

Newlands Farm, Arborfield

Protected Species Survey Report

Prepared on behalf of

Gleeson Strategic Land Ltd

Final Report

06 February 2025

22/31-1C

Newlands Farm, Arborfield

Protected Species Survey Report

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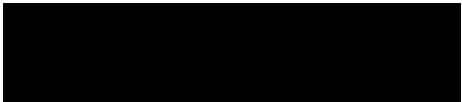
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Protected Species Survey Report

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Newlands Farm, Arborfield

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1. INTRODUCTION

- 1.1 Ecological Planning & Research Limited (EPR) was commissioned by Gleeson Strategic Land Ltd to conduct a suite of ecological surveys on the land at Newlands Farm, Arborfield (central grid reference SU762 680).

Background

- 1.2 Newlands Farm, herein after referred to as the 'Site', is located to the north-east of the village of Arborfield, bordered by the B3030 within the administrative boundary of Wokingham Borough Council. The Site comprises of two fields; a large arable field and a smaller grassland field. **Map 1** shows the location of the Site.
- 1.3 The Site falls under the wider Loddon Garden Village (LGV) allocation, currently being considered by Wokingham Borough Council as part of their upcoming strategic development allocation for their forthcoming local plan.
- 1.4 The LGV allocation would provide up to 4,500 new residential homes, of which a portion would be provided on the Site. As such, a series of ecological surveys have been undertaken across the Site, to identify potential constraints and opportunities in relation to residential development.

Scope of Report

- 1.5 This report details the methods and results of those surveys conducted in 2022, these comprised:
- Habitat Surveys;
 - Hedgerow Surveys;
 - Veteran Tree Surveys
 - Badgers Survey;
 - Bat Activity Surveys,
 - Automatic Static Detector Surveys;
 - Breeding Bird Surveys;
 - Winter Bird Surveys;
 - Hazel Dormice Habitat Assessment;
 - Invertebrate Scoping; and
 - Water Vole Habitat Suitability Surveys.

- 1.6 Where necessary, it also outlines recommendations for mitigation and compensation measures, to ensure compliance with relevant legislation and policy. Recommendations for enhancement measures have also been covered to provide gains for local biodiversity.
- 1.7 In addition to the above Ground Level Tree Inspections for bats have been carried out. Due to changes in guidance a re-assessment of the results must be made and will be added to this note upon completion.

Relevant Legislation, Planning Policy and Guidance

- 1.8 Due regard has been paid to the following:
- The Environment Act 2021;
 - The Conservation of Habitats and Species Regulations 2017 (as amended), known as the 'Habitats Regulations';
 - The Wildlife and Countryside Act 1981 (as amended);
 - The Countryside and Rights of Way (CROW) Act 2000 (as amended);
 - The Natural Environment and Rural Communities (NERC) Act 2006;
 - National Planning Policy Framework (NPPF) 2023;
 - Government Circular 06/05 'Biodiversity and Geological Conservation: Statutory Obligations and Their Impact Within the Planning System';
 - UK post-2010 Biodiversity Framework;
 - The 25 Year Environment Plan;
 - Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services; and
 - The Wokingham Borough Council Local Biodiversity Action Plan.
- 1.9 Further information can be found in **Appendix 1**.

2. METHODOLOGY

Field Surveys

Habitat and Hedgerow Assessment

- 2.1 The habitat and hedgerow surveys were undertaken between May and June of 2022 by Jodie Southgate.
- 2.2 Within the study area the land use, habitat types and landscape features (such as hedgerows) were described and mapped. For each main habitat type the dominant vegetation communities were recorded, along with any notable or indicator plant species, (including invasive species such as Japanese Knotweed where present). An evaluation of the structure, quality and likely management of each habitat or feature was also carried out.
- 2.3 The survey method used to record this information was based on the UK Habitat Classification System v1.1 (UK Hab, 2020). Botanical nomenclature in this report follows Stace (2019). The habitat map is coded to Level 4 and 5 in the UKHab hierarchy. All mandatory and some optional UKHab secondary codes were recorded as part of the survey, these codes have not been included within the mapping of the habitats.
- 2.4 Full condition assessments of habitats were undertaken using the Biodiversity Metric 3.1 condition assessment criteria.

2024 Update

- 2.5 An update survey was carried out on 10th May 2024 by Hannah Corrigan using the methodology outlined above.

Badger Survey

- 2.6 The Badger *Meles meles* survey method was conducted following standard guidance (Harris *et al.*, 1989; Scottish Badgers, 2018).
- 2.7 The Site was systematically walked by experienced mammologist Natalie Compton on 13th March 2022. The survey area covered all accessible land within the Site.
- 2.8 All areas of the Site were surveyed, but particular attention was paid to habitats most frequently used by Badger, such as field boundaries, hedgerows, woodland, and features within the landscape such as pylons.
- 2.9 The Site was examined for Badger presence through the discovery of setts, and Badger activity levels were assessed using field signs (e.g., well-used pathways, foraging holes (snuffle holes), Badger hairs, footprint, dung pits and latrines).

2024 Update

- 2.10 An update survey was carried out on 8th April 2024 by Natalie Compton using the methodology outlined above.

Bat Activity Surveys

- 2.11 A transect route, encompassing most of the features within the Site considered to have the suitability of to support bat foraging, commuting or roosting habitat, however, the smaller field in the Northeast of the Site was not covered by the transect due to access constraints from the main field. This area was instead covered through the use of an automated bat detector to establish the bat assemblage, and this is discussed below. See **Map 2** for the transect route walked by surveyors.
- 2.12 The transect route was marked on a survey map and was surveyed eight times from April to October 2022, including one dawn survey undertaken in July which started two hours before sunrise. The dusk surveys started 15 minutes prior to sunset and continued for a minimum of two hours (see **Table 2.1**). The direction of travel for the transect routes was altered between survey visits.

Table 2.1: Transect Survey Dates, Timings, and Weather Conditions

Survey Date	Sunset/ Sunrise Time	Start Time	Finish Time	Temperature (°C)	Cloud Cover (%)	Wind (Beaufort Scale)	Rain
26/04/22	20:18	20:03	22:18	13 - 9	-	3-3	None
25/05/22	21:01	20:46	23:03	16	100	3-4	None
23/06/22	21:05	20:50	23:25	25 - 18	95-60	2-2	None
27/07/22	21:00	20:45	23:00	23 – 18	100 – 100	1 – 1	None
28/07/22	5:21	3:21	5:36	14 - 14	100 - 70	1 - 1	None
18/08/22	20:21	20:05	22:21	23 - 20	100 - 90	2 - 1	None
21/09/22	19:05	18:50	21:05	19 - 15	100 - 90	0 - 0	None
12/10/22	18:17	18:02	20:17	16 - 14	100 - 100	2 - 2	None

- 2.13 All transects were walked by two experienced bat surveyors, using Batbox Duets, Batlogger M, Batlogger M2, or Anabat Scout full spectrum bat detectors.
- 2.14 The following information was recorded for any bats seen or heard; species, time, behaviour (whether it was feeding, commuting, social calling or swarming) and if seen, direction of flight, and if it emerged or re-entered a building or tree. Behaviour was determined by observed flight patterns and call characteristics heard on the bat detector.

2024 Update

- 2.15 Update surveys were carried out in 2024 using the updated methodology outlined in the BCT good practice guidelines (4th edition) published September 2023.
- 2.16 In line with these guidelines, only three surveys were required throughout the active period, in Spring, Summer and Autumn. Prior to walking the transect route, surveyors recorded bat activity from a fixed point for 30 minutes, starting at sunset. **Table 2.2** sets out the dates, times and conditions of these surveys. Fixed-point locations are shown in **Map 2**.

Table 2.2: Transect Survey Dates, Timings, and Weather Conditions

Survey Date	Sunset/ Sunrise Time	Transect Start Time	Transect Finish Time	Temperature (°C)	Cloud Cover (%)	Wind (Beaufort Scale)	Rain
29/04/24	20:25	20:55	22:32	9 - 11	0 - 20	0 - 1	none
22/07/24	21:08	21:38	23:40	19 - 21	80 – 100	1 - 3	none
22/10/24	17:55	18:25	19:55	14 - 15	20 - 30	0	none

Automatic Static Detector Surveys

- 2.17 Two automated static full spectrum detectors were deployed over five consecutive nights to provide additional information to support the ecological assessment of how bats use the Site, see **Table 2.3** for dates and weather conditions.
- 2.18 The automated static detectors were located to cover those habitats considered suitable for bats. (see **Map 3** for automated static detector locations).

Table 2.3: Dates and weather conditions during Automatic Static Detector Surveys in 2022

Date	Temperature range (°C)	Wind (mph)	Rain
25/04 - 2/05	-0.5 - 12.2	<10	None
21/05 - 26/05	7.7 - 17.2	<12	None
14/06 - 23/06	6.1 - 22.7	<14	None
19/07 - 25/07	13.0 - 25.0	<18	None
24/08 - 30/08	9.0 - 19.0	<12	Light rain on 24/08
20/09 - 26/09	8.0 - 18.0	<9	Light rain on 23/09 and 24/09
17/10 - 24/10	9.0 - 14.0	<16	Light rain on 19/10, 20/10, and 21/10

- 2.19 The recordings were analysed using Kaleidoscope, with the number of bats, species, and any social calling activity noted where possible.

2024 Update

- 2.20 Update surveys were carried out in 2024 using the methodology outlined in the BCT good practice guidelines (4th edition) published September 2023 which is unchanged from the above. **Table 2.4** sets out the dates and conditions for these surveys.

Table 2.4: Dates and weather conditions during Automatic Static Detector Surveys in 2024

Date	Temperature range (°C)	Wind (mph)	Rain
24/04/24 – 30/04/24	-1 - 11	0 - 16	Light rain on 27 - 28/04/24

20/05/24 – 25/05/24	6 - 28	0 - 12	Light rain on 21 - 22/05/24
24/06/24 – 29/06/24	6 - 21	0 - 10	None
23/07/24 – 28/07/24	8 - 19	0 - 12	Light rain on 24 - 25/07/24
23/08/24 – 28/09/24	08 - 18	1 - 16	Light rain on 24/08/24 and 25 - 26/08/24
23/09/24 – 28/09/24	0 - 14	1 - 13	Heavy rain on 23 – 24/09/24, light rain on 25 - 26/09/24
23/10/24 – 28/10/24	3 - 15	0 - 15	Light rain on 26/10/24

- 2.21 As the eastern parcel had been dropped from the application area by the time these surveys commenced, the second static detector was deployed at the northern border of the Site, at the edge of the ancient woodland (**Map 3**), henceforth referred to as Location C. This area was chosen as it is the location of the proposed spine road.

Breeding Bird Surveys

- 2.22 Breeding bird surveys were conducted by Katie Cammack and Jodie Southgate of EPR.
- 2.23 Five Site visits were conducted between 20th April 2022 and 12th July 2022. Further details are provided in **Table 2.3**.

Table 2.5: Time and weather during breeding bird survey visits in 2022.

Date	Start Time	Finish Time	Temperature (°C)
20/04/2022	5:30	-	7
26/05/2022	5:20	6:30	9
13/06/2022	19:14		18
28/06/2022	6:45	7:30	12 - 16
12/07/2022	7:20	-	16

- 2.24 Surveys were undertaken based on methodologies provided by the Bird Survey Guidelines for Assessing Ecological Impacts (2023). These guidelines recommend a total of six surveys to be carried out as a standard for breeding birds, however due to timing restrictions only four surveys were undertaken.
- 2.25 All bird species seen or heard during the survey were recorded. However, most survey effort was focussed on species listed as Species of Principal Importance and/or those red status species (see Eaton *et al.*, 2015) and/or those species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).
- 2.26 Consequently, birds flying overhead (and not using the Site) and/or some common and widespread species may have been omitted from survey results.

- 2.27 The area was surveyed on foot so that the surveyor passed within 50m of most points within the Site. In some circumstances i.e., when fields are particularly large, the distance between the surveyor and areas within the Site may have exceeded 50m.
- 2.28 Where possible, signs of breeding activity were noted, and breeding evidence was assigned to four categories: confirmed; probable; possible and non-breeding. These are based on the standard British Trust for Ornithology (BTO) criteria.

2024 Update

- 2.29 Four update surveys were carried out between 8th April and 10th July 2024 by Alice Holley and Katrina Diedericks using the methodology outlined above. Further details are provided in **Table 2.6**.

- 2.30 **Table 2.6:** Time and weather during breeding bird survey visits in 2024.

Date	Start Time	Finish Time	Temperature (°C)
08/04/24	06:40	08:00	9
09/05/24	05:35	05:00	9
12/06/24	04:45	06:30	8
10/07/24	05:05	07:30	14 - 15

Winter Bird Surveys

- 2.31 Three wintering bird surveys were undertaken by Alice Hicks and Katie Cammack (see **Table 2.7**), including one nocturnal survey.

Table 2.7: Time and weather conditions for wintering bird survey.

Date	Start	Finish	Temperature (°C)	Cloud cover (%)	Wind (Beaufort Scale)	Rain
18/01/2023	12:40	13:25	6	20	1	None
18/01/2023	20:20	23:00	-1	0	1	None
15/02/2023	10:00	12:00	6	10	0	None
20/11/2023	11:20	12:30	12	90	2	None
13/12/2023	11:30	12:30	7	100	2	Intervals of light rain

- 2.32 Surveys were undertaken based on methodologies provided by the Bird Survey Guidelines for Assessing Ecological Impacts (2023). These guidelines recommend a total of monthly surveys between November to February for sites likely to support wintering birds. However due to the timing of the instruction only two surveys were completed.
- 2.33 An additional nocturnal survey, using thermal imaging cameras, was completed to identify whether the Site was supporting wintering waders.

Hazel Dormouse Habitat Assessment

- 2.34 The Hazel Dormouse *Muscardinus avellanarius* Habitat Assessment was conducted following standard guidance (Bright *et al.*, 2006).
- 2.35 The Site was systematically walked by experienced mammologist Natalie Morrison on the 22nd of April 2022. The survey area covered all accessible land within the Site.
- 2.36 The woodland and hedgerows on the Site were assessed for their suitability to support a Hazel Dormouse population using criteria such as; species composition and diversity, connectivity to the wider landscape, and existing management techniques.
- 2.37 Optimal Dormouse habitat contains a high degree of species diversity of both trees and shrubs providing a three-dimensional structure with links between the canopy and undergrowth. Connectivity to the wider landscape via diverse hedgerows and scrub enables movement across the whole woodland landscape. Rotational felling, coppicing or pollarding creates a mosaic of age classes which is beneficial to the Dormouse lifecycle.

Invertebrate Survey

- 2.38 Surveys of terrestrial and aquatic invertebrates were carried out over the summer of 2022 by Dr Jonty Denton (FRES, FLS, Cocol, MCIEEM).
- 2.39 Standard field techniques were employed to sample the invertebrate fauna across the Site. These included sweeping vegetation with a wide mouthed sweep net, beating trees and bushes over a beating tray, and grubbing amongst tussocks and key host plant rosettes.

Water Vole & Otter Habitat Suitability Survey

- 2.40 The water course adjacent to the Site was assessed for its suitability to support Water Vole *Arvicola amphibius* and Otter *Lutra lutra*, and searched for signs of presence by Katie Cammack and Katrina Diedericks on the 20th June 2022.

Survey Limitations and Constraints

- 2.41 All surveys were undertaken at an appropriate time of year.

Badger

- 2.42 Badgers are highly mobile and can quickly establish new setts, therefore any survey will only provide a snapshot of how badgers are using a particular site at a time.

Bats

- 2.43 Bats are often nomadic and invariably move between roosts, therefore, any bat survey will only provide a snapshot of how bats are using a particular site at a time.
- 2.44 Automated surveys allow surveillance over relatively long periods, and generate large volumes of data – the applicability of which is inevitably constrained by the lack of an observational context; that is to say, it is impossible to determine whether a number of recorded passes were made by few or many bats. However, undertaking manned activity surveys in combination with automated methods is considered to mitigate this intrinsic methodological constraint.

- 2.45 When analysing data from the static detectors it is not always possible to assign a call to species level due to poor-quality call data, or large amount of noise distorting the call. In these cases, the call is designated to genus level (e.g. *Myotis* species) or to a group, such as 'Big bats'.
- 2.46 Bat species that typically have quieter echolocation calls, particularly Long-eared *Plecotus* species, may be under recorded across the potential Zone of Influence as the quieter calls make them less likely to be detected compared to other bat species.
- 2.47 The Batbox Duet handheld bat detector malfunctioned at 20:47 on the bat transect survey on the 6th of September, however this was an hour and 42 minutes after sunset, the minimum survey time had been completed as per the guidelines this was not considered a significant survey constraint.

Birds

- 2.48 Following guidance, a total of six breeding bird surveys, and four winter bird surveys should have been undertaken. Unfortunately, due to project timescales this was not possible.
- 2.49 However, given the findings of the survey it is considered unlikely that additional surveys would have provided further insights into the bird assemblage, and at this point in the project is unlikely to prove a significant constraint.

3. RESULTS

Field Surveys

Habitat Surveys

- 3.1 The results of the habitat and linear habitat surveys are shown on **Maps 4 and 4b**.
- 3.2 The Site consists of arable land which at the time of the surveys contained Wheat and Barley crops and temporary grass and clover leys. These areas are of little ecological value in themselves, although may provide foraging opportunities for local biodiversity.
- 3.3 At the north of the Site is an area of Lowland mixed deciduous woodland, a section of which is listed on the Provisional Ancient Woodland Inventory. This means this woodland is considered likely to have been in existence since at least 1600 and is classified as an 'irreplaceable habitat' under the NPPF.
- 3.4 Two parcels of neutral grassland are present within the Site boundary, both of which are species poor.
- 3.5 The Site is largely bound by native hedgerows, of which many are heavily managed through flailing.

2024 Update

- 3.6 Himalayan Balsam *Impatiens glandulifera*, a Schedule 9 Non-Native Invasive Species, was noted to have colonised the banks of the watercourse adjacent to site and beginning to push further into the adjacent fields.
- 3.7 No further significant changes were recorded.

Veteran Tree Survey Results

- 3.8 Four Veteran Trees have been identified on Site. Three along the Site boundaries, and one within the central hedgerow bisecting the fields (**Map 5**).
- 3.9 In addition to this, the Site supports a substantial number of 'Trees of Ecological Interest'. These trees are not considered to have enough features to categorise them as Veteran, but do have some features of interest.

Badger Survey

- 3.10 All Badger survey results must be treated as confidential and cannot be released into the public domain.

- 3.11 [REDACTED]

[REDACTED]

seasonal crops, and therefore the field may be used by foraging Badger at different times of the year to when the survey was undertaken.

2024 Update

- 3.13 No significant changes were recorded in the update survey. Full results are shown in **Map 6b**.

Bat Activity Surveys

- 3.14 Summary results of the activity transect surveys are shown on **Maps 7a-g**.
- 3.15 Five species of bat, and three species groups, were recorded on Site during the surveys. These comprised:
- Common Pipistrelle *Pipistrellus pipistrellus*;
 - Soprano Pipistrelle *Pipistrellus pygmaeus*;
 - Brown Long-eared *Plecotus auritus*;
 - Serotine *Eptesicus serotinus*;
 - Noctule *Nyctalus noctula*;
 - Pipistrelle species *Pipistrellus sp*;
 - Long-eared species *Plecotus sp*; and
 - Myotis species *Myotis sp*.

- 3.16 The results demonstrate that bat activity is concentrated around the periphery of the Site, following the linear features of the Site boundary. Activity was dominated by Common Pipistrelle, which were recorded frequently across the Site and in every month of survey. Activity by the remaining species was recorded at a lower frequency, less often and in more discrete locations.
- 3.17 Alongside Common Pipistrelle, Soprano Pipistrelle were also recorded in every month of survey, although as noted above the level of activity by Common Pipistrelle far outweighed the recorded activity of Soprano Pipistrelle. Both species were recorded to be foraging on the Site, alongside Noctule and Serotine. Despite this the summary maps do not indicate a single common location between these four species that would suggest a specific foraging area. Instead, it can be assumed that all linear features around the periphery of the Site are providing foraging opportunities for these bat species.

2024 Update

- 3.18 The results from the update surveys were broadly in line with those of the 2022 surveys, though fewer species were recorded, limited to Common and Soprano Pipistrelle and Noctule.
- 3.19 The fixed-point portion of the surveys recorded significant foraging activity at fixed-point 1, predominantly by Pipistrelle species. Little activity was recorded at fixed-point 2. Full results are shown in **Maps 7h-j**.

Automatic Static Detector Surveys

- 3.20 See **Maps 8a – 8g** for results for relative bat activity for each species at each location per month.

Species Recorded

- 3.21 The static detectors identified ten different bat species and groups present on the Site, see **Table 3.1**. The Common Pipistrelle was the most frequently recorded (57% of all calls recorded) bat species throughout the surveys. Soprano Pipistrelle bats were also frequently heard (30%). Recordings of bat passes by other bat species were low (0.04 - 6%).

Table 3.1: Total mean number of passes per species

Site Totals	Pip pip	Pip pyg	Pip sp	Pip nat	Myo sp	LE sp	LFB	Ept ser	Nyc noc	Nyc lei	B bar	Total Calls
Total Calls	1048.8	554.30	6	0.8	17.30	29.90	22	1.3	112.7	3.6	28.8	825.5
% of total calls	57.45	30.36	0.33	0.04	0.95	1.64	1.21	0.07	6.17	0.2	1.58	/

Pip pip = Common Pipistrelle, Pip pyg = Soprano Pipistrelle, Pip sp = Pipistrelle species, Pip nat = Nathusius' Pipistrelle, Myo sp = Myotis species, LE sp = Long-eared species, LFB = Low-frequency bat (Noctule/Leislars/Serotine), Ept ser = Serotine, Nyc sp = Nyctalus species, Nyc noc = Noctule, Nyc Lei = Leislars, B bar = Barbastelle.

Geographic Variation in Activity

- 3.22 The highest number of bat passes was recorded at location A where a total of 1083.4 bat passes (60%) from eleven different bat species or groups were recorded (**Table 3.2**).

Table 3.2: Total mean number of passes per sampling location

Location	A	B
Total Calls	1083.4	732.4
% of total calls	59.67	40.33

Seasonal Variation in Activity

- 3.23 The highest activity was recorded in September where a mean total of 591.9 bat passes from ten different bat species groups were recorded (**Table 3.3**). This could indicate juvenile dispersion and/or adult mating behaviour which generally takes place in the transition period after the breeding season and before the bats start to move to winter hibernation roosts.

Table 3.3: Total mean number of passes per month

Month	April	May	June	July	August	September	October
Total Calls	59.1	289.9	100.6	208.7	80.5	591.9	494.8
% of total calls	3.24	15.88	5.51	11.43	4.41	32.42	27.10

Social Call Activity Across the Site

- 3.24 The most social calls were recorded in location A (76%). September was the month with the most social calls recorded (48%) with October being the second highest (47%) (see **Table 3.4**).

Table 3.4: Total mean social calls recorded over the year by location, and by month for all locations.

Location	A			B			
Total Calls	207.9			67.2			
% of total calls	75.6			24.4			
Month	April	May	June	July	August	September	October
Total Calls	0.4	4	1	2.4	6.1	131.6	129.7
% of total calls	0.145	1.45	0.363	0.872	2.22	47.8	47.1

- 3.25 Although only Common Pipistrelle, Soprano Pipistrelle and Unidentified Pipistrelle (most likely to be Common or Soprano Pipistrelle) bat species were recorded social calling over the Site, it should not be assumed that these are the only species using the Site in this way. Pipistrelle bats are relatively loud in comparison to other species; therefore, their calls are recorded and more easily identified over those of other, quieter bat species such as Long-eared bats.

2024 Update

Species Recorded

- 3.26 The species recorded and their relative frequencies were broadly similar to the 2022 survey. For full results see **Maps 8h-n**.

Table 3.5: Total mean number of passes per species

Site Totals	Pip pip	Pip pyg	Pip sp	Pip nat	Myo sp	LE sp	LFB	Ept ser	Nyc noc	Nyc lei	B bar	Total Calls
Total Calls	1669.1	559.3	1.0	1.0	23.0	48.7	8.9	34.1	101.6	2.7	38.3	2487.7
% of total calls	67.10	22.48	0.04	0.04	0.92	0.96	0.35	1.37	4.08	0.11	1.54	/

Pip pip = Common Pipistrelle, Pip pyg = Soprano Pipistrelle, Pip sp = Pipistrelle species, Pip nat = Nathusius' Pipistrelle, Myo sp = Myotis species, LE sp = Long-eared species, LFB = Low-frequency bat (Noctule/Leislars/Serotine), Ept ser = Serotine, Nyc sp = Nyctalus species, Nyc noc = Noctule, Nyc Lei = Leislars, B bar = Barbastelle.

Geographic Variation in Activity

- 3.27 The highest number of bat passes was recorded at location A where a mean total of 1743.7 bat passes (70.09%) from eleven different bat species or groups were recorded (**Table 3.6**).

Table 3.6: Total mean number of passes per sampling location

Location	A	C
Total Calls	1743.7	744.0
% of total calls	70.09	29.91

Seasonal Variation in Activity

- 3.28 The highest activity was recorded in May where a mean total of 2582 bat passes from ten different bat species groups were recorded (**Table 3.7**).

Table 3.7: Total mean number of passes per month

Month	April	May	June	July	August	September	October
Total Calls	228.5	2582	671.5	1729.5	1544.5	843	1108
% of total calls	2.62	29.65	7.71	19.86	17.74	9.68	12.73

Social Call Activity Across the Site

- 3.29 The most social calls were recorded in location A (93.52%). October was the month with the most social calls recorded (27.55%) with September being the second highest (22.32%) (see **Table 3.8**).

Table 3.8: Total mean social calls recorded over the year by location, and by month for all locations.

Location	A			C			
Total Calls	309.43			21.43			
% of total calls	93.52			6.48			
Month	April	May	June	July	August	September	October
Total Calls	18	77.5	18	140	258.5	319	327
% of total calls	1.55	6.69	1.55	12.09	22.32	27.55	28.24

- 3.30 In addition to the Pipistrelle species, the update surveys recorded social calls in low numbers from Long-Eared and Barbastelle bats, both from location C. These are light-shy species that produce quiet calls and likely favour the darkness amongst the woodland.

Breeding Bird Surveys

- 3.31 A total of 39 species were recorded on the Site and within the immediate vicinity. Nine species are amber-listed under Birds of Conservation Concern (BoCC), whilst a further four are red-listed. A further 5 species are listed under Section 41 of the NERC Act 2006.
- 3.32 Two species, Red Kite *Milvus milvus* and Barn Owl *Tyto alba* are listed on the schedule 1 of the Wildlife and Countryside Act 1981 (as amended). This provides additional protection against intentional or reckless disturbance during the breeding season at, on or near their nests, eggs and young.
- 3.33 Of the 39 species recorded, 28 are considered to be 'breeding' species (i.e. species observed to be breeding, or present within suitable breeding/nesting habitats).
- 3.34 The majority of birds were recorded within the hedgerows, treelines and woodland on the Site, which will be providing foraging, roosting and nesting opportunities.
- 3.35 Two Skylark *Alauda arvensis* territories were recorded within the arable fields on Site. Skylark are ground-nesting farmland birds, which rely on suitable crops to successfully raise the multiple broods a year required to maintain a population. A red-listed BoCC, their numbers have severely decreased in recent decades and as a result are often a key consideration during the planning process. Whilst the loss of two territories is unlikely to impact the local assemblage, when taken

into consideration with the wider development there could be a significant impact on the local Skylark population, and it is likely that bespoke mitigation will be required.

3.36 **Appendix 2** provides a summary of the survey results.

2024 Update

3.37 The results from the update surveys are broadly in line with those of the 2022 surveys, though fewer species (34) and only a single possible Skylark territory was recorded. All species recorded are common and widespread.

3.38 Seven species that were not recorded in 2022 were recorded during the update surveys. These are:

- Canada Goose *Branta canadensis*;
- Coal Tit *Periparus ater*;
- Egyptian Goose *Alopochen aegyptica*;
- House Sparrow *Passer domesticus*;
- Kestrel *Falco tinnunculus*;
- Lesser Black-Backed Gull *Larus fuscus*; and
- Swift *Apus apus*.

3.39 Of these, Kestrel and Lesser Black-Backed Gull are amber-listed under Birds of Conservation Concern (BoCC), whilst House Sparrow and Swift are red-listed. House Sparrow are also listed under Section 41 of the NERC Act 2006. The Black-Backed Gull and Greylag Goose flew over and were not recorded using the Site, though this does not necessarily mean that they do not do so.

3.40 Twelve species that were recorded in 2022 were not recorded onsite during the update surveys, though this does not necessarily mean that they no longer visit or use the Site. A full species list and results summary can be found in **Appendix 2**.

Nocturnal Bird Survey

3.41 No nocturnal or roosting birds were recorded on the Site during the nocturnal survey.

3.42 During other surveys carried out on Site a Tawny Owl *Strix aluco* was heard on the 27th of July in the woodland to the south-east of the Site and on the 12th of October 2022 in the north-east corner of the Site.

Winter Bird Survey

3.43 A total of 22 bird species were recorded during the winter bird survey. Of these, two are BoCC Red-listed and seven are on the Amber-list.

3.44 Redwing *Turdus iliacus*, Red Kite, and Fieldfare *Turdus pilaris* are listed on the Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Redwing and Fieldfare are winter migrants and rarely breed in the UK hence their classification as a Schedule 1 species.

- 3.45 The Site was not found to support any significant assemblages of winter bird during the initial two surveys, and this will be re-evaluated upon completed of the remaining two surveys.
- 3.46 **Appendix 2** provides a summary of the survey results.

Hazel Dormouse Habitat Assessment

- 3.47 The Site contains optimal habitat for Hazel Dormice, as shown on **Map 9**, which includes the ancient woodland block to the north of the Site, and boundary hedgerows connecting the smaller compartment to the larger compartment.
- 3.48 The woodland and species-rich hedgerows provide nesting material and foraging opportunities vital for their lifecycle. Connectivity to the wider landscape via species-rich and intact hedgerows and scrub enables movement across the whole woodland landscape. Understory and shrubs are also vital to Dormouse movement by filling gaps between canopies and providing foraging and nesting material.
- 3.49 The majority of hedgerows on Site however are considered to be of sub-optimal suitability for Hazel Dormice. This is to say, that they provide connectivity between these habitats but in themselves are not optimal nesting habitat for Hazel Dormice.
- 3.50 Whilst Dormouse surveys were not specifically undertaken on the Site, they were completed across the wider LGV Site, including immediate Site boundaries. No Dormice, or evidence of Dormice, was found during these surveys and they are considered to be likely absent from the Site.

Invertebrate Survey

- 3.51 Whilst a number of notable species were found across the wider Loddon Garden Village site, these were largely relating to the river Loddon. Being of arable land, the majority of the Site is of limited importance for invertebrates. The ancient woodland at the north of the Site has been identified as an area of high-quality habitat, which is to be expected of a habitat of the maturity and longevity of ancient woodland (**Map 10**).
- 3.52 The full invertebrate report which covers the entire Loddon Garden Village allocation site is included at **Appendix 4**.

Water Vole & Otter Habitat Suitability survey

- 3.53 Barkhams Brook, which runs parallel to the boundary of the smaller compartment, was found to be sub-optimal for both Water Vole.
- 3.54 No evidence of Water Vole was found on Site, or within the wider allocation land.
- 3.55 The Brook provides opportunities for commuting and foraging Otter, although further upstream the size of the brook decreases significantly which will reduce opportunities. No evidence of Otter was found in the Brook adjacent to the Site, although evidence of Otter has been recorded within the wider allocation site.

4. RECOMMENDATIONS FOR MITIGATION, COMPENSATION AND ENHANCEMENT

Habitats

Mitigation

- 4.1 The majority of the Site is covered by arable crops, which in itself is of limited ecological value but does provide nesting and foraging habitat for farmland birds. Mitigation for these species is covered in the relevant section below.
- 4.2 Linear habitats, to include hedgerows and treelines, should be retained where possible to maintain connectivity within the landscape.
- 4.3 The woodland at the north of the Site is designated as Ancient Woodland on the Provisional Ancient Woodland Inventory which is afforded protection under the NPPF as an 'irreplaceable habitat'. As a result, this woodland must be retained within any plans for the Site, and to avoid potential harm, a no-development buffer of no less than 15m must be implemented from the edge of the woodland.
- 4.4 Consideration must be given as to how to protect the woodland during the operational phase of development from impacts including fly tipping and recreational pressure. Options for such measures include limited access to the woodland and providing alternative and more attractive options.

Compensation

- 4.5 Development on the Site may result in the loss of species poor grasslands, which increase floral and habitat diversity locally, and provide opportunities for local biodiversity including birds and small mammals. The loss of this grassland would also have implications for biodiversity net gain on the Site.
- 4.6 In the event the grasslands were lost, new grassland habitats of ecological value should be provided within the Site. This could include within buffer habitats, or open greenspace. Grasslands should be species-rich and managed in a way that allows them to develop a diverse sward, providing maximum benefits to local biodiversity. This would also provide the largest gains for biodiversity net gain.

Enhancement

- 4.7 Where habitats on Site are to be retained, their value and condition may be improved to increase their value to local biodiversity, as well as improve their contribution to measurable biodiversity net gain. Grasslands may be enhanced through supplementary seeding to further increase diversity, and where appropriate the implementation of a conservation-led management regime.
- 4.8 Supplementary planting can be used to enhance hedgerows, improving species diversity and filling in gaps where present. Altering the management practices to become more sensitive towards wildlife can increase the condition of linear features, for example; rotational cutting of the hedgerows, using hand tools instead of a flail, and leaving a semi-natural habitats alongside.

- 4.9 Enhancement opportunities will be possible in the ancient woodland, although these must be carefully considered to ensure they are appropriate for the habitat. Such measures may include creating scalloped edges, improving the three-dimensional structure of the understorey and its composition, a rotational felling scheme to ensure a varied canopy and prevent enclosure.
- 4.10 Within the development itself, landscaping plans should seek to use native species of local provenance. Fruit and berry-bearing species will provide foraging opportunities for local biodiversity, and the inclusion of thorny species will provide protection from predation.

Veteran Trees

Mitigation

- 4.11 Defined as 'irreplaceable habitats' under the NPPF, any Veteran Trees would need to be retained as part of the development proposals unless 'wholly exceptional reasons' justifying their removal can be demonstrated.
- 4.12 Retained trees should be protected through the implementation of a suitable buffer zone.
- 4.13 Guidance provided by Forestry Commission/Natural England¹ suggests that a buffer zone of 15 times the diameter of the tree, or 5m past the tree canopy (whichever is the larger) should be included. This buffer zone should include semi-natural habitats, which (where possible) form part of the development's green infrastructure.
- 4.14 Public use of the space below the trees should be discouraged to prevent impacts of increased recreational pressure, such as soil compaction and increases in nutrients.
- 4.15 Where possible, Trees of Ecological Interest should be retained as part of the development proposals. Suitable mitigation should be introduced to prevent damage to the tree, its canopy and root system, including consideration of root protection zones during masterplanning and construction, although buffers are not required to be as extensive as for confirmed Veteran Trees.

Compensation

- 4.16 Should Trees of Ecological Interest be removed as part of the development they should be replaced on a like-for like basis. A new tree should be planted, of the same species, in an appropriate location around the development.

Enhancement

- 4.17 Buffer zones implemented around Veteran trees and retained Trees of Ecological Interest should include semi-natural habitats, providing additional supporting habitats for local biodiversity such as grassland and scrub habitats.
- 4.18 Where possible, this should link up to the wider green infrastructure network to maintain connectivity within the local landscape for species which may be utilising the tree such as bats, birds and invertebrates.

Badger

Mitigation

- 4.19 Badgers are afforded legal protection by the Protection of Badgers Act 1992 (as amended).

4.20 [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Compensation

- 4.22 [REDACTED]

Enhancement

4.23	
4.24	

Bats

Mitigation

- 4.25 All bat species are legally protected by The Conservation of Habitats and Species Regulations 2017 (as amended) and The Wildlife and Countryside Act 1981 (as amended).
- 4.26 A Natural England European Protected Species Licence (EPSL) is required when impacts and effects (such as disturbance) that would otherwise be an offence are anticipated. For example, when works affect animals and/or their roosts and/or their 'supporting habitat' which is critical to maintain their conservation status.

- 4.27 The Ground Level Tree Inspections which are due to take place imminently will provide more information as to whether the Site is likely to support roosting bats. Should any roosts be identified in future, they should be retained where possible, with areas of semi-natural habitats in the immediate vicinity to maintain connectivity to the wider landscape. Should roosts need to be removed to accommodate development, an EPSL would be required from Natural England.
- 4.28 To maintain key foraging and commuting routes, light spill during the construction and post-development phases should be kept to an absolute minimum, with dark corridors maintained where key foraging and commuting routes have been identified. Where lighting is required, light spill can be reduced by installing hoods on lights, reducing the height of lights, and strategic landscaping.

Compensation

- 4.29 Should foraging and/or commuting habitats be lost as a result of development, compensatory habitats should be provided to ensure no loss of opportunity for the local bat assemblage.
- 4.30 Foraging habitats should comprise of diverse semi-natural habitats that facilitate invertebrate populations, whilst commuting habitats would comprise of linear habitats which provide shelter and allow for movement through the landscape. All compensatory habitats should remain unilluminated by artificial light.

Enhancement

- 4.31 Bat boxes should be integrated into buildings to increase roosting opportunities available within the Site. This can also improve the engagement of residents with the natural environment.
- 4.32 Planting native flower and tree species to increase the number of invertebrate host species will improve the foraging opportunities for bats.

Birds

Mitigation

- 4.33 Nesting birds, their nests, eggs, and chicks are afforded protection by the Wildlife and Countryside Act 1981 (as amended). Therefore, vegetation clearance (including the areas of arable crops) should be conducted during the period mid-September to February (inclusive), which is outside of the bird nesting season (but see caveat below).
- 4.34 If this is not possible and vegetation clearance is required within the bird nesting season (March to mid-September, inclusive), a nesting bird check will need to be undertaken by a suitably experienced ecologist not more than 24 hours prior to the commencement of vegetation clearance. If any active nests are discovered, these will need to be retained and protected *in situ* until they are no longer in use by nesting birds.
- 4.35 The existing arable land provide nesting habitats for at least two Skylark territories. Due to their ground-nesting behaviour, Skylark have very specific habitat requirements in order for them to breed successfully and maintain local populations. Suitable mitigation measures are unlikely to be able to be incorporated into the Site once development is taken into consideration, and off-site solutions are likely to be necessary. An allocation wide approach would likely be the most

sensible and effective solution, but any off-site measures would include the provision of Skylark plots within suitable habitats to increase breeding opportunities within the local landscape.

Compensation

- 4.36 Where foraging and/or nesting opportunities are lost, new opportunities should be provided through the landscaping plans for the Site. The inclusion of fruit and berry bearing species will provide foraging resources, and the inclusion of thorny species will provide cover and protection from pet predation.
- 4.37 The inclusion of bird boxes for species known to be present on the Site will provide alternative nesting and roosting opportunities.

Enhancement

- 4.38 Increasing the diversity of invertebrates found within the Site would increase the quality of foraging material found particularly for nesting birds with young. This can be done by increasing the number of wildflower species within the Site, leaving deadwood and cuttings in situ, reducing the use of pesticides, and creating wet habitats.
- 4.39 Nesting opportunities for Birds of Conservation Concern which do not currently nest on the Site can be provided through the provision of nesting boxes. Swift *Apus apus* and House Sparrow *Passer domesticus* are two declining species that are capable of thriving in an urban setting where suitable opportunities are provided.

Hazel Dormice

Mitigation

- 4.40 Hazel Dormouse are legally protected by The Conservation of Habitats and Species Regulations 2017 (as amended) and The Wildlife and Countryside Act 1981 (as amended). Whilst no Dormice were found in the wider area during the course of surveys, suitable habitats are present within the Site. Should Dormice be found to be present at any point, an EPSL from Natural England would be required for vegetation works to be undertaken lawfully.
- 4.41 Any removal of optimal Dormouse habitat should be taken during the months which reduce the risk to Dormice.

Enhancement

- 4.42 Any supplementary planting along existing hedgerow, as outlined above, should include species that are known to be particularly beneficial to Dormice, including Hazel, Wild Honeysuckle *Lonicera periclymenum*, English Oak *Quercus robur* and Field Maple *Acer campestre*. The planting should target existing gaps within the hedgerows and increase the understory within the lines of trees. This will improve the available material for nesting and foraging, and the connectivity across the Site for Dormice to travel.

Invertebrates

Enhancement

- 4.43 The most valuable habitats on-Site for invertebrates are located within the Ancient Woodland at the north of the Site. Any ongoing management which is implemented to improve the condition of the woodland should therefore benefit the local invertebrate assemblage, although the impact of management works must be considered.
- 4.44 Any habitat creation works undertaken on the Site would provide a benefit to invertebrates. The provision of biodiverse grasslands will increase the floral diversity within the Site providing nectar and host species.
- 4.45 Any dead wood and cuttings taken should be left either in situ or on compost heaps creating habitat for a wide variety of invertebrate species. Any dead standing wood should be left where possible as this provides vital habitat for a range of invertebrates many of which are exceedingly rare.
- 4.46 Bug boxes can be installed at strategic locations across the Site to create hibernacula and installing 'Bee bricks' within buildings is an easy way to provide habitat whilst increasing engagement with the new residents.

Water Voles

Enhancement

- 4.47 The water course running through the smaller compartment of the Site can be enhanced to increase the suitability for Water Voles. Due to the low suitability score of the water course the mitigation required will be minimal to offset any disturbance or removal of Water Vole habitat on Site.
- 4.48 The water course can be enhanced to encourage Water Voles into the area by improving the structure and vegetation cover along the banks. The banks should be fairly steep with tiered areas for marking territory and creating burrows into the banks. If the water course is prone to flooding, taller areas of the bank need to be created to ensure Water Voles have areas to escape to.
- 4.49 Water Voles are herbivorous and eat a wide range of reeds, sedges, rushes, and flowering plants. Ensuring there is ample vegetation along the banks to provide food and cover will enhance the water course for Water Voles. Any poaching of the banks by livestock should be reduced as this has been shown to reduce Water Vole activity.
- 4.50 Increased disturbance by new residents should be minimised by ensuring sections of the bank are inaccessible particularly addressing potential increased predation by cats and dogs.

5. REFERENCES

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MAP 1 Site Location

KEY

 Site boundary

SCALE: 1:3,750 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Strategic Land Ltd

PROJECT: Land at Newlands Farm, Arborfield

DATE: 17 October 2023

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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



MAP 2 Bat Transect Route

KEY

-  Site boundary
-  Fixed point survey locations
-  Transect route

SCALE: 1:2,250 at A3

0 20 40 60 80 100 Metres



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025



MAP 3 Static Detector Locations

KEY

-  Site boundary
-  Static detectors

SCALE: 1:3,500 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited

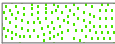
PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025



MAP 4a Habitat Types (Biodiversity Metric)

KEY

-  Site boundary
-  Cereal crops
-  Temporary grass and clover leys
-  Other neutral grassland
-  Lowland mixed deciduous woodland

SCALE: 1:3,365 at A3

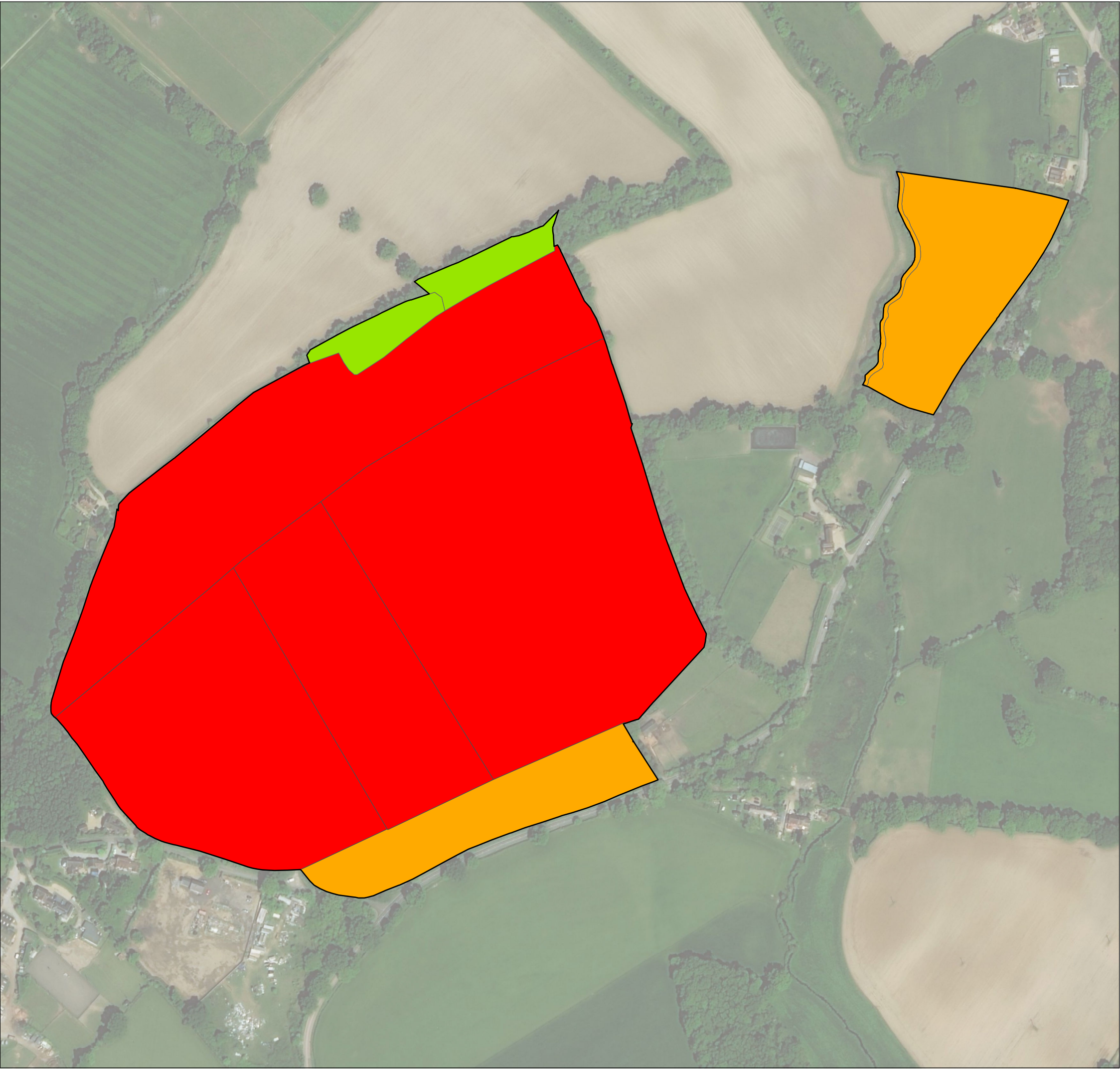
0 50 100 150 200 Metres



CLIENT: Gleeson Strategic Land Ltd

PROJECT: Land at Newlands Farm, Arborfield

DATE: 13 March 2023



MAP 4b Habitats - Distinctiveness

KEY

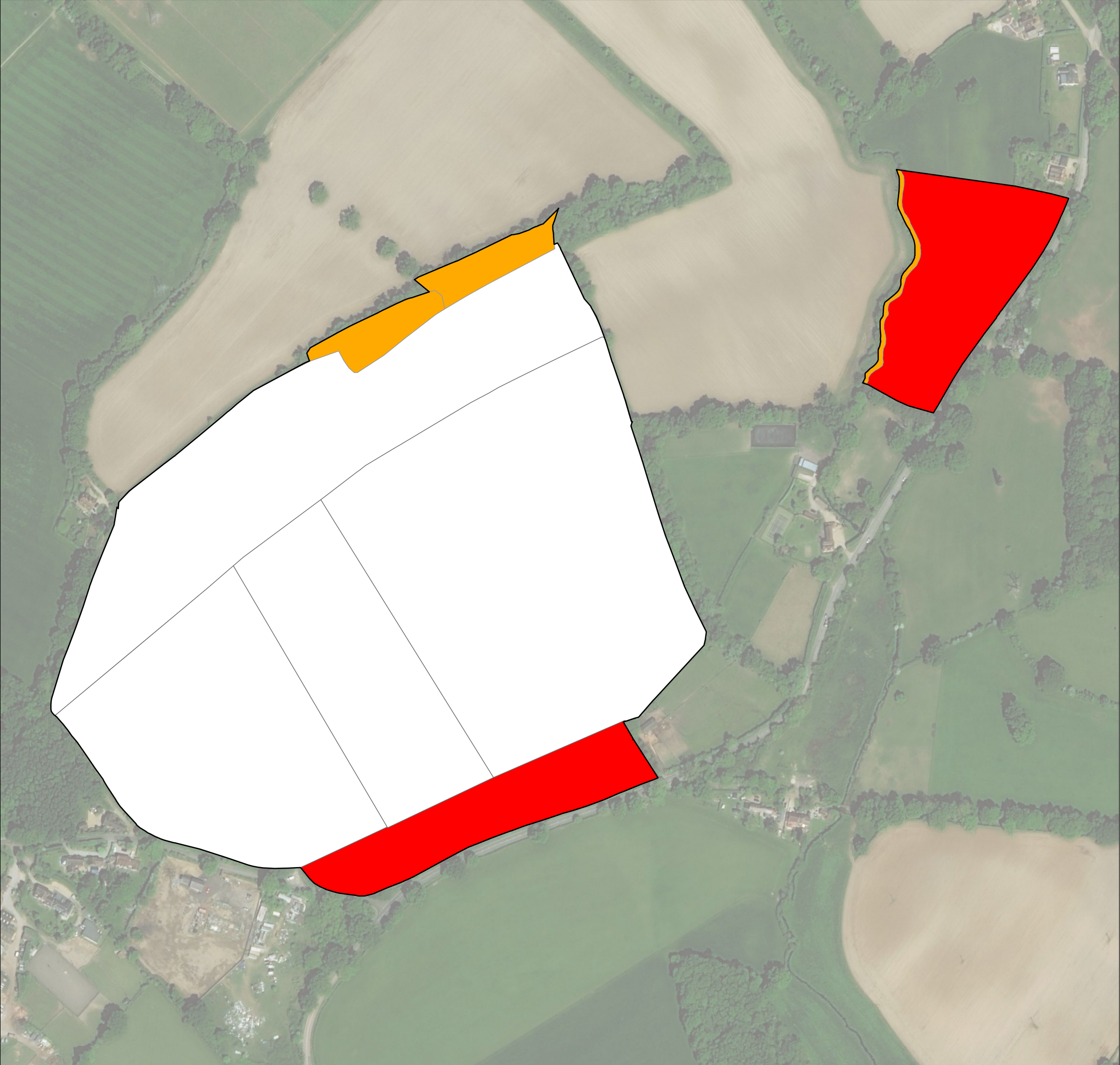
- Site boundary
- Very High
- High
- Medium
- Low
- Very Low

SCALE: 1:3,365 at A3

0 50 100 150 200 Metres

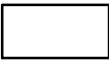


CLIENT: Gleeson Strategic Land Ltd
PROJECT: Land at Newlands Farm, Arborfield
DATE: 13 March 2023



MAP 4c Habitats - Condition

KEY

-  Site boundary
-  Good
-  Moderate
-  Poor
-  N/A

SCALE: 1:3,365 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Strategic Land Ltd
PROJECT: Land at Newlands Farm, Arborfield
DATE: 13 March 2023



MAP 4d Habitat ID Codes (to cross-reference with results spreadsheet)

- KEY
- Site boundary
 - Cereal crops
 - Temporary grass and clover leys
 - Other neutral grassland
 - Lowland mixed deciduous woodland
 - Provisional Ancient Woodland

SCALE: 1:3,365 at A3

0 50 100 150 200 Metres

N



CLIENT: Gleeson Strategic Land Ltd

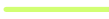
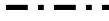
PROJECT: Land at Newlands Farm, Arborfield

DATE: 13 March 2023



MAP 4e Linear Habitats - Type

KEY

-  Line of Trees
-  Line of Trees - associated with bank or ditch
-  Line of Trees (ecologically valuable)
-  Line of Trees (ecologically valuable) - associated with bank or ditch
-  Native hedgerow
-  Native hedgerow - associated with bank or ditch
-  Native species-rich hedgerow - associated with bank or ditch
-  Native hedgerow with trees
-  Native hedgerow with trees - associated with bank or ditch
-  Native species-rich hedgerow with trees
-  Native species-rich hedgerow with trees - associated with bank or ditch
-  Ditch
-  Rivers and streams

SCALE: 1:3,365 at A3



CLIENT: Gleeson Strategic Land Ltd

PROJECT: Land at Newlands Farm, Arborfield

DATE: 13 March 2023

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P22/01



MAP 4f Linear Habitats - Distinctiveness

- KEY
- Very High
 - High
 - Medium
 - Low
 - Very Low

SCALE: 1:3,365 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Strategic Land Ltd

PROJECT: Land at Newlands Farm, Arborfield

DATE: 13 March 2023



Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community

MAP 4g Linear Habitats - Condition

KEY

- Good
- Moderate
- Poor

SCALE: 1:3,365 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Strategic Land Ltd
PROJECT: Land at Newlands Farm, Arborfield
DATE: 13 March 2023

Y:\Gleeson\Land_LGV_2231\GIS\SurveyResults\Habitats\Map7_LinearHabitatsCondition_2201_1.mxd



MAP 4h Linear Habitats - ID (to cross-reference to results spreadsheets)

KEY

- Line of Trees
- Line of Trees - associated with bank or ditch
- Line of Trees (ecologically valuable)
- Line of Trees (ecologically valuable) - associated with bank or ditch
- Native hedgerow
- Native hedgerow - associated with bank or ditch
- Native species-rich hedgerow - associated with bank or ditch
- Native hedgerow with trees
- Native hedgerow with trees - associated with bank or ditch
- Native species-rich hedgerow with trees
- Native species-rich hedgerow with trees - associated with bank or ditch
- Ditch
- Rivers and streams

SCALE: 1:3,365 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Strategic Land Ltd
PROJECT: Land at Newlands Farm, Arborfield
DATE: 13 March 2023



MAP 5 Veteran Tree Survey Results

KEY

-  Site boundary
-  Veteran Tree
-  Tree of Ecological Interest

SCALE: 1:3,365 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Strategic Land Ltd
PROJECT: Land at Newlands Farm, Arborfield
DATE: 19 January 2024



MAP 6a Badger Survey Results Summary

KEY

-  Site boundary
-  Push-under

SCALE: 1:3,250 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited
PROJECT: Land at Newlands Farm, Arborfield
DATE: 29 January 2025



MAP 6b Badger Survey Results Summary

KEY

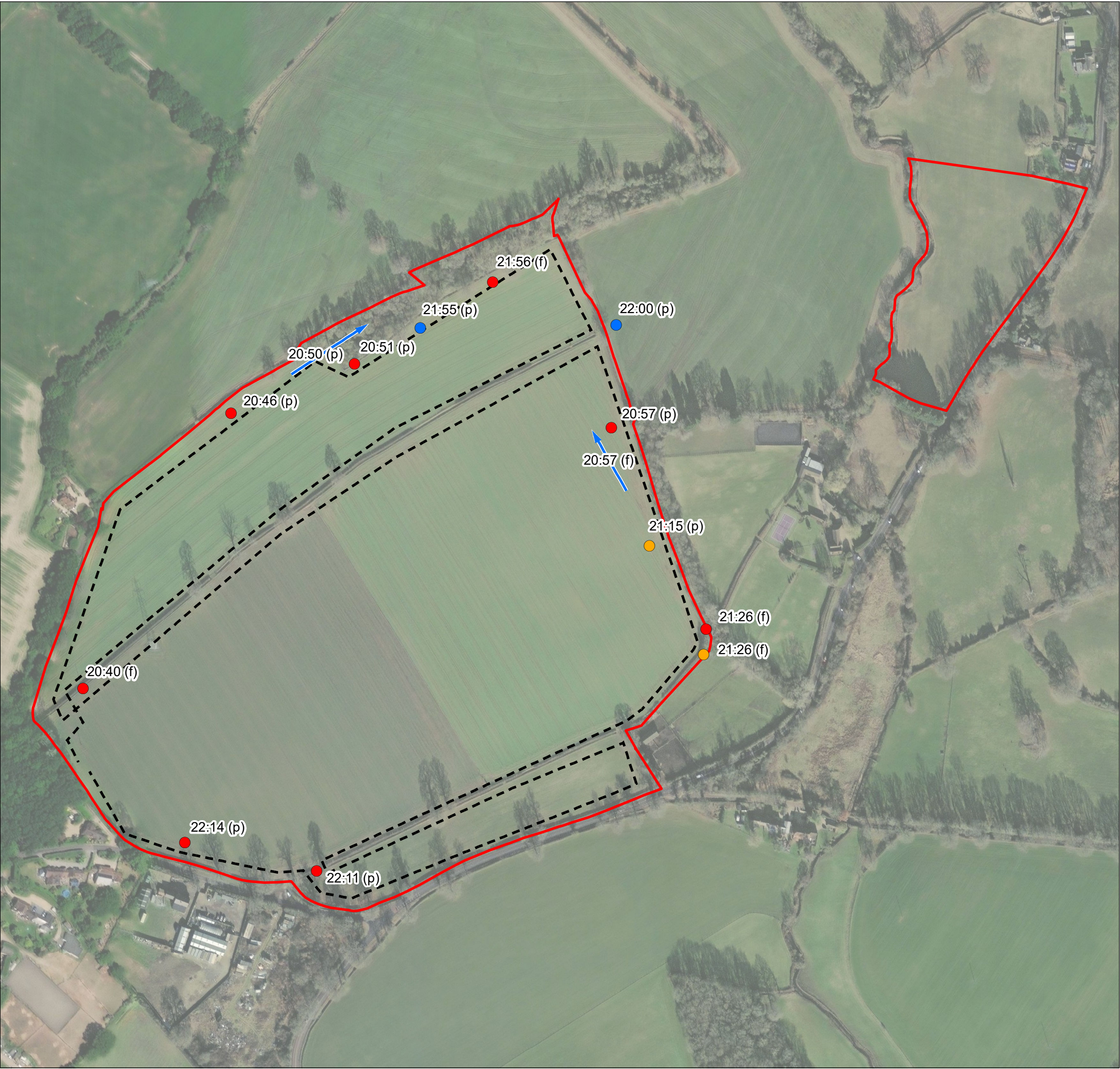
-  Site boundary
-  Claw marks/scratching post
-  Push-under
-  Rabbit burrow
-  Several footprints along eastern field boundary heading SE
-  Other feature

SCALE: 1:3,250 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited
PROJECT: Land at Newlands Farm, Arborfield
DATE: 29 January 2025



MAP 7a Bat Night-time Walkover Results
26/04/22

KEY

-  Site boundary
-  Transect route
-  Common Pipistrelle (heard not seen)
-  Soprano Pipistrelle (heard not seen)
-  Serotine (heard not seen)
-  Soprano Pipistrelle observed flight
- (f) Foraging
- (p) Pass

SCALE: 1:3,250 at A3

0 50 100 150 200 Metres

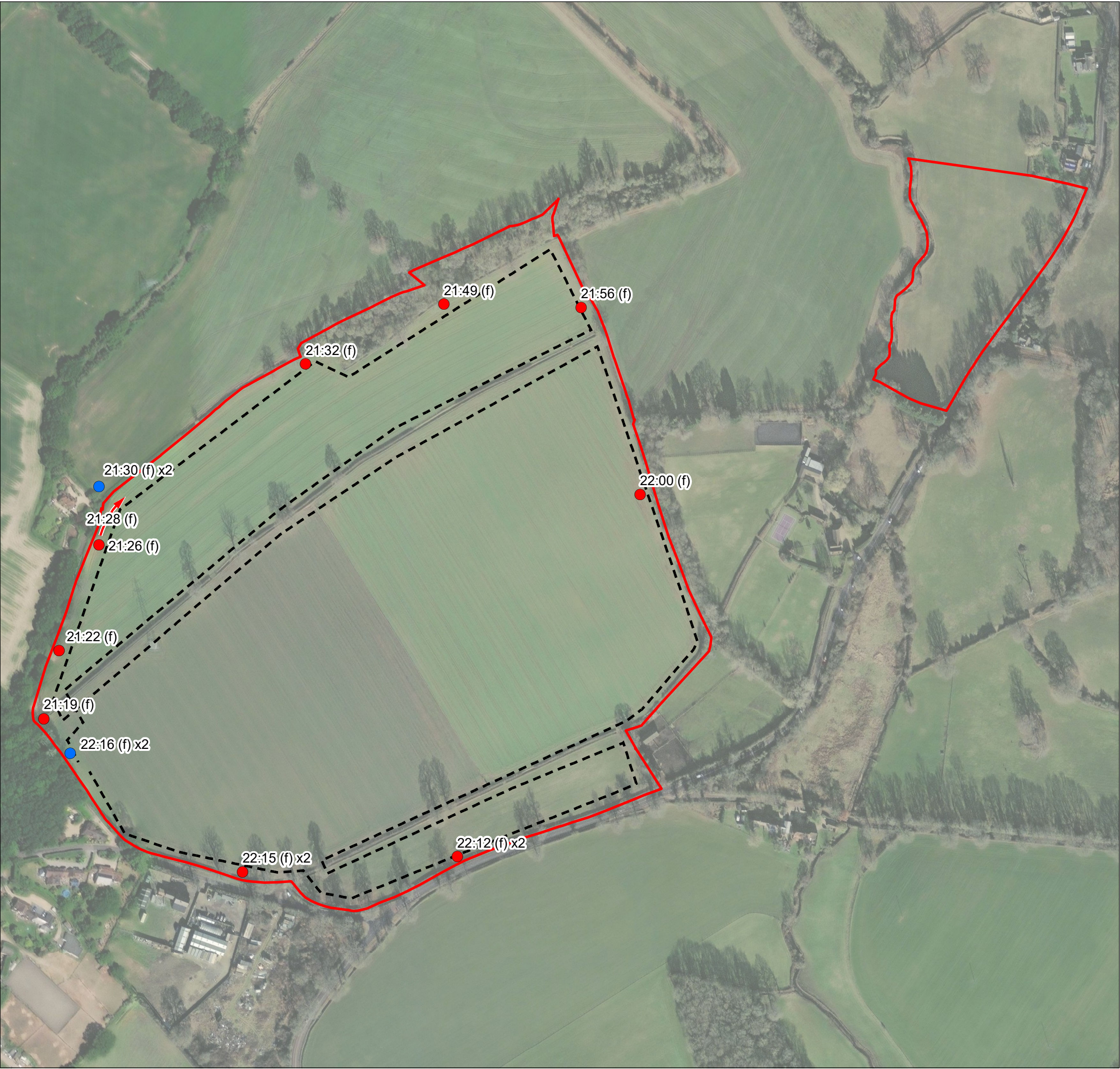


CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

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MAP 7b Bat Night-time Walkover Results
25/05/22

KEY

-  Site boundary
-  Transect route
-  Common Pipistrelle (heard not seen)
-  Soprano Pipistrelle (heard not seen)
-  Common Pipistrelle observed flight
-  (f) Foraging
-  x3 Number of bats

SCALE: 1:3,250 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited

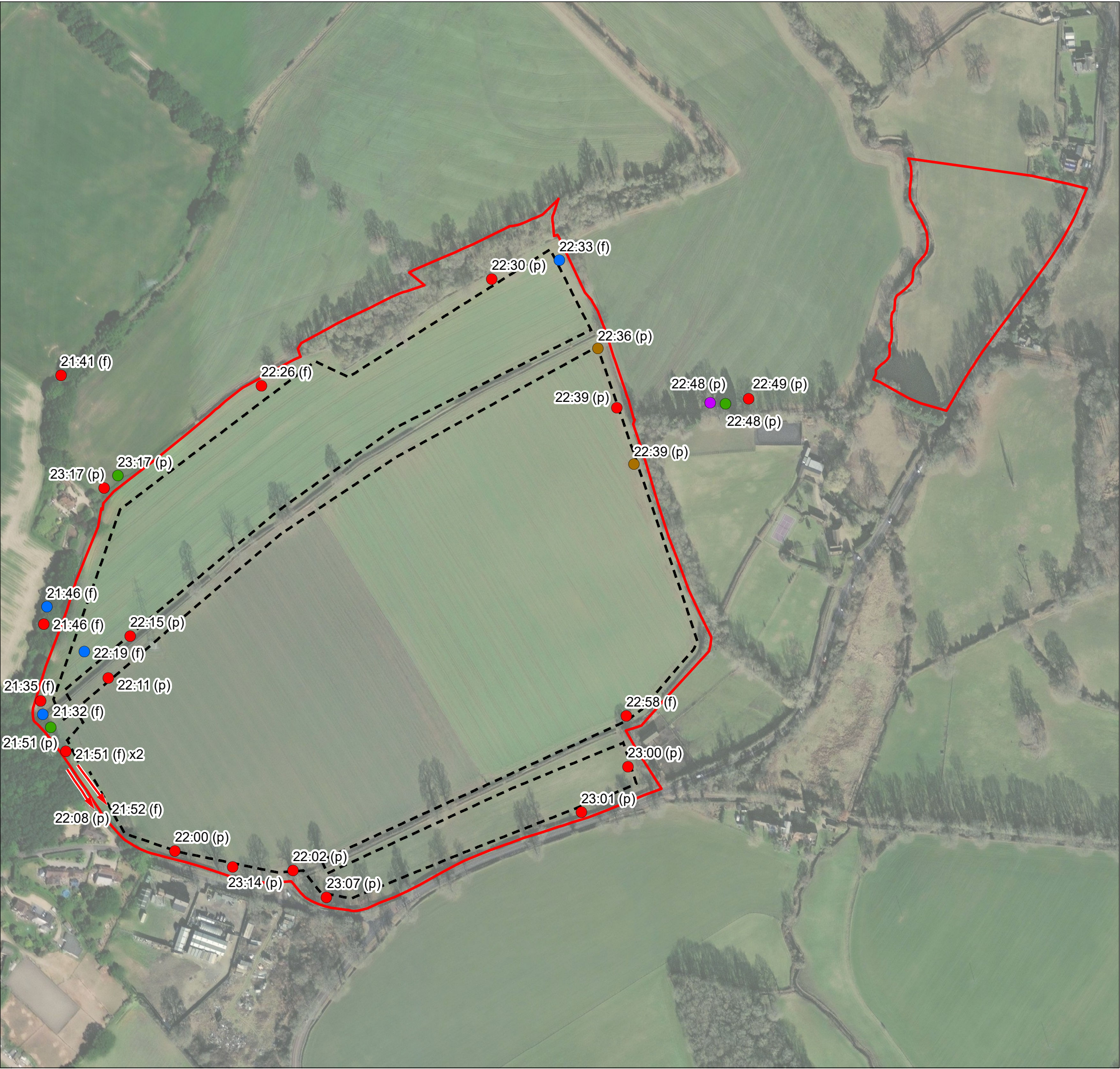
PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Y:\GleesonLand_LGV_2231\GIS\Bats\Activity surveys\2022\Map7b_Bat_Survey200522_P3026_3422_29012025.mxd

P30/26

Aerial Image: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



MAP 7c Bat Night-time Walkover Results
23/06/22

KEY

-  Site boundary
-  Transect route
-  Common Pipistrelle (heard not seen)
-  Soprano Pipistrelle (heard not seen)
-  Pipistrelle species (heard not seen)
-  Brown Long-eared bat (heard not seen)
-  Noctule (heard not seen)
-  Common Pipistrelle observed flight
- (f) Foraging
- (p) Pass
- x3 Number of bats

SCALE: 1:3,250 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited

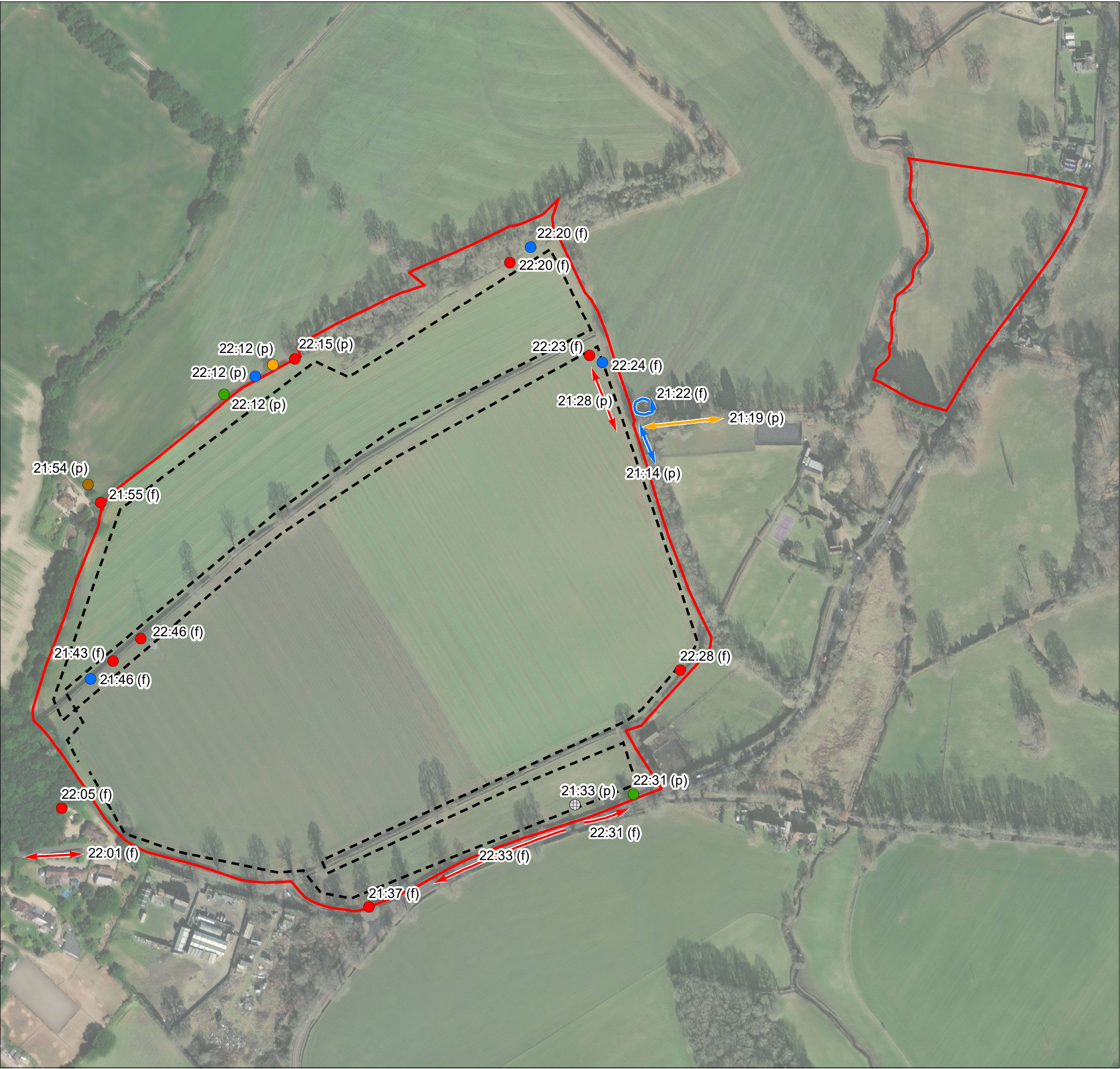
PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Y:\GleesonLand_LGV_2231\GIS\Bats\Activity surveys\2022\Map7c_Bat_Survey230622_P3026_3422_29012025.mxd

P30/26

Aerial Image: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



MAP 7d Bat Night-time Walkover Results
27/07/22

KEY

-  Site boundary
-  Transect route
-  Common Pipistrelle (heard not seen)
-  Soprano Pipistrelle (heard not seen)
-  Brown Long-eared bat (heard not seen)
-  Noctule (heard not seen)
-  Serotine (heard not seen)
-  Unidentified bat (heard not seen)
-  Common Pipistrelle observed flight
-  Soprano Pipistrelle observed flight
-  Serotine observed flight
- (f) Foraging
- (p) Pass

SCALE: 1:3,250 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited

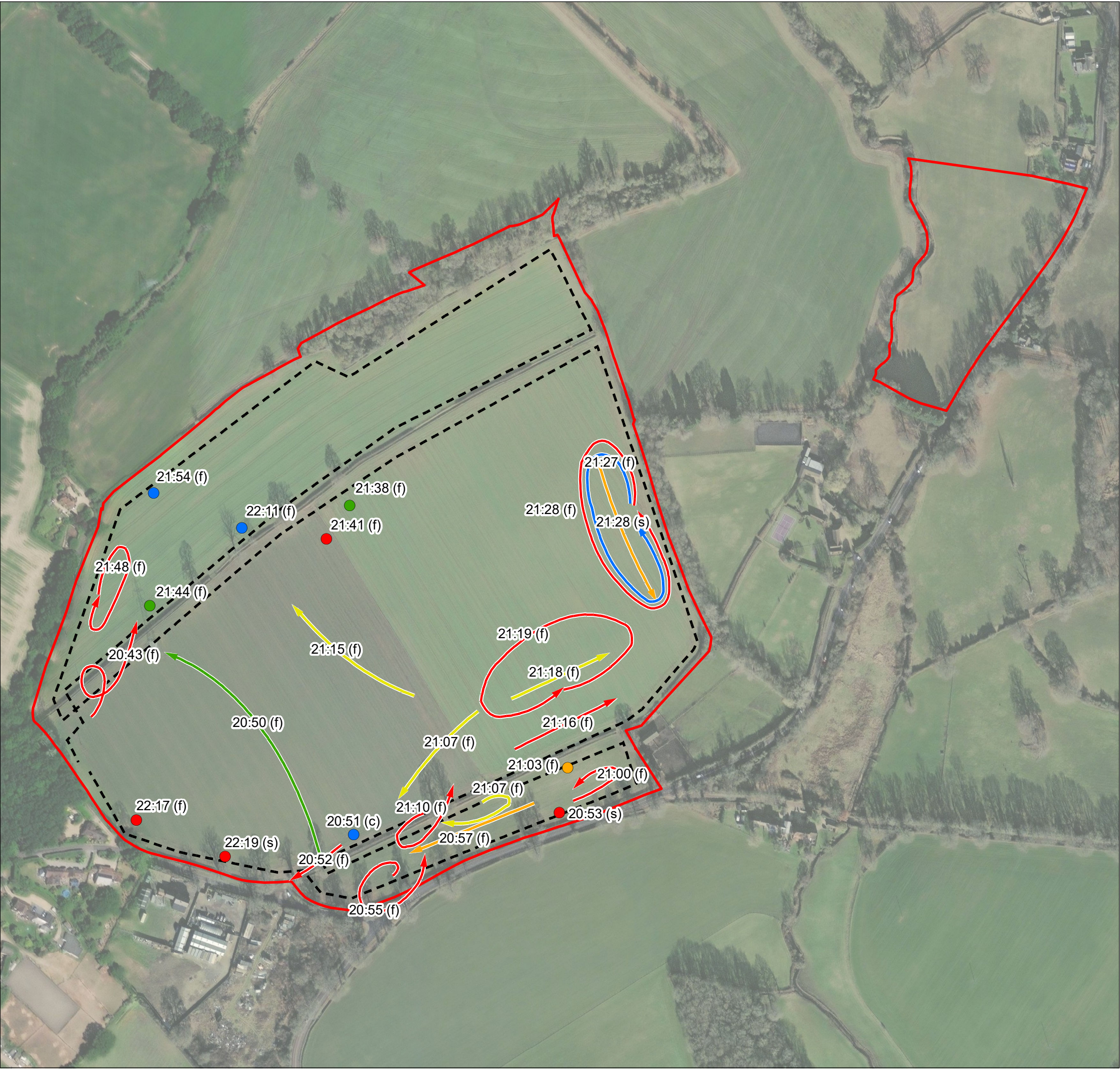
PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Y:\GleesonLand_LGV_2231GIS\Bats\Activity surveys\2022\Map7d_Bat_Survey270722_P3026_3422_29012025.mxd

P30/26

Aerial Image: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



MAP 7e Bat Night-time Walkover Results
18/08/22

KEY

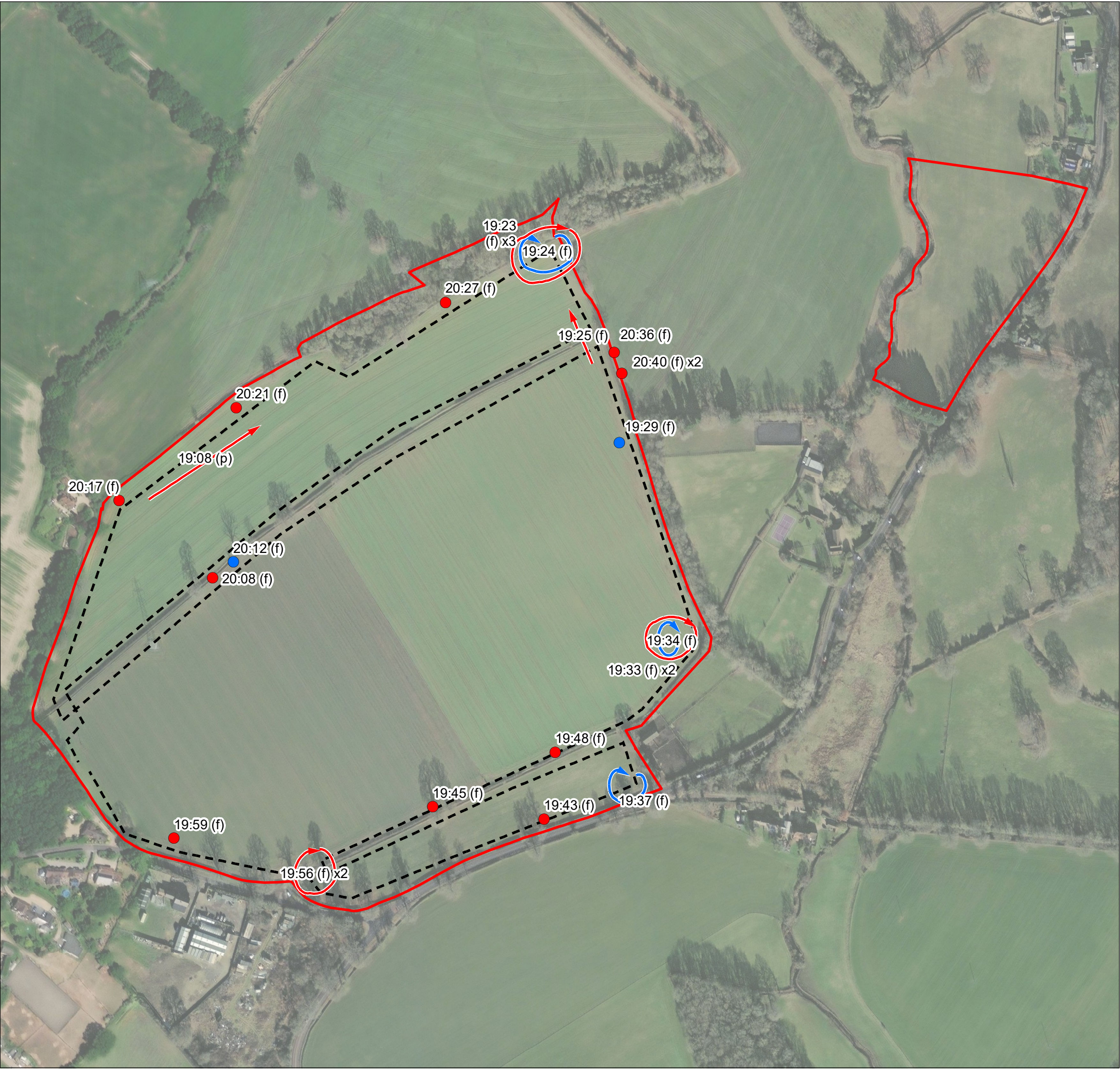
- Site boundary
- Transect route
- Common Pipistrelle (heard not seen)
- Soprano Pipistrelle (heard not seen)
- Noctule (heard not seen)
- Serotine (heard not seen)
- Common Pipistrelle observed flight
- Soprano Pipistrelle observed flight
- Myotis species observed flight
- Noctule observed flight
- Serotine observed flight
- (c) Commuting
- (f) Foraging
- (s) Social calling

SCALE: 1:3,250 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited
PROJECT: Land at Newlands Farm, Arborfield
DATE: 29 January 2025



MAP 7f Bat Night-time Walkover Results
21/09/22

KEY

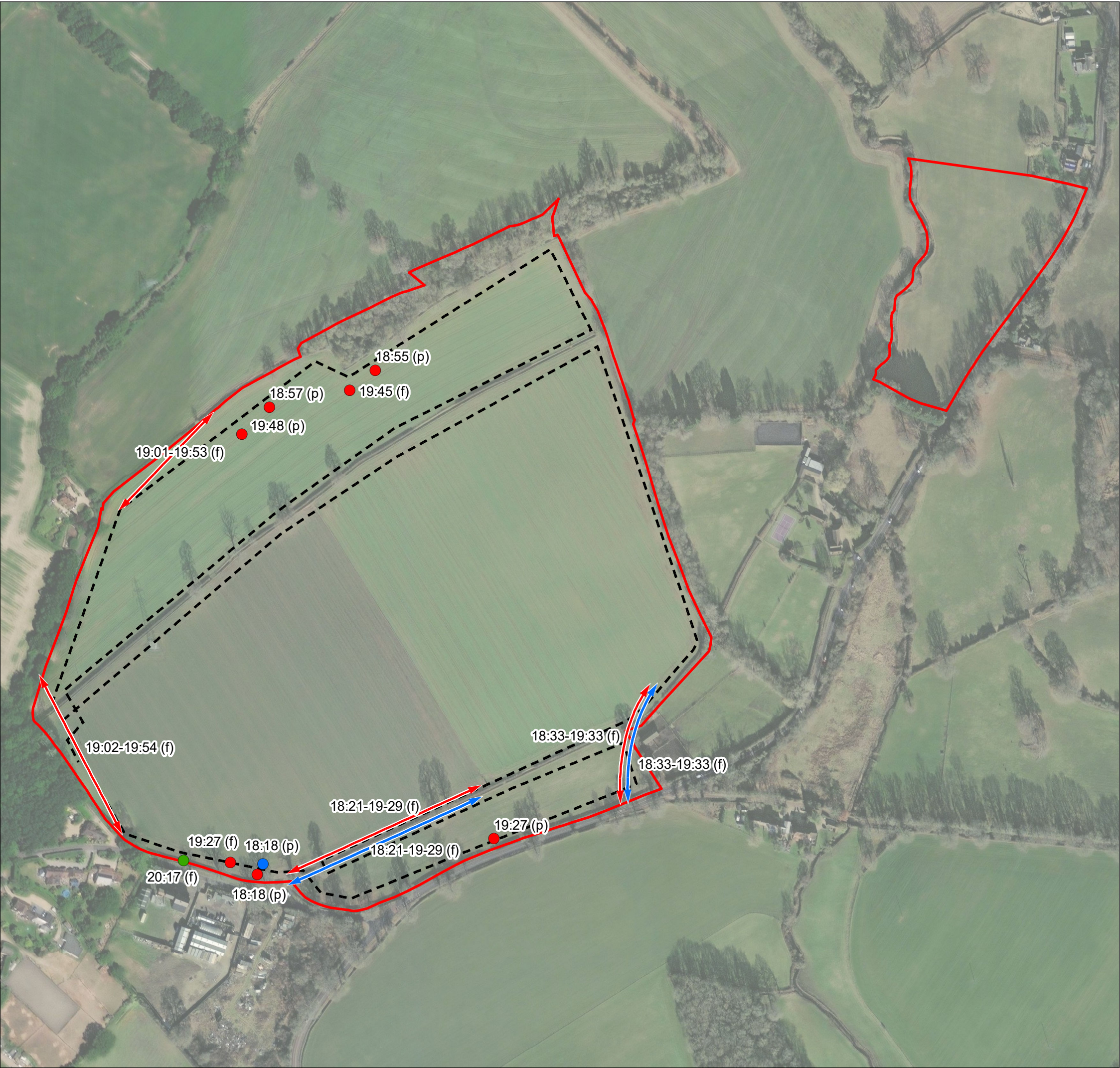
- Site boundary
- Transect route
- Common Pipistrelle (heard not seen)
- Soprano Pipistrelle (heard not seen)
- ➔ Common Pipistrelle observed flight
- ➔ Soprano Pipistrelle observed flight
- (f) Foraging
- (p) Pass
- x3 Number of bats

SCALE: 1:3,250 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited
PROJECT: Land at Newlands Farm, Arborfield
DATE: 29 January 2025



MAP 7g Bat Night-time Walkover Results
12/10/22

KEY

-  Site boundary
-  Transect route
-  Common Pipistrelle (heard not seen)
-  Soprano Pipistrelle (heard not seen)
-  Noctule (heard not seen)
-  Common Pipistrelle observed flight
-  Soprano Pipistrelle observed flight
- (f) Foraging
- (p) Pass

SCALE: 1:3,250 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited

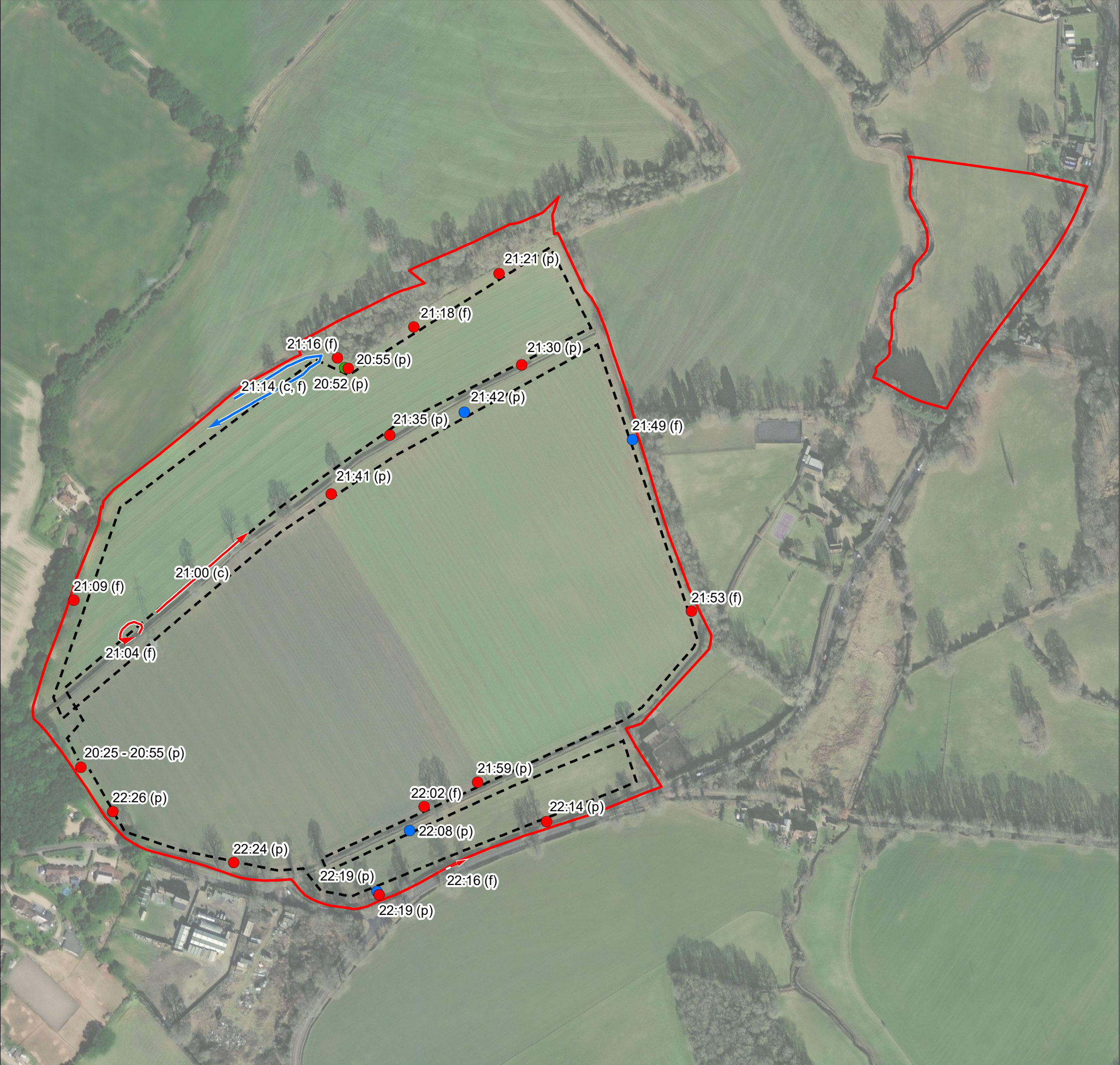
PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Y:\GleesonLand_LGV_2231\GIS\Bats\Activity surveys\2022\Map7g_Bat_Survey121022_P3026_3422_29012025.mxd

P30/26

Aerial Image: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



MAP 7h Bat Night-time Walkover Results
29/04/24

KEY

- Site boundary
- Transect route
- Common Pipistrelle (heard not seen)
- Soprano Pipistrelle (heard not seen)
- Noctule (heard not seen)
- Common Pipistrelle observed flight
- Common Pipistrelle presumed flight
- Soprano Pipistrelle observed flight
- (c) Commuting
- (f) Foraging
- (p) Pass

SCALE: 1:3,250 at A3

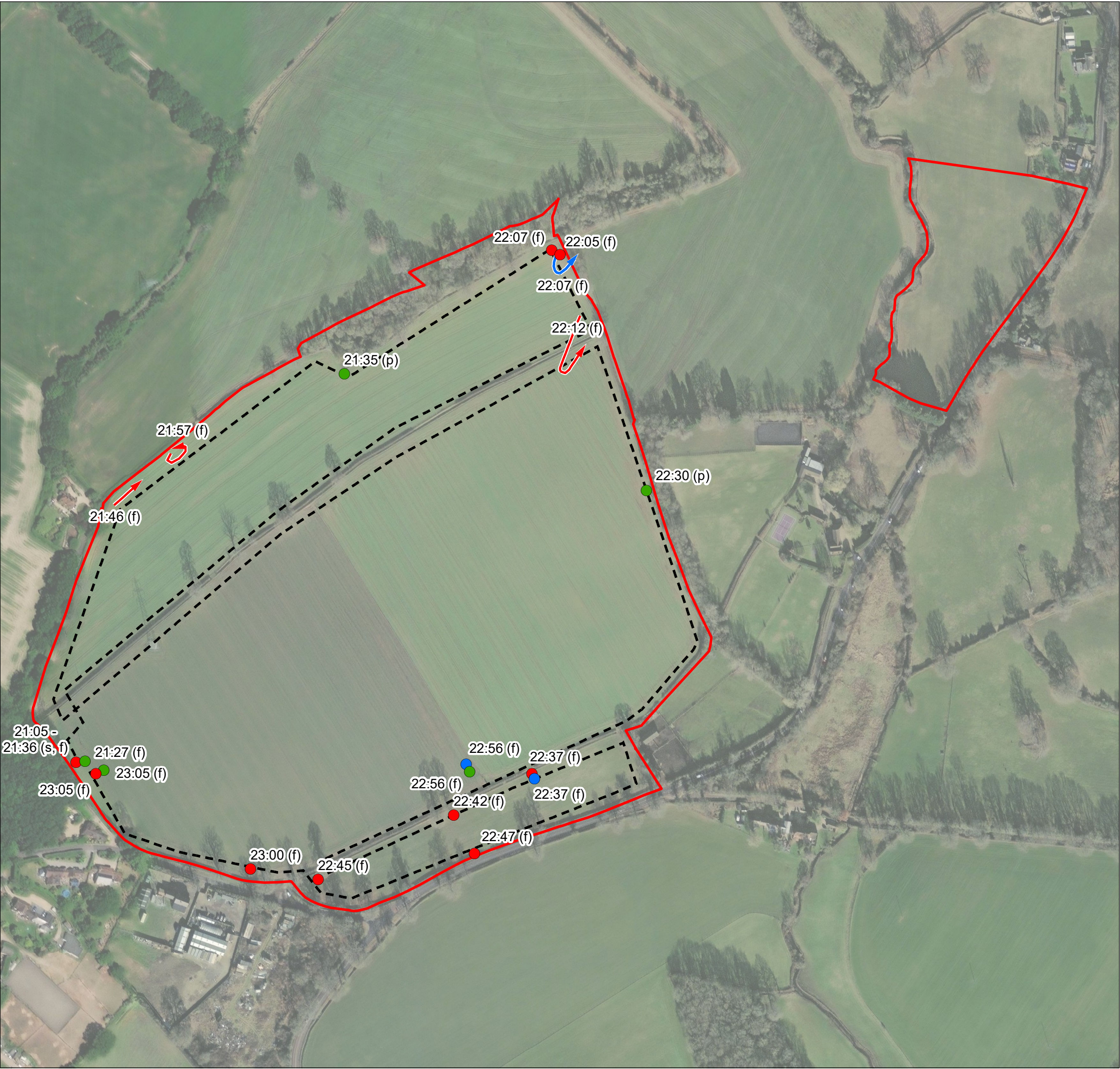
0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025



MAP 7i Bat Night-time Walkover Results
22/07/24

KEY

- Site boundary
- Transect route
- Common Pipistrelle (heard not seen)
- Soprano Pipistrelle (heard not seen)
- Noctule (heard not seen)
- Common Pipistrelle observed flight
- Soprano Pipistrelle observed flight
- (f) Foraging
- (p) Pass
- (s) Social calling

SCALE: 1:3,250 at A3

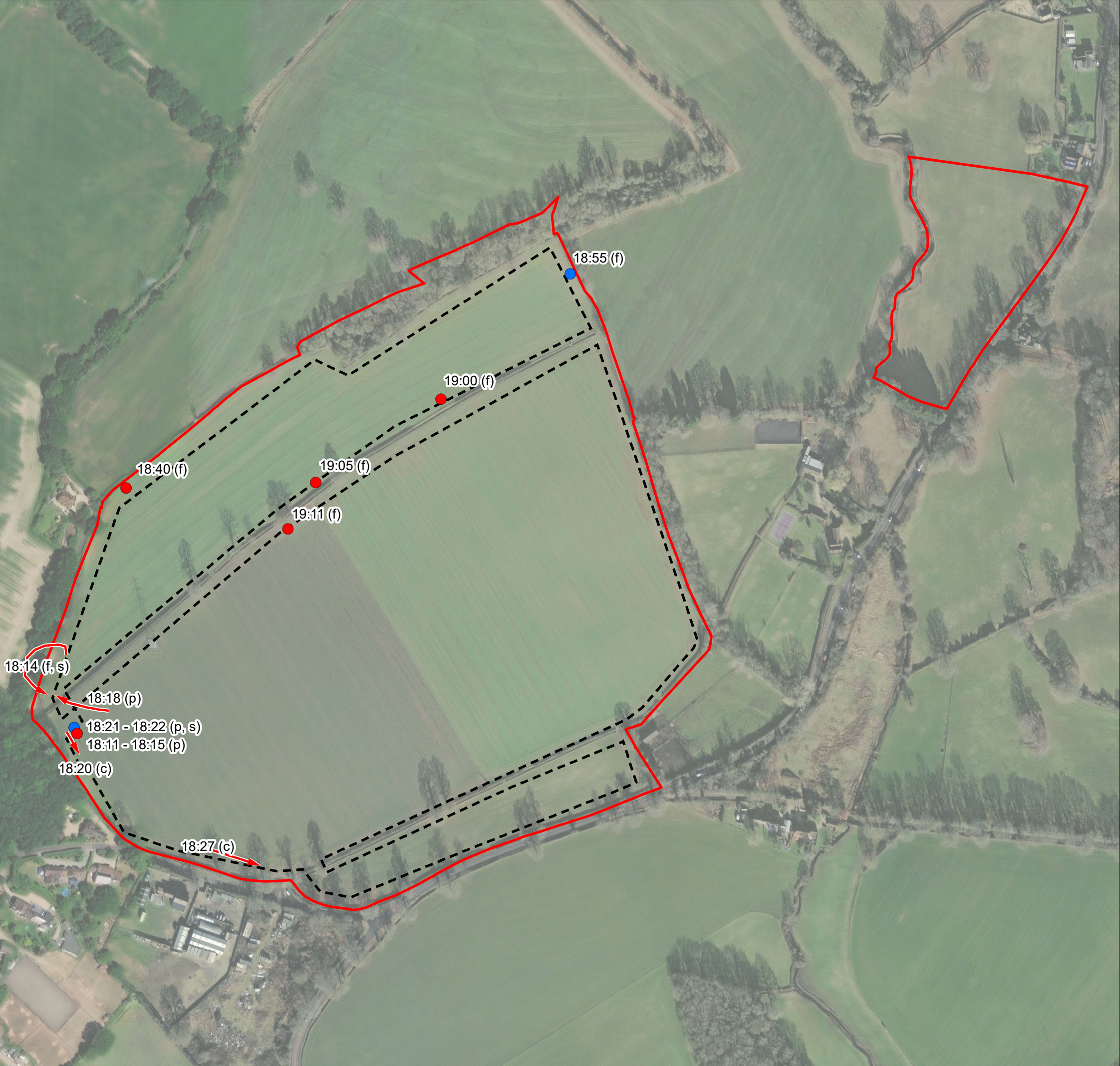
0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025



MAP 7j Bat Night-time Walkover Results
22/10/24

KEY

-  Site boundary
-  Transect route
-  Common Pipistrelle (heard not seen)
-  Soprano Pipistrelle (heard not seen)
-  Common Pipistrelle observed flight
- (c) Commuting
- (f) Foraging
- (p) Pass
- (s) Social calling

SCALE: 1:3,250 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Y:\GleesonLand_LGV_2231\GIS\Bats\Activity surveys\2024\Map7j_Bat_Survey221024_P3026_3422_28012025.mxd

Location	Common Pipistrelle	Soprano Pipistrelle	Common/ Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Barbastelle
27	23.50	4.10	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.10	0.20
28	23.90	3.30	0.00	0.00	1.00	1.50	0.00	0.90	0.00	0.00	0.00



MAP 8a Automated Static Detector Results
April 2022

KEY

- Site boundary
- 1-30 Static bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Long-eared species
- Myotis species
- Serotine
- Noctule
- Leisler's
- Noctule/Leisler's
- Barbastelle
- No passes detected

Pie charts produced from data table shown, which represents the relative bat activity for April 2022 expressed as the total number of bat passes per night for each species/species group at each static detector location



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/ Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Barbastelle
27	154.10	19.70	0.00	0.00	0.40	0.00	0.10	1.40	0.10	1.40	0.70
28	73.10	15.00	2.90	0.00	2.00	1.40	0.20	13.20	0.10	4.10	0.00



MAP 8b Automated Static Detector Results
May 2022

KEY

- Site boundary
- 1-30 Static bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Long-eared species
- Myotis species
- Serotine
- Noctule
- Leisler's
- Noctule/Leisler's
- Barbastelle
- No passes detected

Pie charts produced from data table shown, which represents the relative bat activity for May 2022 expressed as the total number of bat passes per night for each species/species group at each static detector location



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/ Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Barbastelle
27	51.50	1.60	0.10	0.00	0.30	0.20	0.40	4.20	0.50	0.70	0.40
28	34.20	0.80	0.10	0.00	0.50	0.10	0.00	3.10	0.20	1.60	0.10

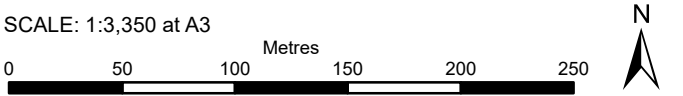


MAP 8c Automated Static Detector Results
June 2022

KEY

- Site boundary
- 1-30 Static bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Long-eared species
- Myotis species
- Serotine
- Noctule
- Leisler's
- Noctule/Leisler's
- Barbastelle
- No passes detected

Pie charts produced from data table shown, which represents the relative bat activity for June 2022 expressed as the total number of bat passes per night for each species/species group at each static detector location



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/ Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Barbastelle
27	74.50	15.40	0.00	0.00	0.00	0.30	0.20	2.90	0.90	0.30	23.50
28	43.40	4.40	0.10	0.00	3.90	0.10	0.10	41.10	0.30	1.80	23.90



MAP 8d Automated Static Detector Results
July 2022

KEY

- Site boundary
- 1-30 Static bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Long-eared species
- Myotis species
- Serotine
- Noctule
- Leisler's
- Noctule/Leisler's
- Barbastelle
- No passes detected

Pie charts produced from data table shown, which represents the relative bat activity for July 2022 expressed as the total number of bat passes per night for each species/species group at each static detector location

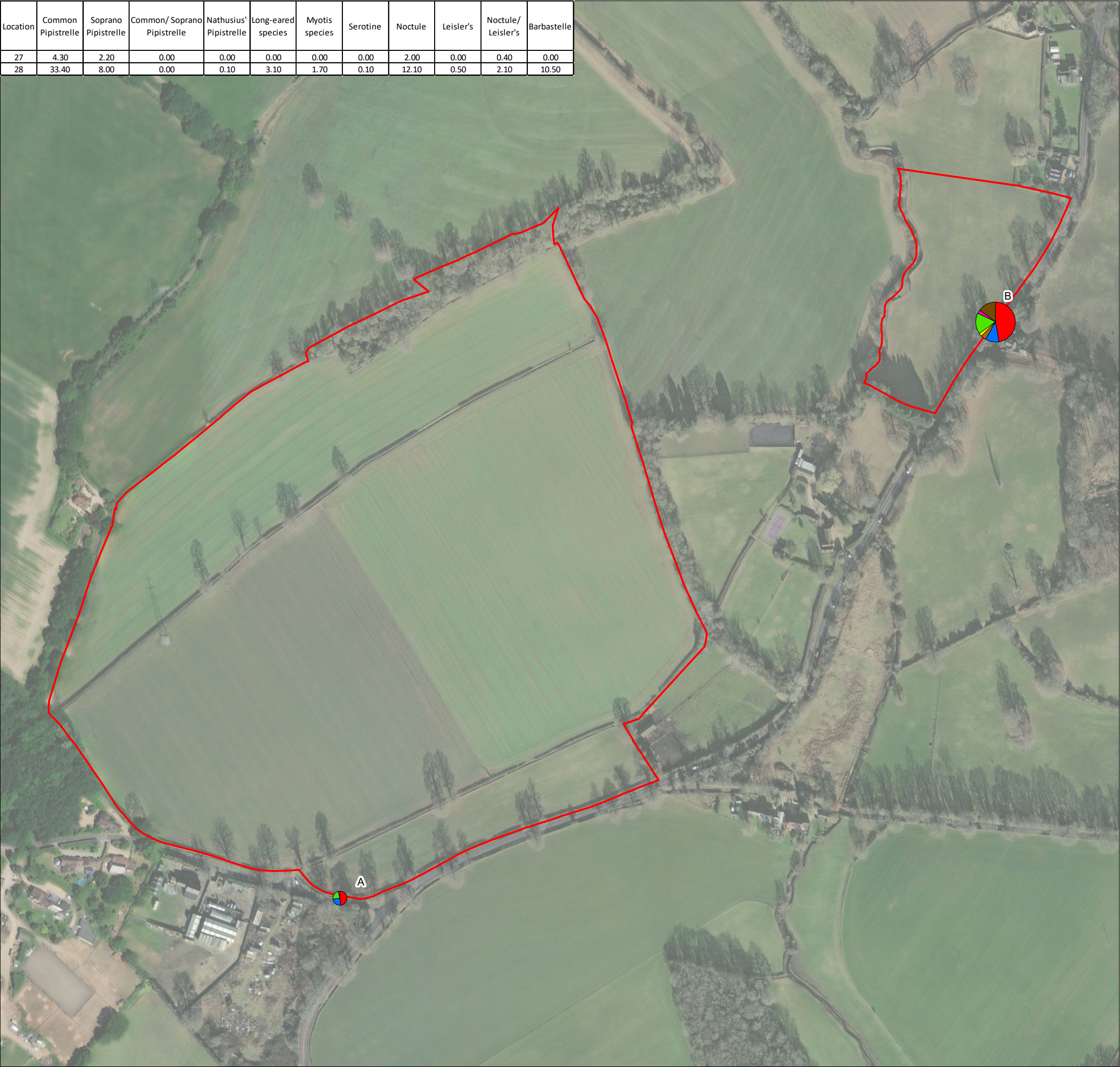


CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/ Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Barbastelle
27	4.30	2.20	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.40	0.00
28	33.40	8.00	0.00	0.10	3.10	1.70	0.10	12.10	0.50	2.10	10.50



MAP 8e Automated Static Detector Results
August 2022

KEY

- Site boundary
- 1-30 Static bat detector locations & reference

Bat species/species group:

- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Long-eared species
- Myotis species
- Serotine
- Noctule
- Leisler's
- Noctule/Leisler's
- Barbastelle
- No passes detected

Pie charts produced from data table shown, which represents the relative bat activity for August 2022 expressed as the total number of bat passes per night for each species/species group at each static detector location

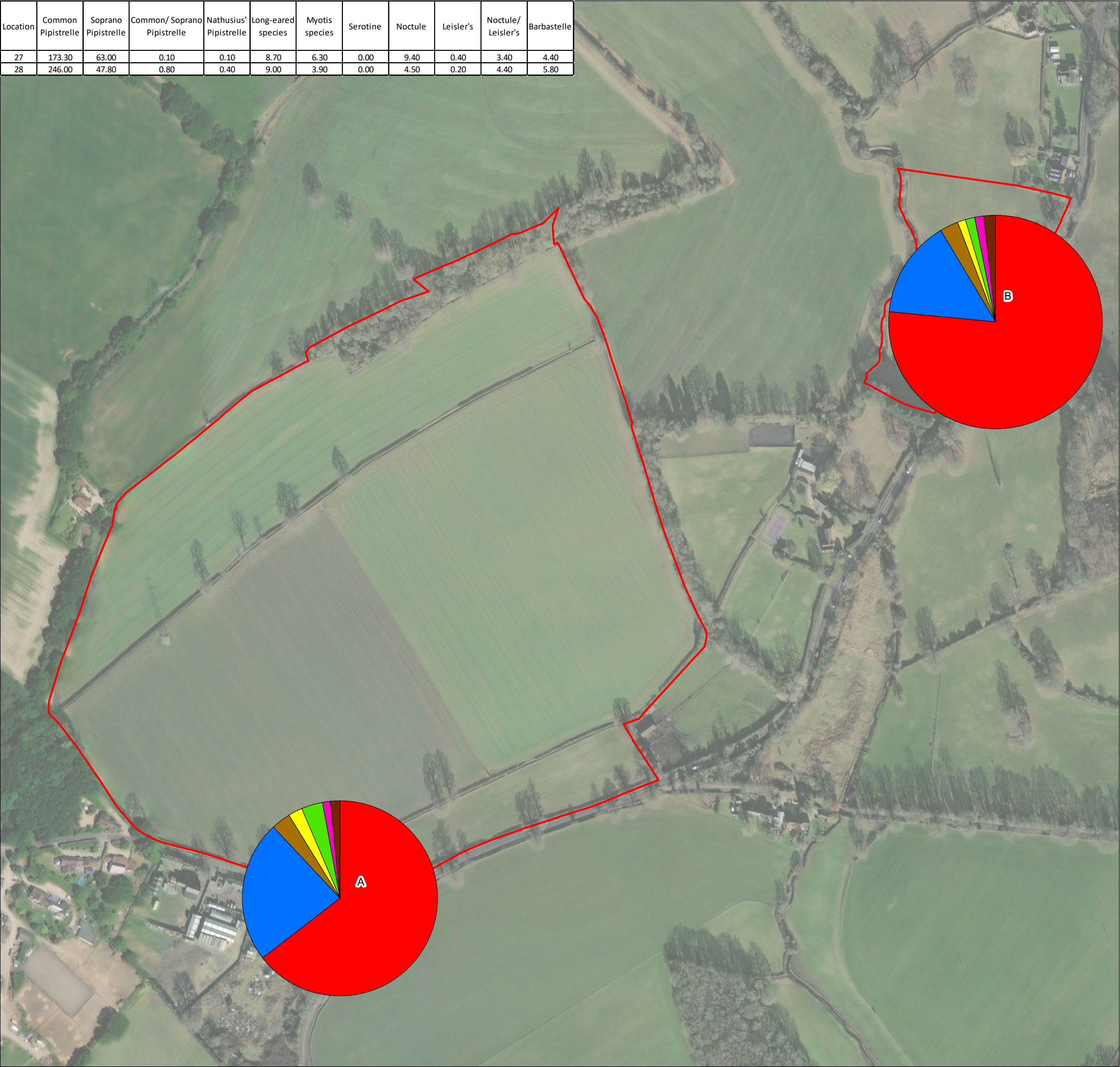


CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/ Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Barbastelle
27	173.30	63.00	0.10	0.10	8.70	6.30	0.00	9.40	0.40	3.40	4.40
28	246.00	47.80	0.80	0.40	9.00	3.90	0.00	4.50	0.20	4.40	5.80

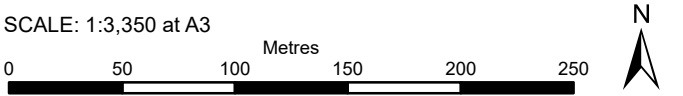


MAP 8f Automated Static Detector Results
September 2022

KEY

- Site boundary
- 1-30 Static bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Long-eared species
- Myotis species
- Serotine
- Noctule
- Leisler's
- Noctule/Leisler's
- Barbastelle
- No passes detected

Pie charts produced from data table shown, which represents the relative bat activity for September 2022 expressed as the total number of bat passes per night for each species/species group at each static detector location

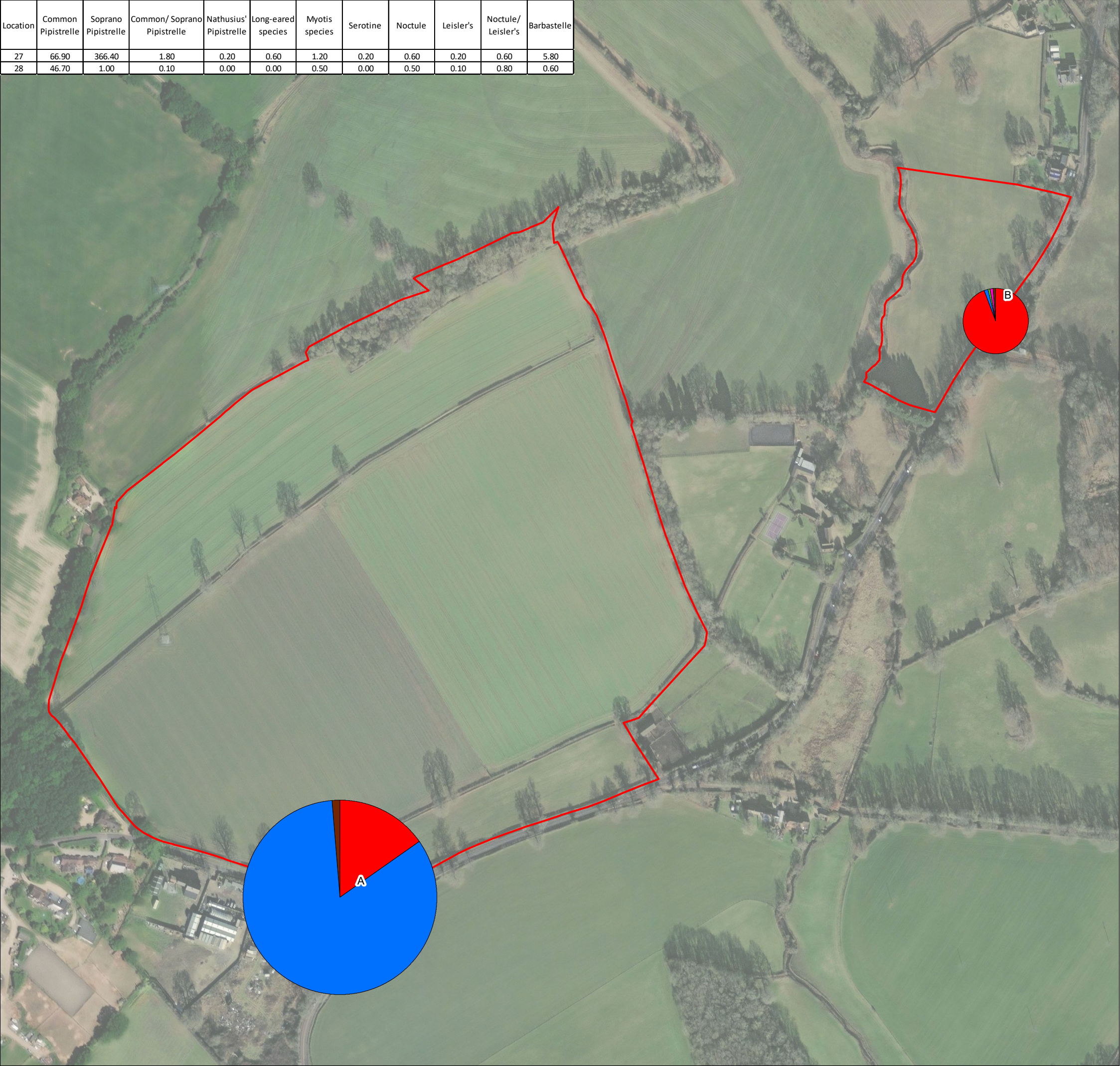


CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/ Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Barbastelle
27	66.90	366.40	1.80	0.20	0.60	1.20	0.20	0.60	0.20	0.60	5.80
28	46.70	1.00	0.10	0.00	0.00	0.50	0.00	0.50	0.10	0.80	0.60



MAP 8g Automated Static Detector Results
October 2022

KEY

- Site boundary
- 1-30 Static bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Long-eared species
- Myotis species
- Serotine
- Noctule
- Leisler's
- Noctule/Leisler's
- Barbastelle
- No passes detected

Pie charts produced from data table shown, which represents the relative bat activity for October 2022 expressed as the total number of bat passes per night for each species/species group at each static detector location



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Myotis/ Plecotus	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Big Bat	Barbastelle	Greater Horseshoe	Lesser Horseshoe
North	129.00	24.00	0.00	0.00	3.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
South	7.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



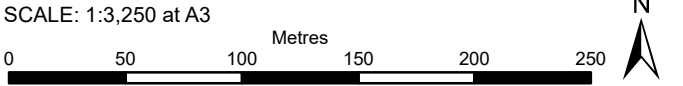
MAP 8h Automated Static Detector Results
April 2024

KEY

- Site boundary
- North & South

Static bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Long-eared species
- Myotis species
- Barbastelle

Pie charts produced from data table shown, which represents the relative bat activity for April 2024 expressed as the total number of bat passes per night for each species/species group at each static detector location

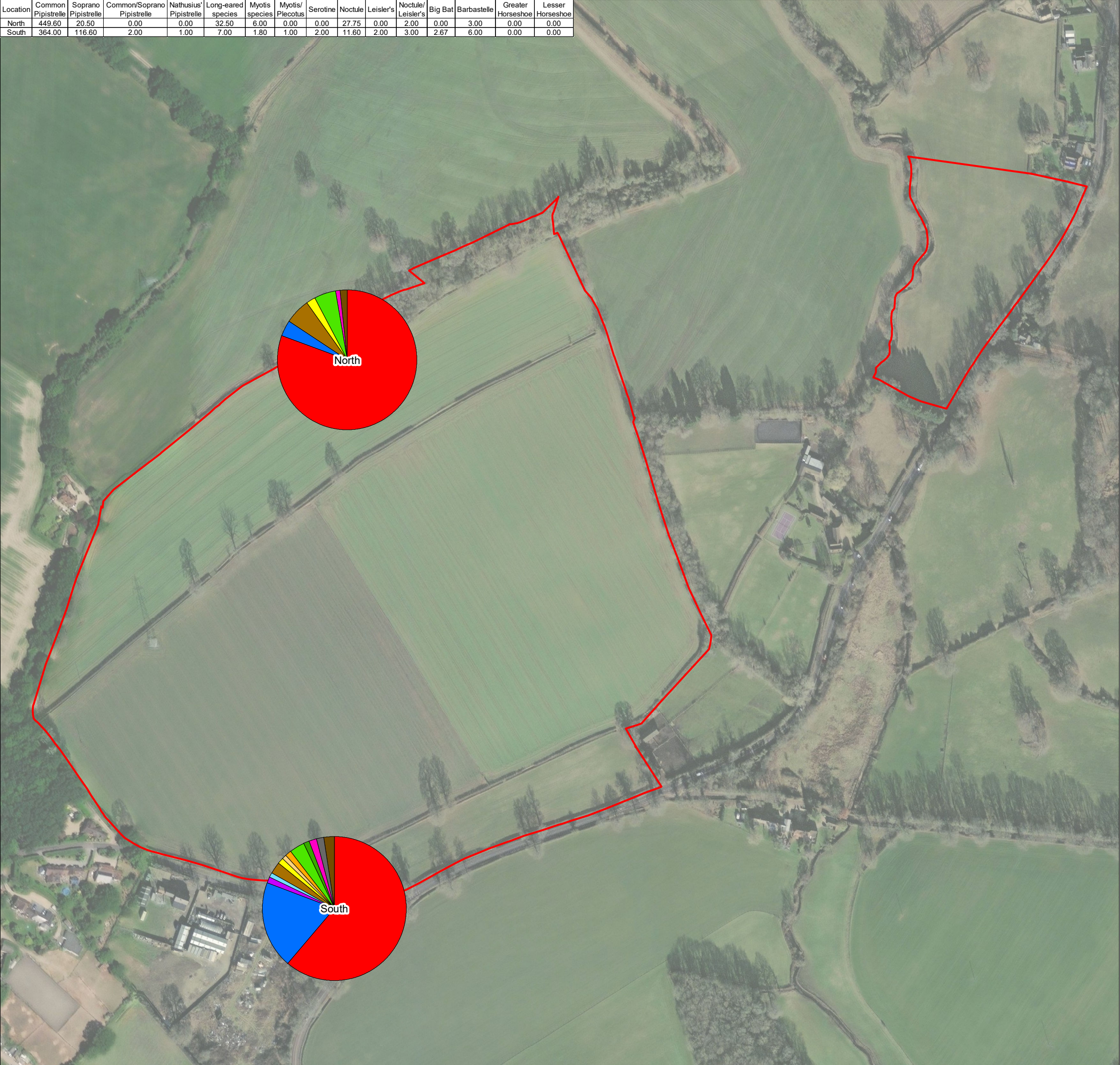


CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Myotis/ Plecotus	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Big Bat	Barbastelle	Greater Horseshoe	Lesser Horseshoe
North	449.60	20.50	0.00	0.00	32.50	6.00	0.00	0.00	27.75	0.00	2.00	0.00	3.00	0.00	0.00
South	364.00	116.60	2.00	1.00	7.00	1.80	1.00	2.00	11.60	2.00	3.00	2.67	6.00	0.00	0.00



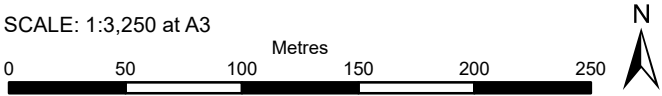
MAP 8i Automated Static Detector Results
May 2024

KEY

- Site boundary
- North & South

Static bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Nathusius' Pipistrelle
- Long-eared species
- Myotis species
- Myotis/Plecotus
- Serotine
- Noctule
- Leisler's
- Noctule/Leisler's
- Big Bat
- Barbastelle

Pie charts produced from data table shown, which represents the relative bat activity for May 2024 expressed as the total number of bat passes per night for each species/species group at each static detector location



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Myotis/ Plecotus	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Big Bat	Barbastelle	Greater Horseshoe	Lesser Horseshoe
North	16.00	6.80	0.00	0.00	5.50	3.60	0.00	8.67	4.20	0.00	0.00	1.00	1.00	0.00	0.00
South	190.40	19.25	0.00	0.00	1.80	2.60	0.00	4.50	10.60	2.00	0.00	4.00	3.00	0.00	0.00



MAP 8j Automated Static Detector Results
June 2024

KEY

- Site boundary
- North & South

Static bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Nathusius' Pipistrelle
- Long-eared species
- Myotis species
- Myotis/Plecotus
- Serotine
- Noctule
- Leisler's
- Noctule/Leisler's
- Big Bat
- Barbastelle

Pie charts produced from data table shown, which represents the relative bat activity for June 2024 expressed as the total number of bat passes per night for each species/species group at each static detector location

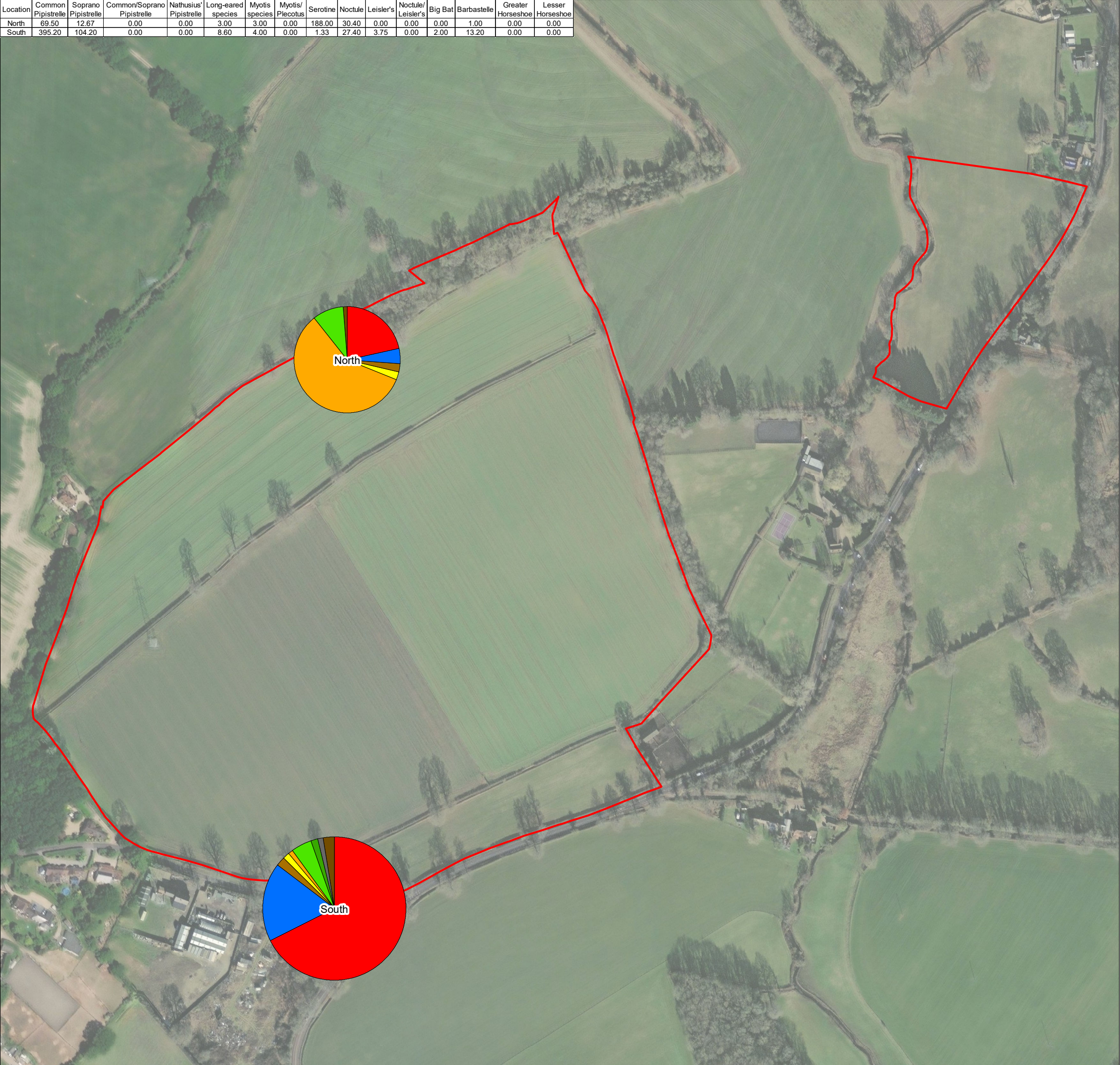


CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Myotis/ Plecotus	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Big Bat	Barbastelle	Greater Horseshoe	Lesser Horseshoe
North	69.50	12.67	0.00	0.00	3.00	3.00	0.00	188.00	30.40	0.00	0.00	0.00	1.00	0.00	0.00
South	395.20	104.20	0.00	0.00	8.60	4.00	0.00	1.33	27.40	3.75	0.00	2.00	13.20	0.00	0.00



MAP 8k Automated Static Detector Results
July 2024

KEY

- Site boundary
- North & South

 Static bat detector locations & reference

Bat species/species group:

- Common Pipistrelle
- Soprano Pipistrelle
- Long-eared species
- Myotis species
- Serotine
- Noctule
- Leisler's
- Big Bat
- Barbastelle

Pie charts produced from data table shown, which represents the relative bat activity for July 2024 expressed as the total number of bat passes per night for each species/species group at each static detector location

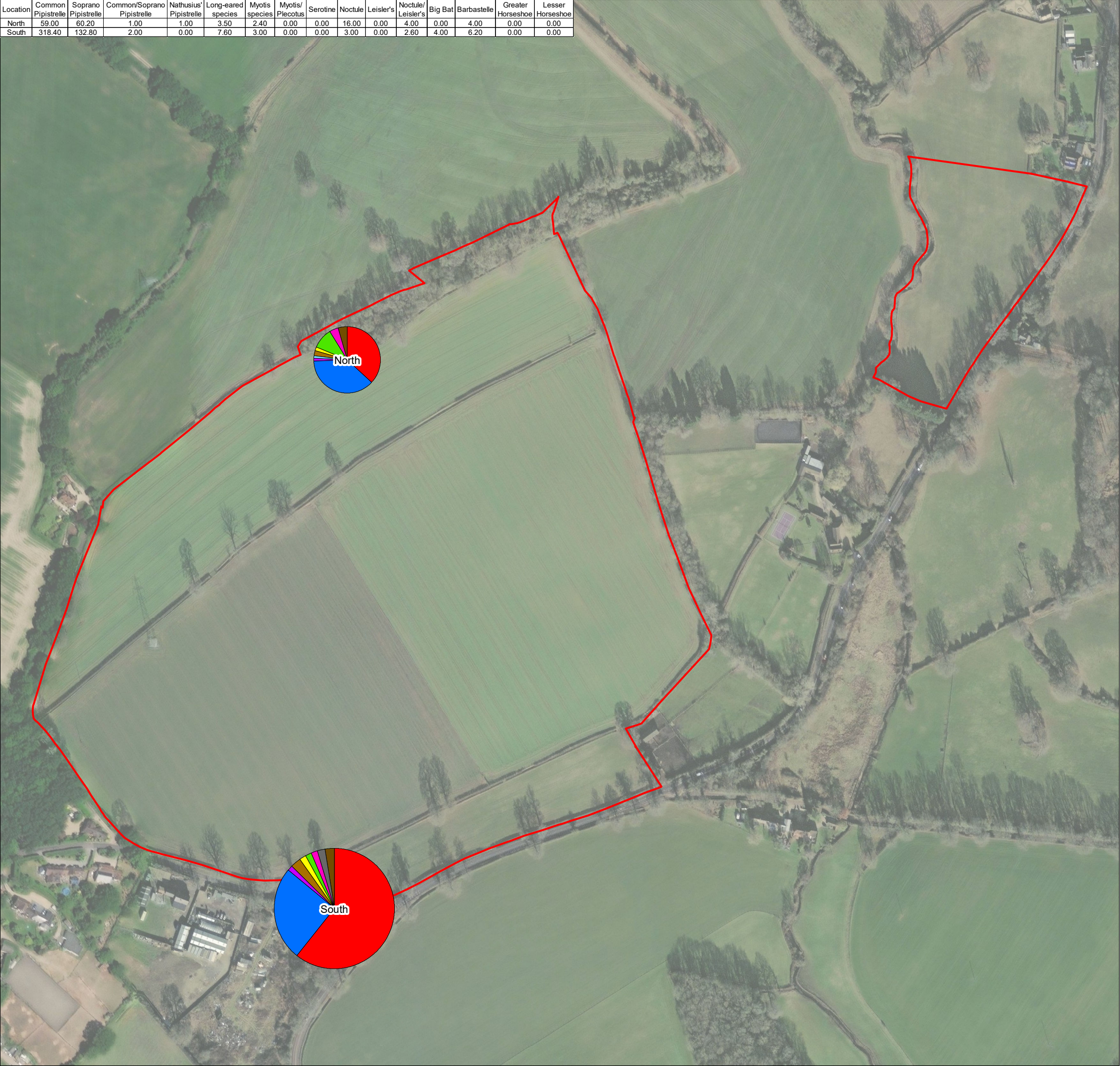


CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Myotis/ Plecotus	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Big Bat	Barbastelle	Greater Horseshoe	Lesser Horseshoe
North	59.00	60.20	1.00	1.00	3.50	2.40	0.00	0.00	16.00	0.00	4.00	0.00	4.00	0.00	0.00
South	318.40	132.80	2.00	0.00	7.60	3.00	0.00	0.00	3.00	0.00	2.60	4.00	6.20	0.00	0.00



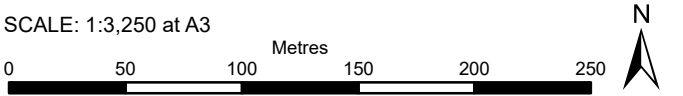
MAP 8I Automated Static Detector Results
August 2024

KEY

- Site boundary
- North & South

Static bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Nathusius' Pipistrelle
- Long-eared species
- Myotis species
- Noctule
- Noctule/Leisler's
- Big Bat
- Barbastelle

Pie charts produced from data table shown, which represents the relative bat activity for August 2024 expressed as the total number of bat passes per night for each species/species group at each static detector location



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Myotis/ Plecotus	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Big Bat	Barbastelle	Greater Horseshoe	Lesser Horseshoe
North	31.80	24.80	1.00	0.00	1.00	4.25	0.00	0.00	12.50	0.00	0.00	0.00	2.25	0.00	0.00
South	125.80	126.00	0.00	1.50	4.50	2.75	0.00	0.00	4.25	0.00	1.33	1.00	3.33	0.00	0.00



MAP 8m Automated Static Detector Results
September 2024

KEY

- Site boundary
- North & SouthStatic bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Common/Soprano Pipistrelle
- Nathusius' Pipistrelle
- Long-eared species
- Myotis species
- Noctule
- Noctule/Leisler's
- Big Bat
- Barbastelle

Pie charts produced from data table shown, which represents the relative bat activity for September 2024 expressed as the total number of bat passes per night for each species/species group at each static detector location

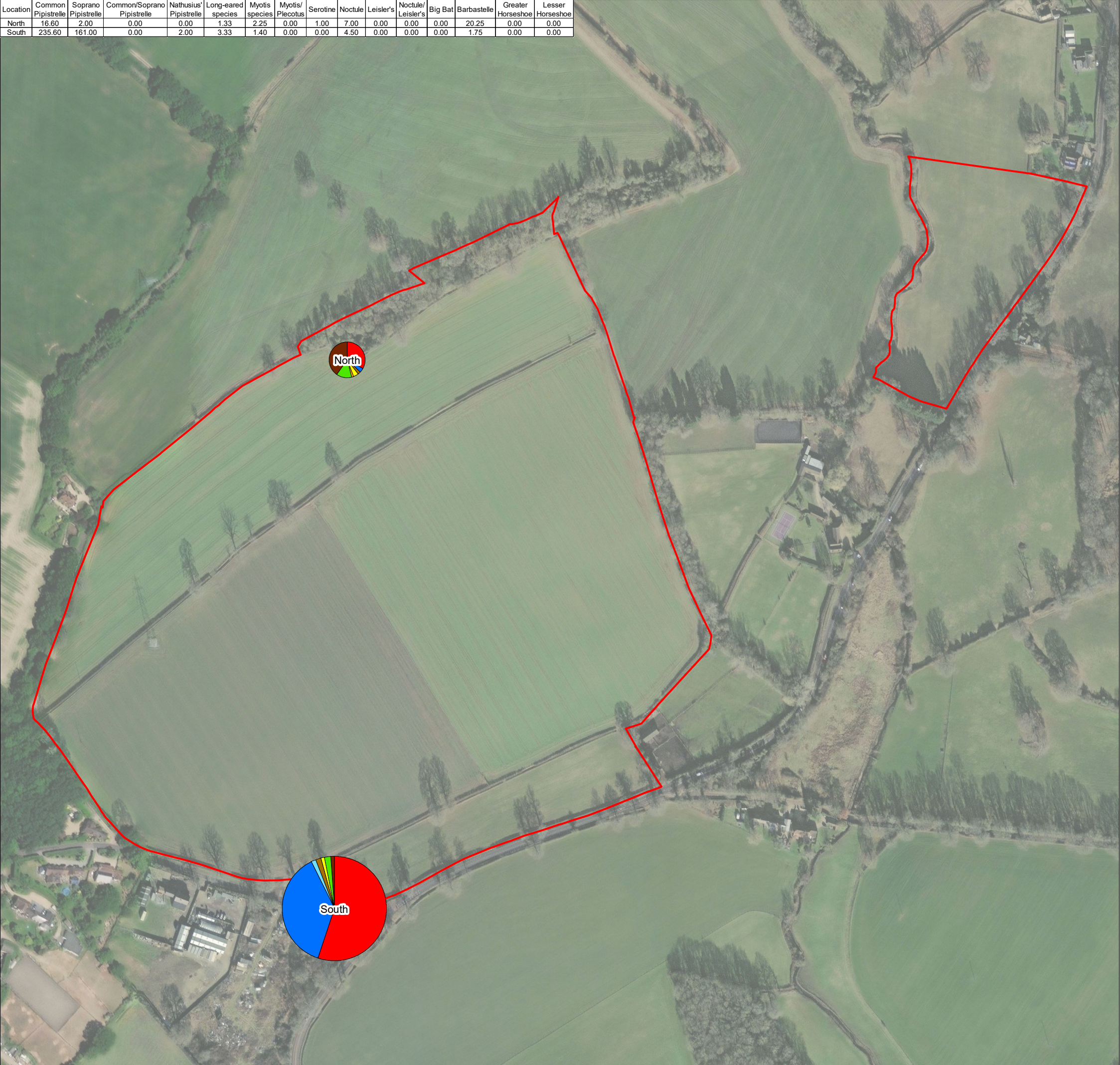


CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025

Location	Common Pipistrelle	Soprano Pipistrelle	Common/Soprano Pipistrelle	Nathusius' Pipistrelle	Long-eared species	Myotis species	Myotis/ Plecotus	Serotine	Noctule	Leisler's	Noctule/ Leisler's	Big Bat	Barbastelle	Greater Horseshoe	Lesser Horseshoe
North	16.60	2.00	0.00	0.00	1.33	2.25	0.00	1.00	7.00	0.00	0.00	0.00	20.25	0.00	0.00
South	235.60	161.00	0.00	2.00	3.33	1.40	0.00	0.00	4.50	0.00	0.00	0.00	1.75	0.00	0.00



MAP 8n Automated Static Detector Results
October 2024

KEY

- Site boundary
- North & SouthStatic bat detector locations & reference
- Bat species/species group:
- Common Pipistrelle
- Soprano Pipistrelle
- Nathusius' Pipistrelle
- Long-eared species
- Myotis species
- Serotine
- Noctule
- Barbastelle

Pie charts produced from data table shown, which represents the relative bat activity for October 2024 expressed as the total number of bat passes per night for each species/species group at each static detector location



CLIENT: Gleeson Land Limited

PROJECT: Land at Newlands Farm, Arborfield

DATE: 29 January 2025



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 9 Dormouse Habitat Suitability Assessment

KEY

 Site boundary

Suitability to support Dormice

 Optimal

 Sub-optimal

 Negligible

SCALE: 1:3,365 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Strategic Land Ltd

PROJECT: Land at Newlands Farm, Arborfield

DATE: 14 March 2023

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KEY

-  Site boundary
-  Areas with high quality habitats

SCALE: 1:3,350 at A3

0 50 100 150 200 Metres



CLIENT: Gleeson Strategic Land Ltd

PROJECT: Land at Newlands Farm, Arborfield

DATE: 17 October 2023