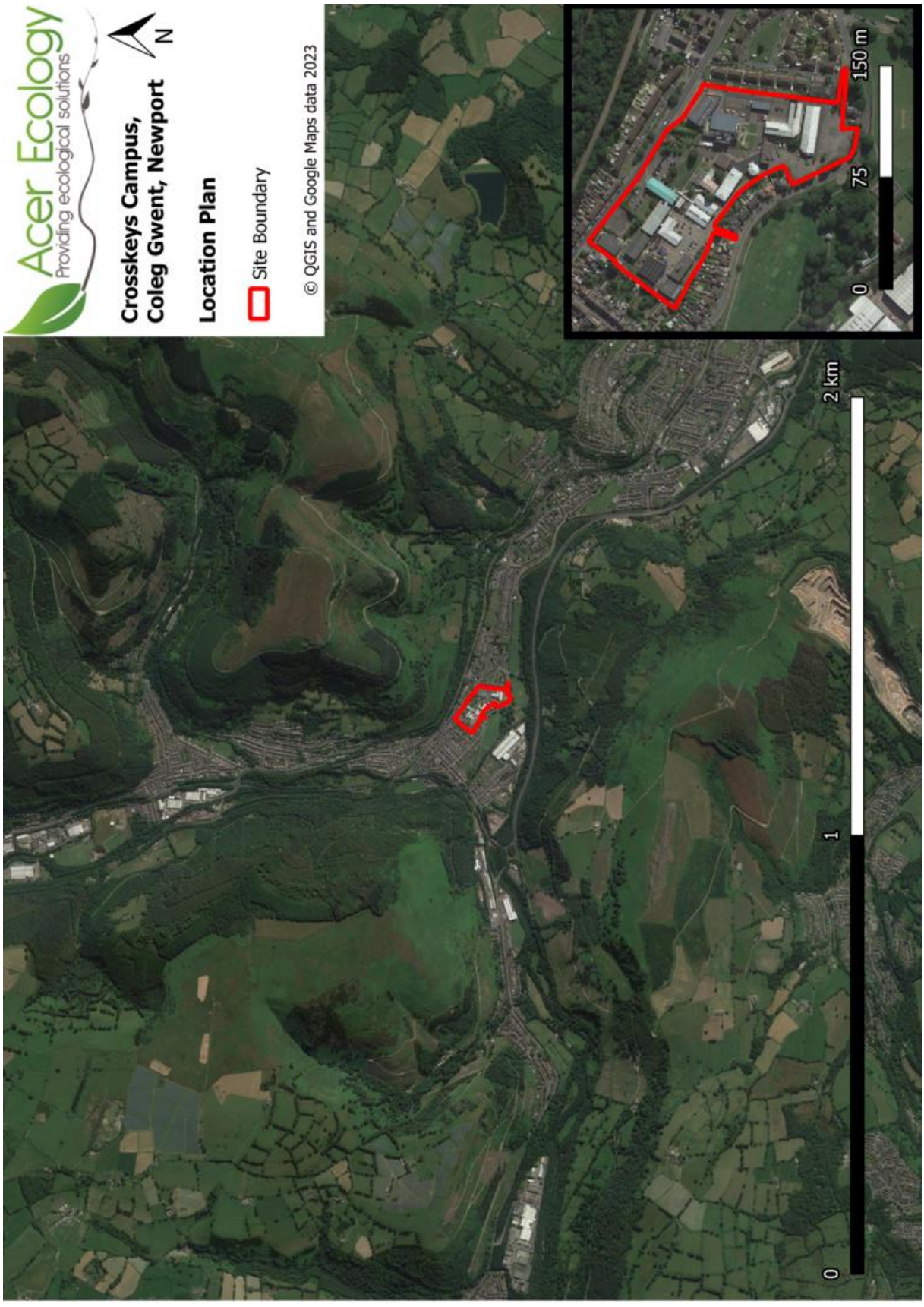
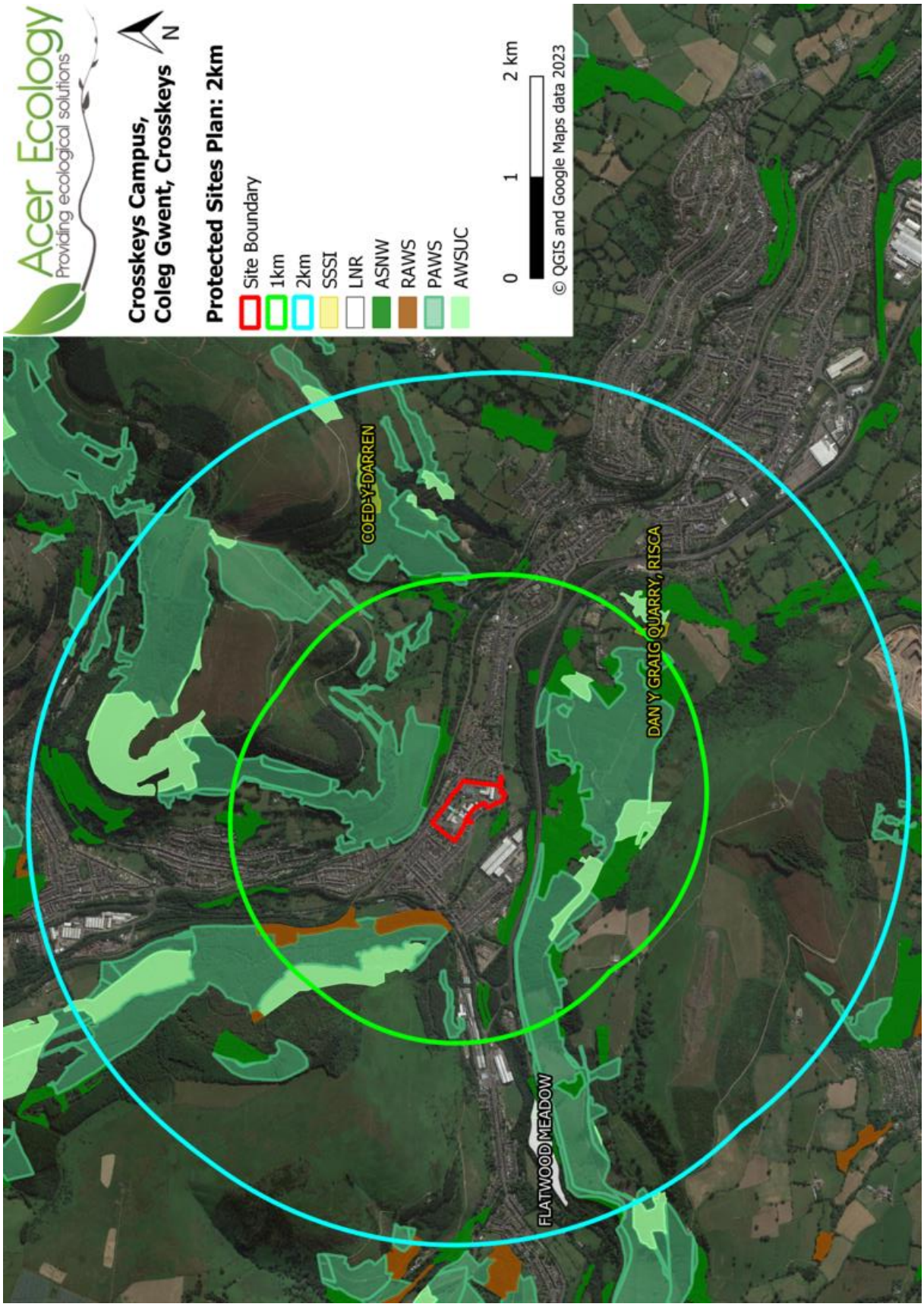
Drawing 1: Site Plan



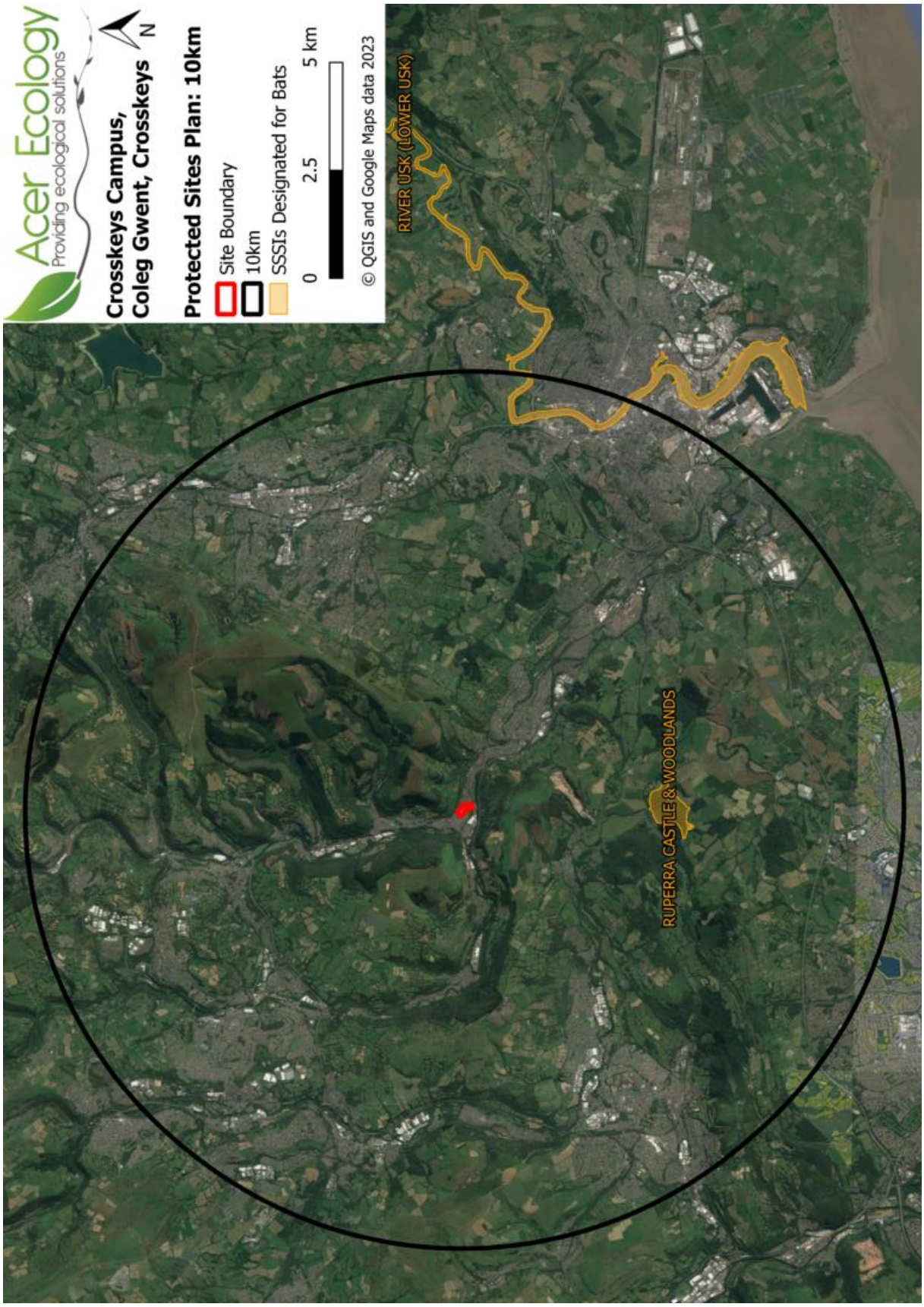
Plan 2: Site Location



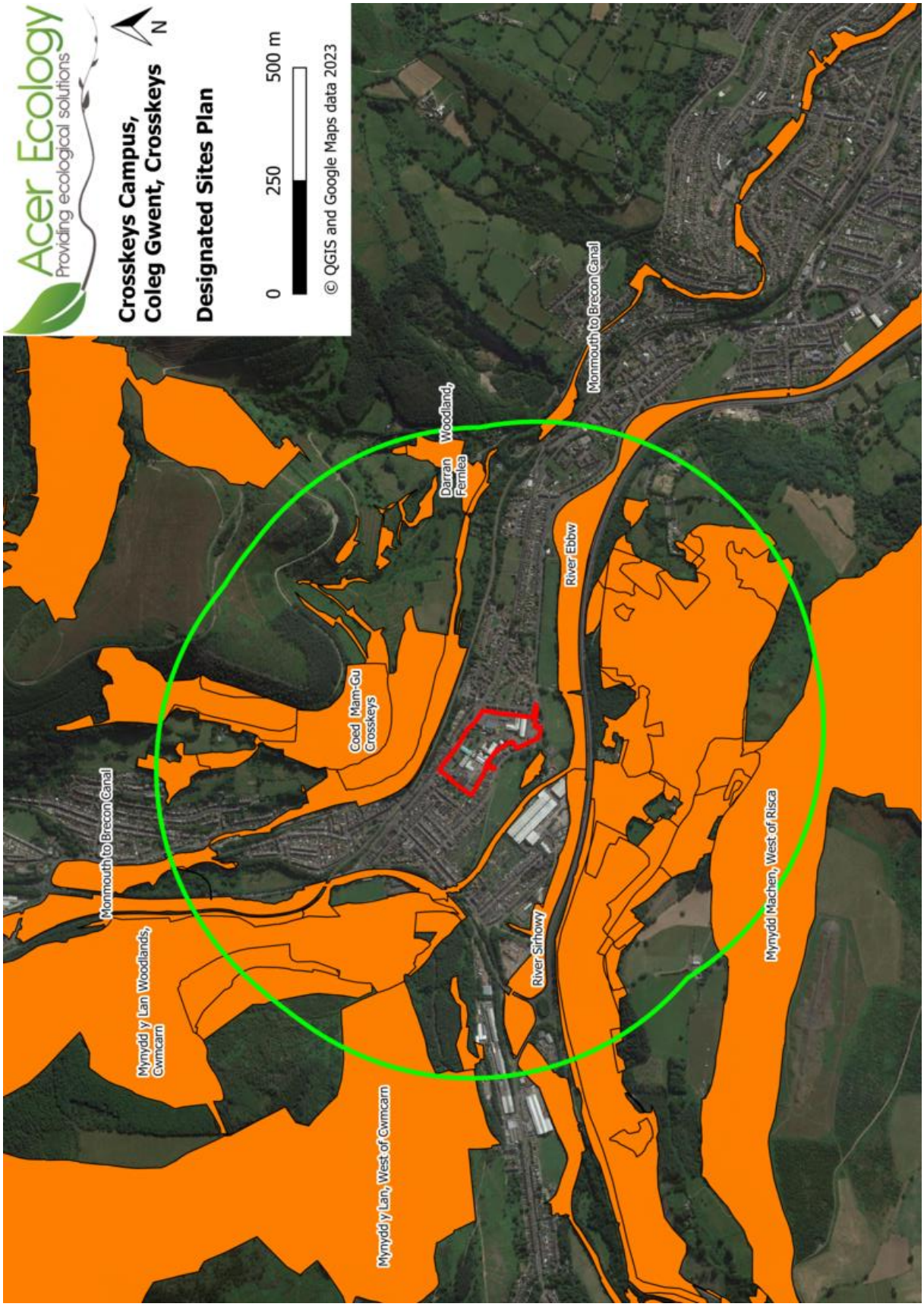
Plan 3: Site Location and Protected Sites within 2km



Plan 3: Site Location and Protected Sites within 10km

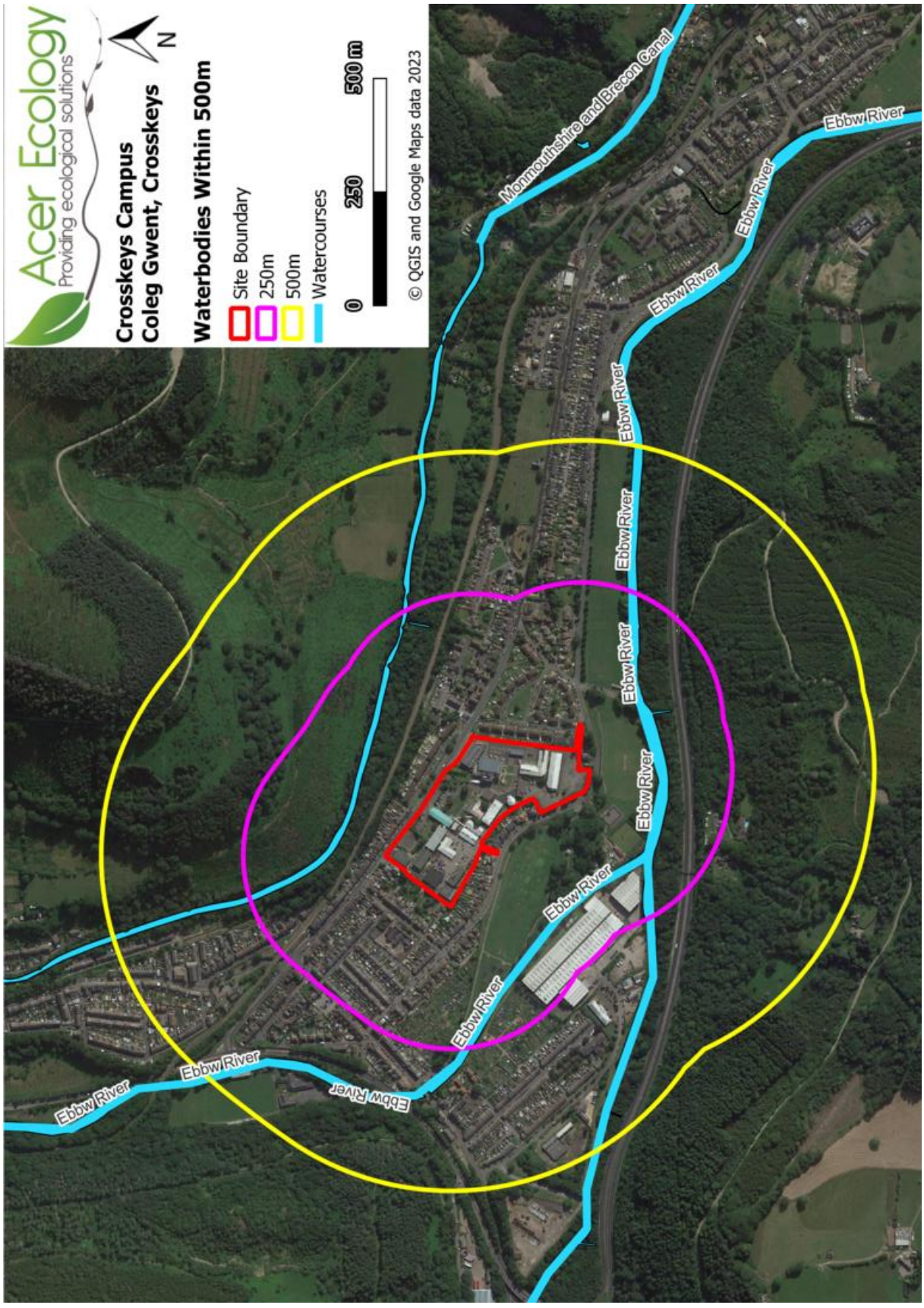


Plan 4: Site Location and SINCS (0.5km Buffer)

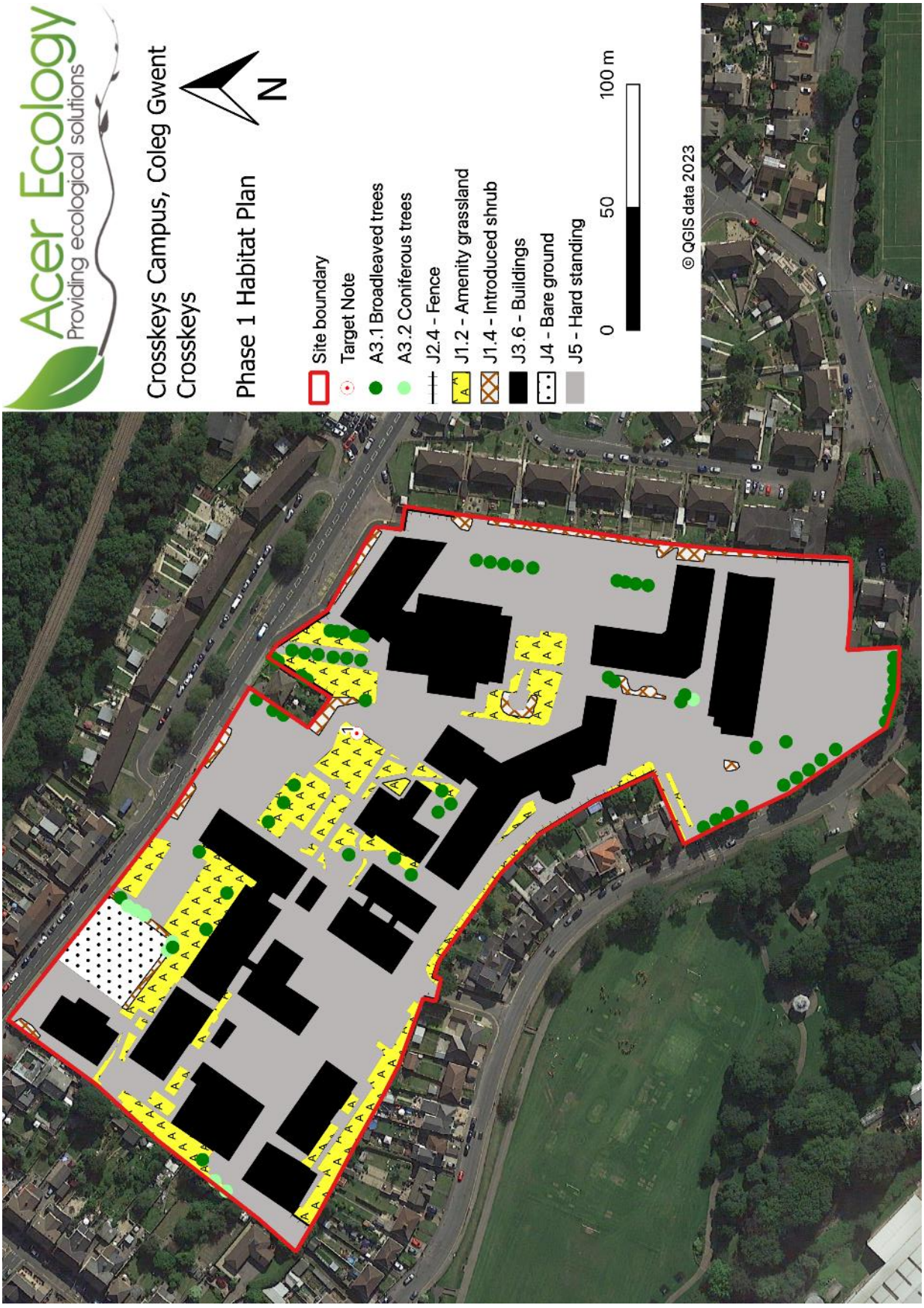


Plan 5: River Catchment

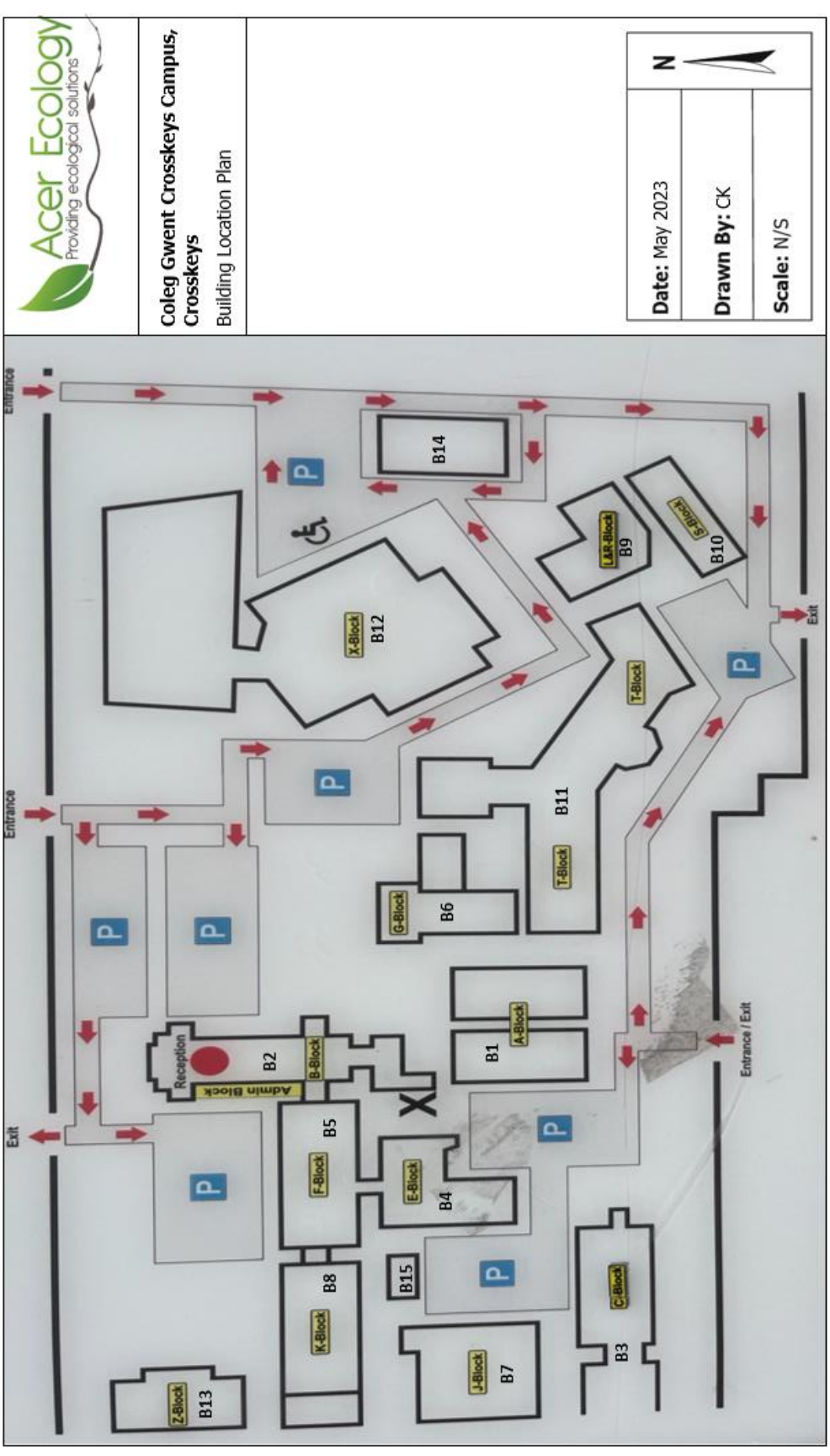
Plan 6: Location of Water Bodies within 0.5km of Site



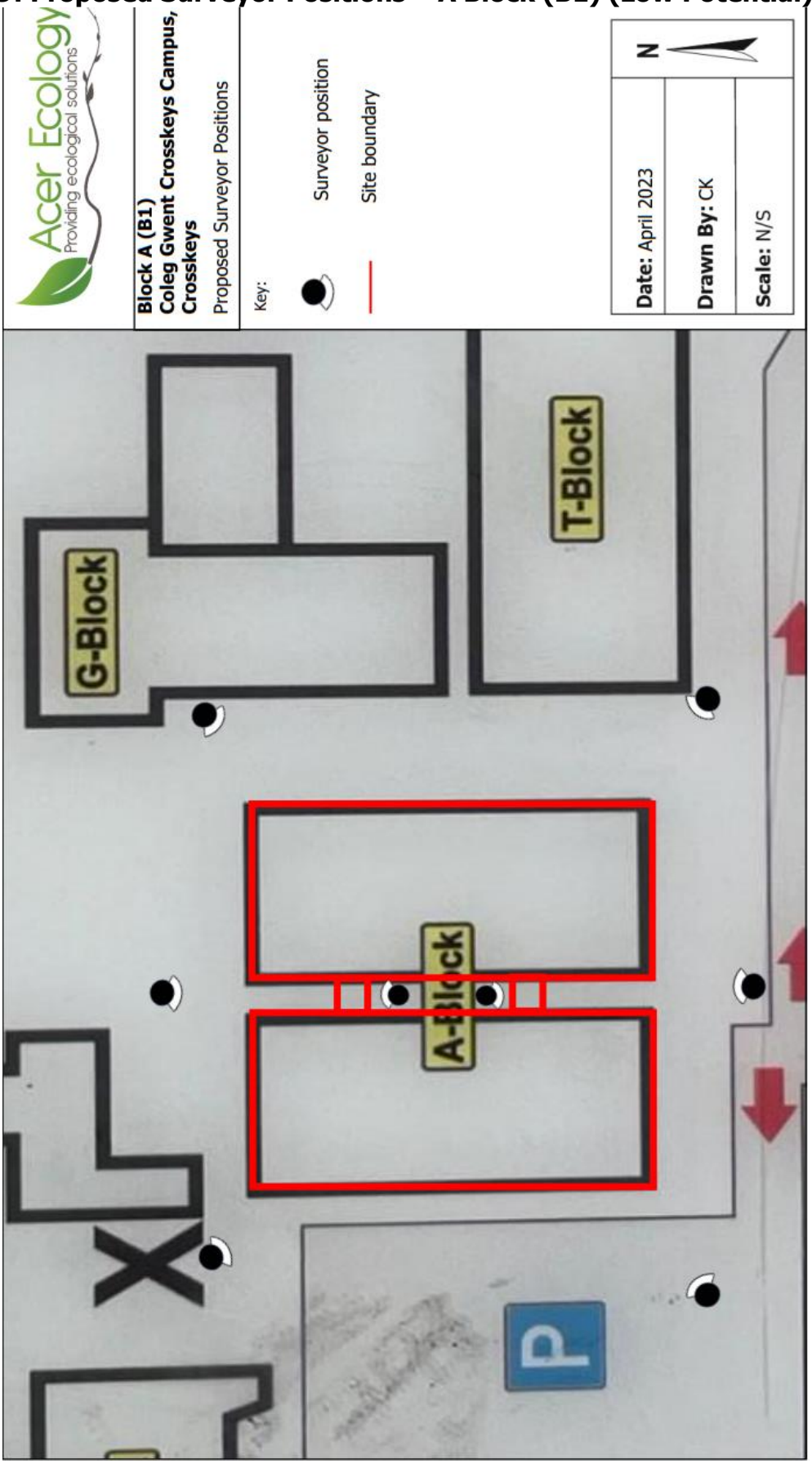
Plan 7: Habitats and Vegetation



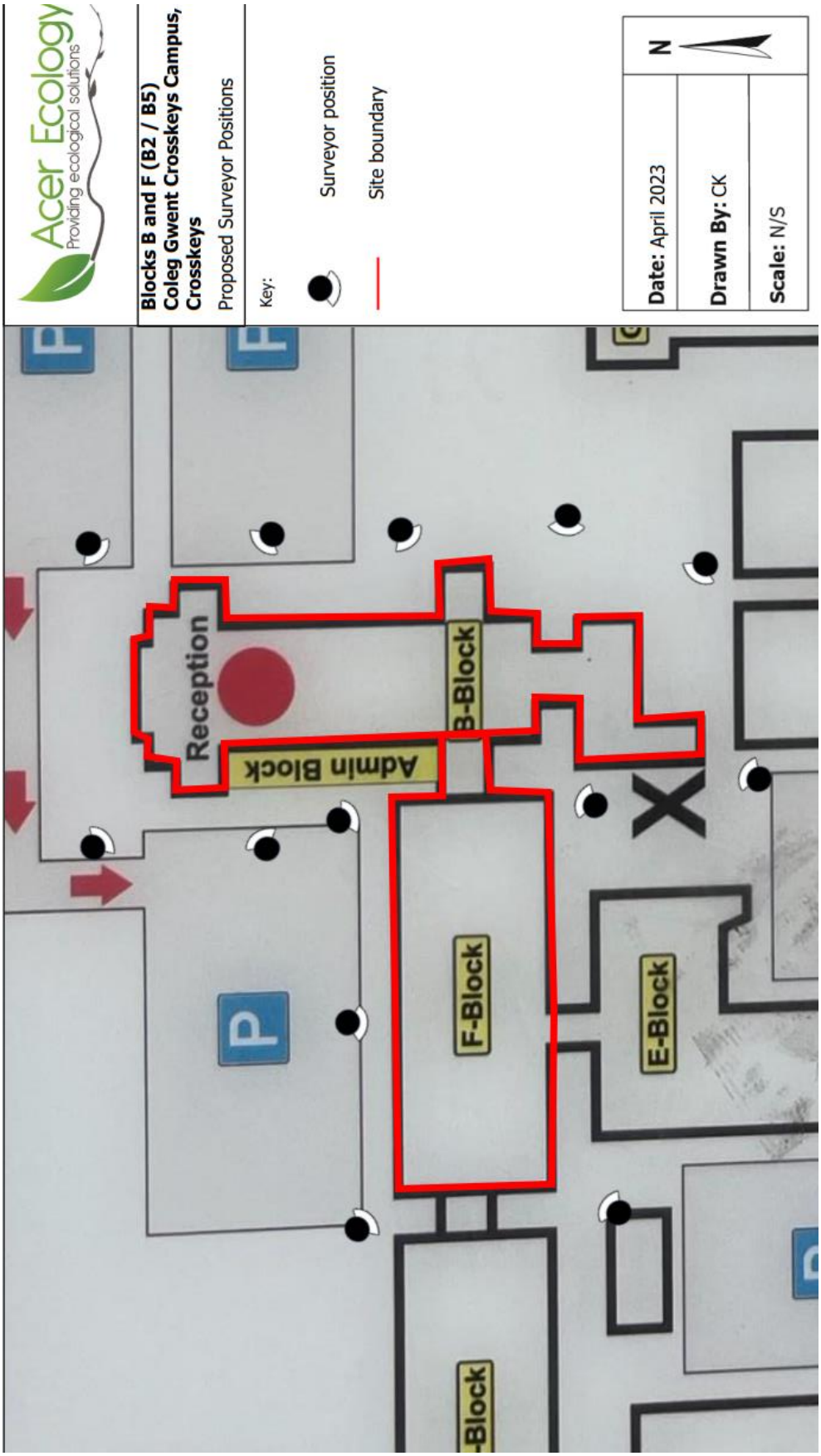
Plan 8: Building Location Plan



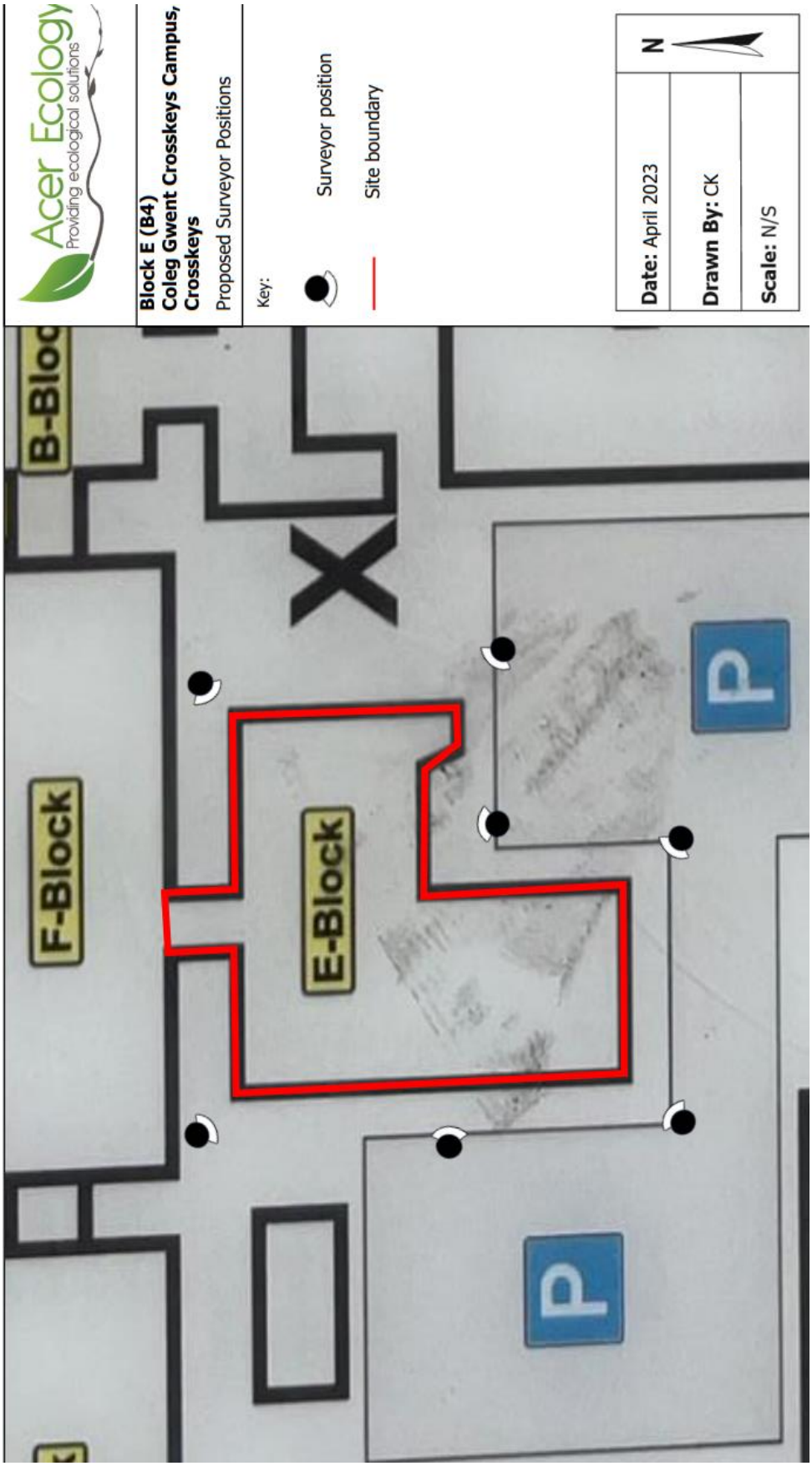
Plan 9: Proposed Surveyor Positions – A Block (B1) (Low Potential)



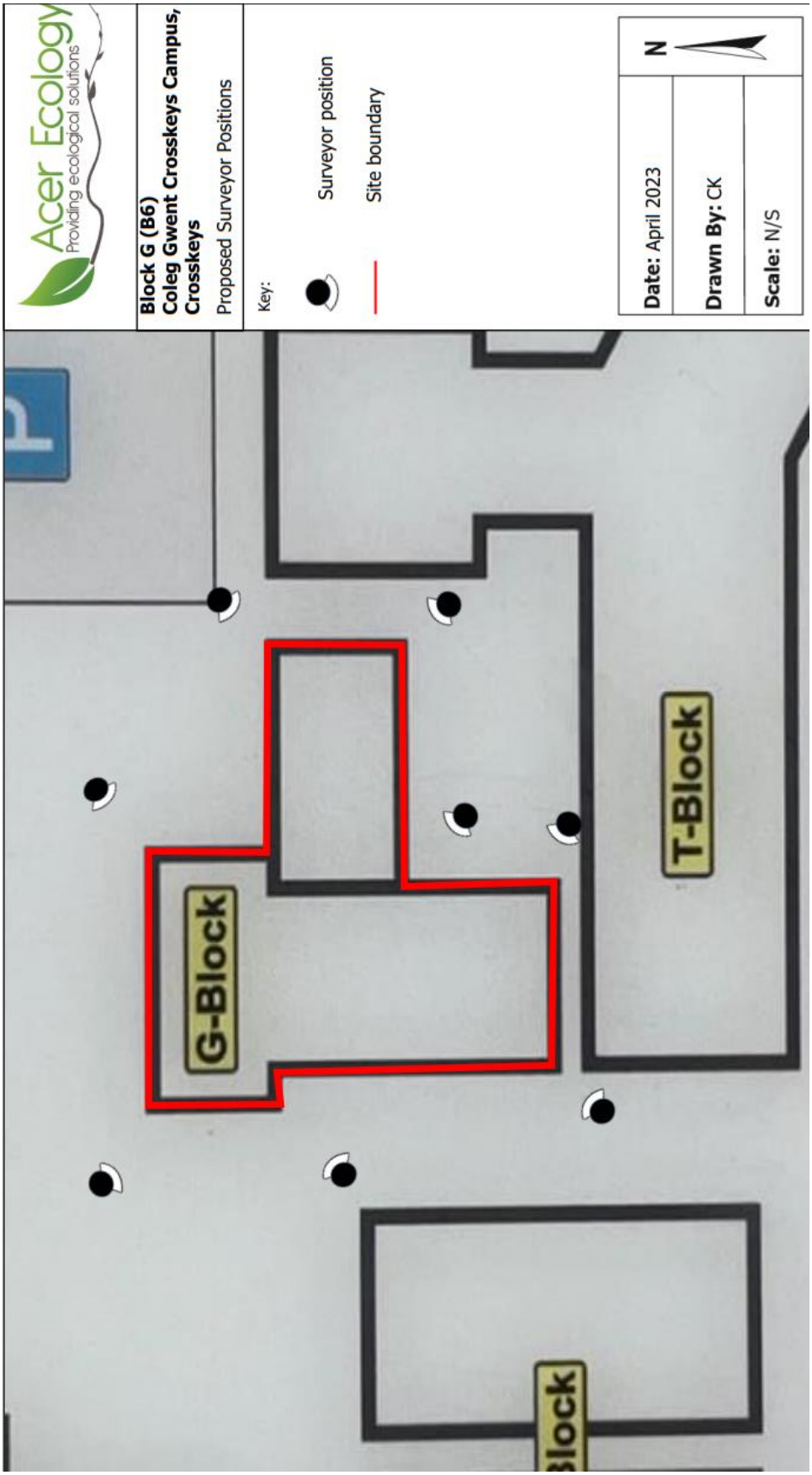
Plan 10: Proposed Surveyor Positions – B and F Block (B2 / B5) (Moderate Potential)



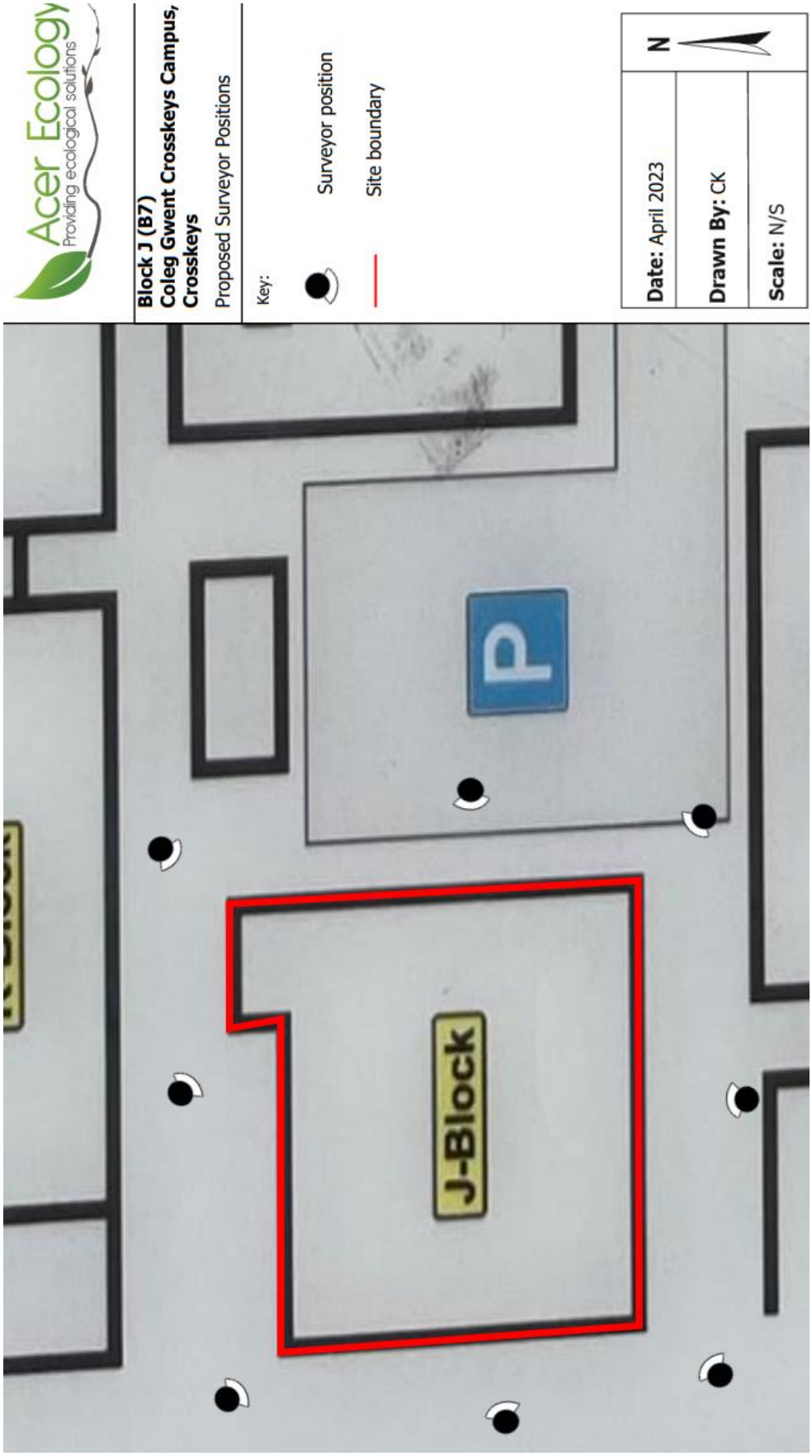
Plan 11: Proposed Surveyor Positions – E Block (B4) (Low Potential)



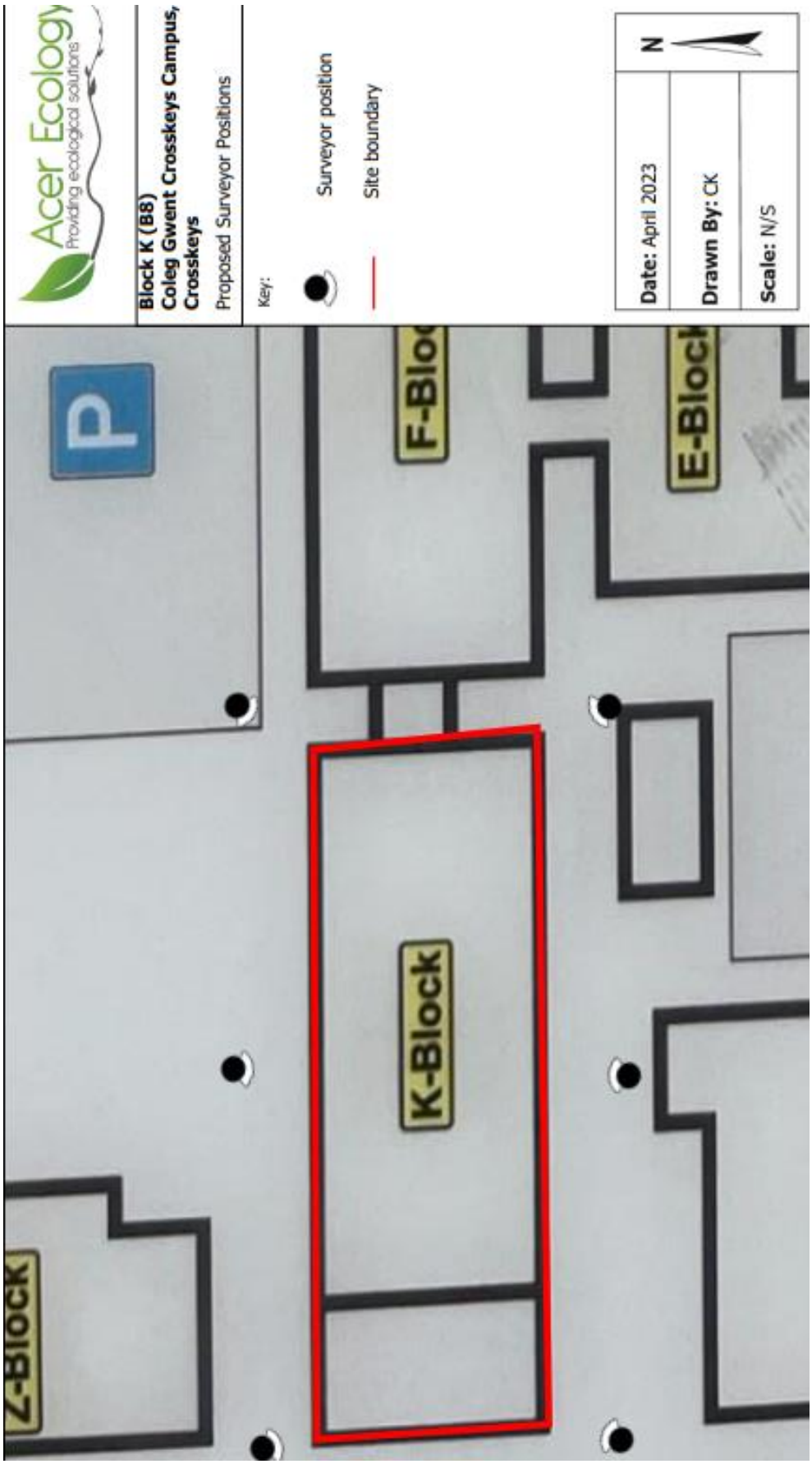
Plan 12: Proposed Surveyor Positions – G Block (B6) (Low Potential)



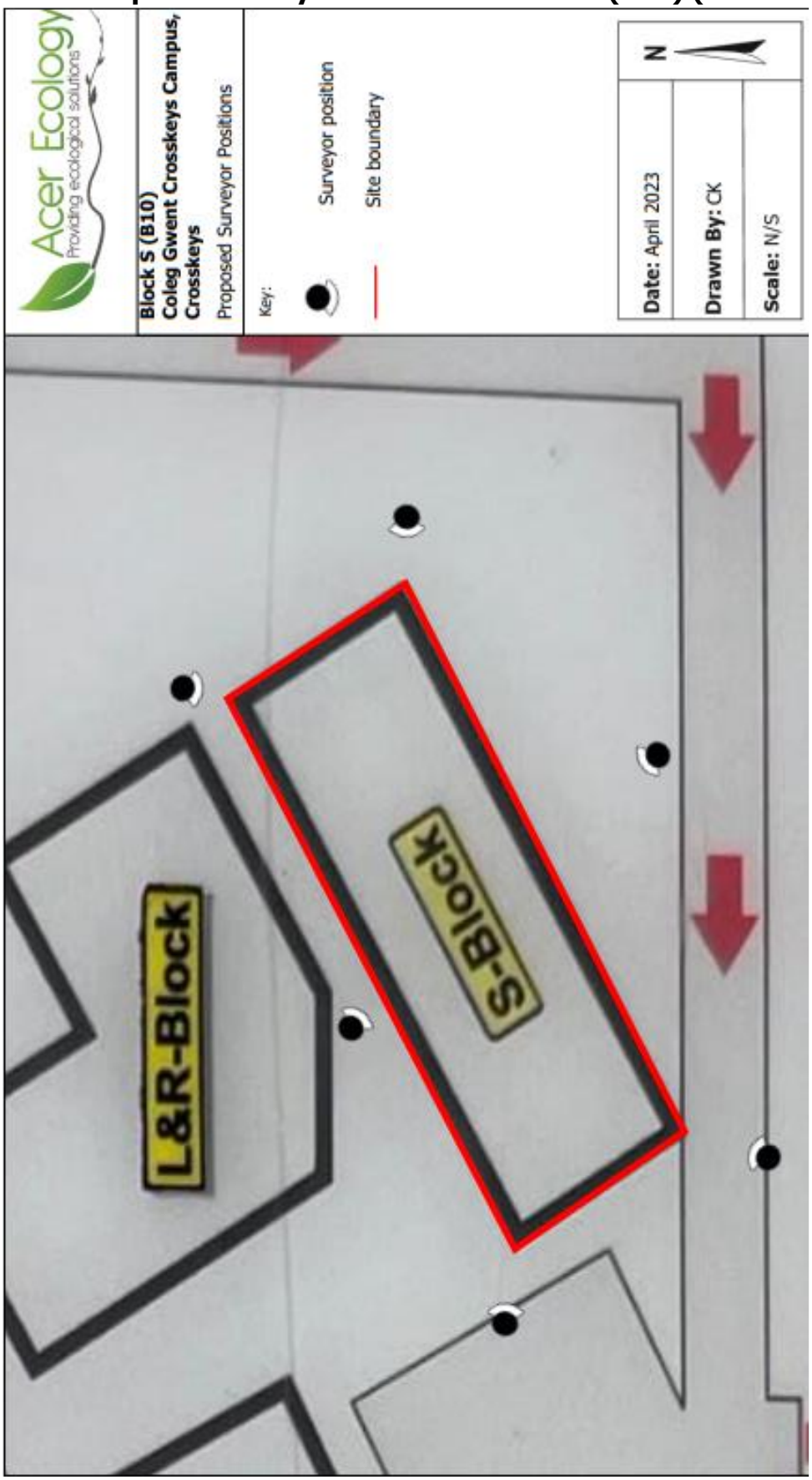
Plan 13: Proposed Surveyor Positions – J Block (B7) (Low Potential)



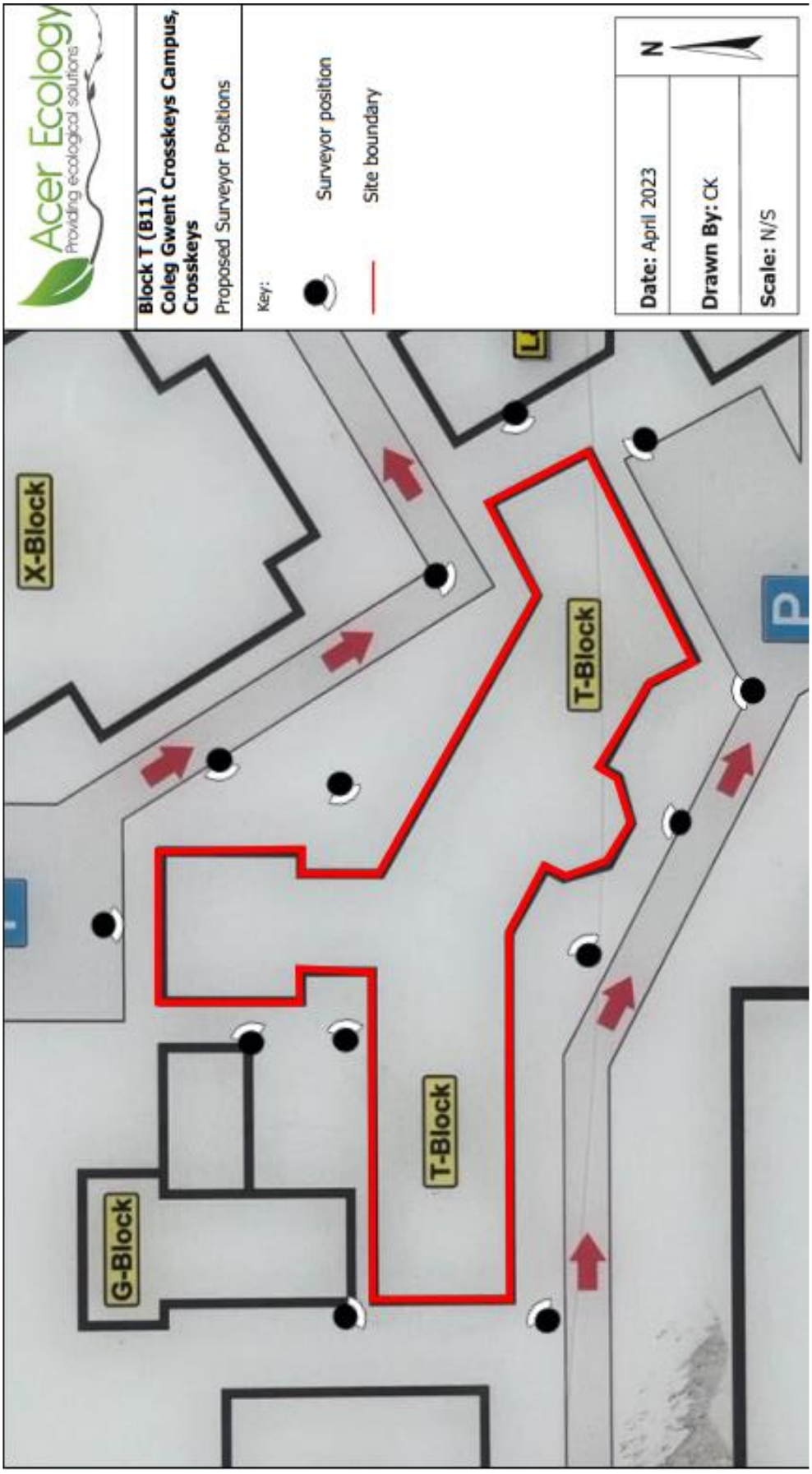
Plan 14: Proposed Surveyor Positions – K Block (B8) (Low Potential)



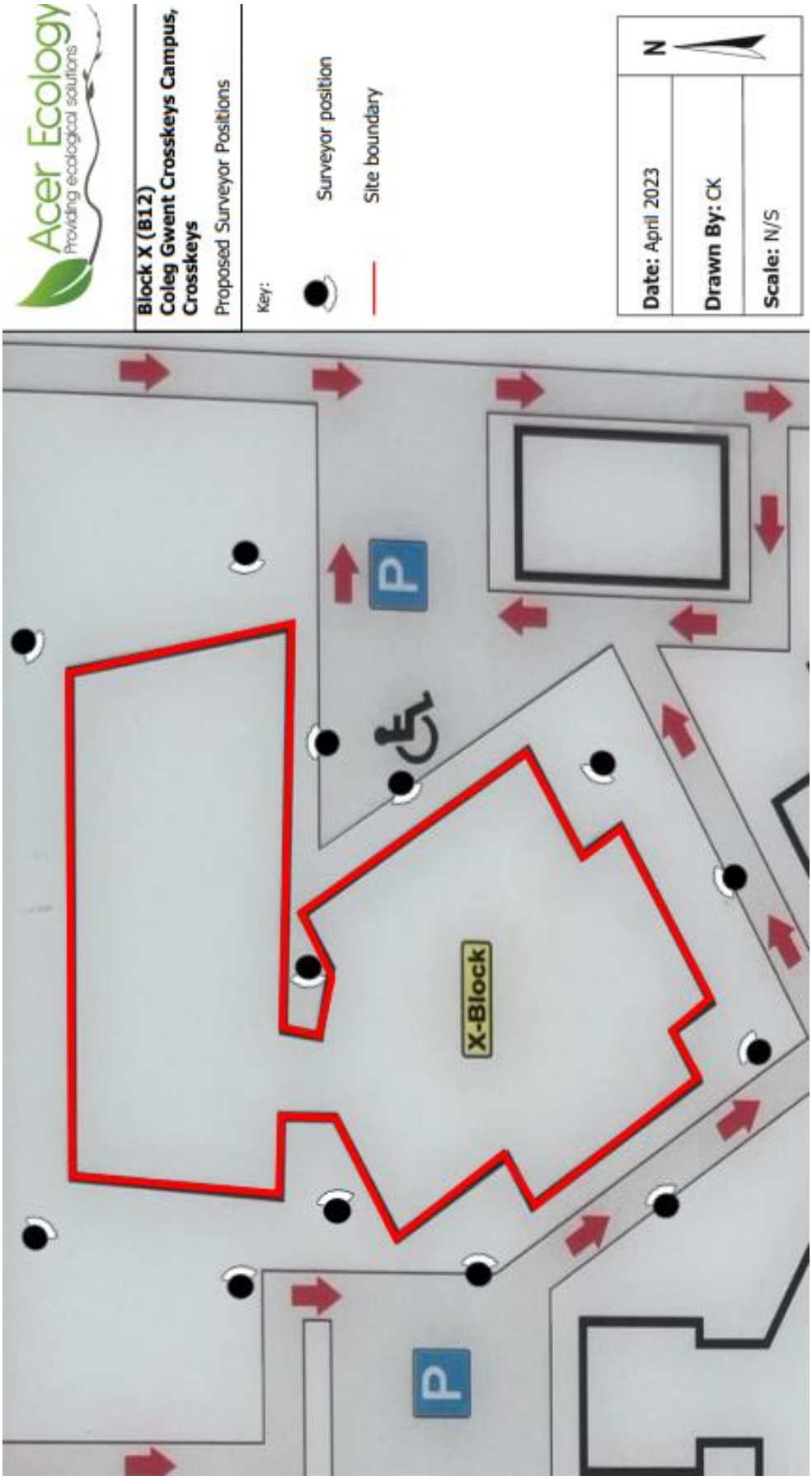
Plan 15: Proposed Surveyor Positions – S Block (B10) (Low Potential)



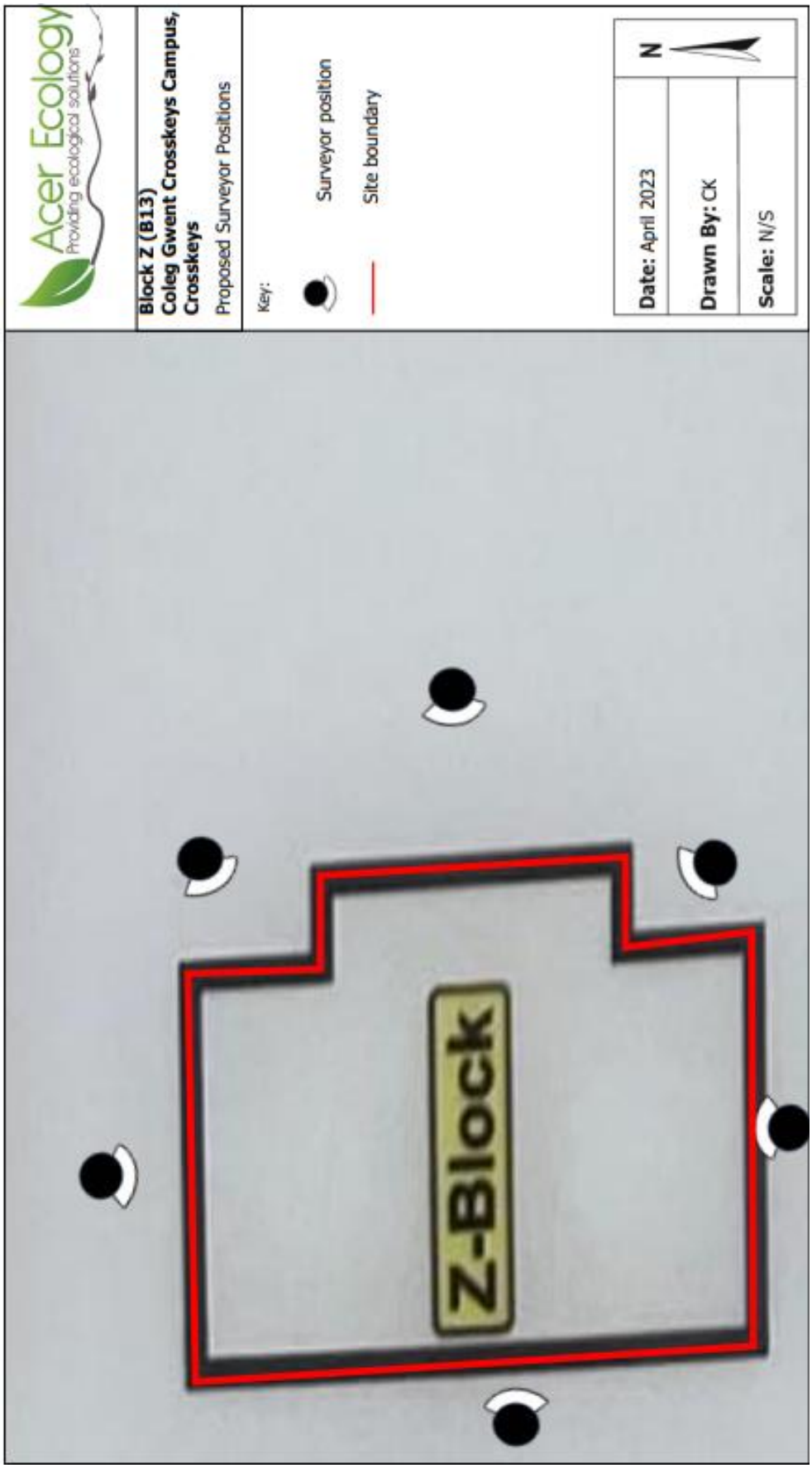
Plan 16: Proposed Surveyor Positions – T Block (B11) (Moderate Potential)



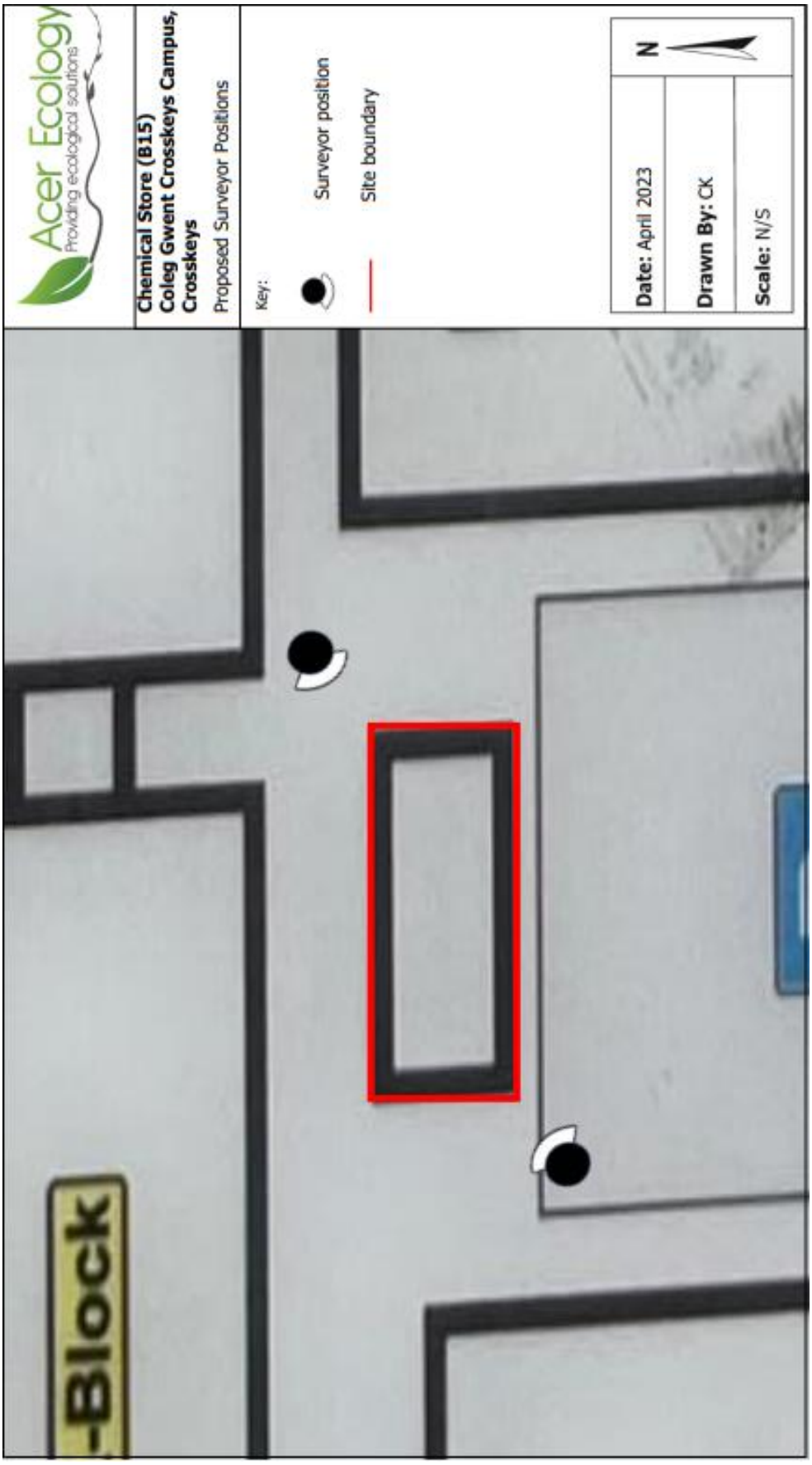
Plan 17: Proposed Surveyor Positions – X Block (B12) (Low Potential)



Plan 18: Proposed Surveyor Positions – Z Block (B13) (Low Potential)



Plan 19: Proposed Surveyor Positions – Chemical Store (B15) (Low Potential)



Appendix 1: Legislation and Policy Relating to Statutory and Non-Statutory Designated Sites and Planning Policy Relevant to Site

SSSIs

SSSIs are important as they support habitats and/or species of national importance. SSSIs are legally protected under the Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000 and the Natural Environment and Rural Communities Act 2006, and are of national (second tier) biodiversity significance and form the essential building blocks of the United Kingdom's protected areas for nature conservation. Many are also designated as Natura sites i.e. internationally (first tier) designated sites. It is an offence for any person to intentionally or recklessly damage the protected natural features of a SSSI.

LNRs

Under the National Parks and Access to the Countryside Act 1949, LNRs may be declared by local authorities after consultation with the relevant statutory nature conservation agency. LNRs are declared and managed for nature conservation, and provide opportunities for research and education, or simply enjoying and having contact with nature. LNRs must be controlled by the local authority through ownership, lease or agreement with the owner.

National Parks

National Parks are designated for their aesthetic and recreational value as opposed to wildlife value, however, they often contain habitats of high ecological value also.

SINCs

SINCs are a class of nature conservation designations collectively referred to as 'Wildlife Sites'. Wildlife Sites are so-called 'third tier' sites, generally ranked below sites which are of international (first tier) or national (second tier) biodiversity significance, but which are considered to have *'substantive nature conservation value'* at the regional or district level. They are usually designated at the county or county borough level by the relevant local planning authority, and are recognised as a planning constraint in the relevant statutory development plan.

The framework for the identification and designation of 'Wildlife Sites' is set out in various Government documents, and is referred to in *Planning Policy Wales* (2021) *and Technical Advice Note (Wales)* 5: *Nature Conservation & Planning*. Defra published *Local Sites: Guidance on their identification, selection and management in 2006*[36].

36 hiips://webarchive.nationalarchives.gov.uk/ ukgwa/20111108175609/hiip://archive.defra.gov.uk/rural/documents/protected/localsites.pdf

Environment (Wales) Act 2016

The Environment (Wales) Act Section 6 duty, or the Biodiversity Duty, requires public authorities to seek to maintain and enhance biodiversity and in so doing promote the resilience of ecosystems. In fulfilling this duty, planning authorities must have regard to the list of habitats and species of principal importance for Wales, published under Section 7 of the Environment (Wales) Act 2016.

The Section 6 duty requires that developments should not be permitted which result in net loss of value to biodiversity, and must seek to achieve biodiversity net gain. Where net loss cannot be achieved through avoidance or mitigation, compensation is required.

Future Wales - the National Plan 2040

Future Wales is the national development framework, setting the direction for development in Wales to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of our communities. Future Wales - the national plan 2040 is the national development framework and it is the highest tier plan, setting the direction for development in Wales to 2040. It is a framework which will be built on by Strategic Development Plans at a regional level and Local Development Plans. Planning decisions at every level of the planning system in Wales must be taken in accordance with the development plan as a whole.

National Planning Policy Wales (2021)

The primary objective of PPW is to ensure the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation.

Planning Policy Wales (PPW) Edition 11 - 24th Feb 2021 states that planning authorities must follow a stepwise approach to maintain and enhance biodiversity and build resilient ecological networks by ensuring that any adverse environmental effects are firstly avoided, then minimized, mitigated, and as a last resort compensated for; enhancement must be secured wherever possible. The first priority for planning authorities is to avoid damage to biodiversity and ecosystem functioning. Where there may be harmful environmental effects, planning authorities will need to be satisfied that any reasonable alternative sites that would result in less harm, no harm or gain have been fully considered.

Caerphilly County Borough Council Local Development Plan

Caerphilly County Borough Local Development Plan 2021[37] was adopted in 2010. The LDP ensured the protection of the '*environment as a whole whilst balancing the need for development with the need to conserve valuable resources'* (pg.20).

[37] hiips://www.caerphilly.gov.uk/CaerphillyDocs/LDP/written -statement.aspx

The report does not include biodiversity net-gain guidance, however, key objective 12 of the council is to '*identify, protect and enhance sites of nature conservation and earth science interest and ensure the biodiversity of the County Borough is enhanced' pg.21.*

Biodiversity Net Gain

Net benefit for biodiversity Planning Policy Wales (PPW) 11 sets out that "*planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means that development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity*" (para 6.4.5 refers). This policy and subsequent policies in Chapter 6 of PPW 11 respond to the Section 6 Duty of the Environment (Wales) Act 2016.

Appendix 2: Protected Species Legislation Relevant to Site

Birds

All wild British birds (while nesting, building nests and sitting on eggs), their nests and eggs (with certain limited exceptions) are protected by law under Section 1 of the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000. Included in this protection are all nests (at whatever stage of construction or use) and all dependent young until the nest is abandoned and the young have fledged and become independent. Particularly rare species such as barn owl (*Tyto alba*) are listed on Schedule 1 which gives them additional protection from disturbance whilst nest building, whilst near a nest with eggs or young, or from disturbing the dependent young.

Section 10.8 of the Conservation of Habitats and Species Regulations 2017 state that Local authorities must use all reasonable endeavours to avoid any deterioration of habitats of wild birds.

Bats

All species of bats and their roosting sites are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 which continues to apply in UK law through the Conservation of Habitats and Species (Amendment) (EU Exit) ['CHSAEU'] Regulations 2019.

All species of UK bats are designated as 'European protected species'. Seven species of bat (soprano pipistrelle, barbastelle (*Barbastella barbastellus*), Bechstein's (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), brown long-eared (*Plecotus auritus*), lesser horseshoe (*Rhinolophus hipposideros*) and greater horseshoe bats (*Rhinolophus ferrumequinum*)) are listed under Section 7 of the Environment (Wales) Act 2016 as being of principal importance for maintaining and enhancing biodiversity in Wales.

Badgers

Badgers are protected under the Protection of Badgers Act 1992. Protection applies both to the animal itself and to its nesting burrows (setts), and current interpretation of the Act also confers some protection to key foraging areas.

Reptiles

With the exception of smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) (which are afforded greater protection), common reptiles are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). They are given so-called 'partial protection', which prohibits the deliberate killing or injury of individuals. The habitats of common reptiles are not specifically protected. These species are listed as priority species in Wales under Section 7 of the Environment (Wales) Act 2016.

Hedgehogs

Hedgehogs are listed as a Red List mammal species in Britain and are protected under Schedule 6 of the Wildlife and Countryside Act (1981). They are "protected from being killed or taken by certain methods

under Section 11 of the Wildlife and Countryside Act 1981. The methods listed are: self-locking snares, bows, crossbows, explosives (other than ammunition for a firearm), or live decoys. The species listed are also protected from the following activities: trap, snare or net, electrical device for killing or stunning, poisonous, poisoned or stupefying substances or any other gas or smoke, automatic or semi-automatic weapon, device for illuminating a target or sighting device for night shooting, artificial light, mirror or other dazzling device, sound recording, and mechanically propelled vehicle in immediate pursuit. They are also listed as priority species under Section 7 of the Environment (Wales) Act 2016.

The legislation afforded to hedgehogs in Section 7 of the Environment (Wales) Act 2016 means that every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity[38]. In effect, 'conserving biodiversity' includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat.

[38] Biodiversity conservation in respect to hedgehogs is interpreted as a commitment to restoring or enhancing their population.

Appendix 3: Species Recorded

All species recorded by Acer Ecology, 2023

Taxonomic Name	Common Name	W	LM	CG	LDA	PMG	PIL	TF	Status
Acer pseudoplatanus	Sycamore								Alien
Berberis vulgaris	Barberry								Cs, alien
Betula sp	Birch								
Clematis vitalba	Traveller's-joy								
Cornus sanguinea	Dogwood								
Corylus avellana	Hazel								
Fagus sylvatica	Beech								
Fraxinus excelsior	Ash								
Ilex aquifolium	Holly								
Prunus laurocerasus	Cherry laurel								Alien
Prunus sp	Cherry sp								
Prunus spinosa	Blackthorn								
Rubus fruticosus agg.	Bramble								
Salix spp.	Willow sp								
x Cuppressocyparis leylandii	Leyland cypress								Alien
Achillea millefolium	Yarrow								
Bellis perennis	Daisy								
Cardamine sp	Bitter-cress species								
Festuca rubra	Red fescue								
Hedera helix	Ivy								
Holcus lanatus	Yorkshire fog								
Hypochaeris radicata	Common cat's-ear		LM						
Lolium perenne	Perennial rye-grass								
Luzula campestris	Field wood-rush		LM						
Helminthotheca echioides	Bristly oxtongue						PIL		
Plantago lanceolata	Ribwort plantain								
Poa annua	Annual meadow-grass								
Ficaria verna	Lesser celandine								
Ranunculus repens	Creeping buttercup								
Senecio jacobaea	Common ragwort								
Taraxacum officinale agg.	Dandelion								
Trifolium pratense	Red clover		LM						
Vicia sativa	Common vetch								

'Habitat Indicator Species' Totals (Wales Biodiversity Partnership 2008[39])	0	3	0	0	0	1	0	
	W	**LM**	**CG**	**LDA**	**PMG**	**PIL**	**TF**	
'Primary' and 'Contributory' Totals (Wales Biodiversity Partnership 2008)	0				0			
	Primary Species				**Contributory Species**			

Key to Indicator Species (Wales Biodiversity Partnership 2008[40])

W - Woodland, LM – Lowland meadow, CG - Calcareous Grassland, LDA – Lowland Dry Acid Grassland, PMR Purple moor-grass and rush pasture, PIL – Post Industrial Land, TF Species-rich Tillage Fields and Margins

PS – Primary Species, CS – Contributory Species

SINC Selection

Sites which support one primary species or five contributory species; or habitats which support eight lowland meadow, eight calcareous grassland, seven lowland dry acid grassland, twelve purple moor-grass and rush pasture or eight tillage field and margins indicator species, should be considered for SINC selection. Post-industrial sites supporting 20 or more indicator species from the combined post-industrial land, acid, neutral, calcareous and marshy grassland lists should be also considered for selection.

WCA 5 – Species protected under Schedule 5 of the Wildlife and Countryside Act
WCA 9 – Species listed under Schedule 9 of the Wildlife and Countryside Act

[39] Wales Biodiversity Partnership (2008) Wildlife Sites Guidance Wales: A Guide to Develop Local Wildlife Systems in Wales. Wales Biodiversity Partnership/Welsh Assembly Government.

Appendix 4: Definitions of Site Value

International Value

Internationally designated or proposed sites such as Ramsar Sites, Special Protection Areas, Biosphere Reserves and Special Areas of Conservation, or non-designated sites meeting criteria for international designation. Sites supporting populations of internationally important species or habitats.

National Value

Nationally designated sites such as Sites of Special Scientific Interest (SSSIs), or non-designated sites meeting SSSI selection criteria (NCC 1989), National Nature Reserves (NNRs) or Nature Conservancy Review (NCR) Grade 1 sites, viable areas of key habitats within the UK Biodiversity Action Plan. Sites supporting viable breeding populations of Red Data Book (RDB) species (excluding scarce species), or supplying critical elements of their habitat requirements.

Regional Value

Sites containing viable areas of threatened habitats listed in a regional Biodiversity Action Plan, comfortably exceeding Site of Importance for Nature Conservation (SINC) criteria, but not meeting SSSI selection criteria. Sites supporting regionally significant areas of BAP habitats or large and viable populations Nationally Scarce species, or those included in the Regional Biodiversity Action Plan on account of their rarity, or supplying critical elements of their habitat requirements.

County Value/District Value

Site identified as a Site of Importance to Nature Conservation (SINC) at the district level; meeting South Wales Wildlife Sites Partnership (SWWSP) 2004 published designation criteria, but falling short of SSSI designation criteria, whether designated as a SINC or not. Ancient woodlands and sites supporting regionally significant areas of UK BAP habitat. Large scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/ LBAP or threatened species (other than badger).

High Local

Habitats which just fail to meet Regional value criteria, but which appreciably enrich the ecological resource of the locality. Sites supporting species which are notable or uncommon in the county; or species which are uncommon, local or habitat-restricted nationally, and which might not otherwise be present in the area. Moderate scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/LBAP or threatened species.

Local Value

Old hedges, woodlands, ponds, significant areas of species-rich grassland, small scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/LBAP or threatened species. Undesignated sites or features which appreciably enrich the habitat resource in the context of their immediate surroundings, parish or neighbourhood (e.g. a species-rich hedgerow). Rare or uncommon species may occur but are not restricted to the site or critically dependent upon it for their survival in the area.

Site Value (within the immediate zone of influence)

Low-grade and widespread habitats. Woodland plantations, structured planting, small areas of species-rich grassland and other species-rich habitats not included in the UK or Local BAP.

Negligible

No apparent nature conservation value.

Appendix 5: Guidelines for Assessing Potential Suitability of Proposed Development Site for Bats

Suitability	Commuting and Foraging Habitat
Negligible	Negligible habitat features on-site likely to be used by commuting and foraging bats.
Low	Commuting Habitat Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Foraging Habitat Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	Commuting Habitat Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Foraging Habitat Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Commuting Habitat Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. Foraging Habitat High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Proximity to Known Bat Roosts Site is close to and connected to known roosts.

Suitability	Description of Roosting Habitat
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection appropriate conditions[41] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity) or hibernation[42].
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely to support a roost of high conservation status[43] (with respect to roost type only) the assessments in this table are made irrespective of conservation status, which is established after presence is confirmed.
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat.

[41] For example, in terms of temperature, humidity, height above ground levels, light levels or levels of disturbance.
[42] Evidence from the Netherlands, shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for large numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.
[43] 'High roost status' is not defined within Collins, 2016. Acer Ecology Ltd. interpret maternity, hibernation, swarming sites, mating sites, and satellite roosts as being of 'high roost status' and exclude day roosts, night roosts, feeding roosts, transitional/occasional roosts from this definition.

Appendix 6: Bat Survey Protocol for Trees Affected by Arboricultural Work

The trees were assigned to the following categories:

Suitability	Description of Roosting Habitat	Commuting and Foraging Habitat
Negligible		Negligible habitat features on site likely to be used by commuting and foraging bats.
Low	A tree of sufficient size and age to contain PRFs but with none seen from the ground[44].	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only) the assessments in this table are made irrespective of conservation status, which is established after presence is confirmed.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more 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 well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

[44] This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

Appendix 7: Minimum Number of Dusk Emergence and Dawn Re-entry Surveys Required [45]

High Roost Suitability	Moderate Roost Suitability	Low Roost Suitability
Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. Surveys should be undertaken from May to September with at least two of the surveys from May to August.	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey[46]. Surveys should be undertaken from May to September with at least one of the survey between May and August.	One survey visit. One dusk emergence or dawn re-entry survey (Survey period is from May to August).

Note: Table is reproduced from Collins 2016

[45] Multiple survey should be spread out to sample as much of the survey period as possible; It is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk survey is considered only one visit.

Appendix 8: Assessment of On-Site Habitat for Supporting Marsh Fritillary

Habitat quality definition:

Once the landscape boundaries have been drawn the next stage is to undertake a preliminary sift by examining Phase One survey maps and plotting the location of examples of the following habitat categories: Unimproved & Semi-improved Acid Grassland (B.1.1 & B.1.2), Unimproved & Semi-improved Neutral Grassland (B.2.1 & B.2.2), Marshy Grassland (B.5),

Wet Heath (D.2), Wet Heath/Acid Grassland mosaic (D.6), Wet & Dry modified Bogs (E.1.7 & E.1.8), Valley Mire (E.3.1), Basin Mire (E.3.2), Floodplain Mire (E.3.3), Dune Slack (H.6.4) and Coastal Heathland (H.8.5). Lowland Blanket Mire (E.1.6.1) may also support marsh fritillary habitat but this was rarely mapped as such during the Phase One survey. Most of the important habitat patches will have been mapped by Phase One as 'Marshy Grassland' but all of the above categories should be surveyed in the field to ensure all possible habitat patches are included.

Within each enclosure supporting one or more of the above broad habitats, patches should be mapped according to the following definitions.

Good Condition Habitat (GC):
Grassland where, for at least 80% of sampling points, the vegetation height is within the range of 12-25 cms and *Succisa pratensis* is present within a 1 m radius. Scrub (>0.5 metres tall) covers no more than 5% of area. Habitat patches in this condition will constitute the most important breeding areas for marsh fritillaries within the landscape, even though higher larval web densities may sometimes occur in slightly ranker conditions, as maintenance of appropriate grazing levels (0.3-0.4 livestock units by cattle or ponies) will sustain vegetation structure in the long term.

Suitable (Under-grazed) Habitat (SU):
Grassland where *Succisa pratensis* is occasional/frequent/abundant and vegetation height is above 25cms, or in which sward height is between 12-25 cm but scrub (>0.5 meters tall) covers more than 5% of area. Such habitat is capable of supporting marsh fritillaries in its current condition, but its significance will decline over a 5-10- year period unless action is taken. Restoration of appropriate grazing levels (perhaps requiring initial management in the form of mowing or patch burning before the introduction of stock) should improve habitat quality to Good Condition.

Suitable (Over-grazed) Habitat (SO):
Grassland with frequent-abundant *Succisa* but which is currently over-grazed such that the sward is below 12cm on average. Mown swards may also come under this category. Such habitat is not capable of supporting marsh fritillaries in its current condition, although short- sward rosettes may

be utilised by larvae where these are adjacent to breeding habitat. Reductions in stocking density to approximately 0.3-0.4 livestock units (or cessation of mowing) should improve vegetation structure towards Good Condition in the short term.

Suitable (Sparse) Habitat (SS):

Grassland with sparse (rare-occasional) *Succisa* and vegetation height less than 25 cms on average. Superficially these patches may have good vegetation structure but the paucity of *Succisa* means that they are less favoured by marsh fritillaries. Edaphic conditions may dictate the abundance of *Succisa* but this may also be due to past or current management practices, such as frequent mowing in the absence of grazing animals. If this is the case, then re-introduction of grazing stock may break up the sward sufficiently to allow germination of any *Succisa* within the seed bank and Good Condition habitat may return in the near future. *Succisa* may also be rare in the sward due to a history of sheep grazing and in such instances removal of sheep may allow condition to improve quickly.

Potential (Rank) Habitat (PR):

Grassland with rare *Succisa* but which is currently under-grazed or neglected such that the sward is above 25cm on average and *Succisa* occurs as scattered plants, usually in a rank, tussocky sward. Management of such grasslands will require considerable effort (in the form of mowing, patch burning and probably scrub control) before grazing can be introduced at appropriate levels. Where landscapes are regarded as containing insufficient habitat to guarantee long-term viability of the marsh fritillary metapopulation, Potential (Rank) patches will offer the best option for habitat restoration, but they are unlikely to support anything more than the occasional larval web without management.

Unsuitable Habitat (NS):

All other habitat types are mapped under this category. This will include patch types that potentially could be restored to support marsh fritillaries, but this is likely to involve a considerable resource input to correct former agricultural practices or to alter soil hydrology.

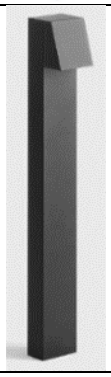
Further clarification of these categories is provided in the Patch Type Criteria Table and Decision Chart. Note for the latter that it is assumed that *Succisa* is at least present in the sward. It should be noted that in previous forms of this guidance *Molinia* and non-*Molinia* dominated swards were separately categorised (the latter distinguished as OG). Whilst this distinction has been abolished, the Comments field should be used to record whether or not habitat patches are *Molinia*-dominated as this information can be useful for management purposes.

Appendix 9: Example of Suitable Wall Light Fittings

	Description
	Light fitting sourced from hiip://www.energylightbulbs.co.uk/products/single -outdoor-wall-with-pir-movement-sensor-stainless-steel?gclid=CLuf2c63hM4CFYVAGwod0sYPvg
	Light fitting sourced from hiips://www.screwfix.com/p/lap -bronx-outdoor-wall-light-black/7323r
	Lighting sourced from hiips://energylightbulbs.co.uk/outdoor -lighting/single-wall-lights/black-single-wall-lights/single-outdoor-wall-light-black-stainless-shiips://www.darksky.org/our -work/lighting/lighting-for-industry/fsa/fsa-products/#!/Bronze-Outdoor-LED-Wall-Lantern-Sconce/p/50117847/category=12541418 teel-ip65-zlc076b
	Light fittigng sourced from https://energylightbulbs.co.uk/outdoor-lighting/single-wall-lights/black-single-wall-lights/cone-shape-outdoor-wall-light-stainless-steel-black-finish-exterior-single-downlight-zlc068b
	Lighting sourced from hiips://www.dunelm.com/product/houston -outdoor-wall-light-1000189390?defaultSkuId=30730458
	Lighting sourced from hiips://www.lights.co.uk/lin dby-jarte-led-outdoor-wall-light-23-9-cm-down.html?gclid=Cj0KCQiAys2MBhDOARIsAFf1D1cN-g6FdvDbjkJcq57t5Ym6RuP5BjjnsVPsMI465W2D8SlLoTRmA5kaAkHZEALw_wcB&gclsrc=aw.ds
	No longer available from previous stockist
	No longer available from previous stockist
	Lighting sourced from hiip://www.theopenboxshop.com/hampton -bay-lexington-collection-outdoor-rustic-bronze-led-medium-wall-lantern/ Note: bulb is in unit above glass casing.

A tool for finding ' bat-friendly' lighting is available at hiips://www.darksky.org/our -work/lighting/lighting-for-industry/fsa/fsa-products/ although the majority of suppliers are based in America

Appendix 10: Examples of Suitable Bollard Lighting

	Manufacturer	Model	Description
	DW Windsor	Pharola DS	Specifically designed as a 'dark sky compliant' light, this bollard produces zero light above the horizontal plane, and is available with 3000K warm white lighting. For more details, visit: hiips://www.dwwindsor.com/products/pharola/pharola -ds/
	GHM-Eclatec	Trek	Lighting head and module in die-cast aluminium; polyester powder coating, any colour available. Available in 3000k. For more details, visit: hiips://www.ghm -eclatec.com/products/lighting/bollards/trek-bollard
	GHM-Eclatec	Taiga	Lighting head and module in die-cast aluminium; polyester powder coating, any colour available. Available in 3000k. For more details, visit: hiips://www.ghm -eclatec.com/products/lighting/bollards/taiga-led-bollard
	BEGA	77237	Cast aluminium, LED 300k, directs beam downwards. For more details, visit: hiips://www.bega.com/en/products/led -garden-and-pathway-luminaires-for-the-private-sector-77237/
A tool for finding ` bat-friendly' lighting is available at hiips://www.darksky.org/our -work/lighting/lighting-for-industry/fsa/fsa-products/ although the majority of suppliers are based in America			