OAKLANDS FARM SOLAR PARK

Applicant: Oaklands Farm Solar Ltd

Environmental Statement
Appendix 6.6 – Bat Survey Report
January 2024
Document Ref: EN010122/APP/6.1/Appx 6.6
Revision: -

Planning Act 2008
Infrastructure Planning (Application: Prescribed Forms and Procedure) Regulations 2009 - 5(2)(a)

Oaklands Farm Solar Park - Environmental Statement Volume 3

Appendix 6.6: Bat Survey Report

Final report
Prepared by LUC
January 2024

Oaklands Farm Solar Limited

Oaklands Farm Solar Park
Technical Appendix 6.6: Bat Survey Report

Project Number
11477

Version	Status	Prepared	Checked	Approved	Date
1.	First issue	T. Hicks	R. Turner	D. Green	11.04.2022
2.	Second issue – following design freeze in February 2023	T. Hicks A Blatnik R. Turner	R. Turner	D. Green	28.04.2023
3.	Third issue – updated following revised scheme design in October 2023	R. Turner H. Gillon	R. Turner	D. Green	24.10.2023
4.	Fourth issue – updated desk study records	H. Gillon	D. Green	D.Green	19.01.2024

Bristol
Cardiff
Edinburgh
Glasgow
London
Manchester
Sheffield

landuse.co.uk

Land Use Consultants Ltd
Registered in England
Registered number 2549296
Registered office:
250 Waterloo Road
London SE1 8RD

100% recycled paper

Contents

Chapter 1
Introduction

Terms of Reference

1.1 In April 2021, LUC was appointed by Oaklands Solar Farm Limited to provide ecological support to inform an application to construct and operate Oaklands Farm Solar Park, a proposed solar photovoltaic (PV) electricity generating facility, hereafter referred to as 'the Proposed Development.

1.2 The Phase 1 Habitat Survey, which is reported separately (**Appendix 6.5: Phase 1 Habitat Survey Report**) identified suitable habitat within the Proposed Development boundary for bats.

1.3 This report presents the baseline survey findings, in respect of bats, and has been prepared to inform proposals, including avoidance of impacts, mitigation requirements, and provision of appropriate enhancements.

1.4 The report has informed an Ecological Impact Assessment (EcIA) and forms part of the Environmental Statement (ES), in support of a planning application for the Proposed Development. Assessment of impacts, mitigation requirements and enhancement measures are provided as part of the ES Chapter and are not detailed within this report.

1.5 This report has been prepared for the exclusive use of Oaklands Solar Farm Limited. No part of this report should be considered as legal advice.

This report relates to Oaklands Farm and land within the grid cable route, including Park Farm, Fairfield Farm and Drakelow Power Station, hereafter referred to as 'the Site'.

Site Description

1.6 The Site is located to the east of Walton-on-Trent in South Derbyshire (OS Central Grid Reference: SK 23456 17577). The Site boundary comprised of land within Oaklands Farm, Park

Farm and Fairfield Farm land-holdings, which are currently used for arable crop production and grazing, and Drakelow National Grid Substation in the north.

1.7 The wider area comprised a mosaic of agricultural and pastoral land and woodland with Rosliston Forestry Centre located approximately 0.7km to the east and the River Trent located approximately 1.7km to the west of the Site boundary.

Proposed Development Description

1.8 The Proposed Development comprises a solar farm with an associated battery energy storage facility. The Proposed Development would have a generating capacity of over 50MW and would be situated on 191 hectares of land at Oaklands Farm to the south-east of Walton-on-Trent and to the west of Rosliston in south Derbyshire. The solar farm itself, comprising photovoltaic panel arrays, a central electricity substation and Battery Energy Storage System together with access, landscaping and other works would be located on 135 hectares of agricultural land currently in use for arable production and grazing. A high voltage underground electricity cable would then run through land at Fairfield Farm and Park Farm to the north to connect the solar farm to the national grid via an electricity substation located at the former Drakelow Power Station which sits south of Burton-upon-Trent. As the Proposed Development would be an onshore generating station with a generating capacity of over 50MW an application for a Development Consent Order is being made under the Planning Act 2008 to the Planning Inspectorate, for determination by the Secretary of State for Energy Security and Net Zero.

Previous Surveys at Oaklands Farm

1.9 A preliminary ground level roost assessment of trees at Oaklands Farm was undertaken in 2020 and reported separately[1] to inform this planning application. In line with advice given by CIEEM on the lifespan of ecological reports and surveys, an updated site walkover was undertaken on 30th March 2023, which confirmed that the findings of the ground level roost assessment are still considered valid in cognisance with advice provided by CIEEM. The full methodology and results of the original assessment are available within the previous report.

[1] Arcus, (2020). *Preliminary Ecological Appraisal: Oaklands Solar Farm and Grid Connection Route prepared on behalf of BayWar.e. UK Limited*

Policy and Legal Considerations

1.10 This baseline report has been prepared in cognisance with relevant legislation and policy. Further detail is provided in **Appendix A**; however, the following primary documents are of relevance:

- The Wildlife and Countryside Act of 1981[2].
- The Countryside and Rights of Way Act (CRoW Act), 2000[3].
- The Natural Environment and Rural Communities Act 2006 (NERC Act)[4].
- The Conservation of Habitats and Species Regulations 2017[5].
- The National Planning Policy Framework (2023)[6].
- South Derbyshire District Local Plan Part 1 (Adopted June 2016)[7].

[2] The Wildlife and Countryside Act 1981. Available at: https://www.legislation.gov.uk/ukpga/1981/69. [Accessed 29/09/23]

[3] The Countryside and Rights of Way Act (CRoW Act), 2000. Available at: https://www.legislation.gov.uk/ukpga/2000/37/contents [Accessed 29/09/23]

[4] The Natural Environment and Rural Communities Act 2006. Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents [Accessed 29/09/23]

[5] The Conservation of Habitats and Species Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents/made [Accessed 29/09/23]

[6] Department for Levelling Up, Housing and Communities 2023) The National Planning Policy Framework. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework—2 [Accessed 29/09/23]

[7] South Derbyshire District Council (2016) Local Plan Part 1 (Adopted June 2016). Available at: https://www.southderbyshire.gov.uk/our-services/planning-and-building-control/planning/planning-policy/local-plan/adopted-local-plan [Accessed 29/09/23]

- Department for Energy and Climate Change. 2011. Overarching National Policy Statement for Energy (EN-1)[8] and Draft NPS EN-1 for designation dated 2023[9].
- Department for Energy and Climate Change. 2011. National Policy Statement for Renewable Energy Infrastructure (EN-3)[10] and Draft NPS EN-3 for designation dated 2023[11].
- Department for Energy and Climate Change. 2011. National Policy Statement for Electricity Networks Infrastructure (EN-5)[12] and Draft NPS EN-5 for designation dated 2023[13].

[8] Department for Energy and Climate Change (2011) Overarching National Policy Statement for Energy. Available at: https://assets.publishing.service.gov.uk/media/5a79522de5274a2acd18bd53/1938-overarching-nps-for-energy-en1.pdf [Accessed 29/09/23]

[9] Department for Energy Security and Net Zero (2011) Draft Overarching National Policy Statement for Energy (EN-1). Available at: https://assets.publishing.service.gov.uk/media/655dc190d03a8d001207fe33/overarching-nps-for-energy-en1.pdf [Accessed 16/01/24]

[10] Department for Energy and Climate Change (2011) National Policy Statement for Renewable Energy Infrastructure (EN-3). Available at: https://assets.publishing.service.gov.uk/media/5a79c422e5274a684690bf53/1940-nps-renewable-energy-en3.pdf [Accessed 29/09/23]

[11] Department for Energy Security and Net Zero (2023) Draft National Policy Statement for Renewable Energy Infrastructure (EN-3). Available at: https://assets.publishing.service.gov.uk/media/655dc352d03a8d001207fe37/nps-renewable-energy-infrastructure-en3.pdf [Accessed 16/01/24]

[12] Department for Energy and Climate Change (2011) National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: https://assets.publishing.service.gov.uk/media/5a74877840f0b61938c7e2d9/1942-national-policy-statement-electricity-networks.pdf [Accessed 29/09/23]

[13] Department for Energy Security and Net Zero (2011) Draft National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: https://assets.publishing.service.gov.uk/media/655dc25e046ed400148b9dca/nps-electricity-networks-infrastructure-en5.pdf [Accessed 16/01/24]

Chapter 2
Methods

Desk Study

2.1 A review of biological records within 2km of Park Farm was undertaken as part of the Extended Phase 1 Habitat Survey, which included a review of bat records. This is reported separately in **Appendix 6.5: Phase 1 Habitat Survey Report**.

Field Survey

Habitat Appraisal

2.2 The Phase 1 Habitat Survey, which is reported separately (**Appendix 6.5: Phase 1 Habitat Survey Report**) identified suitable habitat within the Site boundary for bats.

Oaklands Farm

2.3 The suitability of the habitat at Oaklands Farm was informed by findings of a previous Preliminary Ecological Appraisal (PEA)[1], also report separately in **Appendix 6.3: Preliminary Ecological Appraisal: Oaklands Solar Farm and Grid Connection Route**

2.4 The habitat appraisals included consideration of all activity, such as foraging, commuting and roosting.

Preliminary Ground Level Roost Assessment

2.5 An initial preliminary ground level roost assessment of trees was undertaken on the following dates:

- Park Farm was undertaken on 21st April 2021 by Rebecca Turner BSc (Hons) MSc ACIEEM (NE Bat Level 4 Class Licence holder: 2019-43260-CLS-CLS) and Tom Hicks BSc (Hons) ACIEEM. Due to changes in the proposals, a further preliminary ground level roost assessment of additional trees at Park Farm was undertaken on 13th September 2021 by Tom Hicks and Jasmine Bernard BSc (Hons), Qualifying Member of CIEEM. This included

an assessment of trees that are no longer included within the application boundary and as such will not be affected by the proposed scheme.

- Fairfield Farm was undertaken on 26th April 2022 by Tom Hicks and Rosalind Warwick-Haller.
- Drakelow Power Station was undertaken on 11th July 2022 by Tom Hicks. Due to changes in the proposals, a further preliminary ground level roost assessment of additional trees at Drakelow Power Station was undertaken by Rebecca Turner and Holly Gillon MSci (Hons), Qualifying Member of CIEEM on 6th September 2023.

Oaklands Farm

2.6 The preliminary ground level roost assessment of trees at Oaklands Farm was informed by findings of a previous PEA[1].

2.7 The surveys comprised an assessment of trees for their suitability to support roosting bats, including a detailed search for external features with potential to support access points and roosting places suitable for bats, and to locate evidence of bat activity, such as droppings, staining, feeding remains and live/dead specimens.

2.8 Trees were classified as to their Bat Roost Suitability (BRS), using the criteria provided in **Table 2.1**, with due consideration to good practice guidance[14,15,16].

2.9 Maps of assessed trees with BRS could be found in **Figures 6.6.1, and 6.6.2**, in **Appendix B**.

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

[15] Mitchell-Jones, A.J. and McLeish, A.P. (2004). Bat Workers' Manual. 3rd Edition. Peterborough: Joint Nature Conservation Committee (JNCC).

[16] Andrews H. (2018). *Bat Roosts in Trees - A Guide to Identification and Assessment for Tree-care and Ecology professionals: Bat Tree Habitat Key.* Exeter: Pelagic Publishing.

Table 2.1: Bat Roost Suitability (BRS) Categories

BRS Category	Roosting Habitat Features	Survey Requirement
Negligible	Negligible habitat features likely to support roosting, commuting or foraging bats.	No surveys required
Low	Structures in this category offer one or more potential roost sites for individual, opportunistically roosting bats. These sites do not offer the space, shelter or appropriate conditions to support large numbers of bats or maternity roosts. Tree in this category include those of sufficient size and age to support suitable roosting features, but none are visible from the ground.	One dusk or dawn survey required for structures. No surveys required for trees.
Moderate	Structures and trees in this category offer one or more roost site that, due to their space, shelter or conditions, offer roosting potential for a range of species. Roosts may be more permanent, rather than opportunistic. Small maternity roosts of common species may form in one of these roost sites.	One dusk and one dawn survey required for both structures and trees. Tree-climbing may be an appropriate alternative to dusk and dawn surveys.
High	Structures and trees in this category have one or more potential roost sites that are suitable for large number of bats. Roosts are likely to be permanent and include maternity roosts. Potential roost sites exist for a wide	Three surveys, including both dusk and dawn elements. Tree-climbing may be an appropriate

BRS Category	Roosting Habitat Features	Survey Requirement
	range of species or species of particular conservation interest.	alternative to dusk and dawn surveys.

Emergence/Re-entry Surveys

2.10 Emergence/re-entry surveys of trees features identified as having BRS, and which were likely to be affected by the proposed development, were undertaken to determine the presence or likely absence of bat roosts. This included trees at Oaklands Farm: T68, and T9[17], T22[17], T24[17] and T29[17]. As part of this suite of surveys, emergence/re-entry surveys were also completed for trees G22 - a, G22 – b, and T40 at Park Farm. However, these trees are now located outside of the application boundary and as such will not be affected by the proposed scheme.

2.11 All surveys were undertaken between July and September 2021, to coincide with the optimal season for bat roost surveys. Surveys were completed during suitable weather conditions and in line with good practice guidance[14]. Emergence surveys commenced at least 15 minutes prior to sunset and continued until at least 1.5 hours after sunset. Re-entry surveys commenced 1.5 hours before sunrise and lasted until 15 minutes after sunrise or until activity ceased.

2.12 Surveyors carried Bat Box Duet heterodyne detectors and Anabat Express frequency division detectors. Bat sonograms were logged for subsequent analysis and species identification using Analook software (if required).

2.13 Survey dates, timing and environmental conditions during the emergence/re-entry surveys are provided in **Table C.1** and **C.3, Appendix C,** for Park Farm and Oaklands Farm, respectively**.**

[17] Trees previously assessed by Arcus and using their existing tree reference numbers. Tree references and full details are presented within **Appendix 6.3: Preliminary Ecological Appraisal.**

Nocturnal Bat Activity Surveys – Transect

2.14 Activity transect surveys were carried out to provide a 'snapshot' of bat activity across the Site. Surveys were undertaken in May, June and September 2021 at Park Farm and in early and late August and September 2021 at Oaklands Farm. Surveys in May, June and August were completed at dusk and in September prior to dawn.

2.15 All transects were walked at a suitably slow pace along the transect route. Surveyors recorded bat activity, noting time, species, direction of flight and behaviour and any other incidental information.

2.16 Surveyors carried Bat Box Duet heterodyne detectors and Anabat Express frequency division detectors. Bat sonograms were logged for subsequent analysis and species identification using Analook software (if required).

2.17 Dusk transects began at sunset and continued until two hours after sunset. Dawn transects began two hours before sunrise and ended until sunrise (or until activity ceased). Transects were completed during suitable weather conditions for bats (dry and mild).

2.18 A map showing transect routes is provided in **Figure 6.6.3** and **Figure 6.6.4**, **Appendix D,** for Park Farm and Oaklands Farm, respectively. Detailed survey timings and weather conditions are provided in **Table D.1** and **Table D.3, Appendix D,** for Park Farm and Oaklands Farm, respectively.

Nocturnal Bat Activity Surveys – Static Monitoring

2.19 To provide additional data on bat activity across the Site, a Static Monitoring Point (SMP) survey was carried out in May, June and September 2021 at Park Farm and in early and late August and September 2021 at Oaklands Farm.

2.20 SMP locations were chosen to incorporate strategic features in the landscape likely to be of greatest importance for commuting and foraging across the Site and that would be affected by proposed development. Song Meter SM4BAT FS full spectrum detectors were left out for five consecutive nights to collect sufficient data for analysis. Bat sonograms were logged for subsequent analysis and species identification using Kaleidoscope software.

2.21 SMP locations are shown in **Figures 6.6.9** and **6.6.10, Appendix E** and are summarised below in **Table 2.2.** Detailed dates and weather conditions are provided in **Table E.1** and **E.3, Appendix E,** for Park Farm and Oaklands Farm, respectively.

Table 2.2: Static Monitoring Point Locations

Static Monitoring Point	Habitat Description	Grid Reference
Park Farm		
SMP-1	Hedgerow between unnamed watercourse corridor and woodland in the northwest of Park Farm.	SK 2360 1841
SMP-2	Unnamed watercourse corridor along western boundary of Park Farm.	SK 2352 1825
SMP-3	Hedgerow along southern boundary of Park Farm.	SK 2366 1784
SMP-4	Hedgerow between two woodland parcels in east of Park Farm.	SK 2407 1801
Oaklands		
SMP-1	Woodland block adjoining hedgerows in the south of Oaklands Farm.	SK 2321 1619
SMP-2	Unnamed watercourse corridor in the north of Oaklands Farm.	SK 2346 1726
SMP-3	Scrub adjoining hedgerows in the west of Oaklands Farm.	SK 2264 1679

Limitations

2.22 It should be noted that the bat activity survey period typically extends April to September. The surveys were scheduled to make best use of the season following appointment. Whilst no

'Spring' survey was undertaken at Oaklands, there is no significant constraint given the scale of the overall data collected.

Transect Surveys

2.23 Due to health and safety concerns in relation to cattle, transect routes had minor variations between seasons. This is not considered a significant limitation given the alternative routes predominately covered the same target features.

Static Monitoring

2.24 An equipment error effecting SMP-2 at Park Farm resulted in three hours of data being corrupted on 27th May 2021. Given the scale of the overall data collected this is not considered a significant limitation.

Analysis Limitations

2.25 The data collected on the Anabats represents single bat call registrations. Registrations cannot be used to estimate the number of bat passes and it cannot always be ascertained if multiple passes in an evening represent multiple bats, or a single bat recorded repeatedly. Given the limitations to the data, caution is taken when reviewing the data and high numbers of bat passes are not automatically assumed to demonstrate use of a site by a large bat population.

2.26 The analysis of bat detector calls can be prone to subjectivity, but has been undertaken by experienced surveyors, following appropriate guidance and training in bat call analysis. Bat species identification was interpreted using known call parameters and existing literature[18] on the ecology of UK bat species, including distribution, range, habitat associations and behavioural characteristics, in addition to professional judgement. Every attempt was made to identify bats to species level. However, it is not always possible to identify some *Myotis, Pipistrellus and Nyctalus* bats to species level. For example, differentiating between the echolocation calls of the common pipistrelle (which echolocate at a peak frequency of approximately 45kHz) and the soprano pipistrelle (which peaks at approximately 55kHz) is not

[18] Russ J. (2012). *British Bat Calls: A Guide to Species Identification*. Pelagic Publishing, Exeter.

always possible where recordings peak at the intermediate frequency of 50kHz. This is a widely accepted limitation and in such cases these passes are therefore classified at the Genus level only (i.e. *Pipistrellus* sp., *Myotis* sp., or *Nyctalus* sp.).

2.27 Particular care was taken when identifying members of the *Myotis* genus due to significant overlaps in their call parameters. These identifications should be considered as *Myotis* calls with the characteristics of the named species, based on comparison with a known call sequence from a bat flying in a similar situation, and should therefore be treated as likely, rather than definitive identifications.

General Limitations

2.28 Due to changes in the scheme design since the completion of the surveys in 2021, the bat surveys at Park Farm included an additional area of the landholding, which is no longer included within the application boundary. This has resulted in a reduction of the area to be affected by the proposed scheme and for the proposals to only include the installation of the Grid cable route rather than the installation of solar arrays. Although, the survey results include areas that are no longer within the scheme design as this information provides valuable contextual information of habitat suitability and use in the local area. This is not considered a constraint as the impacts proposed have significantly reduced in this area of the Site.

2.29 It is important to note that ecological surveys provide information regarding the ecological baseline of a Site for only a ‘snapshot’ of time. Therefore, if significant time lapses between the surveys and the further development or implementation of proposals, updated ecological surveys may be required to identify any change in the baseline, such as natural succession of habitats, or local extinction or colonisation of species. Therefore, if a year lapses between the progressions of development proposals, it is recommended that ecological advice is sought regarding the applicability of the survey findings, in cognisance with advice given by CIEEM on the lifespan of ecological reports and surveys[19].

[19] CIEEM (2019) Advice note on the Lifespan of Ecological Reports and Surveys

Chapter 3
Results

Desk Study

3.1 Full details of the review of biological records are provided in **Appendix 6.5: Phase 1 Habitat Survey Report**. A summary of the desk study records is provided within **Table 3.1** below. In addition, a large number of bat sightings were recorded from transect surveys On Site in 2021. These included sightings of brown long-eared (*Plecotus auratus*); pipistrelle species (*Pipistrellus sp.*); soprano pipistrelle (*Pipistrellus pygmaeus*); myotis species (*Myotis sp.*); Nathusius' pipistrelle (*Pipistrellus nathusii*); serotine (*Eptesicus serotinus*); Leisler's bat (*Nyctalus leisleri*); and whiskered bat (*Myotis mystacinus*).

Table 3.1: Biological Records Summary

Record Type	Species	Nearest Record and Date
Roost	Brown long-eared	1.5km southeast in 2018
Roost	Pipistrelle species	0.9km east in 2001
Roost	Soprano pipistrelle	1.5km south east in 2018
Sighting	Daubenton's (*Myotis daubentoniid*)	1.0km northwest in 2008
Roost	Whiskered bat	1.3km west in 2021
Sighting	Brandt's bat (*Myotis brandtii*)	1.2km northwest in 2015
Roost	Noctule (*Nyctalus noctule*)	0.8km east in 2001
Roost	Common pipistrelle (*Pipistrellus pipistrellus*)	0.4km east in 2001

Previous Preliminary Ground Level Roost Assessment at Oaklands Farm

3.2 The previous surveys at the Site identified 18 trees with BRS. The surveys concluded that the mosaic of habitats such as the species-rich hedgerows with trees, small areas of woodland and running ditches have the potential to support foraging and commuting bats. The full report is presented in **Appendix 6.3: Preliminary Ecological Appraisal: Oaklands Solar Farm and Grid Connection Route** in **Volume 3** of the ES.

Field Survey

Habitat Appraisal

Park Farm / Fairfield Farm

3.3 The vast majority of Park Farm and Fairfield Farm was of low value to bats, consisting of intensively managed improved grassland and arable fields offering limited foraging and roosting opportunities. However, opportunities for bats were recorded at periphery habitats as follows:

- Woodland suitable for foraging, commuting and roosting.
- Hedgerows suitable for foraging and commuting.
- Treelines suitable for foraging, commuting and roosting.
- Scattered trees suitable for roosting.
- Open water and unnamed watercourse corridor suitable for foraging and commuting, including by specialist species such as Daubenton's *Myotis daubentonii*. Due to the size and the dense coverage of scrub along this water corridor the value of this habitat for bat, such as Daubenton's is considered to be limited.

3.4 Given this information, it was determined that that the Park Farm and Fairfield Farm area was of low suitability for commuting and foraging bats. Therefore, seasonal bat activity surveys were undertaken in spring, summer and autumn in line with best practice guidelines[14] to inform proposals to include solar panels as part of the previous iteration of the design. Since these surveys have been completed the design has been revised to include a smaller area of Park Farm, which will include the installation of the Grid cable route and a temporary access track.

Drakelow Power Station

3.5 Drakelow Power Station supported a mosaic of woodland, scrub, semi-improved grassland and standing water, including a pond and two ditches, which provided high value opportunities for bats to roost, forage and commute. Opportunities for bats included:

- Woodland suitable for foraging, commuting and roosting.
- Dense scrub suitable for foraging and commuting.
- Rough semi-improved grassland suitable for foraging.
- Open water suitable for foraging, including by specialist species such as Daubenton's *Myotis daubentonii*.
- Structures suitable for roosting.

3.6 The wider landscape was also considered to support good habitat for bats including large areas of woodland, grassland, wetland, lakes and rivers.

Oaklands Farm

3.7 Oaklands Farm supported similar habitats to Park Farm and was also considered of low suitability for commuting and foraging bats with habitats of higher suitability restricted to linear hedgerows, tree lines woodlands and isolated field trees. Therefore, seasonal bat activity surveys were undertaken in spring, summer and autumn in line with best practice guidelines[14].

Preliminary Ground Level Roost Assessment

Drakelow Power Station

3.8 Within the Site boundary at Drakelow Power Station, one confirmed roost, two high BRS and three moderate BRS trees were identified, as shown in **Table 3.2** below. Numerous low BRS trees were also identified, with features including lifted back associated with the Scot's pine, and occasional exposed holes on young sycamore, which were considered to have limited value for bats to roost. Full survey data is provided within **Table B.1, Appendix B.** A plan showing the individual tree locations is provided within **Figure 6.6.1, Appendix B.**

Table 3.2: Summary of Preliminary Ground Level Roost Assessment (Drakelow Power Station)

Tree ID	Species	Description of Features	Bat Roost Suitability
T173	Acer sp.	Tree is dead with a knothole and two large cavities on the main limb towards the top, on the northern and northwestern aspects respectively. Cavities may connect within the trunk.	High
T175	Beech	Large crevice approximately 2m along the southernmost limb. Crevice is deep and extends, likely providing some shelter.	Moderate
T177	Sycamore	Long wound split on the south eastern aspect of the trunk starting at the base, with some heartwood exposed. Wound inspected using an endoscope, continues northwards within trunk but due to limited depth roosting potential limited to smaller numbers of bats.	Moderate
T178	Sycamore	Three knot hole features on the south western aspect that likely all link within a potentially hollow trunk. Features located above point where limbs split at approximately 20m height. Observed from ground with good potential for aerial inspection via tree climbing.	Moderate
T180	Sycamore	Two large rot holes on the southern aspect of the trunk. Lower cavity accessible form ground level and endoscoped, with decay blocking northern portion of cavity. Higher cavity (~10m) has potential to extend further north.	High
T184	Sycamore	Single bat, likely *Myotis sp.* found roosting within large wound split along southern eastern aspect of trunk, split	Confirmed Roost

Tree ID	Species	Description of Features	Bat Roost Suitability
		down to base. Bat found within top of wound further into the cavity.	

Park Farm

3.9 Five trees were considered to have moderate or high BRS at Park Farm, as shown summarised in **Table 3.3.** 25 additional trees were considered to have low BRS. These trees were located within or immediately adjacent to the Site boundary.

3.10 A plan showing individual tree locations is provided within **Figure 6.6.2, Appendix B.** Full survey data is provided within **Table B.1, Appendix B.**

Table 3.3: Summary of Preliminary Ground Level Roost Assessment (Park Farm)

Tree ID	Species	Description of Features	Bat Roost Suitability
G5	Horse chestnut	Knot hole extending to sheltered cavity 3m high on west aspect. Hazard beam on higher branch on north aspect.	High
G8	Horse chestnut	Canker 10m on north aspect which appears to extend to sheltered cavity. Knot hole 8m on south aspect.	High
Adjacent to Site boundary			
G4 - k	Lime	Dead branch with knot holes and decay on west aspect.	Moderate
T9	Lime	Knot hole 6m high on east aspect. Rot hollow 7m high on north aspect.	Moderate
T10	Horse chestnut	Large tear out wound extending to sheltered cavity 5m high on north aspect. Also several knot holes on central trunk.	High

3.11 During the site visit in 2021, an additional five trees were considered to have moderate or high BRS at Park Farm and eleven additional trees were considered to have low BRS. Due to the changes in proposed plans, all of those trees were excluded from the site boundary and therefore only trees that are outside but close to the Site boundary were taken into consideration within the assessment of impacts, avoidance and mitigation plans.

Fairfield Farm

3.12 Six trees were considered of moderate or high BRS, as shown in **Table 3.4,** and two of low BRS**.** Four of these were located adjacent to the Site boundary with only T26 and T58 within the boundary itself.

3.13 A plan showing individual tree locations is provided within **Figure 6.6.1, Appendix B.** Full survey data is provided within **Table B.2, Appendix B.**

Table 3.4: Summary of Preliminary Ground Level Roost Assessment (Fairfield Farm)

Tree ID	Species	Description of Features	Bat Roost Suitability
G25 - a	Ash	Moderate crack with decay 5m high on east aspect.	Moderate
T58	Ash	Dead tree with high ivy coverage.	Moderate
Adjacent to Site boundary			
G25 - b	Willow	Fissure on branch 6m high on southwest aspect.	Moderate
G25 - c	Willow	Lifted bark plate and knothole 4m high on southeast aspect.	Moderate
T49	Ash	Several large rot hollows resulting from limb tear out and two knot holes.	High
T56	Oak	Limb tear outs with cracked bark and lifted bark plates on north aspect.	Moderate

Oaklands Farm

3.14 The previous surveys conducted by Arcus in 2020 identified a total of 33 trees at Oaklands Farm and three trees in the cable route corridor as having BRS. This included one tree considered of high BRS, 14 trees were considered of moderate BRS and 21 consider of low BRS. Further detail of this is presented in the previous report[1]. The tree ID numbers for those trees identified by Arcus have been retained as detailed within the previous report for cross-reference, and as such do not correspond to the numbering used in **Appendix 6.14: Arboricultural Survey Report**.

3.15 In addition to the previous surveys at the Site a further one tree was considered of high BRS, as shown in **Table 3.5,** below**.**

3.16 A plan showing individual tree locations, including trees identified in the previous report[1],is provided within **Figure 6.6.2, Appendix B.** Full survey data is provided within **Table B.4, Appendix B.** Four of these trees, as detailed in the following section, were subject to further assessment and survey.

Table 3.5: Summary of Preliminary Ground Level Roost Assessment (Oaklands Farm)

Tree ID	Species	Description of features	Bat Roost Suitability
T68	Ash	Limb tears at two locations at 3m and 4m on southern aspect, which extended upwards.	High

Emergence/Re-entry Surveys

3.17 No bat roosts were recorded during the emergence/re-entry surveys. Surveys were undertaken for:

- Trees G22 – a, G22 – b, and T40 at Park Farm. *
- Trees at Oaklands Farm: T68, and Arcus trees T9, T22, T24 and T29.

*As detailed above, the emergence/re-entry surveys were undertaken for trees at Park Farm to inform the previous iteration of the scheme design. Due to the changes in proposed plans, all of

those trees were excluded from the site boundary and therefore only trees that are outside though close to the Site boundary were taken into consideration for mitigation plans.

3.18 Full survey data is provided within **Tables C.2 and C.4**, **Appendix C.** Maps showing surveyed trees are provided within **Figures 6.6.1** to **6.6.2** and in **Appendix C,** respectively.

Transect Surveys

3.19 Full transect survey data is provided within **Tables D.2** and **D.4**, **Appendix D**. Maps showing the combined bat passes and relative density of bat passes, are provided within **Figures 6.6.5** to **6.6.8** and in **Appendix D**.

Species Composition

3.20 **Table 3.6** summaries the species which were recorded during transect surveys:

Table 3.6: Species Composition During Transect Surveys (Park Farm and Oaklands Farm)

Species	Park Farm	Oaklands Farm
Common[20]		
Common pipistrelle *Pipistrellus pipistrellus*	X	X
Soprano pipistrelle *Pipistrellus pygmaeus*	X	X
Brown long-eared bat *Plecotus auritus*	X	X
Rarer[20]		
Nathusius pipistrelle *Pipistrellus nathusii*	X	X
Unidentified *Myotis* sp.	X	X
Noctule *Nyctalus noctula*	X	X

[20] Wray, S., Wells, D., Long, E. and Mitchell-Jones, A. (2010). *Valuing Bats in Ecological Impact Assessment*. In Practice, 70: 23-25.

Species	Park Farm	Oaklands Farm
Leisler's *Nyctalus leisleri*		X
Serotine *Eptesicus serotinus*		X

Park Farm

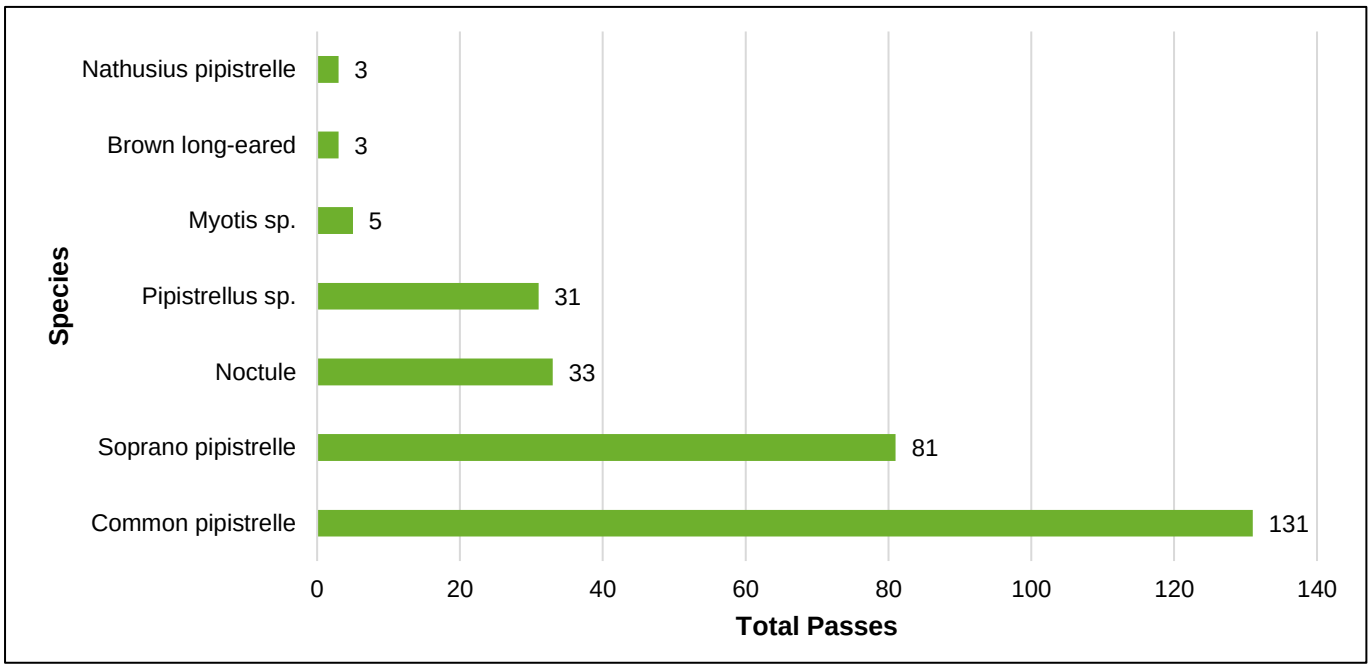
3.21 Common pipistrelle and soprano pipistrelle and were the most frequently recorded species, accounting for 45.6% and 28.2% of the total calls respectively. Accumulatively, these two species comprised 84.7% of the total bat passes. Noctule was the third most frequent species and accounted for 11.5% of the total bat passes recorded. *Myotis* sp., brown long-eared and Nathusius pipistrelle comprised 1.7% 1.0% and 1.0% of total bat passes respectively.

3.22 The species composition recorded across all transect surveys is summarised in **Table 3.7** and **Figure 3.1** below.

Table 3.7: Species Composition Recorded During All Transect Surveys (Park Farm)

Bat Species / Group	Total Bat Passes	% of Total Bat Passes
Common pipistrelle	131	45.6%
Soprano pipistrelle	81	28.2%
Noctule	33	11.5%
Pipistrellus sp.	31	10.8%
Myotis sp.	5	1.7%
Brown long-eared	3	1.0%
Nathusius pipistrelle	3	1.0%

Figure 3.1: Total Bat Passes by Species Recorded During All Transect Surveys (Park Farm)



Oaklands Farm

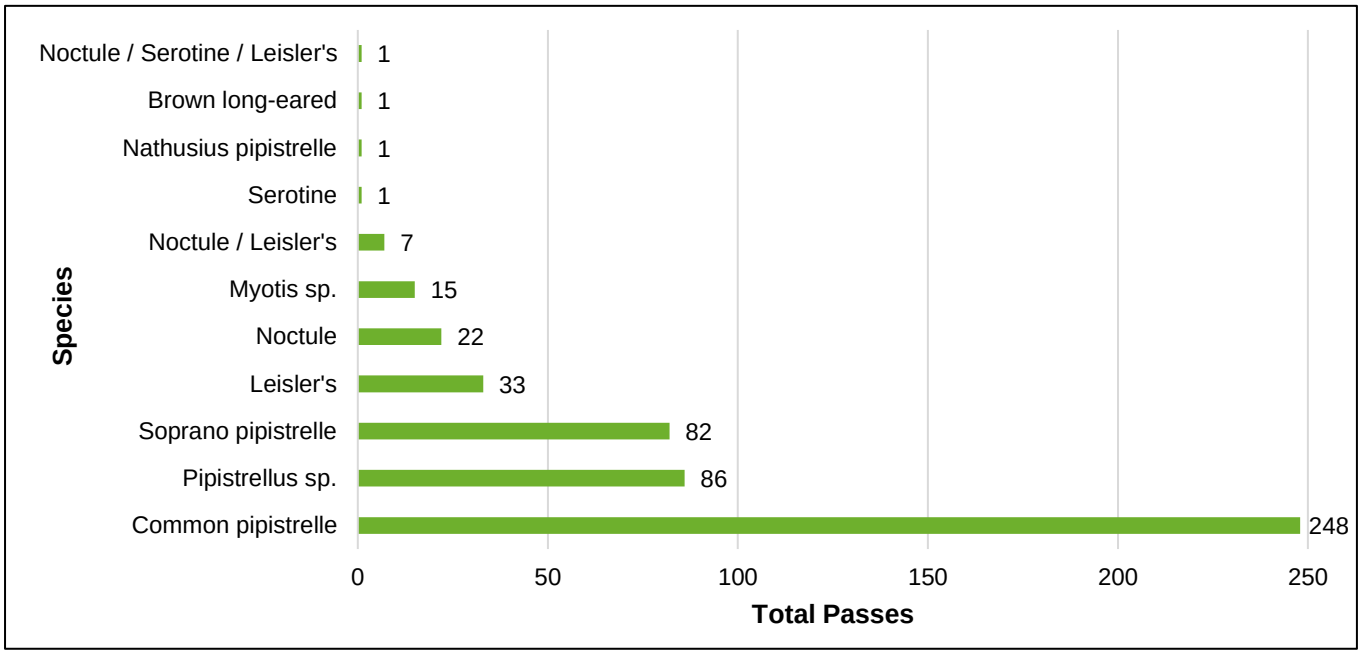
3.23 Common pipistrelle and soprano pipistrelle and were the most frequently recorded species, accounting for 49.9% and 17.3% of the total calls respectively. Accumulatively, these two species comprised 66.4% of the total bat passes. Leisler's was the third most frequent species and accounted for 6.6% of the total bat passes recorded. Noctule and *Myotis* sp. comprised 4.4% and 3.0% of total bat passes respectively. All other species recorded accounted for less than 1% of total bat passes.

3.24 The species composition recorded across all transect surveys is summarised in **Table 3.8** and **Figure 3.2** below.

Table 3.8: Species Composition Recorded During All Transect Surveys (Oaklands Farm)

Bat Species / Group	Total Bat Passes	% of Total Bat Passes
Common pipistrelle	248	49.9%
Pipistrellus sp.	86	17.3%
Soprano pipistrelle	82	16.5%
Leisler's	33	6.6%
Noctule	22	4.4%
Myotis sp.	15	3.0%
Noctule / Leisler's	7	1.4%
Serotine	1	0.2%
Nathusius pipistrelle	1	0.2%
Brown long-eared	1	0.2%
Noctule / Serotine / Leisler's	1	0.2%

Figure 3.2: Total Bat Passes by Species Recorded During All Transect Surveys (Oaklands Farm)



Variation Between Transects

Spatial Interpretation

Park Farm

3.25 **Figure 6.6.5 and 6.6.6, Appendix D** indicates that there were highest density of bat activity were noted along the central hedgerow between an area of woodland and scrub. Bat density was also relatively high along the woodland edge to the east and unnamed watercourse corridor to the west. Bat density elsewhere was relatively sparse.

Oaklands Farm

3.26 **Figure 6.6.7 and 6.6.8, Appendix D** indicates that there were highest densities of bat activity recorded along the south segment of Transect A and the southeast segment of Transect C. Bat density was also relatively high along the western segment of Transect B. Bat density elsewhere was relatively sparse.

Activity and Seasonal Changes

Park Farm

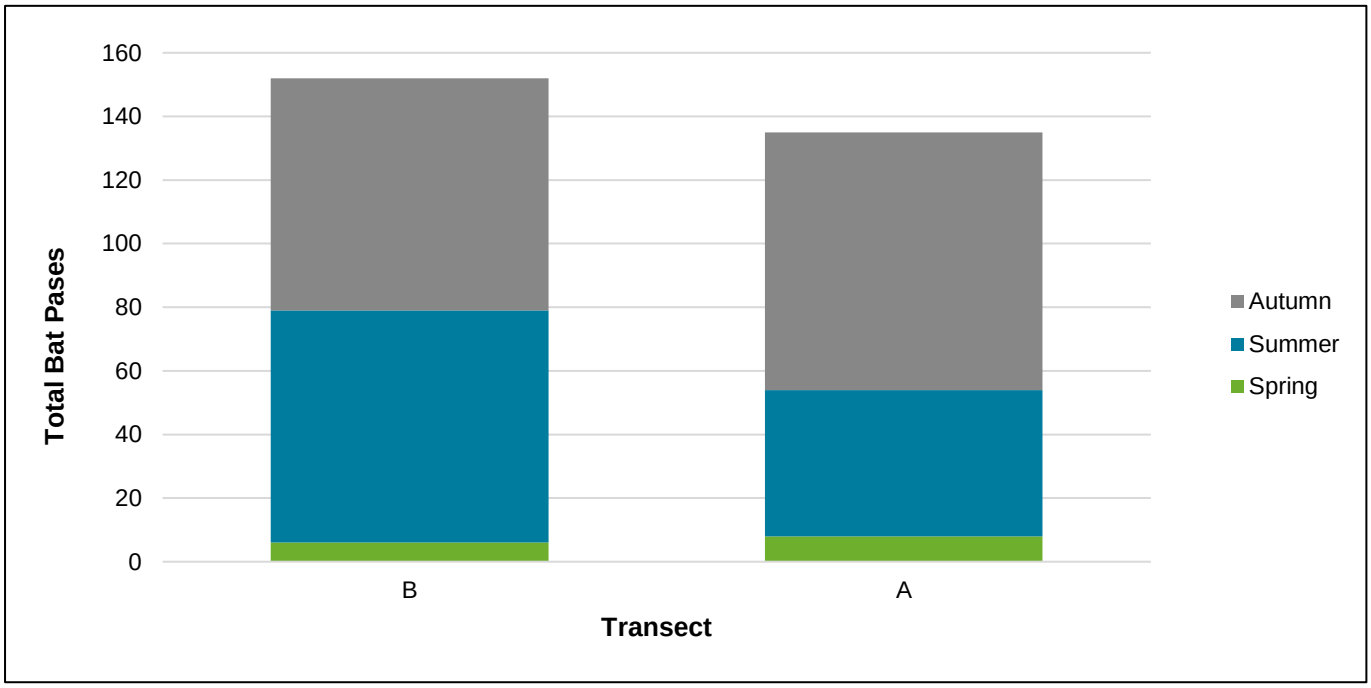
3.27 The highest levels of bat activity were recorded on Transect B, which accounted for 53.0% of the total bat passes. Activity peaked in Autumn for Transect A whereas activity peaked in Summer/Autumn for Transect B (equal activity).

3.28 Variation in activity and seasonal changes are summarised in **Table 3.9** and **Figure 3.3** below.

Table 3.9: Total Bat Passes (including percentages) for Each Transect Route (Park Farm)

Transect	Total Bat Passes				% of Total Bat Passes			
	Spring	Summer	Autumn	Grand Total	Spring	Summer	Autumn	Grand Total
B	6	73	73	152	2.1%	25.4%	25.4%	53.0%
A	8	46	81	135	2.8%	16.0%	28.2%	47.0%

Figure 3.3: Total Bat Passes for Each Transect Across the Sample Period (Park Farm)



Oaklands Farm

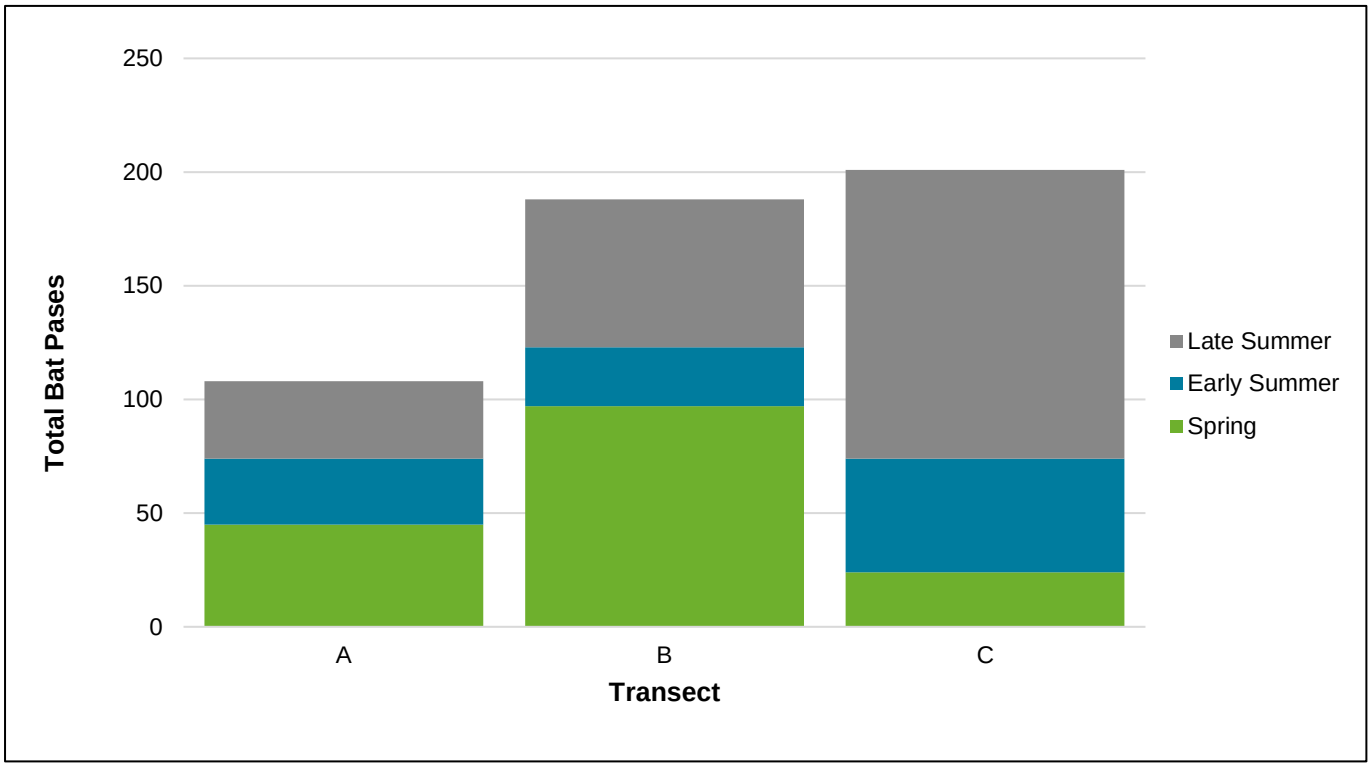
3.29 The highest levels of bat activity were recorded on Transect C, which accounted for 40.4% of the total bat passes. Activity peaked in Early Summer for Transects A and B whereas activity peaked in Autumn for Transect C.

3.30 Variation in activity and seasonal changes are summarised in **Table 3.10** and **Figure 3.4** below.

Table 3.10: Total Bat Passes (including percentages) for Each Transect Route (Oaklands Farm)

Transect	Total Bat Passes				% of Total Bat Passes			
	Early Summer	Late Summer	Autumn	Grand Total	Early Summer	Late Summer	Autumn	Grand Total
A	45	29	34	108	9.1%	5.8%	6.8%	21.7%
B	97	26	65	188	19.5%	5.2%	13.1%	37.8%
C	24	50	127	201	4.8%	10.1%	25.6%	40.4%

Figure 3.4: Total Bat Passes for Each Transect Across the Sample Period (Oaklands Farm)



Species Richness

Park Farm

3.31 Species richness was equal for both transects with at least five species recorded. The species richness for each Transect is shown in **Table 3.11** below**.**

Table 3.11: Species Richness for Each Transect Route (Park Farm and Oaklands Farm)

Transect	Species Richness (all species)	Species Richness (Rarer species)
Park Farm		
A	5+	3+
B	5+	3+
Oaklands Farm		
A	6+	4+
B	5+	3+
C	8+	5+

Oaklands Farm

3.32 Species richness was highest for Transect C with at least eight species recorded. All transects recorded at least five species. The species richness for each Transect is shown in **Table 3.11** above.

Rarer[20] Species

Park Farm

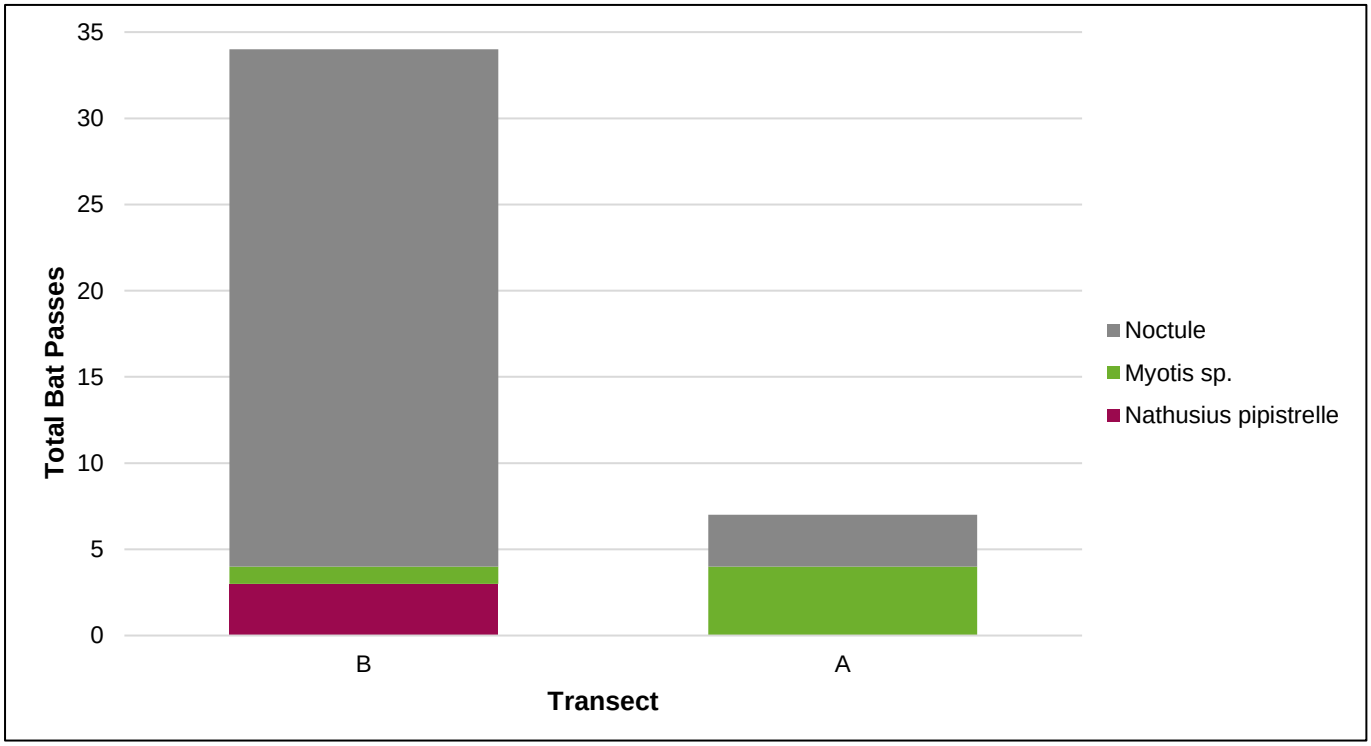
3.33 Species richness of Rarer species was equal for both transects with at least three species recorded (Nathusius' pipistrelle, *Myotis* sp. and noctule). Species richness for Rarer species is provided in **Table 3.11** above**.**

3.34 Transect B had the highest activity of Rarer species which accounted for 82.9% of the total passes. The majority of passes by Rarer species for Transect B relate to Noctule. Transect data in relation to Rarer species is summarised in **Table 3.12** and **Figure 3.5** below.

Table 3.12: Total Bat Passes of Rarer[20] Species for Each Transect

Transect	Nathusius' pipistrelle	*Myotis* sp.	Noctule	Grand Total	% of Total
B	3	1	30	34	82.9%
A		4	3	7	17.1%

Figure 3.5: Total Bat Passes of Rarer[20] Species for Each Transect (Park Farm)



Oaklands Farm

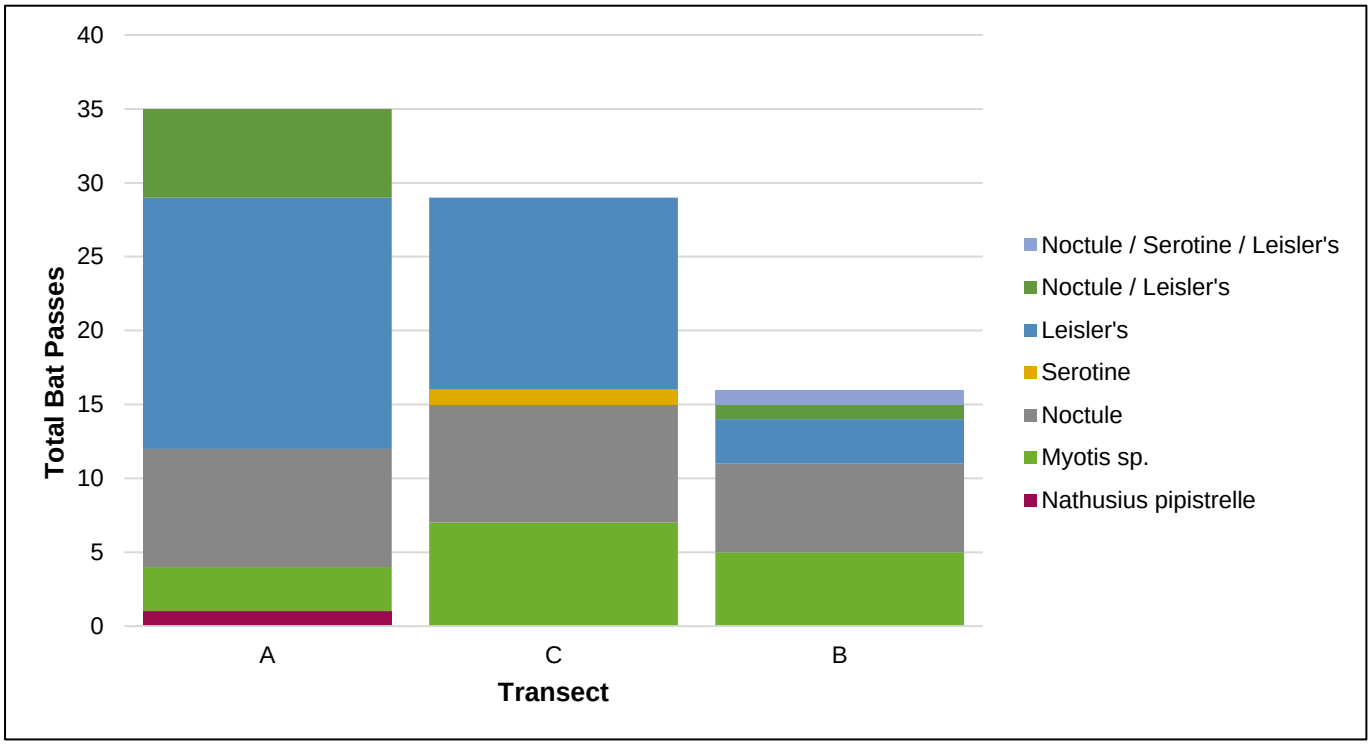
3.35 Transect C had the highest species richness of Rarer species with at least recorded (Nathusius' pipistrelle, *Myotis* sp., noctule, Leisler's and serotine). Species richness for Rarer species is provided in **Table 3.11** above**.**

3.36 Transect A had the highest activity of Rarer species which accounted for 43.8% of the total passes. The majority of passes by Rarer species for Transect A relate to Leisler's. Transect data in relation to Rarer species is summarised in **Table 3.12** and **Figure 3.6** below.

Table 3.13: Total Bat Passes of Rarer[20] Species for Each Transect (Oaklands)

Transect	Nathusius pipistrelle	Myotis sp.	Noctule	Serotine	Leisler's	Noctule / Leisler's	Noctule / Serotine / Leisler's	Grand Total	% of Total
A	1	3	8		17	6		35	43.8%
C		7	8	1	13			29	36.3%
B		5	6		3	1	1	16	20.0%

Figure 3.6: Total Bat Passes of Rarer[20] Species for Each Transect (Oaklands Farm)



Other Observations

3.37 At least five bats (common and soprano pipistrelle) were recorded having a social interaction in the southeast of Transect C at Oaklands Farm during the Autumn survey (grid reference: SK 2343 1688).

Static Monitoring

3.38 Full SMP data is provided within **Tables E.2** and **E.4**, **Appendix E**.

Species Composition

3.39 **Table 3.14** summaries the species which were recorded during static monitoring surveys across all of the SMPs.

Table 3.14: Species Composition During Static Monitoring Surveys (Park Farm and Oaklands Farm)

Species	Park Farm	Oaklands Farm
Common[20]		
Common pipistrelle *Pipistrellus pipistrellus*	X	X
Soprano pipistrelle *Pipistrellus pygmaeus*	X	X
Brown long-eared bat *Plecotus auritus*	X	X
Rarer[20]		
Nathusius pipistrelle *Pipistrellus nathusii*	X	X
Unidentified *Myotis* sp.	X	X
Daubenton's *Myotis daubentonii*	X	
Noctule *Nyctalus noctula*	X	X
Leisler's *Nyctalus leisleri*	X	X
Serotine *Eptesicus serotinus*	X	X

Park Farm

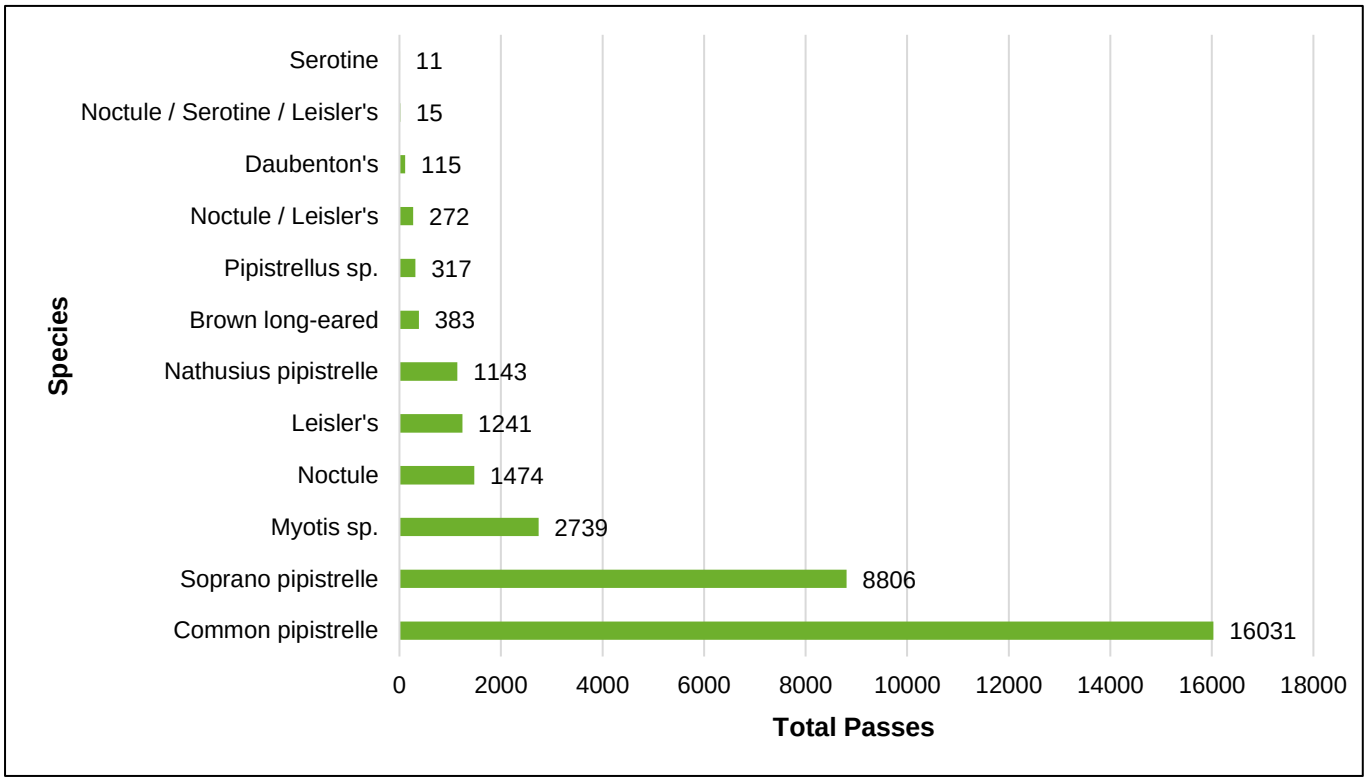
3.40 Common pipistrelle and soprano pipistrelle and were the most frequently recorded species, accounting for 49.3% and 27.1% of the total calls respectively. Accumulatively, these two species comprised 77.3% of the total bat passes. *Myotis* sp. was the third most frequent species and accounted for 8.4% of the total bat passes recorded. Noctule, Leisler's, Nathusius pipistrelle and brown long-eared comprised 4.5%, 3.8%, 3.5% and 1.2% of total bat passes respectively. All other species recorded accounted for less than 1% of total bat passes.

3.41 The species composition recorded across all transect surveys is summarised in **Table 3.15** and **Figure 3.7** below.

Table 3.15: Species Composition Recorded During Static Monitoring Surveys(Park Farm)

Bat Species / Group	Total Bat Passes	% of Total Bat Passes
Common pipistrelle	16031	49.3%
Soprano pipistrelle	8806	27.1%
Myotis sp.	2739	8.4%
Noctule	1474	4.5%
Leisler's	1241	3.8%
Nathusius pipistrelle	1143	3.5%
Brown long-eared	383	1.2%
Pipistrellus sp.	317	1.0%
Noctule / Leisler's	272	0.8%
Daubenton's	115	0.4%
Noctule / Serotine / Leisler's	15	< 0.1%
Serotine	11	< 0.1%

Figure 3.7: Total Bat Passes by Species Recorded During Static Monitoring Surveys (Park Farm)



Oaklands Farm

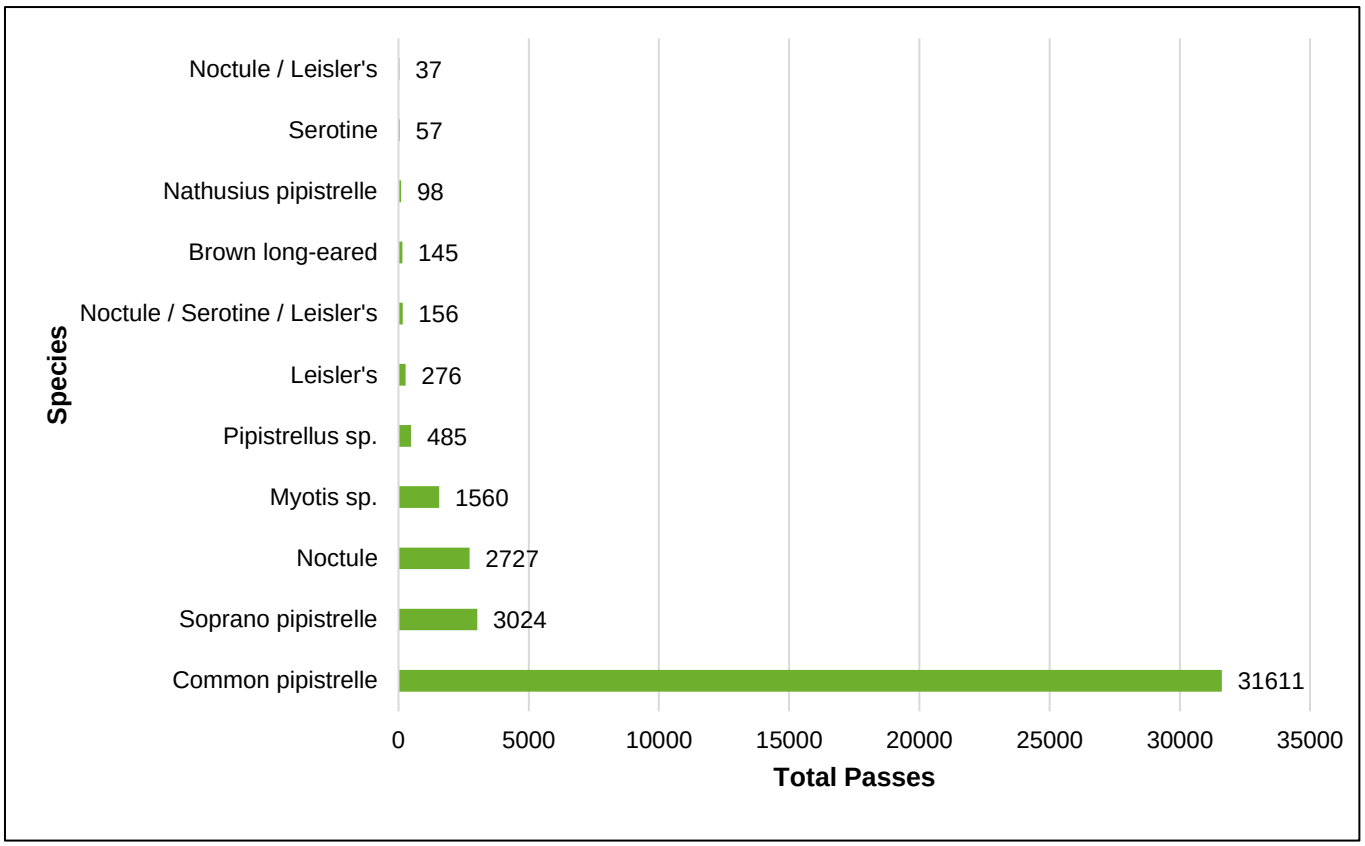
3.42 Common pipistrelle and soprano pipistrelle and were the most frequently recorded species, accounting for 78.7% and 7.5% of the total calls respectively. Accumulatively, these two species comprised 87.4% of the total bat passes. Noctule was the third most frequent species and accounted for 6.8% of the total bat passes recorded. *Myotis* sp. comprised 3.9% of total bat passes. All other species recorded accounted for less than 1% of total bat passes.

3.43 The species composition recorded across all transect surveys is summarised in **Table 3.16** and **Figure 3.8** below.

Table 3.16: Species Composition Recorded During Static Monitoring Surveys (Oaklands Farm)

Bat Species / Group	Total Bat Passes	% of Total Bat Passes
Common pipistrelle	31611	78.7%
Soprano pipistrelle	3024	7.5%
Noctule	2727	6.8%
Myotis sp.	1560	3.9%
Pipistrellus sp.	485	1.2%
Leisler's	276	0.7%
Noctule / Serotine / Leisler's	156	0.4%
Brown long-eared	145	0.4%
Nathusius pipistrelle	98	0.2%
Serotine	57	0.1%
Noctule / Leisler's	37	0.1%

Figure 3.8: Total Bat Passes by Species Recorded During Static Monitoring Surveys (Oaklands Farm)



Variation Between Static Monitoring Points

Activity and Seasonal Changes

Park Farm

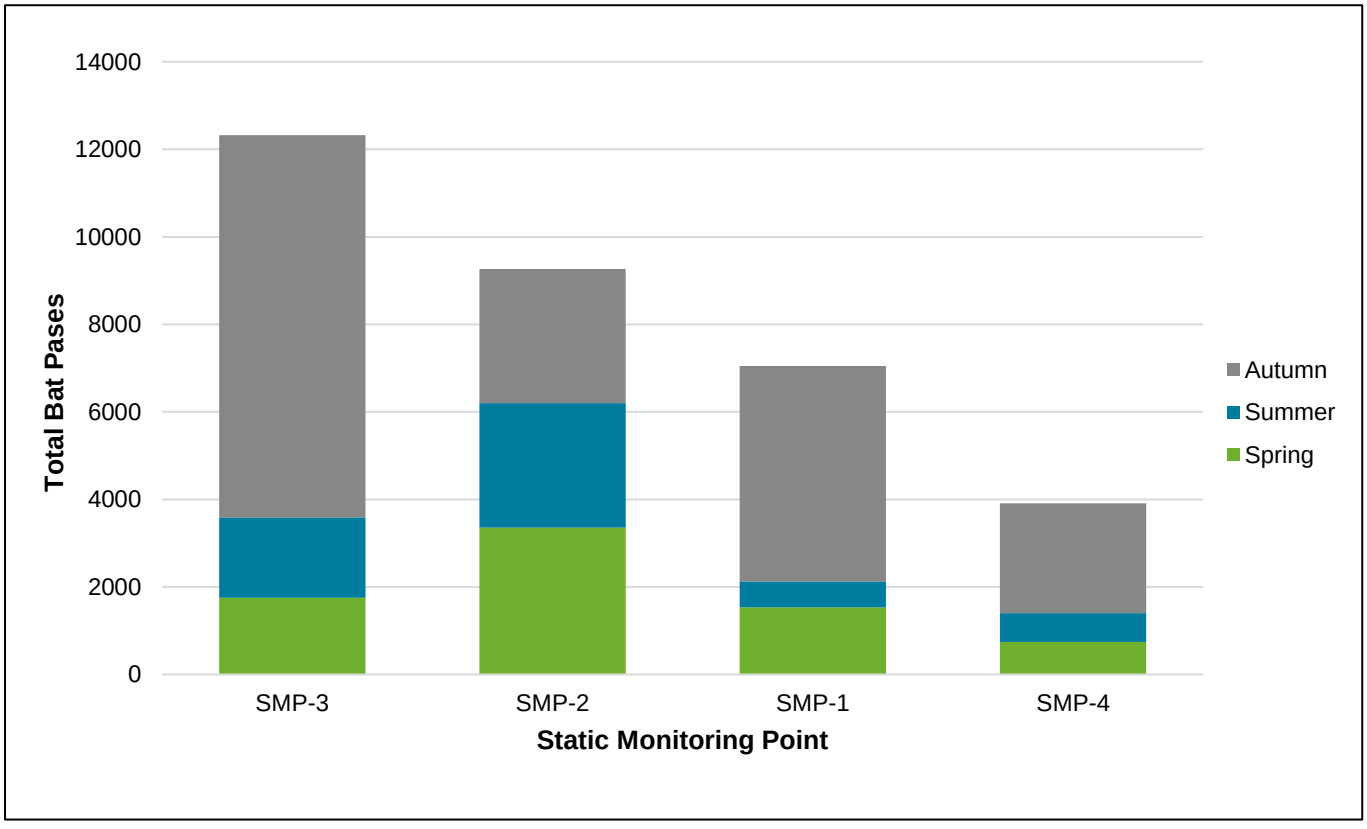
3.44 The highest levels of bat activity were recorded at SMP-3, which accounted for 37.9% of the total bat passes. Activity peaked in Autumn for SMP-1, SMP-3 and SMP-4 whereas activity peaked in Spring for SMP-2.

3.45 Variation in activity and seasonal changes are summarised in **Table 3.17** and **Figure 3.9** below.

Table 3.17: Total Bat Passes (including percentages) for Each Static Monitoring Point (Park Farm)

Static Monitoring Point	Total Bat Passes				% of Total Bat Passes			
	Spring	Summer	Autumn	Grand Total	Spring	Summer	Autumn	Grand Total
SMP-3	1755	1836	8734	12325	5.4%	5.6%	26.8%	37.9%
SMP-2	3354	2849	3059	9262	10.3%	8.8%	9.4%	28.5%
SMP-1	1533	594	4921	7048	4.7%	1.8%	15.1%	21.7%
SMP-4	746	655	2511	3912	2.3%	2.0%	7.7%	12.0%

Figure 3.9: Total Bat Passes for Each Static Monitoring Point Across the Sample Period (Park Farm)



Oaklands Farm

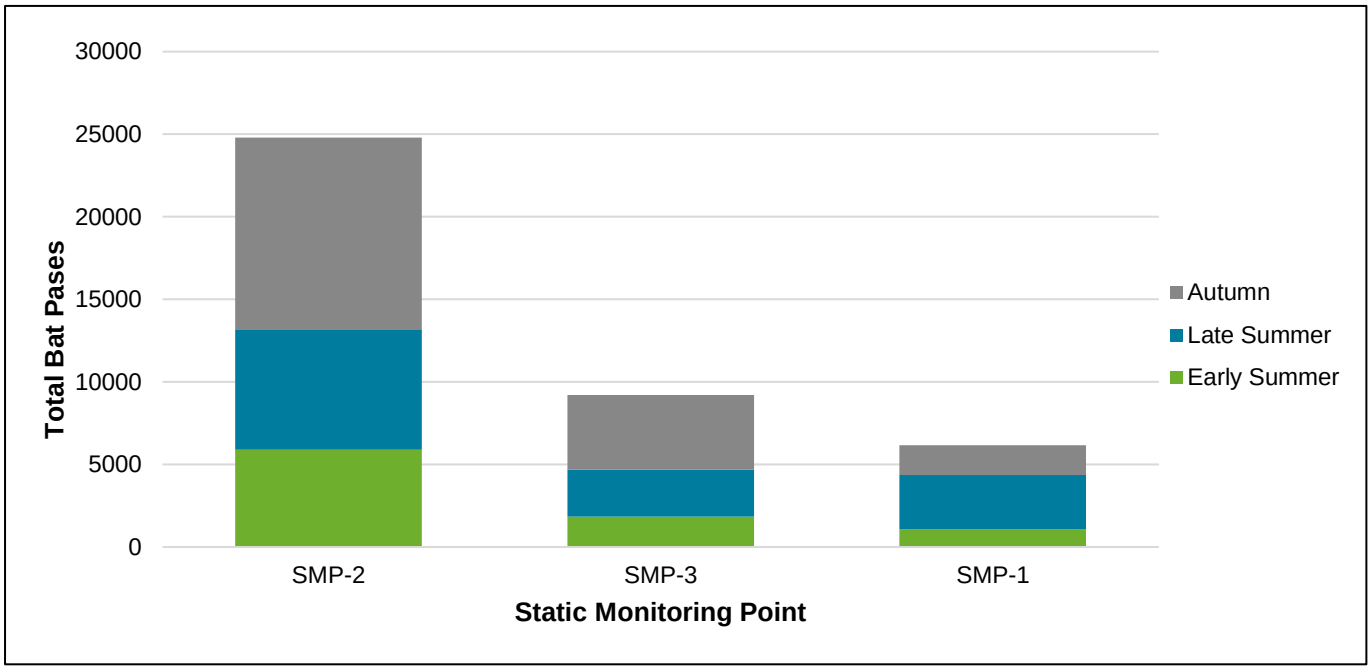
3.46 The highest levels of bat activity were recorded on SMP-2 which accounted for 61.7% of the total bat passes. Activity peaked in Autumn for SMP-2 and SMP-3 whereas activity peaked in Summer for SMP-1.

3.47 Variation in activity and seasonal changes are summarised in **Table 3.18** and **Figure 3.10** below.

Table 3.18: Total Bat Passes (including percentages) for Each Static Monitoring Point (Oaklands Farm)

Transect	Total Bat Passes				% of Total Bat Passes			
	Early Summer	Late Summer	Autumn	Grand Total	Early Summer	Late Summer	Autumn	Grand Total
SMP-2	5901	7247	11648	24796	14.7%	18.0%	29.0%	61.7%
SMP-3	1834	2866	4517	9217	4.6%	7.1%	11.2%	22.9%
SMP-1	1058	3301	1804	6163	2.6%	8.2%	4.5%	15.3%

Figure 3.10: Total Bat Passes for Each Static Monitoring Point Across the Sample Period (Oaklands Farm)



Species Richness

Park Farm

3.48 Species richness was highest at SMP-2 and SMP-3 with at least eight species recorded. The species richness for each Transect is shown in **Table 3.19** below**.**

Table 3.19: Species Richness for Each Static Monitoring Point (Park Farm and Oaklands Farm)

Static Monitoring Point	Species Richness (all species)	Species Richness (Rarer species)
Park Farm		
SMP-1	7+	4+
SMP-2	8+	5+
SMP-3	8+	5+
SMP-4	7+	4+
Oaklands Farm		
SMP-1	8+	5+
SMP-2	8+	5+
SMP-3	8+	5+

Oaklands Farm

3.49 Species richness was equal for all SMP's with at least eight species recorded. The species richness for each Transect is shown in **Table 3.19** above.

Rarer Species

Park Farm

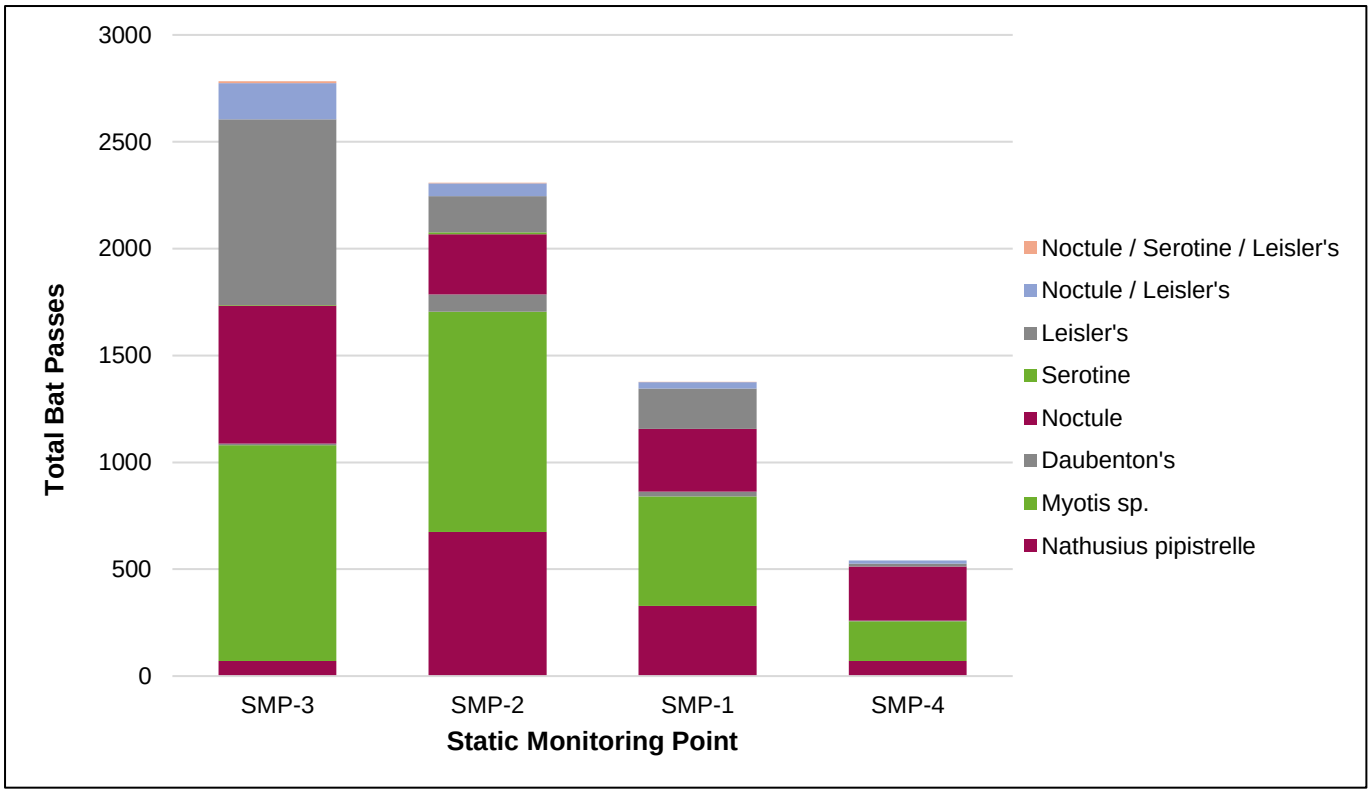
3.50 Species richness of Rarer species was highest at SMP-2 and SMP-3 with at least five species recorded. (Nathusius' pipistrelle, Daubenton's, noctule, serotine and Leisler's). Species richness for Rarer species is provided in **Table 3.19** above**.**

3.51 SMP-3 and SMP-2 had the highest activity of Rarer species, accounting for 39.7% and 32.9% of the total passes respectively. Transect data in relation to Rarer species is summarised in **Table 3.20** and **Figure 3.11** below.

Table 3.20: Total Bat Passes of Rarer[20] Species for Each Static Monitoring Point (Park Farm)

Static Monitoring Point	Nathusius pipistrelle	Myotis sp.	Daubenton's	Noctule	Serotine	Leisler's	Noctule/ Leisler's	Noctule / Serotine / Leisler's	Grand Total	% of Total
SMP-3	70	1010	8	646	2	869	169	10	2784	39.7%
SMP-2	674	1031	81	281	9	170	59	3	2308	32.9%
SMP-1	329	511	23	294		189	29	2	1377	19.6%
SMP-4	70	187	3	253		13	15		541	7.7%

Figure 3.11: Total Bat Passes of Rarer[20] Species for Static Monitoring Point (Park Farm)



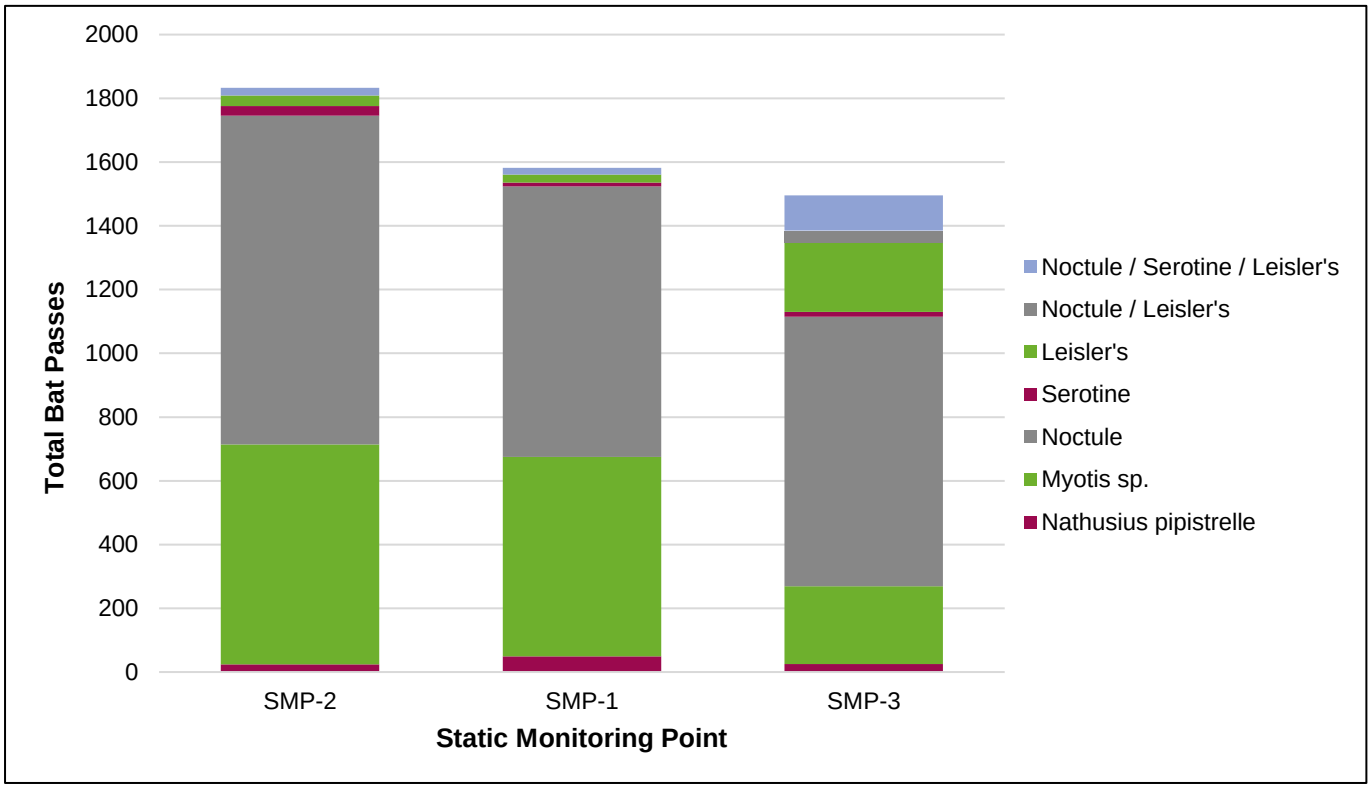
Oaklands Farm

3.52 Activity of Rarer species was relatively even across all SMPs. The majority of passes by Rarer species relate to Noctule or *Myotis* sp.. SMP data in relation to Rarer species is summarised in **Table 3.21** and **Figure 3.12** below.

Table 3.21: Total Bat Passes of Rarer[20] Species for Static Monitoring Point (Oaklands)

Static Monitoring Point	Nathusius pipistrelle	Myotis sp.	Noctule	Serotine	Leisler's	Noctule / Leisler's	Noctule / Serotine / Leisler's	Grand Total	% of Total
SMP-2	24	690	1032	30	33		24	1833	37.3%
SMP-1	49	626	849	12	25		21	1582	32.2%
SMP-3	25	244	846	15	218	37	111	1496	30.5%

Figure 3.12: Total Bat Passes of Rarer[20] Species for Static Monitoring Point (Oaklands Farm)



Chapter 4
Discussion

4.1 Relevant legislation relating to bats is summarised in **Appendix A.**

4.2 The majority of Oaklands Farm and Grid cable route, including Park Farm and land between the two farms was of low value to bats. However, specific habitat features and periphery habitats including woodland, hedgerows, scattered trees, open water and an unnamed watercourse corridor were considered valuable for foraging, commuting and roosting bats.

4.3 The habitats in proximity to Drakelow Power Station were considered to provide high suitability for bats. This area included a mosaic of woodland, scrub, semi-improved grassland and standing water, including a pond and two ditches.

4.4 The wider landscape supported a network of habitat suitable for supporting a range of bat species, including large areas of woodland, scrub, hedgerows, treelines, wetland and river habitat.

Foraging and Commuting Activity

Transect Surveys

Park Farm

4.5 Surveys found low levels of activity across the Park Farm area. Notably higher levels of bat activity were recorded along two central hedgerows at Park Farm. These hedgerows link two areas of woodland and likely form a valuable commuting corridor for bats, including Nathusius pipistrelle.

Oaklands Farm

4.6 Surveys found low levels of activity across the Oakland Farm area. Notably higher levels of bat activity were recorded along the south segment of Transect A and the southeast segment of Transect C at Oaklands Farm. These correspond to areas of woodland and hedgerow which

likely represent valuable foraging resources for bats. The hedgerow at southeast segment of Transect C is also likely a valuable commuting corridor, including Leisler's.

Static Monitoring

Park Farm

4.7 Surveys found low levels of activity across the Site. Soprano pipistrelle and Common pipistrelle were the most commonly registered bats within the Site. Both of these species are common and widespread throughout the county. Several Rarer species were also recorded including Nathusius pipistrelle, *Myotis* sp., Daubenton's, Noctule, Leisler's and Serotine.

4.8 The highest bat activity levels were recorded at SMP-2. SMP-2 was sited in hedgerow linking an area of woodland to a unnamed watercourse corridor. This SMP recorded high levels of bat activity during Autumn. This is likely attributed the area being an important foraging resource at this time of year. It is also possible that this area is used by roosting or swarming bats.

Oaklands

4.9 Surveys found low levels of activity across the Site. Soprano pipistrelle and common pipistrelle were the most commonly registered bats within the Site. Several Rarer species were also recorded including Nathusius pipistrelle, *Myotis* sp., Noctule, Leisler's and Serotine.

4.10 The highest bat activity levels were recorded at SMP-2 which was sited in a unnamed watercourse corridor in the north of Oaklands Farm. It is likely the unnamed watercourse corridor is a valuable commuting corridor. This SMP recorded high levels of bat activity during Late Summer and Autumn. This is likely attributed the area being an important foraging resource at this time of year. It is also possible that this area is used by roosting or swarming bats.

Potential Impacts to Bats as a Result of the Proposed Development

4.11 An assessment of potential impacts of the proposed development on bats along with avoidance / mitigation / compensation measures and habitat enhancements is reported directly in **Chapter 6** of the ES and **Chapters 4** and **5** of **Appendix 5.6: Outline Landscape and**

Ecological Management Plan. A summary of proposed mitigation and enhancement measures are provided below.

Avoidance and Mitigation

4.12 The scheme has been sensitively designed to focus infrastructure to areas of lower ecological value including improved grassland and arable fields. The majority of habitat of higher value to bats, including hedgerows, woodland, trees, watercourses and open water will be retained and/or enhanced.

4.13 To mitigate for the loss of low quality foraging habitats, lowland meadow, species-rich grassland, woodland, hedgerows and scrub will be created to provide high quality foraging habitat and strengthen landscape scale habitat connectivity for bats. Lowland meadow and species-rich grassland will be managed sympathetically for wildlife encouraging a diverse and varied sward to develop. This will encourage a rich and abundant invertebrate population to establish, providing better foraging opportunities for bats.

4.14 To mitigate for the loss of low numbers of low suitability potential tree roosting features, bat boxes will be installed prior to felling. In addition, the cable route corridor at Drakelow Power Station has been sensitively designed to minimise impacts to the adjacent trees of moderate BRS and above. The scheme will incorporate measures to protect these retained trees, detailed within **Appendix 5.6 Outline Landscape and Ecological Management Plan**.

4.15 To mitigate the loss of commuting opportunities, new hedgerows will be planted and defunct hedgerows will be subject to infill planting. This will improve connectivity through the Site and to suitable habitat in the wider area.

4.16 Trees identified as having low bat roost potential will be felled using soft felling techniques. This will involve the section felling of trees and then gently lowering each section in a controlled manner to ground. The sections will be left for at least 24 hours with the features in an upright position to enable bats to vacate. This would be completed at a sensitive time of year in spring/autumn to avoid the breeding season.

Enhancement

4.17 The extensive habitat creation including lowland meadow, species-rich grassland, woodland, hedgerows and scrub is predicted to represent a significant biodiversity

enhancement, and would therefore also be expected to provide a significant benefit for the local bat population. Predicted enhancements for bats includes:

- The creation of extensive lowland meadow and species-rich grassland creation is expected to result in significant enhancement for foraging bats relative to the existing habitats (improved grassland and arable).
- Woodland, hedgerow and scrub creation will provide enhanced foraging and commuting opportunities whilst complementing lowland meadow and species-rich grassland creation.
- Bat boxes will also be installed across the Site onto retained mature trees Schwegler 2F or similar. This will provide long term roosting opportunities for a variety bats species.

4.18 As a result of the proposed enhancement, the connectivity and quality of the habitat for foraging would be expected to increase significantly. This is due to the change in landscape from open expanses characterised by poor structural and species diversity, to one of complex ecological niches. The addition of the arrays would also improve the Site for bats, by changing the conditions and providing sheltered foraging habitat and edge features, in place of previously unsuitable habitats. Overall the change in landscape character, structure, and species diversity is expected to be significantly enhanced as a result of the development, and positively impact bat usage of the Site.

Appendix A
Policy and Legislation

A.1 Statutory nature conservation sites and protected species are a 'material consideration' in the UK planning process (DCLG 2019). Where planning permission is not required, for example on proposals for external repair to structures, consideration of protected species remains necessary given their protection under UK and EU law.

A.2 Natural England Standing Advice aims to support Local Planning Authorities decision making in respect of protected species (Natural England 2017). Standing advice is a material consideration in determining the outcome of applications, in the same way as any individual response received from Natural England following consultation.

A.3 The Conservation of Habitats and Species Regulations 2017 (SI 2017/1012), as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (SI 2019/579) transpose the requirements of the European Habitats Directive (Council Directive 92/43/EEC) and Birds Directive (Council Directive 2009/147/EC) into UK law, enabling the designation of protected sites and species at a European level.

A.4 The Wildlife and Countryside Act 1981 (as amended) forms the key piece of UK legislation relating to the protection of habitats and species.

A.5 The Countryside Rights of Way Act 2000 provides additional support to the Wildlife and Countryside Act 1981.

A.6 The Wild Mammals (Protection) Act 1996 sets out the welfare framework in respect to wild mammals, prohibiting a range of activities that may cause unnecessary suffering.

A.7 The Natural Environment and Rural Communities Act (NERC Act) 2006 created Natural England and the Commission for Rural Communities and extended the biodiversity duty set out in the Countryside and Rights of Way Act (CROW Act) to public bodies and statuary undertakers to ensure due regard to the conservation of biodiversity.

A.8 The Protections of Badgers Act 1992 sets out the legislation relating to badgers.

A.9 The Hedgerows Regulations 1997 makes provision for the protection of important hedgerows in England and Wales.

A.10 Species and Habitats of Principal Importance for Conservation in England and Wales and priority habitats and species listed on the Lowland Derbyshire Biodiversity Action Plans (LBAP) are species which are targeted for conservation. The government has a duty to ensure that involved parties take reasonable practice steps to further the conservation of such species under Section 41 of the Natural Environment and Rural Communities Bill 2006. In addition, the Act places a biodiversity duty on public authorities who 'must, in exercising their functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity' (Section 40 [1]). Criteria for selection of national priority habitats and species in the UK include international threat and marked national decline.

A.11 The National Planning Policy Framework (December 2023) states (Section 15) that the planning system should identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks; promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

A.12 It also states that local planning authorities should refuse planning on the following principles:

- If significant harm to biodiversity resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for.
- If development is on land within or outside a site of Special Scientific Interest (SSSI), and is likely to have an adverse effect on it (the exception being where the benefits of the development in the location proposed clearly outweigh its likely impact).
- If development results in the loss or deterioration of irreplaceable habitats, such as ancient woodland and ancient or veteran trees (unless there are wholly exceptional reasons and a suitable compensation strategy exists).

A.13 Additionally, the NPPF states that development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity

Bats

A.14 All British species of bat are listed on the **Wildlife and Countryside Act 1981 (as amended) Schedule 5**. It is an offence to deliberately kill, damage, take **(Section 9(1))** a bat; to intentionally or recklessly disturb a bat whilst it occupies a place of shelter or protection **(Section 9(4)(b))**; or to deliberately or recklessly damage, destroy or obstruct access to a bat roost **(Section 9(4)(c))**. Given the strict nature of these offences, there is an obligation on the developer and owner of a site to consider the presence of bats.

A.15 All British bats are listed on the **Conservation of Habitats and Species Regulations 2017, Schedule 2**. **Regulation 41** strengthens the protection of bats under the 1981 Act against deliberate capture or killing **(Regulation 41(1) (a))**, deliberate disturbance **(Regulation 41(1) (b))** and damage or destruction of a resting place **(Regulation 41(1) (d))**.

A.16 A bat roost is defined as any structure or place which is used for shelter or protection, irrespective of whether or not bats are resident. Buildings and trees may be used by bats for a number of different purposes throughout the year including resting, sleeping, breeding, raising young and hibernating. Use depends on bat age, sex, condition and species as well as the external factors of season and weather conditions. A roost used during one season is therefore protected throughout the year and any proposed works that may result in disturbance to bats, and loss, obstruction of or damage to a roost are licensable.

Application for a Natural England EPS Licence

A.17 Development works that may cause killing or injury of bats or that would result in the damage, loss or disturbance of a bat roost would require a Natural England (NE) Bat Mitigation Licence. For a Mitigation licence to be granted three tests must be met. Evidence is needed to determine these three tests: whether there is a need for the development which justifies the impact on the European Protected Species (EPS); whether there is an alternative which would avoid the impact and need for an EPS licence; and whether mitigation proposed is sufficient to maintain the conservation status of the EPS in question. A Mitigation Licence application will generally only be considered by NE on receipt of planning consent, and once any pre-commencement conditions of relevance to ecology have been discharged. There are two licensing routes now available for bats, which comprise:

Full NE England EPS Mitigation Licence

A.18 NE aim to determine the application within six weeks (although this can take longer).

- The application comprises three components including an application form (broad details of the applicant, site and proposals);
- A detailed Method Statement providing the survey methods and findings, impact assessment and mitigation measures (including detailed maps and schedule of works); and a Reasoned Statement outlining the „need" for the development and consideration of alternatives.

NE Low Impact Class Licence

A.19 This new route provides an alternative, quicker route (with a much reduced application form, and a target of 10 days to determine an application).

A.20 This Low Impact Class Licence is only available to Registered Consultants identified by NE. This is available for sites which support up to three low status roosts (day roosts, night roosts, feeding roosts and transitional roosts) of a maximum of three common species.

A.21 The common species which can be covered by this licence include common pipistrelle, soprano pipistrelle, brown long-eared, whiskered, Brandts, Daubenton's and Natterer's bat.

A.22 All licensed works require evidence that there is a need for the development and that appropriate mitigation, including seasonal constraints and provision of alternative habitat and/or roosting structures is considered.

A.23 Before Natural England can confirm the site is registered and licensable works can commence, an assessment of the three tests must be undertaken by the Registered Consultant. Although this does not need to be submitted to NE, NE may subsequently undertake a review of the Proposed Development and request to see all evidence as collected by the Consultant. This can only be undertaken following a survey and impact assessment which must be carried out in accordance with licence conditions and BCT survey guidelines.

A.24 This licence cannot be used in relation to trees.

A.25 Several species of bat, including brown long-eared and soprano pipistrelle are listed as species of principal importance under the **NERC Act (2006)**. **Section 41** of the Act is used to guide decision-makers such as public bodies, including local and regional authorities, in

implementing their duty under section 40 of the **Natural Environment and Rural Communities Act 2006**, to have regard to the conservation of biodiversity in England, when carrying out their normal functions

Appendix B

Preliminary Ground Level Roost Assessment

- **Figure 6.6.1: Trees with Bat Roosting Suitability (North)**
- **Figure 6.6.2: Trees with Bat Roosting Suitability (South)**
- **Table B.1: Trees with Bat Roosting Suitability (Park Farm and Fairfield Farm)**
- **Table B.2: Trees with Bat Roosting Suitability (Oaklands Farm)**
- **Table B.3: Trees with Bat Roosting Suitability (Drakelow Power Station)**

Oaklands Farm Solar Park
for Oaklands Farm Solar Ltd

Figure 6.6.1: Trees Surveyed for Bat Roost Suitability (BRS) North

Site boundary
BRS area

BRS tree

- High
- Moderate
- Low
- Confirmed Roost

T4 G8 G7 T19 G34 - a G34 - b G30 - a G30 - b G29 G32 - a T40 G32 - b T55 T56 T57 T49 T47 G22 - b G22 - a G25 - a T46 T44 T58 G25 - b G25 - c T171 T184 T185 T186 T183 T181 T190 T172 T182 T173 T180 T174 T179 T176 T178 T177 T175 T187 T188 T189 G1 - a T3 G1 - b G4 - a G4 - b G2 - a G4 - c G2 - b G4 - d G2 - c G4 - e G3 - a G3 - b G4 - f G3 - c G4 - h G5 G3 - d G4 - i T11 G4 - g G4 - j T10 T7 T8 T9 G4 - k G4 - l

0 250 500 m

Map scale 1:8,000 @ A3

PINS reference: EN010122

Oaklands Farm Solar Park
for Oaklands Farm Solar Ltd

Figure 6.6.2: Trees Surveyed for Bat Roost Suitability (BRS) South

Site boundary

BRS tree (data collected by LUC)

- High

BRS tree (data collected by ARCUS)*

- High
- Moderate
- Low

*Data digitised from ARCUS Preliminary Ecological Appraisal Report (2020)

T68 T27 T26 T28 T25 T24 T30 T31 T29 T32 T33 T23 T22 T1 T2 T3 T5 T4 T6 T7 T8 T21 T20 T19 T15 T17 T14 T10 T13 T16 T11 T18 T12 T9

0 250 500 m

Map scale 1:7,500 @ A3

PINS reference: EN010122

Table B.1: Trees with Bat Roosting Suitability (Park Farm and Fairfield Farm)

Tree ID	Species	Description of Features	Bat Roost Suitability
Within Boundary			
G1 - a	Lime	Rot hole 6m high on southeast aspect.	Low
G1 - b	Lime	Knot hole 8m high on southeast aspect.	Low
G2 - a	Lime	Two rot holes. One 5m high on southwest aspect. One 6m high on southwest aspect.	Low
G2 - b	Lime	Four rot holes 6m high across west to southwest aspects.	Low
G2 - c	Lime	Knot hole 4m high on south aspect.	Low
G3 - a	Lime	Knot hole 8m high on north aspect.	Low
G3 - b	Lime	Limb wound on north aspect.	Low
G3 - c	Lime	Five knot holes all below 3m high across north to southwest aspects.	Low
G3 - d	Lime	Two knot holes 5m high on southwest aspect.	Low
G4 - a	Lime	Knot hole 5m high on north aspect.	Low

Tree ID	Species	Description of Features	Bat Roost Suitability
G4 - b	Lime	Two knot holes 6m high on east aspect.	Low
G4 - c	Lime	Rot hole 6m high on northwest aspect.	Low
G4 - d	Lime	Rot hole 7m high on west aspect.	Low
G4 - e	Lime	Rot hole and split wood 9m high on northeast aspect.	Low
G4 - f	Lime	Limb wound and decay 3m high on south aspect.	Low
G4 - g	Lime	Rot hole 8m high on south aspect.	Low
G4 - h	Lime	Knot hole 5m high on west aspect.	Low
G4 - i	Lime	Limb wounds 4m high on north and south aspects.	Low
G5	Horse chestnut	Knot hole extending to sheltered cavity 3m high on west aspect. Hazard beam on higher branch on north aspect.	High
G7	Horse chestnut	Small hole under tear out wound 3m high on north aspect possibly extending to a cavity.	Low
G8	Horse chestnut	Canker 10m on north aspect which appears to extend to sheltered cavity. Knot hole 8m on south aspect.	High
G25 - a	Ash	Moderate crack with decay 5m high on east aspect.	Moderate

Tree ID	Species	Description of Features	Bat Roost Suitability
T58	Ash (Common)	Dead tree with high ivy coverage.	Moderate
Adjacent to Boundary			
G4 - j	Lime	Deadwood high in canopy and some split wood.	Low
G4 - k	Lime	Dead branch with knot holes and decay on west aspect.	Moderate
G4 - l	Lime	Knot hole 4m high on west aspect.	Low
G25 - b	Willow	Fissure on branch 6m high on southwest aspect.	Moderate
G25 - c	Willow	Lifted bark plate and knothole 4m high on southeast aspect.	Moderate
T3	Oak	Multiple limb wounds, cracked bark and decay.	Moderate
T4	Oak	Dense ivy obscuring view	Low
T7	Lime	Two limbs wounds on small branches.	Low
T8	Lime	Rot hole 5m high on east aspect.	Low
T9	Lime	Knot hole 6m high on east aspect. Rot hollow 7m high on north aspect.	Moderate
T10	Horse chestnut	Large tear out wound extending to sheltered cavity 5m high on north aspect. Also several knot holes on central trunk.	High
T11	Horse chestnut	Canker on south aspect of limb.	Low

Tree ID	Species	Description of Features	Bat Roost Suitability
T19	Ash	Multiple large crevices that possibly extend into hollow trunk. Large split on west aspect. Two crevices 6m high, one on east aspect and on north aspect.	High
T49	Ash	Several large rot hollows resulting from limb tear out and two knot holes.	High
T55	Oak	Minor cracks and crevices on dead limbs but no obvious features.	Low
T56	Oak	Limb tear outs with cracked bark and lifted bark plates on north aspect.	Moderate
T57	Oak	Lifted bark plate 7m high on northeast aspect.	Low
T172	Ash	Crevice extending to cavity 4m high on southeast aspect. Additional crevice 7m high on southeast aspect. Tree also supported mature ivy.	Moderate

Table B.2: Trees with Bat Roosting Suitability (Oaklands Farm)[21]

Tree ID	Species	Description of features	Bat Roost Suitability
T68	Ash	Limb tears at two locations at 3m and 4m on southern aspect, which extended upwards.	High

[21] Identified by LUC during surveys in 2021. All other trees identified to have BRS are identified in the report prepared by Arcus in 2020 within **Appendix 6.14: Arboricultural Survey Report**

Table B.3: Trees with Bat Roosting Suitability (Drakelow Power Station)

Tree ID	Species	Description of features	Bat Roost Suitability
T173	Acer sp.	Tree is dead with a knothole and two large cavities on the main limb towards the top, on the northern and northwestern aspects respectively. Cavities may connect within the trunk.	High
T174	Beech	Large rot hole at base of limb on southern aspect. Hole does not extend further and is shallow, with majority open and exposed providing limited roosting opportunities.	Low
T175	Beech	Large crevice approximately 2m along the southernmost limb. Crevice is deep and extends, likely providing some shelter.	Moderate
T176	Sycamore	Pollarded with lifted bark along length of trunk and small shallow crevice on south west at approximately 15m.	Low
T177	Sycamore	Long wound split on the south eastern aspect of the trunk starting at the base, with some heartwood exposed. Wound inspected using an endoscope, continues northwards within trunk but due to limited depth roosting potential limited to smaller numbers of bats.	Moderate
T178	Sycamore	Three knot hole features on the south western aspect that likely all link within a potentially hollow trunk. Features located above point where limbs split at	Moderate

Tree ID	Species	Description of features	Bat Roost Suitability
		approximately 20m height. Observed from ground with good potential for aerial inspection via tree climbing.	
T179	Birch	Semi-mature with approximately 3.5m long narrow wound in trunk, partially exposing heartwood. Located on the southern aspect, wound is shallow and provides limited roosting space for small numbers of bats.	Low
T180	Sycamore	Two large rot holes on the southern aspect of the trunk. Lower cavity accessible form ground level and endoscoped, with decay blocking northern portion of cavity. Higher cavity (~10m) has potential to extend further north.	High
T181	Beech	Numerous long thin fissures along southern aspect of eastern limb as well as lifted bark. Fissures very narrow and would only support low numbers of bats.	Low
T182	Sycamore	Lifted bark along length of trunk.	Low
T183	Pinus sp.	Lifted bark along trunk as well as woodpecker hole halfway up trunk on the north eastern aspect. Hole looks shallow and flat in binoculars and likely has limited space for roosting.	Low
T184	Sycamore	Single bat, likely *Myotis sp.* found roosting within large wound split along southern eastern aspect of trunk, split down to base. Bat found within top of wound further into the cavity.	Confirmed Roost

Tree ID	Species	Description of features	Bat Roost Suitability
T185	Sycamore	Narrow wound 2m long on south western aspect with limited suitability.	Low
T186	Silver birch	Partially felled trunk with lifted bark and very open and exposed rot holes and decay. Limited suitability due to exposure and shallow depth.	Low
T187	Sycamore	Butt-rot cavity at base that extended part way into trunk, cavity largely open and exposed.	Low
T188	Pinus sp.	Part-felled with loose bark and decay but cavities open and shallow with limited roosting suitability for limited numbers of bats.	Low
T189	Sycamore	Shallow wound on southern aspect, high up on trunk.	Low
T190	Oak	Butt-rot cavity at south-west of base that extends further up interior of trunk.	Low

Appendix C
Emergence/Re-entry Surveys

- **Table C.1: Environmental Conditions During Emergence/Re-entry Surveys (Park Farm)**
- **Table C.2: Emergence/Re-entry Survey Data (Park Farm)**
- **Table C.3: Environmental Conditions During Emergence/Re-entry Surveys (Oaklands Farm)**
- **Table C.4: Emergence/Re-entry Survey Data (Oaklands Farm)**

Table C.1: Environmental Conditions During Emergence/Re-entry Surveys (Park Farm)

Survey Date	Sunrise/Sunset	Survey Timing		Temperature (°C)		Wind[22]		Cloud Cover[23]		Precipitation	Weather Conditions
		Start	End	Start	End	Start	End	Start	End		
29/07/2021	21:04	20:49	22:34	17	17	2	2	4	4	Dry	Good visibility, insects present
24/08/2021	06:02	04:32	06:17	15	15	2	2	2	2	Dry	Good visibility, insects present

Table C.2: Emergence/Re-entry Survey Data (Park Farm)

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
29/07/2021	RG	G22 - a	21:55 - 22:05	Common pipistrelle	3	NS	F/C	-

[22] Beaufort scale where 0 = calm, 2 = light breeze, 4 = moderate breeze, 6 = strong breeze, 7 = high wind, 9 = strong gale, 12 = hurricane

[23] Oktas scale where 0 = sky completely clear, 4 = sky half cloudy, 8 = sky completely cloudy

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			22:10 - 22:15	Common pipistrelle	5	NS	F/C	-
			22:20	Common pipistrelle	2	NS	F/C	-
	CC	G22 - b	21:35	Noctule	1	NS	C	Brief pass
			21:44	Noctule	1	NS	C	Brief pass
			21:51	Noctule	1	NS	F	Few passes
			21:35	Common pipistrelle	1	NS	F	Very brief
			22:00	Noctule	1	NS	F	Brief pass
			22:00	Myotis sp.	1	NS	F	Brief pass
			22:04	Noctule	1	NS	F	Brief pass

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			22:11	Common pipistrelle	1	NS	F	-
			22:15	Noctule	1	NS	F	Few passes
			22:21	Noctule	1	NS	F	Few passes
			22:26	Common pipistrelle	1	NS	F	Brief pass
	JB	T40	22:04 – 22:15	-	-	-	-	Brief period without full observation due to cattle
			21:27	Pipistrelle sp.	1	S	P/F	Flew from east behind trees
			21:39	Noctule	1	NS	P/F	-
			21:41	Noctule	2	NS	F	-
			21:45	Myotis sp.	1	S	F	Foraged in field

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			21:53 - end	Common pipistrelle	3	S	F	Foraged north of trees, semi constant
			21:55	Nyctalus sp.	2	NS	F	-
			21:57 - end	Noctule	3	NS	F	Semi - constant
24/08/2021	JM	G22 - a	04:45	Common pipistrelle	1	NS	F	-
			04:51 - 04:54	Common pipistrelle	1	NS	F	-
			04:59 - 05:02	Common pipistrelle	1	NS	F	-
			05:17	Common pipistrelle	1	S	P	-

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			05:17	Soprano pipistrelle	1	S	P	-
			05:23	Common pipistrelle	1	S	P	-
			05:23	Noctule	1	S	P	-
			05:27	Common pipistrelle	1	S	P	-
			05:28	Soprano pipistrelle	1	S	P	-
			05:29	Noctule	1	S	P	-
	LB	G22 - b	04:43	Common pipistrelle	1	NS	F	-
			04:48	Common pipistrelle	1	NS	F	-

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			05:03	Pipistrelle sp.	1	NS	P	-
			05:17	Common pipistrelle	1	NS	P	-
			05:23	Common pipistrelle	1	NS	P	-
	RG	T40	04:40	Common pipistrelle	12	NS	F/C	Frequent and constant passes. Evident F/C route along hedgerow
			05:22	Common pipistrelle	4	NS	F/C	-
			05:22	Noctule	1	NS	F/C	-
			05:57	Pipistrelle sp.	1	NS	F/C	-

Table C.3: Environmental Conditions During Emergence/Re-entry Surveys (Oaklands Farm)

Survey Date	Sunrise/Sunset	Survey Timing		Temperature (°C)		Wind[22]		Cloud Cover[23]		Precipitation	Weather Conditions
		Start	End	Start	End	Start	End	Start	End		
29/07/2021	21:04	20:49	22:34	15	15	2	1	6	5	Dry	Good visibility, insects present
24/08/2021	06:02	04:32	06:17	15	15	2	2	2	2	Dry	Good visibility, insects present
08/09/2021	19:40	19:25	21:10	25	25	0	0	4	4	Dry	Good visibility, insects present
09/09/2021	06:30	05:00	06:45	16	16	2	1	2	4	Dry	Good visibility, insects present

Table C.4: Emergence/Re-entry Survey Data (Oaklands Farm)

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
29/07/2021	TH	T9 (Arcus)	21:50	Pipistrelle sp.	2	S	C	Flew from behind T9, across track and south
			21:53	Common pipistrelle	1	NS	P	-
			21:56	Common pipistrelle	3	S	C	Flew from behind T9, across track and south
			22:02	Common pipistrelle	1	NS	P	-
			22:05	Common pipistrelle	2	NS	P	-
			22:07 - 22:13	Common pipistrelle	2	NS	F	-

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			22:13	Big bat	1	NS	P	Faint
			22:15 - 22:19	Common pipistrelle	1	NS	F	-
	GS	T68	22:00	Common pipistrelle	2 to 3	S	F	-
	EM	T24 (Arcus)	22:05	Common pipistrelle	1	S	F/P	Flew around tree
			22:15	Common pipistrelle	1	NS	F/P	-
			22:30	Leisler and common pipistrelle	2	NS	F/P	-
	RWH	T22 (Arcus)	21:56	Common pipistrelle	1	S	F	Flew from east, circling around tree then flying west

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			22:05	Common and soprano pipistrelle	1	NS	F	-
			22:08	Common pipistrelle	1	NS	F	-
			22:13 - end	Common and soprano pipistrelle	3	NS	F	-
24/08/2021	JB	T68	04:37	Noctule	1	NS	P/F	-
			04:40 - 04:56	Common pipistrelle	1	NS	P/F	Constant
	CC	T22 (Arcus)	04:37 – 04:40	Common pipistrelle	1	NS	F	Constant
			04:52	Common pipistrelle	1	NS	F	Brief pass

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			04:59 – 05:07	Common pipistrelle	1	NS	F	-
			05:02	Soprano pipistrelle	1	NS	F	Brief pass
			05:10 – 05:15	Common pipistrelle	1	NS	F	Brief pass
	RWH	T29 (Arcus)	04:54	Common pipistrelle	1	NS	F	-
			05:01	Common pipistrelle	1	NS	F	-
			05:07	Common pipistrelle	1	NS	F	-
			05:17	Soprano pipistrelle	1	NS	F	-

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
08/09/2021	RWH	T29 (Arcus)	20:22	Soprano pipistrelle	1	S	P	Flew south to north
			20:34	Common pipistrelle	1	NS	P	-
			20:38	Common pipistrelle	1	NS	F	-
			20:41	Soprano pipistrelle	1	NS	P / F	Very faint
			20:47-20:54	Common pipistrelle	1	NS	F	Very faint
	TH	T68	20:15	Soprano pipistrelle	1	S	P	Brief
			20:20	Soprano pipistrelle	1	S	P	-

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			20:23	Common pipistrelle	1	S	F	-
			20:27	Soprano pipistrelle	1	NS	P	-
			20:27	Common pipistrelle	1	NS	F	-
			20:30-20:37	Common pipistrelle	2	S	F	Frequent foraging over hedge
			20:38 – end	Common pipistrelle	2	S	F	Frequent foraging over hedge
			20:58	Noctule	1	NS	P	-
09/09/2021	RWH	T9 (Arcus)	05:06	Common pipistrelle	1	NS	P	Very faint

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			5:12-5:18	Common pipistrelle	1	NS	F	Continuous foraging
			05:20	Soprano pipistrelle	1	NS	F	-
			05:22	Common pipistrelle	1	NS	F	-
			05:27	Myotis sp.	1	NS	F	-
			05:33	Common pipistrelle	1	NS	F	-
			05:34	Soprano pipistrelle	1	NS	F	-
			05:41	Common pipistrelle	1	NS	F	-
			05:44	Myotis sp.	1	NS	F	-

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			05:49	Soprano pipistrelle	1	NS	F	-
			05:55	Myotis sp.	1	S	P / F	Flew along hedgerow and around the base of the tree
	TH	T24 (Arcus)	05:18 – 05:30	Common pipistrelle	2	S	F	Constant foraging
			05:31	Soprano pipistrelle	1	NS	P	-
			05:32	Common pipistrelle	2	S	F	Occasional foraging with chasing
			05:36 – 05:40	Soprano pipistrelle	1	NS	P	-
			05:45	Common pipistrelle	1	S	F	-

Survey Date	Surveyor	Location	Time	Species	No. Bats	Seen/Not Seen (S/NS)	Activity Type (E/R/C/F/P)	Comments
			05:55	Pipistrelle sp.	1	NS	P	-

Appendix D
Transect Surveys

- **Figure 6.6.3: Transect Routes (Park Farm)**
- **Figure 6.6.4: Transect Routes (Oaklands Farm)**
- **Figure 6.6.5: Relative Density of Bat Activity – Common Species (Park Farm)**
- **Figure 6.6.6: Relative Density of Bat Activity – Rarer Species (Park Farm)**
- **Figure 6.6.7: Relative Density of Bat Activity – Common Species (Oaklands Farm)**
- **Figure 6.6.8: Relative Density of Bat Activity – Rarer Species (Oaklands Farm)**
- **Table D.1: Environmental Conditions During Transect Surveys (Park Farm)**
- **Table D.2: Transect Survey Data (Park Farm)**
- **Table D.3: Environmental Conditions During Transect Surveys (Oaklands Farm)**
- **Table D.4: Transect Survey Data (Oaklands Farm)**

Oaklands Farm Solar Park
for Oaklands Farm Solar Ltd

Figure 6.6.3: Transect Routes on Park Farm

Site boundary

Transect route

A

B

0 250 500 m

Map scale 1:8,000 @ A3

PINS reference: EN010122

Oaklands Farm Solar Park
for Oaklands Farm Solar Ltd

Figure 6.6.4: Transect Routes on Oaklands Farm

Site boundary

Transect route

- A
- B
- C

N 0 250 500 m

Map scale 1:7,500 @ A3

PINS reference: EN010122

Oaklands Farm Solar Park
for Oaklands Farm Solar Ltd

Figure 6.6.5: Relative Density of Bat Activity - Common Species on Park Farm

Site boundary

Common species*

- Brown long-eared
- Common pipistrelle
- Pipistrellus sp.
- Soprano pipistrelle

Transect route

- A
- B

Relative bat activity density

High

Low

*Wray, S., Wells, D., Long, E. and Mitchell-Jones, A. (2010). Valuing Bats in Ecological Impact Assessment. In Practice, 70: 23-25.

PINS reference: EN010122

0 250 500 m

Map scale 1:8,000 @ A3

Oaklands Farm Solar Park
for Oaklands Farm Solar Ltd

Figure 6.6.6: Relative Density of Bat Activity - Rarer Species on Park Farm

Site boundary

Rarer species*

- Nathusius pipistrelle
- Myotis sp.
- Noctule
- Noctule / Leisler's
- Noctule / Serotine / Leisler's
- Leisler's
- Serotine

Transect route

- A
- B

Relative bat activity density

High

Low

0 250 500 m

Map scale 1:8,000 @ A3

*Wray, S., Wells, D., Long, E. and Mitchell-Jones, A. (2010). Valuing Bats in Ecological Impact Assessment. In Practice, 70: 23-25.

PINS reference: EN010122

Oaklands Farm Solar Park
for Oaklands Farm Solar Ltd

Figure 6.6.7: Relative Density of Bat Activity - Common Species on Oaklands Farm

Site boundary

Common species*

- Brown long-eared
- Common pipistrelle
- Pipistrellus sp.
- Soprano pipistrelle

Transect route

- A
- B
- C

Relative bat activity density

High

Low

*Wray, S., Wells, D., Long, E. and Mitchell-Jones, A. (2010). Valuing Bats in Ecological Impact Assessment. In Practice, 70: 23-25.

PINS reference: EN010122

N 0 250 500 m

Map scale 1:7,500 @ A3

Oaklands Farm Solar Park
for Oaklands Farm Solar Ltd

Figure 6.6.8: Relative Density of Bat Activity - Rare Species on Oaklands Farm

Site boundary

Rarer species*

- Nathusius pipistrelle
- Myotis sp.
- Noctule
- Noctule / Leisler's
- Noctule / Serotine / Leisler's
- Leisler's
- Serotine

Transect route

- A
- B
- C

Relative bat activity density

High

Low

0 250 500 m

Map scale 1:7,500 @ A3

*Wray, S., Wells, D., Long, E. and Mitchell-Jones, A. (2010). Valuing Bats in Ecological Impact Assessment. In Practice, 70: 23-25.

PINS reference: EN010122

Table D.1: Environmental Conditions During Transect Surveys (Park Farm)

Season	Survey Date	Sunrise / Sunset	Survey Timing		Temperature (°C)		Wind[24]		Cloud Cover[25]		Precipitation	Weather Conditions
			Start	End	Start	End	Start	End	Start	End		
Spring	24/05/2021	21:11	21:11	23:11	9	9	2	1	6	6	Dry	Good visibility, insects present, rain during day
Summer	23/06/2021	21:35	21:35	23:35	15	14	1	1	7	7	Dry	Good visibility, insects present, warm sunny day
Autumn	14/09/2021	06:39	04:39	06:39	13	13	1	1	8	7	Light rain until 05:13 then dry	Okay to good visibility, insects present

[24] Beaufort scale where 0 = calm, 2 = light breeze, 4 = moderate breeze, 6 = strong breeze, 7 = high wind, 9 = strong gale, 12 = hurricane
[25] Oktas scale where 0 = sky completely clear, 4 = sky half cloudy, 8 = sky completely cloudy

Table D.2: Transect Survey Data (Park Farm)

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
Spring								
24/05/2021	TH	1	21:45	Soprano pipistrelle	1	S	C	Flew near woodland
			22:20	Soprano pipistrelle	1	S	C	Flew southwest along hedge
			22:26	Common pipistrelle	1	NS	C/F	Foraged in field
	JM	2	21:47	Common pipistrelle	1	S	C	Flew north along hedgerow
			21:56	Common pipistrelle	1	NS	C	Near woodland edge
			22:11	Myotis sp.	1	S	C	Flew north along hedgerow

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			22:16	Common pipistrelle	1	NS	C	In field to the east
			22:19	Soprano pipistrelle	1	NS	C	In field to the east
			22:25	Common pipistrelle	1	S	C	Flew south along eastern boundary
Summer								
23/06/2021	TH	1	22:20	Common pipistrelle	Brief	NS	P	Flew along southern boundary
			22:24	Pipistrelle sp.	1	NS	P	In southwestern field on southern boundary
			22:27	Soprano pipistrelle	1	S	P	In south western field on western boundary

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			22:30 - 22:36	Soprano pipistrelle	2	S	F	Foraged near trees on western boundary
			22:42	Pipistrelle sp.	1	S	F	Foraged around hedgerow towards the north of the site
			22:54	Common pipistrelle	1	NS	P	In field to the north of the site
			22:59	Pipistrelle sp.	1	S	F	Near Poplar trees in centre of site
			23:07	Common pipistrelle	1	S	F	Foraged along hedgerow in centre of the site
			23:17	Soprano pipistrelle	1	S	F	Near woodland on north eastern boundary
	JB	2	22:16	Pipistrelle sp.	1	S	P	Flew over hedge southwest

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			22:20	Pipistrelle sp.	2	S	P	Flew in field northeast
			22:28	Pipistrelle sp.	1	NS	P/F	In southern field near boundary
			22:30	Common pipistrelle	5	S	F	Foraging over hedgerow
			22:40	Common pipistrelle	3	S	P	Flew southeast down field
			22:47	Pipistrelle sp.	1	S	P	Flew west in field
			22:52	Common and soprano pipistrelle	1	NS	P	Flew along northern boundary of eastern field
			22:55	Common pipistrelle	2	NS	P/F	Near hedge to the west of eastern field

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			23:02	Common pipistrelle	5	NS	P	Near hedgerow in centre of the site
			23:04	Common pipistrelle	1	NS	P	Near hedgerow in centre of the site
			23:06	Common pipistrelle	3	S	F	Foraged along hedgerow in centre of the site
			23:18	Common pipistrelle	2	NS	F	In southern field near boundary
			23:26	Common pipistrelle	1	NS	P/F	Flew south east down field
Autumn								
14/09/2021	TH	1	Start - 05:13	-	-	-	-	Rain so no duet used

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			05:13 - 05:23	Soprano pipistrelle	2	NS	F	Foraged near woodland edge in northeast of site
			05:24	Soprano pipistrelle	1	S	F	Foraged along hedgerow in centre of site
			05:27	Common and soprano pipistrelle	1	S	F	Foraging along hedgerow in centre of site
			05:31	Soprano pipistrelle	2	NS	F	Foraging in western field
			05:35	Soprano pipistrelle	2	NS	F	Foraged along hedgerow
			05:42	Pipistrelle sp.	1	NS	P	Faint and brief near western boundary

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			05:49	Soprano pipistrelle	2	S	F	Foraging in western field
			06:04	Soprano pipistrelle	2	S	F/Social	Foraged with chasing near north western boundary
			06:11	Soprano pipistrelle	1	S	F	Foraged in north eastern field
			06:17	Soprano pipistrelle	1	S	F	Foraged near woodland edge in north east of site
	JB	2	05:00	Pipistrelle sp.	1	NS	P/R	Along hedgerow north to south
			05:10	Common pipistrelle	4	NS	P/R	Near eastern boundary of southern field
			05:19	Common pipistrelle	3	NS	F	Near hedgerow to the west of eastern field

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			05:46	Common pipistrelle	2	NS	F	Near hedgerow to the west of eastern field
			05:51	Pipistrelle sp.	2	S	F	Foraged along hedgerow
			05:56	Pipistrelle sp.	1	S	F	Foraged along hedgerow
			05:57	Common pipistrelle Noctule	2	S	F	Common pipistrelle foraged over hedgerow Noctule foraged in field
			06:05	Pipistrelle sp.	1	NS	P/F	Near eastern boundary of southern field
			06:08	Common pipistrelle	1	S	F	Foraged in field and near trees near eastern boundary of southern field

Table D.3: Environmental Conditions During Transect Surveys (Oaklands Farm)

Season	Survey Date	Sunrise / Sunset	Survey Timing		Temperature (°C)		Wind[24]		Cloud Cover[25]		Precipitation	Weather Conditions
			Start	End	Start	End	Start	End	Start	End		
Early Summer	10/08/2021	20:42	20:42	22:42	19	19	1	1	4	4	Dry	Good visibility, insect present
Late Summer	26/08/2021	20:09	20:09	22:09	16	16	2	2	3	3	Dry	Good visibility, insects present
Autumn	21/09/2021	06:48	04:48	06:48	11	12	2	2	7	7	Dry	Good visibility, lots of insect present

Table D.4: Transect Survey Data (Oaklands Farm)

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
Early Summer								
10/08/2021	JB	A	21:11	Soprano pipistrelle	1	NS	P	Very quiet and brief near Coton Road
			21:19	Soprano pipistrelle	1	NS	P/F	Very quiet near woodland edge to the north of the site
			21:19 - 21:48	-	-	-	-	In maize field so limited note taking
			21:48	Pipistrelle sp. Leisler	2	S	P/F	Foraged in northwest of field
			21:50	Leisler	1	NS	P/F	Very quiet in north of field
			21:53	Unknown	1	NS	P/F	Quiet in east of field

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			21:55	Common pipistrelle	1	NS	P/F	In southeast of field
			21:57	Common pipistrelle	1	NS	F	In southeast of field
			22:01	Common pipistrelle	1	NS	F	In west corner of field
			22:32	Soprano pipistrelle	1	NS	P/F	In southeast of field close to gate
	EM	B	21:25	Common pipistrelle	1	NS	P	-
			21:33	Common pipistrelle	1	NS	P	-
			21:35	Common pipistrelle	1	NS	P	-

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			21:37	Common pipistrelle	1	NS	P	-
			21:39	Common pipistrelle	1	NS	P	-
			21:45	Unknown	1	NS	P	-
			21:47	Soprano pipistrelle	1	NS	P	-
			21:49	Common and soprano pipistrelle	2	NS	P	-
			21:51	Common pipistrelle	1	NS	P	-
			22:00	Soprano pipistrelle	1	NS	P	-

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			22:02	Common pipistrelle	1	NS	F	-
			22:09	Common pipistrelle	1	NS	P	-
			22:12	Common and soprano pipistrelle	2	NS	P	-
			22:20	Common pipistrelle	1	NS	F	-
	CC	C	21:07	Noctule	1	NS	C	-
			21:13	Common pipistrelle	1	NS	C	-
			21:22	Common pipistrelle	2	NS	F	-

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			21:31	Noctule	1	NS	F	-
			21:44	Myotis sp.	1	NS	F	-
			21:56	BLE	1	NS	F	-
			22:10	Noctule	1	NS	F	-
			22:30	Soprano pipistrelle	2	NS	F	-
			22:34	Common pipistrelle	1	NS	F	-
Late Summer								
26/08/2021	JB	A	-	-	-	-	-	-
	RWH	B	20:53	Soprano pipistrelle	1	S	F/P	Flew east from woodland

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			20:58	Soprano pipistrelle	1	NS	F	Near east of woodland
			21:00	Common and soprano pipistrelle	3	S	F/P	Flew west along road
			21:03	Common pipistrelle	1	NS	F	Near Coton Road
			21:05	Common pipistrelle	1	NS	F	Near hedgerow by track running
			21:11	Soprano pipistrelle	1	NS	F	Near south west of the site
			21:14	Common pipistrelle	1	NS	F/P	Near treeline in southwest of site

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			21:17	Common pipistrelle	1	NS	F/P	Near tree line in southwest of site
			21:27	Soprano pipistrelle	1	NS	F	Near track running northeast of Coton Road
			21:28	Common and Soprano pipistrelle	1	NS	F/P	Near track running northeast of Coton Road
			21:38	Common pipistrelle	1	NS	F/P	In the northeast corner of the field
			21:58	Pipistrelle sp.	1	NS	F/P	In the eastern corner of the field
	CC	C	20:31	Noctule	4	NS	C	-
			21:02	Common pipistrelle	5	NS	F	-

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			21:03	Common pipistrelle	2	S	F	Flew southwest along hedge
			21:17	Noctule	2	NS	F	-
Autumn								
21/09/2021	JB	A	05:59	Pipistrelle sp.	3+	S	P/F	Foraged along hedgerow
	EM	B	05:00	Common pipistrelle	1	NS	P	-
			05:08 - 05:15	Common and soprano pipistrelle	3+	NS	F	-
			05:34	Common pipistrelle	1	NS	P	-

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			05:36	Common pipistrelle	1	NS	P	-
			05:41	Soprano pipistrelle	1	NS	P	-
			05:47	Soprano pipistrelle	1	S	P	Flew along hedge
			05:51	Common and soprano pipistrelle	1	NS	P	-
			05:53	Common pipistrelle	2	NS	P	-
			06:07	Common pipistrelle	1	NS	P	-

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			06:10	Common pipistrelle	1	NS	P	-
			06:13	Common pipistrelle	1	NS	P	-
			06:20	Unknown	1	NS	P	-
	TH	C	04:53	Common and soprano pipistrelle	2	NS	F	In west corner of field
			05:02	Common pipistrelle	1	NS	F	Near hedgerow dividing southern fields
			05:15	Soprano pipistrelle	1	NS	P	In northern corner of field
			05:20	Soprano pipistrelle	1	NS	F	In field in the northeast of site

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			05:27	Soprano pipistrelle	1	NS	F	On the northeast boundary of site
			05:31	Soprano pipistrelle	1	NS	F	In the field to the west of woodland and unnamed watercourse
			05:37	Common pipistrelle	1	S	P	Flew along field on northern boundary of site
			05:43	Common pipistrelle	1	S	P	Flew along western boundary of field at north east of site
			05:47	Soprano pipistrelle	2	S	F	In west corner of field - social calls
			05:51	Common and soprano pipistrelle	5	S	F	Flew along hedgerow – chasing/ social interaction

Survey Date	Surveyor	Transect	Time	Species	No. bats	Seen/not seen (S/NS)	Activity Type (E/R/C/P/F)	Comments
			05:54	Soprano pipistrelle	1	S	F	In northern corner of field
			06:12	Soprano pipistrelle	1	S	F	-
			06:21	Pipistrelle sp.	1	NS	P	In field to the west of woodland and unnamed watercourse

Appendix E
Static Monitoring

Oaklands Farm Solar Park
for Oaklands Farm Solar Ltd

Figure 6.6.9: Static Monitoring Point Locations on Park Farm

PINS reference: EN010122

Oaklands Farm Solar Park
for Oaklands Farm Solar Ltd

Figure 6.6.10: Static Monitoring Point Locations on Oaklands Farm

Site boundary

Static monitoring point

PINS reference: EN010122

Table E.1: Environmental Conditions During Static Monitoring Surveys (Park Farm)

Season	Date	Sunrise	Sunset	Min Temperature (°C)	Max Temperature (°C)	Weather Conditions (night)
Spring (May)						
Spring	27/05/2021	04:53	21:19	10	13	Light breeze, light/moderate cloud, dry
	28/05/2021	04:52	21:20	10	11	Light breeze, dry with slight rain at 00:00, sky completely cloudy
	29/05/2021	04:51	21:22	10	14	Light air, dry, light to moderate cloud
	30/05/2021	04:50	21:23	8	15	Gentle / light breeze, dry, clear sky
	31/05/2021	04:49	21:24	10	13	Moderate/gentle breeze, dry, light cloud
Summer (June/July)						
Summer	27/06/2021	04:45	21:39	12	14	Gentle /light breeze, dry, light to moderate cloud
	28/06/2021	04:46	21:39	13	15	Light air/light breeze, light rain, full cloud cover
	29/06/2021	04:46	21:39	11	16	Light breeze/light air, dry, light to moderate cloud

Season	Date	Sunrise	Sunset	Min Temperature (°C)	Max Temperature (°C)	Weather Conditions (night)
	30/06/2021	04:47	21:38	13	15	Light air, dry, sky half cloudy
	01/07/2021	04:48	21:38	13	14	Light breeze, dry, full cloud cleared to almost completely clear
Autumn (September)						
Autumn	15/09/2021	07:32	18:10	20	13	Dry, mainly clear sky, light breeze
	16/09/2021	07:34	18:08	20	13	Dry, light breeze
	17/09/2021	07:35	18:06	20	11	Dry, light breeze
	18/09/2021	07:37	18:04	22	13	Rain around 19:00 then dry, light breeze
	19/09/2021	07:39	18:01	19	11	Dry, light breeze

Table E.2: Static Monitoring Data (Park Farm)

	Common pipistrelle	Soprano pipistrelle	Nathusius pipistrelle	Pipistrellus sp.	Brown long-eared	Myotis sp.	Daubenton's	Noctule	Serotine	Leisler's	Noctule / Leisler's	Noctule / Serotine / Leisler's	Grand Total
Spring	**3496**	**2062**	**693**	**6**	**117**	**642**	**34**	**272**	**1**	**8**	**56**	**1**	**7388**
SMP-1	966	199	114	-	10	105	12	110	-	5	12	-	**1533**
SMP-2	1091	1224	576	3	37	319	14	62	1	2	24	1	**3354**
SMP-3	937	560	1	2	68	145	5	28	-	-	9	-	**1755**
SMP-4	502	79	2	1	2	73	3	72	-	1	11	-	**746**
Summer	**2421**	**2439**	**166**	**40**	**49**	**269**	**48**	**301**	**-**	**136**	**65**	**-**	**5934**
SMP-1	220	94	88	-	16	70	4	93	-	8	1	-	**594**
SMP-2	642	1864	44	-	27	112	44	86	-	8	22	-	**2849**
SMP-3	1079	420	11	35	3	62	-	72	-	114	40	-	**1836**

	Common pipistrelle	Soprano pipistrelle	Nathusius pipistrelle	Pipistrellus sp.	Brown long-eared	Myotis sp.	Daubenton's	Noctule	Serotine	Leisler's	Noctule / Leisler's	Noctule / Serotine / Leisler's	Grand Total
SMP-4	480	61	23	5	3	25	-	50	-	6	2	-	**655**
Autumn	**10114**	**4305**	**284**	**271**	**217**	**1828**	**33**	**901**	**10**	**1097**	**151**	**14**	**19225**
SMP-1	3219	756	127	146	45	336	7	91		176	16	2	**4921**
SMP-2	843	1152	54	49	22	600	23	133	8	160	13	2	**3059**
SMP-3	4376	1931	58	69	61	803	3	546	2	755	120	10	**8734**
SMP-4	1676	466	45	7	89	89	-	131		6	2	-	**2511**
Grand Total	**16031**	**8806**	**1143**	**317**	**383**	**2739**	**115**	**1474**	**11**	**1241**	**272**	**15**	**32547**

Table E.3: Environmental Conditions During Static Monitoring Surveys (Oaklands Farm)

Season	Date	Sunrise	Sunset	Min Temperature (°C)	Max Temperature (°C)	Weather Conditions (night)
Early Summer (Early August)						
Early Summer	01/08/2021	05:27	20:59	12	14	Light breeze, dry
	02/08/2021	05:29	20:57	11	13	Light breeze, light rain until 00:00
	03/08/2021	05:30	20:55	14	17	Light air, dry
	04/08/2021	05:32	20:53	13	17	Light breeze, dry with light rain at 00:00
	05/08/2021	05:34	20:51	13	14	Light breeze, light rain at 21:00
Late Summer (Late August)						
Late Summer	25/08/2021	06:07	20:10	13	20	Dry, light breeze
	26/08/2021	06:08	20:08	8	18	Dry, light breeze
	27/08/2021	06:10	20:06	9	15	Dry, light breeze
	28/08/2021	06:12	20:03	10	15	Dry, light breeze
	29/08/2021	06:13	20:01	10	17	Dry, gentle breeze

Season	Date	Sunrise	Sunset	Min Temperature (°C)	Max Temperature (°C)	Weather Conditions (night)
Autumn (September)						
Autumn	21/09/2021	06:52	19:07	10	15	Dry, light breeze
	22/09/2021	06:54	19:04	11	19	Dry, light to gentle breeze
	23/09/2021	06:56	19:02	11	14	Dry, light breeze
	24/09/2021	06:57	19:00	14	18	Dry, gentle to light breeze
	25/09/2021	06:59	18:57	13	19	Light rain, light breeze

Table E.4: Static Monitoring Data (Oaklands Farm)

	Common pipistrelle	Soprano pipistrelle	Nathusius pipistrelle	Pipistrellus sp.	Brown long-eared	Myotis sp.	Noctule	Serotine	Leisler's	Noctule / Leisler's	Noctule / Serotine / Leisler's	Grand Total
Early Summer	**6335**	**626**	**41**	**173**	**32**	**350**	**901**	**38**	**180**		**117**	**8793**
SMP-1	445	239	8	114	4	136	93	5	6		8	**1058**
SMP-2	5068	276	19	47	19	178	252	18	22		2	**5901**
SMP-3	822	111	14	12	9	36	556	15	152		107	**1834**
Late Summer	**10590**	**1150**	**13**	**112**	**57**	**697**	**710**	**19**	**52**	**1**	**13**	**13414**
SMP-1	1951	572	7	23	24	429	270	7	13		5	**3301**
SMP-2	6200	408	4	79	28	161	342	12	8		5	**7247**
SMP-3	2439	170	2	10	5	107	98		31	1	3	**2866**

	Common pipistrelle	Soprano pipistrelle	Nathusius pipistrelle	Pipistrellus sp.	Brown long-eared	Myotis sp.	Noctule	Serotine	Leisler's	Noctule / Leisler's	Noctule / Serotine / Leisler's	Grand Total
Autumn	**14686**	**1248**	**44**	**200**	**56**	**513**	**1116**		**44**	**36**	**26**	**17969**
SMP-1	996	151	34	20	42	61	486		6		8	**1804**
SMP-2	10060	603	1	166	9	351	438		3		17	**11648**
SMP-3	3630	494	9	14	5	101	192		35	36	1	**4517**
Grand Total	**31611**	**3024**	**98**	**485**	**145**	**1560**	**2727**	**57**	**276**	**37**	**156**	**40176**