5 Discussion

Seven of the nine resident Irish bat species were found within the site; Leisler's Bat, Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Brown Long-eared, Natterer's Bat and Daubenton's bat.

62,880 registrations were recorded over the course of 22 nights from 8 static bat detectors placed in key locations throughout the site. Detectors 2, 3, 5, 7 are set in Edge Habitat which shows much higher activity on this site and these detectors make up 97% of all bat calls. Locations with high density of bat commuting traffic are Detector 2 and Detector 3 (D3 particularly in late summer when young bats are present).

Lowest Levels of activity was consistently seen in open habitats onsite, with Detector 1, 4, 6 and 8 showing drastically lower levels of activity. Detector 5 is the only detector placed adjacent to a watercourse, a small stream along the northern border of Section 3. It also showed the highest levels of Myotis Species on site though few Myotis bats were recorded.

The detector surveys show in open habitats, the average bat pass equates to 1.3 Bp/Hr. This is a very low level of activity and this habitat represents the majority of the site, particularly where the solar panels are proposed. In open habitats Common and Soprano Pipistrelle make up 58.3% of activity with Leisler's bats representing 31.9%. All these species typically fly at heights above 5m and regularly at heights of 20m+. The presence of solar panels should have little impact on these species current rate of activity in open areas. Other species were found in very low numbers here.

The average Bp/hr by edge habitat reached 100 Bp/Hr with high numbers of Common and Soprano Pipistrelle. In sections 2, 3 and 4, treelines and hedges are being retained with minimal gaps provided for access. In section 1 a significant portion of mature treelines will be lost. These trees were used by feeding bats and the loss of this habitat will need to be mitigated; see sections 6 and 7 below.

A Breeding pair of Barn owls were observed nesting onsite near Detector 3. Literature suggests that Barn Owls can influence the suitability of an area for bats, potentially driving bats out of a roost. (Roulin, 2013) concludes that while Barn Owls can predate on insectivore bat species, bats typically make up a small portion of their diet (usually <0.2%) and predation is mostly opportunistic on the part of the Barn Owl.

No tree roosting bats were recorded during any survey. Bat roosts were noted from buildings to the west of the site (two roost structures) however these buildings will not be altered by the proposed development.

6 IMPACT ASSESSMENT PRIOR TO MITIGATION

Determination of impacts is derived with guidance from EPA 2022 Guidelines on the information to be contained in Environmental Impact Assessment Reports. Table 6-1 provides definitions of effect while table 6-2 provides an assessment of impacts prior to mitigation for bats recorded within the site.

6.1 LOSS OF ROOSTING HABITAT

Assessment of Potential Impacts on Roosting Bats	All structures, trees and hedge species which could be impacted by the development were assessed from ground level examining the potential to host a bat roost. The shed in the North-western corner of the site is not going to be renovated, despite being onsite, and as such no derogation license is required, provided care is taking with lighting during the post-construction phase. Trees were examined for their potential to host a bat roost however none were found. The majority of trees will remain unaffected by the proposed development baring in section 1 where treelines are proposed to be removed. These trees will require re-surveying prior to felling to ensure no bats are present.
Characterization of unmitigated effect	Due to the retaining of the shed roost on site and the other roost being located offsite, the development will not have an impact on roosting bats. Lighting post-construction is the most likely cause of roost habitat loss and care must be taken that bats are not deterred from returning to their roost due to improper lighting practices. Bats moving into potential tree roosts that are being felled could be harmed. The removal of trees in section 1 will result in the loss of potential roost features.
Assessment of Importance prior to mitigation	This has the potential to have an effect on a receptor of Local Importance (Moderate Value).
Mitigation	Tree-felling should ideally be undertaken in the period **September to late October/early November,** however, can also be conducted from **late January until the end of February**. Outside of these times an EcOW will need to first verify if impacts will occur. All trees recorded as PRF will require an additional at height survey prior to felling. Identified roosts will not be impacted by lighting. **Veteranisation of trees** To compensate for the loss of prf features, veteranisation of remaining trees will create new features suitable for roosting bats. Six trees have been marked to be retained as monolith features to assist in the development of the compensatory woodland. The tree to the north will be retained if possible. This tree is an ash with significant dieback and is at the edge of the proposed road. This tree would have its crown removed and additional prfs cut in. The canopy of these trees will be cut and roost features will be cut into the trunks thus providing prf features in trees without any. Retaining these veteran trees will expedite the effectiveness of the mitigation measures by providing potential satellite roost locations and maintaining important continuity in the connectivity of treelines onsite

	Building 1 While a bat roost was not found in building 1, the attic of this building will be converted to make it more suitable for roosting bats. Three bat slates will be installed in the roof. In the attic, baffles will be created and 3 x 1ff Schwegler (or equivalent) bat boxes installed.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted as a result of the construction works.

6.2 Loss of Foraging and Commuting Habitat

Describing the Significance of Effects	Surveys demonstrate low bat activity in open areas of the site thus the placement of solar panels throughout the site should have low levels of impacts on feeding bats. Section 1 contain the majority of hedgerow and treeline loss due to the density of proposed buildings in this section. The loss of these treelines will result in the loss of feeding and commuting habitats for the local bat population.
Characterisation of unmitigated effect	Without mitigation, there would be a loss of some feeding habitat for bats close to the location of a Common Pipistrelle roost.
Assessment of Importance prior to mitigation	This is a moderate effect on receptors of Local Importance (Higher Value).
Mitigation	**Planting of Compensatory Woodland** A plot of land, (4.34Ha), has been set aside to be planted with trees to act as mitigation against habitat loss in this section. Native trees will be planted along the Western boundary of the Section. With the retaining of mature trees, this will provide feeding and commuting habitat for local bats. An additional strip of woodland (1Ha) is proposed to be planted in Section 4, where trees are to be planted along the Northern Border of the site along the M6. This will act as safe commuting routes for bats in this section of the site and sheltering the Northern Section from light and noise pollution that may affect bat populations in the area. **Ponds** Two ponds will be created within section 1 that will act as SuDS drainage system. These ponds will not be kept as aesthetic features, rather be landscaped so as to avoid lighting and anthropic disturbance. Ponds will be surrounded by native trees.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted as a result of the construction works. Short term slight effects on foraging and commuting are anticipated due to the temporary loss of vegetation during the construction phases though these effects will reduce as the Compensatory Woodland matures.

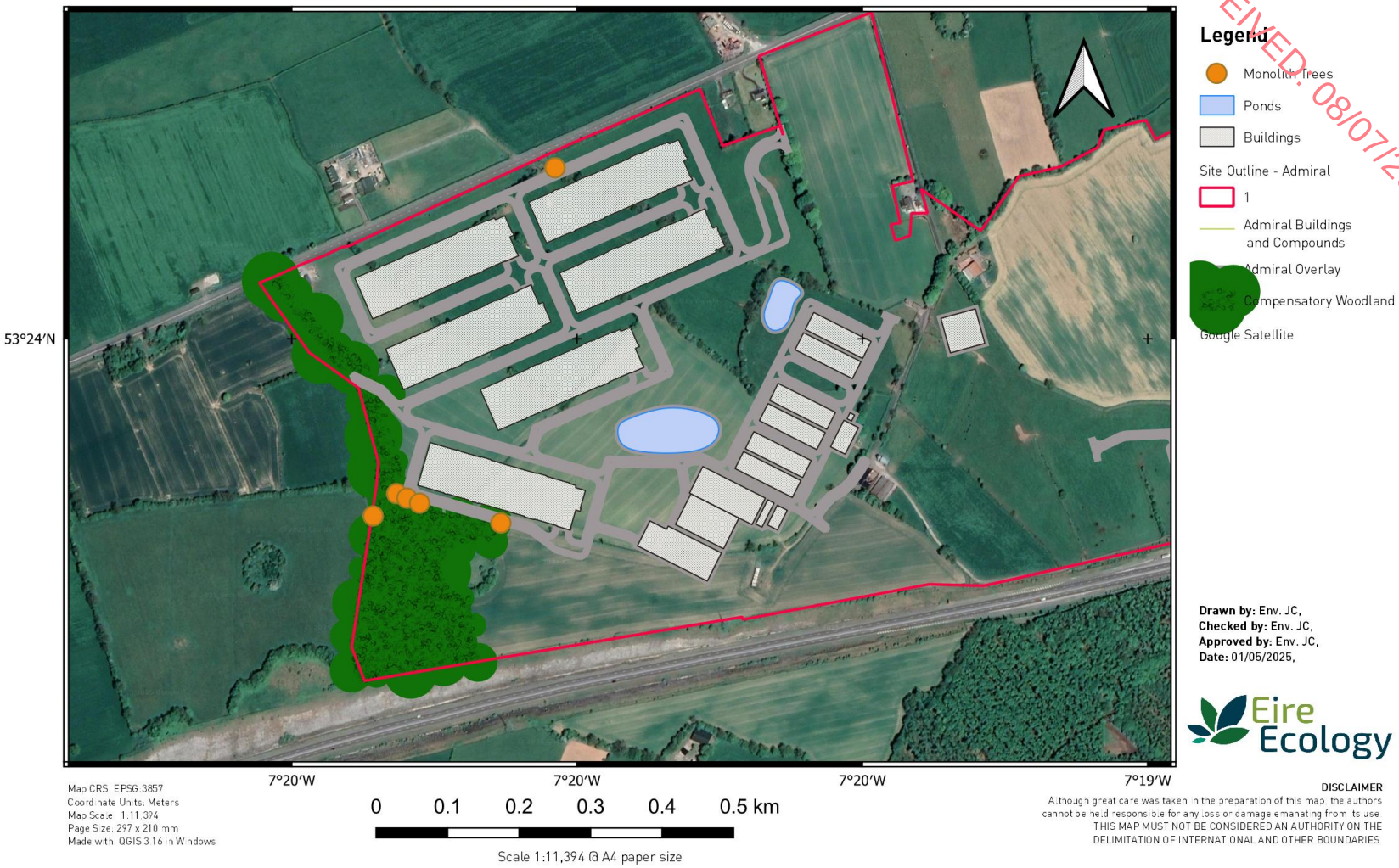

Figure 6-1: Trees Proposed as Monolith Features, section 1 proposed woodland and ponds.

Figure 6-2: Proposed Compensatory Woodland (total : 5.34Ha)

6.3 DISTURBANCE.

Describing the Significance of Effects	**Disturbance** - Works associated with development or building work are likely to lead to an increase in human presence at the site, extra noise and changes in the site layout and local environment. **Lighting effects on feeding and commuting bats** Guidance on lighting has been based on Bats and artificial lighting in the UK, Guidance Note 08/18 (BCT, 2018), EUROBATS*; Guidelines for consideration of bats in lighting projects.* (Voigt, 2018) and BCI; Bats & Lighting document; (BCI, 2010). Lighting can alter the behaviour of bats and the insects they prey on. Night flying insects can be attracted to lights particularly sources that emit an ultraviolet component or have a high blue spectral content. Whilst some species of bat such as Leisler's and Pipistrelle species can take advantage of this occurrence, other species such as Daubenton's bat and brown long-eared avoid such areas. Lighting can create barriers for bat species both entering roosts and using commuting routes such as rivers, treelined roads and woodland edges. A mitigation guideline produced by (Bat Conservation Trust, 2018) recommends that for effective mitigation to be implemented, there needs to be a collaborative effort by an ecologist in conjunction with engineers, planners and when deemed necessary by the ecologist, there should also be input from a lighting specialist and landscape designer. The guideline was designed for the UK where more bat species are concerned however there are aspects of the guideline that apply to Irish bat species. The guidelines recommend a baseline bat survey is conducted and the following areas should have no ALAN • Roosting and swarming sites for all species • Foraging or commuting habitat for highly light-averse species (lesser horseshoe, brown long-eared and some Myotis) • Foraging or commuting habitat used by large numbers of bats • Foraging or commuting habitat for rare species (Lesser horseshoe) (Bat Conservation Trust, 2018) **Western roost structure** Lighting is only proposed in section 1. This area contains a roost to the north west while another roost is located close but outside the site. Lighting close to the roost has the potential to impact entry to roosts and limit access to feeding grounds.
Characterisation of unmitigated effect	Without sufficient care, lighting could have a significant impact on the NW roosts.
Assessment of Importance prior to mitigation	This is assessed as a long-term Significant effect on a receptor of Local Importance (Higher Value).
Mitigation	**Construction** Where lighting is unavoidable during construction, low-intensity lighting and motion sensors will be used to limit illumination. Exterior lighting, during construction, will be designed to minimize light spillage, thus reducing the effect on areas outside the

	proposed development, and consequently on bats i.e. Lighting will be directed away from mature trees/treelines around the periphery of the site boundary and woodland areas to minimize disturbance to bats. Directional accessories will be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. **Operation** The aim of the lighting plan is to create three lighting zones in section 1; a dark zone (not impacted by lights), a low lux zone and a standard lit area. Figure 6-3 shows these areas. *Dark zone* The western boundary of the site (by building 1) showed highest bat activity during surveys. This entrance and the proposed woodland strip will remain unlit, The proposed road here is a secondary emergency road and does not require lighting. The new woodland and ponds will also remain unlit. **Low light zone** This area covers some sections of road where connectivity between the ponds and the woodland is desirable. Along these roads 6m high lights are proposed with a colour of 4000k thus not attractive to invertebrates. These lights will have motion sensors installed so will only operate when required. For much of the night, these areas will remain unlit. **Standard areas** The main buildings are considered standard areas where lighting is required. These areas are not of high value to bats.
Residual Effect following Mitigation	No significant residual effects on bats are expected at a county, national or international level.

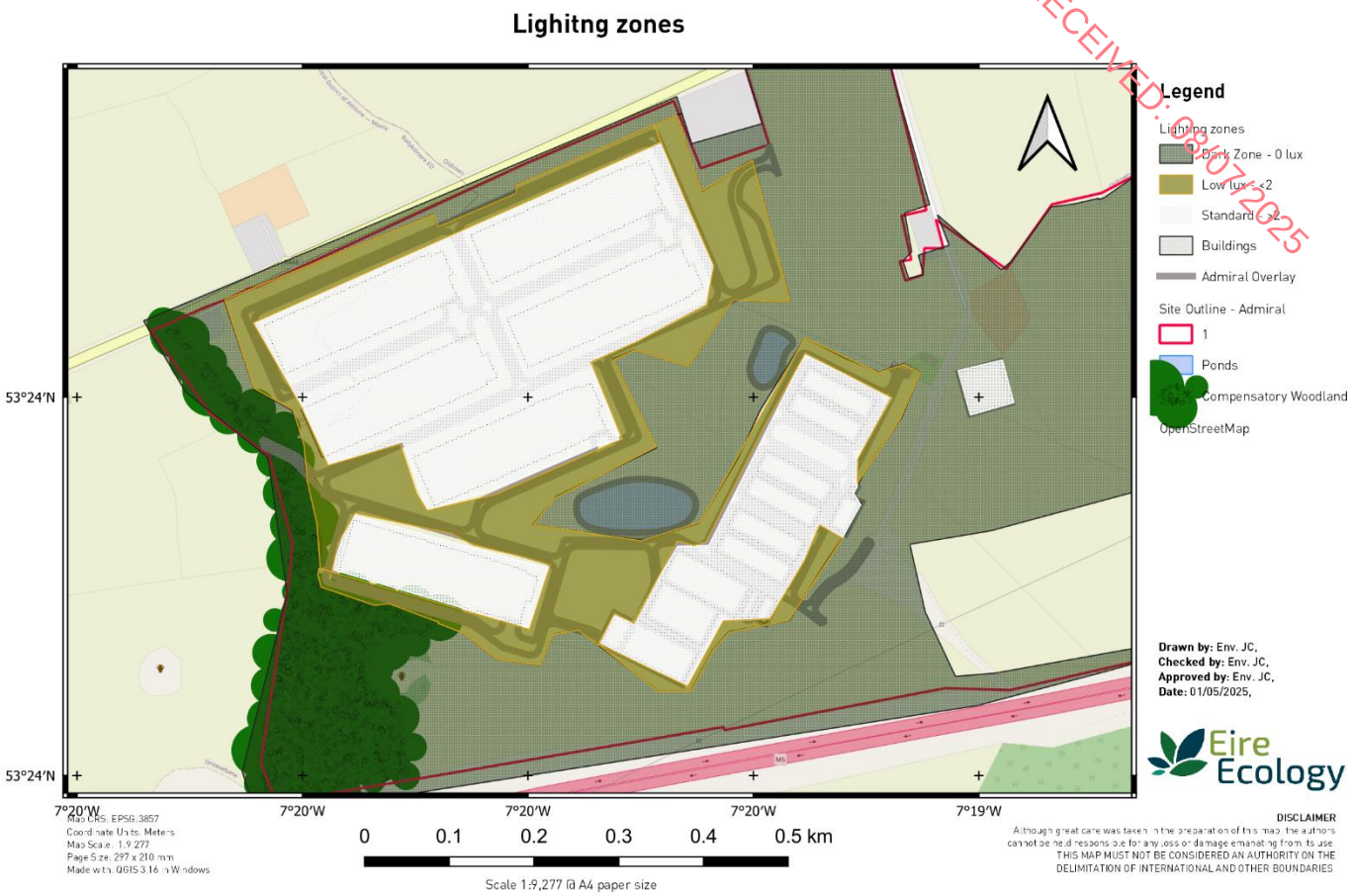

Figure 6-3: Section 1 lighting zones

6.4 BAT INTERACTIONS WITH SOLAR PANELS

Assessment of Potential Impacts on Roosting Bats	(Smallwood K. , 2022) reviewed reports of fatality monitoring from 1982 to 2018 at 14 project in California (PV, SCAs & heliostat mirrors reflecting light to towers) estimated some 11,418 bats have been killed in the state of California per year. Smallwood recommends • Perform baseline studies beginning ≥1 year prior to project construction to quantify relative abundance, densities in both breeding and nonbreeding seasons, and behaviour patterns of resident and migratory wildlife species; • Monitor all new utility-scale solar projects for fatalities, • Use scent-detection dogs • Integrate carcass detection trials into routine fatality monitoring, using appropriate species to quantify overall detection probability • Quantify and report observer error rates associated with monitoring, such as carcass detection rates and species misidentifications; • Report species-specific use rates and fatality rates in addition to use rates and fatality rates of all birds and all bat

	Regarding general activity, (Szabadi, 2023). The study found species most adapt at utilising anthropogenic environments used solar farms. The study also found a decrease in Myotis / woodland bats. Our surveys show the majority of bat activity recorded within the site was from open and edge habitats such as Common and Soprano Pipistrelle alongside Leisler's bat
Characterization of unmitigated effect	Given the lack of documented Irish studies there exists the potential some bats may collide with solar panels. In addition, there may also be a reduction in bat feeding habitats although the majority of hedgerows and trees within the solar farm portion of the site are being retained. Our surveys show these are the features most valuable for bats.
Assessment of Importance prior to mitigation	This has the potential to have a slight effect on a receptor of Local Importance (Moderate Value).
Mitigation	• Minimum 5m buffer for drain ditches and hedgerows. • (Horvath, 2010) suggests solar panels are a new source of polarized light pollution and can be attractive to insects, thus also insect feeding bat species. There is evidence that this potential effect can be mitigated by a non-polarising white grid, partitioning on solar panels to reduce or eliminate their reflection of polarised light. As such, all panels will be fitted with a non-polarising white grid partitioning. • Retention of all hedgerows and treelines in sections 2, 3 4 and 5. • Lighting restrictions. In general, artificial light creates a barrier to bats so lighting should be avoided where possible. Construction operations within the solar farm site will take place during the hours of daylight where possible to minimise disturbances to faunal species at night. Where temporary lighting is required, directional lighting (i.e. lighting which only shines on work areas and not nearby countryside) will be used to prevent overspill. The operational phase solar farm will not require lighting. This is a key measure to reduce impacts on bats.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted as a result of the construction works.

7 MONITORING

Based on recommendations outlined on Smallwood and to provide an opportunity to gain baseline data on bat / solar panel interaction it is recommended that the scheme be monitored for bat (and bird) fatalities for the first three years of operation (post construction surveys). A comprehensive onsite fatality monitoring programme is to be undertaken following published best practice (e.g. SNH 2021 or equivalent at the time of operation).

The primary components of the bat mortality programme are outlined below:

a) *Carcass removal trials to establish levels of predator removal of possible fatalities. This should be done following best recommended practice and with due cognisance of published effects such as predator swamping, whereby excessive placement of carcasses increases predator presence and consequently skews results.* At the time of writing (2022), predation trials set using trail cameras following guidance set out in (Smallwood K. S., 2010) provides the most accurate results.
b) Searches for fatalities should be undertaken with the use of conservation dogs following best practice in terms of search area and at intervals selected to effectively sample fatality rates as determined by carcass removal trials in (a) above. Given little is documented at an Irish level monthly surveys should be conducted within the site and should include areas of highest bat activity.
c) Recorded fatalities should be calibrated against known predator removal rates to provide an estimate of overall fatality rates (bat fatalities/MW/year).
d) Conduct static monitoring in the same locations at similar times of year and assess activity compared to the baseline.
e) Monitoring report to be submitted to Westmeath County Council and the NPWS.

- A post-construction lux survey should be conducted of all lights in proximity to features important to bats such as woodland, treelines ponds and the known roosts. Should light have increased to a point where it may impact bats, adjustments to the lights will be required.
- Post construction monitoring of existing roosts should be conducted. Should occupancy lower than the baseline, measures will be required to rectify the situation.

8 CONCLUSION

Seven of the nine resident Irish bat species were found within the site. Two bat roosts were found; the site is utilised for feeding and commuting purposes. The site is located in Co. Westmeath. Common

Pipistrelle was the primary species utalising the site, with Soprano and Leisler's Bats also present in moderate numbers. Two Roosts were found in structures, one onsite and another less than 100 bm from the site boundary. Common pipistrelle and Soprano Pipistrelles were confirmed roosting onsite.

Common and Soprano Pipistrelle especially near D-2 and D-3, during the bat breeding season, in autumn, show very high levels of activity. It's these groups of bats that are of the highest risk onsite. Numbers of other species are much lower and more typical of occasional interactions with the site, not roosting bats.

Mitigation has been implemented by way of Compensatory woodland and retained monolith tree features to enhance the stability of the area. D2 was located in the western section of the site where this compensatory woodland will be planted. The large amount of Common Pipistrelle using the tree lines here will benefit from additional tree lines and lands for foraging.

After mitigation, no significant long term residual impacts will occur to roosting and commuting bats. It is possible that there will be a slight long-term impact on feeding bats specifically relating to bats utilising the area in and around the substation and lands adjacent to construction areas in Section 1, though compensatory measures will ensure that ample opportunities are available for bats after the construction phase is completed.

Additionally, bats should be able to better utilise the southern Section of the site, where connectivity has been created along the motorway through the planting of an additional hectare of woodland. Activity was low in the Southern section of sit but improving connectivity will encourage transit to the larger landscape outside the site.

9 Residual Impacts

As long as the mitigation measures requested above are implemented, impacts on the local bat populations will be negligible. Post construction monitoring will provide insights into the effectiveness of mitigation.

APPENDIX A – TABLES, FIGURES & PHOTOS

Table 1: Irish bat species recorded in the BCI database

Record Type	*Species name*	Distance of record from site	Last record	Details	Designation	Potential connectivity with subject site (for roost records)
Roost	*Myotis nattereri*	1.1km	2023	Ruined stone building by river. Records are of low numbers of hibernating bats	Annex IV EU Habitats Directive	Yes, Connectivity through treelines to N section
	Pipistrellus pipistrellus (45kHz)					
	Plecotus auritus					
	Plecotus auritus	1.5km	2024	Ruined stone building, Conifer plantation and watercourses nearby.		Yes, Treeline/Hedgerow provide connectivity
	Myotis daubentonii					
	Pipistrellus pygmaeus	4.4km	2015	Bat Box erected in woodland		No
	Unidentified Species	4.4km	2015	Bat Box erected in woodland		No
	Unidentified Species	4.4km	2015	Bat Box erected in woodland		No
	Unidentified Species	4.4km	2015	Bat Box erected in woodland		No
	Pipistrellus spp. (45kHz/55kHz)	5.5km	2015	Bat Box erected on boundary hedgerow		No
	Unidentified Species	5.5km	2015	Bat Box erected on boundary hedgerow		No
Ad Hoc	*Pipistrellus pipistrellus (45kHz)*	5.2km	2009	Bat Surveys - Tina Aughney	Annex IV EU Habitats Directive	N/A
	Pipistrellus pygmaeus					
	Myotis spp.					
	Nyctalus leisleri					
	Pipistrellus pipistrellus (45kHz)	5.1km	2009			
	Pipistrellus pygmaeus					
	Pipistrellus pipistrellus (45kHz)	4.2km	2009			
	Pipistrellus pygmaeus					
	Nyctalus leisleri					
	Pipistrellus pipistrellus (45kHz)	4.6km	2009			
	Pipistrellus pygmaeus					
	Myotis spp.					
	Pipistrellus pipistrellus (45kHz)	5.2km	2009			
	Pipistrellus pygmaeus					
	Pipistrellus spp. (45kHz/55kHz)					
	Nyctalus leisleri					

Record Type	*Species name*	Distance of record from site	Last record	Details	Designation	Potential connectivity with subject site (for roost records)
	Plecotus auritus					
	Myotis spp.					
	Plecotus auritus					
	Pipistrellus pipistrellus (45kHz)	5.4km	2009	Bat Surveys - Tina Aughney		
	Pipistrellus pygmaeus					
	Pipistrellus spp. (45kHz/55kHz)					
	Nyctalus leisleri					
	Plecotus auritus					
	Pipistrellus pipistrellus (45kHz)	5.3km	2009			
	Pipistrellus pygmaeus					
	Pipistrellus spp. (45kHz/55kHz)					
	Myotis spp.					
	Pipistrellus pipistrellus (45kHz)	5.2km	2009			
	Pipistrellus pygmaeus					
	Pipistrellus spp. (45kHz/55kHz)					
	Nyctalus leisleri					
	Myotis spp.					
	Plecotus auritus					
	Pipistrellus pipistrellus (45kHz)	4.8km	2009			
	Pipistrellus pygmaeus					
	Pipistrellus spp. (45kHz/55kHz)					
	Pipistrellus pipistrellus (45kHz)	5.4km	2009			
	Pipistrellus pygmaeus					
	Pipistrellus spp. (45kHz/55kHz)					
	Nyctalus leisleri					
	Pipistrellus pipistrellus (45kHz)	4.9km	2009			
	Pipistrellus pygmaeus					
	Pipistrellus spp. (45kHz/55kHz)					
	Myotis spp.					
	Pipistrellus nathusii					
	Pipistrellus pipistrellus (45kHz)	4.5km	2009			
	Pipistrellus pygmaeus					
	Pipistrellus spp. (45kHz/55kHz)					
	Myotis spp.					
	Pipistrellus nathusii					
	Pipistrellus pipistrellus (45kHz)	4.0km	2009			
	Pipistrellus pygmaeus					
	Nyctalus leisleri					

Record Type	*Species name*	Distance of record from site	Last record	Details	Designation	Potential connectivity with subject site (for roost records)
	Pipistrellus pipistrellus (45kHz) *Pipistrellus pygmaeus,* *Pipistrellus spp. (45kHz/55kHz),* *Myotis spp.,* *Nyctalus leisleri*	4.2km	2009	Bat Surveys - Tina Aughney		
	Pipistrellus pipistrellus (45kHz) *Pipistrellus pygmaeus* *Nyctalus leisleri* *Myotis spp.*	3.9km	2009			
	Pipistrellus pipistrellus (45kHz) *Pipistrellus pygmaeus* *Pipistrellus spp. (45kHz/55kHz)* *Nyctalus leisleri*	3.6km	2009			
	Pipistrellus pipistrellus (45kHz) *Pipistrellus pygmaeus,* *Nyctalus leisleri*	3.6km	2009			
	Pipistrellus pipistrellus (45kHz) *Pipistrellus pygmaeus* *Nyctalus leisleri*	3.6km	2009			
	Pipistrellus pipistrellus (45kHz) *Pipistrellus pygmaeus* *Nyctalus leisleri* *Myotis spp.*	2.7km	2009	Batlas 2010		
	Pipistrellus pygmaeus *Myotis daubentoniid*	2.0km	2009	Batlas 2010		

POTENTIAL ROOST FEATURE (PRF) RESULTS

Table 2: PRF GLTA Results

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
1	53.40201	-7.3331	None	Ash	Some ivy but not mat forming	N/A
2	53.40194	-7.3332	None	Ash	Some ivy but not mat forming	N/A
3	53.40189	-7.3332	None	Ash	Some ivy but not mat forming	N/A
4	53.40186	-7.3334	None	Ash	Some ivy but not mat forming	N/A
5	53.40181	-7.3335	None	Ash	Some ivy but not mat forming	N/A
6	53.40177	-7.3336	None	Ash	Some ivy but not mat forming	N/A
7	53.40167	-7.3338	None	Ash	Some ivy but not mat forming	N/A
9	53.40156	-7.334	None	Hawthorn	Some ivy but not mat forming	N/A
10	53.4015	-7.3342	None	Hawthorn	Some ivy but not mat forming	N/A
11	53.40139	-7.3344	None	Hawthorn	Some ivy but not mat forming	N/A
12	53.40128	-7.3347	None	Hawthorn	Some ivy but not mat forming	N/A
13	53.40122	-7.3349	None	Hawthorn	Some ivy but not mat forming	N/A
14	53.40113	-7.335	None	Hawthorn	Some ivy but not mat forming	N/A
15	53.40107	-7.3352	None	Hawthorn	Some ivy but not mat forming	N/A
16	53.40101	-7.3353	None	Hawthorn	Some ivy but not mat forming. 3 trees	N/A
17	53.40098	-7.3355	None	Ash	Some ivy but not mat forming. 4 trees	N/A
18	53.40091	-7.3356	None	Ash	Some ivy but not mat forming	N/A
19	53.40086	-7.3357	None	Ash	Some ivy but not mat forming. 2 trees	N/A
20	53.40081	-7.3358	None	Hawthorn	Some ivy but not mat forming	N/A
21	53.40082	-7.3359	None	Beech	Some ivy. No knot holes or cracks	N/A
22	53.40086	-7.3359	None	Beech	6 trees. No knot holes or cracks	N/A
23	53.40098	-7.3361	None	Ash	Some ivy but not mat forming. 4 trees	N/A
24	53.40102	-7.3362	None	Ash	Some ivy but not mat forming. 3 trees	N/A
25	53.40109	-7.3364	None	Ash	Some ivy but not mat forming	N/A
26	53.40117	-7.3365	None	Ash	Some ivy but not mat forming. 2 trees	N/A
27	53.4006	-7.3359	None	Ash	Some ivy but not mat forming. Has die back	N/A
28	53.40052	-7.3357	None	Hawthorn	Some ivy but not mat forming. 3 trees	N/A
29	53.40048	-7.3356	None	Hawthorn + Ash	Some ivy but not mat forming. 2 trees	N/A
30	53.40039	-7.3355	None	Hawthorn	Some ivy but not mat forming. 4 trees	N/A
31	53.40033	-7.3353	None	Hawthorn + Ash	Some ivy but not mat forming. 3 trees	N/A
32	53.40023	-7.3352	None	Ash	Some ivy but not mat forming	N/A
33	53.40005	-7.335	None	Hawthorn	Some ivy but not mat forming. 2 trees	N/A
34	53.39997	-7.3352	None	Hawthorn	Some ivy but not mat forming. Hedgerow	N/A
35	53.39983	-7.3359	None	Hawthorn + Ash	Some ivy but not mat forming. 1 ash tree in hawthorn hedgerow	N/A
36	53.39977	-7.3361	None	Hawthorn	Some ivy but not mat forming. 2 trees	N/A
37	53.39975	-7.3362	None	Hawthorn + Ash	Some ivy but not mat forming. 2 ash trees and 1 hawthorn	N/A
38	53.39967	-7.3366	None	Hawthorn	Some ivy but not mat forming. 3 trees	N/A

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
39	53.39967	-7.3366	None	Hawthorn	Some ivy but not mat forming. 3 trees	N/A
40	53.39957	-7.3369	None	Hawthorn + Ash	Some ivy but not mat forming. 2 ash and 1 hawthorn	N/A
41	53.39972	-7.3373	None	Blackthorn	Some ivy but not mat forming. 3 trees	N/A
42	53.39983	-7.3374	None	Hawthorn + Ash	Some ivy but not mat forming. 1 ash and 1 hawthorn	N/A
43	53.39994	-7.3376	None	Hawthorn + Ash	Some ivy but not mat forming. 1 ash and 2 hawthorn	N/A
44	53.39998	-7.3377	None	Ash	Some ivy but not mat forming. 4 trees	N/A
45	53.40014	-7.3379	None	Ash	Some ivy but not mat forming. 3 trees	N/A
46	53.40026	-7.338	None	Ash	Some ivy but not mat forming. 3 trees	N/A
47	53.40036	-7.3381	None	Ash	Some ivy but not mat forming. 4 trees	N/A
48	53.4004	-7.3382	None	Ash	Some ivy but not mat forming. 3 trees	N/A
49	53.40047	-7.3383	None	Ash	Some ivy but not mat forming. 2 trees	N/A
50	53.40062	-7.3384	None	Ash	Some ivy but not mat forming	N/A
51	53.39939	-7.3364	None	Hawthorn	Some ivy but not mat forming. Hedgerow	N/A
52	53.39932	-7.3364	None	Hawthorn + Ash	Some ivy but not mat forming. Hedgerow with 1 ash tree	N/A
53	53.39924	-7.3364	None	Hawthorn	Some ivy but not mat forming. Hedgerow	N/A
54	53.39913	-7.3362	None	Hawthorn	Some ivy but not mat forming. 7 trees	N/A
55	53.39898	-7.3362	None	Hawthorn	Some ivy but not mat forming. 7 trees	N/A
56	53.39885	-7.3361	None	Hawthorn	Some ivy but not mat forming. 7 trees	N/A
57	53.39848	-7.336	None	Hawthorn	Some ivy but not mat forming. Hedgerow	N/A
58	53.3983	-7.3359	None	Hawthorn	Some ivy but not mat forming	N/A
59	53.39817	-7.3357	None	Ash	Some ivy but not mat forming	N/A
60	53.3981	-7.3355	None	Elm	Some ivy but not mat forming	N/A
61	53.39792	-7.3359	None	Ash	Some ivy but not mat forming	N/A
62	53.39773	-7.3361	None	Elm	Some ivy but not mat forming	N/A
63	53.3974	-7.3362	None	Ash	Some ivy but not mat forming	N/A
64	53.39716	-7.3362	None	Hawthorn + Ash	Some ivy but not mat forming. 1 ash and 1 hawthorn	N/A
65	53.39695	-7.3363	None	Ash	Some ivy but not mat forming	N/A
66	53.39676	-7.3363	None	Ash	Some ivy but not mat forming. 4 trees	N/A
67	53.3966	-7.3364	None	Hawthorn + Ash	Some ivy but not mat forming. 1 ash and 1 hawthorn	N/A
68	53.39634	-7.3365	None	Ash	Some ivy but not mat forming	N/A
69	53.39617	-7.3365	None	Ash	Some ivy but not mat forming. 5 trees	N/A
70	53.39611	-7.3365	None	Ash	Some ivy but not mat forming. 5 trees	N/A
71	53.39605	-7.3364	None	Ash	Some ivy but not mat forming. 3 trees	N/A
72	53.39723	-7.3284	None	Ash	Some ivy but not mat forming	N/A
73	53.39717	-7.3297	None	Ash	Some ivy but not mat forming	N/A
74	53.39721	-7.3306	None	Ash	Some ivy but not mat forming	N/A
75	53.39741	-7.3323	None	Ash	Some ivy but not mat forming	N/A
76	53.39745	-7.3325	None	Ash	Some ivy but not mat forming	N/A
77	53.39756	-7.3335	None	Ash	Some ivy but not mat forming	N/A

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
78	53.39795	-7.3346	None	Ash	Some ivy but not mat forming	N/A
79	53.3983	-7.3341	None	Ash	Some ivy but not mat forming	N/A
80	53.39841	-7.3339	None	Ash	Some ivy but not mat forming	N/A
81	53.3986	-7.3335	None	Ash	Some ivy but not mat forming	N/A
82	53.39905	-7.3328	None	Ash	Some ivy but not mat forming	N/A
83	53.3991	-7.3323	None	Ash	Some ivy but not mat forming. 2 trees	N/A
84	53.39913	-7.3324	None	Ash	Some ivy but not mat forming. 3 trees	N/A
85	53.39916	-7.3325	None	Ash	Some ivy but not mat forming. 5 trees	N/A
86	53.39923	-7.3327	None	Ash	Some ivy but not mat forming. 2 trees	N/A
87	53.39927	-7.3328	None	Hawthorn + Ash	Some ivy but not mat forming. 1 ash and 1 hawthorn	N/A
88	53.39935	-7.333	None	Ash	Some ivy but not mat forming	N/A
89	53.39942	-7.3332	None	Ash	Some ivy but not mat forming. 2 trees	N/A
90	53.39951	-7.3334	None	Hawthorn + Ash	Some ivy but not mat forming. 1 ash and 1 hawthorn	N/A
91	53.39961	-7.3337	None	Hawthorn	Some ivy but not mat forming. 3 trees	N/A
92	53.39971	-7.3339	None	Hawthorn	Some ivy but not mat forming. Hedgerow	N/A
93	53.39989	-7.3344	None	Hawthorn + Ash	Some ivy but not mat forming. 1 ash and 1 hawthorn	N/A
94	53.4	-7.3346	None	Ash	Some ivy but not mat forming. 2 trees	N/A
95	53.39917	-7.3319	None	Ash	Some ivy but not mat forming. 3 trees	N/A
96	53.39931	-7.3316	None	Ash	Some ivy but not mat forming. 2 trees	N/A
97	53.39955	-7.3313	None	Hawthorn	Some ivy but not mat forming. Hedgerow	N/A
98	53.39976	-7.331	None	Ash	Some ivy but not mat forming. 2 trees	N/A
99	53.39999	-7.3307	None	Hawthorn	Some ivy but not mat forming. Hedgerow	N/A
100	53.40016	-7.3305	PRF I	Ash	Best potential so far. A few holes from where brances have fallen off	none
101	53.40025	-7.3304	None	Ash	Some ivy but not mat forming. 2 trees	N/A
102	53.40021	-7.3303	PRF I	Ash	Some ivy but not mat forming. Tall enough to have potential for single bats	PRF I
103	53.40013	-7.3301	None	Ash	Some ivy but not mat forming. 3 trees	N/A
104	53.4	-7.3299	None	Hawthorn + Ash	Some ivy but not mat forming. 1 ash and 1 hawthorn	N/A
105	53.39979	-7.3296	None	Hawthorn + Ash	Some ivy but not mat forming. 1 ash and 1 hawthorn	N/A
106	53.39946	-7.3288	None	Ash	Some ivy but not mat forming. 3 trees	N/A
107	53.39934	-7.3286	None	Ash	Some ivy but not mat forming	N/A
108	53.39924	-7.3285	None	Ash	Some ivy but not mat forming. 2 trees	N/A
109	53.39913	-7.3278	None	Ash	Some ivy but not mat forming	N/A
110	53.39916	-7.3275	None	Ash	Some ivy but not mat forming	N/A
111	53.39923	-7.3265	None	Ash	Some ivy but not mat forming	N/A
112	53.39923	-7.3262	None	Ash	Some ivy but not mat forming	N/A
113	53.39925	-7.326	None	Ash	Some ivy but not mat forming. 3 trees	N/A
114	53.39921	-7.3259	None	Ash	Some ivy but not mat forming	N/A
115	53.39915	-7.3262	PRF I	Ash	Some ivy but not mat forming. Tall enough to have potential for single bats	PRF I

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
116	53.39902	-7.3263	None	Ash	Some ivy but not mat forming	N/A
117	53.39851	-7.3261	None	Ash	Some ivy but not mat forming	N/A
118	53.39851	-7.3262	PRF I	Ash	Some ivy but not mat forming. Tall enough to have potential for single bats	PRF I
119	53.39837	-7.3263	None	Sycamore	Some ivy but not mat forming. 2 trees	N/A
120	53.39816	-7.3268	None	Ash	Some ivy but not mat forming	N/A
121	53.39796	-7.3271	None	Ash	Some ivy but not mat forming	N/A
122	53.3979	-7.3272	None	Holly	Some ivy but not mat forming	N/A
123	53.39968	-7.3286	None	Ash	Some ivy but not mat forming. 3 trees	N/A
124	53.39976	-7.3288	None	Hawthorn	Some ivy but not mat forming. 3 trees	N/A
125	53.40008	-7.3286	None	Hawthorn	Some ivy but not mat forming. 3 trees	N/A
126	53.40019	-7.3286	None	Ash	Some ivy but not mat forming. 2 trees	N/A
127	53.40026	-7.3285	None	Ash	Some ivy but not mat forming. 2 trees	N/A
128	53.40031	-7.3285	PRF I	Ash	Plenty of holes and cracks	3 PRF I
129	53.4005	-7.3285	None	Ash	1 or 2 holes in it but don't go in far enough	N/A
130	53.40061	-7.3284	None	Ash	Some ivy but not mat forming. 3 trees	N/A
131	53.40063	-7.3283	None	Ash	Some ivy but not mat forming. 3 trees	N/A
132	53.40084	-7.3283	None	Ash	Some ivy but not mat forming. 3 trees	N/A
133	53.40095	-7.3285	PRF M	Ash	Plenty of knots and cracks. Good potential	PRF M
134	53.40103	-7.3288	PRF I	Ash	Branch fallen off + lots of cracks and holes	PRF I
135	53.4011	-7.3292	None	none	No potential	N/A
136	53.40138	-7.3302	PRF M	Ash	Lots of holes and 2 openings. Size indicates that could be containing big roost. Emergence survey conducted; no bats.	PRF M
137	53.40144	-7.3304	PRF M	Ash	Cracks and holes. Could also contain larger roost. Emergence survey conducted; no bats.	PRF M
138	53.40154	-7.3307	None	Ash	No potential	N/A
139	53.40155	-7.3308	None	Ash	No potential	N/A
140	53.40162	-7.3309	None	Ash	No potential	N/A
141	53.40163	-7.331	PRF M	Ash	Prf-m. Large cavity on trunk. Goes up 1m. Diameter is 15cm. Could hold a maternity roost. Needs another check. Can access via ladder. Emergence survey conducted; no bats.	PRF M
142	53.40166	-7.3312	None	Ash	No potential	N/A
143	53.4017	-7.3314	None	Ash	No potential	N/A
144	53.40184	-7.332	PRF I	Ash	Holes suitable for single bat	PRF I
145	53.40187	-7.3322	PRF	Ash	Holes suitable for single bat	PRF-I
146	53.40218	-7.3324	PRF M	Ash	Holes suitable for single bat. Has considerable dieback. Proposing to retain if possible, cut canopy off and retain as monolith.	PRF-I
147	53.40231	-7.3288	None	Leyland + Sitka Spruce	No potential	N/A
148	53.40233	-7.3286	None	Sitka Spruce	No potential	N/A
149	53.4024	-7.3283	None	Leyland	No potential	N/A
150	53.40256	-7.3278	PRF I	Beech	Holes suitable for single bat	PFR I

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
151	53.40248	-7.3278	PRF I	Beech	Holes suitable for single bat	PFR I
152	53.40186	-7.3275	None	beech	No potential	N/A
153	53.40171	-7.3274	PRF I	Beech	Holes suitable for single bat	PRF I
154	53.40143	-7.3272	None	Beech	No potential	N/A
155	53.40118	-7.3271	None	Ash	Some ivy but not mat forming	N/A
156	53.40107	-7.327	None	Ash	Some ivy but not mat forming	N/A
157	53.4009	-7.3269	None	Ash	Some ivy but not mat forming	N/A
158	53.40071	-7.3268	None	Lodgepole Pine	Some ivy but not mat forming	N/A
159	53.4008	-7.327	PRF M	Ash	Holes suitable for single bat	PRF M
160	53.40091	-7.3274	None	Ash	Some ivy but not mat forming	N/A
161	53.40055	-7.3309	None	Ash	Some ivy but not mat forming. 2 trees	N/A
162	53.40075	-7.3313	None	Ash	Some ivy but not mat forming	N/A
163	53.40106	-7.3323	None	Ash	Some ivy but not mat forming	N/A
164	53.40112	-7.3325	None	Ash	Some ivy but not mat forming. 3 trees	N/A
165	53.40118	-7.3327	None	Ash	Some ivy but not mat forming	N/A
166	53.40056	-7.3325	PRF I	Beech	Holes suitable for single bat	PRF I
167	53.40131	-7.333	None	Ash	Some ivy but not mat forming. 2 trees	N/A
168	53.40144	-7.3334	None	Ash	Some ivy but not mat forming	N/A
169	53.4015	-7.3336	None	Ash	Some ivy but not mat forming	N/A
170	53.40159	-7.3334	None	Ash	Some ivy but not mat forming. 3 trees	PRF I
171	53.40165	-7.3332	None	Ash	Some ivy but not mat forming. 3 trees	N/A
172	53.40176	-7.333	None	Ash	Some ivy but not mat forming. 3 trees	PRF I
173	53.40697	-7.3198	None	Ash	Some ivy but not mat forming	N/A
174	53.40713	-7.3198	None	Ash	Some ivy but not mat forming	N/A
175	53.4073	-7.3198	None	Ash	Some ivy but not mat forming	N/A
176	53.40745	-7.3198	None	Ash	Some ivy but not mat forming	N/A
177	53.40748	-7.3198	None	Ash	Some ivy but not mat forming	N/A
178	53.40792	-7.3198	None	Ash	Some ivy but not mat forming	N/A
179	53.40805	-7.3202	None	Ash	Some ivy but not mat forming	N/A
180	53.40812	-7.3203	PRF I	Ash	Has potential for single bat	PRF I
181	53.40846	-7.3202	None	Ash	Some ivy but not mat forming	N/A
182	53.40859	-7.3207	None	Ash	Some ivy but not mat forming	N/A
183	53.40845	-7.3213	PRF I	Ash	Lightning strike cavity.	PRF I
184	53.40846	-7.3213	None	Ash	Some ivy but not mat forming. 3 trees	N/A
185	53.4085	-7.3215	PRF I	Ash	Three large lightning strike cavities on tree.	PRF I
186	53.40844	-7.3218	None	Ash	Some ivy but not mat forming	N/A
187	53.40845	-7.3222	None	Ash	Some ivy but not mat forming	N/A
188	53.40842	-7.3223	None	Ash	Some ivy but not mat forming	N/A
189	53.40831	-7.3243	None	Ash	Some ivy but not mat forming	N/A
190	53.40839	-7.3259	None	Hawthorn	Some ivy but not mat forming	N/A
191	53.4082	-7.3272	None	Ash	Some ivy but not mat forming. 3 trees	N/A

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
192	53.40828	-7.3273	None	Ash	Some ivy but not mat forming. 3 trees	N/A
193	53.40835	-7.3273	None	Ash	Some ivy but not mat forming. 3 trees	N/A
194	53.40845	-7.3275	None	Ash	Some ivy but not mat forming. 3 trees	N/A
195	53.40859	-7.3276	PRF I	Ash	Has potential for single bat	PRF I
196	53.40863	-7.3277	None	Oak	Some ivy but not mat forming	N/A
197	53.40872	-7.3277	None	Ash	Some ivy but not mat forming. 5 trees	N/A
198	53.4088	-7.3277	None	Ash	Some ivy but not mat forming. 2 trees	N/A
199	53.40893	-7.3276	None	Ash	Some ivy but not mat forming. 2 trees	N/A
200	53.40931	-7.3275	None	Ash	Some ivy but not mat forming. 2 trees	N/A
201	53.40952	-7.3274	None	Ash	Some ivy but not mat forming. 2 trees	N/A
202	53.40976	-7.3273	None	Ash	Some ivy but not mat forming. 2 trees	N/A
203	53.41001	-7.3273	None	Ash	Some ivy but not mat forming. 2 trees	N/A
204	53.41012	-7.3272	None	Ash	Some ivy but not mat forming	N/A
205	53.41019	-7.3272	None	Ash	Some ivy but not mat forming	N/A
206	53.41029	-7.3272	None	Ash	Some ivy but not mat forming. 2 trees	N/A
207	53.4103	-7.327	None	Beech	Outside site boundary	N/A
208	53.41026	-7.3269	PRF I	Beech	Has a few small looking holes. Outside site boundary	PRF I
209	53.41018	-7.3266	None	Beech	Outside site boundary	N/A
210	53.41001	-7.3262	None	Beech	Outside site boundary	N/A
211	53.40996	-7.3258	None	Beech	Outside site boundary	N/A
212	53.40985	-7.3252	None	Beech	Outside site boundary	N/A
213	53.40981	-7.3247	None	Beech	Outside site boundary	N/A
214	53.4098	-7.3244	None	Beech	Outside site boundary	N/A
215	53.40982	-7.3239	None	Beech	Outside site boundary	N/A
216	53.40981	-7.3236	None	Beech	Outside site boundary	N/A
217	53.40986	-7.3234	None	Beech	Outside site boundary	N/A
218	53.40983	-7.323	None	Beech	Outside site boundary	N/A
219	53.40976	-7.3226	None	Beech	Outside site boundary	N/A
220	53.40975	-7.3223	None	Beech	Outside site boundary	N/A
221	53.40968	-7.3218	None	Beech	Outside site boundary	N/A
222	53.40965	-7.3215	None	Beech	Outside site boundary	N/A
223	53.40963	-7.3212	None	Beech	Outside site boundary	N/A
224	53.40954	-7.3212	None	Ash	-	N/A
225	53.40945	-7.3212	None	Sycamore	-	N/A
226	53.40929	-7.3212	None	Sycamore	-	N/A
227	53.40917	-7.3212	None	Ash	-	N/A
228	53.40899	-7.3213	None	Sycamore	-	N/A
229	53.40886	-7.3213	None	Sycamore	-	N/A
230	53.40877	-7.3212	None	Sycamore	-	N/A
231	53.40929	-7.3209	None	Hawthorn	-	N/A
232	53.40959	-7.3209	None	Sycamore	Outside site boundary	N/A
233	53.40956	-7.3206	None	Sycamore	Outside site boundary	N/A

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
234	53.40954	-7.3204	None	Scots Pine	Outside site boundary	N/A
235	53.40951	-7.3201	None	Beech	Outside site boundary	N/A
236	53.40947	-7.3196	None	Ash	Outside site boundary	N/A
237	53.40942	-7.3194	None	Ash	Outside site boundary	N/A
238	53.40937	-7.3191	None	Ash	Outside site boundary	N/A
239	53.40934	-7.3188	None	Blackthorn	Outside site boundary	N/A
240	53.40928	-7.3185	None	Blackthorn	Outside site boundary	N/A
241	53.40917	-7.3178	None	Sycamore	Outside site boundary	N/A
242	53.40907	-7.3173	None	Oak	Outside site boundary	N/A
243	53.40902	-7.317	None	Blackthorn	Outside site boundary	N/A
244	53.40904	-7.3165	None	Ash	Outside site boundary	N/A
245	53.40923	-7.3164	None	Ash	Outside site boundary	N/A
246	53.40925	-7.3164	None	Blackthorn	Outside site boundary	N/A
247	53.40933	-7.3161	None	Ash	Outside site boundary	N/A
248	53.40933	-7.3158	None	Ash	Outside site boundary	N/A
249	53.40934	-7.3154	None	Ash	Outside site boundary	N/A
250	53.40927	-7.3151	None	Ash	Outside site boundary	N/A
251	53.40911	-7.3148	None	Ash	Outside site boundary	N/A
252	53.40898	-7.3144	None	Ash	Outside site boundary	N/A
253	53.40886	-7.3141	None	Ash	Outside site boundary	N/A
254	53.40874	-7.3136	None	Ash	Outside site boundary	N/A
255	53.40863	-7.3133	None	Ash	Outside site boundary	N/A
256	53.40846	-7.3128	None	Ash	Outside site boundary	N/A
257	53.40835	-7.3125	None	Ash	Outside site boundary	N/A
258	53.40825	-7.3122	None	Ash	-	N/A
259	53.40825	-7.3119	None	Sycamore	Outside site boundary	N/A
260	53.40827	-7.3115	None	Ash	Outside site boundary	N/A
261	53.40785	-7.3155	None	Sycamore	-	N/A
262	53.40796	-7.3155	None	Sycamore	-	N/A
263	53.40808	-7.3156	None	Sycamore	-	N/A
264	53.40815	-7.3157	None	Ash	-	N/A
265	53.40825	-7.3157	None	Oak	-	N/A
266	53.40832	-7.3157	None	Ash	-	N/A
267	53.40864	-7.3159	None	Sycamore	-	N/A
268	53.40872	-7.3159	None	Blackthorn	-	N/A
269	53.40884	-7.3161	None	Blackthorn	-	N/A
270	53.40586	-7.3227	None	Ash	-	N/A
271	53.40589	-7.3227	None	Ash	-	N/A
272	53.406	-7.3227	PRF-I	Ash	A few holes suitable for single bat	N/A
273	53.40607	-7.3227	None	Ash	-	N/A
274	53.40635	-7.3228	None	Ash	-	N/A
275	53.40641	-7.3229	None	Ash	-	N/A

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
276	53.40651	-7.3229	None	Sycamore	-	N/A
277	53.40805	-7.327	None	Ash	-	N/A
278	53.40761	-7.3271	None	Ash	-	N/A
279	53.4075	-7.3271	None	Ash	-	N/A
280	53.40723	-7.327	None	Ash	-	N/A
281	53.40523	-7.326	None	Ash	-	N/A
282	53.40517	-7.3261	None	Ash	-	N/A
283	53.40461	-7.3258	None	Sycamore	-	N/A
284	53.40446	-7.3257	None	Ash	-	N/A
285	53.40435	-7.3257	None	Ash	-	N/A
286	53.4055	-7.3229	None	Oak	-	N/A
287	53.40546	-7.3229	None	Ash	-	N/A
288	53.40533	-7.3229	None	Ash	-	N/A
289	53.40521	-7.3229	None	Sycamore	-	N/A
290	53.40409	-7.3154	None	Ash	-	N/A
291	53.40538	-7.3139	None	Beech	-	N/A
292	53.40537	-7.3139	None	Beech	-	N/A
293	53.40535	-7.3138	None	Ash	-	N/A
294	53.40531	-7.3136	None	Beech	-	N/A
295	53.40521	-7.3134	None	Ash	-	N/A
296	53.4052	-7.3133	None	Ash	Few holes. Suitable for single bat	N/A
297	53.40519	-7.3132	None	Ash	Few holes. Suitable for single bat	N/A
298	53.40517	-7.313	PRF I	Sycamore	Few holes. Suitable for single bat	PRF I
299	53.40514	-7.3128	PRF I	Sycamore	Few holes. Suitable for single bat	N/A
300	53.40512	-7.3127	None	Sycamore	-	N/A
301	53.40513	-7.3126	None	Beech	-	N/A
302	53.40509	-7.3125	None	Beech	-	N/A
303	53.40506	-7.3123	None	Beech	-	N/A
304	53.40505	-7.3121	None	Beech	-	N/A
305	53.40505	-7.3118	PRF I	Ash	Few holes. Suitable for single bat	N/A
306	53.40489	-7.312	None	Blackthorn	-	N/A
307	53.40456	-7.312	None	Beech	-	N/A
308	53.40333	-7.3121	None	Ash	-	N/A
309	53.40329	-7.312	None	Ash	-	N/A
310	53.40334	-7.3119	None	Ash	-	N/A
311	53.40334	-7.3116	None	Blackthorn	-	N/A
312	53.40334	-7.3112	None	Ash	-	N/A
313	53.40334	-7.311	None	Ash	-	N/A
314	53.40341	-7.3106	None	Sycamore	-	N/A
315	53.40345	-7.3102	None	Beech	-	N/A
316	53.40348	-7.3102	PRF I	Sycamore	Few holes. Suitable for single bat	N/A
317	53.40361	-7.3101	None	Sycamore	-	N/A

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
318	53.40374	-7.3101	PRF I	Sycamore	Few holes. Suitable for single bat	N/A
319	53.40387	-7.3101	PRF I	Sycamore	Few holes. Suitable for single bat	N/A
320	53.40398	-7.3101	PRF	Beech	Few holes. Suitable for single bat	none
321	53.40404	-7.31	None	Beech	-	N/A
322	53.40412	-7.31	PRF I	Beech	Few holes. Suitable for single bat	N/A
323	53.40416	-7.31	PRF I	Sycamore	Few holes. Suitable for single bat	PRF I
324	53.40423	-7.31	PRF I	Beech	Few holes. Suitable for single bat	N/A
325	53.40427	-7.31	None	Beech	-	N/A
326	53.40432	-7.31	PRF	Sycamore	Few holes. Suitable for single bat	PRF I
327	53.40444	-7.3099	None	Beech	-	N/A
328	53.40448	-7.3099	PRF	Beech	Looks like it could have larger roost. Big opening that goes in a good bit	PRF I
329	53.40456	-7.3099	None	Beech	-	N/A
330	53.40464	-7.3099	None	Beech	-	N/A
331	53.40472	-7.3104	PRF	Sycamore	Few holes. Suitable for single bat	PRF I
332	53.40475	-7.3104	None	Ash	-	N/A
333	53.40479	-7.3107	FAR	Ash	Few holes. Suitable for single bat	N/A
334	53.40482	-7.311	FAR	Ash	Few holes. Suitable for single bat	none
335	53.40487	-7.3113	FAR	Sycamore	Few holes. Suitable for single bat	none
336	53.40508	-7.3116	None	Ash	-	N/A
337	53.40515	-7.3118	FAR	Ash	Few potential holes. Suitable for single bat	none
339	53.40258	-7.314	None	Ash	-	N/A
340	53.40176	-7.3138	None	Ash	-	N/A
341	53.40163	-7.3138	None	Ash	-	N/A
342	53.40151	-7.3137	None	Ash	-	N/A
343	53.40138	-7.3137	None	Ash	-	N/A
344	53.40124	-7.3137	None	Ash	-	N/A
345	53.4006	-7.3135	None	Ash	-	N/A
346	53.40039	-7.3134	None	Ash	-	N/A
347	53.39988	-7.3133	None	Ash	-	N/A
348	53.39983	-7.314	FAR	Ash	Few holes. Suitable for single bat	
349	53.39984	-7.3142	None	Ash	-	N/A
350	53.39965	-7.3146	FAR	Ash	Few holes. Suitable for single bat	PRF I
351	53.39943	-7.3155	None	Ash	-	N/A
352	53.39982	-7.316	None	Sycamore	-	N/A
353	53.3998	-7.3157	PRF I	Ash	Few holes. Suitable for single bat	PRF I
354	53.39979	-7.3154	None	Ash	-	N/A
355	53.39991	-7.3131	None	Ash	-	N/A
356	53.39998	-7.3129	None	Ash	-	N/A
357	53.40003	-7.3127	None	Sycamore	-	N/A

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
358	53.39985	-7.3115	None	Ash	-	N/A
359	53.3999	-7.3115	FAR	Ash	Few holes. Suitable for single bat	N/A
360	53.40003	-7.3112	None	Ash	-	N/A
361	53.39985	-7.3111	FAR	Ash	Few holes. Suitable for single bat	N/A
362	53.3998	-7.3107	None	Ash	-	N/A
363	53.39982	-7.3097	None	Ash	-	N/A
364	53.39982	-7.3095	None	Ash	-	N/A
365	53.4004	-7.3096	None	Ash	-	N/A
366	53.40093	-7.3097	None	Ash	-	N/A
367	53.40111	-7.3097	None	Ash	-	N/A
368	53.40207	-7.3099	None	Ash	-	N/A
369	53.40242	-7.31	None	Ash	-	N/A
370	53.40292	-7.3101	None	Ash	-	N/A
371	53.40316	-7.3101	None	Sycamore	-	N/A
372	53.40385	-7.3099	FAR	Beech	Mature tree	N/A
373	53.40371	-7.3098	None	Sycamore	-	N/A
374	53.40368	-7.3097	None	Sycamore	-	N/A
375	53.40369	-7.3095	None	Sycamore	-	N/A
376	53.40371	-7.3094	PRF M	Sycamore	Few holes. Suitable for single bat	PRF M
377	53.40512	-7.3102	None	Sycamore	-	N/A
378	53.40517	-7.3106	PRF I	Ash	Few holes. Suitable for single bat	PRF I
379	53.40538	-7.312	None	Sycamore	-	N/A
380	53.40556	-7.3129	None	Sycamore	-	N/A
381	53.40571	-7.3136	None	Ash	-	N/A
382	53.40607	-7.313	None	Ash	-	N/A
383	53.4063	-7.3127	None	Ash	-	N/A
384	53.40673	-7.3121	None	Ash	-	N/A
385	53.40729	-7.3113	None	Sycamore	-	N/A
386	53.40738	-7.3111	None	Ash	-	N/A
387	53.40549	-7.3071	None	Sycamore	-	N/A
388	53.40588	-7.3046	None	Sycamore	-	N/A
389	53.4056	-7.3044	None	Ash	-	N/A
390	53.40515	-7.3046	FAR	Ash	Few holes. Suitable for single bat	N/A
391	53.40505	-7.3047	None	Sycamore	-	N/A
392	53.40469	-7.3045	None	Ash	-	N/A
393	53.40462	-7.3044	None	Ash	-	N/A
394	53.40444	-7.3045	None	Ash	-	N/A
395	53.40418	-7.3046	None	Sycamore	-	N/A
396	53.40378	-7.3048	None	Sycamore	-	N/A
397	53.40358	-7.305	None	Ash	-	N/A

Name	Latitude	Longitude	GLTA	Species	Details	PRF final
398	53.40303	-7.305	None	Ash	-	N/A
399	53.40291	-7.3051	None	Oak	-	N/A
400	53.4028	-7.3054	None	Ash	-	N/A
401	53.40269	-7.3057	None	Ash	-	N/A
402	53.40262	-7.3058	None	Ash	-	N/A
403	53.40247	-7.3061	None	Ash	-	N/A
404	53.40211	-7.3078	None	Ash	-	N/A
405	53.40089	-7.3075	None	Ash	-	N/A
406	53.4005	-7.3074	None	Ash	-	N/A
407	53.39991	-7.3072	None	Sycamore	-	N/A
408	53.40001	-7.3091	None	Sycamore	-	N/A
409	53.40112	-7.3093	None	Sycamore	-	N/A
410	53.40204	-7.3095	None	Ash	-	N/A
411	53.40065	-7.304	FAR	Sycamore	Few holes. Suitable for single bat	N/A
413	53.40186	-7.305	None	Blackthorn	-	N/A
414	53.40196	-7.3058	None	Blackthorn	-	N/A
415	53.39677	-7.3144	None		-	N/A
416	53.39774	-7.3127	None	Blackthorn	-	N/A
417	53.39787	-7.3123	None	Blackthorn	-	N/A
418	53.3984	-7.3093	None	Sycamore	-	N/A
419	53.39832	-7.3093	None	Ash	-	N/A
420	53.39719	-7.3094	None	Ash	-	N/A
421	53.39147	-7.3087	None	Beech	Outside site boundary	N/A
477	53.4013	-7.32924	FAR	Ash	-	PRF I
479	53.39806	-7.33579	None	Elm	-	N/A

Table 3: Static Detector Results

August														
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	LSH	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	**Total**	**Minutes recorded**	**Bat passes per hour**
1	66	57	88	0	0	17	0	1	0	0	7	236	7633	1.9
2	152	11408	1983	1	5	31	0	2	0	0	31	13613	6208	131.6
3	413	7091	8193	0	1	13	0	19	0	0	73	15803	3932	241.1
4	113	43	69	0	0	21	0	1	0	0	5	252	7633	2.0
5	157	6086	2572	0	0	31	0	1	0	0	89	8936	7633	70.2
6	43	53	55	0	0	11	0	0	0	0	9	171	7633	1.3
7	192	2238	1757	3	5	34	0	1	0	0	45	4275	7633	33.6
8	165	76	104	0	0	18	0	2	0	0	12	377	7633	3.0
Total	**1301**	**27052**	**14821**	**4**	**11**	**176**	**0**	**27**	**0**	**0**	**271**	**43663**		
Bat passes per hour	1.4	29.0	15.9	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.3	43663	**55938**	46.8
Spring														
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	LSH	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	**Total**	**Minutes recorded**	**Bat passes per hour**
1	3	31	14	0	0	1	0	0	0	3	0	52	7613	0.4
2	36	9901	993	3	2	4	0	4	0	0	69	11012	9398	70.3
3	130	1078	1328	3	1	4	0	0	0	0	13	2557	8285	18.5
4	11	21	23	0	1	2	0	1	0	0	2	61	8285	0.4
5	104	2073	2712	0	0	5	0	8	0	2	347	5251	8952	35.2
6	0	6	0	0	0	0	0	1	0	0	11	18	8285	0.1
7	0	49	45	1	0	0	0	0	0	0	2	97	6942	0.8
8	25	66	73	0	0	0	0	0	0	0	5	169	8952	1.1
Total	**309**	**13225**	**5188**	**7**	**4**	**16**	**0**	**14**	**0**	**5**	**449**	**19217**		
Bat passes per hour	0.3	11.9	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	17.3	**66712**	17.3

Table 4: Daily Static Results

Detector	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total
1	29th August	14	3	13	0	0	4	0	0	1	35
1	30th August	3	4	2	0	0	1	0	0	0	10
1	31st August	3	4	9	0	0	1	0	0	0	17
1	1st September	5	9	7	0	0	0	1	0	2	24
1	2nd September	3	5	4	0	0	5	0	0	1	18
1	3rd September	3	2	6	0	0	0	0	0	2	13
1	4th September	5	5	4	0	0	1	0	0	0	15
1	5th September	13	4	2	0	0	1	0	0	0	20
1	6th September	12	10	20	0	0	1	0	0	1	44
1	7th September	5	5	12	0	0	3	0	0	0	25
1	8th September	0	6	9	0	0	0	0	0	0	15
1	2nd April	0	0	3	0	0	0	0	0	0	3
1	3rd April	1	4	1	0	0	0	0	0	0	6
1	4th April	0	1	0	0	0	0	0	0	0	1
1	5th April	0	1	0	0	0	0	0	0	0	1
1	6th April	0	4	1	0	0	0	0	0	0	5
1	7th April	0	1	0	0	0	0	0	1	0	2
1	8th April	0	2	0	0	0	1	0	0	0	3
1	9th April	0	1	0	0	0	0	0	1	0	2
1	10th April	2	6	2	0	0	0	0	0	0	10
1	11th April	0	4	2	0	0	0	0	1	0	7
1	12th April	0	7	5	0	0	0	0	0	0	12
2	27th August	10	1600	376	0	0	7	2	0	7	2002
2	28th August	3	889	74	0	0	3	0	0	4	973
2	29th August	6	887	63	0	0	6	0	0	0	962
2	30th August	33	534	84	0	0	4	0	0	3	658

Detector	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total
2	31st August	8	1819	231	1	0	3	0	0	7	2069
2	1st September	3	2083	318	0	0	0	0	0	3	2407
2	2nd September	8	221	59	0	0	0	0	0	3	291
2	3rd September	5	842	144	0	0	2	0	0	1	994
2	4th September	35	823	82	0	0	2	0	0	0	942
2	5th September	40	623	144	0	5	4	0	0	1	817
2	6th September	1	1087	408	0	0	0	0	0	2	1498
2	2nd April	0	185	28	0	0	0	0	0	3	216
2	3rd April	0	513	54	0	0	0	0	0	4	571
2	4th April	1	89	10	0	0	0	0	0	0	100
2	5th April	1	91	8	0	0	0	0	0	5	105
2	6th April	1	382	9	0	0	0	0	0	5	397
2	7th April	1	569	13	1	0	0	0	0	11	595
2	8th April	2	628	29	0	0	1	0	0	5	665
2	9th April	2	1083	46	0	1	0	1	0	5	1138
2	10th April	6	2352	562	0	1	1	0	0	2	2924
2	11th April	0	1998	103	0	0	2	0	0	4	2107
2	12th April	3	688	58	0	0	0	0	0	5	754
2	13th April	12	166	29	1	0	0	1	0	7	216
2	14th April	7	1157	44	1	0	0	2	0	13	1224
3	29th August	11	1393	1428	0	0	0	0	0	8	2840
3	30th August	35	1107	1355	0	0	3	6	0	18	2524
3	31st August	64	1312	1021	0	0	6	4	0	16	2423
3	1st September	227	976	939	0	1	4	5	0	14	2166
3	2nd September	52	924	1420	0	0	0	3	0	5	2404
3	3rd September	24	1379	2030	0	0	0	1	0	12	3446
3	2nd April	2	34	19	0	1	0	0	0	0	56
3	3rd April	3	97	93	0	0	0	0	0	1	194

Detector	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total
3	4th April	8	29	58	0	0	0	0	0	0	95
3	5th April	0	3	9	0	0	0	0	0	0	12
3	6th April	5	48	59	0	0	1	0	0	0	113
3	7th April	1	45	72	1	0	0	0	0	0	119
3	8th April	0	58	51	1	0	0	0	0	2	112
3	9th April	33	89	162	0	0	1	0	0	1	286
3	10th April	31	398	480	1	0	1	0	0	7	918
3	11th April	43	250	315	0	0	1	0	0	2	611
3	12th April	4	27	10	0	0	0	0	0	0	41
4	30th August	0	0	2	0	0	4	0	0	1	7
4	31st August	9	7	3	0	0	2	0	0	0	21
4	1st September	15	6	13	0	0	3	1	0	1	39
4	2nd September	5	1	6	0	0	1	0	0	1	14
4	3rd September	1	1	5	0	0	0	0	0	0	7
4	4th September	4	2	5	0	0	2	0	0	2	15
4	5th September	16	8	11	0	0	2	0	0	0	37
4	6th September	31	9	10	0	0	3	0	0	0	53
4	7th September	27	7	11	0	0	4	0	0	0	49
4	8th September	5	2	3	0	0	0	0	0	0	10
4	2nd April	0	0	0	0	0	0	0	0	0	0
4	3rd April	0	2	2	0	0	0	0	0	0	4
4	4th April	0	1	1	0	0	0	0	0	0	2
4	5th April	0	0	1	0	0	0	0	0	0	1
4	6th April	1	0	2	0	0	0	1	0	0	4
4	7th April	1	3	3	0	0	0	0	0	0	7
4	8th April	0	2	1	0	0	0	0	0	1	4
4	9th April	6	2	4	0	0	0	0	0	0	12
4	10th April	2	8	7	0	1	0	0	0	1	19

Detector	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total
4	11th April	1	1	2	0	0	2	0	0	0	6
4	12th April	0	2	0	0	0	0	0	0	0	2
5	29th August	10	234	138	0	0	3	0	0	12	397
5	30th August	7	208	93	0	0	1	0	0	2	311
5	31st August	14	276	191	0	0	1	0	0	2	484
5	1st September	9	191	280	0	0	2	1	0	1	484
5	2nd September	6	196	116	0	0	3	0	0	4	325
5	3rd September	24	427	184	0	0	4	0	0	7	646
5	4th September	17	624	151	0	0	6	0	0	7	805
5	5th September	36	1481	458	0	0	1	0	0	21	1997
5	6th September	14	482	329	0	0	1	0	0	2	828
5	7th September	14	333	423	0	0	0	0	0	5	775
5	8th September	6	1634	209	0	0	9	0	0	26	1884
5	2nd April	0	57	118	0	0	0	1	0	11	187
5	3rd April	4	325	333	0	0	0	0	0	24	686
5	4th April	1	116	291	0	0	0	0	0	12	420
5	5th April	0	105	115	0	0	0	0	0	10	230
5	6th April	2	113	77	0	0	0	2	0	34	228
5	7th April	4	424	287	0	0	0	1	0	17	733
5	8th April	10	182	197	0	0	0	0	0	14	403
5	9th April	4	105	162	0	0	0	0	0	51	322
5	10th April	40	332	220	0	0	1	1	1	31	626
5	11th April	13	109	189	0	0	0	2	1	40	354
5	12th April	4	91	40	0	0	0	0	0	18	153
5	13th April	8	19	23	0	0	0	1	0	49	100
5	14th April	14	95	660	0	0	4	0	0	36	809
6	30th August	3	5	4	0	0	1	0	0	0	13
6	31st August	8	5	2	0	0	1	0	0	0	16

Detector	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total
6	1st September	8	9	9	0	0	1	0	0	0	27
6	2nd September	1	4	2	0	0	2	0	0	0	9
6	3rd September	1	8	9	0	0	2	0	0	6	26
6	4th September	1	0	7	0	0	0	0	0	0	8
6	5th September	1	3	3	0	0	0	0	0	0	7
6	6th September	8	10	10	0	0	0	0	0	1	29
6	7th September	3	6	3	0	0	2	0	0	2	16
6	8th September	9	3	6	0	0	2	0	0	0	20
6	2nd April	0	0	0	0	0	0	0	0	0	0
6	3rd April	0	0	0	0	0	0	1	0	0	1
6	4th April	0	0	0	0	0	0	0	0	1	1
6	5th April	0	0	0	0	0	0	0	0	0	0
6	6th April	0	0	0	0	0	0	0	0	0	0
6	7th April	0	0	0	0	0	0	0	0	1	1
6	8th April	0	0	0	0	0	0	0	0	2	2
6	9th April	0	0	0	0	0	0	0	0	2	2
6	10th April	0	0	0	0	0	0	0	0	5	5
6	11th April	0	2	0	0	0	0	0	0	0	2
6	12th April	0	2	0	0	0	0	0	0	0	2
6	13th April	0	0	0	0	0	0	0	0	0	0
6	14th April	0	2	0	0	0	0	0	0	0	2
7	29th August	11	91	109	0	1	4	0	0	2	218
7	30th August	18	349	380	3	0	7	1	0	4	762
7	31st August	18	320	208	0	0	5	0	0	8	559
7	1st September	63	376	200	0	2	2	0	0	13	656
7	2nd September	13	55	66	0	0	2	0	0	3	139
7	3rd September	11	58	32	0	0	3	0	0	1	105
7	4th September	12	79	117	0	0	2	0	0	0	210

Detector	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total
7	5th September	12	399	285	0	1	2	0	0	7	706
7	6th September	16	283	211	0	1	4	0	0	0	515
7	7th September	16	205	111	0	0	3	0	0	6	341
7	8th September	2	23	38	0	0	0	0	0	1	64
7	2nd April	0	0	0	0	0	0	0	0	0	0
7	3rd April	0	1	0	0	0	0	0	0	0	1
7	4th April	0	2	15	0	0	0	0	0	0	17
7	5th April	0	0	0	0	0	0	0	0	0	0
7	6th April	0	1	0	0	0	0	0	0	0	1
7	7th April	0	1	1	0	0	0	0	0	0	2
7	8th April	0	6	11	0	0	0	0	0	1	18
7	9th April	0	6	5	0	0	0	0	0	1	12
7	10th April	0	27	12	1	0	0	0	0	0	40
7	11th April	0	5	1	0	0	0	0	0	0	6
8	29th August	16	3	4	0	0	3	0	0	2	28
8	30th August	4	9	5	0	0	2	0	0	1	21
8	31st August	13	8	22	0	0	1	1	0	0	45
8	1st September	36	10	27	0	0	4	1	0	0	78
8	2nd September	6	1	6	0	0	3	0	0	4	20
8	3rd September	10	2	4	0	0	0	0	0	0	16
8	4th September	5	3	4	0	0	1	0	0	0	13
8	5th September	13	5	5	0	0	0	0	0	1	24
8	6th September	42	20	9	0	0	1	0	0	1	73
8	7th September	16	12	13	0	0	3	0	0	2	46
8	8th September	4	3	5	0	0	0	0	0	1	13
8	2nd April	0	6	6	0	0	0	0	0	0	12
8	3rd April	0	10	7	0	0	0	0	0	0	17
8	4th April	2	2	2	0	0	0	0	0	0	6

Detector	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total
8	5th April	0	5	1	0	0	0	0	0	0	6
8	6th April	0	4	5	0	0	0	0	0	0	9
8	7th April	2	2	3	0	0	0	0	0	0	7
8	8th April	1	6	2	0	0	0	0	0	1	10
8	9th April	2	13	6	0	0	0	0	0	1	22
8	10th April	1	4	8	0	0	0	0	0	2	15
8	11th April	5	5	9	0	0	0	0	0	0	19
8	12th April	11	2	13	0	0	0	0	0	0	26
8	13th April	1	1	4	0	0	0	0	0	0	6
8	14th April	0	6	7	0	0	0	0	0	1	14

PHOTOS

Plate 0-1: Structure 1 – Occupied Dwelling adjacent to D2

Plate 0-2: 5 Structure 2 – Shed next to Dwelling, 1 Bat emerged.

Plate 0-3: Derelict Dwelling with Hay being stored inside. It is the surveyor's opinion that the Hay being stored here is increasing the roosting potential of this building

Plate 0-4: Derelict dwelling and semi-detached sheds

Plate 0-5: Occupied Dwelling Emergence survey

Plate 6: Tree 146 proposing to retain as monolith.

APPENDIX 6.2

Eire Ecology

Environmental Consultants

Bird Survey Report
Project Admiral

DOCUMENT DETAILS

Client:	Red Admiral DC Ltd
Project Title:	Project Admiral
Document Title:	Bird Survey Report
Prepared By:	John Curtin – Consultant Ecologist
Date:	June 2025

EXECUTIVE SUMMARY

This document reports on the findings of wintering and breeding bird surveys undertaken within and surrounding a proposed development in the townlands of Farthingstown, Oldtown and Kiltotan, Co. Westmeath outside Rochfortbridge. The Surveys took place between September 2024 and May 2025 inclusive. The objective of these surveys was to establish a baseline dataset of birds using the site and the surrounds and to determine the scale of effects on birds as a result of the planned development.

Target Species of Interest for this site are Golden Plover and Snipe, which were observed using multiple areas of the site to the South and in the case of Golden Plover, tillage fields to the Northwest during winter months. These birds are not breeding on site. Breeding barn owl were recorded within the site. Whooper Swan was recorded within the hinterland but did not utilise fields onsite while Lapwing were confirmed breeding in bog habitats outside the site during May's hinterland survey. Meadow Pipit was found to be breeding onsite, with possible Yellowhammer breeding present.

Robust mitigation, enhancement and monitoring have been proposed to negate impacts on birds including creating designated feeding grounds for golden plover and buffer zones for construction phase activities.

After the implementation of mitigation, residual Impacts on bird species will be low.

Table of Contents

1 INTRODUCTION

1.1 Purpose of this report

Eire Ecology were commissioned to complete bird surveys for the proposed Project Admiral site. This report presents the results of these surveys, comprising of Vantage Point, Transects, Breeding Wader, Breeding Bird surveys and Hinterland surveys within and surrounding the proposed development in the townlands of Farthingstown, Oldtown and Kiltotan.

The report aims to:

- Identify species of birds using the site.
- Identify breeding bird species on and adjacent to the site.
- Identify how bird species in the surroundings utilise the site.
- Potential impacts of birds by the proposed development.

Surveys were conducted from September 2024 to May 2025. The survey types were determined most appropriate to establish a baseline species assemblage, along with spatial and temporal distribution of species activity within the proposed planning boundary.

1.2 Landscape context

The site is situated within a working farm with a mix of improved agricultural (GA1), tillage land (BC3) with associated hedgerows (WL1), treelines (WL2), drains (FW4) and roads (BL3).

1.3 Development proposals

The proposed development consists of the construction of a solar farm and datacentre development in Co. Westmeath (see site outline in figure 1-1).

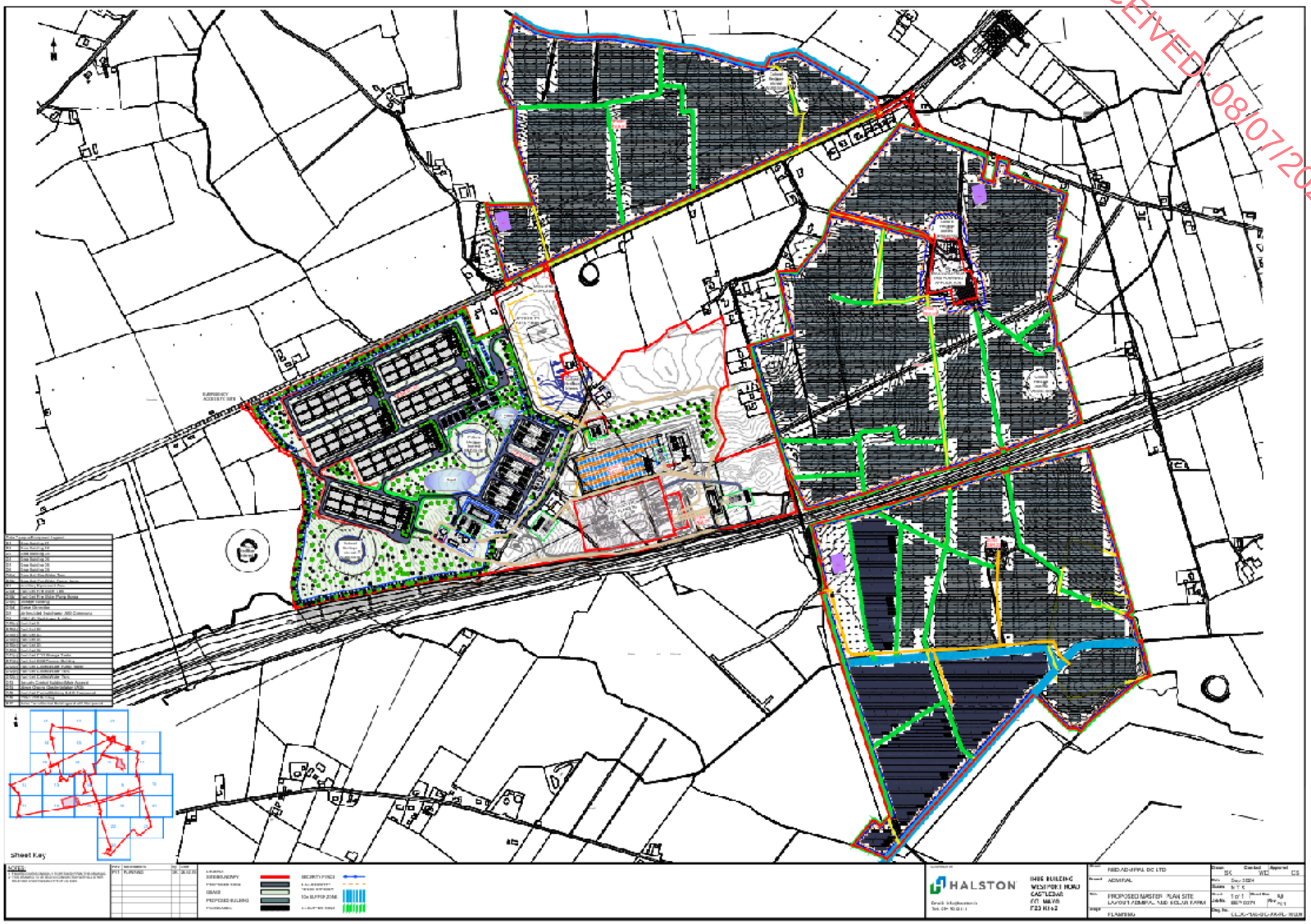

Figure 1-1: Admiral Project: Site Layout

1.4 Survey and Assessment

A desk study which includes a review of the literature relevant to the avian ecology of the site is provided in Section 2 of this report. The following sources of information are included: the most recent Bird Atlas 2007-2011 (the breeding and wintering birds of Britain and Ireland) (Balmer *et al* 2013). IWeBS and NDBC data within 2km of the site.

Field surveys of the site were conducted from September 2024 to April 2025 during winter and breeding Periods, and the findings of those surveys are presented in Section 3 of this report. All bird species observed or heard within the site and the surrounding area were recorded during the walkover survey, as well as information observed on the breeding probability of these species.

A variety of bird transects were conducted within the site including;

- O'Brien and Smith methodology (O'Brien and Smith, 1992, Gilbert et al., 1998) targets lowland breeding waders, other waterbirds and raptors (3 x surveys conducted between the 14th April and the 21st of April. Survey conducted from the three hours after dawn and / or the three hours before dusk).
- Common Bird Census methodology (British Trust for Ornithology, 2021) targets dense habitat breeding birds (3 x surveys conducted in April).
- Nighttime Thermal transects, targeting wintering waders (Golden Plover, Woodcock, Curlew) recorded on site or in Hinterland Surveys. (2 x Surveys conducted between the 18th of February and 19th of February)

Monthly Vantage point surveys following (SNH, 2017) were conducted from September 2024 to March 2025 in three locations overlooking the site.

To better understand the relationship between the site and the surrounding areas, hinterland surveys were conducted on a monthly basis from September to May comprising of point counts, habitat information and breeding information, and encompassed breeding raptor surveys. Additionally, a hinterland survey focused on mapping Golden Plover Habitat in the surrounding 5km of the site was conducted in February 2025.

Target species for the surveys include waders and other red listed species, particularly; Snipe, Golden plover, various raptors including Kestrel, Buzzard, Sparrowhawk and Barn Owl, waterbirds such as Mallard, Mute Swan, Whooper Swan and Grey heron, and passerines such as Yellowhammer and Meadow pipit.

1.5 Limitations of Survey

Surveys were conducted in acceptable weather conditions and cover both wintering and breeding periods thus provide robust coverage of the site.

2 DESK STUDY

The below information is a repletion of results outlined in the accompanying wintering bird report.

2.1 POLICY & GUIDANCE

2.1.1 EU Birds Directive

The "Birds Directive" (Council Directive 79/409/EEC as codified by 2009/147/EC) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This directive species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection (Annex I species). Appendix I indicates Annex I bird species as listed on the Birds Directive. A "Special Protection Area" or SPA, is a designation under The Birds Directive.

2.1.2 Wildlife Acts 1976 – 2012

The primary domestic legislation providing for the protection of wildlife in general, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976, as amended. The aims of the wildlife act according to the National Parks and Wildlife Service are "... to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims." All bird species are protected under the act. The Wildlife (Amendment) Act of 2000 amended the original Act to improve the effectiveness of the Act to achieve its aims.

2.2 Site Location in Relation to Protected sites with Ornithological Value

The proposed site lies between the towns of Rochfortbridge and Tyrellspass (Grid Ref: 245818.8N 239258.0E) and contains land on both sides of the motorway. The site for the proposed development lies approximately 5.19km from Raheenmore Bog SAC [Site Code: 000582], approximately 5.61km from Lough Ennell SAC [Site Code: 000685], 6.30km from the Lough Ennell SPA [Site Code: 004044], 6.4km from Split Hills and Long Hill Esker SAC [Site Code: 001831], 13.36km from Wooddown Bog SAC [Site Code: 002205]. None of the EU designated sites are designated for the presence of bat species. (see **Figure 2-1** below).

These sites contain habitats which may support populations (see Figure 2-1 and table 2-1 below).

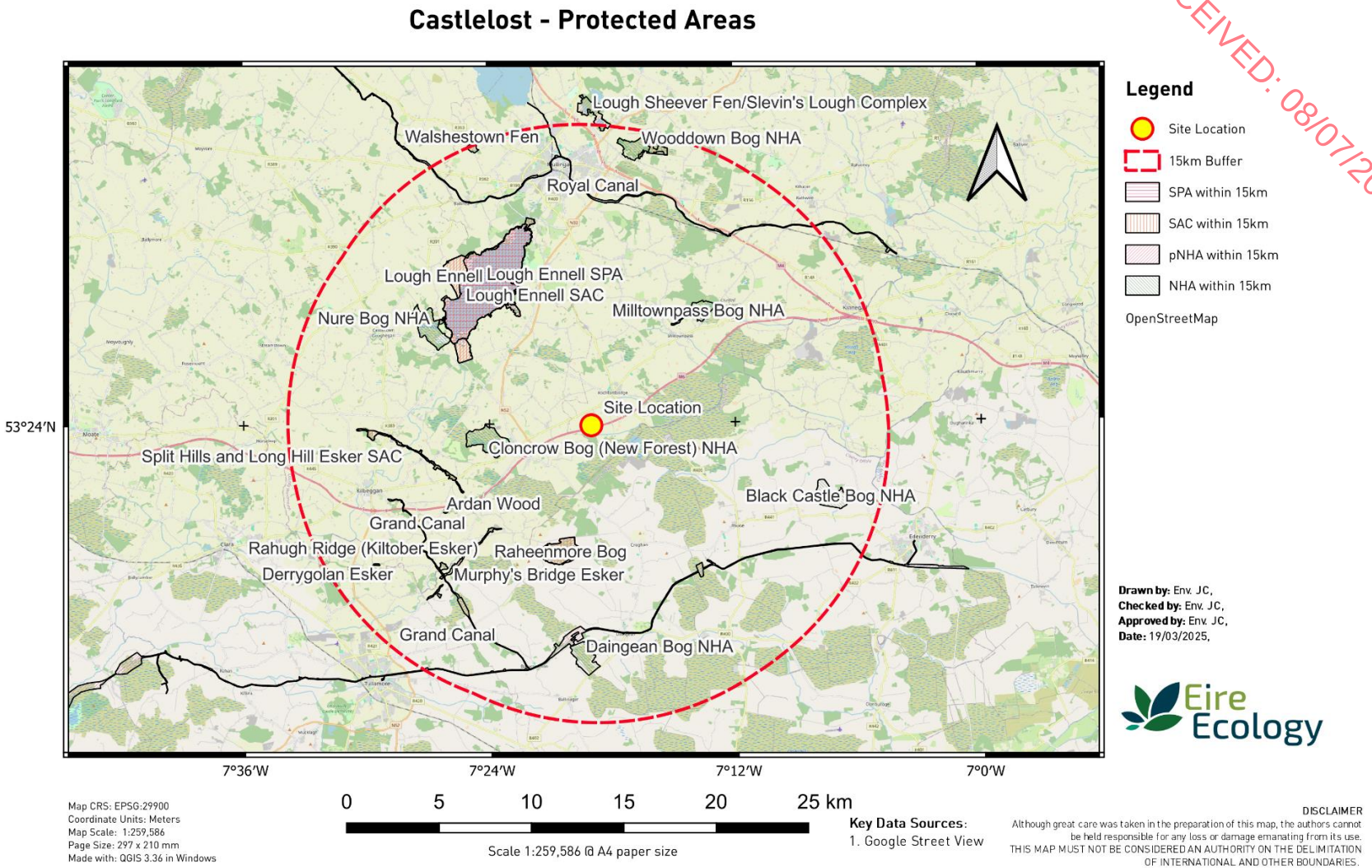

Figure 2-1 Site Location in Relation to designated site

Table 2-1 Protected habitats with ornithological value in the vicinity of the proposed development

Site Code	Site Name	Distance	Literature review with respect to ornithology	Potential connectivity (in relation to ornithology)
EU designated Sites				
000582	Raheenmore Bog SAC	5.19km	Breeding: Red Grouse, Snipe, Lapwing, Curlew, Woodcock, Skylark and Meadow Pipit. Wintering: Merlin, Sparrowhawk, Kestrel, Grey Heron, Teal and Mallard.	There is potential connectivity as this bog forms a network with other cutover bogs that lie close to the site.
000685	Lough Ennell SAC	5.61km	Greenland White-fronted Goose, Cormorant, Mute Swan, Pochard, Tufted Duck, Coot. A single count of 522 Golden Plover	Potentially. Greenland white-fronted geese can forage between 5 – 8km from night roosts.
004044	Lough Ennell SPA	6.30km	Pochard [A059], Tufted Duck [A061], Coot [A125]	The COs of this lake are associated with water rather than terrestrial habitats so are unlikely to be affected by the development.
001831	Split Hills and Long Hill Esker SAC	6.46km	No mention of important bird species	N/A
002205	Wooddown Bog SAC	13.36km	Buzzard, and snipe	Unlikely given distance
Nationally designated sites				
000677	Cloncrow Bog (New Forest) NHA	3.15km	Site synopsis does not refer to birds	N/A
000582	Raheenmore Bog pNHA	5.20km	Site synopsis does not refer to birds	N/A
02323	Milltownpass Bog NHA	5.63km	Site synopsis does not refer to birds	N/A
000918	Rahugh Ridge (Kiltober Esker) pNHA	6.30km	Site synopsis does not refer to birds	N/A
001725	Nure Bog NHA	7.59km	Site synopsis does not refer to birds	N/A
001711	Ardan Wood pNHA	7.66km	Probable breeding Sparrowhawks, and Long-eared Owls.	Unlikely given distance
001775	Murphy's Bridge Esker pNHA	8.89km	Site synopsis does not refer to birds	N/A

Site Code	Site Name	Distance	Literature review with respect to ornithology	Potential connectivity (in relation to ornithology)
EU designated Sites				
002033	Daingean Bog NHA	10.61km	Site synopsis does not refer to birds	N/A
002103	Royal Canal pNHA	10.81km	Site synopsis does not refer to birds	N/A
000570	Black Castle Bog NHA	11.40km	Site synopsis does not refer to birds	N/A
000896	Derrygolan Esker pNHA	12.40km	Site synopsis does not refer to birds	N/A
000694	Wooddown Bog NHA	13.22km	Site synopsis does not refer to birds	N/A
001731	Walshestown Fen pNHA	14.58km	Site synopsis does not refer to birds	N/A
000690	Lough Sheever Fen/Slevin's Lough Complex pNHA	14.69km	Lakes provide a very good habitat for a variety of bird species	Unlikely given distance

2.3 Historical Review of Data

2.3.1 National Biodiversity Data Centre (NBDC) information

The NBDC was accessed on the 14th of August 2024 and again on the 21st of May 2025 for previous records within the 3 x 2km squares the site resides in; N43U, N43P and N44K. In total there were sixteen bird species recorded within the records examined. The following rare and / or threatened birds have been recorded here.

Table 2-2 Designated species recorded within the 2km squares; N43U, N43P and N44K

Name	Latin Name
Mallard	*Anas platyrhynchos*
Eurasian Teal	*Anas crecca*
Eurasian Wigeon	*Anas penelope*
Tufted Duck	*Aythya fuligula*
Common Snipe	*Gallinago gallinago*
Eurasian Woodcock	*Scolopax rusticola*
Eurasian Curlew	*Numenius arquata*
Northern Lapwing	*Vanellus vanellus*
Barn Swallow	*Hirundo rustica*
Common Starling	*Sturnus vulgaris*
House Martin	*Delichon urbicum*
House Sparrow	*Passer domesticus*
Lesser Black-backed Gull	*Larus fuscus*

Name	Latin Name
Mute Swan	*Cygnus olor*
Sky Lark	*Alauda arvensis*
Yellowhammer	*Emberiza citrinella*

The proposed site lies in close proximity to the Yellow River windfarm project where numerous bird surveys have previously been carried out. The Kilmurray's sand and gravel quarry (lying 1.4km from the subject site) is a component of this windfarm and contains a breeding population of Lapwing as well as numerous wintering birds including Golden Plover and Whooper Swans.

3 Field Survey

3.1 Survey Personnel

Bird surveys were primarily conducted by Shane O'Neill. Shane O'Neill is an experienced ornithologist (Co-author Hen Harrier Survey, NPWS 2015) with a broad knowledge of breeding birds, waders and all aspects of ornithology. Shane has previously conducted I-WeBS surveys and taken part in the Shannon estuary wintering wader surveys. In addition, some surveys were conducted by John Curtin B.Sc and Karolina Illien M.Sc, both Eire Ecology ecologists.

3.2 Summary of Results

Table 3-1 below provides a summary of surveys undertaken.

Table 3-1 Summary of surveys conducted

Visit No	Date	Location	Start Time	End Time	Details	Sunset / sunrise
1	20/09/2024	VP2	10:00	16:30	VP started once fog cleared. High Buzzard activity on site, also one siting of Kestrel and 4 golden plover seen briefly landing on site.	07:17 / 19:28
2	23/09/2024	VP3	10:00	16:30	Cormorant and 5 Lesser black backed Gull flew over site but did not interact with site. One Buzzard heard but not seen	07:13 / 19:20
3	23/09/2024	VP1	06:17	12:47	Only species of note recorded was a buzzard.	07:13 / 19:20
4	25/09/2024	Hinterland	8:30	17:30	Coot and Mallard were observed on pond adjacent to site. Mute swan were observed at locations 2 and 4 and a heron was observed at Location 3	07:17 / 19:14
5	09/10/2024	VP3	12:46	19:16	In total 7 Golden Plover flew over site. Sparrowhawk, Buzzard and Meadow Pipit present. Very high corvid activity on site all day. No migratory flocks seen	07:42 / 18:46
	09/10/2024	VP3	12:46	19:16	In total 7 Golden Plover flew over site. Sparrowhawk, Buzzard and Meadow Pipit present. Very high corvid activity on site all day. No migratory flocks seen	07:42 / 18:46
6	14/10/2024	VP1	13:00	16:00	A total of 90 Golden plover were recorded, 4 Yellowhammer, a Kestrel was recorded 5 times during the watch hunting this area. There were 4 sightings of Buzzard believed to be 2 separate birds hunting on the site (Possible Pair). Tillage to the W, NW and N was drawing in Woodpigeon, Hooded Crow Rook and Jackdaw also.	07:50 / 18:32
	14/10/2024	VP1	16:30	19:40	There was a farmer working the field to the W which may have caused disturbance during this watch. Yellowhammer and Buzzard were still present during the watch.	07:50 / 18:32
7	15/10/2024	Hinterland	09:15	17:30	A total of 8 hinterland VP's were found to be worth return visits, this should grow as the second and third visits are carried out.	07:52 / 18:27
8	17/10/2024	VP2	13:00	16:00	A total of 21 Golden plover were recorded on or over the site during this watch 11 circled over the site the other 10 landed onto the site in a GS4 to the SW of the VP field. Yellowhammer were recorded on the edge of the Tillage field calling and a Kestrel was hunting the site throughout the watch.	07:56 / 18:23
	17/10/2024	VP2	16:30	19:30	During this watch a small flock of Golden plover landed into the W side of the VP field where the roosted. A further 24 were recorded to the W, off site circling close to the motorway. 9 Whooper swan were recorded flying over the NE of the site but didn't land onto it. There were 2 recordings of Buzzard on site during this watch, but it is believed to be same bird.	07:56 / 18:23
9	07/11/2024	VP2	06:40	09:40	Whooper Swan flying over site. Buzzard and Redeye observed on site	07:40 / 16:40

Visit No	Date	Location	Start Time	End Time	Details	Sunset / sunrise
	07/11/2024	VP2	10:20	13:20	Buzzard flying over site	07:40 / 16:38
10	14/11/2024	VP3	06:45	09:45	Before dawn during this watch Snipe were heard calling from the ground and Golden Plover were heard calling (The GP were not recorded on the ground during this watch). A total of 7 Whooper Swan were recorded flying over the site. None recorded on it during this watch. Buzzard were also recorded flying over this site during the watch.	07:49 / 16:28
	14/11/2024	VP3	10:20	13:20	Golden plover were recorded flying over the site during this watch, also recorded were Peregrine, Sparrowhawk, Buzzard, Yellowhammer and Black headed Gull. All of these were recorded flying over the site, apart from the Y that was calling from the hedgerows and the SH that was recorded hunting the hedgerows of the site.	07:49 / 16:28
11	15/11/2024	VP1	06:45	09:45	A total of 95 Golden plover were recorded during this watch 92 circled the site for over 40 minutes before landing in the site. Yellow hammer were again recorded calling from the edges of the site with Kestrel hunting just off site to the east. Buzzard was recorded to the south of the motorway off site.	07:51 / 16:27
	15/11/2024	VP1	10:15	13:15	Golden plover were recorded coming and going from the field to the north of VP the largest number recorded on the ground was 120. Also recorded were 3 Lapwing that flew over the site flying from east to west. A Sparrowhawk was also recorded hunting the site it is believed it flushed the GP.	07:51 / 16:27
12	16/11/2024	Hinterland	08:15	16:15	A total of 11 hinterland point count locations were recorded during this survey but it is expected to rise. There was 2 flocks of Whooper swan recorded one numbering 7 and the second numbered 29. Also recorded were 6 Goldeneye on Lough Ennell.	07:53 / 16:25
13	11/12/2024	VP2	10:15	13:15	Buzzard were the most recorded bird during this survey. It looked to be a pair hunting the area to the east of the site both sides of the motorway. Kestrel was also recorded hunting this area. A large flock of Golden Plover were recorded off to the east 2-3km off site.	08:32 / 16:05
	11/12/2024	VP2	14:00	17:00	Two flocks of Golden plover were recorded during this watch one of 115 and the second of 46. Both were recorded off site circling. Buzzard was also recorded during this watch perched on site.	08:31 / 16:05
14	12/12/2024	Transect1			No large flocks of interest were recorded during these transects. Some SN were recorded but in small numbers (see Maps). The second part of transect 1 was to the north of the motor way mostly consisting of tillage and GA1. In this area there were large flocks of SG but no flocks of birds of interest.	08:32 / 16:05
15	13/12/2024	Transect2			Transect 2 was carried out in the area to the north and the west of the site both were north of the motorway. As with transect 1 there were no large flocks of birds of interest recorded. Small numbers of SN were recorded feeding on the site	08:33 / 16:05
16	16/12/2024	VP1	10:10	13:10	Flock of GP flew over site from N to S	08:35 / 16:05
	16/12/2024	VP1	13:40	16:40	Golden Plover Sighted later in Watch	08:35 / 16:05

Visit No	Date	Location	Start Time	End Time	Details	Sunset / sunrise
17	17/12/2024	VP3	09:40	16:10	Within the site, there were 35 Redwing feeding in the grass. Flying overhead within and without the site were Cormorant, Buzzards, Golden Plovers and Herring Gull.	08:41 / 16:10
18	18/12/2024	Hinterland	09:30	17:30	48 whooper swan by quarry along with 110 lapwing. Small flock (15) golden plover further south in tillage field. 34 lapwing noted perched in field to NE of site.	08:42 / 16:11
19	18/12/2024	Thermal Transect	18:19	01:10	There were roosting Snipe scattered across the sites.	08:42 / 16:11
20	13/01/2025	VP2	07:00	10:00	Few target species were recorded this survey; they include Buzzard and Yellowhammer.	08:34 / 16:33
	13/01/2025	VP2	11:00	14:00	There were 3 wigeon recorded flying over the site during this watch. Also recorded were Buzzard and Kestrel. No large flocks were observed during this watch	08:34 / 16:33
21	15/01/2025	VP3	10:48	13:48	Few target species were recorded this survey	08:32 / 16:36
	15/01/2025	VP3	14:18	17:18	10 Golden Plover seen during survey	08:32 / 16:36
22	15/01/2025	Transect 1	09:00	17:15	There was a small flock of Golden plover recorded circling a tillage field to the east of the site these were possibly flushed when the electronic gate was open to let me enter they circled for 15 minutes before I continued on with my transect they were not in the area when I returned (First recorded at 53.40615, -7.31035). Later in the transect there was a large flock of Snipe flushed by me from the same fields as the Golden Plover These flew west total number of SN flushed was 42 from 53.40560, -7.31186.	08:32 / 16:36
23	16/01/2025	Transect2	09:00	17:00	During this transect a large flock (250-275) of Golden Plover were circling the site as if they wanted to land. 40 did land in a tillage field on site at 53.39853,-7.33017. The remainder circled over the site and off to the west within 1 km of the site. I didn't enter the field that they landed in as I didn't want to cause disturbance. There was no visible reason why the rest of the flock did not land. The rest of the transect no large flocks but did have some Buzzard holding territory.	08:31 / 16:38
24	21/01/2025	VP1	11:01	14:01	Few Species of interest during survey, Golden Plover observed	08:26 / 16:47
	21/01/2025	VP1	14:31	17:31	Two flocks of Golden Plover with 30 individuals seen during this survey	08:26 / 16:47
25	25/01/2025	Hinterland	09:00	17:05	By quarry, and grassland surrounding, 172 lapwing perched and 63 whooper swan grazing. 150 black headed gulls in field to north of site by Gaybrook Demesne.	08:30 / 17:06
26	06/02/2025	VP3	7.05	10.05	GP flew in from NW and perched in field within site. Buzzard also flew low over field then perched within site. Lots of flocks of RE flying over (largest flock 60)	08:01 / 17:17

Visit No	Date	Location	Start Time	End Time	Details	Sunset / sunrise
	06/02/2025	VP3	10:35	13:35	BB circling low over field adjacent to site outline. GP flew high over site from NW to SE	08:01 / 17:17
27	18/02/2025	Thermal Transects	18:00	21:35	No Large flocks were recorded but some small flocks of Snipe were recorded foraging in Tillage and in GS4 wet grassland. Also recorded in these fields were Woodcock. Some of these birds were not picked up by the thermal scope as the vegetation was too high in places.	07:37 / 17 :41
28	19/02/2025	VP2	11:30	13:30	Buzzard and Kestrel were the main species recorded during this watch, but one large flock of Golden Plover numbering 350-400 birds was recorded to the south of the site circling over peat bog 1-2km off site approx.	07:35 / 17:43
	19/02/2025	VP1	15:00	18:00	There were no large flocks recorded during this watch. The only notable recording was a Kestrel flying through the site.	07:35 / 17:43
29	19/02/2025	Thermal Transects	18:15	20:45	There were a small number of Golden Plover flushed from the Tillage fields to the west and NW of VP1. These birds were not part of a larger flock these were just singletons that were roosting in the fields. Note these were not picked up by the thermal scope as the tillage was to high 8 inches approx. Some Snipe were picked up in the fields north of VP3 some of these birds were picked up by the thermal scope and some were not, depending where in the fields they were recorded.	07:35 / 17:43
30	20/02/2025	5km golden plover habitat mapping	08:30	16:30	The day was spent visiting Tillage fields within 5km of the site boundary to see if they were suitable for large flocks of Golden Plover and other winter waders. All suitable areas were marked and mapped.	07:33 / 17:45
31	12/03/2025	Hinterland	08:30	16:00	Still 30 whooper swan by quarry. Increased tufted duck numbers (25). Decrease in numbers as wintering season draws to a close.	06:57 / 18:35
32	18/03/2025	VP2	06:00	09:00	Birds of interest recorded were Hen Harrier, Golden Plover, Yellow Hammer, and Lapwing. The Hen Harrier was recorded flying through the SW corner of the site. This Male HH had no interaction with the site apart from flying over it. A flock of 141 Golden Plover were recorded circling to the E of the site they appeared to have been flushed from the pond to the E of the site. They did circle over the E edge of the site but settled again off site to the E. The Lapwing that were recorded were mixed in with the GP and also settles off site to the E.	06:32 / 18:34
	18/03/2025	VP3	10:40	13:40	The most recorded species on or over VP3 were Buzzard, Yellowhammer were also recorded. The BZ were recorded flying over the site perched in the site and hunting the site. The Yellow hammer were recorded perched and calling from hedge rows within the site . They looked to be holding territory but no singing was recorded.	06:32 / 18:34

Visit No	Date	Location	Start Time	End Time	Details	Sunset / sunrise
33	19/03/2025	VP3	06:45	09:45	Again during this watch Yellow Hammer and Buzzard were the main birds of interest recorded. Yellow Hammer were recorded pairing up, Singing and holding in the hedge rows of the improved grassland. They were feeding on the spilt sheep feed that probably had grains and seeds in it. The Buzzard was recorded on and over the site hunting and perched. There seems to be a territory just north of the site north of VP3.	06:30 / 18:36
	19/03/2025	VP1	10:40	13:40	At VP1 Buzzard, Yellowhammer and Raven were recorded. The Buzzards were holding territory and displaying. The territory is north northwest of VP1 not in tillage fields. The yellowhammer were singing, Perched and calling from inside and outside the site 1 pair look to be holding territory in the hedgerow to the north of VP1. Ravens are already sitting on eggs in the Pylon to the SE of VP1.	06:30 / 18:36
34	20/03/2025	VP1	06:30	09:30	During this VP, Yellowhammer were the most recorded birds of interest recorded. The Yellow hammer were recorded singing, Calling and holding territory. A Snipe was recorded calling from the tillage field to the west of the VP. This snipe was later recorded flying off site heading south.	06:28 / 18:37
	20/03/2025	VP2	10:20	13:20	Buzzard, Yellowhammer, Kestrel, and Golden Plover were the birds of interest recorded from VP2 during this watch. The Buzzard was recorded displaying over the site also flying over it hunting it and generally holding territory. Yellowhammer were recorded singing and holding territory on and off site. A flock of 130 Golden plover were recorded flushed off the pond in the field just east of the sire they circled off to the NE but returned and landed back into the field with the pond in it a short while later. The Kestrel was recorded just off site to the S hunting the bog, not recorded over the site.	06:28 / 18:37
35	14/4/2025	Breeding bird survey	09:30	18:00	During this survey all birds were recorded with particular attention given to birds of note such as Yellowhammer, Raptors and any red or amber listed birds. The survey was carried out in the East and SE areas of the site. There was no standout birds of interest recorded during the survey.	06:28 / 20:23
36	15/04/2025	O Brien and Smith	05:50	08:40	This survey was carried out in the south SE of the site there was no evidence of breeding waders in this area. This area comprises of a mixture of GA1 and GS4 with suitable drainage ditches and a river running through the site. These habitats would be suitable nesting habitat but for the fact there is much better habitat off site to the south and southeast of this site.	06:26 / 20:24
	15/04/2025	O Brien and Smith	18:15	21:15	This survey was carried out to the north of the site. There were no breeding waders recorded during this survey even though there was some suitable habitat present	06:26 / 20:24
-	16/04/2025	Breeding bird survey	09:45	10:30	This survey was called off as the weather was not good enough to continue	06:24 / 20:26
37	19/04/2025	O Brien and Smith	18:10	21:16	There was 3 Snipe recorded on site during this survey but no evidence of breeding was recorded. They were all recorded in a flooded area of the site, they looked to be foraging. When flushed they flew off site into more suited areas for breeding and were not recorded returning to the site. No signs of breeding wader were recorded during this survey.	06:17 / 20:32

Visit No	Date	Location	Start Time	End Time	Details	Sunset / sunrise
	21/04/2025	O Brien and Smith	05:45	08:30	During this survey that was carried out in perfect conditions there were no breeding waders recorded. The area that was surveyed was the area in the north of the site it has mostly GA1 but with some suitable patched of GS4 and large drainage ditches and a river running the northern boundary suitable for breeding waders.	06:21 / 20:32
38	20/04/2025	Breeding bird survey	09:30	18:30	During this survey all birds were recorded with particular attention was given to birds of note such as Yellowhammer, Raptors and any red or amber listed birds. The survey was carried out in the section around the farmhouse surrounded by tillage in the east of the site. The area to the north of the site was surveyed on this visit. Also the area of tillage to the west was surveyed on this visit.	06:15 / 20:33
39	28/04/2025	Hinterland	08:50	15:50	No whooper swan visible. Surveys sought raptors. Several sightings of buzzard surrounding site in suitable breeding habitat. Sparrowhawk and kestrel also observed in suitable breeding habitat.	06:08 / 21:00
40	04/05/2025	Breeding bird survey	09:30	18:00	This survey was carried out in suitable weather conditions in the area south of the motorway and in the 2 GA1s just north of the motorway. All species were recorded. Special interest was taken of Yellowhammer and raptor species. See data sheets.	05:45 / 20:58
41	05/05/2025	Breeding bird survey	09:30	18:00	It was carried out to the North of the motorway In a mixture of GA1 and Tillage. Again all species and there breeding status was recorded, with special emphasis given to Yellowhammer. In this area Yellowhammer were recorded on the edge of GA! Habitat feeding on the grain that had been left for the sheep. In the area north of the road at VP3 there were 2 possibly 3 pairs utilising this resource.	05:43 / 21:00
42	06/05/2025	Breeding bird survey	09:30	17:15	This survey was also carried out in perfect weather conditions. It was carried out in GA1 and Tillage habitat in the west and east of the site, north of the motorway. All species were recorded and there breeding status was recorded. Yellowhammer were again given special emphasis as the majority of the habitat was tillage.	05:42 / 21:02
43	07/05/2025	O Brien and Smith	05:00	07:30	The area along the river that runs along the northern boundary of the site was especially targeted. No waders were recorded during this survey.	05:40 / 21:04

Visit No	Date	Location	Start Time	End Time	Details	Sunset / sunrise
44	07/05/2025	O Brien and Smith	18:46	10:00	There were 2 Snipe and 4 Lapwing recorded during this walkover. No drumming or chipping were recorded on or over the site, thus the snipe are not breeding. Some territorial dispute over the bog to the south of the site was recorded, with 2 Lapwing pushing a third off the bog and onto the site. No alarm calling or distraction display from the 4 Lapwing on site which I would expect from breeding birds at this time of the season. The first snipe that was recorded flushed and left the site flying south onto the bog. This snipe was in an area unsuitable for nesting. The second snipe was a Jack Snipe that flushed from suitable nesting habitat and landed again to the south. No sign of a nest was found in the area it flushed from but signs of foraging were recorded. A further 3 Lapwing were recorded on the pond off site to the east of the site this area was more suited for nesting but no evidence was recorded.	05:38 / 21:05
45	15/05/2025	Hinterland	09:30	17:30	Final Hinterland Survey conducted in lands south of the Site, Lapwing were found breeding during this survey in Conifer plantation south of site.	05:26 / 21:17

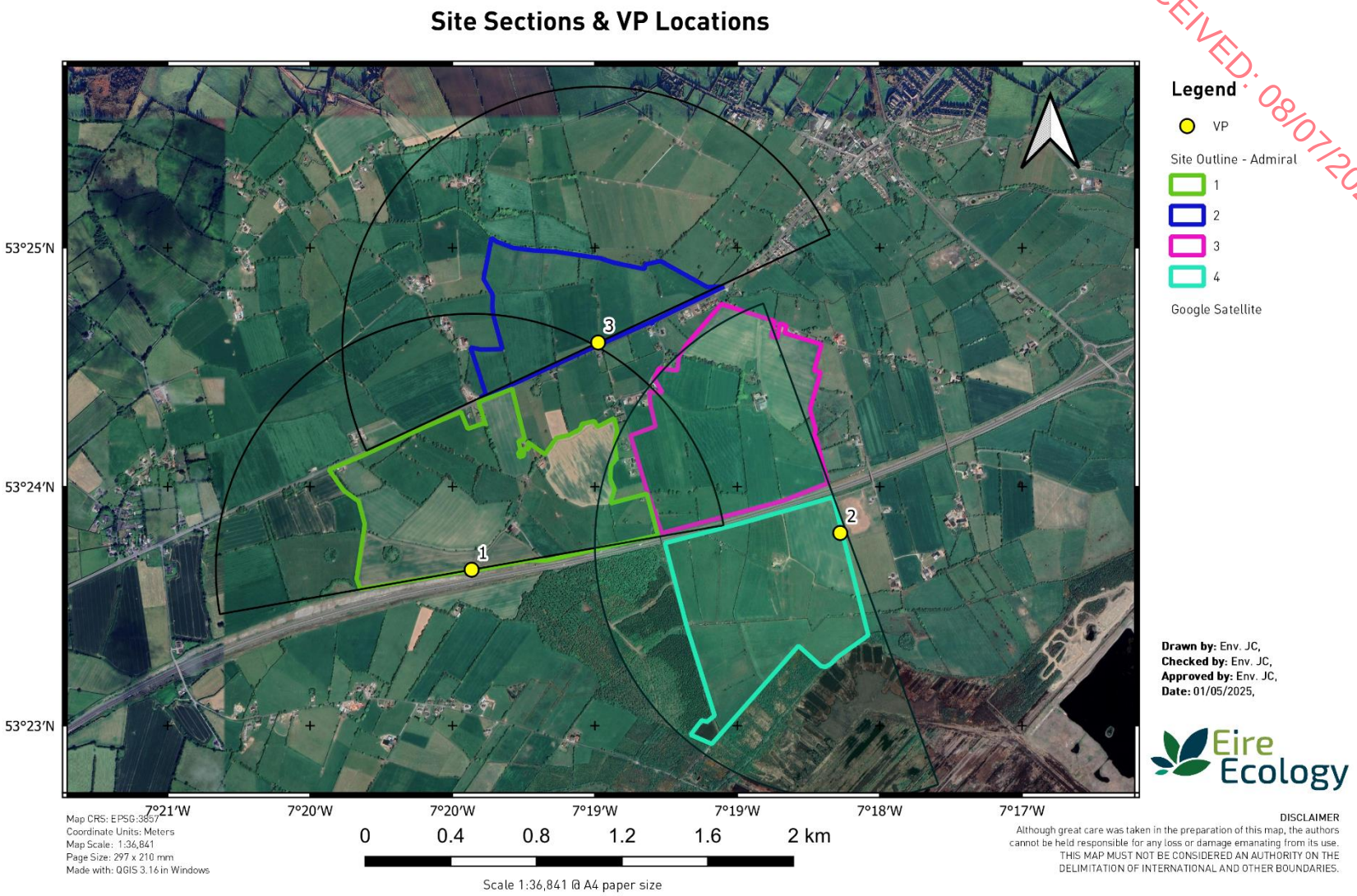

Figure 3-1: VP locations with site split into sections

3.3 Birds in the ecological survey area

3.3.1 Birds within the site of the proposed development and surrounds

During Vantage point surveys, species of interest noted using the site included Golden Plover, Lapwing, Snipe and Woodcock.

Buzzard, Golden Plover and Kestrel were seen most frequently making use of the site, with moderately sized flocks of Meadow Pipit, Mallard and Redwing also present. A large flock of Golden Plover observed far to the South of the Site numbering ~375 individuals was noted and is included below, though on the site, the largest recorded flock was 262 individuals strong. Whooper Swan were noted overflying but did not interact with the site.

3.3.2 Onsite Results

3.3.2.1 VP Summary

Three vantage point surveys were conducted each month between September 2024 and March 2025. The presence of the Target species and their flightlines were recorded. Table 3-2 provides a summary of species of interest including number of times the species was observed and if the species interacted with the site (perched within, hunting or roosting compared to flying over). Summaries of non-target species can be found in Appendices.

Table 3-2 Summary of Vantage Points 'Species of interest' results

Species	No of Obs.	Max Obs.	Recorded within site	Interacting with Site?	BoCCI4	Season for BOCCI4 designation
Black-headed Gull	2	2	In	No	Amber	Breeding/Wintering
Buzzard	63	7	In	Yes	Green	-
Golden Plover	42	375	In	Yes	Red	Breeding/Wintering
Great Cormorant	2	1	In	No	Green	-
Hen Harrier	1	1	In	Yes	Amber	Breeding
Herring Gull	1	1	In	No	Green	-
Kestrel	21	92	In	Yes	Red	Breeding
Lapwing	2	3	In	Yes	Green	-
Lesser Black-backed Gull	1	5	In	No	Amber	Breeding/Wintering
Meadow Pipit	3	22	Out	Yes	Red	Breeding
Peregrine Falcon	1	1	Out	Yes	Green	-
Raven	1	2	In	Yes	Green	-
Redwing	2	35	In	Yes	Red	Wintering
Sky Lark	1	1	In	Yes	Green	-
Snipe	4	2	In	Yes	Red	Breeding/Wintering
Sparrowhawk	3	1	In	Yes	Green	-
Whooper Swan	7	10	In	No	Amber	Breeding/Wintering

Species	No of Obs.	Max Obs.	Recorded within site	Interacting with Site?	BoCCI4	Season for BOCCI4 designation
Wigeon	1	4	In	No	Amber	Breeding/Wintering
Woodcock	1	2	In	Yes	Red	Breeding
Yellowhammer	29	3	In	Yes	Red	Breeding

Table 3-3 Summary of Vantage Point Non-Target results

Species	No of Obs.	Max Obs.	BoCCI4	Season for BOCCI4 designation
Blackbird	16	6	Green	-
Barn Swallow	3	10	Amber	Breeding
Blue Tit	12	4	Green	-
Bullfinch	1	4	Green	-
Chaffinch	16	10	Green	-
Coal Tit	1	1	Green	-
Collared Dove	2	6	Green	-
Dunnock	14	2	Green	-
Fieldfare	9	150	Green	-
Goldcrest	2	2	Amber	Breeding
Goldfinch	6	25	Green	-
Great Tit	6	2	Green	-
Greenfinch	4	30	Amber	Breeding
Grey Heron	1	1	Green	-
Grey Wagtail	1	2	Green	-
Hooded Crow	20	40	Green	-
House Martin	1	6	Amber	Breeding
House Sparrow	2	7	Amber	Breeding
Jackdaw	13	80	Green	-
Jay	5	3	Green	-
Kestrel	1	1	Red	Breeding
Lesser Redpoll	2	5	Green	-
Linnet	4	4	Amber	Breeding
Long-tailed Tit	5	9	Green	-
Magpie	3	2	Green	-
Meadow Pipit	12	10	Red	Breeding
Mistle Thrush	4	7	Green	-
Pheasant	1	1	Green	-
Pied Wagtail	13	4	Green	-
Raven	4	3	Green	-
Redwing	6	50	Red	Wintering
Reed Bunting	2	18	Green	-
Robin	24	20	Green	-
Rook	18	100	Green	-
Sky Lark	3	2	Green	-
Song Thrush	9	3	Green	-
Starling	21	500	Amber	Breeding
Stonechat	5	2	Green	-
Tree Sparrow	1	4	Amber	Breeding
Winter Wren	16	8	Green	-
Wood Pigeon	26	150	Green	-

3.3.2.2 Wintering Transects

Three wintering transect surveys were conducted in December and two in January; these surveys are of benefit to discover species not obvious during VP surveys. Table 3-4 below provides a summary of birds found during these transect surveys, including the number of times the species was observed and the largest flock observed at once. All Transect Points were recorded within the site outline.

Table 3-4 Summary of Transect 'Species of interest' results

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation
Buzzard	16	2	Green	N/A
Golden Plover	5	262	Red	Breeding/Wintering
Little Grebe °	1	1	Green	N/A
Meadow Pipit	29	16	Red	Breeding
Mute Swan °	3	2	Amber	Breeding/Wintering
Redwing	8	22	Red	Wintering
Snipe	14	42	Red	Breeding/Wintering
Yellowhammer	33	8	Red	Breeding

° outside site boundary

Table 3-5 Summary of Non-Target Transect results

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation
Blackbird	142	5	Green	N/A
Blue Tit	21	2	Green	N/A
Bullfinch	3	2	Green	N/A
Chaffinch	80	9	Green	N/A
Dunnock	30	5	Green	N/A
Fieldfare	17	100	Green	N/A
Goldfinch	3	3	Green	N/A
Great Tit	7	6	Green	N/A
Hooded Crow	3	1	Green	N/A
Jackdaw	10	4	Green	N/A
Jay	17	18	Green	N/A
Lesser Redpoll	3	2	Green	N/A
Long-tailed Tit	1	2	Green	N/A
Magpie	1	1	Green	N/A
Mistle Thrush	5	7	Green	N/A
Pheasant	5	3	Green	N/A
Pied Wagtail	25	7	Green	N/A
Robin	3	4	Green	N/A
Rook	18	3	Green	N/A
Sky Lark	2	3	Green	N/A
Starling	51	2	Amber	Breeding
Stonechat	14	71	Green	N/A
Tree Sparrow	3	1	Amber	Breeding

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation
Winter Wren	1	4	Green	N/A
Wood Pigeon	1	1	Green	N/A

3.3.2.3 Breeding Season Surveys

To determine which species are breeding within the site, combined surveys were conducted, including preliminary barn owl assessment, a nighttime thermal survey and several breeding walkover surveys (O' Brien and Smith). Summaries are provided below with full results in appendix.

Table 3-6: Summary of Breeding Season Species of Interest Results

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation	Confirmed Breeding?
Barn owl	1	2	Red	Breeding	Yes
Buzzard	8	1	Green	N/A	No
Goldcrest	11	1	Amber	Breeding	No
Golden Plover	1	1	Red	Breeding/Wintering	No
Great Black-backed Gull	1	1	Green	N/A	No
House Martin	5	6	Amber	Breeding	No
Little Grebe	2	3	Green	N/A	No
Mallard	1	2	Amber	Breeding/Wintering	No
Meadow Pipit	65	11	Red	Breeding	Yes
Mute Swan	2	2	Amber	Breeding/Wintering	No
Northern Lapwing	2	1	Green	N/A	No
Snipe	1	1	Red	Breeding/Wintering	No
Teal	2	2	Amber	Breeding/Wintering	No
Willow Warbler	16	1	Amber	Breeding	No
Yellowhammer	64	3	Red	Breeding	No

Table 3-7: Summary of Breeding Season Non-Target species

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation	Confirmed Breeding?
Blackbird	218	4	Green	N/A	Yes
Blackcap	87	2	Green	N/A	No
Blue Tit	30	2	Green	N/A	No
Bullfinch	1	1	Green	N/A	No
Chaffinch	248	3	Green	N/A	Yes
Chiffchaff	15	1	Green	N/A	No
Dunnock	43	2	Green	N/A	Yes
Goldfinch	34	8	Green	N/A	No
Great Tit	15	2	Green	N/A	Yes
Greenfinch	10	2	Amber	Breeding	No
Hooded Crow	3	2	Green	N/A	No
Jackdaw	11	7	Green	N/A	No
Linnet	33	7	Amber	Breeding	Yes
Long-tailed Tit	3	2	Green	N/A	No

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation	Confirmed Breeding?
Magpie	3	2	Green	N/A	Yes
Mistle Thrush	17	2	Green	N/A	No
Moorhen	1	1	Green	N/A	No
Pheasant	2	1	Green	N/A	No
Pied Wagtail	8	2	Green	N/A	No
Raven	11	4	Green	N/A	No
Reed Bunting	2	1	Green	N/A	No
Robin	128	2	Green	N/A	Yes
Rook	5	6	Green	N/A	No
Sky Lark	20	2	Green	N/A	No
Song Thrush	56	2	Green	N/A	
Starling	28	12	Amber	Breeding	Yes
Tree Sparrow	25	4	Amber	Breeding	Yes
Winter Wren	205	1	Green	N/A	No
Wood Pigeon	42	7	Green	N/A	No

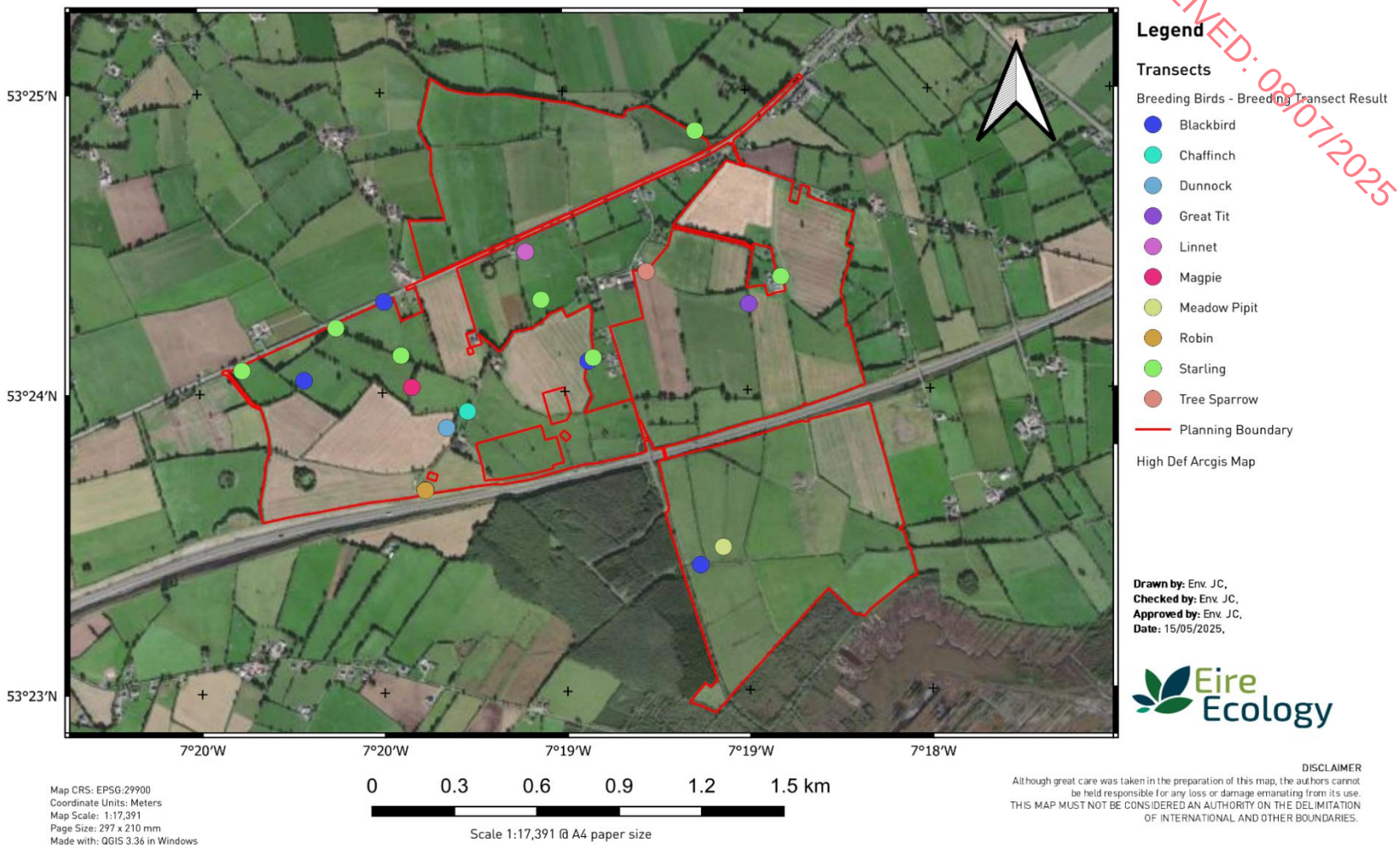

Figure 3-2: Confirmed species breeding, April/May 2025

3.3.2.4 Nighttime Thermal Surveys

Thermal Surveys were conducted in order to assess the use of the site by wintering wader species as a roosting location. Most commonly found species during these surveys was snipe, with 39 observations, mostly in Section 4 of the site to the North.

Table 3-8: Summary of Thermal Survey Results

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation
Golden Plover	3	2	Red	Breeding/Wintering
Meadow Pipit	1	5	Red	Breeding
Snipe	39	16	Red	Breeding/Wintering
Song Thrush	1	3	Green	N/A
Woodcock	3	2	Red	Breeding

Plate 3-1: Snipe in GA1 Habitat before being flushed

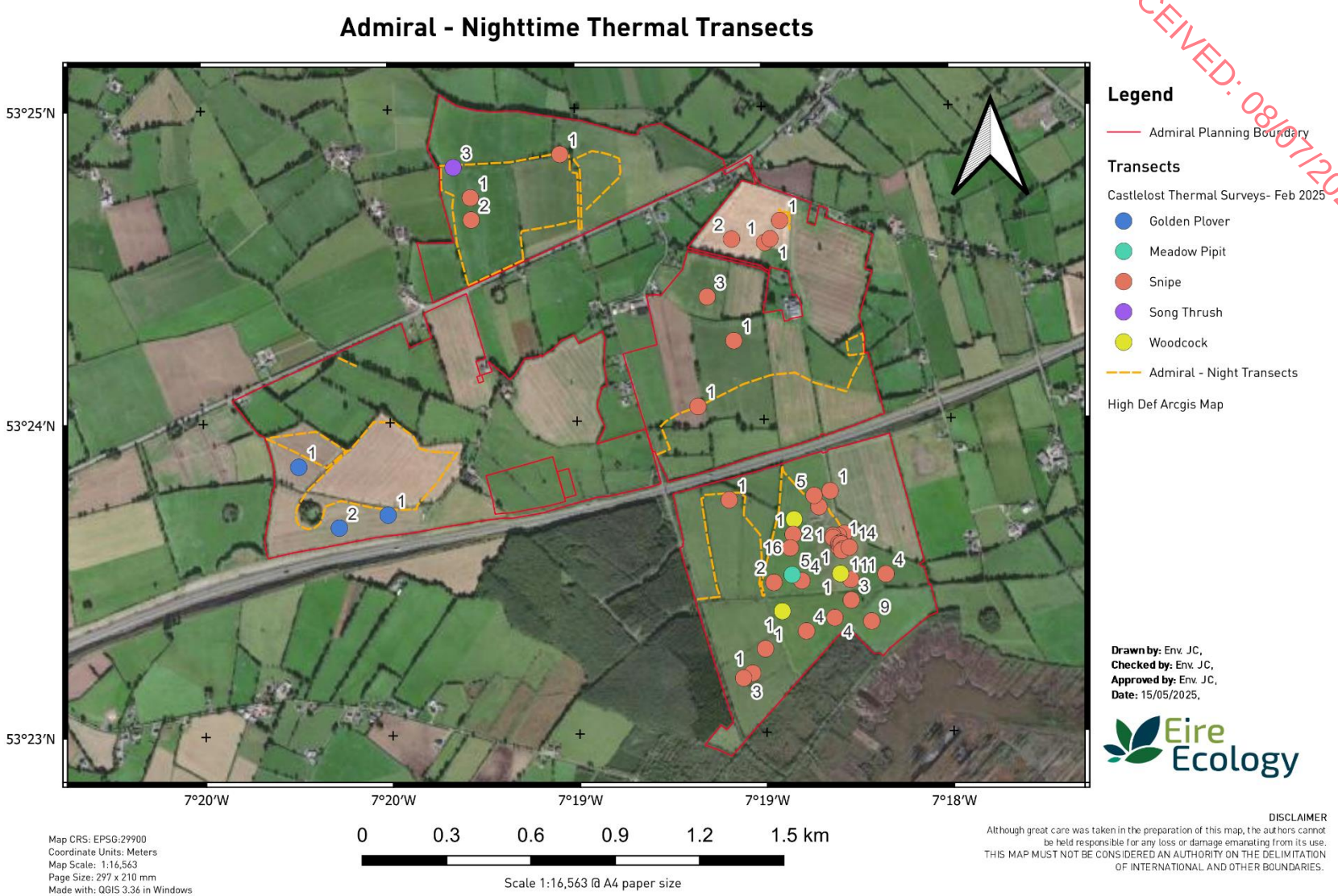

Figure 3-3: Thermal Survey Results (number of birds provided by location points)

3.4 Summary per species

The following sections provides a summary of sightings from species of note observed within the site. Full details can be found in Appendix 1.

Fig. 3-2 below shows the maximum numbers of wintering birds observed using the site during VP's, throughout the winter and migration periods (September 2024 -> March 2025). Of these, Golden Plover showed the most significant numbers utilizing the site.

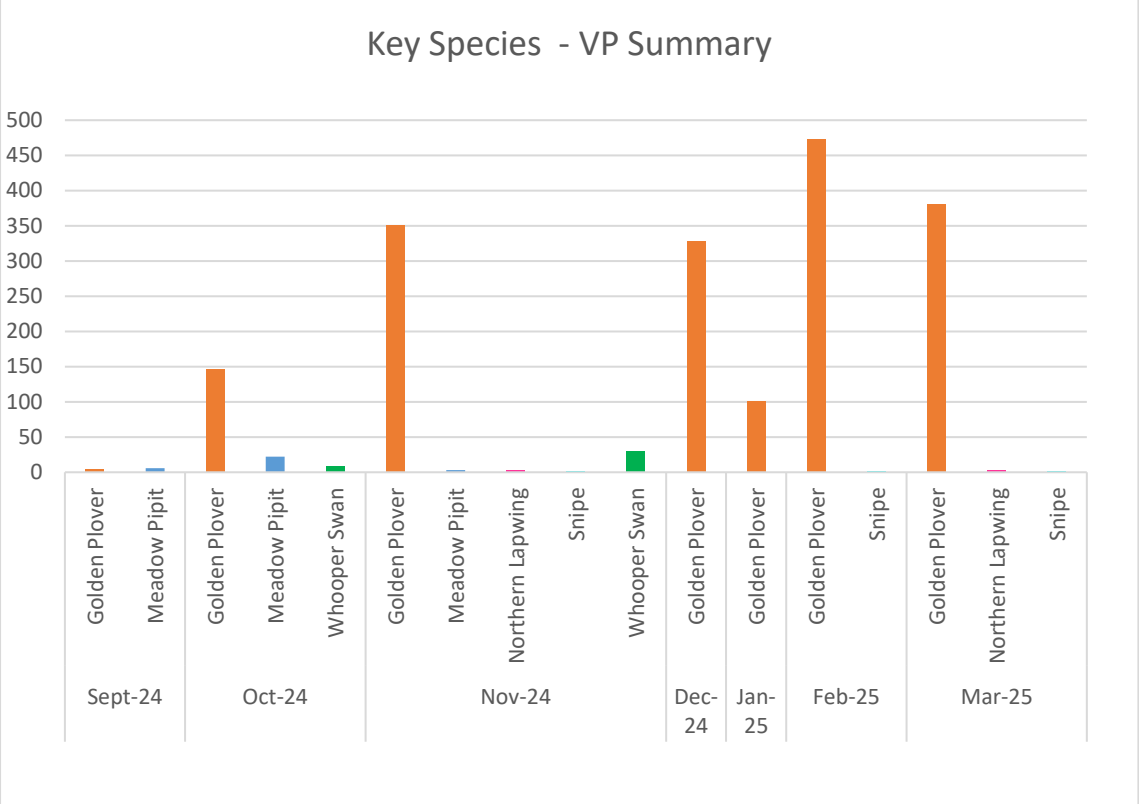

Figure 3-4: Wintering bird numbers – VP summary

3.4.1 Golden Plover

Golden Plover is a red listed species and is of high conservation value. Golden plover was observed 42 times over the course of the VP surveys, with peaks in February and March. Highest flock noted onsite during VP's was 141, with a flock noted during transects of up to 262. Additionally, a flock of 375 individuals was noted far south of the site. Golden Plover was observed in most of the site, but particularly to the West and South. An analysis of suitable plover habitat (peatland, tillage and grassland with less than 7cm sward height - (Gilling, 2007)) within 5km of the site shows 2,279 Ha, accounting for a total of 18% of total land cover. 46.5 Ha of this habitat is located onsite.

4.26 Ha of this habitat is proposed to be retained onsite with an additional 6.9 Ha proposed to be developed for Golden plover habitat. In total it is predicted that 35.34 Ha of habitat will be lost during the implementation of the current proposed development. This corresponds to a habitat reduction of 1.5% within the 5km surrounding area of the site.

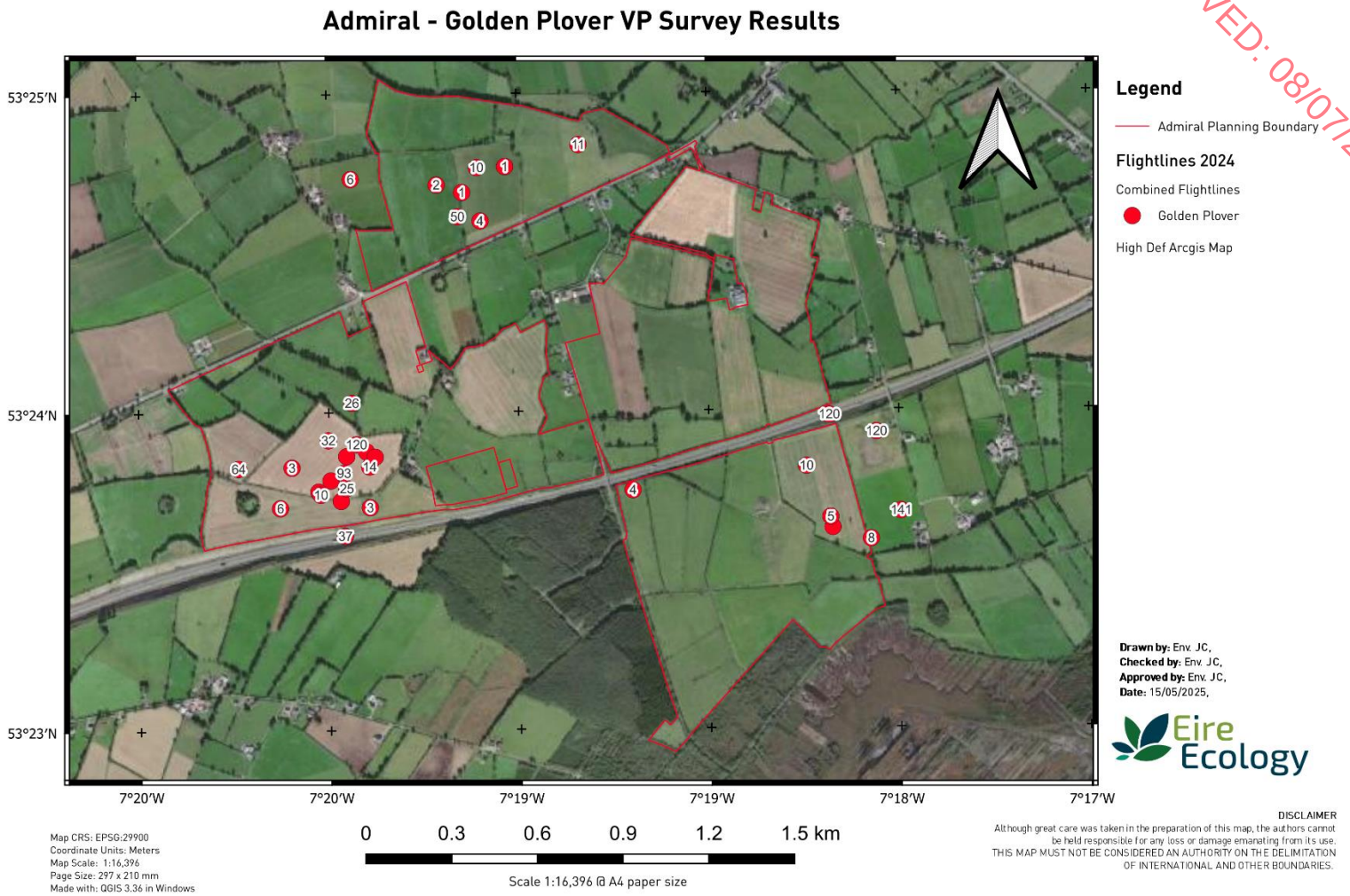

Figure 3-5: Golden Plover VP Results

3.4.2 Snipe

Common snipe is a small cryptic wader mostly found in bog, marshy wetland, and rough ground in both upland, lowland regions, and lakeshores. Breeding takes place between April - June. Courtship ritual most often involves a male producing a drumming effect by filtering air over feathers ((RSPB)., 2021). There may be an aerial display to ward off competitors. As snipe is a crepuscular species, these behaviors are most likely observed in twilight. The lifespan of a snipe is typically 3 years, with breeding commencing at 2 years. The average clutch size is 4, which the female incubates 18-20 days. The fledgling period is 19/20 days (BTO), 2021). Small invertebrates and seedlings form part of the diet.

Only a handful of Snipe were recorded onsite during VP surveys. A single snipe was seen during VPs in November 2024 with an additional sighting in February and two in March 2025. Only five Snipe were observed in total between September and March.

Thermal night time surveys were conducted during in February and March 2025. 39 observations of Snipe were recorded during these surveys, for a total of 110 individuals (Max Obs. of 17). The majority of the thermal footage was of Snipe roosting onsite to the south, with some examples of roosting snipe in the Eastern and Northernmost sections.

Breeding wader surveys conducted within the site did not find any breeding snipe onsite. During April, 3 snipe were observed were flushed, flying offsite. In May, two snipe were observed one of which could possibly have been a jacksnipe. Importantly, no instances of drumming or displays were observed which is an indicator of breeding. It is likely this species is breeding oin the bog to the south of the site.

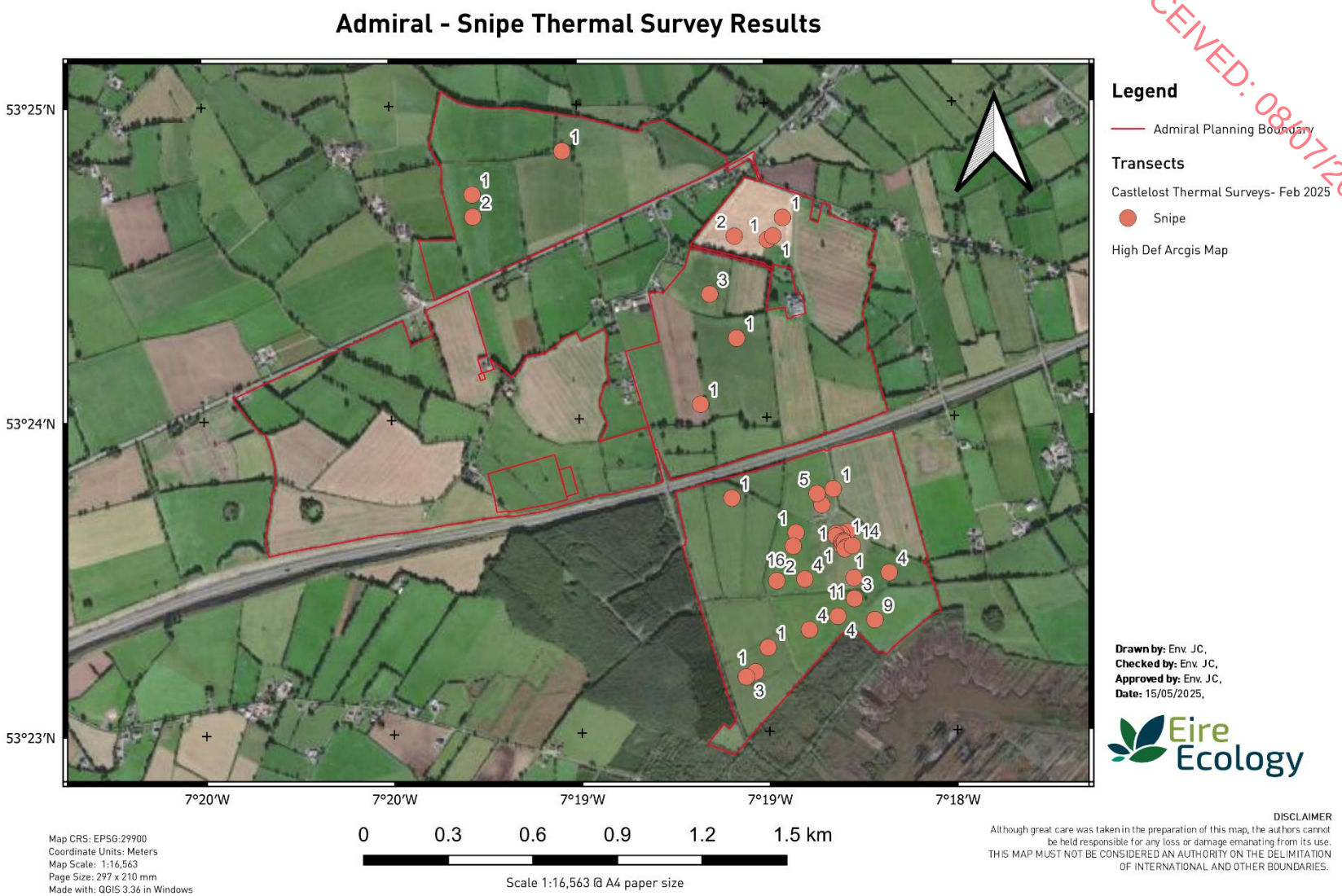

Figure 3-6: Snipe recorded during Winter Thermal Surveys

3.4.3 Meadow pipit

Meadow pipit, a ground nesting, red listed passerine. This species was noted 3 times from within the site boundary during vantage point surveys. Largest flock of Meadow Pipits was noted with 22 individuals.

With 66 total observations, Meadow Pipit was noted in higher numbers during the Breeding season walkover surveys, where a single contact of Meadow pipit confirmed to be breeding onsite. Additionally, 58 observations noted behaviour indicating Possible or Probable breeding onsite. Detailed map of transect results are displayed below.

The majority of Probable Breeding indicators were located in the northern section of the site, though the only confirmed instance of breeding Meadow Pipit was located in the Southernmost section of the site.

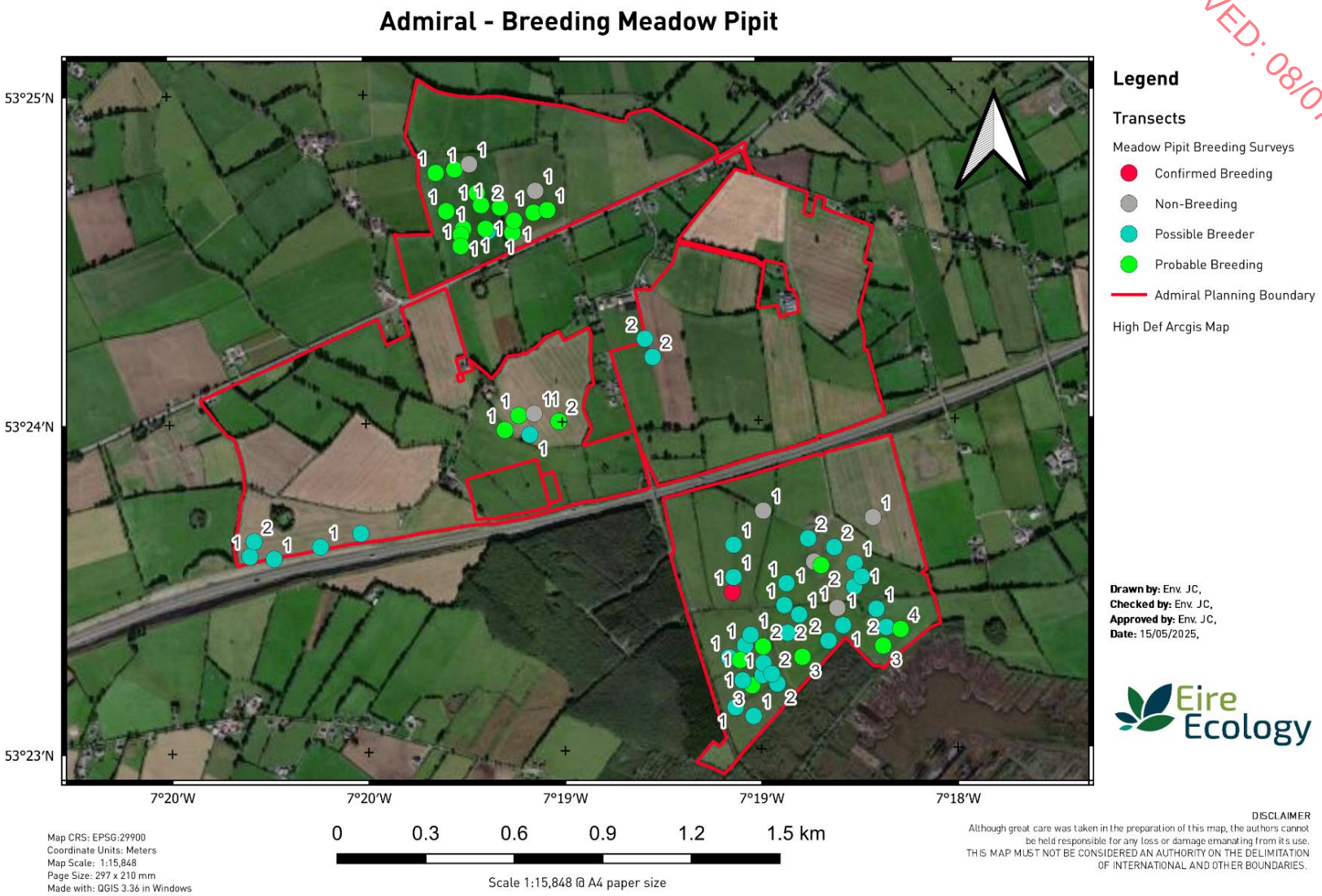

Figure 3-7: Meadow Pipit Breeding Survey Results

3.4.4 Whooper Swan

Not found to utilise the site, found using a pond to the east and the site is not used as a commuting route or feeding area. Hinterland Surveys show Whooper Swan are faithful to a location 2km south by the Yellow River Windfarm and often use the lands surrounding the Kilmurray Sand and Gravel Quarry. Whooper Swan was most often noted during Hinterland surveys South of Site.

3.4.5 Breeding Raptors

3.4.5.1 Buzzard

Buzzard is a widespread bird of prey best adapted to hunt over lowland pasture. Multiple records were noted from this species throughout the site. The species typically breeds within treelines and hedgerows thus retention of these features will be important for Buzzards continued usage of the site. Buzzard is a green listed species with a secure Irish population.

Buzzard was observed 63 times during VP surveys between September and March. 40 of the sightings were recorded within the site, though most observations noted the Buzzard flying/circling over the site, with 5 sightings within 500m of the site and 12 sightings flying over the site but not interacting. The largest number of Buzzard seen at once was 7 individuals observed flying over the site and not interacting.

During breeding season walkover surveys, 8 Buzzards were observed onsite, but none were recorded engaging in breeding behaviours and were simply flying over site.

3.4.5.2 Kestrel

21 Kestrel sightings were observed during VP Surveys, 14 of which were noted using the site. Kestrel was observed every month between September 2024 to March 2025, though they were not observed using the site in March.

During Breeding Walkover Surveys, no Kestrel was observed either on or off the site.

3.4.5.3 Barn Owl

Combined surveys were conducted to establish the presence of Barn Owl's on the site, including at height assessment of trees, preliminary barn owl habitat assessments and nighttime thermal surveys.

A nest was identified onsite in April 2025 during at height tree surveys of the site and was recorded and flagged for further assessment. A day of Barn owl surveys was conducted to attempt to confirm the presence of Owls, however little evidence was found at this time.

Nighttime footage of the nest tree conducted in May 2025 concluded that there was indeed a nesting pair in the vicinity of a house in the Eastern Section of site. Mitigation measures have been included below to ensure that these owls are not disturbed during the construction phase of the project.

The barn owl nest location is withheld from this report as releasing locations of nest sites is not advisable. This information will be submitted separately and should not be available for public viewing.

3.4.6 Yellowhammer

Yellowhammer, a declining red listed passerine found mainly in the east and south of Ireland. Strongly tied to cereal cultivation, this species breeds in treelines.

There were 23 sightings of Yellowhammer within the site during VP Surveys and a further 6 just outside the boundary, most were in section 1 (western portion of site) where tillage is prominent, and Section 2 (Northern Section of Site). No Yellowhammer were observed in Section 3 of the site.

During Breeding walkover surveys, Yellowhammer was found in all sections of the site, with Section 4 being most prominent. Yellowhammer onsite displayed few indicators of breeding birds, with only a single observation deemed as evidence for probable breeding in Section 2 of the site. Interestingly, within the site, yellowhammer was less associated to cereal fields than typically observed.

3.4.7 Gulls

Four sightings of gulls occurred within the site; Five Lesser Black-backed gulls were observed flying over the site and not interacting. A Black-headed Gull was observed onsite and another far outside the buffer, and a single Herring gull was noted flying over the site in December.

The site does not contain habitat suitable for breeding gulls.

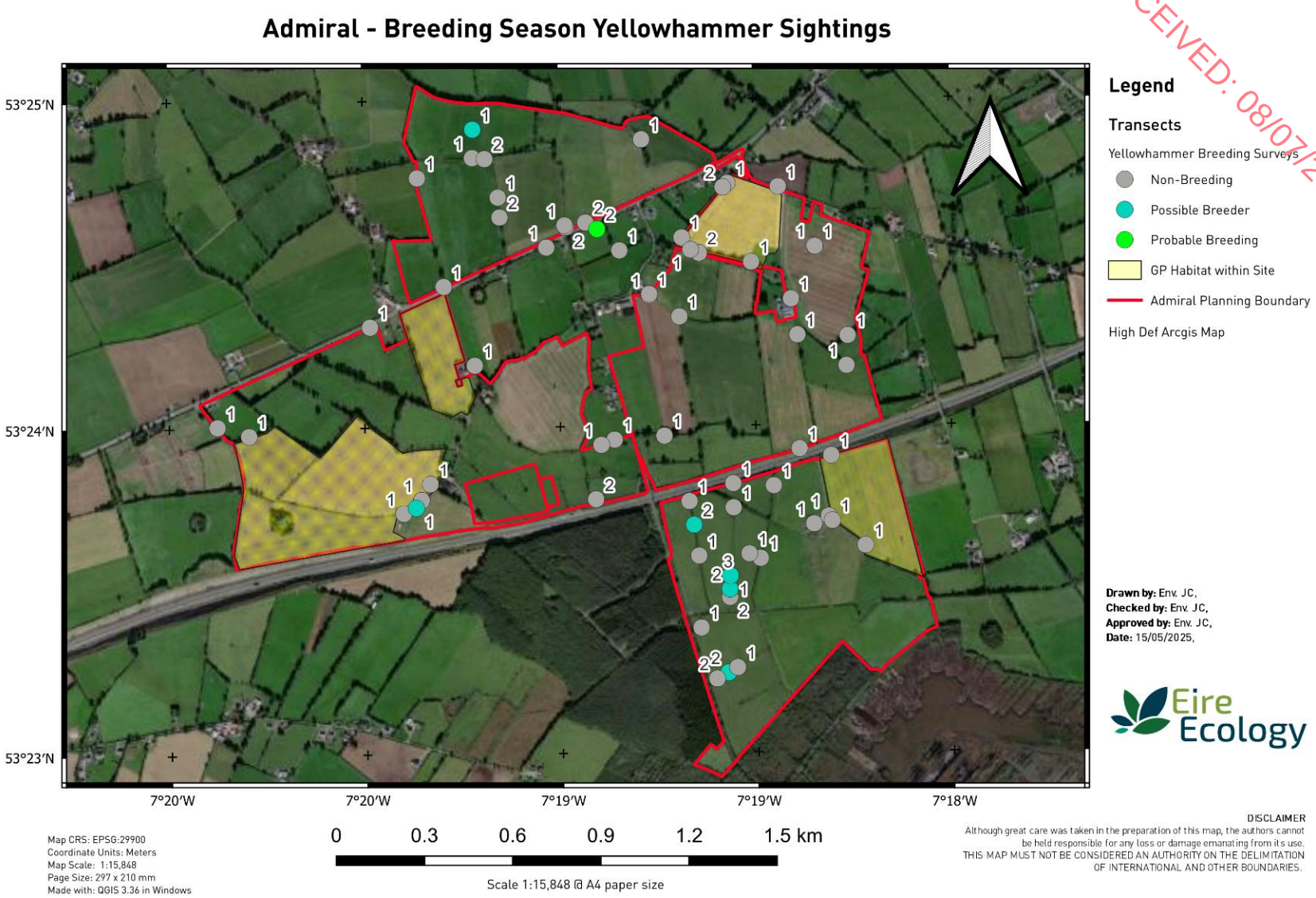

Figure 3-8: Breeding Yellowhammer Results

3.5 Hinterland Surveys

3.5.1.1 Hinterland Surveys

Hinterland surveys were conducted monthly, in order to examine the connectivity of the subject site to the surrounding lands. Areas of high ornithological value were established through a desktop study followed by ground truthing. February's hinterland survey consisted of the assessment of Golden Plover Habitat with a 5km area based on the results of this desktop study. Surveys were conducted in lands thought to have high potential for species of interest, Golden Plover, Whooper Swan, Snipe and Woodcock. During the surveys, Golden Plover, Whooper Swan, Curlew, Northern Lapwing and Tufted Duck were found to be using lands to the south of the site.

The majority of Hinterland activity surrounding the site was located in the wetlands to the south of site, where multiple water bird species were observed interacting with these lands, including Tufted Duck, Mallard, Whooper Swan and Mute Swan.

Lapwing were discovered adjacent to these lands, with observations of birds using the quarry lake, located just to the Southwest of the site. Territorial Behaviour was indicative of a breeding pair of Lapwing. Larger flocks of Lapwing were observed further South of the quarry, reaching a maximum size of 235 individuals.

An Area to the East of Section 1, the westernmost section of the site, is labelled as "Construction Area" below in Figure, this is the location of the construction works being conducted ancillary to the construction of the main substation for this site and is no longer suitable habitat for species of interest in this site and was disregarded in the transect surveys conducted.

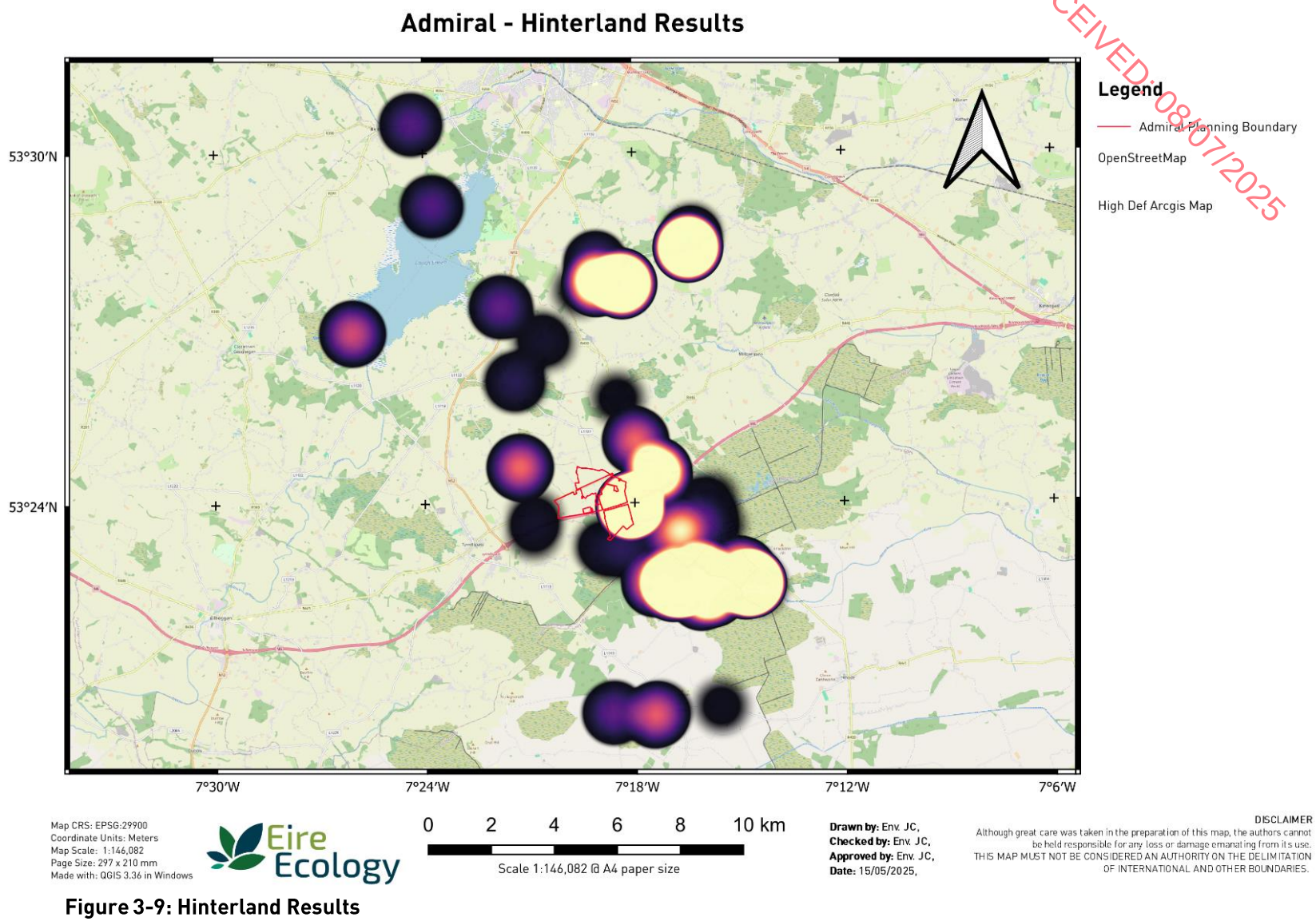

Figure 3-9: Hinterland Results

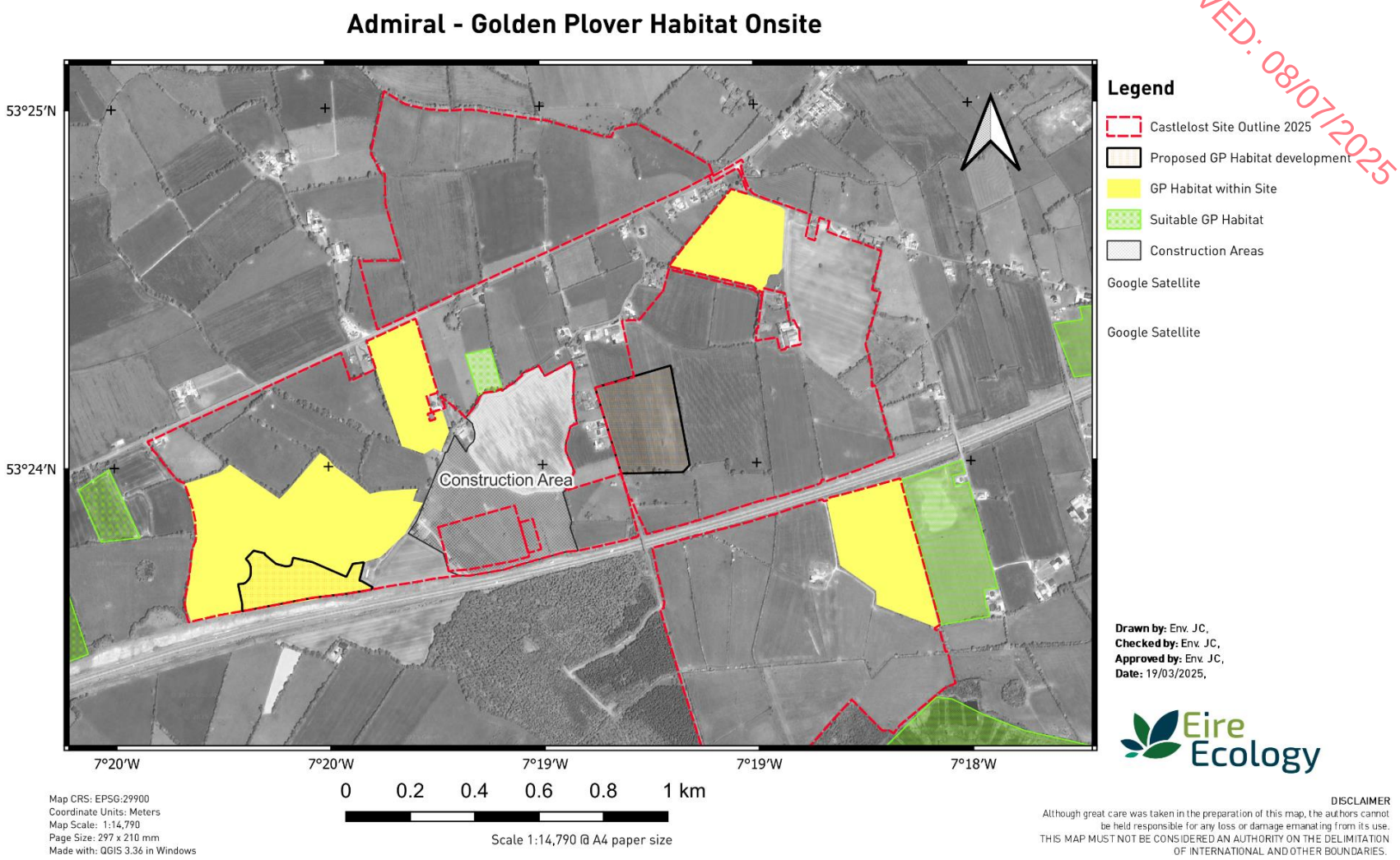

Figure 3-10: Golden Plover Habitat within site

3.6 Significance of Birds

The significance of potential ecological effects on birds was determined using Percival (2003) together with professional judgement and is based on results from breeding and wintering bird data. The effects were further described with reference to EPA (2017) and CIEEM (2019) criteria for characterising ecological impacts.

The following portion of the report also utilises results from the baseline wintering bird report found accompanying this application.

Table 3-9: Criteria for assessing impacts based on CIEEM (2019) and (EPA, 2022)

Parameter	Description	
Quality	Positive effect: A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).	
	Neutral effect: No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.	
	Negative effect: A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).	
Extent	The area over which an impact occurs	
Duration	• Momentary – effects lasting from seconds to minutes • Brief – effects lasting less than a day • Temporary – effects lasting less than a year • Short-term – effects lasting 1 to 7 years • Medium term – effects lasting 7 to 15 years • Long term – effects lasting 15 to 60 years • Permanent – effects lasting over 60 years • Reversible	
Reversibility	Irreversible impacts: permanent changes from which recovery is not possible within a reasonable time scale or for which there is no reasonable chance of action being taken to reverse it. Reversible impact: temporary changes in which spontaneous recovery is possible or for which effective mitigation (avoidance/cancellation/reduction of effect) or compensation (offset/recompense/offer benefit) is possible.	
Frequency and Timing	Frequency –How often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually) Timing –the timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.	
Describing the significance of effects (EPA, 2017)	Imperceptible	An effect capable of measurement but without significant consequences.
	Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.

Parameter	Description	
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound	An effect which obliterates sensitive characteristics

The desk study and the field study reveal that some species of high ecological importance are present in low numbers in the local environment. There are no SPA's found close by which have connectivity to the subject site with the closest; Lough Ennell, being 6.3km away from the site. No species associated with this SPA were found within the site.

Wintering water bird species of interest were recorded utilising tillage in the surrounds and onsite. The threshold for inclusion of a bird species as a qualifying interest for an SPA is 1% of Irelands population. No such flock was recorded from within the site or during hinterland surveys.

Moderate sized flocks of Golden Plover were often found in Section 1, in the Southwestern most field. These birds were observed both during day and nighttime surveys. The western section of site (Section 1) consists of tillage and grassland with associated bordering treelines and hedgerows.

Buzzard was observed many times through the site, though they have not been confirmed breeding here.

Snipe can also be found, with observations of Snipe in Section 1 and 2 in February and March 2025 however no evidence of breeding snipe were noted.

3.6.1 Significance values for birds

Table 3-11 evaluates the importance of species of interest found within and surrounding the site. The table provides a sensitivity value based on (Percivel 2003) although this was designed to examine impacts on birds by wind energy.

Table 3-10 Determination of Sensitivity in study area

Sensitivity	Determining factor
Very High	Species that form the cited interest of SPAs and other statutorily protected nature conservation areas. Cited means mentioned in the citation text for the site as a species for which the site is designated.
High	Species that contribute to the integrity of an SPA but which are not cited as species for which the site is designated. Ecologically sensitive species including the following: divers, common scoter, hen harrier, golden eagle, red-necked phalarope, roseate tern and chough. Species present in nationally important numbers (>1% Irish population)
Medium	Species on Annex 1 of the EC Birds Directive Species present in regionally important numbers (>1% regional (county) population) Other species on BirdWatch Ireland's red list of Birds of Conservation Concern
Low	Any other species of conservation interest, including species on BirdWatch Ireland's amber list of Birds of Conservation Concern not covered above.

Table 3-11 Evaluation of importance for species of interest from within site and hinterland

Species	Species information	Found within site?	Found in Hinterland surveys?	Designation	Sensitivity (Percivel 2003)	Value of hinterland study area	Value of subject site
Barn owl	Scarce resident mainly in central and southern Ireland. No longer breeds in large patches of northern, western and eastern Ireland. Red-listed in Ireland due to a significant decline in the breeding population. The European population is currently evaluated as Declining. Confirmed breeding towards the east of the site.	Yes	No	Red	Medium	Local High	Local High
Black-headed gull	Single sighting of a bird overflying site. Not observed associating (feeding) within the site. No impacts expected.	Yes, but only overflying	Yes	Amber	Low	Local low	Local Low
Buzzard	Green listed in BoCC 2020-2026. Regularly found both within and surrounding the site. No confirmed breeding observed though there are several sightings during preliminary breeding transects.	Yes	Yes	Green	Low	Local High	Local High
Golden Plover	There is no SPA surrounding the site that has Golden plover as a Conservation objective thus these birds should not be viewed as an ex-situ flock (closest Golden plover SPA is Lough Iron SPA 21km to the North). Species is undertaking a long term, significant decrease in Ireland (I-WeBS National trends 1994/95 to 2019/20). Higher numbers found once in Hinterland.	Yes	Yes	Red, Annex I	Medium	County	Local High
Great Black-backed Gull	Site is not suitable fopr breeding gulls. This species was not observed inteacting with site.	Yes	Yes	Green	Low	Local low	Local Low
Hen harrier	A single sighting of hen harrier was recorded during winter surveys. No wintering roost habitat found on site. Habitats on site are not suitable for breeding hen harrier. VP2 overlooked adjacent bog habitats; the only suitable winter roost habitat for this species close to the site. No evidence of roosting birds were observed from any survey. As such this was a vagrant record.	Yes	No	Amber, Annex I	High	Local high	Local low
Herring gull	A single Herring Gull was observed onsite. Habitat used or breeding by this species is not present on site.	Yes	No	Green	Low	Local Low	Local low

Species	Species information	Found within site?	Found in Hinterland surveys?	Designation	Sensitivity (Percivel 2003)	Value of hinterland study area	Value of subject site
Kestrel	Countryside bird survey shows an overall downward trend since 1998 however the index has trended up since a 2014 low (https://c0cre470.caspio.com/dp/4bae3000b62efcaae08e4f4da8bd). The 2011-2016 population was estimated at 13,500 (Lewis 2019). This species was found to hunt and perch within the site rarely. There will be no loss of breeding habitat, and the species should continue to hunt effectively post construction.	Yes	Yes	Red	Medium	Local medium	Local medium
Lesser Black-backed Gull	Amber listed species with a peak count of 20,832 within Ireland (Lewis 2019). Five individuals were observed interacting with site, and overflying. Site is not suitable for breeding gulls.	Yes	Yes	Amber	Low	Local low	Local low
Meadow Pipit	Red listed (breeding) in BoCC 2020-2026. The listing of this species as of high conservation concern is due to a large decline in population following the unusually cold winters of 2009/2010. According to BirdWatch Ireland, the species has undergone a significant recovery since that period (Countryside bird survey data trend showed 2019 with highest peak since index started in 1998. Slight decline occurred from this peak in 2020 and 2021; https://c0cre470.caspio.com/dp/4bae3000b62efcaae08e4f4da8bd) Meadow Pipit was found widely dispersed over the site, with a number of indicators of Breeding birds, especially in section 2 and 4. A confirmed instance of breeding Meadow pipit was observed in Section 4.	Yes	No	Red	Medium	Local High	Local medium
Lapwing	Historical records alongside hinterland records verify that Lapwing can be found to the south of the site, primarily utalising peatland and have been recorded breeding towards the Yellow River windfarm. Breeding behaviour noted in May on peatland to the south of the site. Lapwing to Nine Observations of Lapwing were recorded from within the site, with only 2 of them interacting with the site. Lapwiing were not breeding onsite.	Yes	Yes	Red	Medium	County	Local low

Species	Species information	Found within site?	Found in Hinterland surveys?	Designation	Sensitivity (Percivel 2003)	Value of hinterland study area	Value of subject site
Peregrine falcon	Habitats within the site are not suitable for breeding given the lack of cliffs or tall structures. A single Peregrin was noted on site but not interacting. No breeding Peregrine were recorded during hinterland surveys. Quarries to the south do not have tall cliff edges.	Yes	No	Green. Annex I	Medium	Local Low	Local low
Snipe	Severe declines have been recorded in Snipe breeding and wintering populations in Ireland, resulting in its move to the Red-List in the most recent BoCCI assessment (Gilbert, Stanbury and Lewis, 2021). According to the last IUCN Red List assessment in 2016, the Snipe is a species of 'Least Concern' on a global scale. However, a decreasing global population trend was noted. This ground nesting species finds suitable breeding habitat where there is grassy tussocks within or adjacent to boggy areas. Bogs and wet grassland can be suitable habitat for this species. The habitat on site is suitable for wintering birds and a handful of Snipe were noted within wetter areas throughout the site. Breeding surveys do not indicate breeding snipe on this site, but are likely to breed on peatland to the south.	Yes	Yes	Red	Medium	Local High	Local High
Yellowhammer	According to BirdWatch Ireland, the species has a fluctuating population trend since 1998 (Countryside bird survey data trend showed 2018 with highest peak since index started in 1998 (Lewis L. J., 2019). Slight decline occurred from this peak in 2019, 2020 and 2021; https://c0cre470.caspio.com/dp/4bae3000b62efcaae08e4f4da8bd. There were 23 Sightings during VP surveys and a further 6 just outside the site boundary, 211 sightings of Yellowhammer were recorded during transect surveys within the site. No breeding Yellowhammer were found but probable breeding signs were noted.	Yes	No	Red	Medium	Local High	Local High
Woodcock	Wintering woodcock were noted during a thermal survey on ground close to conifer plantation to the south of the site. Breeding Woodcock are known to breed in the hinterland. This species breeds in woodland, as habitat not found within the site.	Yes	No	Red	Medium	Local High	Local Low

Species	Species information	Found within site?	Found in Hinterland surveys?	Designation	Sensitivity (Percivel 2003)	Value of hinterland study area	Value of subject site
Whooper swan	The closest location Whooper swan were noted to the site was a small pond to the SE of the site. This species did not interact with the site. This species was found in higher numbers by Killsarn quarries, although numbers are lower than historic records.	Yes	Yes	Amber. Annex I	Medium	County	Local Low

4 ASSESSMENT OF IMPACTS

Determination of impacts is derived with guidance from (Percival, 2003), (CIEEM, 2024) & (EPA, 2022). Table 4-1 provides definitions for magnitude of effect. This data alongside the previously assigned significance value is imputed into Table 4-2; significance matrix to provide a final significance impact of the development per species where the value of the site was above a low value.

Table 4-1 Determination of Magnitude of Effects.

Magnitude	Description
Very High	Total loss or very major alteration to key elements/ features of the baseline conditions such that the post development character/ composition/ attributes will be fundamentally changed and may be lost from the site altogether. Guide: < 20% of population / habitat remains
High	Major loss or major alteration to key elements/ features of the baseline (pre-development) conditions such that post development character/ composition/ attributes will be fundamentally changed. Guide: 20-80% of population/ habitat lost
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of baseline will be partially changed. Guide: 5-20% of population/ habitat lost
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes of baseline condition will be similar to pre-development circumstances/patterns. Guide: 1-5% of population/ habitat lost
Negligible	Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation. Guide: < 1% population/ habitat lost

Table 4-2 Significance matrix

Significance		Sensitivity			
		Very high	**High**	**Medium**	**Low**
Magnitude	**Very High**	Very high	Very high	High	Medium
	High	Very high	Very high	Medium	Low
	Medium	Very high	High	Low	Very Low
	Low	Medium	Low	Low	Very Low
	Negligible	Low	Very Low	Very Low	Very Low

Table 4-3 Impacts on species of interest

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
Barn Owl	Direct Habitat Loss	Barn owl were found to roost within the site. Barn owl are not strongly territorial, with home ranges regularly overlapping. Barn owl nest sites have been recorded less than 350m apart. See mitigation section below for further details. Few studies have been conducted on the impacts of solar arrays on barn owls. The Barn owl trust UK state; Ground mounted solar arrays "*present a negligible collision risk and do not electrocute, dazzle or burn Barn Owls. In fact, solar PV 'farms' have the potential to be of great benefit to Barn Owls as the array frameworks are typically at a height from which Barn Owls can perch-hunt.*" (Trust, 2025).	Permanent, neutral	Occurs once, irreversible	The magnitude of the impact is assessed as Very Low. moderate sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	A breeding site was found during nighttime surveys. (Goodship, 2022) states Barn owl have a low sensitivity to disturbance and suggests a 50 to 100m buffer zone during the breeding season. (Shawyer, 2011) suggests a disturbance risk of 175m for heavy construction works . The breeding site lies within the site boundary thus disturbance from the development may impact this species. With the creation of breeding season buffer disturbance impacts can be avoided - see mitigation	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Moderate sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Buzzard	Direct Habitat Loss	The development footprint is dominated by improved grassland and tillage with associated hedgerows and treelines, providing suitable breeding and foraging habitat for the species. While breeding surveys did not confirm breeding, it is likely this species will breed within the site at some stage. Due to mitigation by design the majority of treelines and hedgerows will be retained thus no net loss of breeding habitat is anticipated. The placement of solar panels on grassland will result in a change of land use of hunting habitat for the species. Given passerines are likely to remain unaffected by the presence of solar panels no net loss of prey species is anticipated.	Permanent, slight negative	Occurs once, irreversible	The magnitude of impact is assessed as Low. Low sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	There is the potential of disturbance to breeding Buzzard through construction phase solar panel arrays, or because the construction activities will disturb the birds and displace them from the area. Foraging and commuting birds may temporarily avoid construction areas owing to the noise and increased activity. Construction of solar farms does not require heavy construction activities with solar stands bored into soil. Based on continued bird surveys through the construction phase it is proposed to identify breeding sites and create a 150m buffer surrounding the zone (Goodship, 2022). Construction will be avoided here until fledging has occurred.	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Low. Low sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
Golden Plover	Direct Habitat Loss	30 sightings from within site (max of 262 birds interacting with site); Higher numbers observed in the surrounds. Within the overall site section 1 had most sightings. This species favours stubble and grassland with a very short sward. In total it is predicted that 35.34 Ha of Habitat will be lost during the implementation of the current proposed development as the mitigation section will outline, a new designated area within the site boundary will be managed for this species. After mitigation, the habitat reduction will see a loss of 1.5% within the 5km surrounding area of the site. According to table 4-1 a loss of between 1 and 5% habitat equates to a low impact Overall, the site was used by smaller flock numbers in comparison to those found in the hinterland, although hinterland figures are not of national importance.	Permanent and of low magnitude and will result in long-term effect.	Occurs once, long term	The magnitude of the impact is assessed as low. Medium sensitivity species + low impact = low effect significance.
	Displacement and barrier effect	The IECS Toolkit26 (EU, 2010) suggests that golden plover is of moderate sensitivity to disturbance. There is the potential of disturbance to wintering Golden Plover located onsite through construction phase activities. Golden Plover showed the highest level of activity in the Western portion of the site. Based on wintering surveys, tillage in this section will be retained to ensure access to suitable habitat for this species. Construction activity in this zone will be limited to time when the species is not present.	Temporary and of low to negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted
Kestrel	Direct Habitat Loss	The development footprint is dominated by improved grassland and tillage with associated hedgerows and treelines, providing suitable foraging habitat for the species. 21 observations of Kestrel were noted during surveys, 14 of which were determined to be interacting with the site. Kestrel can nest in a variety of substrates such as rock ledges, old corvid stick nests, bird boxes, buildings etc. Due to mitigation by design only minor impacts will occur on treelines and hedgerows thus no net loss of breeding habitat is anticipated. The placement of solar panels on grassland will result in a change of land use of hunting habitat for the species. Given passerines are likely to remain unaffected by the presence of solar panels no net loss of prey species is anticipated. No evidence of breeding kestrel was found.	Permanent, slight negative	Occurs once, irreversible	The magnitude of impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
	Displacement and barrier effect	There is the potential of disturbance to breeding Kestrel through construction phase solar panel arrays, or because the construction activities will disturb the birds and displace them from the area. Foraging and commuting birds may temporarily avoid construction areas owing to the noise and increased activity. Construction of solar farms does not require heavy construction activities with solar stands bored into soil. Construction phase breeding bird surveys will identify if breeding kestrel and create a 200m buffer (NatureScot 2022) where construction will be delayed until after fledging.	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted
Meadow Pipit	Direct Habitat Loss	The development footprint is dominated by improved grass and tillage, which provides some suitable nesting, roosting and foraging habitat for the species. Meadow pipit was observed 3 times during VP's, interacting with the site only twice. This species was noted in much higher numbers during breeding bird surveys and was observed 66 times (A single confirmed breeding onsite and 58 contacts with Possible or Probable Breeding). The majority of the site will still be used as grassland post construction thus this species ability to occupy the site will remain.	Permanent and of medium magnitude	Occurs once, irreversible	The magnitude of the impact is assessed as Low. Medium sensitivity species + Low to medium Impact = Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	There is the potential of disturbance to breeding meadow Pipit because the construction activities will disturb birds and displace them from the area. Based on continued bird surveys through the construction phase it is proposed to identify breeding sites and create a 50m buffer surrounding the zone (50m buffer is based on IECS Toolkit26). Works will avoid key breeding periods with works continuing after fledging.	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Snipe	Direct Habitat Loss	The development footprint is dominated by improved grassland, which provides some suitable nesting, roosting and foraging habitat for the species particularly close to patches of wet grassland in section 4. Dedicated breeding wader surveys show the site was not used as a breeding site for this species. Post construction, the hydrological regime of the site will remain the same thus little long term impacts are expected.	Long term slight Negative	Occurs once, irreversible	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negliable Impact = Very Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect	
	Displacement and barrier effect	Some displacement may occur. Pierce-Higgins et al (2012) note that snipe densities declined to the order of ca. 50% within 500 metres of turbines at wind farms during construction. Construction activities will be limited to the development footprint so direct disturbance effects will not extend beyond the works areas. There is potential for indirect disturbance to roosting (and potentially breeding) snipe from noise and visual stimuli associated with construction activities. Construction phase breeding surveys will re-survey lands and should breeding snipe be found a disturbance zone of 400m (BES, 2020) will be put in place until fledging has occurred.	Temporary and of low to negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Medium. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted	
Yellowhammer	Direct Habitat Loss	The only area within the site which will see substantial loss of treelines is in section 1 (west of site). No evidence of possibly, probably or confirmed breeding Yellowhammer were found in this area. For the rest of the site existing hedges and trees will be retained. Several areas currently used as tillage will be transformed to grassland. Atypically, within the site, yellowhammer were not particularly associated with these tillage areas and were regularly noted in grassy fields. Grassland will remain post construction thus impacts on this species due to habitat change are less than typically expected. Given the loss of tillage and following the precautionary approach, a mitigation strategy has been put in place to create significant areas of bird crop cover (11.16Ha) within sections 1 and 2. This crop will not be harvested so all grain will remain available for passerines. These areas will be resown every year for the lifespan of the development thus ensuring a food source within the site. The addition of bird crop cover in section 2 will allow for the expansion of Yellowhammers range into these fields.	Permanent and of negligible magnitude	Occurs once, irreversible	The magnitude of the impact is assessed as Medium. Medium sensitivity species + negligible Impact = Very Low effect significance within the site. No likely significant effects at a local level are predicted	
	Displacement and barrier effect	There is the potential of disturbance to breeding Yellowhammer because the construction activities will disturb birds and displace them from the area.	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted	
		Based on continued bird surveys through the construction phase it is proposed to identify breeding sites and create a 50m buffer surrounding the zone. Works will avoid key breeding periods with works continuing after fledging.				

5 Mitigation and Enhancement

- An Ornithologist ECoW will be employed during the construction phase to micromanage construction locations to avoid disturbance on key species. Species of interest will be identified and management plans implement to avoid significant impacts.
- Whilst halting the construction to times outside the wintering period was considered the scale of works was not considered impactful enough to negatively impact wintering birds both within the site and in the surrounds. Rather an ECoW will be involved in the construction and limit construction in areas based on when they are of value to birds. The monitoring section above outlines how bird surveys will continue during the construction phase and based on these results micro exclusion zones can be put in place. Table 4-3 goes through potential buffer zones and timings when works may need to be halted here. This method based on co-operation between overseeing ornithologist, site manager will allow works to continue throughout the year whilst also avoiding disturbances to key species at vulnerable times.
- Minimum 5m buffer for drain ditches, hedgerows and tree lines.
- The proposed development will result in some loss of tillage. This tillage was utilised during winter months by golden plover. In order to prevent losses reaching medium magnitude for the local populations, tillage will be maintained to the south of section 1 as well as a new area located in section 3 (see figure 5-1). Lands identified should be planted with tillage each year and be unoccupied from October to March inclusive. Winter sward height no greater than 7cm. Increasing the invertebrate level will occur by eliminating the use of herbicides, pesticides and managing lands organically.
- A construction exclusion zone of 100 m will be implemented where breeding barn owl where observed nesting. Construction should not occur during breeding season at this location. Figure 5-2 shows the buffer outline for the breeding season exclusion zone.
- Woodland will be planted in Section 1 and 4 to mitigate the loss of linear features onsite during the construction phase. Two areas are detailed below, a 4.34Ha plot located adjacent to the ring fort feature in section 1. An additional strip of woodland along the Southern boundary of the motorway in Section 4.
- Two ponds will be created within section 1. These ponds will be hidden from view and will be of use by duck and wader species known to be found in the hinterlands (mallard, tufted duck, cormorant, little grebe). A lighting plan will ensure these ponds remain dark at night, increasing the ecological value.

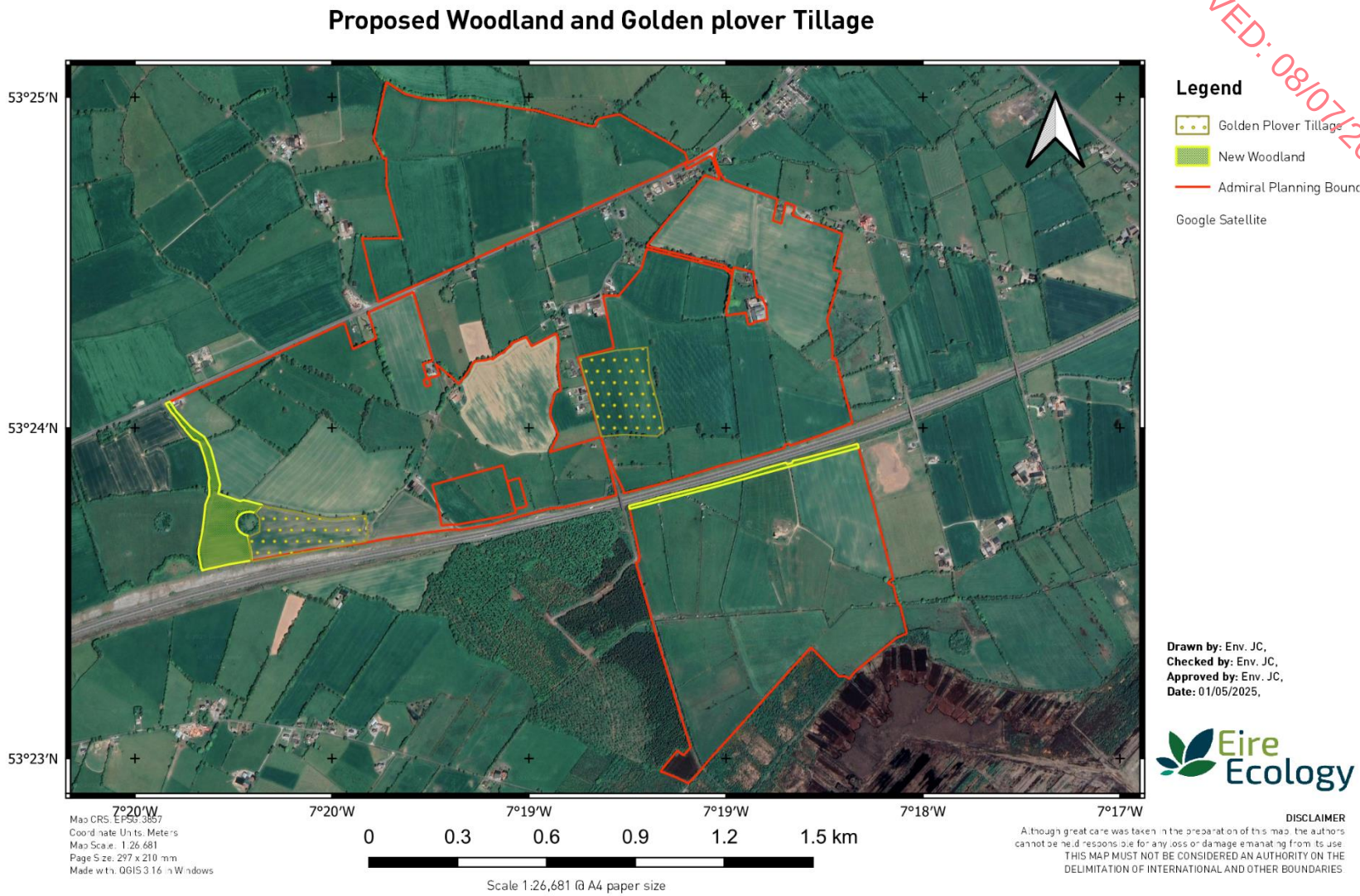

Figure 5-1: Enhancement; native woodland creation and areas for golden plover

Figure 5-2: Location of Breeding Barn owl zone to be avoided during the breeding season.

6 Residual Impacts after Mitigation

Residual impacts are those that occur after the mitigation measures have taken effect. The mitigation measures outlined in section 5 will minimise impacts associated with the construction phase of the proposed development.

No significant indirect impacts on the habitats associated with rare and protected birds found utilising the site in the wintering and breeding seasons as long as best practice measures such as those outlined in Mitigation and Enhancement are implemented fully.

As such residual Impacts on bird species will be low.

7 Conclusion

This report provides details from bird surveys conducted in the townlands of Farthingstown, Oldtown and Kiltotan, Co. Westmeath. The site was found to have value of local high for barn owl, buzzard, golden plover, snipe and yellowhammer while a value of local medium for kestrel and meadow pipit. No species associated with designated European or National sites were found during surveys.

Mitigation measures proposed will reduce the impact on all bird species while enhancement measures should result in a net overall benefit for the local bird population. The proposed development will not have a significant impact on any bird species on a local or county basis.

8 References

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9 APPENDIX 1 – Tables and Figures

Table 9-1 Survey dates and environmental data

VP Location	Date	Sunset / sunrise	Start / finish	Cloud	Wind direction	Visibility	Rain
2	20/09/2024	07:09 / 19:26	10:00-13:00	1	0	4	0
2	20/09/2024	07:09 / 19:26	13:30-16:30	1	0	5	0
3	23/09/2024	07:14 / 19:19	06:17-09:17	3	2	5	0
1	23/09/2024	07:14 / 19:19	06:17-09:17	3	2	5	0
1	23/09/2024	07:14 / 19:19	09:47-12:47	3	2	5	0
3	23/09/2024	07:14 / 19:19	09:47-12:47	3	2	5	0
Hinterland	25/09/2025	07:14 / 19:19	09:15-17:30	2	2	5	0
3	09/10/2024	07:42 / 18:46	12:46-19:16	2	3	5	1-0
1	14/10/2024	07:51 / 18:39	13:00 -16:00	1	SE 1	5	0
1	14/10/2024	07:51 / 18:39	16:30 -19:40	2	SE1	5	0
Hinterland	15/10/2024	07:53 / 18:27	09:15-17:30	3	SE2	5	2
2	17/10/2024	07:57 / 18 :23	13:00-16:00	3	W2	5	3
2	17/10/2024	07:57 / 18 :23	16:30-19:30	3	W2	5	3
2	07/11/2024	07:36 / 16:40	06:40 - 09:40	3	SW1	5	0
2	07/11/2024	07:36 / 16:40	10:20-13:20	3	W1	5	0
3	14/11/2024	07:49 / 16:28	06:45-09:45	3	NW2	3	1
3	14/11/2024	07:49 / 16:28	10:20 -13:20	3	NW2	5	0
1	15/11/2024	07:51 / 16:27	06:45-09:45	3	NW1	3	0
1	15/11/2024	07:51 / 16:27	10:15-13:15	3	SW2	3-4	3
Hinterland	16/11/2024	07:53 / 16:25	08:15-16:15	3	W 3	5	2
2	11/12/2024	08:31 / 16:06	10:15-13:15	3	NE 1	5	0
2	11/12/2024	08:31 / 16:06	14:00-17:00	3	NE1	4	0
Transect 1	12/12/2024	08:32 / 16:05	9:00 - 17:00	3	E1	4	0
Transect 2	13/12/2024	08:32 / 16:05	09:00-17:00	2	E2	5	0
3	17/12/2024	08:38 / 16:07	9:40 - 16:10	3	SE	4	2
1	16/12/2024	08: 39 / 16:08	10:10 - 13:10	3	SE	5	1
1	16/12/2024	08: 39 / 16:08	13:40 - 16:40	3	SE	5	2
2	13/01/2025	08:34 / 16:33	07:00-10:00	3	SW2	4	3
2	13/01/2025	08:34 / 16:33	11:00-14:00	3	SW2	3	3
1	21/01/2025	08:26 / 16:47	11:01 - 14:01	3	S2	3	3
1	21/01/2025	08:26 / 16:47	14:31 - 17:31	3	W2	3	3
3	15/01/2025	08:32 / 16:36	10:48 - 13:48	3	E1	3	3
3	15/01/2025	08:32 / 16:36	14:18-17:18	3	E1	3	3
Transect 1	15/01/2025	08:32 / 16:36	09:00-17:15	1	S2	5	0
Transect2	16/01/2025	08:31 / 16:38	09:00-17:00	2	S3	5	0
3	06/02/2025	08:01 / 17:17	14:00 -17:00	1	S1	5	0
2	19/02/2025	07:35 / 17:43	11:30-14:30	2	SE2	5	3
1	19/02/2025	07:35 / 17:43	15:00-18:00	3	SE4	4	3
Thermal Transects	19/02/2025	07:35 / 17:43	6:15:00-08:45	3	SE3		3
Habitat mapping	20/02/2025	07:33 / 17:45	08:30-16:30	2	SE2	5	2
2	18/03/2025	06:32 / 18:34	06:00-09:00	1	E1	4	0
3	18/03/2025	06:32 / 18:34	10:40-13:40	2	E2	5	0
3	19/03/2025	06:30 / 18:36	06:45-09:45	1	E1	5	0
1	19/03/2025	06:30 / 18:36	10:40-13:40	1	SE1	5	0
1	20/03/2025	06:28 / 18:41	06:30-09:30	1	SE1	4	0
2	20/03/2025	06:28 / 18:41	10:20-13:20	1	SE1	4	0

VP Location	Date	Sunset / sunrise	Start / finish	Cloud	Wind direction	Visibility	Rain
Breeding bird survey	14/04/2025	05:54	09:30-18:00	2	W/SW 2	5	3
O Brien and Smith	15/04/2025	05:54	05:50-08:40	2	NW1	5	0
O Brien and Smith	15/04/2025	09:12	18:15-21:15	3	N2	5	
Breeding bird survey	16/04/2025	05:50	09:45	3	NW 2	4	4
O Brien and Smith	19/04/2025	21:16	18:10-21:16	3	E1	3	1
Breeding bird survey	20/04/2025		09:30-18:30	3	SE1	4	2
O Brien and Smith	21/04/2025	05:45	05:45-08:30	3	W1	5	2
Breeding bird survey	04/05/2025	05:05	09:30-18:00	1	NE1	5	0
Breeding bird survey	05/05/2025	05:05	09:30-18:00	1	NE1	5	0
Breeding bird survey	06/05/2025	05:05	09:30-17:15	1	SE1	5	0
O Brien and Smith	07/05/2025	05:01	0500-07:30	2	E1	5	0
O Brien and Smith	07/05/2025	21:55	18:46-10:00	1	E2	5	0

Table 9-2: Weather Key

Visibility		Rain		Cloud Cover	
1	N visibility	0	None	1	0-32
2	Limited (<500m)	1	Drizzle Mist	2	33-65
3	Poor (<1km)	2	Light Showers	3	66-100
4	Moderate (1-2km)	3	Heavy Showers		
5	Good (>2km)	4	Heavy Rain		

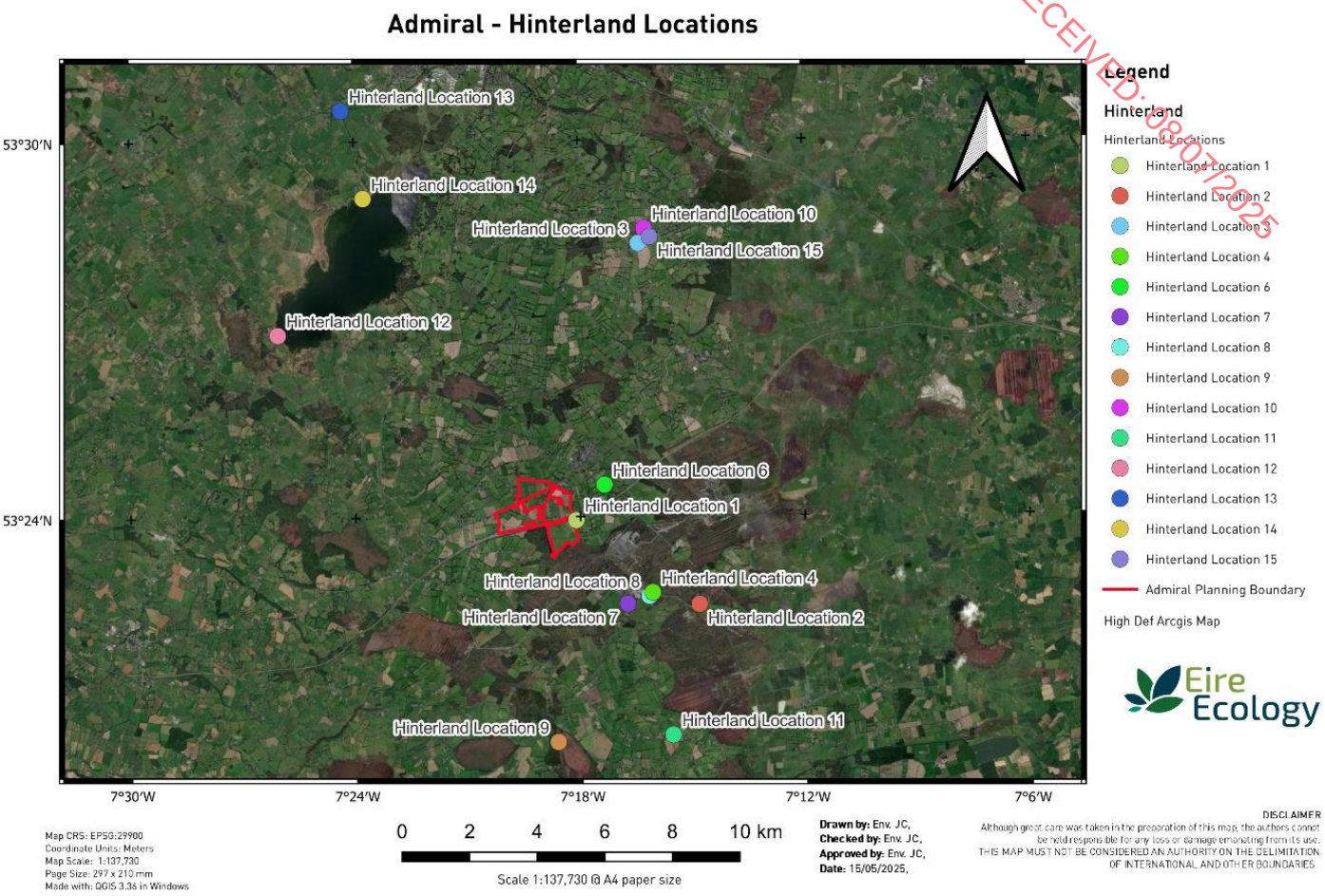

Figure 9-1: Hinterland Locations

Table 9-3 VP Results

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
20/09/2024	2	Migratory	1	Buzzard	1	10:30	30	In	Improved Grassland/Treeline	Flying	Mobbed by swallows
20/09/2024	2	Migratory	2	Buzzard	1	11:08	30	In	Improved Grassland/Treeline	Flying	Flew over edge of site then over hedge
20/09/2024	2	Migratory	3	Buzzard	1	11:24	6	In	Improved Grassland	Flying	Over big farm shed north of road, then into trees
20/09/2024	2	Migratory	4	Golden Plover	4	12:10	20	In	Improved Grassland	Flying	Flew in from west, landed on field within site, however, could not be seen by surveyor after they landed
20/09/2024	2	Migratory	5	Buzzard	4	12:46	480	In		Flying	4 Buzzard soaring high over woodland, 3 disappeared at 12.53 and 1 remained until 12.54. Possible juvenile flock
20/09/2024	2	Migratory	6	Kestrel	1	14:35	120	In	Improved Grassland	Hunting	Hunting over site
20/09/2024	2	Migratory	7	Buzzard	2	14:44	60	In		Flying	Soaring over woodland west of site
20/09/2024	2	Migratory	9	Kestrel	1	15:20	70	In	Improved Grassland	Hunting	Hovering over site
20/09/2024	2	Migratory	10	Buzzard	1	15:37	120	In	Improved Grassland	Flying	Mobbed by two HC
20/09/2024	2	Migratory	11	Buzzard	1	16:02	10	In	Improved Grassland	Flying	Seen briefly but could be heard for a while
20/09/2024	2	Migratory	12	Buzzard	2	16:10	60	In	Improved Grassland	Flying	Soaring
20/09/2024	2	Migratory	13	Buzzard	2	16:13	120	In	Improved Grassland	Flying	North section of site
23/09/2024	3	Migratory	1	Great Cormorant	1	07:50	3	In	Improved Grassland	Flying	Flew over site, did not associate with site
23/09/2024	3	Migratory	2	Lesser Black-backed Gull	5	08:07	7	Buffer	Improved Grassland	Flying	Flew over site, did not associate with site
23/09/2024	3	Migratory	3	Buzzard	1	10:32	2	Buffer	Improved Grassland	Flying	Flew over site, did not associate with site
23/09/2024	3	Migratory	4	Meadow Pipit	6	11:01	6	In	Improved Grassland	Flying	Flew over site, did not associate with site

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
09/10/2024	3	Migratory	1	Buzzard	1	12:46	30	Buffer	Treeline	Flying	Soaring over mature trees, north of site
09/10/2024	3	Migratory	2	Meadow Pipit	22	13:27	10	In	Improved Grassland	Flying	Flew over, did not land on site
09/10/2024	3	Migratory	3	Buzzard	2	13:38	60	Buffer	Improved Grassland/Treeline	Flying	Soaring high, adjacent to site (NW)
09/10/2024	3	Migratory	4	Golden Plover	6	13:39	60	In	Improved Grassland	Flying	Circling high over site, then flew south. Did not land on site
09/10/2024	3	Migratory	5	Buzzard	1	14:46	30	In	Improved Grassland	Flying	West section of site
09/10/2024	3	Migratory	6	Buzzard	2	14:51	120	In	Improved Grassland	Hunting	1 buzzard flying low over site, briefly joined by second buzzard
09/10/2024	3	Migratory	7	Golden Plover	1	17:26	40	In	Improved Grassland	Flying	Flew lowish over site from west to east
09/10/2024	3	Migratory	8	Sparrowhawk	1	17:31	120	In	Improved Grassland	Hunting	Perched on ESB post in middle of site, then flew low into treeline to east of site
14/10/2024	1	Winter	1	Yellowhammer	1	13:06	5	In	Tillage/Treeline	Perched / Calling	Flew E after calling from ash tree
14/10/2024	1	Winter	2	Yellowhammer	1	13:08		In	Tillage/Treeline	Perched / Calling	Didn't see it leave
14/10/2024	1	Winter	3	Sky Lark	1	13:30	5	In/Out	Tillage	Flying	Flying S/SE to the E of VP
14/10/2024	1	Winter	4	Kestrel	1	13:31	10	In	Tillage	Flying	Flew off Ash tree flew W 5-10 m
14/10/2024	1	Winter	5	Kestrel	1	13:44	20	In	Tillage	Flying	Flew over tillage W-E 5-10m
14/10/2024	1	Winter	6	Golden Plover	26	13:46	180	In	Tillage	Flying	Flew in from the E circled as if they were about to land, kept flying NW
14/10/2024	1	Winter	7	Golden Plover	64	13:56	240	In	Tillage	Flying/circling	Flew in from the N circled before flying back out N again 40-60m
14/10/2024	1	Winter	8	Buzzard	1	13:59	40	In	Tillage	Flying	Flew NE to SE 5-10m through the site
14/10/2024	1	Winter	9	Buzzard	1	14:05	180	In/Out	Improved Grassland	Circling	Circling off site to the W
14/10/2024	1	Winter	10	Buzzard	1	14:06	50	In	Tillage	Flying	Flew through the site SE-NW

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
14/10/2024	1	Winter	11	Buzzard	1	14:55	10	In	Treeline	Flying / Perched	Flying W along treeline mobbed by HC perched in tree out of site
14/10/2024	1	Winter	12	Kestrel	1	15:09	25	In	Tillage	Flying / Perched	Flew in from the N circled and flew to ash tree W of VP and perched
14/10/2024	1	Winter	13	Kestrel	1	15:16	15	In	Tillage	Perched / Flying	Flew off treeline, Flew W/SW 5-10m
14/10/2024	1	Winter	14	Kestrel	1	15:31	300	In	Tillage	Circling / Flying / Hunting	Flew in from the W circled from 15-60m hunted before carrying on N (Female same bird as last 2 entries)
14/10/2024	1	Winter	15	Yellowhammer	1	15:44	180	In	Treeline	Singing	Singing from treeline to the W
14/10/2024	1	Winter	16	Yellowhammer	1	15:50	10	In	Built	Flying / Perched	Flying S-N landed in ash tree to N of VP
14/10/2024	1	Winter	17	Yellowhammer	3	17:35	5	In	Treeline	Flying / Perched	Flying E-W perched into Ash tree N of VP.
14/10/2024	1	Winter	18	Buzzard	2	17:39	90	In	Improved Grassland/treeline	Treeline and improved grassland	Flew from N-S into treeline , 1 had prey other looked to be begging.
17/10/2024	2	Winter	1	Golden Plover	10	13:08	480	In	Tillage GS4	Flying / Perched	Circling landed in field to SW
17/10/2024	2	Winter	2	Golden Plover	3	14:36	300	In	Tillage/Wet Grassland	Flying / Circling	Circled in from the E circled tilled field before flying NE
17/10/2024	2	Winter	3	Kestrel	1	14:57	40	In	Wet grassland	Hunting / Perched	Hunting over grassland flew W and perched.
17/10/2024	2	Winter	4	Yellowhammer	1	15:04	30	In	Tillage	Flying	Flew E over the site.
17/10/2024	2	Winter	5	Kestrel	1	15:28	300	In	Wet grassland	Hunting	Hunting Wet grassland to the SW of VP
17/10/2024	2	Winter	6	Golden Plover	8	15:33	60	In	Tillage/Improved grassland	Flying	Flee N-S turned back N
17/10/2024	2	Winter	7	Buzzard	1	16:32	40	In	Improved grassland	Flying	Flying E-W 5-10m
17/10/2024	2	Winter	8	Whooper Swan	9	17:04	90	In	Improved grassland	Flying	Flying N-S over NE corner of site.

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
17/10/2024	2	Winter	9	Golden Plover	5	17:48	240	In	Tillage	Circling / Perched	Circled in from the E landed on W side of tilled field that VP is in.
17/10/2024	2	Winter	10	Buzzard	1	17:56		In	Treeline	Perched	Perched in a Ash tree.
17/10/2024	2	Winter	11	Golden Plover	24	18:39	90	Out	Built	Circling	Circling off to the west about 2km..
23/09/2024	1	Migratory	1	Buzzard	1	07:44	10	In	Improved Grassland	Flying	Flying
23/09/2024	1	Migratory	2	Buzzard	1	07:57	5	In	Improved Grassland	Flying	Flew into tree
23/09/2024	1	Migratory	3	Buzzard	1	08:19	30	In	Improved Grassland	Flying	Flew E into tree. Second bird. First still perched in tree to W.
23/09/2024	1	Migratory	4	Buzzard	1	11:02	5	In	Improved Grassland	Flying	Flew into tree to NW
14/11/2024	3	Winter	1	Snipe	1	06:51	180	In	Improved Grassland	Flying	-
14/11/2024	3	Winter	2	Buzzard	1	07:30	40	In	Improved Grassland	Flying	-
14/11/2024	3	Winter	3	Whooper Swan	1	08:34	-	In	Improved Grassland	Flying	-
14/11/2024	3	Winter	4	Whooper Swan	5	08:44	-	In	Improved Grassland	Flying	-
14/11/2024	3	Winter	5	Buzzard	1	09:15	60	In	Improved Grassland	Flying	-
14/11/2024	3	Winter	6	Golden Plover	11	10:56	60	In	Improved Grassland	Flying	-
14/11/2024	3	Winter	7	Yellowhammer	1	11:23	-	In	Improved Grassland	Flying	-
14/11/2024	3	Winter	8	Black-headed Gull	1	12:15	-	In	Improved Grassland	Mobbing PE	-
14/11/2024	3	Winter	8	Peregrine Falcon	1	12:15	-	In	Improved Grassland	Being Mobbed by BH	-
14/11/2024	3	Winter	9	Yellowhammer	1	12:47	30	In	Improved Grassland	Flying	-
14/11/2024	3	Winter	10	Sparrowhawk	1	12:48	5	In	Improved Grassland	Flying	-
15/11/2024	1	Winter	1	Blackbird	1	08:08	-	In	Improved Grassland	Perched / Calling	-

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
15/11/2024	1	Winter	2	Yellowhammer	1	08:06	-	In	Improved Grassland	Perched / Calling	-
15/11/2024	1	Winter	3	Golden Plover	3	08:23	120	In	Improved Grassland	Flying	-
15/11/2024	1	Winter	4	Kestrel	1	08:38	-	Buffer	Improved Grassland	Flying	-
15/11/2024	1	Winter	5	Kestrel	92	09:20	2820	In	Improved Grassland	Flying	-
15/11/2024	1	Winter	6	Golden Plover	93	09:26	-	In	Improved Grassland	Flying / Perched	-
15/11/2024	1	Winter	7	Yellowhammer	1	09:32	-	In	Improved Grassland	Flying	-
15/11/2024	1	Winter	8	Buzzard	1	09:33	15	Buffer	Improved Grassland	Flying	-
15/11/2024	1	Winter	9	Buzzard	1	09:39	10	Buffer	Improved Grassland	Flying	-
15/11/2024	1	Winter	10	Golden Plover	120	10:56	1680	In	Tillage	Flying	-
15/11/2024	1	Winter	11	Sparrowhawk	1	10:58	-	In	Tillage	Flying	-
15/11/2024	1	Winter	12	Northern Lapwing	3	11:01	120	In	Tillage	Flying	-
15/11/2024	1	Winter	13	Golden Plover	14	11:03	30	In	Tillage	Flying	-
15/11/2024	1	Winter	14	Golden Plover	5	11:10	10	In	Tillage	Flying	-
15/11/2024	1	Winter	15	Golden Plover	19	11:15	10	In	Tillage	Flying	-
15/11/2024	1	Winter	16	Golden Plover	86	12:16	60	In	Tillage	Flying	-
07/11/2024	2	Winter	1	Whooper Swan	5	08:01	30	In/Out	Tillage	flying	Flew in from bog to south and landed in pond adjacent to site
07/11/2024	2	Winter	2	Whooper Swan	10	08:12	45	In/Out	Flying	flying	Flew S to N over site
07/11/2024	2	Winter	3	Whooper Swan	6	08:14	75	In/Out	Flying	flying	Flew S to N over site
07/11/2024	2	Winter	4	Meadow Pipit	3	08:15	20	In/Out	Flying	flying	Flying over BC1 on site

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
07/11/2024	2	Winter	5	Redwing	2	08:49	300	In	Treeline	perched	Flock perched in tree on site boundary, also several flocks flew over site throughout the morning
07/11/2024	2	Winter	6	Buzzard	4	11:09	20	In/Out	Flying	flying	Flew over site from S being mobbed by 2x HC, then landed in field within site
07/11/2024	2	Winter	7	Buzzard	7	11:25	30	In/Out	Flying	flying	Flying
07/11/2024	2	Winter	8	Buzzard	5	12:53	20	In/Out	Flying	flying	Flying, then landed in tree
07/11/2024	2	Winter	9	Whooper Swan	3	13:07	60	Out	Flying	flying	Flying over bog
11/12/2024	2	Winter	1	Buzzard	1	10:22		Out	Treeline	Perched	Perched on edge of the site didn't ser it leave the perch
11/12/2024	2	Winter	2	Buzzard	1	10:26		In	Treeline	Perches	Perched in Treeline didn't see it leave
11/12/2024	2	Winter	3	Buzzard	1	10:49		In	Treeline	Perched	Perched in treeline believed to be same bird as number 2.
11/12/2024	2	Winter	4	Golden Plover	100	11:23	240	Out	Bog	Circling	Circling 2-3 km to the E over worked bog 50-150m
11/12/2024	2	Winter	5	Kestrel	1	11:36	30	In	Improved grassland	Flying	Flew S-N through the site just E of VP perched N of motorway.
11/12/2024	2	Winter	6	Buzzard	1	11:41	15	In	built	Flying/perched	Flew along motorway perched E of VP
11/12/2024	2	Winter	7	Buzzard	1	11:45	10	In	Treeline	Flying	Flew N over motorway.
11/12/2024	2	Winter	8	Buzzard	1	12:00	15	In	Tillage	Hunting	Hunted the E edge of the site over tillage no sticks
11/12/2024	2	Winter	9	Yellowhammer	1	12:50			Treeline	Perched	Heard calling not seen.
11/12/2024	2	Winter	10	Kestrel	1	12:55	300	Out	Bog	Hunting	Hunting bog to the S of the site off site.
11/12/2024	2	Winter	11	Golden Plover	115	14:16	360	Out	Improved grassland	Circling	Circling off site 1-2 km S 50-120m
11/12/2024	2	Winter	12	Golden Plover	46	15:35	240	Out	Improved grassland	Circling	Circled before dropping out of sight N side of the motorway.

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
11/12/2024	2	Winter	13	Buzzard	1	15:49	30	In	Improved grassland	Flying/Perched	Flew in from the west perched E of where a farmer wad feeding cattle
16/12/2024	1	Winter	1	Golden Plover	37	10:20			Improved Grassland	Flying	Flew into site from N-S
16/12/2024	1	Winter	2	Golden Plover	3	10:25	1320		Improved grassland	Flying/Perched	3 Flew in and landed on site, several perched in field already, 32 in total
16/12/2024	1	Winter	3	Yellowhammer	1	11:15			Improved grassland		In hedgerow alongside chaffinch & GT
16/12/2024	1	Winter	4	Golden Plover	20	12:20	270		Improved grassland		Circling Field for 4.5 minutes
16/12/2024	1	Winter	5	Golden Plover	3	14:36	20		Improved grassland		Flew in from West, did look over tilled field and flew west again
16/12/2024	1	Winter	6	Kestrel	1	14:51	30		Improved grassland		Flew over the site from N - S
17/12/2024	3	Winter	1	Great Cormorant	1	11:02	30	In/Out	Improved grassland	Flying	Cormorant was flying over site, headed east.
17/12/2024	3	Winter	2	Golden Plover	4	11.39	40	In/Out	Improved grassland	Flying	They flew through the site, headed S/SW.
17/12/2024	3	Winter	3	Herring Gull	1	12:01	70	In/Out	Improved grassland	Flying	Herring Gull was flying through, headed east.
17/12/2024	3	Winter	4	Buzzard	1	12:25	60	Out	Improved grassland	Flying	Buzzard was flying, most likely hunting. Was eventually mobbed by several rooks.
17/12/2024	3	Winter	5	Buzzard	1	13:20	75	Out	Improved grassland	Flying	Buzzard was flying low until dropping below the tree line.
17/12/2024	3	Winter	6	Redwing	35	14:54	5	In	Improved grassland	Feeding	Flock were feeding in the grass and were perched in mature ash tree.
17/12/2024	3	Winter	7	Buzzard	1	15:51	85	Out	Improved grassland	Flying	Buzzard was flying low until dropping below the tree line.
13/01/2025	2	Winter	1	Buzzard	1	08:20		In	Treeline	Calling	Not seen heard calling to the NE
13/01/2026	2	Winter	2	Yellowhammer	1	08:56			Treeline	Calling	Perched in treeline just S of motorway calking.
13/01/2027	2	Winter	3	Wigeon	4	11:54	40	In	Tillage	Flying	Flew from the E over the site turned S/SE possibly came off pond to the E.

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
13/01/2028	2	Winter	4	Buzzard	1	12:18	240	In/Out	Tillage/Improved grassland	Hunting/flying	Hunted in for the E over the E side of the site turned N across the motorway turned W.
13/01/2029	2	Winter	5	Kestrel	1	12:28	120	Out	Peat bog/Improved Grassland	Hunting	Hunting Bog and grassland to the SE of VP2.
13/01/2030	2	Winter	6	Buzzard	1	13:40	1200	In/Out	Peatbog/rough grassland	Hunting/perched	Hunted in from the W along S edge pf site
15/01/2025	1	Winter	1	Golden Plover	30	11:13	-	In	Improved grassland	Flying	-
15/01/2025	1	Winter	2	Golden Plover	30	11:31	-	In	Improved grassland	Flying	-
15/01/2025	1	Winter	3	Golden Plover	6	11:39	-	In	Improved grassland	Flying	-
15/01/2025	1	Winter	4	Golden Plover	25	13:35	-	In	Improved grassland	Flying	-
21/01/2025	3	Winter	1	Golden Plover	10	14:18	-	In	Improved grassland	Flying	GP settled in field, then flew north
06/02/2025	3	Winter	1	Golden Plover	2	08:57	-	In	Improved grassland	Flying	-
06/02/2025	3	Winter	2	Buzzard	1	09:35	-	In	Improved grassland	Flying	-
06/02/2025	3	Winter	3	Black-headed Gull	2	12:08	-	Out	Improved grassland	Flying	-
06/02/2025	3	Winter	4	Golden Plover	35	12:28	-	In	Improved grassland	Flying	-
17/02/2025	VP1	Winter	1	Buzzard	1	12:31	60	Out	Tillage, Improved Grassland	Flying	-
17/02/2025	VP1	Winter	2	Golden Plover	52	12:33	150	Out	Tillage, Improved Grassland	Flying	-
17/02/2025	VP1	Winter	3	Buzzard	2	12:28	300	In	Tillage, Improved Grassland	Flying/Hunting	-
17/02/2025	VP1	Winter	4	Golden Plover	2	13:00	15	In	Tillage	Flying	-
17/02/2025	VP1	Winter	5	Golden Plover	3	13:06	120	In	Tillage/Built	Circling	-
17/02/2025	VP1	Winter	6	Golden Plover	1	13:51	90	In	Improved Grassland	Flying	-

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
17/02/2025	VP1	Winter	7	Golden Plover	3	14:54	20	In	Tillage	Flying, Perched	-
17/02/2025	VP2	Winter	1	Kestrel	1	15:39		In	Improved Grassland	Perched	-
17/02/2025	VP2	Winter	2	Snipe	2	15:56	30	In	Improved Grassland	Flying	-
17/02/2025	VP2	Winter	3	Woodcock	2	1817	10	Out	Broadleaf forestry	Flying	-
19/02/2025	VP2	Winter	1	Kestrel	1	11:34	309	In	Wet Grassland/peatbog	Hunting	-
19/02/2025	VP2	Winter	2	Buzzard	1	12:13	30	In	Tillage/Improved grassland	Flying	-
19/02/2025	VP2	Winter	3	Buzzard	1	12:42		In/Out	Improved Grassland	Hunting	-
19/02/2025	VP2	Winter	4	Kestrel	1	12:44	240	In/Out	Improved Grassland	Mobbing and Hunting	-
19/02/2025	VP2	Winter	5	Golden Plover	375	12:56	360	Out	Peat Bog	Circling	-
19/02/2025	VP2	Winter	6	Kestrel	1	13:29	120	In	Wet grassland.	Hunting	-
19/02/2025	VP1	Winter	1	Kestrel	1	17:36	25	In/Out	Tillage/ Built	Flying	-
18/03/2025	VP2	Winter	1	Yellowhammer	1	06:58	-	Out	Hedgerow	Singing	-
18/03/2025	VP2	Winter	2	Yellowhammer	1	08:15	-	In	Hedgerow	Singing	-
18/03/2025	VP2	Winter	3	Hen Harrier	1	08:34	15	In/Out	Wet grassland/Scrub	Hunting	-
18/03/2025	VP2	Winter	4	Golden Plover	141	09:23	120	In /Out	Wet Grassland	Flying	-
18/03/2025	VP2	Winter	5	Northern Lapwing	3	09:23	60	In/Out	Wet Grassland	Flying	-
18/03/2025	VP3	Winter	1	Yellowhammer	1	10:40	-	In	Hedgerow	Perched	-
18/03/2025	VP3	Winter	2	Yellowhammer	1	10:40	-	In	Hedgerow	Perched	-
18/03/2025	VP3	Winter	3	Buzzard	1	11:45	-	In/Out	Hedgerows, Improved grassland	Flying	Circled onto the site circled off to the W 30-150m

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
18/03/2025	VP3	Winter	4	Buzzard	1	12:05	-	Out	Improved Grassland	Flying	Circling off site to the N possibly same bird.
18/03/2025	VP3	Winter	5	Buzzard	1	12:25	-	In/Out	Improved Grassland	Flying	Circled in from the N flew W off site
18/03/2025	VP3	Winter	6	Buzzard	1	12:27	-	In	Treeline	Perched	Perched on site in an Ash tree to the W.
18/03/2025	VP3	Winter	8	Buzzard	1	13:12	-	In/Out	Improved Grassland	Flying	Flying
19/03/2025	VP3	Winter	1	Yellowhammer	2	07:09	-	In	Built area sheep feeder	Foraging	Foraging
19/03/2025	VP3	Winter	2	Yellowhammer	1	07:42	-	In	Treeline	Calling	Calling
19/03/2025	VP3	Winter	3	Yellowhammer	2	08:53	-	In/Out	Built up	Flying Foraging	Flying foraging
19/03/2025	VP3	Winter	4	Buzzard	1	09:42	-	In	Improved Grassland	Flying	Flew N-S through the site 5-10m.
19/03/2025	1	Winter	2	Buzzard	2	10:40	-	In	Tillage Treeline	Flying	Circling 10-20m Displaying visiting potential nest sites
19/03/2025	1	Winter	3	Yellowhammer	1	11:01	-	Out	Hedgerow	Calling	Calling from off site in hedgerow
19/03/2025	1	Winter	4	Raven	2	11:20	-	In	Pylon	Nesting	Nesting in the pylon just E of VP1
19/03/2025	1	Winter	5	Yellowhammer	1	12:04	-	In/Out	Hedgerow	Calling	Calling from hedgerow.
19/03/2025	1	Winter	6	Buzzard	1	12:11	-	In	Tillage, Treeline	Flying	Looked to be a male displaying swooping Diving at bird wile calling 5-20m
19/03/2025	1	Winter	7	Buzzard	1	13:11	-	In	Tillage, Treeline	Flying	Flew N-S stopped 3 times over 30minutes each stop marked on map
20/03/2025	1	Winter	1	Yellowhammer	2	06:28	-	In	Hedgerow	Holding Territory	Pair in hedgerow holding Territory
20/03/2025	1	Winter	2	Yellowhammer	1	06:38	-	In	Treeline	Calling	Male calling from treeline
20/03/2025	1	Winter	3	Yellowhammer	1	06:42	-	In	Hedgerow	Singing from hedgerow to the SW of VP	Singing from hedgerow to the SW of VP
20/03/2025	1	Winter	4	Snipe	1	06:59	-	In	Tillage	Calling	Calling from tillage West of VP

Date	VP	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	In /Out	Habitat	Activity	Comments
20/03/2025	1	Winter	5	Yellowhammer	1	07:10	-	Out	Hedgerow	Calling	Singing from hedgerow off site.
20/03/2025	1	Winter	6	Snipe	1	08:08	-	In/Out	Tillage	Flying	Same bird as called earlier Flew S0-20m
20/03/2025	1	Winter	7	Yellowhammer	1	08:32	-	In	Tillage	Calling	Singing from edge of the site to the W of VP.
20/03/2025	1	Winter	8	Yellowhammer	1	09:25	-	In	Treeline	Calling	A pair holding territory male calling.
20/03/2025	2	Winter	1	Buzzard	2	10:23	-	In/Out	improved grass land	Flying	Flew through the site from conifer plantation just off site to the SW. flew from the SW to N of the site.
20/03/2025	2	Winter	2	Buzzard	1	10:40	-	In/Out	improved grass land	Flying	1 flew back the same line 20 mins later 5-10m
20/03/2025	2	Winter	3	Kestrel	1	11:03	-	Out	Peat bog	Hunting	Hunting the bog to the S of the Site working its way E
20/03/2025	2	Winter	4	Golden Plover	120	12:04	-	In/Out	Wet grassland, Improved, Tillage	Flying	Flew off Field with pond in it to the E circled before flying NE
20/03/2025	2	Winter	5	Buzzard	1	12:13	-	In	Improved Grassland	Flying	/Flew E along motorway circled off to the NW 10-100m
20/03/2025	2	Winter	6	Yellowhammer	1	12:19	-	In	Hedgerow	Calling.	Singing from hedge row.
20/03/2025	2	Winter	7	Golden Plover	120	12:25	-	Out	improved grass land	Flying	Flew in from the NE circled and landed back into field with pond in it.
20/03/2025	2	Winter	8	Buzzard	2	12:42	-	In	improved grass land	Flying	-Circled in from SE corner of the site sored p, 10- 200m drifted off N/NW

Table 9-4: Breeding season transects

Date	Species	No's	Note	Latitude	Longitude	Breeding_
2025-04-14-09-43-43	Robin	1	Singing	53.39583	-7.31431	Flying
2025-04-14-09-45-31	Yellowhammer	1	Calling	53.39602	-7.31296	Flying
2025-04-14-09-46-03	Chaffinch	1	Singing	53.39574	-7.31292	Flying
2025-04-14-09-46-34	Dunnock	1	Singing	53.39622	-7.31455	Flying
2025-04-14-09-50-13	Blackbird	1	Alarm calling	53.39697	-7.31483	Flying
2025-04-14-09-50-54	Song Thrush	1	Singing	53.39715	-7.31494	Flying
2025-04-14-09-51-43	Chaffinch	1	Singing	53.39772	-7.31444	Flying
2025-04-14-09-52-19	Robin	1	Singing	53.39756	-7.31505	Flying
2025-04-14-09-52-51	Winter Wren	1	Singing	53.39739	-7.3149	Flying
2025-04-14-09-55-22	Yellowhammer	2	In suitable habitat	53.39696	-7.3132	Flying
2025-04-14-09-56-18	Winter Wren	1	Foraging	53.39724	-7.31331	Flying
2025-04-14-09-57-16	Song Thrush	1	in suitable habitat	53.39654	-7.31204	Flying
2025-04-14-09-59-57	Goldfinch	3	Territorial dispute	53.39767	-7.31136	Flying
2025-04-14-10-02-09	Chaffinch	2	Calling	53.39706	-7.31119	Flying
2025-04-14-10-03-55	Chaffinch	1	Suitable habitat	53.39781	-7.31161	Flying
2025-04-14-10-04-28	Robin	1	Singing	53.39811	-7.31197	Flying
2025-04-14-10-07-05	Winter Wren	1	Singing	53.398	-7.31209	Flying
2025-04-14-10-07-26	Winter Wren	1	Singing	53.39829	-7.31096	Flying
2025-04-14-10-07-55	Robin	1	Singing	53.3975	-7.31119	Flying
2025-04-14-10-09-12	Goldfinch	1	Singing	53.3982	-7.31153	Flying
2025-04-14-10-10-57	Chaffinch	1	Singing	53.39842	-7.31017	Flying

Date	Species	No's	Note	Latitude	Longitude	Breeding_
2025-04-14-10-11-36	Song Thrush	1	Singing	53.39733	-7.30928	Flying
2025-04-14-10-12-04	Greenfinch	1	Holding territory	53.39707	-7.30945	Flying
2025-04-14-10-13-27	Chaffinch	1	Singing	53.39764	-7.30923	Flying
2025-04-14-10-13-55	Winter Wren	1	Singing	53.39852	-7.30942	Flying
2025-04-14-10-15-48	Chaffinch	2	Territorial dispute	53.39739	-7.30999	Flying
2025-04-14-10-16-23	Wood Pigeon	1	Suitable habitat	53.39646	-7.31052	Flying
2025-04-14-10-18-58	Chaffinch	1	Suitable habitat	53.39679	-7.30946	Flying
2025-04-14-10-23-51	Blackbird	1	In suitable habitat	53.39717	-7.31118	Flying
2025-04-14-10-25-12	Blackcap	1	Singing	53.39657	-7.30957	Flying
2025-04-14-10-25-46	Sky Lark	1	Singing holding territory	53.39653	-7.30909	Flying
2025-04-14-10-28-18	Winter Wren	1	singing	53.39615	-7.30977	Flying
2025-04-14-10-29-33	Yellowhammer	1	On ground foraging	53.39607	-7.31039	Flying
2025-04-14-10-32-18	Linnet	1	perched	53.39585	-7.31122	Flying
2025-04-14-10-32-54	Blackbird	1	Alarm calling	53.39577	-7.30988	Flying
2025-04-14-10-35-39	Yellowhammer	3	Territorial dispute	53.39539	-7.31138	Flying
2025-04-14-10-36-22	Linnet	3	Territorial dispute	53.39513	-7.3114	Flying
2025-04-14-10-37-15	Chaffinch	1	Singing	53.39495	-7.31032	Flying
2025-04-14-10-38-07	Sky Lark	1	Holding territory	53.39487	-7.30939	Flying
2025-04-14-10-40-39	Yellowhammer	2	Singing	53.39474	-7.3114	Flying
2025-04-14-10-41-31	Blackbird	1	Singing	53.39467	-7.31262	Flying
2025-04-14-10-43-49	Blackbird	1	Singing	53.39402	-7.30984	Flying
2025-04-14-10-44-20	Winter Wren	1	Singing	53.39428	-7.31174	Flying
2025-04-14-10-44-58	Winter Wren	1	Singing	53.39432	-7.31042	Flying
2025-04-14-10-45-35	Sky Lark	1	Holding territory	53.39401	-7.30924	Flying
2025-04-14-10-50-11	Pied Wagtail	2	Suitable nesting habitat	53.39337	-7.30954	Flying
2025-04-14-10-51-18	#N/A	2	GL suitable habitat	53.39425	-7.31097	Flying
2025-04-14-10-53-40	Yellowhammer	1	Calling	53.39259	-7.31103	Flying

Date	Species	No's	Note	Latitude	Longitude	Breeding_
2025-04-14-10-54-20	Meadow Pipit	1	Suitable habitat	53.39347	-7.31051	Flying
2025-04-14-10-55-00	Meadow Pipit	2	Suitable habitat	53.39261	-7.30987	Flying
2025-04-14-10-59-22	Sky Lark	1	Holding territory	53.39311	-7.3087	Flying
2025-04-14-11-00-01	Winter Wren	1	Singing	53.39277	-7.30913	Flying
2025-04-14-11-02-48	Meadow Pipit	1	Suitable habitat	53.39209	-7.31093	Flying
2025-04-14-11-04-37	Yellowhammer	2	Singing Male and female	53.39225	-7.31209	Flying
2025-04-14-11-05-09	Blackcap	1	Singing	53.39123	-7.31196	Flying
2025-04-14-11-05-31	Blackcap	1	Singing	53.3919	-7.31235	Flying
2025-04-14-11-05-51	Wood Pigeon	1	Perched holding territory	53.39013	-7.31136	Flying
2025-04-14-11-06-29	Song Thrush	1	Singing	53.39168	-7.31221	Flying
2025-04-14-11-07-02	Robin	1	Singing	53.39206	-7.31244	Flying
2025-04-14-11-07-24	Blackbird	1	Alarm calling	53.39036	-7.31152	Flying
2025-04-14-11-09-30	Chaffinch	1	Singing	53.39022	-7.31037	Flying
2025-04-14-11-10-05	Meadow Pipit	1	Perched in suitable habitat	53.391	-7.31039	Flying
2025-04-14-11-11-25	Raven	1	Suitable habitat	53.391	-7.31109	Flying
2025-04-14-11-12-54	Blackcap	1	Singing	53.3909	-7.30929	Flying
2025-04-14-11-14-00	Willow Warbler	1	Singing	53.38987	-7.31023	Flying
2025-04-14-11-15-08	Blackcap	1	Singing	53.39127	-7.3087	Flying
2025-04-14-11-17-29	Linnet	2	In suitable habitat	53.39187	-7.30871	Flying
2025-04-14-11-18-25	Goldfinch	8	Flying over site	53.39135	-7.30938	Flying
2025-04-14-11-19-51	Winter Wren	1	Singing	53.39166	-7.30828	Flying
2025-04-14-11-21-31	Meadow Pipit	2	In suitable habitat	53.39198	-7.30917	Flying
2025-04-14-11-23-31	Linnet	2	Perched in suitable habitat	53.39237	-7.30883	Flying
2025-04-14-11-24-12	Meadow Pipit	2	Suitable habitat	53.39228	-7.30945	Flying
2025-04-14-11-28-06	Chaffinch	1	Calling	53.39253	-7.31264	Flying
2025-04-14-11-28-35	Winter Wren	1	Singing	53.39284	-7.31283	Flying