



ENGLISHCOMBE LANE, BATH

Ecological Impact Assessment

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1. INTRODUCTION

- 1.1. Engain was commissioned by Bath and North East Somerset (BANES) Council to undertake an Ecological Impact Assessment (EclA) of a proposed development on a plot of land to the rear of Englishcombe Lane, Bath, BANES.
- 1.2. The development proposals comprise the creation of 16 supported living properties and associated soft landscaping and infrastructure. An illustration of the proposed development is provided in **Figure 1**.
- 1.3. The scope of this assessment is based on the Guidelines for Ecological Impact Assessment in the UK, published in 2018 by Chartered Institute of Ecology and Environmental Managers (CIEEM).
- 1.4. This EclA is supported by an ecological data search, a desk study to identify any notable or protected sites, habitats or species on or near to the site, a field survey to map and describe the habitats of the site, a review of existing ecological data and field surveys for protected species.
- 1.5. The purpose of this EclA is to:
 - Set out the methodologies used to inform the assessment.
 - Identify Important Ecological Features (IEF)¹ within the Zone of Influence (ZoI).
 - Assess the impacts from the Proposed Development on the IEFs and any resulting significant effects.
 - Set out measures to avoid or mitigate negative impacts.
 - Assess the residual effects after the incorporation of agreed avoidance or mitigation measures.
 - Set out agreed measures to offset any significant residual effects.
 - Set out opportunities for ecological enhancement.
- 1.6. This assessment is also informed by surveys of the site that have been carried out by ecological consultancies, including that presented in a report by Johns Associates from January 2019.

¹ The definition of 'Important Ecological Features' is set out in Chapter 4 of '*CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester*'.

Figure 1, "Proposed Development Plan"



2. LEGISLATION AND POLICY

Legislation

- 2.1. The two principal European Union Directives relating to nature conservation are *The Habitats Directive (1992)* and *The Birds Directive (amended 2009)*. Both directives are transposed into national legislation through *The Conservation of Habitats and Species (Amendment) Regulations 2017*.
- 2.2. *The Habitats Directive (1992)* protects certain species that are threatened across Europe and makes provision for the designation of wildlife conservation areas as Special Areas of Conservation. *The Birds Directive (1979)* makes provision for the designation of conservation areas for rare and vulnerable birds as Special Protection Areas.
- 2.3. European Protected Species are protected under *The Habitats Regulations*. It is an offence to:
 - Deliberately capture or kill a European Protected Species;
 - Damage or destroy a breeding site or resting place of a European Protected Species; or
 - Deliberately disturb a European Protected Species in such a way as to be likely to significantly affect:
 - The ability of any significant group of animals of that species to survive, breed, rear or nurture their young; or
 - The local distribution of that species.
- 2.4. *The Environment Act 2021* introduces requirements for development to deliver measurable net gains using the good practice principles of biodiversity net gain.
- 2.5. *The Wildlife and Countryside Act 1981 (as amended, WCA)* provides protection to common reptiles at a UK national level. Additionally, all wild birds, their nests and young are protected through the WCA and it is illegal to kill, injure or take any wild bird, or damage or destroy the nest or eggs of breeding birds.
- 2.6. *The Natural Environment and Rural Communities Act 2006 (NERC Act)* extends the biodiversity duty set out in *The Countryside and Rights of Way Act 2000* to public bodies and statutory undertakers to take due regard to the conservation of biodiversity. Local planning authorities should ensure that there is no net loss of biodiversity on a site, no net loss in habitat connectivity and should always aim to enhance biodiversity.

Relevant Policy

- 2.7. *The National Planning Policy Framework* sets out the government's policies for the protection and enhancement of biodiversity through the planning system. *The National Planning Policy Framework* encourages the planning system to contribute to and enhance natural and local environments, through minimising the impacts on biodiversity and providing net gains in biodiversity where possible.
- 2.8. Local planning authorities are required to follow key principles in their consideration of potential impacts of planning decisions on biodiversity conservation. Circular 06/05: Biodiversity and Geological Conservation provides administrative guidance on the application of the law relating to planning and nature conservation and complements *The National Planning Policy Framework*.
- 2.9. The presence of species protected under UK and European legislation are a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. Ecological assessments are required by planning authorities to inform the planning application.
- 2.10. Biodiversity 2020: A strategy for England's wildlife and ecosystem services provides national and local biodiversity strategies for England, based on the habitats and species listed under *The Natural Environment and Rural Communities Act*. Local biodiversity action plans give valuable information on local conservation priorities. The site is covered by the North Somerset Biodiversity Action Plan (LBAP).

Local Planning Policy

- 2.11. The relevant Development Plan comprises the Core Strategy, Placemaking Plan and the newly adopted Local Plan Partial Update. The following policies have been given due regard in the preparation of this assessment:
- Policy NE3 (Sites, Species and Habitats), developments that would adversely affect international or nationally protected/important species, habitats or sites will not be permitted.
 - Policy NE3a (Biodiversity Net Gain) Development will only be permitted for major developments where a Biodiversity Net Gain of a minimum of 10% is demonstrated and secured in perpetuity (at least 30 years) subject to the following requirements.

- Policy NE5 (Ecological Networks), developments should demonstrate how they will through habitat creation, protection, enhancement, restoration and/or management contribute to ecological networks.

3. SITE LOCATION AND GENERAL DESCRIPTION

Site Location

- 3.1. The site is located to the south of Bath city centre (**Figure 2**) and is accessed from a track leading off Englishcombe Lane. The site is bounded by residential dwellings to the north and west and woodland and scrub to the south and east. The site is approximately 1.2ha in size and centred on OS grid reference ST73526322.

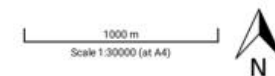
Site Description

- 3.2. The site comprises grassland habitat with scrub and woodland around the periphery acting as the boundary features. There are several small water courses which run through the middle of the site, south to north.
- 3.3. According to Soilscape, the site is 'lime-rich loamy and clayey soils with impeded drainage'.

Figure 2, "Site Location"



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4. METHODOLOGIES

Desk Study

- 4.1. Bristol Regional Environmental Records Centre has provided records of notable sites, habitats, and species within the last 20 years. The search area was set at a radius of 2km from the site boundary for protected and notable species.
- 4.2. Online resources were also used, including the UK government's online resource for geographic information about the natural environment (MAGIC Map). This and other resources were used to scope the habitat survey at an appropriate scale and level of detail.
- 4.3. The site was subject to ecological surveys in 2008 by Ecosulis and subsequently 2017 to support a planning application in 2018 (planning reference: 18/01516/REG04) and reported in an Ecological Impact Assessment produced by Johns Associates (ref: J00129). The content of this report has been drawn upon when considered relevant to this assessment.

Botanical Surveys

- 4.4. Botanical surveys were carried out over the course of three visits on 11th, 17th and 23rd May 2023. The surveys were completed in accordance with the methods set out in Rodwell (1991).
- 4.5. A total of 16 2m x 2m quadrats were taken at approximately regular intervals along two transects across the site, although the exact positions of some quadrats were adjusted to ensure that the full range of vegetation variation (and grassland types highlighted in the previous survey) were sampled. Each quadrat was photographed, mapped (with GPS assistance), briefly described and the cover of all higher plant species present recorded using the DOMIN scale of abundance.
- 4.6. Following the survey, the quadrat data were analysed using TABLEFIT software, which was used, together with published keys and written descriptions, to classify the vegetation types present on the site within the National Vegetation Classification (NVC).

4.7. Additionally, the whole site was walked and the vegetation types on site described, photographed, mapped and target noted, and indicative species lists compiled. The species lists included an estimate of the frequency of each species using the DAFOR frequency scale. Species which are 'positive indicator species' for Lowland Meadow or Lowland Calcareous Grassland in the Common Standards Monitoring Guidance for Lowland Grassland Habitats are highlighted.

Evaluation for Protected Species

4.8. The potential for the site to support legally protected and notable species has been assessed using the desk study results combined with observations during the field surveys. The assessment of the site's suitability for protected and notable species was based on knowledge and judgement of an experienced professional informed by sources of guidance on habitat suitability assessment for key animal groups, including:

- Amphibians (Gent and Gibson, 2003);
- Badgers (Harris et al., 1991; and Roper, 2010);
- Bats (Collins, 2016; and Mitchell-Jones, 2004);
- Birds (wintering and breeding) (Gilbert et al., 1998; and Bibby et al., 2000);
- Reptiles (Gent and Gibson, 1998; and Froglife, 1999); and
- Terrestrial invertebrates (Drake et al., 2007; and Kirby, 2001).

4.9. Considering the site location, context and the habitats it contains, the following protected species are considered in this report:

- Amphibians;
- Badgers (*Meles meles*);
- Bats;
- Breeding birds;
- Dormice (*Muscardinus avellanarius*);
- Hedgehogs (*Erinaceus europaeus*);
- Reptiles; and
- Invertebrates (aquatic and terrestrial).

4.10. The site is not suitable for otters (*Lutra lutra*), water voles (*Arvicola amphibious*), or white-clawed crayfish (*Austropotamobius pallipes*), as there are no suitable waterbodies on or near the site. These species are not considered further in this report.

Badger survey

4.11. A systematic search for signs of badgers was originally conducted on 11th May 2023. The surveys followed standard guidelines (Harris, Cresswell & Jeffries, 1989) and included a thorough search for setts or for signs of badger activity, including tracks, latrines, hairs and snuffle holes. Incidental observations of badgers evidence was also recorded whenever on site for other surveys.

Bats

Bat Activity Surveys

4.12. Bat activity surveys were conducted in 2023, following the methods set out in standard guidance (Collins, 2016; Mitchell-Jones, 2004; and Mitchell Jones & McLeish, 2004). The transect route walked by the surveyors is shown in **Figure 2** for the bat transect route. Transect routes were walked by one surveyor, starting at different positions each transect.

Table 1, "Bat survey transect schedule"

Date	Start / Finish	Sunset / Sunrise	Weather Conditions (Start / Finish)			
			Temp (°C)	Cloud ¹	Wind ²	Rain
28/04/23	20:26 / 22:26	20:26	19 / 14	3	0	0
17/05/23	20:56 / 23:56	20:56	11 / 10	6 / 8	1	0
29/06/23	21:29 / 23:29	21:29	16	3	3	0
21/07/23	21:13 / 00:13	21:13	14 / 13	2 / 4	1 / 0	0
29/08/23	20:03 / 23:03	20:03	16 / 13	8 / 2	2 / 0	0
16/09/23	19:22 / 22:22	19:22	17	8	0 / 1	0
30/10/23	16:47 / 19:47	16:47	10	1	0	0

¹ Oktas scale ² Beaufort scale

4.13. Visual observations were supported by ultra-sonic bat detectors. A variety of hand-held detectors (Anabat SD2, EM3+ and EMTouch) were used.

Automated Static Surveys

4.14. An SM Mini static detector was installed within the site between April and October, for a total of 38 nights. Table 2 shows the periods over which it recorded bat activity. The objective of the survey was to confirm (following on from previous bat surveys of the site) the species that use the site and the relative frequency at which each species was recorded.

Table 2, "Static detector deployment schedule"

Month	Start date / End date (nights of)	Number of nights
April	28/04/23 – 02/05/23	5*
May	05/05/23 – 09/05/23	5
June	04/06/23 – 09/06/23	5
July	21/07/23 – 26/07/23	6
August	07/08/23 – 11/08/23	5
September	11/09/23 – 16/09/23	6
October	01/10/23 – 06/10/23	6

**Two nights in the beginning of May*

Data Analysis

4.15. Static detector data was analysed using Kaleidoscope Pro software. Myotis species identification was accepted, but is treated with caution when analysing the results, and where in doubt all Myotis species have been combined, with the assumption some of the calls could be Bechstein's bats.

Figure 2, "Transect routes and static detector location"



Breeding birds

4.16. Following on from previous surveys of the site, a breeding bird survey was conducted on 9th June 2023, during acceptable weather conditions.

Table 3, "Breeding bird survey dates and weather"

Date	Start / Finish	Weather conditions (Start / Finish)			
		Temp (°C)	Cloud ¹	Wind ²	Rain
09/06/23	05:00 – 06:00	15	1 / 8	2	0

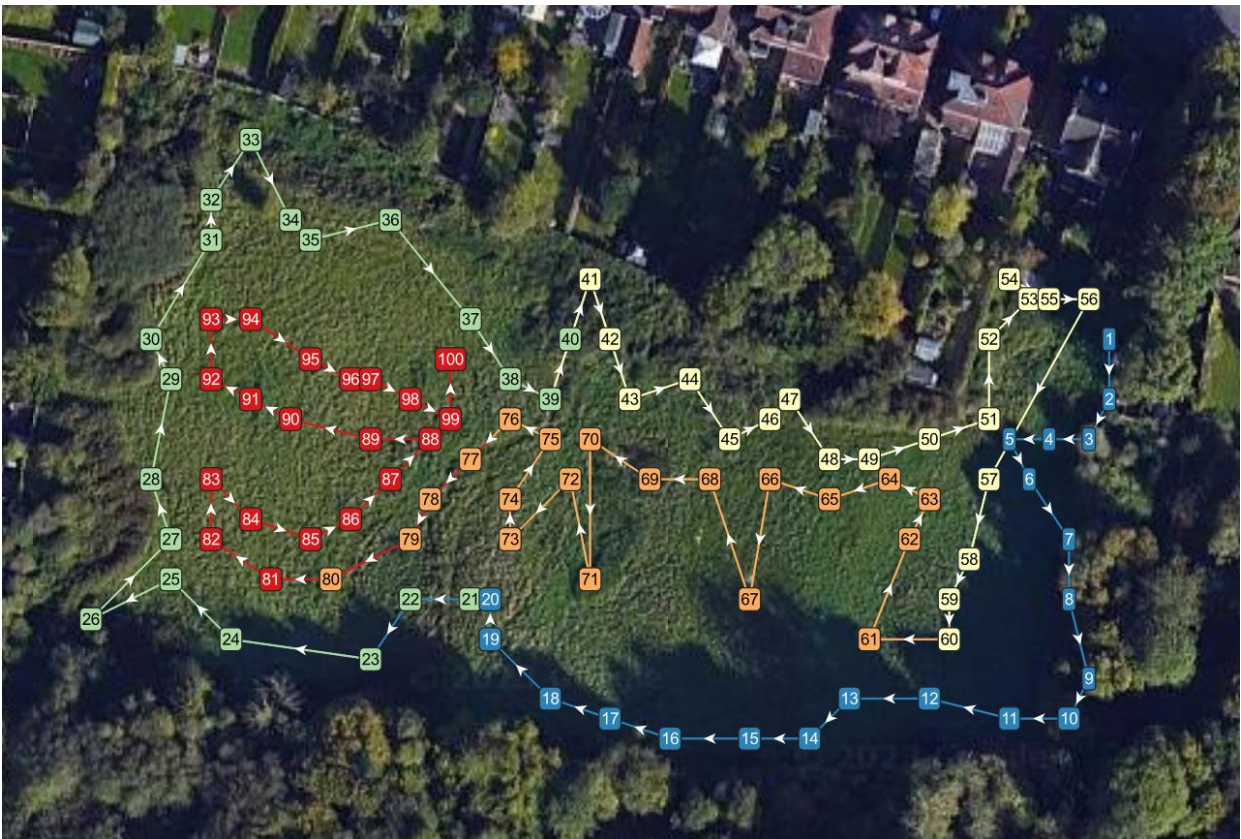
Reptile Survey

4.17. Previous surveys of the site confirmed that it was used by slow-worms. The remains of reptile exclusion fencing are present on the site but it is not intact and would not prevent reptiles from using the site. It was therefore decided to complete presence / absence surveys to verify if slow-worms still use the site. The surveys followed the methods outlined in Froglife Advice Sheet 10 (1999) and the Surveying for Reptiles guide (2016). The surveys were conducted over seven days during October and November, after site investigation work had been completed and the site was freely accessible. Mats were placed on the 13th of September 2023 and left to 'bed in' for four weeks. The location of the mats is shown in **Figure 3**.

Table 4, "Reptile survey dates and weather"

Date	Start / Finish	Weather conditions (Start / Finish)			
		Temp (°C)	Cloud ¹	Wind ²	Rain
09/10/23	16:30 – 17:49	22 / 21	2	2	0
13/10/23	10:53 – 12:13	19	3	3	0
17/10/23	13:31 – 14:54	13 / 10	1	4	0
20/10/23	12:03 – 13:12	13 / 14	6 / 3	6 / 3	0
02/11/23	09:30 – 10:15	9	8	6	Heavy
06/11/23	15:13 – 15:58	12 / 11	1	2 / 3	0
09/11/23	10:49 – 12:25	9 / 10	2 / 3	3 / 4	Dry

Figure 3, "Reptile mat locations"



Zone of Influence

- 4.18. The Zone of Influence (Zol) for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries.
- 4.19. Based on the scale and nature of the development, it has been assessed that the Zol arising from these works is unlikely to be greater than 1km with regards to protected species (excluding those associated with the bat SAC) and non-statutory sites from the centre of the site. With regards to statutory designated sites, the Zol is 10km. Therefore, these distances have been used to collect the ecological data search information.
- 4.20. The habitat survey area comprised primarily the site. However, adjacent land was viewed where possible. As referenced in industry guidance, potential Important Ecological Features (IEFs) that are present or potentially present on and off the site, which may be impacted by the proposed development have been considered.

Important Ecological Features

- 4.21. In addition to the legislative requirements detailed in Section 3, the habitats and species of principal importance for biodiversity in England are listed on Section 41 of the Natural Environment and Rural Communities Act 2006.
- 4.22. The assessment of the relative nature conservation value of the features at this site is also assessed against published criteria wherever possible. The value of habitats in the UK is covered in a wide variety of literature, including Usher (1986) and Ratcliffe (1977).
- 4.23. The main criteria against in assessing IEFs are rarity, diversity, naturalness, and extent. High importance is also attached to habitats that have not been subject to agricultural intensification, and which often depend on traditional forms of management, such as ancient semi-natural woodland, species-rich meadows and traditionally managed grassland and moorlands.
- 4.24. Not all potential or confirmed IEFs within the Zol have the potential to be significantly affected by the development or legislation pertaining to them to be contravened. Therefore, where features are unlikely to be affected by the proposed development, or where any effects that impact IEFs are unlikely to be significant, for the reasons listed below, such features have been scoped out of the assessment:

- No pathway of effect has been identified, for example the feature is sufficient distance from the site or there is the presence of a barrier between its location and the site; or
- The feature is of insufficient biodiversity conservation value within the Zol, due to its quality, extent, or population size.

Impact Assessment

4.25. The impact assessment process involves:

- identifying and characterising impacts and their effects;
- incorporating measures to avoid and mitigate negative impacts and effects;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset significant residual effects; and
- identifying opportunities for ecological enhancement.

Predicting Ecological Impacts and Effects

4.26. The process of predicting ecological impacts and effects will consider the relevant aspects of ecosystem structure and function. Examples include the availability of the identified IEF's resources, such as connective or breeding habitat and environmental processes, such as the hydrological regime of a river.

Characterising Ecological Impacts

4.27. When describing ecological impacts and effect, the following characteristics are considered:

- positive or negative;
- extent;
- magnitude;
- duration;
- frequency and timing; and
- reversibility.

Assessment of Cumulative Impacts and Effects

4.28. There is no requirement for a cumulative assessment in this EclA, considering the nature of the Development, the small scope of works to be assessed and the scale of the likely impacts.

Assessment of Residual Impacts

4.29. After assessing the impacts of the proposal, efforts should be made to avoid and mitigate the ecological impacts. Once these measures have been agreed, an assessment of the residual impacts will be made to determine the significance of their effects on the identified IEFs.

Determining Significant Effects

4.30. A 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives of any identified IEFs.

4.31. The following considerations are made in relation to the identified IEFs:

- any processes or key characteristics will be removed or changed;
- there will be an effect on the nature, extent, structure and function of component habitats; and
- there is an effect on the average population size and viability of component species.

4.32. The evaluation of significant effects should be based on available scientific evidence. Based on the precautionary principle, if the available information is not sufficient, then a significant effect may be assumed likely to occur.

4.33. The evaluation of significant effects is based on available scientific evidence. The level of an effect is stated with reference to the matrix in **Table 5**.

Table 5, "Matrix for stating the level of significance of an ecological effect"

		Magnitude / Scale of Impact (degree of change)				
		No change	Negligible	Minor	Moderate	Major
Ecological Importance	National (England)	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
	Regional (south-west)	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	County (Bath and North East Somerset)	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	Local (Bath)	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
	Site	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

Limitations

- 4.34. Engain cannot verify the accuracy of third-party information.
- 4.35. The field survey is not definitive and represents a snapshot of the ecological status of a site. Furthermore, data records help to provide a historical context, however the absence of evidence of a species does not prove that it does not use the site.
- 4.36. Several of the reptile surveys were conducted outside the typical survey period and in sub-optimal weather conditions. However, given the site has been previously surveyed for reptiles and the fact reptiles were confirmed to still be present during the 2023 it is considered that the survey effort is enough to inform the impact assessment and support the proposed mitigation strategy.

5. RESULTS

Designated Sites

Statutory Designated Sites

5.1. There are five statutory designated sites of relevance to this site (**Table 6**).

Table 6, "Relevant Statutory Designated Sites within 5km"

Name	Designation	Proximity	Qualifying features
Bath and Bradford on Avon Bats / Box Mine component	Special Area of Conservation (SAC) / Special Site of Scientific Interest (SSSI)	1.37km south east	This 106.45 hectare site in southern England comprises the hibernation sites associated with 15% of the UK greater horseshoe bat (<i>Rhinolophus ferrumequinum</i>) population and is selected on the basis of the importance of this exceptionally large overwintering population. Small numbers of Bechstein's bats (<i>Myotis bechsteini</i>) have also been recorded hibernating in abandoned mines in this area, though maternity sites remain unknown. Lastly, it also supports a population of Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>) however, it is not the primary reason for the designation. The Combe Down and Bathampton Down Mines SSSI component, is particularly important for bats as a hibernaculum between October and May.
Midford Valley Woods	SSSI	3.65km south east	Midford Valley Woods comprises some of the best examples of southern calcareous ash-wych elm woods on the oolitic limestone of the Wiltshire Cotswolds. It is a floristically rich site with large populations of a plant which has a nationally restricted distribution.
Twerton Roundhill	Local Nature Reserve (LNR)	1km west	Limestone grassland
Carrs Woodland	LNR	2.km north west	Broadleaved woodland, limestone pasture, running water. Notable plant species including Bath asparagus (<i>Ornithogalum pyrenaicum</i>)
Kensington Meadows	LNR	4km north east	Habitat mosaic situated on the banks of the River Avon. Old willow pollards.

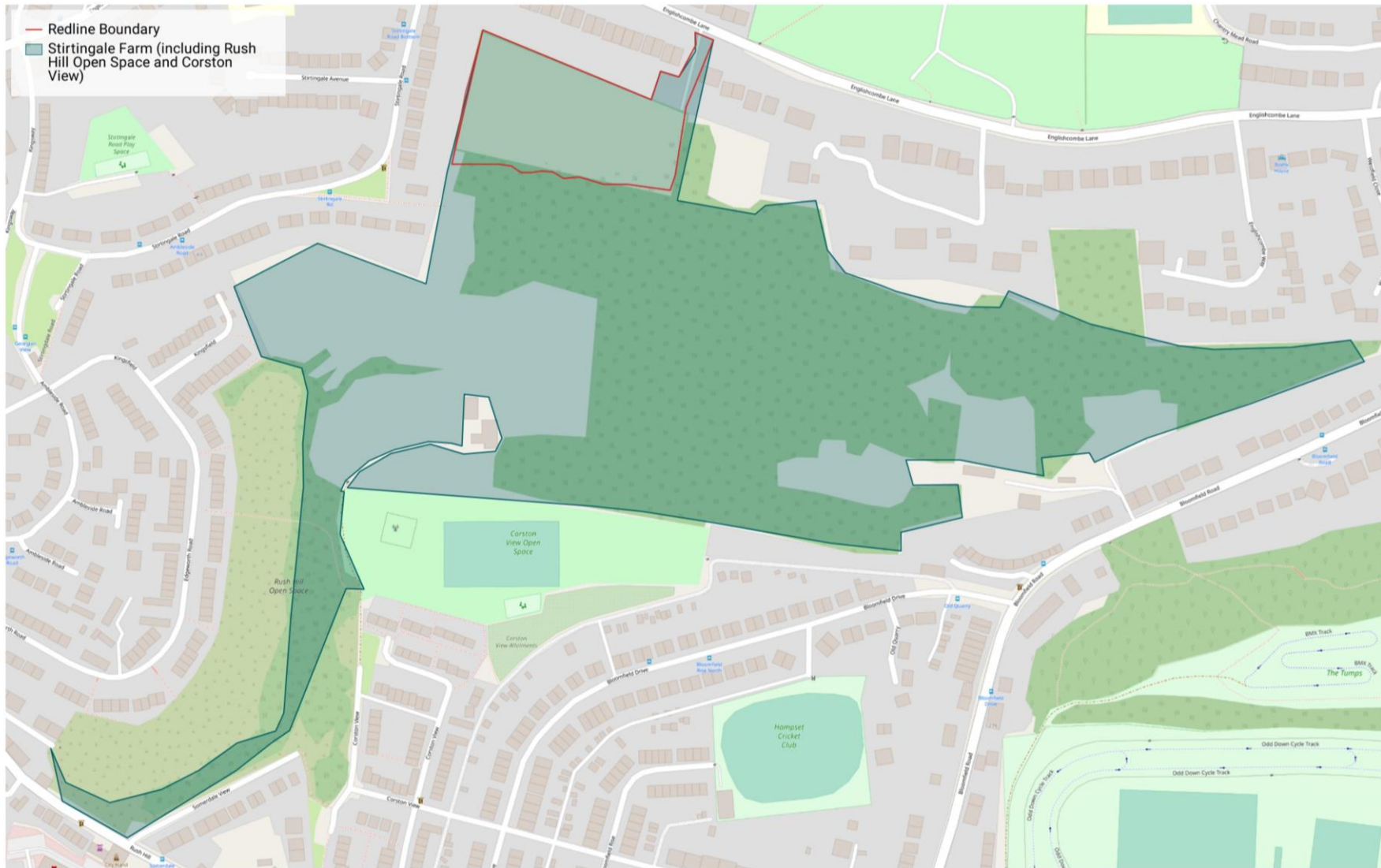
Non-Statutory Designated Sites

5.2. There are nine non-statutory designated sites within 1km of the site:

Table 7, "Non-statutory designated sites within 1km of the site"

Name	Designation	Proximity	Qualifying features
Stirtingale Farm (including Rush Hill open space and Corston View)	Site of Nature Conservation Importance (SNCI)	The site forms part of the SNCI (approx. 10% of the total SNCI area)0. Location Figure 3 below.	Semi-improved neutral grassland and limestone grassland, springs, semi-natural broadleaved woodland and scrub.
The Trumps	SNCI	420m south east	Limestone grassland, semi-natural broadleaved woodland and scrub.
Linear Park	SNCI	595m north	Scrub, hedges, trees and limestone grassland.
Breach wood and adjacent land	SNCI	658m south west	Ancient woodland, stream with associated marginal habitats and hedgerow.
(part of Rush Hill and Eastover Coppice	SNCI	715m south west	Unimproved calcareous grassland, semi-natural broadleaved woodland.
Padleigh Wood (grassland Wansdyke)	SNCI	855m west	Unimproved calcareous grassland.
Hugh Barrow Hill	SNCI	865m west	Unimproved calcareous grassland, hedgerows and scrub.
Field by Redland Park	SNCI	915m north west	Large field of semi-improved grazing pasture with a strip along the western edge which supports a more herb rich sward.
Hoggen Coppice and adjacent land	SNCI	1km south west	Ancient semi-natural broadleaved woodland and running water (stream) with associated marginal habitats.

Figure 4, "Reproduction of the map of Stirlingale Farm (including Rush Hill Open Space and Corston View)"



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100 m
Scale 1:3544 (at A4)



Habitats

5.3. The site has the following habitats:

- rough grassland;
- broadleaved woodland;
- Species poor, native hedgerow;
- Scrub and ruderal vegetation; and
- Watercourses.

Botanical Survey

5.4. The results of the botanical survey can be found in **Table 8** and **Figure 4** below. Full details on the results can be found in **Appendices 1, 2 and 3**.

Table 8,
"Summary of the results of the TABLEFIT NVC analysis showing overall percentage 'goodness of fit'"

Quadrat	NVC type	Mapped vegetation type – quadrat description
Q1	MG1a (85%)	Rough grassland. Herb-poor with red fescue
Q2	MG1 (76%)	Rough grassland – rank and weedy
Q3	Inconclusive due to high cover meadow foxtail. Best match was MC11 (49%)	Rough grassland. Herb-poor with red fescue
Q4	Inconclusive due to high cover meadow foxtail. Best match was MG7c (45%)	Rough grassland – lush and herb-poor with meadow foxtail
Q5	MG1a (67%)	Rough grassland – slightly finer area, but herb-poor
Q6	MG1a (74%)	Rough grassland with thistles
Q7	OV24b (77%) transitional to MG1b (75%)	Rough grassland – rank, tall and nettles
Q8	W24 (60%) transitional to MG1a (59%)	Rough grassland with bramble
Q9	MG1a (66%)	Rough grassland – previously mapped as calcareous grassland
Q10	MG1a (77%)	Rough grassland – rank and herb-poor with red fescue
Q11	MG1a (51%), but also a 53% match to W24b	Rough grassland – locally fine patch with red fescue and meadow vetchling (no bramble)
Q12	Transitional between MG1 (50%) and CG6 (49%)	Area with downy oat-grass
Q13	Unclear, with 49% match to CG3.	Area with upright brome
Q14	Inconclusive due to high cover of meadow foxtail, but matched to MG7d (42%)	Poor rough grassland
Q15	MG1a (64%)	Rough grassland – with creeping thistle

Figure 5, "Botanical Field Survey Map"



Rough (MG1) grassland

- 5.5. Much of the field supported a herb-poor rank grassland, with the prominent grasses being a variable mix of false oat-grass (*Arrhenatherum elatius*) and meadow foxtail (*Alopecurus pratensis*), with a range of other common mesotrophic grasses at lower cover, and with an 'under-storey' of red fescue (*Festuca rubra*) in many parts. In general the cover of broad-leaved plants was low, although species such as buttercups (*Ranunculus* spp.) common vetch (*Vicia sativa*) and thistles and docks were occasional and sometimes locally frequent. Positive indicator species (*Lathyrus pratensis*) and agrimony (*Agrimonia eupatoria*), and more rarely cowslip (*Primula veris*) and oxeye daisy (*Leucanthemum vulgare*) were extremely sparsely distributed, and the areas in which they were concentrated have been target noted.
- 5.6. Overall, the classification of the majority grassland on site is clearly **MG1 *Arrhenatherum elatius* grassland**, with most parts best matched to the **MG1a *Festuca rubra* sub-community**. This agrees with the classification made in the previous 2017/18 botanical survey.
- 5.7. The 2017/18 botanical survey suggested that previously there were patches of increased botanical interest, and these were more widespread and diverse than found during the current survey. For example, the previous survey highlighted a significant area towards the centre of the site where the sward was described as finer, more diverse and herb-rich than the surrounding MG1 grassland, and this area was classified as species-rich dry semi-improved grassland (**MG6 *Lolium perenne* – *Cynosurus cristatus* grassland**). Then, this area included locally frequent oxeye daisy, together with a good range of other herb species including black medick (*Medicago lupulina*) and selfheal (*Prunella vulgaris*). In the 2023 survey, this area was similar to the surrounding rough grassland, suggesting that the previously richer grassland area has changed due to the absence of cutting or grazing of the field and is now indistinguishable.
- 5.8. In 2023, one slightly more diverse very small patch was found near the centre of the site (Q11), where just one plant of oxeye daisy was found, together with occasional meadow vetchling (*Lathyrus pratensis*) and locally frequent ribwort plantain (*Plantago lanceolata*).

- 5.9. There were also some small areas where there were local concentrations of meadow vetchling and agrimony in the rank MG1 sward. Most of these areas were not significantly different (or large) enough to warrant separate classification or mapping (being simply weak concentrations of meadow vetchling or agrimony), though they have been target-noted.
- 5.10. Only one area in the north-east of the site (Q16) has similarities with an MG5 grassland - where localised light trampling has maintained a lighter sward with abundant common bird's-foot trefoil *Lotus corniculatus*.
- 5.11. This area in the north-west corner of the site was described as 'dominated by upright brome' in 2017/18, with cover recorded as 51-75% cover, although with only a limited suite of calcicole species noted: glaucous sedge (*Carex flacca*) and downy oat-grass (*Helictotrichon pubescens*).

Area previously mapped as 'calcareous grassland' in 2017

- 5.12. In 2023, upright brome was still present in Q9 and Q13, but extremely localised, only achieving significant cover in a small very area, perhaps only a few metres squared, and it occurred in a rankly structured sward with many other ubiquitous neutral grass species also present. No glaucous sedge was found, nor were any typical calcicole species or positive indicator species for Lowland Calcareous Grassland. A quadrat was taken in the area with the most upright brome (Q13). Although this quadrat has similarities with a CG3 grassland (49% goodness of fit), it had no other characteristic species of CG3 except downy oat-grass. Despite the local occurrence of upright brome, this area can no longer clearly be classified as CG3 grassland.
- 5.13. Another calcicolous grass, downy oat-grass (*Helictotrichon pubescens*), was also locally abundant in small patches of the western side of the field, albeit at mostly low covers within a rough neutral grassland sward (e.g. Q12). Apart from agrimony and meadow vetchling, there were few positive indicator species, and no strict calcicoles recorded.

Wet grassland associated with watercourses

- 5.14. Some of the damper grassland immediately adjacent to the watercourses was characterised by herb-poor *Agrostis stolonifera* grassland; however the extent of these areas was not as extensive as was described in the 2017/18 botanical survey.

Scrub and ruderal

- 5.15. The entrance to the site has areas of dense nettle with other species including cleavers, false oat-grass, teasel, broad-leaved dock referable to the NVC type **OV24 *Urtica dioica* - *Galium aparine* community**), with some small rough grassland patches and bramble scrub (*W24 Rubus fruticosus* - *Holcus lanatus* underscrub) in mosaic with this.
- 5.16. There is scrub along the northern and western boundaries of the site, which is dominated by blackthorn (*Prunus spinosa*), bramble (*Rubus fruticosus*) and bindweed (*Calystegia sepium*). The shrub layer comprises ivy-leaved speedwell (*Veronica hederacea*), wood avens (*Geum urbanum*), cleavers (*Galium aparine*) and herb Robert (*Geranium robertianum*). Variaget yellow archangel (*Lamium galeobdolon argentatum*), a plant listed on Schedule 9 of the Wildlife and Countryside Act, 1981 was recorded along part of the western boundary, adjacent to the scrub.
- 5.17. Nettle also formed some discrete stands within the grassland, the most significant of which have been mapped.

Broadleaved woodland

- 5.18. The woodland along the southern edge of the site is part of the woodland habitat within the SINC. Tree species include predominately ash (*Fraxinus excelsior*) and field maple (*Acer campestre*) with occasional sycamore (*Acer pseudoplatanus*). The understory is dominated by native shrub species including elder, hawthorn and with occasional hazel. The ground flora comprises nettles (*Urtica dioica*), ivy (*Hedera helix*), hedge woundwort (*Stachys sylvatica*), dog's mercury (*Mercurialis perennis*) and cow parsley (*Anthriscus sylvestris*). No ancient woodland indicators were recorded. According to MAGIC, the woodland off-site, within the SINC has been inventoried as the priority habitat deciduous woodland.

Watercourses

- 5.19. Historic mapping of the site (**Appendix 4**) shows that a watercourse from Stirtingale Farm to the south used to be directed under the site via a land drain (at least up until the mid 1980s). There are now some watercourses running over the surface of the ground, north through the site. They arise from a point just outside the site to the south, and disappear (presumably into a culvert) before reaching the gardens to the north of the site. The location and route of the overland watercourses appear to have changed since they were mapped in 2019, but botanically they have not altered substantially.
- 5.20. The wet ground contains a range of species including lesser water parsnip (*Berula erecta*), brooklime (*Veronica beccabunga*), water mint (*Mentha aquatica*), as well as a local concentration of Indian balsam (*Impatiens glandulifera*) and nettles.

Species poor hedgerow

- 5.21. There is a species-poor hedgerow along the eastern boundary. which is currently not managed. Species include field maple, elder, apple (*Malus spp.*) ash and occasional hazel. The understory comprises the same species that are present in the broadleaved woodland.

Protected Species

Amphibians

- 5.22. The ecological data search returned seventeen records for great crested newts, many of which are associated with Bath City farm, 1.2km north west of the site. According to MAGIC, the closest EPS licence for great crested newts is 1.3km south of the site.
- 5.23. The site has suitable terrestrial habitat for commuting, foraging and hibernating great crested newts and other amphibians. However, there are no suitable waterbodies known to be present within 500m of the site (Figure 5), so it is concluded that great crested newts do not use the site.

Badgers

- 5.24. Forty eight records for badgers were returned in the data search.

5.25. In 2017, one active outlier sett entrance was located in the middle of the site and two outlier setts near to the southern boundary in addition to snuffle holes and runs through the grass. During the 2023 surveys the outlier sett in the middle of the site was found to have bedding material by the entrance, indicating the sett is still in use. Badgers were also seen on the site during the bat surveys. The site likely falls within a badger clan's territory however, the main sett is offsite, likely within the woodland habitat to the south.

Bats

5.26. The ecological data search returned twelve records for bats, the closest being for lesser and greater horseshoe adjacent to the site in 2018 (likely the results from the previous surveys of the site), as well as a large number of roost records including those for lesser and greater horseshoes (no precise location given). According to MAGIC, there are ten EPS Licences for roosting bats within 2km of the site, the closest of which is 900m north of the site for the destruction of a resting place for brown long-eared bats and common pipistrelle.

5.27. In 2017 during the crossing point surveys using static detectors, it was identified that lesser horseshoe bats were crossing Englishcombe Lane, north to south to reach the site, commuting along the treeline of the access track, using it as a dispersal corridor to commute along the eastern boundary of the site. Given the timing after sunset they were recorded, it indicated a day roost for lesser horseshoe bats is present nearby to the site.

Roosting bats

5.28. Several dilapidated sheds are present adjacent to the eastern boundary. Whilst they have the potential to support night feeding roosts, no evidence has been recorded to support this during 2017 and 2023. They are not suitable as day roosts because they are open-fronted and in a very poor state of repair.

5.29. Three trees were rated to have the potential for roosting bats, two low and one high. Tree 1 (high) and T2 (low) are located in the woodland in the south of the site. T3 (low) is located in the boundary of the access track in the north east of the site.

5.30. T1 is an ash tree with a hollow trunk and large openings, multiple rot and woodpecker holes and splits/cracks in the limbs. T2 and T3 both sycamore, no obvious potential roosting features other than a dense cover of ivy (a roosting feature in itself).

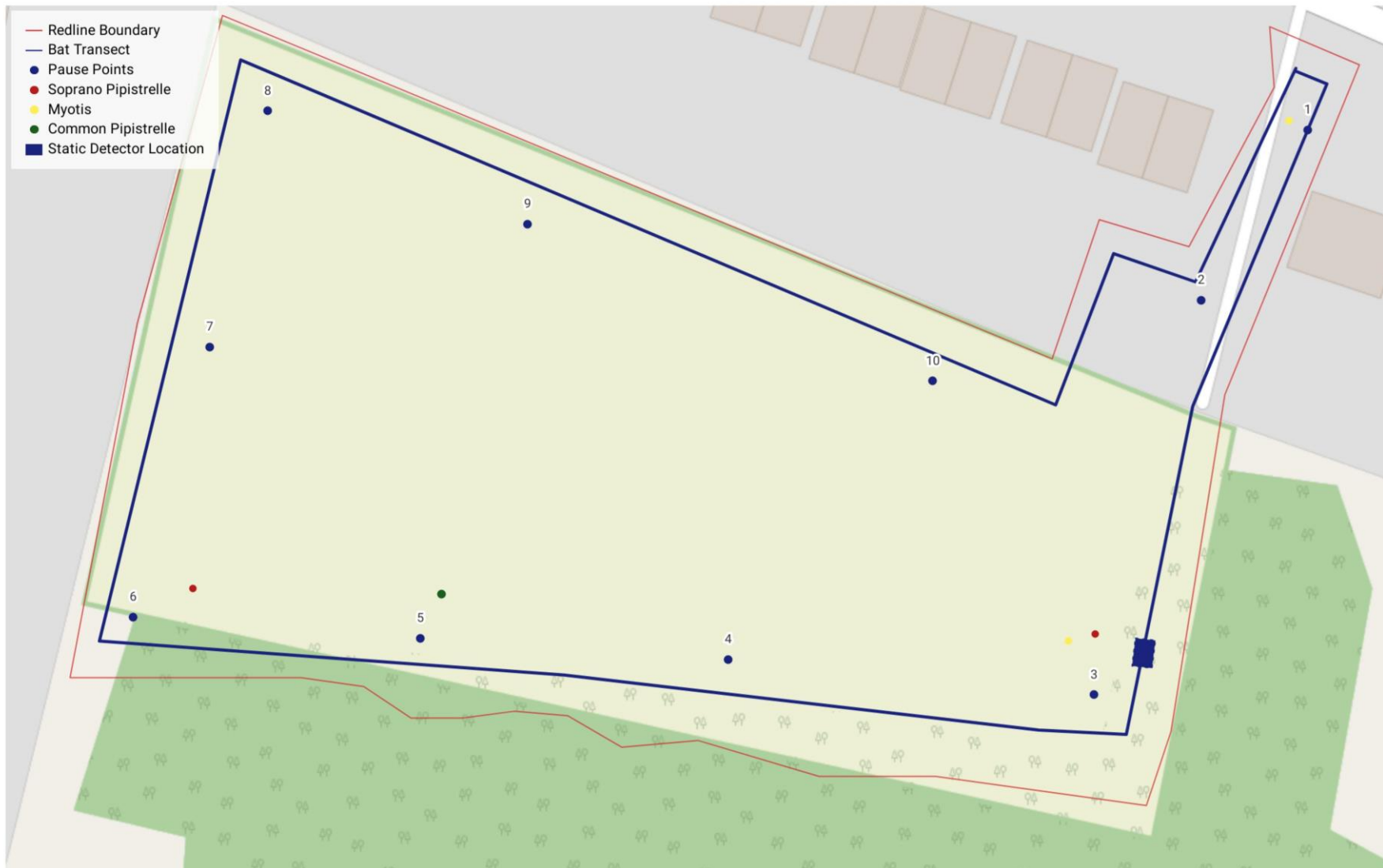
Commuting and foraging bats

- 5.31. The boundary habitats on the site offer good opportunities for commuting and foraging bats given the presence of mature hedgerows along the eastern boundary and woodland habitat to the south which connects to optimal habitats within the landscape to the south and east. The northern and western boundaries comprise dense scrub which back on to residential gardens which has less opportunities for commuting and foraging with these boundaries restricted to more urban tolerant species such as common pipistrelle.
- 5.32. The site is 1.3km from Chanctonbury Mine, part of Combe Down and Bathampton Down Mines SSSI. The site provides potential foraging opportunities for lesser and greater horseshoe bats, particularly associated with watercourses. The opportunities for foraging greater horseshoe bats are limited as the site is not grazed by cows or sheep and therefore they are only likely to use the site opportunistically. Lesser horseshoe bats may also use the woodland adjacent to the site for foraging. There are more limited foraging opportunities for Bechstein's bats, although use of boundary vegetation is possible. Based on the distance from the Mine, which is a hibernation site, the site may be used by foraging bats including during the winter months.

Activity Surveys

- 5.33. The following species were recorded during the 2023 transect surveys:
- Common pipistrelle;
 - Soprano pipistrelle;
 - *Myotis spp.*;
 - Brown long ear;
 - Serotine;
 - Noctule;
 - Leisler's; and
 - Lesser horseshoe.
- 5.34. Overall, activity was relatively low, with only a few bat registrations for each species per survey. Most bats were using the green linear features for commuting as opposed to a foraging resource. **Figures 6 – 12** set out the results of the transects.
- 5.35. Lesser horseshoe bats were recorded during two surveys, commuting between pause points 2 and 3 during the July survey and foraging in woodland in September.

Figure 6, "April Transect Results"



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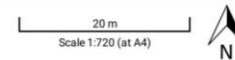


Figure 7, "May Transect Survey Results"



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20 m
Scale 1:730 (at A4)

Figure 8, "June Transect Survey"

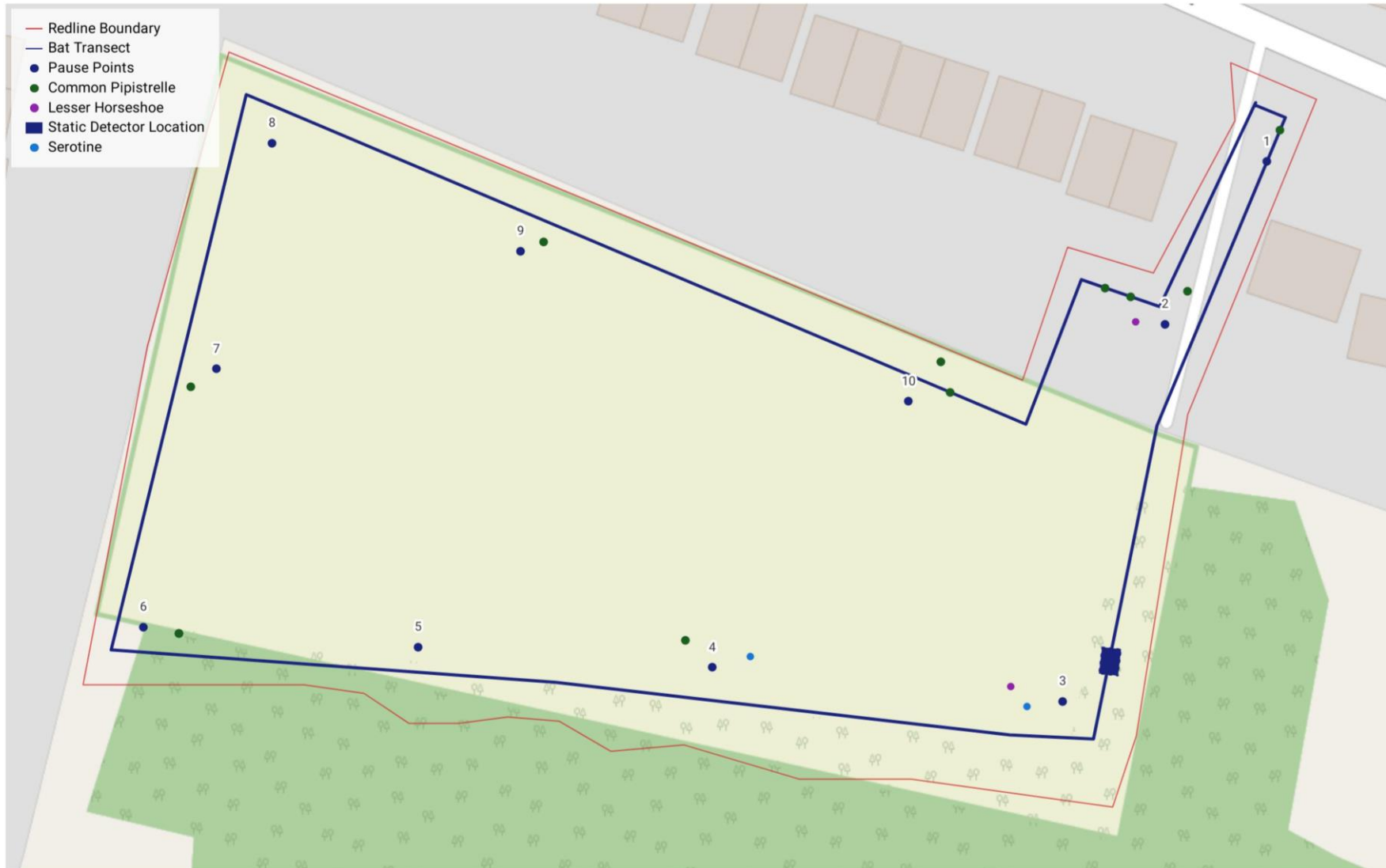


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20 m
Scale 1:751 (at A4)



Figure 9, "July Transect Results"



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20 m
Scale 1:754 (at A4)



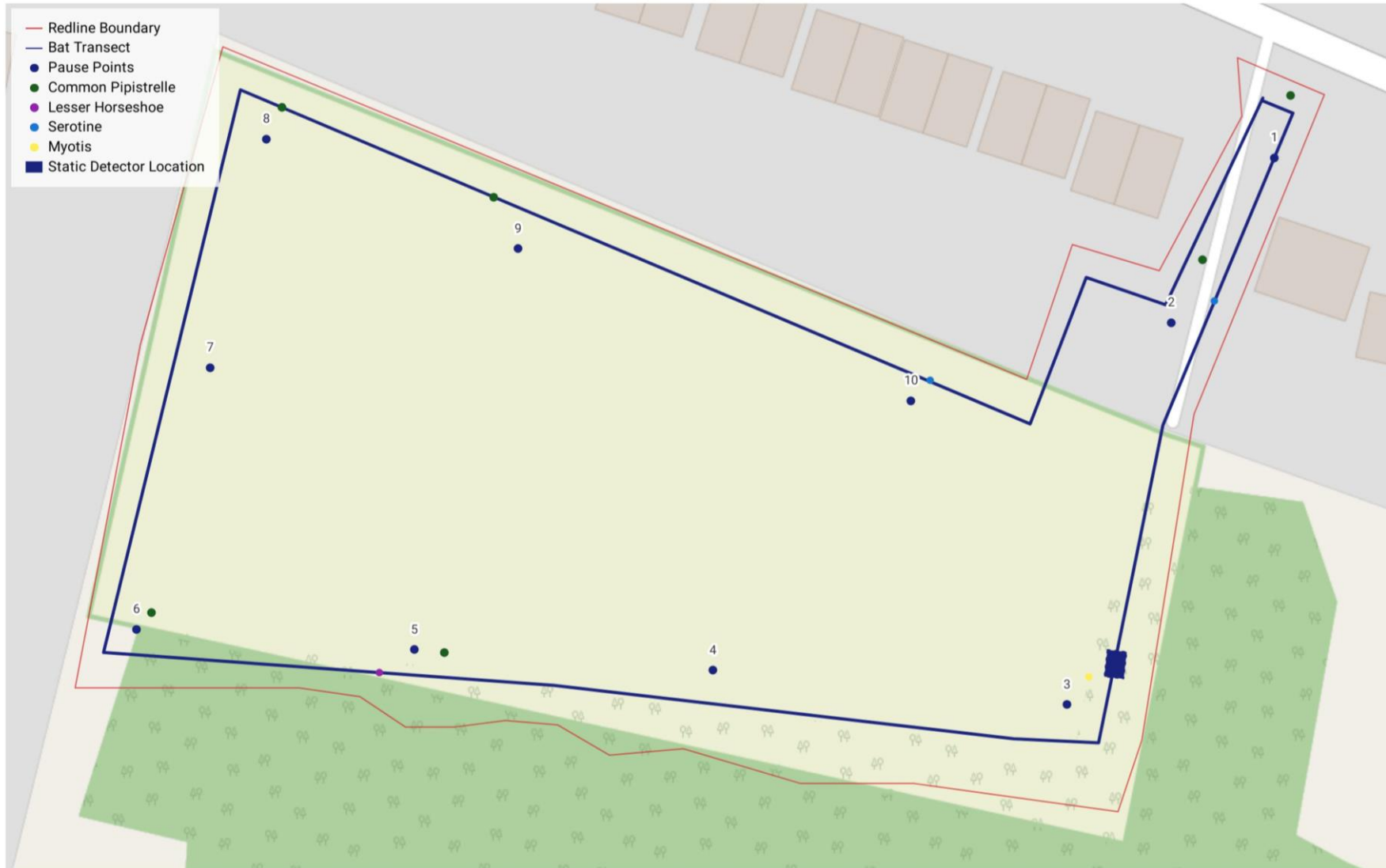
Figure 10, "August Transect Results"



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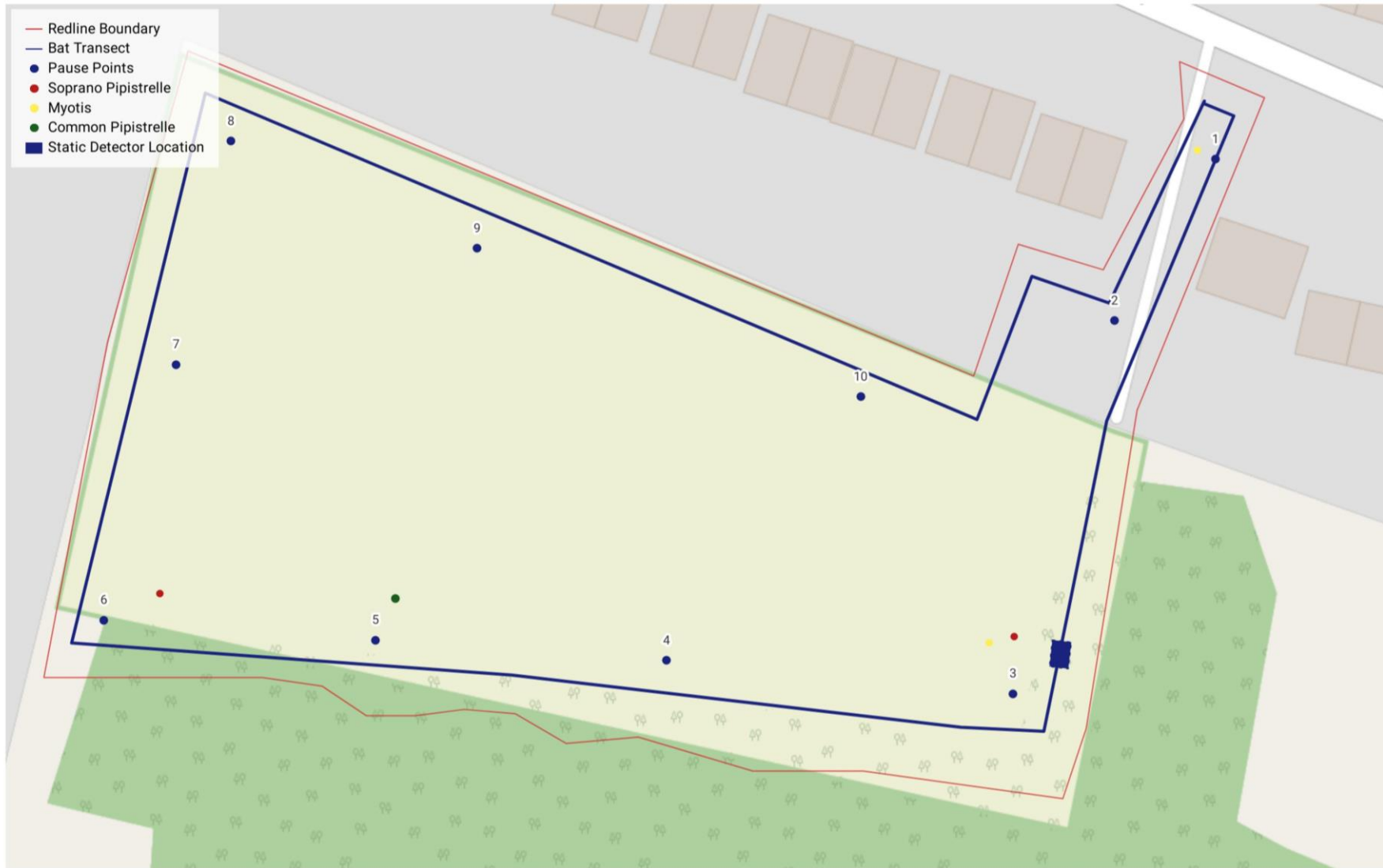
Figure 11, "September Transect Results"



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20 m
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Figure 12, "October Transect Results"



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20 m
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Automated Static Surveys

5.36. The following bat species were recorded during the static detector surveys:

- barbastelle;
- common pipistrelle
- Leisler's;
- lesser horseshoe;
- greater horseshoe;
- myotis species;
- Nathusius' pipistrelle;
- noctule;
- serotine; and
- soprano pipistrelle.

Table 9, "Passes per night, per month, per species"

	Barb	Eser	Myo sp.	Nlei	Nnoc	Paur	Pnat	Ppip	Ppyg	Rferr	Rhipp
April	0.00	1.20	0.00	1.80	8.00	0.00	0.00	34.40	0.80	0.00	0.00
May	0.40	4.00	0.20	0.60	2.40	0.40	0.20	31.60	0.20	0.00	0.00
June	0.40	0.00	1.00	0.00	0.20	0.00	0.00	6.80	0.60	0.00	1.00
July	0.00	1.67	13.00	0.00	0.00	1.67	0.00	119.33	19.67	0.00	0.17
August	0.00	7.40	2.20	0.00	0.20	0.60	0.00	21.80	6.60	0.40	0.00
September	0.00	0.33	1.67	0.00	0.50	0.33	0.00	1.17	2.50	0.00	0.00
October	0.17	26.33	2.83	0.00	4.50	1.00	0.00	13.00	4.17	0.00	0.00

Table 10, "Proportional abundance % per night, per species, per month"

	Barb	Eser	Myo sp.	Nlei	Nnoc	Paur	Pnat	Ppip	Ppyg	Rferr	Rhipp
April	0.00	2.60	0.00	3.90	17.32	0.00	0.00	74.46	1.73	0.00	0.00
May	1.00	10.00	0.50	1.50	6.00	1.00	0.50	79.00	0.50	0.00	0.00
June	4.00	0.00	10.00	0.00	2.00	0.00	0.00	68.00	6.00	0.00	10.00
July	0.00	1.07	8.36	0.00	0.00	1.07	0.00	76.74	12.65	0.00	0.11
August	0.00	18.88	5.61	0.00	0.51	1.53	0.00	55.61	16.84	1.02	0.00
Sept	0.00	5.13	25.64	0.00	7.69	5.13	0.00	17.95	38.46	0.00	0.00
Oct	0.32	50.64	5.45	0.00	8.65	1.92	0.00	25.00	8.01	0.00	0.00

5.37. **Figures 12 – 13** set out the total passes per night, per month, per species, per month and the species abundance per night, per month, per species, per month.

Figure 13, "Passes per night, per month, per species"

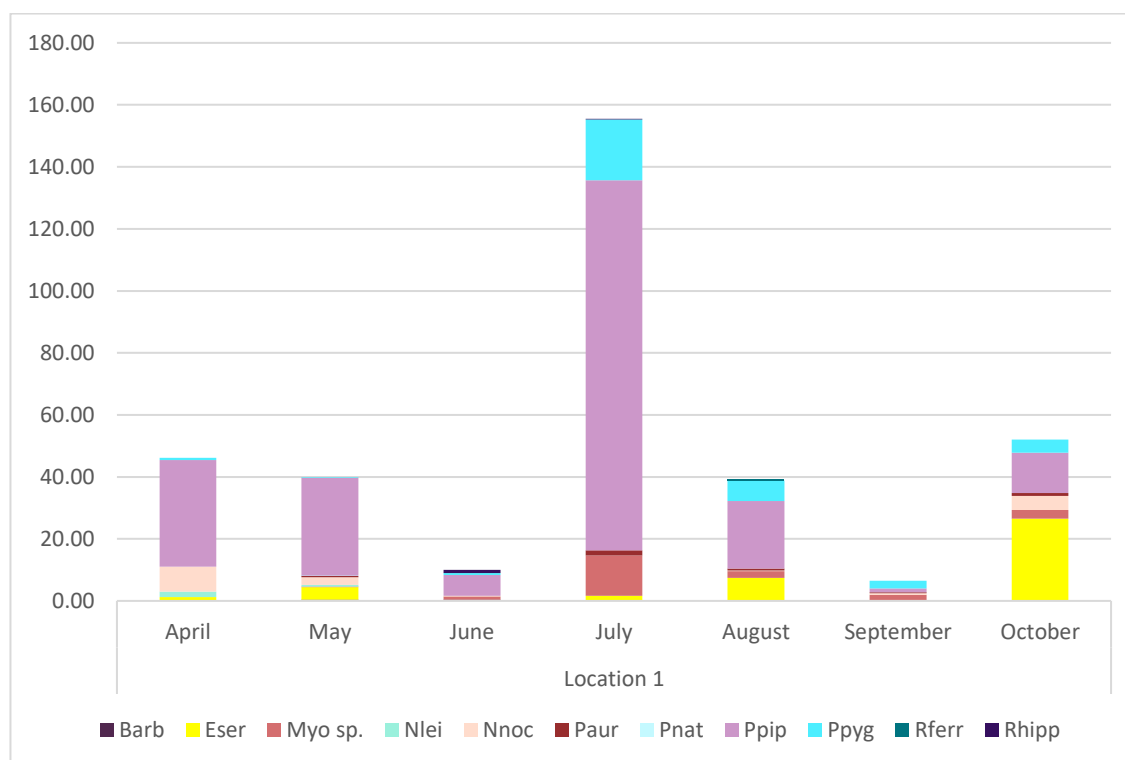
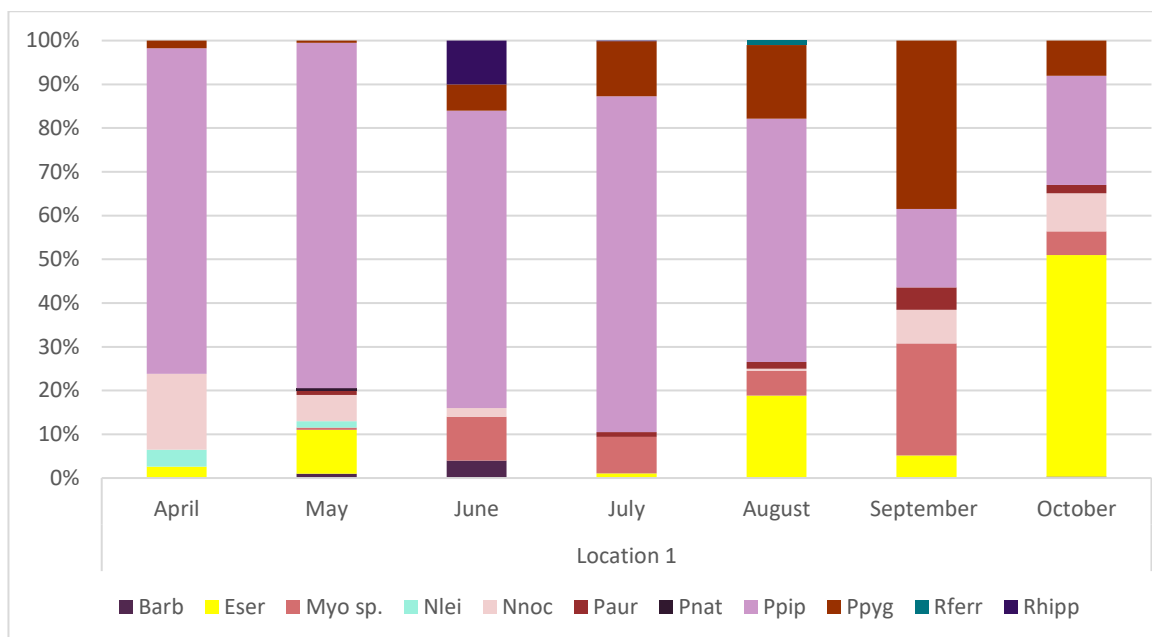


Figure 14, "Proportional abundance %, per night, per species, per month"



- 5.38. Overall, common pipistrelle was the most recorded species, making up the highest proportion of calls most months. Greater horseshoe bats were recorded in June and July and lesser horseshoe bats were recorded in August only indicating they use the site occasionally.
- 5.39. In June, whilst there was overall less registrations of bats, greater horseshoe passes made up 10% of the overall calls.
- 5.40. According to the guidance in Wray (2010), the site would be of up to National importance for commuting greater horseshoe, county for lesser horseshoes but of District/Parish importance for the remaining species (**Table 11**).

Table 11, "Site's value for commuting and foraging bats"

Species	Rarity	Number of bats	Roosts / potential roosts	Foraging Habitat characteristics	Importance / Score
Eser	Rarer (5)	Individual bats (5)	Moderate number/Not known (4)	Well-grown and well-connected hedgerows, small field sizes (4)	18 District / Parish
Myo sp.	Bechstien's (20) Other species (5)	Individual bats (5)	Bechstien's - Close to or within a SAC for the species (20) Moderate number/Not known (4) –	Well-grown and well-connected hedgerows, small field sizes (4)	49 National (Bechstien's) 18 District / Parish (other myotis species)
Nnoc	Rarer (5)	Individual bats (5)	Moderate number/Not known (4)	Well-grown and well-connected hedgerows, small field sizes (4)	18 District / Parish
Nyclei	Rarer (5)	Individual bats (5)	Moderate number/Not known (4)	Well-grown and well-connected hedgerows, small field sizes (4)	18 District / Parish
Pnat	Rarer (5)	Individual bats (5)	Moderate number/Not known (4)	Well-grown and well-connected hedgerows, small field sizes (4)	18 District / Parish
Ppip	Common (2)	Small number of bats (10)	Moderate number/Not known (4)	Well-grown and well-connected hedgerows, small field sizes (4)	20 District / Parish
Ppyg	Common (2)	Individual bats (5)	Moderate number/Not known (4)	Well-grown and well-connected hedgerows, small field sizes (4)	15 District / Parish
Rferr	Rarest (20)	Individual bats (5)	Close to or within a SAC for the species (20)	Well-grown and well-connected hedgerows, small field sizes (4)	49 National
Rhipp	Rarer (5)	Individual bats (5)	Large number of roosts, or close to a SSSI for the species (5)	Well-grown and well-connected hedgerows, small field sizes (4)	19 County

Breeding birds

- 5.41. The ecological data search returned a large number of records of birds, with those of most relevance being for house sparrow (*Passer domesticus*), dunnock (*Prunella modularis*), starling (*Sturnus vulgaris*) and bullfinch (*Pyrrhula pyrrhula*).
- 5.42. The site offers nesting, breeding and foraging habitat for a wider range of birds associated with residential gardens and woodland due to the presence of trees, hedgerows and woodland.
- 5.43. During the 2023 survey, bird activity was largely restricted to the boundary features of the site. **Table 12** sets out the species and the numbers recorded. Most of the species recorded are common in gardens and suburban areas.

Table 12, "Bird species recorded and their numbers"

Species	Number recorded	Species	Number recorded
Black bird	2	Collard dove	2
Blue tit	6	Wood pigeon	2
Carrion crow	1	Starling	1
Dunnock	3	Goldfinch	3
Great tit	5	Jay	1
Long tailed tit	4	Magpie	3
Robin	5	House sparrow	24
Swift	3	Tree creeper	1
Wren	7		

5.44. A tawny owl (*Strix aluco*) was recorded flying across site during the August bat survey.

Dormice

5.45. The ecological data search returned no records for dormice. According to MAGIC, there are no EPS Licences for dormice within 2km of the site.

5.46. No evidence of dormice was found during the surveys of the site undertaken in 2017.

5.47. The site's habitats have not changed substantially since the 2017 surveys were completed and it is not likely that this species would have colonised this area of Bath in the time since those surveys were completed. It is therefore concluded that dormice are still not present at the site.

Hedgehogs

5.48. The ecological data search returned sixty-eight records for hedgehogs, the closest of which is 0.53km south of the site.

5.49. The site offers good habitat for hedgehogs with the woodland, scrub and hedgerows offering foraging, breeding, hibernating and commuting habitat which links to the wider landscape.

Reptiles

5.50. The ecological data search returned twenty-two records for reptiles, the closest of which is 1.9km north of the site for slow-worm and grass snake. Slow-worms were recorded during previous surveys of the site and they were confirmed to be still present in 2023 (Table 13). Adult and juvenile slow-worms were recorded, which indicates that the site supports a breeding population.

5.51. No other reptile species have been recorded from the site.

Table 13, "Reptile Survey Results"

Date	Results	Peak Adult Count
09/10/2023	4 male 8 female 8 juvenile	12
13/10/2023	10 male 14 female 59 juvenile	24

Date	Results	Peak Adult Count
17/10/2023	3 male 8 female 28 juvenile	13
20/10/2023	4 male 4 female 39 juvenile	8
02/11/2023	None	N/A
06/11/2023	None	N/A
09/11/2023	3 juvenile	N/A

Figure 15, "Location of slow worms"



Invertebrates

5.52. The ecological data search returned wide range of notable species of invertebrates.

Relevant species that may use the site include blood-vein (*Timandra comae*), buff ermine (*Spilosoma luteum*), centre-barred sallow (*Atethmia centrigo*), dot moth (*Melanchra persicariae*), dusky thorn (*Ennomos fuscantaria*), feathered gothic (*Tholera decimalis*).

5.53. The report by John's Associates includes the results of invertebrate surveys from 2017 that identified ten species of note:

- *Oxycera analis* (Nationaly Rare);
- *Oxycera pardalina* (National Scarce);
- *Eggisops pecchiollii* (National Scarce);
- *Pipinculus elegans* (Nationaly Scarce);
- *Auplopus carbonarius* (Nationaly Scarce);
- *Campiglossa malaris* (Nationaly Endangered);
- *Hercostomus plagiatus* (Nationaly Scarce);
- *Oxyna nebulosa* (Nationaly Rare);
- *Pherbellia griseola* (Nationaly Rare); and
- *Tetanocera punctifrons* (Nationaly Scarce).

5.54. The Johns Associates report ranked the site as having 'moderate' value for invertebrates. The site's value for invertebrates may have decrease slightly now that the grassland has become more rank and the watercourses are perhaps a little more overgrown with nettles, but it is possible that it still supports the ten species listed above.

6. EVALUATION

Potential Impacts

- 6.1. **Table 14** sets the potential impacts of the development proposal on each of the ecological features associated with the site. This assessment is based upon development without any additional avoidance, mitigation or compensation measures beyond those inherent in the design. It excludes assessment of features that have been shown through the surveys and assessments to be absent from the site (e.g. dormice and great crested newts) or where any impacts would be *de minimis* and where the effects of the development would have ecological effects on the site but would objectively not be not ecologically significant (such as the loss of nettlebed or bramble scrub).
- 6.2. In the absence of any avoidance, mitigation or compensation measures the development of the site has the potential to lead to adverse ecological effects of up to 'large' significance on the site's invertebrate interest.
- 6.3. In the absence of any avoidance, mitigation or compensation measures the development of the site has the potential to lead to adverse ecological effects of up to 'moderate' significance on bats of the Bath and Bradford on Avon Bats SAC, grassland and watercourses and non-SAC bats and on the Stirringale Farm SNCI.
- 6.4. The potential impacts of the development on badgers, slow-worms and breeding birds would be of 'slight' significance, even in the absence of avoidance, mitigation or compensation measures.

Table 14, "Potential Impacts in the Absence of Avoidance, Mitigation or Compensation"

Ecological Feature	Value of the site for the Ecological Feature	Potential Impact	Magnitude / Scale of Impact	Ecological Significance in the absence of avoidance, mitigation or enhancement
Bats Associated with the Bath & Bradford on Avon Bats SAC including Combe Down and Bathampton Mines SSSI	County	Removal of grassland foraging habitat used by low numbers of qualifying species	Moderate – loss of approximately 0.5ha of habitat used by low numbers of qualifying species at a distance of more than 4km from the nearest SAC component (which is therefore outside of the core foraging area), but may be within the foraging range of a non-SAC roost of lesser horseshoe bats	Potential for adverse effect of 'moderate' significance
Bats Associated with the Bath & Bradford on Avon Bats SAC including Combe Down and Bathampton Mines SSSI	County	Artificial lighting of foraging habitat that may deter low numbers of qualifying species from using the site or give light-opportunistic bats a competitive advantage over the light-averse bats when using the site	Minor – degradation of a proportion of the site used by low numbers of qualifying species at a distance of more than 4km from the nearest SAC component (which is therefore outside of the core foraging area) but may be within the foraging range of a non-SAC roost of lesser horseshoe bats	Potential for adverse effect of 'moderate' significance
Stirtingale Farm SNCI	County	Loss of approximately 0.5ha of grassland from the SNCI and reduced functional connectivity of the site for the species that use it	Minor – loss of approximately 3% of the total area of the SNCI	Potential for adverse effect of 'moderate' significance
Slow-worms	Local	Killing or injury during construction	Moderate – potential to lead to a reduction in the size of	Potential for an adverse effect of 'slight' significance

Ecological Feature	Value of the site for the Ecological Feature	Potential Impact	Magnitude / Scale of Impact	Ecological Significance in the absence of avoidance, mitigation or enhancement
			the population but unlikely to completely extirpate slow-worms from the site	
Slow-worms	Local	Reduced population due to loss of habitat during construction	Moderate – combined with the risk of killing or injury during construction, the loss of habitat area may result in the site only being able to support a much reduced population	Potential for an adverse effect of 'slight' significance
Slow-worms	Local	Increased predation from pets during occupation (albeit the site is backed onto by gardens and open to natural predators including foxes and birds)	Moderate – combined with the impacts during construction and the loss of habitats, the site may only be able to support very small numbers of slow-worms	Potential for an adverse effect of 'slight' significance
Invertebrates	County	Loss of notable species due to habitat loss during construction	Major – potential for the complete loss of the site's invertebrate value, which could not easily be replicated on this site or elsewhere	Potential for an adverse effect of 'large' significance
Invertebrates	County	Loss of notable species due to change in site management during occupation	Major – potential for the complete loss of the site's invertebrate value, which could not easily be replicated on this site or elsewhere	Potential for an adverse effect of 'large' significance
Grassland	Local	Loss of the majority of botanical interest due to habitat removal during construction	Major	Potential for an adverse effect of 'moderate' significance

Ecological Feature	Value of the site for the Ecological Feature	Potential Impact	Magnitude / Scale of Impact	Ecological Significance in the absence of avoidance, mitigation or enhancement
Watercourses	Local	Loss of remaining botanical interest due to inappropriate management during occupation	Major	Potential for an adverse effect of 'moderate' significance
Non-SAC bats	Local	Removal of grassland foraging habitat used by low numbers of relatively common species	Major – habitat removal could lead to local changes in the distribution of bats	Potential for adverse effect of 'moderate' significance
Non-SAC bats	Local	Artificial lighting of retained habitat that may alter the distribution and abundance of insect prey but may not completely deter the light-opportunistic species from using the site	Major – combined with habitat removal this could lead to the abandonment of local roosts of common species if there is not sufficient foraging habitat elsewhere	Potential for adverse effect of 'moderate' significance
Badgers	Local	Loss of a single-entrance outlier sett during construction	Minor – the loss of the outlier sett is not likely to lead to the abandonment of the main sett but may curtail the ability of the clan to expand its territory	Potential for adverse effect of 'slight' significance
Badgers	Local	Disturbance to badgers in an off-site main sett during construction or occupation		Potential for adverse effect of 'moderate' significance
Badgers	Local	Loss of foraging habitat within the territory of an off-site main sett	Minor – the site does not appear to be used a great deal for foraging so the loss of the grassland would not be likely to lead to the abandonment of the off-site main sett or substantially limit the long-term success of the clan	Potential for adverse effect of 'slight' significance

Ecological Feature	Value of the site for the Ecological Feature	Potential Impact	Magnitude / Scale of Impact	Ecological Significance in the absence of avoidance, mitigation or enhancement
Breeding birds	Local	Loss of foraging habitat for common species of birds	Minor – the loss of foraging habitat may reduce the local populations of common species	Potential for adverse effect of 'slight' significance

Impacts After Avoidance, Mitigation and Compensation

- 6.5. **Table 15** sets out an assessment of the potential ecological impacts of the development proposals after these measures are taken into account.

Table 15, "Impact Assessment"

Ecological Feature and Importance of the Site	Avoidance / Mitigation / Compensation Measures	Impact After Avoidance / Mitigation / Compensation Measures	Significance of Residual Ecological Effect
Bats Associated with the Bath & Bradford on Avon Bats SAC including Combe Down and Bathampton Mines SSSI – County Importance	<p>The function of the access track as a route for bats will be preserved by retaining vegetation including mature trees to ensure there is no loss of linear connectivity.</p> <p>The access track will not be lit by any new artificial lighting and it will rely on existing lighting from Englishcombe Lane, which will be adapted to accord with best practice guidance (BCT/ILP, 2023). As a result, light levels along the access track will not be raised above their current level.</p> <p>A fence between the property immediately adjacent to the eastern boundary of the access track will also be increased in height to protect the track from light spill. The hedge will also be managed to a height of at least 2m.</p> <p>Dark corridors will be maintained around the edges of the site (Figure 16) and a lighting strategy designed so that they will not be raised above existing light levels.</p> <p>Retained habitats within and adjacent to the dark corridors will be managed to promote an abundance of invertebrate prey species including Tipulids and Chafers.</p> <p>The development proposals seek to deliver a net gain in habitats of 10% within the statutory requirement and an additional discretionary 10%</p>	Negligible – SAC bats will be able to commute through and around the site and it will provide areas of high-quality foraging habitat managed specifically for bats	No significant adverse effect
Stirtingale Farm SNCI	<p>The retention of the site's best areas of grassland, and the proposed restoration of calcareous grassland on retained habitats and a strategy to deliver 10% net gain within the statutory requirement and an additional discretionary 10%.</p> <p>Implementation of dark corridors and measures to deliver net enhancements for protected and notable species</p>	Negligible – the project will not result in a net loss of habitats, species or ecological functionality.	No significant adverse effect
Slow-worms	<p>A CEMP will contain measures to avoid impacts during construction, including removing slow-worms from the construction area to the edges of the site.</p> <p>Retained habitats will be managed to support a healthy population of slow-worms</p> <p>Log piles will be provided to ensure there are safe areas for slow-worms to shelter and hibernate on site</p> <p>Gardens and boundaries of the developed area will be designed to include permeability for wildlife so that slow-worms can move into and between gardens and not only be restricted to the edges of the site</p>	Negligible – after the application of suitable precautions the killing and injury of slow-worms can be avoided. The retained habitats will be managed so that the site can sustain the existing population within the smaller area. This will include the creation of specific areas for basking, sheltering, hibernating and foraging.	No significant adverse effect
Invertebrates	<p>The watercourses will be retained, and the retained areas of grassland managed to promote the continued occupation of the site by the range of notable invertebrates that have been recorded here</p>	Negligible – the reduced total amount of habitat will be offset by the enhanced management of retained areas targeted at the specific requirements of the notable invertebrates	No significant adverse effect
Grassland	<p>Through iterative design in consultation with the project ecologists, the development has been designed to avoid the best areas of grassland and to allow for the enhanced management of retained areas. This will seek to re-establish calcareous grassland with a finer, less rank sward and a greater range of calcicoles.</p> <p>The development proposals seek to deliver a net gain in habitats of 10% within the statutory requirement and an additional discretionary 10%</p>	Neutral – the loss of area will be offset by management of the retained areas and the achievement of at least 10% net gain	No significant adverse effect

Ecological Feature and Importance of the Site	Avoidance / Mitigation / Compensation Measures	Impact After Avoidance / Mitigation / Compensation Measures	Significance of Residual Ecological Effect
Watercourses	<p>Instead of repairing and reinstating the former culvert under the site, the development will retain the overland flow. This will include provision for a dynamic habitat with meandering courses as has been the case in recent years. Pedestrian access will be achieved via a boardwalk across the wet areas towards the south of the site, and the road access will be over a culvert in the north of the site.</p> <p>The retained watercourse will be managed to remove Indian balsam, control nettles and other ruderals, and maintain open water with good conditions for aquatic and water margin plants and uncommon invertebrates.</p>	Neutral – the development will not result in the loss of any habitat and will improve the condition of the retained watercourses	
Non-SAC bats	<p>The avoidance and mitigation measures for SAC bats will also benefit the non-SAC species</p> <p>The development will also provide a range of built-in bat roosting features</p>	Neutral – there will be minimal impacts on foraging and commuting habitat and a positive impact on roosting habitat	No significant adverse effect
Badgers	<p>The CEMP will include measures to avoid impacts on badgers during construction</p> <p>The retained habitats will be created and managed to provide good foraging habitat including promoting good abundance of earthworms in grassland and planting fruit trees</p>	Negligible – badgers are likely to find an alternative location for the lost outlier sett, and the enhanced quality of foraging habitat will offset the reduced total area	No significant adverse effect
Breeding birds	<p>The CEMP will include measures to avoid impacts on birds during construction</p> <p>The development will also provide a range of built-in bird nesting features</p>	Neutral - there will be minimal impacts on foraging habitat and a positive impact on nesting habitat	No significant adverse effect

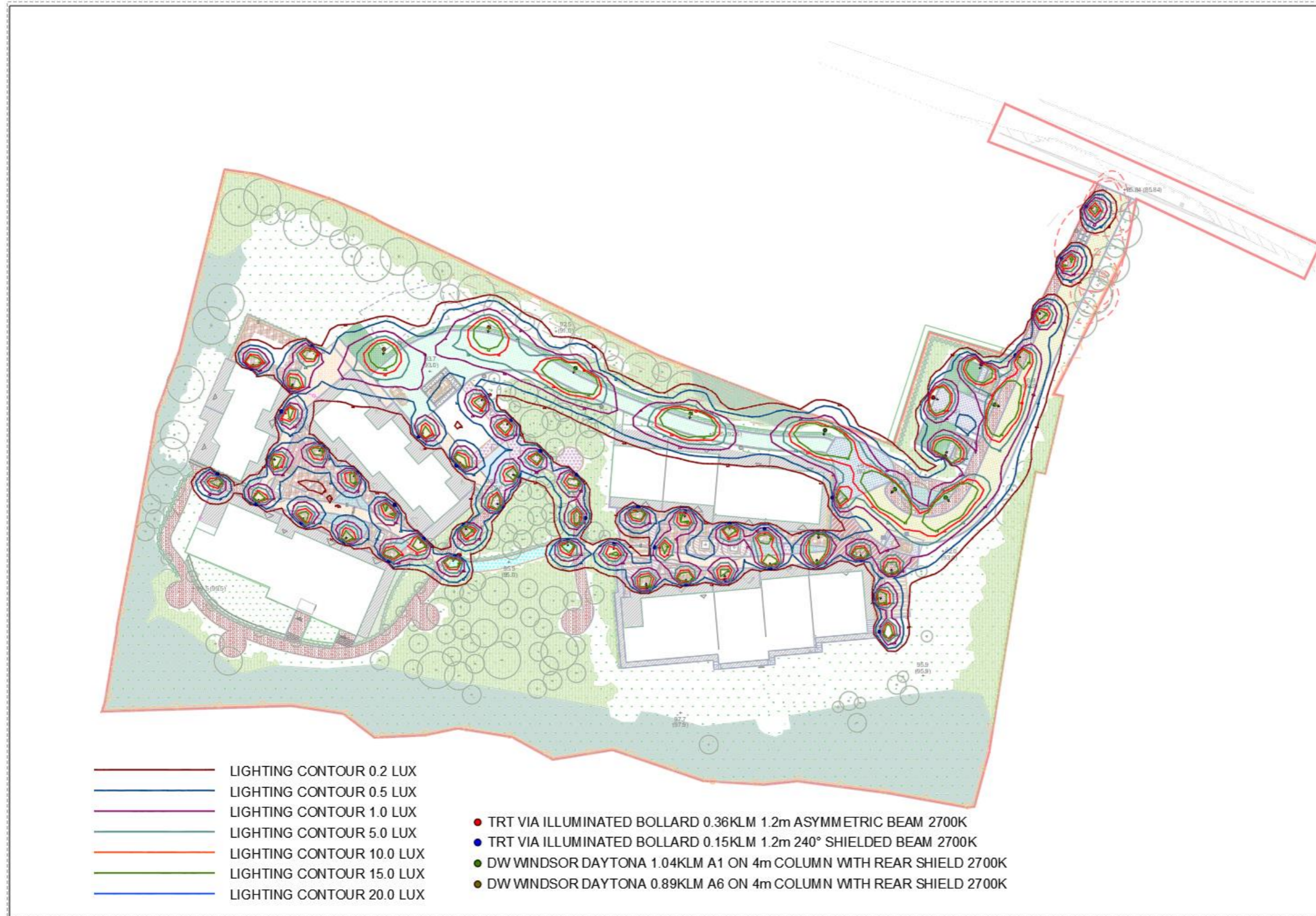
Figure 16, "Illustrated Minimum Dark Buffer Along East and South Boundaries"



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Figure 17, "Lux Contour Plan"



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APPENDICIES

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Average sward height (cm)	25	35	30	50	15	30	60	70	40	45	25	30	40	40	45	15
Slope	gentle	gentle	gentle	gentle	gentle	gentle	gentle	v. gentle	flat	v. gentle	gentle	very gentle	flat	very gentle	very gentle	flat
Aspect	N	N	N	N	NE	N	NE	N	n/a	N	N	N	n/a	N	N	n/a
<i>Achillea millefolium</i>																3
<i>Agrimonia eupatoria</i>						1			3	2		4	3		1	2
<i>Agrostis capillaris</i>					2						4					
<i>Agrostis stolonifera</i>					3											
<i>Alopecurus pratensis</i>	4	5	4	8		3	1	5						8	8	
<i>Anisantha sterilis</i>													1			
<i>Anthoxanthum odoratum</i>		2	3	4						1						
<i>Anthriscus sylvestris</i>							2									
<i>Arrhenatherum elatius</i>	6	7		5	5	6	7	8	6	7	4	5	3	3	5	2
<i>Bromopsis erecta</i>												6	7			
<i>Bromus hordeaceus</i>			1													
<i>Cirsium arvense</i>						6									5	
<i>Convolvulus arvensis</i>			2		2			1	2	3	2	2	3	3		2
<i>Crataegus monogyna</i> (seedling)									1							
<i>Cynosurus cristatus</i>											4		3			
<i>Dactylis glomerata</i>	5	4	3		3	3			3	3	3	3	3	1	2	2
<i>Festuca rubra</i>	6	3	8		7	5	3	3	6	5	7	8	7	5	5	7
<i>Ficaria verna</i>		2						1	1							

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
<i>Galium aparine</i>		4	3	5		3	3			1		2	1	1	4	
<i>Geranium dissectum</i>						1										
<i>Glechoma hederacea</i>										4		3	1			1
<i>Helictotrichon pratense</i>									3							
<i>Helictotrichon pubescens</i>									4			6	3			
<i>Heracleum sphondylium</i>	1	3				6	7			1						
<i>Holcus lanatus</i>	3	3	2		4					1	3	3	3	3	3	3
<i>Impatiens glandulifera</i>						1										
<i>Lathyrus pratensis</i>									1	1	3	1				
<i>Lolium perenne</i>	2	1		1					4			2			1	3
<i>Lotus corniculatus</i>																5
<i>Phleum ?bertolonii</i>									1							
<i>Plantago lanceolata</i>									2		1		1			3
<i>Poa pratensis</i>	1				1				3							1
<i>Poa trivialis</i>	1									1		2				1
<i>Potentilla reptans</i>	1	1	1		1	1					2					
<i>Primula veris</i>	1															
<i>Ranunculus acris</i>			1													1
<i>Ranunculus bulbosus</i>													1			
<i>Ranunculus repens</i>																3
<i>Rubus fruticosus agg.</i>								6								
<i>Rumex acetosa</i>	1												2			
<i>Rumex crispus</i>						2	3									

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
<i>Rumex obtusifolius</i>				1			3									
<i>Schedonorus arundinaceus</i>		1	1	3						3	2	2	2			
<i>Schedonorus pratensis</i>	2	2	1	3	1	2					4	3				
<i>Taraxacum officinale</i> agg.	1															3
<i>Trifolium pratense</i>																3
<i>Trisetum flavescens</i>				1												
<i>Urtica dioica</i>							5	3								
<i>Veronica chamaedrys</i>									5				3			
<i>Vicia sativa</i>									3	3	3		3			3
SPECIES RICHNESS	<u>14</u>	<u>13</u>	<u>12</u>	<u>9</u>	<u>10</u>	<u>13</u>	<u>9</u>	<u>7</u>	<u>16</u>	<u>14</u>	<u>13</u>	<u>15</u>	<u>18</u>	<u>7</u>	<u>9</u>	<u>18</u>

Appendix 2 – Community species lists

+ve indicator spp.?	Scientific name	Common name	MG1 rough grassland
	<i>Achillea millefolium</i>	Yarrow	R
*	<i>Agrimonia eupatoria</i>	Agrimony	LF
	<i>Agrostis capillaris</i>	Common bent-grass	x
	<i>Agrostis stolonifera</i>	Creeping bent-grass	x
	<i>Alopecurus pratensis</i>	Meadow foxtail	F/LA
	<i>Anisantha sterilis</i>	Barren brome	R
	<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	F
	<i>Anthriscus sylvestris</i>	Cow parsley	R/vLF
	<i>Arrhenatherum elatius</i>	False oat-grass	A
	<i>Bromopsis erecta</i>	Upright brome	
	<i>Bromus hordeaceus</i>	Soft brome	R
	<i>Cirsium arvense</i>	Creeping thistle	O
	<i>Cirsium vulgare</i>	Spear thistle	R
	<i>Convolvulus arvensis</i>	Field bindweed	F
	<i>Crataegus monogyna</i> (seedling)	Hawthorn	R
	<i>Cynosurus cristatus</i>	Crested dog's-tail	x
	<i>Dactylis glomerata</i>	Cock's-foot	A
	<i>Festuca rubra</i>	Red fescue	A
	<i>Ficaria verna</i>	Lesser celandine	R
	<i>Galium aparine</i>	Cleavers	O
	<i>Geranium dissectum</i>	Cut-leaved geranium	R
	<i>Glechoma hederacea</i>	Ground-ivy	O
	<i>Helictotrichon pratensis</i>	Meadow oat-grass	
	<i>Helictotrichon pubescens</i>	Downy oat-grass	
	<i>Heracleum sphondylium</i>	Hogweed	O
	<i>Holcus lanatus</i>	Yorkshire fog	A
	<i>Impatiens glandulifera</i>	Himalayan balsam	R
	<i>Jacobaea erucifolia</i>	Hoary ragwort	R
*	<i>Lathyrus pratensis</i>	Meadow vetchling	R
*	<i>Leucanthemum vulgare</i>	Oxeye daisy	R
	<i>Lolium perenne</i>	Perennial rye-grass	x

+ve indicator spp.?	Scientific name	Common name	MG1 rough grassland
*	<i>Lotus corniculatus</i>	Common bird's-foot trefoil	R
	<i>Garden onion</i>	Garden onion	R
	<i>Phleum bertolonii</i>	Small Timothy	
	<i>Plantago lanceolata</i>	Ribwort plantain	R
	<i>Poa pratensis</i>	Smooth meadow-grass	O
	<i>Poa trivialis</i>	Rough meadow-grass	O
	<i>Potentilla reptans</i>	Creeping cinquefoil	O
*	<i>Primula veris</i>	Cowslip	R
	<i>Prunus spinosa (regeneration)</i>	Blackthorn	R
	<i>Ranunculus repens</i>	Creeping buttercup	O
	<i>Ranunculus acris</i>	Meadow buttercup	O
	<i>Ranunculus bulbosus</i>	Bulbous buttercup	
	Rosa sp.	Rose sp.	R
	<i>Rubus fruticosus</i> agg.	Bramble	R/vLF
	<i>Rumex acetosa</i>	Common sorrel	R
	<i>Rumex crispus</i>	Curled dock	R/LF
	<i>Rumex obtusifolius</i>	Broad-leaved dock	R
	<i>Schedonorus arundinaceus</i>	Tall fescue	F
	<i>Schedonorus pratensis</i>	Meadow fescue	F
	<i>Taraxacum officinale</i> agg.	Dandelion	R
	<i>Trifolium pratense</i>	Red clover	R
	<i>Trisetum flavescens</i>	Yellow oat-grass	R
	<i>Urtica dioica</i>	Nettle	R/LA
	<i>Veronica chamaedrys</i>	Germander speedwell	R
	<i>Vicia sativa</i>	Common vetch	O

Appendix 3 – Tablefit Output

Sample Q1 **Parameters = Nobryo Domin Sp & c**

E2.21 MG 1a 85 | 100 65 100 90 | Arrhenatherum elatius Festuca rubra
 E2.21 MG 1 82 | 81 69 96 89 | Arrhenatherum elatius
 F3.131 W24b 73 | 66 70 87 96 | Rub fr-Hol la underscb Arr ela-Her sph
 E2.21 MG 1c 59 | 69 57 73 60 | Arrhenatherum elatius Filip ulmaria
 E3.41 MG 9b 58 | 80 55 59 82 | Holc lana-Desch cespit Arrhen elatius

Sample Q2 **Parameters = Nobryo Domin Sp & c**

E2.21 MG 1 76 | 75 60 95 88 | Arrhenatherum elatius
 E2.21 MG 1a 73 | 90 52 100 76 | Arrhenatherum elatius Festuca rubra
 F3.131 W24b 67 | 62 61 83 87 | Rub fr-Hol la underscb Arr ela-Her sph
 E2.21 MG 1c 59 | 65 50 76 70 | Arrhenatherum elatius Filip ulmaria
 E2.21 MG 1b 53 | 76 39 72 63 | Arrhenatherum elatius Urtica dioica

Sample Q3 **Parameters = Nobryo Domin Sp & c**

B3.31 MC11 49 | 57 32 72 74 | Fest rubra-Daucus carot
 B3.31 MC 4a 47 | 54 35 70 69 | Brassica oleracea cliff Beta vulgaris
 D4.1N M37 47 | 42 15 87 80 | Craton comm-Fest rubr
 B3.31 MC 4 44 | 42 33 70 71 | Brassica oleracea cliff
 A2.53 SM16d 44 | 42 15 96 66 | Juncus gerardii Festuca rubra

Sample Q4 **Parameters = Nobryo Domin Sp & c**

E2.111 MG 7c 45 | 53 57 53 65 | Lol pere flood-pasture Lol-Alop-Fes pr
 E2.111 MG 7d 28 | 45 39 36 51 | Lol pere hay-meadow Lol per-Alo pra
 E2.21 MG 1 22 | 32 36 46 34 | Arrhenatherum elatius
 E2.21 MG 1c 21 | 30 33 47 31 | Arrhenatherum elatius Filip ulmaria
 J OV24b 21 | 45 33 30 32 | Urtica-Gal ap tall herb Arr ela-Rub fru

Sample Q5 **Parameters = Nobryo Domin Sp & c**

E2.21 MG 1a 67 | 86 62 68 83 | Arrhenatherum elatius Festuca rubra
 F3.131 W24b 61 | 45 57 87 95 | Rub fr-Hol la underscb Arr ela-Her sph
 E3.41 MG 9b 61 | 75 66 58 78 | Holc lana-Desch cespit Arrhen elatius
 E2.21 MG 1 53 | 58 61 61 75 | Arrhenatherum elatius
 B3.31 MC 8d 49 | 64 41 63 69 | Fest rubra-Armer marit Holcus lanatus

Sample Q6 **Parameters = Nobryo Domin Sp & c**

E2.21 MG 1a 74 | 82 52 99 84 | Arrhenatherum elatius Festuca rubra
 E2.21 MG 1 71 | 70 55 88 87 | Arrhenatherum elatius
 F3.131 W24b 66 | 55 54 100 80 | Rub fr-Hol la underscb Arr ela-Her sph
 E2.21 MG 1b 54 | 73 39 72 67 | Arrhenatherum elatius Urtica dioica
 E2.21 MG 1c 47 | 58 43 64 63 | Arrhenatherum elatius Filip ulmaria

Sample Q7 **Parameters = Nobryo Domin Sp & c**

J OV24b 77 | 83 66 87 82| Urtica-Gal ap tall herb Arr ela-Rub fru
E2.21 MG 1b 75 | 85 56 93 86| Arrhenatherum elatius Urtica dioica
J OV24 68 | 97 61 74 65| Urtica-Gal ap tall herb
E2.21 MG 1 68 | 61 67 81 93| Arrhenatherum elatius
F3.131 W24b 67 | 60 84 76 100| Rub fr-Hol la underscb Arr ela-Her sph

Sample Q8 **Parameters = Nobryo Domin Sp & c**

F3.131 W24 60 | 57 71 71 78| Rub fr-Hol la underscb
E2.21 MG 1a 59 | 51 51 81 81| Arrhenatherum elatius Festuca rubra
F3.131 W24b 57 | 42 76 74 93| Rub fr-Hol la underscb Arr ela-Her sph
E2.21 MG 1 57 | 44 63 77 90| Arrhenatherum elatius
E2.21 MG 1b 50 | 57 49 63 69| Arrhenatherum elatius Urtica dioica

Sample Q9 **Parameters = Nobryo Domin Sp & c**

E2.21 MG 1a 66 | 100 49 97 59| Arrhenatherum elatius Festuca rubra
E2.21 MG 1 57 | 74 48 83 56| Arrhenatherum elatius
B1.41 SD 9 46 | 68 44 55 61| Ammoph aren-Arrhen elat
F3.131 W24b 45 | 45 35 88 56| Rub fr-Hol la underscb Arr ela-Her sph
B1.41 SD 9b 44 | 66 48 50 56| Ammoph aren-Arrhen elat Geran sanguineum

Sample Q10 **Parameters = Nobryo Domin Sp & c**

E2.21 MG 1a 77 | 100 56 94 82| Arrhenatherum elatius Festuca rubra
E2.21 MG 1 73 | 85 63 80 81| Arrhenatherum elatius
F3.131 W24b 72 | 73 66 87 77| Rub fr-Hol la underscb Arr ela-Her sph
E2.21 MG 1c 55 | 78 59 59 55| Arrhenatherum elatius Filip ulmaria
E2.21 MG 1e 51 | 69 70 44 70| Arrhenatherum elatius Centaurea nigra

Sample Q11 **Parameters = Nobryo Domin Sp & c**

F3.131 W24b 52 | 48 47 88 62| Rub fr-Hol la underscb Arr ela-Her sph
E2.21 MG 1a 51 | 98 56 46 52| Arrhenatherum elatius Festuca rubra
E2.21 MG 1 44 | 75 60 38 46| Arrhenatherum elatius
E2.112 MG 5a 43 | 50 75 41 81| Cynos cris-Centaur nigr Lath pratensis
E2.112 MG 5 42 | 49 70 42 77| Cynos cris-Centaur nigr

Sample Q12 **Parameters = Nobryo Domin Sp & c**

F3.131 W24b 53 | 59 50 87 54| Rub fr-Hol la underscb Arr ela-Her sph
E2.21 MG 1a 50 | 88 45 67 45| Arrhenatherum elatius Festuca rubra
E2.21 MG 1 45 | 74 52 58 39| Arrhenatherum elatius
E1.26 CG 6 40 | 39 26 84 57| Avenula pubescens
E3.41 MG 9b 40 | 80 44 50 38| Holc lana-Desch cespit Arrhen elatius

Sample Q13 **Parameters = Nobryo Domin Sp & c**

E1.26 CG 3d 49 | 65 34 76 61| Bromus erectus Fes rub-Fes aru
F3.131 W24b 43 | 55 41 69 48| Rub fr-Hol la underscb Arr ela-Her sph

E1.26 CG 6 35 | 48 28 67 45| Avenula pubescens
B3.31 MC11 33 | 63 25 72 37| Fest rubra-Daucus carot
E2.21 MG 1a 33 | 90 39 30 38| Arrhenatherum elatius Festuca rubra

Sample Q14 Parameters = *Nobryo Domin Sp & c*

F3.131 W24b 43 | 52 94 56 39| Rub fr-Hol la underscb Arr ela-Her sph
E2.111 MG 7d 42 | 56 63 38 72| Lol pere hay-meadow Lol per-Alo pra
E3.41 MG 9b 39 | 70 82 16 45| Holc lana-Desch cespit Arrhen elatius
E2.111 MG 7c 39 | 43 56 46 82| Lol pere flood-pasture Lol-Alop-Fes pr
E2.21 MG 1a 39 | 71 74 22 31| Arrhenatherum elatius Festuca rubra

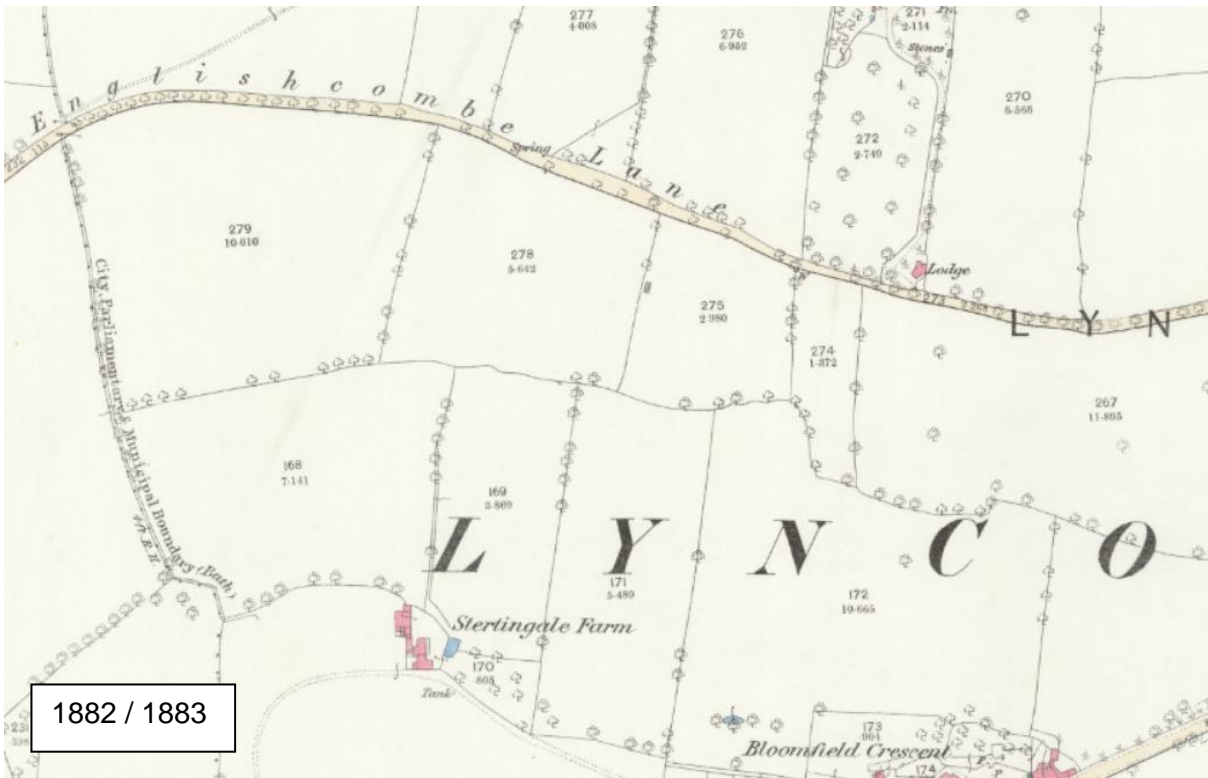
Sample Q15 Parameters = *Nobryo Domin Sp & c*

E2.21 MG 1a 64 | 90 75 63 50| Arrhenatherum elatius Festuca rubra
E2.21 MG 1 59 | 75 86 55 54| Arrhenatherum elatius
E3.41 MG 9b 53 | 80 73 44 49| Holc lana-Desch cespit Arrhen elatius
F3.131 W24b 52 | 52 73 78 51| Rub fr-Hol la underscb Arr ela-Her sph
J OV25 51 | 76 75 43 45| Urtic-Cir arv tall herb

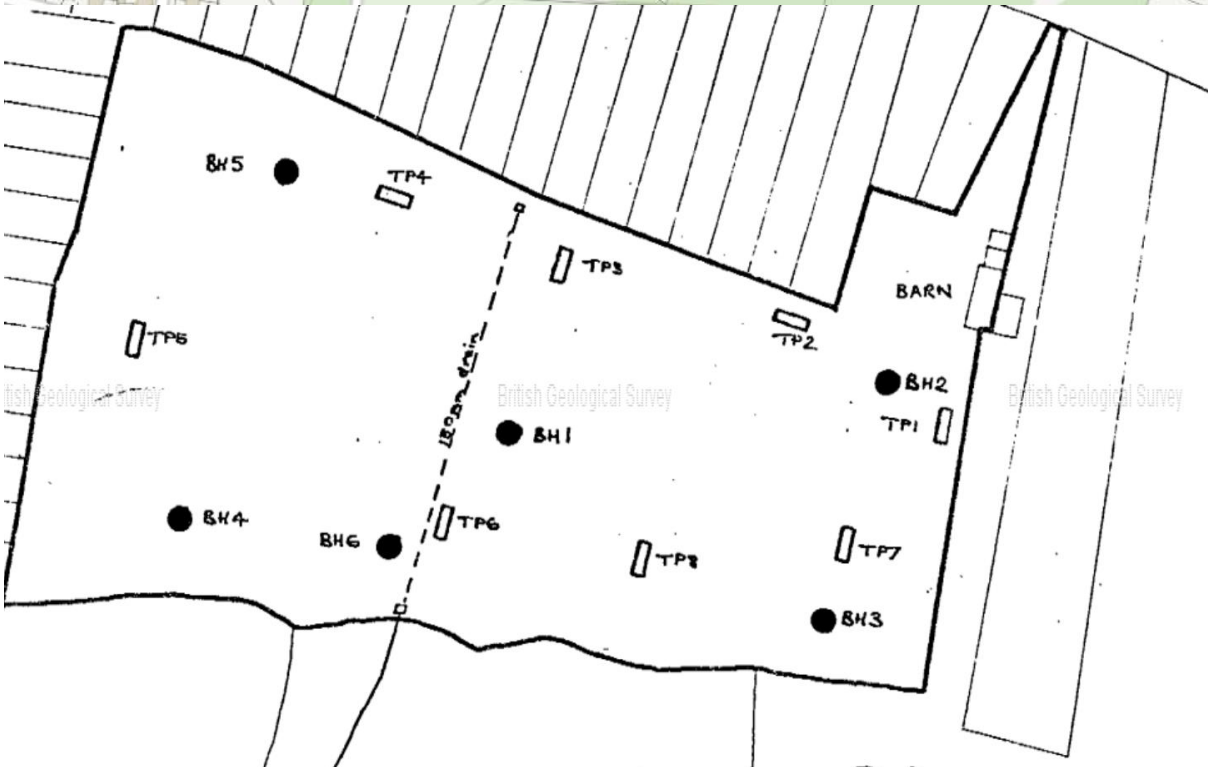
Sample Q16 Parameters = *Nobryo Domin Sp & c*

B3.31 MC 9c 59 | 63 42 90 71| Fest rubra-Holcu lanat Achill millef
E2.112 MG 5a 57 | 70 76 48 92| Cynos cris-Centaur nigr Lath pratensis
E2.112 MG 5 55 | 69 71 47 90| Cynos cris-Centaur nigr
E2.112 MG 5b 51 | 61 67 49 87| Cynos cris-Centaur nigr Galium verum
E1.26 CG 6 50 | 62 34 71 72| Avenula pubescens

Appendix 4 – Historic Mapping













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