

Land off Clay Lane / Furbarn Road, Rochdale OL11 5QR

ECOLOGICAL SURVEY AND ASSESSMENT

July 2023

ERAP (Consultant Ecologists) Ltd Reference: 2023-077

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Document Control

Survey Type:	Surveyors¹	Survey Date(s)
Phase 1 Habitat Survey	Victoria Burrows B.Sc. (Hons) M.Sc. CEnv MCIEEM Principal Ecologist	4 th June 2023
Reporting	Personnel	Date
Author	Victoria Burrows B.Sc. (Hons) M.Sc. CEnv MCIEEM Principal Ecologist	10 th July 2023
Signature(s)		
Checked	Rachel Brown B.Sc. (Hons)	14 th July 2023
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¹ Licence reference numbers

Bats
Victoria Burrows, Natural England Class Survey Licence (bats, Level 2) Registration Number 2015-10390-CLS-CLS

Great crested newt
Victoria Burrows Natural England Class Survey Licence (Level 1) Registration Number 2015-16651-CLS-CLS

Barn owl
Victoria Burrows Natural England Class Survey Licence Registration Number CL29/00061

SUMMARY

Introduction and Scope

- i. This ecological survey and assessment presents the ecological, biodiversity and nature conservation status of land at Clay Lane / Furbarn Road, Rochdale. The assessment was requested to inform a planning application proposing the construction of a 57MW battery storage energy development with a connection along Furbarn Road.
- ii. This report presents the results of an updated desktop study and data search, an extended Phase 1 Habitat Survey and a protected species assessment carried out in June 2023. The scope of survey undertaken is appropriate to identify potential ecological constraints, the remit of mitigation required and opportunities for biodiversity associated with the development proposals.

Results of Survey and Assessment

- iii. The approximately 0.7 hectare site is located on the eastern margins of Bamford, between the residential area and the woodland clough at Naden Brook. The triangular shaped site comprises semi-improved and improved grassland, bordered by hedgerows and tree lines. The site is bordered by roads / tracks on all sides with the exception of the western site boundary which meets a line of Leyland Cypress conifers (*Cupressus x Leylandii*) beyond which is a pony paddock.
- iv. The proposals will have no adverse effect on statutory or non-statutory designated sites for nature conservation.
- v. None of the habitats within the survey area and site boundary are semi-natural or are irreplaceable habitat. The NVC communities present are typical of the geographical area and the previously agriculturally managed conditions present.
- vi. The area of semi-improved grassland is of 'local' importance as it supports a greater diversity of plant species than the surrounding agriculturally improved fields. Development over part of the semi-improved grassland is an identified impact of the proposals and a compensation / habitat creation mitigation strategy is outlined in **Section 5.2** (and the separate Assessment of Biodiversity Net Gain).
- vii. Hedgerows 1 and 2 are Priority Habitat, and Hedgerow 1 meets the criteria to qualify as 'important' in accordance with *The Hedgerows Regulations 1997*. The two hedgerows and the tree lines are of 'local' value as they add structural diversity and are suitable for use by breeding birds and foraging and commuting bats; these habitats will be retained by the proposals.
- viii. Indian Balsam, an invasive species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) is present at the eastern site margin. The proposals present an opportunity for the eradication of this species to prevent further local spread in the wild. Further guidance is presented at **Section 5.3**.
- ix. Appropriate survey and assessment has been completed to reasonably discount the presence of badger, roosting bats, great crested newt and reptile species. No further surveys for protected species are required to inform the planning application.
- x. The hedgerow(s) and tree lines provide favourable foraging and nesting habitat for bird species. Recommendations for the retention and protection of these habitats, where feasible, as part of the proposed development are presented at **Sections 5.2** and **5.3**, below. It is considered that once the construction period is completed the proposals will have no adverse effect on the availability of opportunities for use by nesting birds at the site. It is advised, that once established, the measures detailed on the *Landscape and Planting Strategy Plan* (Turley, 2023) will enhance the opportunities at the site for nesting birds (and foraging bats).

Conclusion

- xi. This ecological survey and assessment has demonstrated that the proposed battery storage development at Clay Lane / Furbarn Road is feasible and acceptable in accordance with ecological considerations and

the National Planning Policy Framework. This report provides a comprehensive account of the ecological baseline and has informed the site layout and the *Landscape and Planting Strategy Plan* (Turley, 2023).

- xii. Adverse effects on protected species will be avoided and measures for Priority Species, particularly bird species, will be accommodated by the proposals and landscape planting.
- xiii. The proposals will secure an opportunity to implement beneficial measures such as habitat creation that will enhance habitats for wildlife such as birds and bats, with the aim of providing gains for biodiversity in accordance with the principles of the NPPF. Further demonstration of compliance with the *Biodiversity Net Gain: Good Practice Principles for Development* (CIEEM, 2016) is provided in the separate *Assessment of Biodiversity Net Gain*.

1.0 INTRODUCTION

1.1 Background and Rationale

- 1.1.1 ERAP (Consultant Ecologists) Ltd was commissioned by Shaw Energi Ltd to carry out an ecological survey and assessment of land at Clay Lane / Furbarn Road, Norden, Rochdale OL11 5QR (hereafter referred to as the 'site'). The Ordnance Survey (OS) grid reference at the centre of the site is SD 85667 13503. An aerial image of the site and its surrounding habitats is appended at **Figure 1** (source image: ESRI World Imagery).
- 1.1.2 The assessment was requested to inform a planning application proposing the construction of a 57MW battery storage energy development with a connection along Furbarn Road.

1.2 Scope of Works

- 1.2.1 The scope of ecological works undertaken in June 2023 comprised:
- A desktop study and data search for known ecological information at the site and the local area;
 - An Extended Phase 1 Habitat Survey and assessment;
 - Assessment of the ecological value of the habitats within the site with the use of the National Vegetation Classification (NVC) and the Ratcliffe criteria, as presented in *A Nature Conservation Review* (Ratcliffe, 1977);
 - Survey and assessment of all habitats for relevant statutorily protected species¹ and other wildlife including badger (*Meles meles*), barn owl (*Tyto alba*), great crested newt (*Triturus cristatus*), bird species and reptiles;
 - A licensed daylight bat survey and assessment of the trees and shrubs;
 - The identification of any potential ecological constraints on the proposals and the specification of the scope of mitigation and ecological enhancement required in accordance with wildlife legislation, planning policy guidance and other relevant guidance;
 - The identification of any further surveys or precautionary actions that may be required to inform the progression of the site through the planning process or prior to the commencement of construction activities; and
 - Collation of appropriate information including habitat condition assessments to inform the implementation of the *Defra Biodiversity Metric Calculation Tool* (version 4.0), refer to **Appendices 2 and 3** (presented separately).

2.0 METHOD OF SURVEY

2.1 Desktop Study and Data Search

- 2.1.1 The following sources of information and ecological records were consulted:
- MAGiC Maps: A web-based interactive map which brings together geographic information on key environmental schemes and designations, including details of statutory nature conservation sites;

¹ In accordance with *Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact on the Planning System* (Ministry of Housing, Communities & Local Government, 2005) developers should not be required to undertake surveys for protected species unless there is reasonable likelihood of the species being present and affected by the development. In this instance (for example) there are water courses within or adjacent to the site; there has been no requirement to consider great crested newt (*Triturus cristatus*), water vole (*Arvicola amphibius*) or otter (*Lutra lutra*) as part of this assessment.

- b. Greater Manchester Local Records Centre (GMLRC); and
- c. Greater Manchester Biodiversity Action Plan (BAP).

2.2 Vegetation and Habitats

- 2.2.1 An Extended Phase 1 Habitat Survey of the site was carried out by Victoria Burrows on 4th June 2023. The weather conditions were dry and sunny with a light air (Beaufort scale 1) and an air temperature of 14°C at 8am rising to 21°C in the afternoon.
- 2.2.2 A habitat and vegetation map was prepared for the site and the immediate surrounding area (refer to **Figure 2**). The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC, 2010) with minor adjustments to illustrate and examine the habitats with greater precision.
- 2.2.3 The plant species within the site boundary were determined with estimates of the distribution, ground cover, abundance and constancy of individual species. The estimation of abundance was based on the DAFOR system, where D = Dominant, A = Abundant, F = Frequent, O = Occasional and R = Rare, this being a widely used and accepted system employed by ecological surveyors. The terms L = Locally and V = Very were additionally used to describe the plant species distributions with greater precision.
- 2.2.4 Stands of vegetation and habitats were described and evaluated using the National Vegetation Classification (NVC). The NVC provides a systematic and comprehensive analysis of British vegetation and is a reliable framework for nature conservation and land-use planning.
- 2.2.5 Habitats within the site were assessed in accordance with the UK Habitats Classification / UKHab (Butcher, et al., 2020). The UKHab has been designed to function at two scales: fine scale (25m² or 5 metres length) and large scale (400m² or 20 metres length). It has been considered for the purposes of this survey that the fine scale of 25m² or 5 metres length is appropriate.
- 2.2.6 Hedgerows were assessed in accordance with *The Hedgerows Regulations 1997* wildlife and landscape criteria (H.M.S.O., 1997).
- 2.2.7 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the *Wildlife and Countryside Act 1981* (as amended) and species which are indicators of important and uncommon plant communities. Plant nomenclature follows *New Flora of the British Isles 3rd Edition* (Stace, 2010).
- 2.2.8 Searches were carried out for the presence of invasive species, including those listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), including Japanese Knotweed (*Fallopia japonica*), Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

2.3 Animal Life

Badger

- 2.3.1 The survey area for badger covered the site (as annotated on **Figure 2**) and extended to accessible land within a radius of 50 metres from the site boundary. Private gardens / land associated with the residential property to the west were viewed from the site boundary only.
- 2.3.2 The survey was conducted in accordance with guidance presented within *Badgers and Development* (Natural England, 2007) and *Badgers: advice for making planning decisions* (Natural England, 2022).
- 2.3.3 The following signs of badger activity were searched for:
 - a. Setts entrances, e.g. entrances that are normally 25 to 35cm in diameter and shaped like a 'D' on its side;
 - b. Large spoil heaps outside sett entrances;

- c. Bedding outside sett entrances;
- d. Badger footprints;
- e. Badger paths;
- f. Latrines;
- g. Badger hairs on fences or bushes;
- h. Scratching posts; and
- i. Signs of digging for food.

2.3.4 Habitats within and surrounding the site were assessed in terms of their suitability for use by foraging and sheltering badger in accordance with their known habitat preferences as detailed in current guidance and *Badger* (Roper, 2010).

Bat Species

Habitat Assessment for Commuting / Foraging Bats

2.3.5 Habitats within and adjacent to the site were assessed for their value and suitability for commuting and foraging bats in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*, (Collins, J. (ed), 2016). Reference has been made to the categories and descriptions / examples, presented below.

Table 2.1: Consideration of Suitability of Foraging and Commuting Habitat for Bats

Suitability	Commuting Habitat	Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by commuting bats.	Negligible habitat features on site likely to be used by foraging bats.
Low	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 or patch of scrub.
Moderate	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 linked to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape and is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. Habitats close to and connected to known roosts.	High-quality habitat that is well-connected to the wider landscape and is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Habitats close to and connected to known roosts.

Survey Personnel

2.3.6 The daylight licensed bat survey and assessment was carried out by Victoria Burrows, Natural England Class Survey Licence WML CL18 (Bat Survey Level 2), Registration Number 2015-10390-CLS-CLS. Victoria's qualifications and experience meet the criteria as defined in the *Technical Guidance Series Competencies for Species Survey: Bats* (CIEEM, 2013).

Daylight Survey: Buildings

2.3.7 There are no buildings at the site.

Daylight Survey: Trees

2.3.8 Trees and shrubs within the site and on the site boundaries were examined to assess their suitability for use by roosting bats, and to inform whether further surveys or precautionary measures were required.

2.3.9 Each tree / shrub was searched for the presence of the following features:

Woodpecker holes, rot holes, hazard beams, other vertical or horizontal cracks or splits in stems and branches, partially decayed platey bark, knot holes, man-made holes, tear-outs, cankers in which cavities have developed, other hollows or cavities, including butt-rots, double-leaders forming compression forks with included bark, gaps between overlapping stems or branches, partially detached Ivy (Hedera helix) with stem diameters in excess of 50mm and bat, bird or dormouse (Muscardinus avellanarius) boxes.

2.3.10 Terms used to describe any features present follow (where possible) those outlined and described in *Bat Tree Habitat Key, 2nd Edition* (Andrews, H (ed), 2013) and *Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-care and Ecology Professionals* (BTHK, 2018).

2.3.11 The suitability of each tree for use by roosting bats has been assessed in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*, (Collins, J. (ed), 2016), taking into account any presence of features suitable for access by bats and the suitability of the surrounding habitats for use by foraging and commuting bats.

Equipment

2.3.12 A list of equipment used is provided below.

Table 2.2: Survey Equipment Used / Available for Use During Daylight Bat Survey

Ladders
LED Lenser P14 torch
Canon Ixus digital camera
8x20 binoculars
Ridgid Micro Inspection Camera Borescope CA-300

Bird Species

2.3.13 Bird species observed and heard during the survey were recorded.

2.3.14 Habitats throughout the site and in the immediate surrounding area were assessed for their value to roosting, feeding and nesting birds, including Priority Species, as indicated by the bird activity recorded and the habitats present at the site and in the surrounding area.

Great Crested Newt

Desktop Search for Ponds

2.3.15 In accordance with *Great crested newts: advice for making planning decisions* (Natural England, 2022) all ponds within an unobstructed 500 metres of a site should be considered for their suitability to support breeding great crested newts and other amphibian species and this will inform the potential of a proposed development to impact upon any great crested newt and amphibian population(s) and their favourable conservation status.

2.3.16 The search of habitats in the wider area up to a distance of 500 metres from the site boundary revealed the presence of one pond, as detailed below.

Table 2.3: Ponds within 500 metres of the Site

Pond Reference	OS Grid Reference	Distance from Site Boundary	Location (refer to Figure 1)
1	SD 85652 13825	265 metres	North of the site within unmanaged neutral grassland and scrub between residential properties off Furbarn Lane and Naden Brook

Habitat Suitability Index Assessment

- 2.3.17 Pond 1 was assessed using the Habitat Suitability Index (HSI) (Oldham, et al., 2000) by Victoria Burrows. The pond was examined with reference to the ten HSI scoring criteria, which are: **SI₁**: Geographical location; **SI₂**: Pond area; **SI₃**: Pond drying; **SI₄**: Water quality (as indicated by the diversity of aquatic plants and invertebrates); **SI₅**: Shade; **SI₆**: Waterfowl; **SI₇**: Fish; **SI₈**: Abundance of other ponds within a one kilometre radius; **SI₉**: Quality of terrestrial habitat; and **SI₁₀**: Macrophyte cover (i.e. aquatic and emergent plants). The survey was conducted in accordance with *ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom* (ARG UK, 2010).
- 2.3.18 The assessment followed guidance in relation to interpreting HSI scores, following the categorical scale shown below.

Table 2.4: Pond Habitat Suitability Index Categories

HSI Score	Pond Suitability for Great Crested Newt
<0.5	Poor
0.5 – 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

Assessment of Terrestrial Habitat

- 2.3.19 Habitats present within the site were assessed for their value to support foraging, sheltering and hibernating great crested newt and other amphibian species. Favourable habitats can comprise rough grassland, scrubland, woodland and sites with underground crevices or cracks, such as mammal holes, voids in tree stumps or banks, and refugia such as rock piles or dead wood.

Consideration of Requirement for Further Survey

- 2.3.20 The requirement for further survey at Pond 1 was assessed using the following criteria:
- Results of the data search;
 - Results of the Habitat Suitability Index assessment;
 - Presence of dispersal barriers to great crested newt movements between the pond and the site, as detected during the walkover survey;
 - Distance of the pond from the site, and the potential influence of the proposed development of the site on any populations of great crested newt (if present at ponds), using the Natural England rapid risk assessment tool; and
 - Presence of other ponds which may form metapopulations and / or alter the influence of the site on ponds at greater distances.

Reptile Species

- 2.3.21 The site and its surroundings were assessed in terms of their suitability for use by reptile species using the important characteristics for reptiles outlined in the draft document 'Reptile Mitigation Guidelines' (Natural England, 2011), and the *Reptile Habitat Management Handbook* (Edgar, et al., 2010). These habitat characteristics are outlined below.

Table 2.5: Important Habitat Characteristics for Reptiles

1. Location (in relation to species range)	7. Connectivity to nearby good quality habitat
2. Vegetation Structure	8. Prey abundance
3. Insolation	9. Refuge opportunity
4. Aspect	10. Hibernation habitat potential
5. Topography	11. Disturbance regime
6. Surface geology	12. Egg-laying site potential

Other Wildlife

- 2.3.22 Evidence of other wildlife (including Priority Species) observed whilst on site (but for which specific surveys were not made) was recorded and has been included in this report where it is considered of relevance to the planning application. Habitats have been assessed for their suitability for Priority Species identified in the data search results where this is considered relevant to the application.

2.4 Survey and Reporting Limitations

- 2.4.1 No survey limitations on the intended scope of survey were experienced.
- 2.4.2 All measurements within this report are approximate only, and have been either estimated whilst on site or calculated using mapping software (QGIS) or internet-based mapping services such as MAGiC Maps and Google Earth.

2.5 Evaluation Methods

- 2.5.1 The habitats, vegetation and animal life were evaluated with reference to standard nature conservation criteria as described in *A Nature Conservation Review* (Ratcliffe, 1977). These are size (extent), diversity, naturalness, rarity, fragility, typicality, recorded history, position in an ecological or geographical unit, potential value and intrinsic appeal.
- 2.5.2 Habitats have been assessed to determine whether they meet those described in *UK Biodiversity Action Plan: Priority Habitat Descriptions* (Maddock, A (ed), 2008); these lists are used to help draw up the statutory lists of Priority Habitats, as required under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006*. Where suitable, the ecological value of the habitats present has been assessed using the terms outlined in *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).
- 2.5.3 Government advice on wildlife, as set out in the *National Planning Policy Framework* (Ministry of Housing, Communities and Local Government, 2021) and associated government circulars has been taken into consideration. Legislation relating to protected species, such as those listed under Schedules 1, 5, 6 and 8 of the *Wildlife and Countryside Act 1981* (as amended) and *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*, is referenced where applicable, and any impacts to protected species are evaluated in accordance with current guidance.
- 2.5.4 The presence of any Priority Species, as listed under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006* is noted, and habitats are assessed in terms of their suitability and value for these species. The presence of habitats and / or species listed by the Greater Manchester Biodiversity Action Plans and the IUCN Red Lists (IUCN, 2022) has been taken into account in the evaluation of the site.

3.0 SURVEY RESULTS

3.1 Desktop Study and Data Search

Statutory Designated Sites for Nature Conservation and SSSI Impact Risk Zones

- 3.1.1 The site and the immediate adjacent land have no statutory designation for nature conservation.
- 3.1.2 The site lies within a Site of Special Scientific Interest (SSSI) Impact Risk Zone for the Rochdale Canal Special Area of Conservation (SAC) and SSSI located 4 kilometres to the south-east of the site. The SSSI Impact Risk Zone requires the Local Planning Authority to consult with Natural England on likely risks from the following development categories (Ordnance Survey, 2023):

Airports, helipads and other aviation proposals.

Any industrial / agricultural development that could cause air pollution (including: industrial processes, livestock and poultry units with floorspace greater than 500m², slurry lagoons and digestate stores greater than 750m², manure stores greater than 3500tonnes).

General combustion processes greater than 50MW energy input. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis / gasification, anaerobic digestion, sewage treatment works, other incineration / combustion.

- 3.1.3 The proposals do not meet any of the listed criteria that would trigger the need for the LPA to consult with Natural England in relation to the risk of likely adverse impacts on statutory designated sites.

Non-statutory Designated Sites for Nature Conservation

- 3.1.4 The site has no non-statutory designation for nature conservation.
- 3.1.5 The nearest boundary of Naden Brook Site of Biological Importance (SBI), a Grade A site that covers an area of 39.6 hectares and is designated for the presence of ancient woodland lies 50 metres from the western site boundary.
- 3.1.6 The nearest boundary of Old House and Mill Croft Brook SBI (which is connected to Naden Brook SBI) is located 620 metres to the north-west of the site.
- 3.1.7 The presence of the SBIs is considered further at **Section 4.2**.

Priority Habitats Inventory and Soilscape Information

- 3.1.8 The Priority Habitats Inventory² was checked via MAGiC Maps. No Priority Habitats are identified at the site by the inventory.
- 3.1.9 In accordance with *Soilscape (England)* as presented on MAGiC Maps (National Soil Resources Institute, 2005), the site supports 'slowly permeable wet very acid upland soils with a peaty surface, and the characteristic semi-natural habitats associated with the soils comprise 'grass moor and some heather with flush and bog communities in wetter parts'.

Protected and Notable Species

- 3.1.10 Greater Manchester Local Record Centre hold no records of protected and notable species for the site.
- 3.1.11 Records of protected and notable species for a 1 kilometre radius from the centre of the site are summarised below.

Table 3.1: Records of Protected Species Within a 1 Kilometre Radius from the Centre of the Site

Taxon Group	Species Name and Designations ¹ and Notes
Amphibians	Common toad (<i>Bufo bufo</i>): PS. 2 records, dated 2015 and 2017. The closest record is 725 metres to the north-east of the site, and from 2017.
Birds – WCAs ¹	Peregrine (<i>Falco peregrinus</i>): WCAs ¹ . 1 record from 2013, located 725 metres to the north-east of the site.
Birds – PS Only	Bullfinch (<i>Pyrrhula pyrrhula</i>), cuckoo (<i>Cuculus canorus</i>), curlew (<i>Numenius arquata</i>), dunnoek (<i>Prunella modularis</i>), house sparrow (<i>Passer domesticus</i>), lapwing (<i>Vanellus vanellus</i>), lesser redpoll (<i>Carduelis cabaret</i>), reed bunting (<i>Emberiza schoeniclus</i>), song thrush (<i>Turdus philomelos</i>), starling (<i>Sturnus vulgaris</i>), and wood warbler (<i>Phylloscopus sibilatrix</i>).
Terrestrial invertebrates	PS: Small heath (<i>Coenonympha pamphilus</i>) and wall (<i>Lasiommata megera</i>).
Moths	Crescent (<i>Helotropha leucostigma</i>) 1 record from 2015, located 725 metres to the north-east of the site.

² A spatial dataset that describes the geographic extent and location of Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance.

Taxon Group	Species Name and Designations ¹ and Notes
Terrestrial Mammals	Badger (<i>Meles meles</i>): PBA. 37 records, dated between 1996 and 2022. The closest record is 410 metres from the site (further information is not disclosed here), and from 1996.
	Brown hare (<i>Lepus europaeus</i>): PS and GMBAP. 1 record from 2020, located 790 metres to the north-west of the site.
	Hedgehog (<i>Erinaceus europaeus</i>): PS. 70 records, dated between 2012 and 2021. The closest record is 725 metres to the north-east of the site, and from 2021.
	Common pipistrelle (<i>Pipistrellus pipistrellus</i>): EPS, WCAs5 and GMBAP. 43 records, dated between 2003 and 2019. The closest record is 130 metres to the south-west of the site, and from 2019.
	Bat (Order <i>Chiroptera</i>): EPS, WCAs5 and GMBAP. 1 record from 2007, located 400 metres to the north-east of the site.
	Pipistrelle sp (<i>Pipistrellus</i> sp.): EPS, WCAs5 and GMBAP. 72 records, dated between 1998 and 2019. The closest record is 10 metres to the west of the site, and from 2013.
	Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>): EPS, WCAs5, PS and GMBAP. 1 record from 2013, located 705 metres to the north-east of the site.
¹ Key to Designation Codes: EPS = European Protected Species under <i>The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019</i> . WCAs1 = Species receives full protection under Schedule 1 of the <i>Wildlife and Countryside Act 1981</i> (as amended). WCAs5 = Species receives full protection under Schedule 5 of the <i>Wildlife and Countryside Act 1981</i> (as amended). PBA = Protection of Badger Act 1992. PS = Priority Species listed under Section 41 of the NERC Act 2006. GMBAP = Species listed on the Greater Manchester Biodiversity Action Plan	

- 3.1.12 The presence of these protected and notable species within the wider area has been taken into account throughout this report.

3.2 Vegetation and Habitats

General Description

- 3.2.1 The approximately 0.7 hectare site is located on the eastern margins of Bamford, between the residential area and the woodland clough at Naden Brook. The triangular shaped site comprises semi-improved and improved grassland, that was unmanaged on the survey date, bordered by hedgerows and tree lines. The field is on sloping ground with the northern and north-eastern areas at a high level than the southern margin of the field.
- 3.2.2 The site is bordered by roads / tracks on all sides with the exception of the western site boundary which meets a line of Leyland Cypress conifers (*Cupressus x Leylandii*) beyond which is a pony paddock.
- 3.2.3 A Phase 1 Habitat Survey map is appended at **Figure 2**. Photographs are appended at **Table 8.1**.

Semi-Improved Neutral Grassland and Improved Grassland

- 3.2.4 Refer to **Photos 2 to 4**. The majority of the site (0.3ha) is occupied by semi-improved neutral grassland characterised by constant and abundant Meadow Foxtail (*Alopecurus pratensis*), Red Fescue (*Festuca rubra*) and Yorkshire-fog (*Holcus lanatus*) with constant and frequent Perennial Rye-grass (*Lolium perenne*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Smooth Meadow-grass (*Poa pratensis*) and Rough Meadow-grass (*Poa trivialis*). Meadow Buttercup (*Ranunculus acris*) is constant and occasional throughout with locally very abundant Broad-leaved Dock (*Rumex obtusifolius*), constant and frequent Common Sorrel (*Rumex acetosa*) and frequent Creeping Buttercup (*Ranunculus repens*). Other herb species include occasional Creeping Thistle (*Cirsium arvense*), Dandelion (*Taraxacum officinale* agg.) and Common Mouse-ear (*Cerastium fontanum*) and very locally frequent Crested Dog's-tail (*Cynosurus cristatus*), Common Hogweed (*Heracleum sphondylium*) and Green Alkanet (*Pentaglottis sempervirens*).
- 3.2.5 The species composition is varied within the grassland sward with areas at the far western and far eastern margins supporting a lower species diversity with an abundance of palatable grass species more typical of an improved / modified grassland and fewer herb species.

- 3.2.6 The majority of the grassland has affinities with the MG6 *Lolium perenne* – *Cynosurus cristatus* community of the NVC (Rodwell, 1992) which is described by the UKHab as g3c6 *Lolium-Cynosurus* neutral grassland with the secondary codes 76 recent management and 58 grazed.
- 3.2.7 The species-poor / modified grassland areas are characteristic of the MG7 *Lolium perenne* grassland ley community described by the UKHab as g4 modified grassland with the secondary codes 76 recent management and 58 grazed.
- 3.2.8 At the field margins are stands of Common Nettle (*Urtica dioica*) and Bramble (*Rubus fruticosus* agg.) scrub where the previous grazing management has been less intensive. The tall-herb vegetation is described by the UKHab as g3c other neutral grassland with the secondary code 16 tall-herb and the Bramble is described as h3d Bramble scrub.
- 3.2.9 A plant species list for the grassland is appended at **Table 8.2**.

Bare Ground and Compacted Ground with Ruderal Herbs

- 3.2.10 Refer to **Photos 5 and 6**. At the gateway and the southern boundary of the site is a levelled area of disturbed and compacted bare ground that covers an area of 0.05ha. In the south-western corner of the site is a 0.01ha area of bare ground used for the storage of silage bales.
- 3.2.11 Around the perimeter of the bare ground is disturbed ground colonised by ruderal grass and herb species characterised by very locally abundant Red Fescue with occasional Lesser Trefoil (*Trifolium dubium*), Greater Plantain (*Plantago major*), Ivy-leaved Speedwell (*Veronica hederifolia*), Self-heal (*Prunella vulgare*), Field Horsetail (*Equisetum arvense*), Bush Vetch (*Vicia sepium*) and very locally frequent Feverfew (*Tanacetum parthenium*) and Orange Hawkweed (*Pilosella aurantiaca*). Single plants of Forget-me-not species (*Myosotis* sp.), Red Clover (*Trifolium pratense*), Pricky Sow-thistle (*Sonchus asper*), Foxglove (*Digitalis purpurea*), Broom (*Cytisus scoparius*) and Colt's-foot (*Tussilago farfara*) were also recorded.
- 3.2.12 Garden / ornamental species such as Chives, *Geranium* species, Gladiola and Yellow Loosestrife were detected in this area.
- 3.2.13 A plant species list for this area is appended at **Table 8.3**.
- 3.2.14 This habitat is not indicative of an NVC community and it is most appropriately described by the UKHab as u1b6 with the secondary codes 73 bare ground and 17 ruderal / ephemeral.

Tree Lines

Tree Line 1: Leyland Cypress

- 3.2.15 Refer to **Photo 7**. At the western boundary of the site is a line of tall Leyland Cypress conifers that have been pruned beneath. The shaded understorey beneath the trees is characterised by constant and abundant Yorkshire-fog and Common Nettle with frequent Bramble, Broad-leaved Dock, Cleavers (*Galium aparine*) and Meadow Foxtail. A plant species list is appended at **Table 8.4**.
- 3.2.16 The boundary vegetation is not a specific NVC community and is described by the UKHab as w1g6 line of trees with the secondary code 48 non-native and 76 recent management.

Tree Line 2: Native Trees and Shrubs

- 3.2.17 Refer to **Photo 8**. At the eastern margin of the site is an unmanaged tree line of trees and shrubs characterised by constant and abundant Hawthorn (*Crataegus monogyna*) with constant and frequent Holly (*Ilex aquifolium*), Sycamore (*Acer pseudoplatanus*) and frequent Ash (*Fraxinus excelsior*) and Elder (*Sambucus nigra*) with rare Pedunculate Oak (*Quercus robur*). The dense understorey is characterised by constant and abundant Bramble with constant and frequent Common Nettle. Rosebay Willowherb (*Chamerion angustifolium*) is locally very abundant with frequent Cock's-foot (*Dactylis glomerata*) and Meadow Foxtail, locally frequent Garlic Mustard (*Alliaria petiolata*) and Smooth Meadow-grass. Woodland

herbs are limited to rare Male-fern and very locally frequent Herb-Robert (*Geranium robertianum*) and Wood Avens (*Geum urbanum*). A plant species list is appended at **Table 8.4**.

- 3.2.18 The line of trees is not a specific NVC community and is described by the UKHab as w1g6 line of trees with the secondary code 77 neglected (defined as unmanaged for 3 to 10 years).

Hedgerows

- 3.2.19 Plant species lists for the hedgerows are appended at **Table 8.5**. An assessment in accordance with *The Hedgerows Regulations 1997* is presented at **Table 8.6**. All hedgerows are characteristic of the W21 *Crataegus monogyna* – *Hedera helix* scrub community of the NVC (Rodwell, 1991) and are described by the UKHab as h2a hedgerow (Priority Habitat) with the secondary code 81 flailed hedgerow.

Hedgerow 1

- 3.2.20 Refer to **Photo 9 to 12**. Hedgerow 1 extends parallel to the road known as The Rake at the northern site boundary. The hedgerow is continuous and cut on the top and roadside. Trees within the hedgerow are limited to one semi-mature Ash and two semi-mature Sycamore. The woody species along the remainder of the hedgerow are characterised by constant and abundant Hawthorn with frequent Holly, very locally abundant Blackthorn (*Prunus spinosa*), locally very abundant Crab Apple (*Malus sylvestris*) and rare Grey Willow (*Salix cinerea*).
- 3.2.21 The hedgerow understorey supports constant and frequent Common Nettle with frequent Cleavers, Bramble, False Oat-grass (*Arrhenatherum elatius*), Meadow Foxtail, Rough Meadow-grass, locally abundant Great Willowherb (*Epilobium hirsutum*) and very locally abundant Cow Parsley (*Anthriscus sylvestris*), Rosebay Willowherb and Garlic Mustard. Woodland herbs are limited to very locally abundant Broad Buckler-fern (*Dryopteris dilatata*) and Greater Stitchwort (*Stellaria holostea*). Pink Purslane (*Claytonia sibirica*), Spanish Bluebell (*Hyacinthoides hispanica*) and Foxglove were also recorded.

Hedgerow 2

- 3.2.22 Refer to **Photo 13 to 14**. Hedgerow 2 is present at the southern site boundary and is characterised by constant and abundant Hawthorn with frequent Ash, Holly, Sycamore and Elder. The understorey supports constant and abundant Bramble and Common Nettle with frequent Perennial Rye-grass, Cock's-foot, Rough Meadow-grass and locally very abundant Cow Parsley. Woodlands herbs are limited to very locally abundant Male-fern (*Dryopteris filix-mas*).

Invasive Plant Species

- 3.2.23 No Japanese Knotweed is present at the site.
- 3.2.24 One plant of Indian Balsam was detected in the understorey at the tree line at the eastern site boundary (refer to **Figure 2** and **Photo 15**). The off-site western section of Hedgerow 2 contains Variegated Yellow Archangel (*Lamiastrum galeobdolon* subsp. *Argentatum*).
- 3.2.25 These two species are listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended); it is an offence to spread or cause their spread in the wild. This is considered further at **Section 4.3** below.

3.3 Animal Life

Badger

- 3.3.1 The grassland at the site is suitable for use by foraging badger and badger setts are known to be present in the wider area (over 400 metres from the site boundary). However, no signs of badger such as setts, snuffle holes, tracks or hairs were detected at the site and survey area. The presence of badger at the site is reasonably discounted.

Bat Species

Habitat Assessment for Commuting and Foraging Bats

- 3.3.2 The hedgerows and tree lines at the site boundaries are suitable for use by foraging bats, and they provide habitat connectivity across the survey area. In combination, the boundary features and the improved and semi-improved grassland within the relatively small site are considered to be of no greater than 'moderate' suitability for use by foraging bats, particularly in the context of the favourable and 'high' suitability of the woodland margin habitats and open water associated with Naden Brook to the west.

Trees and Shrubs

- 3.3.3 None of the trees and shrubs at the site margins support features with suitability for use by roosting bats. All trees are assessed to be of 'negligible' suitability for use by roosting bats.

Bird Species

- 3.3.4 Birds detected in the site on 4th June 2023 are listed below.

Table 3.2: Bird Species Detected on 4th June 2023

Scientific Name	Common Name	BOCC Status ¹	Notes
<i>Corvus monedula</i>	Jackdaw	Green	In Tree Line 2
<i>Erithacus rubecula</i>	Robin	Green	In Tree Line 2
<i>Hirundo rustica</i>	Swallow	Green	Feeding over site and wider area
<i>Parus caeruleus</i>	Blue tit	Green	In Hedgerow 2
<i>Passer domesticus</i>	House sparrow	Red	Feeding in Tree Line 2
<i>Pica pica</i>	Magpie	Green	Visiting site
<i>Troglodytes troglodytes</i>	Wren	Amber	In Hedgerow 1
<i>Turdus merula</i>	Blackbird	Green	In Hedgerow 1
¹ BOCC: Birds of Conservation Concern (Stanbury, et al., 2021). Priority Species are presented in bold .			

- 3.3.5 The tree-line and the boundary hedgerows are suitable for use by nesting passerine (i.e. perching) species, including those detected within the site during the survey. This is considered further at **Section 4.4**.
- 3.3.6 The habitats within the survey area are not considered to be suitable for use by ground nesting birds, such as lapwing or skylark, or overwintering species due to the gradient and topography of the survey area which obstructs an all-round field of view preferred by these species, and the relatively enclosed conditions created by the boundary tree lines and hedgerows at the site.
- 3.3.7 Dependent on the grazing regime the field is likely to support small mammals which may provide opportunities for hunting barn owl and other species such as kestrel. However, based on the relatively small size the field is not likely to form a core habitat that these species are dependent on.

Great Crested Newt and other Amphibians

Habitat Suitability Index (HSI) Assessment

- 3.3.8 The HSI assessment result for Pond 1 (refer to **Photo 16**) located 265 metres to the north is presented below.

Table 3.3: Habitat Suitability Index Assessment for Ponds 1 and 2

Criteria	Description	Pond 1	Score ¹
SI ₁	Location	Optimum	1
SI ₂	Pond area	644m ²	1
SI ₃	Permanence	Never dries	0.9
SI ₄	Water quality	Moderate	0.67
SI ₅	Shade	100%	0.2
SI ₆	Waterfowl	Minor impact	0.67
SI ₇	Fish	Minor impact	0.33
SI ₈	Pond count ²	None	0.1
SI ₉	Terrestrial habitat	Moderate	0.67
SI ₁₀	Macrophyte cover	30%	0.6
Assessment Result:		Below average	0.50

¹Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10})^{1/10}$
²Ponds within an unobstructed 1 kilometre radius

Assessment

- 3.3.9 There are no significant dispersal barriers between the Pond 1 and the site. However, Pond 1 is located 265 metres from the northern margin of the site and the intervening habitats comprise woodland, unmanaged grassland and semi-improved grassland; all of which are favourable habitats for use by sheltering and feeding amphibians. It is advised that the habitats at the site (as described in **Section 3.3**) do not provide any greater quality habitat for the attraction of sheltering amphibians associated with Pond 1 than the habitats closer to Pond 1.
- 3.3.10 To inform the requirement for further surveys, the Natural England Rapid Risk Assessment tool from GCN *Method Statement WML-A14-2 (Version April 2020)* (Natural England, 2020)) has been completed. The tool has been completed based on the distances of the ponds from the site, and the size of the development site (0.7 hectares). The rapid risk assessment tool assumes that great crested newt are present.

Table 3.4: Rapid Risk Assessment Result

Component	Likely Effect	Notional Offence Probability Score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	0.5 - 1 ha lost or damaged	0.03
Individual great crested newts	No effect	0
Maximum:		0.03
Rapid risk assessment result:		GREEN: OFFENCE HIGHLY UNLIKELY

- 3.3.11 The result of the Natural England Rapid Risk Assessment indicates that the site is sufficiently small and distant from Pond 1 that any proposed development is highly unlikely to result and an offence / impact upon great crested newt populations (if present).
- 3.3.12 In combination with the consideration of the distance between the pond and the site and the intervening habitats it is advised that the presence of / adverse effects on great crested newt and their habitats are reasonably discounted and no further survey is required to inform this assessment.
- 3.3.13 The reasonable avoidance measures outlined for the protection of general wildlife (refer to **Section 5.3**) are of relevance for the conservation of common toad (a Priority Species) which can have a wider dispersal range from a breeding pond.

Reptiles

- 3.3.14 Debris suitable for sheltering and basking reptiles was examined during the site visits; no reptile species were detected. The data search did not report any records of reptile species for the area of search.
- 3.3.15 The previously managed habitats within the survey area provide poor quality habitat for sheltering, basking and hibernating reptiles. The survey area is not adjacent or linked to any areas of favourable habitat for reptile species or to the known records in the wider area. The presence of reptiles within the site and survey area is reasonably discounted.

Brown Hare

- 3.3.16 The grassland and hedgerows are suitable for use by foraging and sheltering brown hare; no brown hare were noted during the survey, however.

Butterfly Species

- 3.3.17 The grassland is suitable for use by breeding butterfly species and one small copper butterfly (*Lycaena phlaeas*) was observed during the survey.

4.0 EVALUATION AND ASSESSMENT

4.1 Introduction and Description of Proposals

- 4.1.1 It is proposed to develop the site to a 57MW battery storage energy development with a permanent and construction access off Lower Jowkin Lane.
- 4.1.2 Ecological guidance, based on the baseline surveys, has been provided to the design team throughout the preparation of the site proposals and the *Landscape and Planting Strategy Plan* (Turley, 2023). This approach has ensured that the mitigation hierarchy has been applied and the layout has, as much as possible, been informed by the ecological surveys and assessment to achieve a sympathetic scheme which avoids features of ecological interest, conserves habitat connectivity and seeks to minimise and mitigate / compensate adverse effects where avoidance is not possible.
- 4.1.3 **Section 4.2** provides an assessment of any impacts of the proposed development on the designated sites for nature conservation present in the wider area. The ecological value of habitats within the site are evaluated at **Section 4.3**, and protected and notable species are considered at **Section 4.4**.

4.2 Designated Sites for Nature Conservation

- 4.2.1 There is no hydrological connectivity between the site and the Naden Brook SBI to the west.
- 4.2.2 The proposed retention of the boundary hedgerows and tree lines will ensure that habitat connectivity between the site and habitats in the wider area and Naden Brook SBI will not be severed.
- 4.2.3 It is considered that the site is sufficiently small and distant from all designated sites for nature conservation that the proposed development will have no direct or indirect impact on the designated sites in the local area and their features of special interest.

4.3 Vegetation and Habitats

- 4.3.1 None of the habitats within the survey area and site boundary are semi-natural or are irreplaceable habitat. The NVC communities present are typical of the geographical area and the previously agriculturally managed conditions present. Only common and widespread plant species were recorded in the survey area.

- 4.3.2 In terms of each habitat's importance in a geographical context³, the area of semi-improved grassland is of 'local' importance as it supports a greater diversity of plant species than the surrounding agriculturally improved fields. Development over part of the semi-improved grassland is an identified impact of the proposals and a compensation / habitat creation mitigation strategy is outlined in **Section 5.2** (and the separate Assessment of Biodiversity Net Gain).
- 4.3.3 The areas of bare ground, improved grassland, tall-herb vegetation are of 'site' value only.
- 4.3.4 All hedgerows are examples of Priority Habitat and Hedgerow 1 meets the criteria to qualify as 'important' in accordance with *The Hedgerows Regulations 1997* wildlife and landscape criteria.
- 4.3.5 The two hedgerows and the tree lines are of 'local' value as they add structural diversity and are suitable for use by breeding birds and foraging and commuting bats. Measures for the retention and protection of the hedgerows and tree lines are presented at **Sections 5.2** and **5.3**.
- 4.3.6 Indian Balsam, an invasive species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) has been detected within the site. It is considered that the proposals present an opportunity for the eradication of this species to prevent further local spread in the wild. Further guidance is presented at **Section 5.3**.

4.4 Protected Species and Other Wildlife

Relevant Protected Species

- 4.4.1 Appropriate survey and assessment has been completed to reasonably discount the presence of badger, roosting bats, great crested newt and reptile species. No further surveys for protected species are required to inform the planning application.

Foraging Bats

- 4.4.2 The proposed development will not be permanently artificially illuminated, although it is understood that motion detection security lighting may be required. Recommendations relating to the retention of features suitable for use by foraging and commuting bats (namely the hedgerows and tree lines) and measures to avoid adverse effects on foraging bats as a result of disturbance such as lighting during the construction period and in the long-term are described at **Sections 5.2** and **5.3**.

Breeding Birds

- 4.4.3 The hedgerow(s) and tree lines provide favourable foraging and nesting habitat for the passerine species of birds detected within the survey area via the records search (including dunnock, song thrush and starling, Priority Species detected within the survey area during the survey). Recommendations for the retention and protection of these habitats, where feasible, as part of the proposed development are presented at **Sections 5.2** and **5.3**, below.
- 4.4.4 It is considered that once the construction period is completed the proposals will have no adverse effect on the availability of opportunities for use by nesting birds at the site. It is advised, that once established, the measures detailed on the *Landscape and Planting Strategy Plan* (Turley, 2023) will enhance the opportunities at the site for nesting birds.

Other Considerations

- 4.4.5 The best practice measures to be applied during the site preparation and the construction periods and the long-term habitat creation as detailed in the *Landscape and Planting Strategy Plan* (Turley, 2023) will

³ Using the terms presented at Section 4.7 of *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018), i.e. International and European, National, Regional, Local Authority-wide area, River Basin District, Estuarine system / Coastal cell or Local. The term 'site' value is additionally used to highlight ecological features considered to be of importance in the context of the wider site habitats, but which are of negligible value in the context of the local area.

protect general animal life and will ensure that opportunities for feeding and breeding invertebrates and sheltering wildlife including common toad are retained at the site in the presence of the proposals.

5.0 RECOMMENDATIONS AND ECOLOGICAL ENHANCEMENT

5.1 Introduction

- 5.1.1 The recommendations and guidance provided in this section of the report follow 'The Mitigation Hierarchy' (i.e. avoid, mitigate, compensate). In addition and where possible, opportunities to enhance the ecological interest and habitat connectivity and seek biodiversity gain through appropriate landscape planting and habitat creation have been identified to ensure compliance with Chapter 15, paragraph 180(d) of the NPPF which states:

'opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate'.

5.2 Recommendations in Relation to Site Proposals and Ecological Enhancement

- 5.2.1 As detailed on the *Landscape and Planting Strategy Plan* (Turley, 2023) the proposals achieve:
- Retention of the boundary hedgerows (Hedgerows 1 and 2) and planting of additional native hedgerows;
 - Retention of Tree Lines 1 and 2 and associated Bramble scrub;
 - Conservation (and enhancement by habitat creation and long-term management) of the semi-improved and improved grassland at the eastern end of the site. At this stage it is recommended that the retained grassland is enhanced by overseeding with Yellow Rattle (*Rhinanthus minor*). This species is semi-parasitic on grass species which can reduce the vigour of grasses allowing wildflowers to flourish;
 - Maximised biodiversity value of the areas around the storage facility by reinstatement of areas to be disturbed during construction with wildflower grassland;
 - Planting of native trees and shrubs to improved habitat structural diversity and provide additional opportunities for nesting birds and other wildlife;
 - Construction of log and brash piles in appropriate areas to provide opportunities for sheltering invertebrates, small mammals and amphibians and an opportunity for colonisation by fungi;
 - Installation of retaining walls / vegetated wall system to enhance habitat connectivity around the built environment; and
 - Secured long-term management and maintenance of the habitats in accordance with conservation objectives (refer to **Section 5.4**).
- 5.2.2 The measures outlined above have been entered into the *Defra Biodiversity Metric Calculation Tool* (version 4.0) to inform the assessment of biodiversity net gain.

5.3 Protection of Existing Features During Construction and Construction Environment Management Plan (CEMP) for Biodiversity

Introduction

- 5.3.1 To inform the site preparation and construction activities it is recommended that a Construction Environment Management Plan (CEMP) for Biodiversity is prepared and implemented. The CEMP will describe the following actions / measures:

Lighting

- 5.3.2 Any lighting to be used at the site during site preparation and construction should be directional and screened where possible to avoid excessive illumination of retained habitats that are suitable for use by foraging bats and other wildlife such as the boundary hedgerows and tree lines.

Protection of Existing Vegetation

- 5.3.3 During the construction phase, temporary protective demarcation fencing will be used to protect the hedgerows and tree lines to be retained. The fencing must extend outside the canopy of the retained trees / shrubs and must remain in position until construction has been completed.
- 5.3.4 The fencing will be in accordance with BS5837:2012 *Trees in Relation to Design, Demolition and Construction: Recommendations* (BSI, 2012).

Protection of Nesting Birds

- 5.3.5 All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended) while they are breeding. It is advised that any works such as vegetation clearance that will affect habitats suitable for use by nesting birds are scheduled to commence outside the bird nesting season. Commencement of works in the nesting season must be informed by a pre-works nesting bird survey, carried out by a suitably experienced ecologist. The survey will also include the search for evidence of use by nesting barn owl. The bird breeding season typically extends between March to August inclusive.
- 5.3.6 If nesting birds are detected the ecologist will issue guidance in relation to the protection of the nesting birds in conjunction with the scheduled works. This may involve cordoning off an area of the site until the young birds have fledged.

Invasive Plant Species

- 5.3.7 It is an offence under the *Wildlife and Countryside Act 1981* (as amended) to cause the spread of Indian Balsam in the wild. It is recommended that the Indian Balsam plant(s) are hand pulled during site preparation works. On-going monitoring and hand pulling will be carried out in the long-term as secured by the Landscape and Ecological Management Plan (LEMP) (refer to **Section 5.4**).

Dust Suppression, Incidents and Accidents

- 5.3.8 The risk of adverse effects on retained vegetation, habitats and wildlife as a result of dust, spills and leaks will be controlled by the application of best practice measures and appropriate environmental controls such as dust suppression, appropriate storage of chemicals and fuel, presence of spill kits and appropriate training of on-site personnel.

General Wildlife

- 5.3.9 During the site preparation and construction operations it is essential that the following best practice and Reasonable Avoidance Measures are applied:
- No trenches or other hazards must be left open / accessible overnight. Trenches or holes must be covered with a board or fitted with a means of escape (such as ramped edge or a sloping plank of timber). This will ensure that any inquisitive animals do not become trapped;
 - Any pipes must be stored with caps on (to prevent animal entry);
 - No fires must be lit at the site; and
 - Any chemicals or harmful materials must be stored so that they cannot be accessed by inquisitive animals.

5.4 Management and Maintenance

- 5.4.1 To secure the longevity of the landscape and habitat creation works, it is recommended that a Landscape Ecological Management Plan, including a work schedule, is prepared and applied.

6.0 CONCLUSION

- 6.1 This ecological survey and assessment has demonstrated that the proposed battery storage development at Furbarn Road / Clay Lane is feasible and acceptable in accordance with ecological considerations and the National Planning Policy Framework. This report provides a comprehensive account of the ecological baseline and has informed the site layout and the *Landscape and Planting Strategy Plan* (Turley, 2023).
- 6.2 Adverse effects on protected species will be avoided and measures for Priority Species, particularly bird species, will be accommodated by the proposals and landscape planting.
- 6.3 The proposals will secure an opportunity to implement beneficial measures such as habitat creation that will conserve and enhance habitats for wildlife such as birds and bats, with the aim of providing gains for biodiversity in accordance with the principles of the NPPF. Further demonstration of compliance with the *Biodiversity Net Gain: Good Practice Principles for Development* (CIEEM, 2016) is provided in the separate *Assessment of Biodiversity Net Gain*.

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8.0 APPENDIX 1: TABLES AND FIGURES

8.1 Photographs

Table 8.1: Photographs

	
Photo 1: Current entrance at southern site boundary	Photo 2: Semi-improved and improved grassland at the site (taken facing east)
	
Photo 3: Semi-improved grassland (taken facing north)	Photo 4: Semi-improved grassland (taken facing south)
	
Photo 5: Bare and compacted ground at southern site margin	Photo 6: Bare and compacted ground with ruderal herbs at southern site margin



Photo 7: Leyland Cypress at Tree Line 1

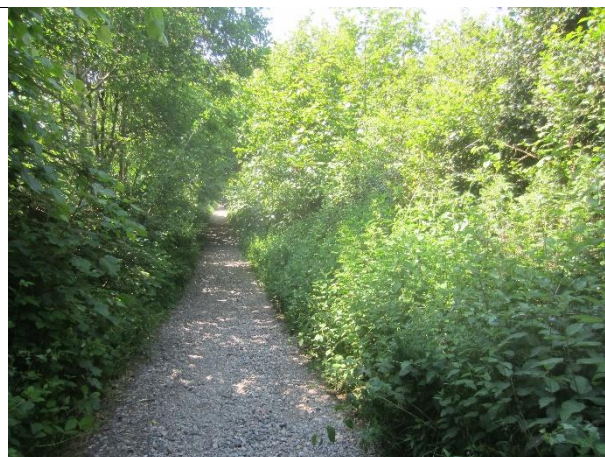


Photo 8: Tree line 2 (right) and off-site Hedgerow 3 (left)

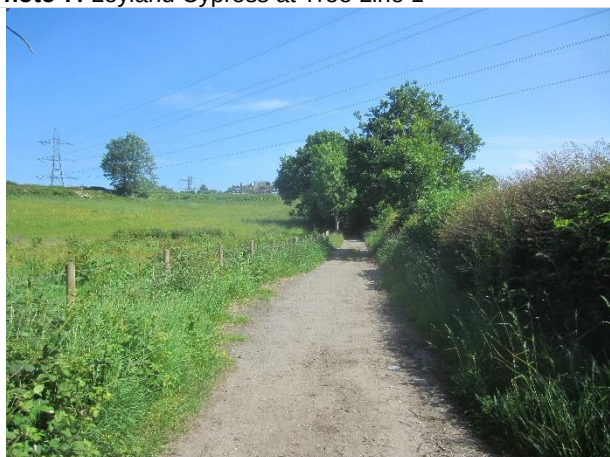


Photo 9: Hedgerow 1 (right)



Photo 10: Hedgerow 1 (left)



Photo 11: Ash tree in Hedgerow 1



Photo 12: Sycamore trees in Hedgerow 1



Photo 13: Hedgerow 2 (left of fence)



Photo 14: Hedgerow 2



Photo 15: Indian Balsam at Tree Line 2



Photo 16: Pond 1



Photo 17: Furbarn Road



Photo 18: Furbarn Road

8.2 Plant Species Lists

Table 8.2: Plant Species List for Semi-improved and Improved / Modified Neutral Grassland

Scientific Name	Common Name	DAFOR ¹	Cover
Woody Species			
<i>Populus alba</i>	White Poplar saplings	VLF	<1%
<i>Quercus robur</i>	Pedunculate Oak saplings	O	<1%
Herb Species			
<i>Alopecurus geniculatus</i>	Marsh Foxtail	F	<1%
<i>Alopecurus pratensis</i>	Meadow Foxtail	A*	10%
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	F*	10%
<i>Arrhenatherum elatius</i>	False Oat-grass	VLA	<1%
<i>Calystegia sepium</i>	Hedge Bindweed	VLF	<1%
<i>Calystegia silvatica</i>	Large Bindweed	VLF	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	O	<1%
<i>Chamerion angustifolium</i>	Rosebay Willowherb	VLA	<1%
<i>Cirsium arvense</i>	Creeping Thistle	O	<1%
<i>Cirsium vulgare</i>	Spear Thistle	O	<1%
<i>Cynosurus cristatus</i>	Crested Dog's-tail	VLF	2%
<i>Elytrigia repens</i>	Common Couch	VLA	<1%
<i>Equisetum arvense</i>	Field Horsetail	O	<1%
<i>Festuca rubra</i>	Red Fescue	A*	20%
<i>Galium aparine</i>	Cleavers	VLF	<1%
<i>Geranium robertianum</i>	Herb-Robert	R	<1%
<i>Geum urbanum</i>	Wood Avens	R	<1%
<i>Heracleum sphondylium</i>	Hogweed	VLF	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	A*	15%
<i>Lolium multiflorum</i>	Italian Rye-grass	LF	1%
<i>Lolium perenne</i>	Perennial Rye-grass	F*	15%
<i>Luzula campestris</i>	Field Wood-rush	VLF	<1%
<i>Pentaglottis sempervirens</i>	Green Alkanet	VLF	<1%
<i>Phalaris arundinacea</i>	Reed Canary-grass	R	<1%
<i>Poa pratensis</i>	Smooth Meadow-grass	F*	20%
<i>Poa trivialis</i>	Rough Meadow-grass	F*	10%
<i>Ranunculus acris</i>	Meadow Buttercup	O*	1%
<i>Ranunculus repens</i>	Creeping Buttercup	F	5%
<i>Rubus fruticosus</i> agg.	Bramble	VLA	1%
<i>Rumex acetosa</i>	Common Sorrel	F*	2%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O/ VLA	5%
<i>Senecio jacobaea</i>	Common Ragwort	R	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%
<i>Trifolium pratense</i>	Red Clover	VLA	<1%
<i>Trifolium repens</i>	White Clover	VLA	<1%
<i>Tussilago farfara</i>	Colt's-foot	F	10%
<i>Vicia sativa</i>	Common Vetch	O	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

Table 8.3: Plant Species List for the Compacted Ground with Ruderal Herbs

Scientific Name	Common Name	DAFOR ¹	Cover
Woody Species			
<i>Buddleja davidii</i>	Butterfly-bush	O	<1%
<i>Cytisus scoparius</i>	Broom	O	<1%
<i>Rosa canina</i>	Dog-rose	R	<1%
<i>Salix caprea</i>	Goat Willow	O	<1%
Herb Species			
<i>Agrostis stolonifera</i>	Creeping Bent	VLA	<1%
<i>Allium schoenoprasum</i>	Chives	R	<1%
<i>Aquilegia vulgaris</i>	Columbine	R	<1%
<i>Bellis perennis</i>	Daisy	R	<1%
<i>Centaurea erythraea</i>	Common Centaury	O	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	O	<1%
<i>Cirsium arvense</i>	Creeping Thistle	VLF	<1%
<i>Cirsium vulgare</i>	Spear Thistle	O	<1%
<i>Cynosurus cristatus</i>	Crested Dog's-tail	VLA	<1%
<i>Digitalis purpurea</i>	Foxglove	O	<1%
<i>Epilobium hirsutum</i>	Great Willowherb	O	<1%
<i>Equisetum arvense</i>	Field Horsetail	O	<1%
<i>Fragaria vesca</i>	Wild Strawberry	O	<1%
<i>Galium aparine</i>	Cleavers	O	<1%
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	R	<1%
<i>Geranium lucidum</i>	Shining Crane's-bill	O	<1%
<i>Geranium sanguineum</i>	Bloody Crane's-bill	O	<1%
<i>Geranium</i> sp.	Crane's-bill species (ornamental)	O	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	O	<1%
<i>Hyacinthoides hispanica</i>	Spanish Bluebell	O	<1%
<i>Hypochaeris radicata</i>	Cat's-ear	O	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	O	<1%
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	O	<1%
<i>Lysimachia nemorum</i>	Yellow Pimpernel	R	<1%
<i>Lysimachia vulgaris</i>	Yellow Loosestrife	O	<1%
<i>Myosotis</i> sp.	Forget-me-not species	R	<1%
<i>Pilosella aurantiaca</i>	Orange Hawkweed	VLF	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	O	<1%
<i>Plantago major</i>	Greater Plantain	O	<1%
<i>Poa annua</i>	Annual Meadow-grass	O	<1%
<i>Poa pratensis</i>	Smooth Meadow-grass	VLA	<1%
<i>Poa trivialis</i>	Rough Meadow-grass	O	<1%
<i>Prunella vulgaris</i>	Selfheal	O	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	VLF	<1%
<i>Rubus fruticosus</i> agg.	Bramble	R	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	<1%
<i>Silene dioica</i>	Red Campion	O	<1%
<i>Sisymbrium officinale</i>	Hedge Mustard	O	<1%
<i>Sonchus asper</i>	Prickly Sow-thistle	O	<1%
<i>Sonchus oleraceus</i>	Smooth Sow-thistle	O	<1%
<i>Tanacetum parthenium</i>	Feverfew	VLF	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%
<i>Trifolium dubium</i>	Lesser Trefoil	O	<1%
<i>Trifolium pratense</i>	Red Clover	R	<1%
<i>Trifolium repens</i>	White Clover	VLF	<1%
<i>Tussilago farfara</i>	Colt's-foot	O	<1%
<i>Urtica dioica</i>	Common Nettle	O	<1%
<i>Gladiolus</i> sp.	Gladiolus species	R	<1%

Scientific Name	Common Name	DAFOR ¹	Cover
<i>Veronica hederifolia</i>	Ivy-leaved Speedwell	O	<1%
<i>Veronica serpyllifolia</i>	Thyme-leaved Speedwell	VLF	<1%
<i>Vicia cracca</i>	Tufted Vetch	O	<1%
<i>Vicia sepium</i>	Bush Vetch	O	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

Table 8.4: Plant Species List for Tree Line 1 (western boundary) and Tree Line 2 (eastern boundary)

Scientific Name	Common Name	Tree Line 1		Tree Line 2	
		DAFOR ¹	Cover	DAFOR ¹	Cover
Woody Species					
<i>Acer pseudoplatanus</i>	Sycamore	-	-	F*	20%
<i>Crataegus monogyna</i>	Hawthorn	-	-	F*	20%
<i>Cupressus x Leylandii</i>	Leyland Cypress	D*	100%	-	-
<i>Fraxinus excelsior</i>	Ash	VLF	<1%	F	20%
<i>Ilex aquifolium</i>	Holly	-	-	F*	20%
<i>Quercus robur</i>	Pedunculate Oak	-	-	R	5%
<i>Sambucus nigra</i>	Elder	F	20%	F	5%
Herb Species					
<i>Alliaria petiolata</i>	Garlic Mustard	-		LF	1%
<i>Alopecurus pratensis</i>	Meadow Foxtail	F	5%	F	1%
<i>Calystegia sepium</i>	Hedge Bindweed	-	-	R	<1%
<i>Chamerion angustifolium</i>	Rosebay Willowherb	-	-	LVA	1%
<i>Dactylis glomerata</i>	Cock's-foot	-	-	F	10%
<i>Digitalis purpurea</i>	Foxglove	-	-	R	<1%
<i>Dryopteris filix-mas</i>	Male-fern	-	-	R	<1%
<i>Epilobium montanum</i>	Broad-leaved Willowherb	-	-	VLA	1%
<i>Galium aparine</i>	Cleavers	F	1%	VLA	1%
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	-	-	O	<1%
<i>Geranium robertianum</i>	Herb-Robert	-	-	VLF	<1%
<i>Geum urbanum</i>	Wood Avens	R	<1%	VLA	<1%
<i>Heracleum sphondylium</i>	Hogweed	-	-	O	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	A*	50%		
<i>Hyacinthoides hispanica</i>	Spanish Bluebell	-	-	VLA	<1%
<i>Impatiens glandulifera</i>	Indian Balsam	-	-	R	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	VLF	<1%		
<i>Poa pratensis</i>	Smooth Meadow-grass	-	-	LF	1%
<i>Ranunculus acris</i>	Meadow Buttercup	-	-	VLF	<1%
<i>Rubus fruticosus</i> agg.	Bramble	F	10%	A*	20%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	F	1%		
<i>Sonchus asper</i>	Prickly Sow-thistle	-	-	O	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%	O	<1%
<i>Urtica dioica</i>	Common Nettle	A*	40%	F*	50%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species					

Table 8.5: Plant Species List for Hedgerows

		Hedgerow 1 %		Hedgerow 2 %		Hedgerow 3 (off-site)	
Scientific Name	Common Name	DAFOR	Cover	DAFOR	Cover	DAFOR	% Cover
Woody Species							
<i>Acer pseudoplatanus</i>	Sycamore	LF	10%	F	10%	-	-
<i>Crataegus monogyna</i>	Hawthorn	A*	60%	A*	60%	F/LA	5%
<i>Fraxinus excelsior</i>	Ash	F	10%	F	20%	LF	5%
<i>Ilex aquifolium</i>	Holly	F	10%	F	20%	R	<1%
<i>Malus sylvestris</i>	Crab Apple	VLA	5%	-	-	-	-
<i>Populus alba</i>	White Poplar	VLA	2%	-	-	-	-
<i>Prunus</i> sp.	Cherry species	-	-	-	-	R	<1%
<i>Prunus spinosa</i>	Blackthorn	VLA	1%	-	-	-	-
<i>Quercus robur</i>	Pedunculate Oak	-	-	-	-	F	10%
<i>Rosa canina</i>	Dog-rose	R	<1%	-	-	R	<1%
<i>Salix cinerea</i>	Grey Willow	R	<1%	-	-	-	-
<i>Sambucus nigra</i>	Elder	O	2%	F	5%	O	2%
Herb Species							
<i>Alliaria petiolata</i>	Garlic Mustard	VLA	<1%	-	-	LF	1%
<i>Alopecurus pratensis</i>	Meadow Foxtail	F	5%	-	-	A	5%
<i>Anthriscus sylvestris</i>	Cow Parsley	VLA	<1%	VLA	10%	-	-
<i>Arrhenatherum elatius</i>	False Oat-grass	F	25%	-	-	LF	5%
<i>Calystegia silvatica</i>	Large Bindweed	O	<1%	-	-	-	-
<i>Cerastium fontanum</i>	Common Mouse-ear	-	-	-	-	VLF	<1%
<i>Chamerion angustifolium</i>	Rosebay Willowherb	VLA	5%	-	-	VLA	1%
<i>Claytonia sibirica</i>	Pink Purslane	VLF	<1%	-	-	-	-
<i>Dactylis glomerata</i>	Cock's-foot	-	-	F	5%	A	10%
<i>Digitalis purpurea</i>	Foxglove	O	<1%	-	-	O	<1%
<i>Dryopteris dilatata</i>	Broad Buckler-fern	VLA	<1%	-	-	LA	10%
<i>Dryopteris filix-mas</i>	Male-fern	-	-	VLA	1%	O	<1%
<i>Epilobium hirsutum</i>	Great Willowherb	LA/ F*	5%	-	-	LA	1%
<i>Festuca rubra</i>	Red Fescue	-	-	-	-	F	5%
<i>Galium aparine</i>	Cleavers	F	5%	VLA	1%	LA	1%
<i>Geranium robertianum</i>	Herb-Robert	-	-	-	-	VLA	<1%
<i>Geum urbanum</i>	Wood Avens	-	-	-	-	VLF	<1%
<i>Heracleum sphondylium</i>	Hogweed	VLA	1%	-	-	-	-
<i>Holcus mollis</i>	Creeping Soft-grass	-	-	-	-	LA	2%
<i>Hyacinthoides hispanica</i>	Spanish Bluebell	VLF	<1%	-	-	-	-
<i>Lamiasstrum galeobdolon</i> subsp. <i>argentatum</i>	Variegated Yellow Archangel	-	-	VLA	10%	-	-
<i>Lolium perenne</i>	Perennial Rye-grass	-	-	F	5%	-	-
<i>Plantago lanceolata</i>	Ribwort Plantain	R	<1%	-	-	-	-
<i>Poa trivialis</i>	Rough Meadow-grass	F	5%	F	5%	F	5%
<i>Ranunculus acris</i>	Meadow Buttercup	R	<1%	-	-	-	-
<i>Ranunculus repens</i>	Creeping Buttercup	-	-	O	<1%	-	-
<i>Rubus fruticosus</i> agg.	Bramble	F	20%	A*	25%	A	10%
<i>Rumex acetosa</i>	Common Sorrel	-	-	-	-	R	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	<1%	O	<1%	O	<1%
<i>Stellaria holostea</i>	Greater Stitchwort	VLA	<1%	-	-	-	-
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%	O	<1%	O	<1%
<i>Urtica dioica</i>	Common Nettle	LA/ F*	10%	A*	20%	F	5%
						-	-

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species.

Species highlighted in grey are classed as either 'woody' or 'woodland' species contributing to *The Hedgerows Regulations 1997* wildlife and landscape criteria assessment.

Table 8.6: Hedgerow Description and Assessment in Accordance with *The Hedgerows Regulations 1997*

	Hedgerow Name	Hedgerow 1			Hedgerow 2		
Description	Height x width (metres)	1.5 metres			1.5 metres		
	Length (metres)	128 metres			54		
	Continuity	100%			100%		
	Management	Cut on the top and northern side			Cut		
Woody Species	Section number ¹	1	2	3	1	2	3
	Qualifying woody species	5	5	-	4	-	-
	Average Number	5			4		
Number of Features Present	(a) Bank or wall along at least ½ length	x			x		
	(b) Gaps which in agg. do not exceed 10%	✓			✓		
	(c)-(e) 1 standard tree per 50m	✓			x		
	(f) At least 3 woodland species within 1m	x			x		
	(g) Ditch along at least ½ its length	x			x		
	(h) Connections scoring 4 points or more	x			x		
	(i) Parallel hedge within 15m	✓			✓		
	Total Features	3			2		
Hedgerow Importance	Criteria for Hedgerow Importance 1	x			x		
	Criteria for Hedgerow Importance 2:	x			x		
	Criteria for Hedgerow Importance 3:	✓			✓		
Hedgerow Important Criteria	Criteria for Hedgerow Importance 1: Hedgerow contains species listed as: (1) Part 1 of Schedule 1, Schedule 5 or Schedule 8 of <i>Wildlife and Countryside Act 1981</i> (as amended); (2) Declining breeders in ‘Red Data Birds of Britain’; and / or (3) Categorised as ‘endangered’, ‘extinct’ or ‘vulnerable’						
	Criteria for Hedgerow Importance 2: Hedgerow includes: (i) At least 7 woody species (on average); (ii) At least 6 woody species (on average) and at least 3 features; (iii) At least 6 woody species (on average), including one of: Black Poplar, Large-leaved Lime, Small-leaved Lime or Wild Service Tree; and / or; (iv) At least 5 woody species (on average), and has 4 features						
	Criteria for Hedgerow Importance 3: Is adjacent to is adjacent to a bridleway, footpath or byway and includes at least 4 woody species on average and 2 features from (a) to (g).						

¹Up to and including 100 metres length = 1 section required.
100 to 200 metres length = 2 sections required
Greater than 200 metres length = 3 sections required.

8.3 Figures

Figure 1: Aerial Image of the Site and its Surroundings

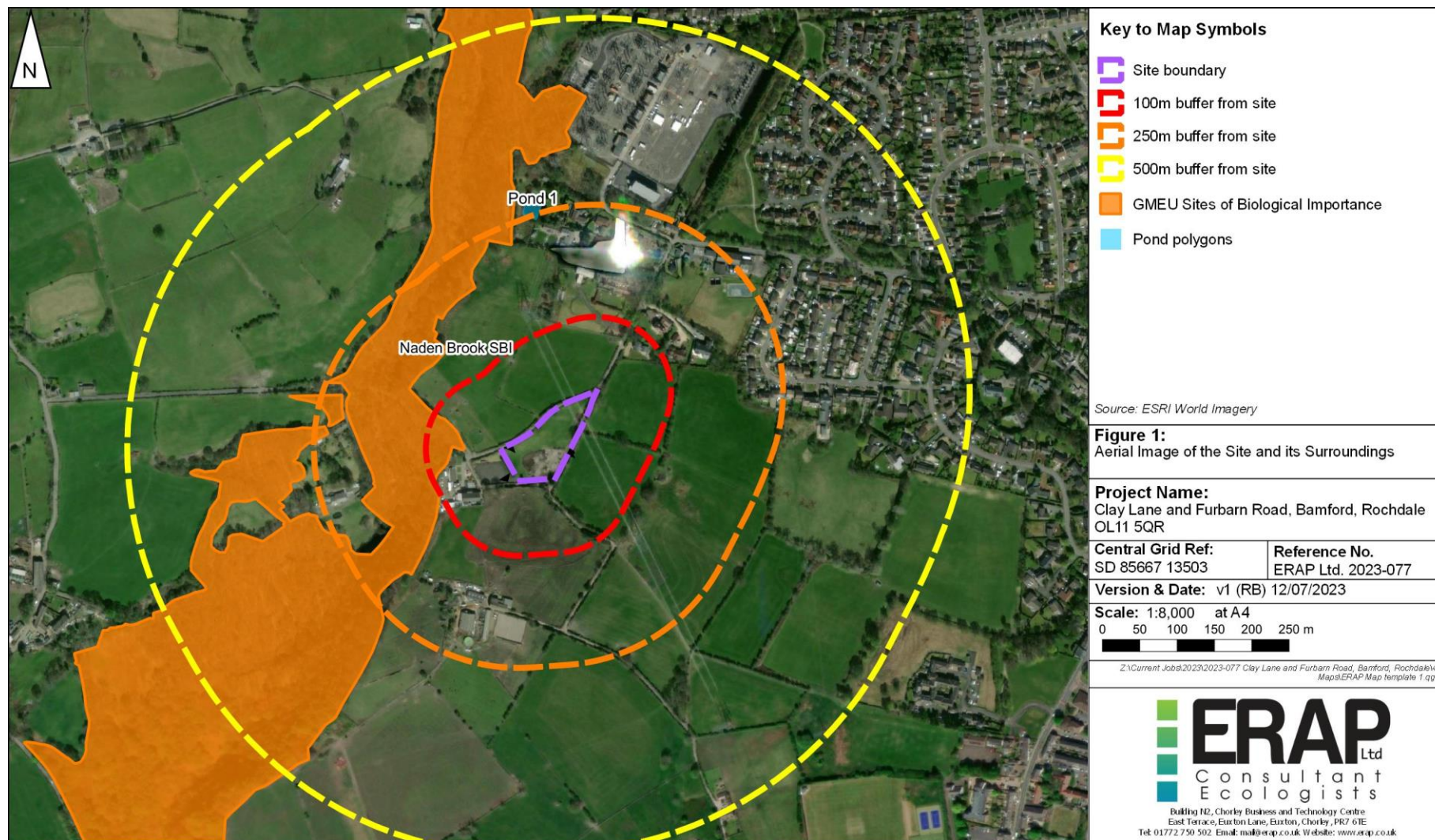


Figure 2: Phase 1 Habitat and Vegetation Map

