

Richard Clarkson Ecology
Ecological & Environmental Services



**Breeding Bird and Black Grouse Survey,
West Kinleith,
Balerno, City of Edinburgh.**

July 2023

Report written by Richard Clarkson

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Table of Contents

Executive Summary	3
1.0. Introduction	4
1.1. Site Description	4
1.2. Aim and Objectives.....	4
2.0. Methods	5
2.1. Black Grouse Survey	5
2.2. Breeding Bird Survey	5
2.3. Impact Assessment.....	6
2.4. Survey Limitations	6
3.0. Results	7
3.1. Statutory Designated Sites	7
3.2. Non-Statutory Designated Sites.....	7
3.3. Biological Record Search.....	9
3.4. Black Grouse Survey	9
3.5. Breeding Bird Survey	9
3.5.1. Wildfowl	17
3.5.2. Birds of Prey.....	17
3.5.3. Waders.....	17
3.5.4. Pigeons and Doves.....	19
3.5.5. Cuckoos.....	19
3.5.6. Larks.....	20
3.5.7. Pipits and Wagtails.....	20
3.5.8. Wren	20
3.5.9. Accentors	21
3.5.10. Thrushes and Chats.....	21
3.5.11. Warblers	21
3.5.12. Crows	22
3.5.13. Finches.....	22
3.5.14. Buntings.....	23
3.6. Incidental Wildlife Records	23
4.0. Evaluation of Bird Interests and Recommendations	24
References	25

Executive Summary

- Richard Clarkson Ecology (RCE) was commissioned by Scottish Woodlands (SW Ltd) to carry out breeding bird and black grouse surveys at West Kinleith near Balerno, Edinburgh. A desktop assessment of bird interests and notable wildlife sites in the area was also requested. The aim was to provide baseline data on the breeding bird assemblage in order to identify any potentially sensitive ecological receptors that may be adversely impacted by a woodland creation scheme. Breeding bird surveys included a 100m buffer around the core survey area, and an enlarged 750m buffer for wading birds.
- The desktop study identified that Balerno Common Site of Special Scientific Interest (SSSI) is the closest statutory designated site. There are 14 non-statutory designated sites within 2km, including Black Springs Local Biodiversity Site (LBS) which is partially within the survey boundary. Threipmuir Reservoir, Harlaw Reservoir and Black Hill all border West Kinleith to the south and west. The site is entirely within Pentland Hills Regional Park, and the north-western corner is within Bonaly Country Park.
- The Wildlife Information Centre (TWIC) returned 6065 bird records for the site and buffer area, including several recent records for curlew, lapwing, snipe and oystercatcher during the breeding season. Black grouse records returned were from sometime between 1988 and 1994. There were 52 pink-footed goose records from the last 10 years in the Threipmuir area.
- Black grouse were not recorded during the lek surveys and there were no signs or sightings of black grouse during the breeding bird surveys.
- A total of 68 bird species were recorded during the 3 Breeding Bird Survey (BBS) visits to core and buffer areas. Of this number, 47 were considered to have bred or attempted to breed. Nineteen species bred or attempted to breed in the core survey area; 4 are classified as red on the Birds of Conservation Concern (BoCC) 5 list, 8 as amber, 6 green, and one has no conservation status.
- Breeding bird species in the core area predicted to benefit from a potential tree planting scheme are willow warbler, dunnock, song thrush, and wren; reed bunting may initially benefit during early growth stages and then decline; linnet, skylark, curlew, snipe, wheatear, and meadow pipit are predicted to be negatively impacted, and for cuckoo the impact is considered to be neutral. Most of the negative impacts are considered to be small for most species.
- Waders such as curlew and snipe will be negatively affected by tree planting. Mitigation to help snipe could include retaining wet areas as open ground where it occurs adjacent to open countryside, and a softening of the hard interface between woodland edge and open ground through low density planting of native shrubs and small trees. At least one curlew nest was predated, so some form of control could help breeding waders in the wider countryside. Keeping areas of gorse scrub and some open ground on the periphery of the site could help retain species such as linnet.
- Human disturbance and mostly unsuitable habitat appear to make much of West Kinleith unattractive for foraging and loafing pink-footed geese. However, because of the number of pink-footed goose records returned from the area and the close proximity of Threipmuir Reservoir LBS, it is recommended that a request is made to NatureScot, British Trust for Ornithology (BTO) and the Royal Society for the Protection of Birds (RSPB) for information they may hold on the pink-footed goose movements in the area and if the survey site in particular is utilised for forage or refuge.

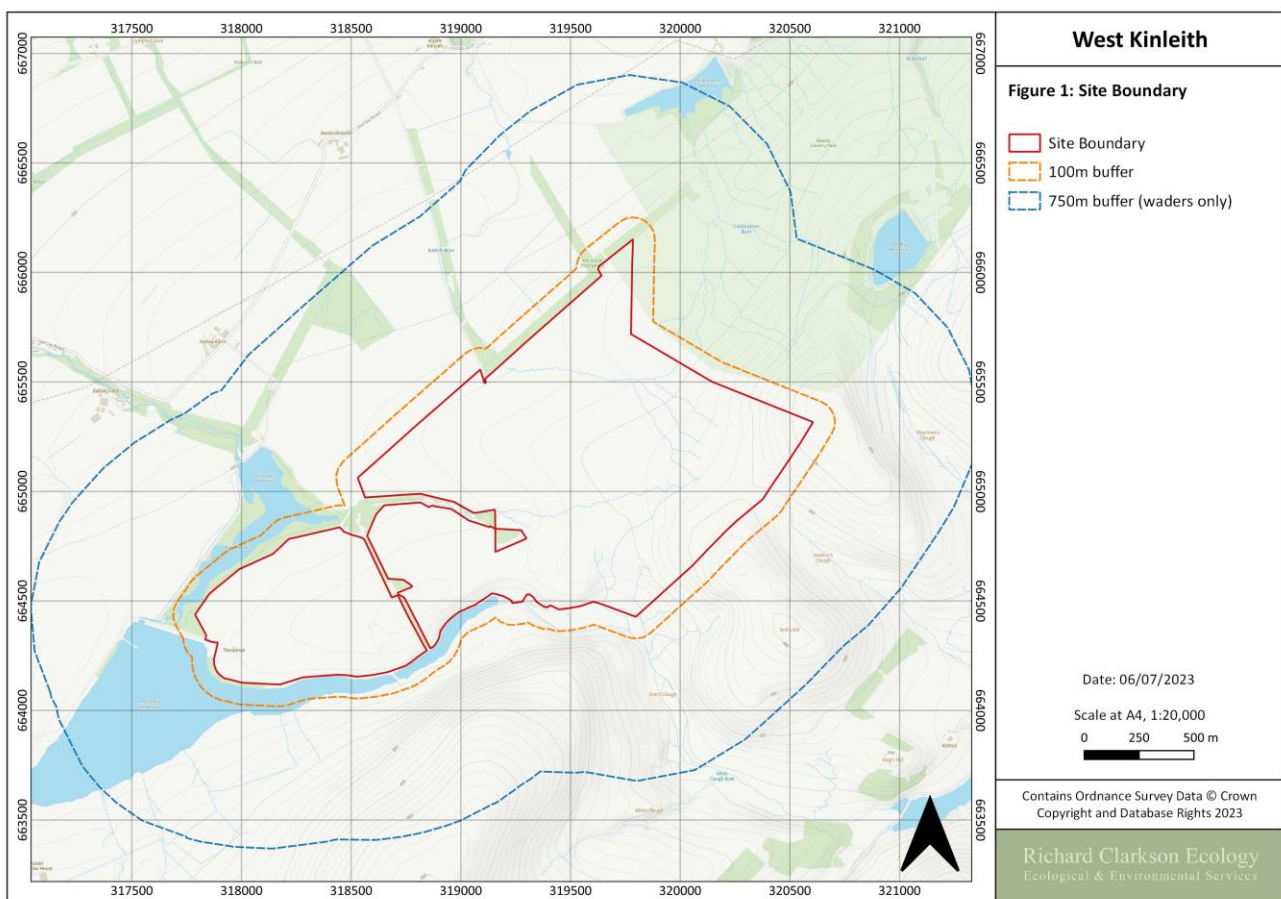
1). Introduction:

Richard Clarkson Ecology (RCE) was commissioned by Scottish Woodlands (SW Ltd) to carry out breeding bird and black grouse surveys at West Kinleith which is within the City of Edinburgh Council area. A desktop assessment of bird interests and notable wildlife sites in the area was also requested. The results in this report will inform potential woodland/forestry creation opportunities being considered.

1.1 Site Description (Figure 1):

West Kinleith is on the north side of the Pentland Hills, 2 miles south of Balerno, and approximately 8 miles south-west of Edinburgh City centre. The core survey site is just over 238ha (outlined in red on the map below) and sits within Pentland Hills Regional Park. Habitats present include heathland, scrub, improved and unimproved grassland, swamp, flushes, marshy grassland, and bracken. The buffer area to be surveyed included similar habitats as well as standing water, marginal vegetation, dry heath, wet heath and plantation. The survey area is centred around grid reference NT 195 650.

Figure 1: Site boundary with 100m buffer, and 750m buffer for waders.



1.2 Aims and Objectives:

The aim of this work was to provide baseline data on the breeding bird assemblage through a desk-based study and then field surveys. In order to identify any potentially sensitive ecological receptors that may be adversely impacted by a woodland creation scheme, breeding bird surveys included a 100m buffer from the

site boundary. The survey buffer for wading birds was enlarged to 750m, as evidence shows that waders avoid nesting near woodland.

2). Methods:

2.1 Black Grouse Survey:

Black Grouse (BG) survey methodology to record the number of lekking males and the number of females present is detailed in Gilbert *et al.* (1998). Historic lek sites and other areas of suitable habitat which could host leks were identified and visited during April and May 2023. Visits involved listening and scanning for lekking black grouse from strategic locations (avoiding disturbance of leks), and during walks between survey locations ensuring that all potential habitat was covered. All potential lek sites were visited within 2 hours of dawn on calm dry days with good visibility.

2.2 Breeding Bird Survey:

Breeding Bird Surveys (BBS) followed Brown and Shepherd methodology as detailed in Gilbert *et al.* (1998). This involves spending 25 minutes in each 500m x 500m quadrant within the breeding survey area. Each quadrant is walked to ensure that all areas of the site are approached to within 100m.

The site was surveyed 3 times during April, May and June 2023, and it was searched by slowly walking and pausing to record all birds seen or heard. Route directions were varied between each visit to ensure there was no temporal sampling bias. All bird locations and behaviour were recorded on large-scale maps using standard BTO notation.

Fieldwork was not undertaken in conditions considered likely to affect bird detection rates, for example in winds greater than Beaufort Scale Force 4, persistent precipitation, poor visibility (less than 300m), or in unusually hot weather. Survey dates and a summary of weather conditions for BBS and BG surveys are presented in Table 1.

Table 1: BBS and BG survey dates and weather conditions.

Survey	Date	Visibility	Wind	Conditions
BBS 1	03/04/23	Excellent	Calm	Bright and clear, very little cloud.
BBS 1 & BG 1	06/04/23	Very good	Light - moderate	2 light showers, 50-90% cloud cover, sunny spells.
BBS 1 & BG 2	07/04/23	Excellent	Calm	Bright and clear, no cloud.
BBS 2 & BG 3	01/05/23	Excellent	Light breeze	Sunny spells, 25-75% cloud cover.
BBS 2 & BG 4	02/05/23	Excellent	Calm – light	Overcast, 100% cloud cover.
BBS 2	03/05/23	Excellent	Calm	Early cloud cleared to clear skies.
BBS 2	04/05/23	Excellent	Moderate	Overcast, 100% cloud cover.
BBS 3	30/05/23	Excellent	Calm	Overcast, 100% cloud cover.
BBS 3	03/06/23	Excellent	Calm	Bright and clear, no cloud.
BBS 3	08/06/23	Excellent	Calm	Overcast, 100% cloud cover.
BBS 3	09/06/23	Excellent	Light - moderate	Bright and clear, 30% cloud cover.

Bird registrations from the 3 BBS visits were digitised and analysed to determine possible, probable and confirmed breeding status using criteria set out by the European Ornithological Atlas Committee (EOAC) 1979. These categories are defined as follows:

Possible:

- Observed in breeding season in possible nesting habitat
- Singing male in breeding season

Probable:

- Permanent territory presumed from two registrations at least one week apart in the same place; one registration must either be a pair in suitable nesting habitat, or an individual exhibiting territorial behaviour (e.g., song, display, courtship etc)
- Visiting probable nest site
- Agitated behaviour or anxiety calls
- Nest building or excavating nest holes

Confirmed:

- Adult carrying food or faecal sac
- Recently fledged young or downy young
- Adults entering/leaving nest site in circumstances indicating an occupied nest
- Active nest
- Used nest or eggshells (must be occupied/laid in survey period)
- Distraction display/feigning injury

Once all registrations have been consolidated onto one map, the geographical centre of all records assumed to be from the same individual is assigned a putative territory. This process can be subjective, except where the location of a nest is known. As such, the territories marked on the map should be regarded as the centre of the territory and not necessarily the nesting location.

2.3 Impact Assessment:

In order to appropriately assess the impact of woodland creation upon birds recorded during the surveys, species which are considered to be a Feature of Ecological Importance (FEI) must be selected. Species listed as amber or red on the Birds of Conservation Concern (BoCC) 5 list (Stanbury *et al.*, 2021) were selected for this assessment. The value of each feature has been assessed according to the geographical framework set out in the Guidelines for Ecological Impact Assessment in the UK (CIEEM, 2018). In summary, this framework allows the value of the sites FEIs to be assessed in the context of a hierarchical scale of increasing spatial areas (e.g., local, parish, district, county, regional, national, UK and international). If the proposals are deemed to have a positive or negative impact on a species or assemblage as a whole, the magnitude of this impact is then evaluated. Magnitude is assessed according to the population size recorded within the core survey area against the likely impact of woodland creation relative to wider distributions and population trends.

2.4 Survey Limitations:

Breeding bird and black grouse surveys were carried out at the optimal time of year and in good weather conditions, therefore there were no limitations for these surveys.

3). Results:

3.1 Statutory Designated Sites:

There is one statutory designated site within 2km of survey boundary (Figure 2). Full details, including reasons for its designation (citations), maps, conservation objectives and management statements, can be found in pdf form via the links provided below.

- **Balerno Common Site of Special Scientific Interest (SSSI)** is located to the north of the Pentland Hills and just over 1km to the west of the survey site. It comprises 2 sites, each with different habitats. Red Moss is notified for its raised bog, the largest in Edinburgh, and Bavelaw Marsh for its transition open fen, bryophyte assemblage, and mesotrophic loch. Red Moss (of Balerno) is a Scottish Wildlife Trust Reserve.

- <https://sitelink.nature.scot/site/120>

The above designation place a duty on competent authorities to carry out 'an appropriate assessment' should they be required to consider any plan or project which will have a 'likely significant effect' on the site's qualifying interests and its conservation objectives.

3.2 Non-Statutory Designated Sites:

There are 14 Local Biodiversity Sites within 2km of West Kinleith (Figure 2), 4 of which are immediately adjacent to the survey site. A brief summary of Black Springs, Threipmuir Reservoir, Harlaw Reservoir and Black Hill is provided below.

- **Black Springs (LBS)** straddles the boundary between the City of Edinburgh and Midlothian. It is predominantly a wetland, with notable habitats such as swamp, standing water and raised bog. The site hosts many locally rare plants, several notable species, and otter, a protected mammal. A small area of Black Springs LBS is within the West Kinleith survey site.
- **Threipmuir Reservoir (LBS)** is at the base of the Pentland Hills and feeds into Harlaw Reservoir and the Water of Leith. Notable habitats include semi-natural broadleaved woodland, unimproved neutral grassland, and standing water. There are many locally or nationally notable species including a Nationally Scarce plant. Threipmuir is an important site for wintering wildfowl including pink-footed goose.
- **Harlaw Reservoir (LBS)** feeds into Bavelaw Burn and the Water of Leith. The main habitats are standing water, coniferous plantation and mixed plantation. There are several nationally notable or scarce species, including the protected species badger and otter.
- **Black Hill (LBS)**. A site statement was not available for this site, but it is predominantly a heather dominated moorland managed for grouse. Habitats include dry heath, wet heath and peatland.

West Kinleith is entirely within Pentland Hills Regional Park and the north-western corner of the survey area is also inside Bonaly Country Park. Other than the Red Moss of Balerno, there do not appear to be any reserves owned or listed by other organisations.

West Kinleith

Figure 2: Statutory & Non-Statutory Designated Sites

- Site boundary
- 2km buffer

- Sites of Special Scientific Interest**
- Balerno Common
- Habbies Howe - Logan Burn

- Local Biodiversity Sites**
- Bavelaw Burn
- Black Springs
- Harlaw Reservoir
- Threipmuir Reservoir
- Bavelaw, Pentlands
- Black Hill
- Bonaly Reservoir
- Clubbiedean Reservoir
- Glencorse Valley and Logan Burn
- Water of Leith
- Howden Burn/Redford Brae & Laverock Dale/Torduff Reservoir & Bonaly Burn
- Redford Wood
- The Dells
- Water of Leith at Blinkbonny and Poet's Glen
- Bonaly Country Park

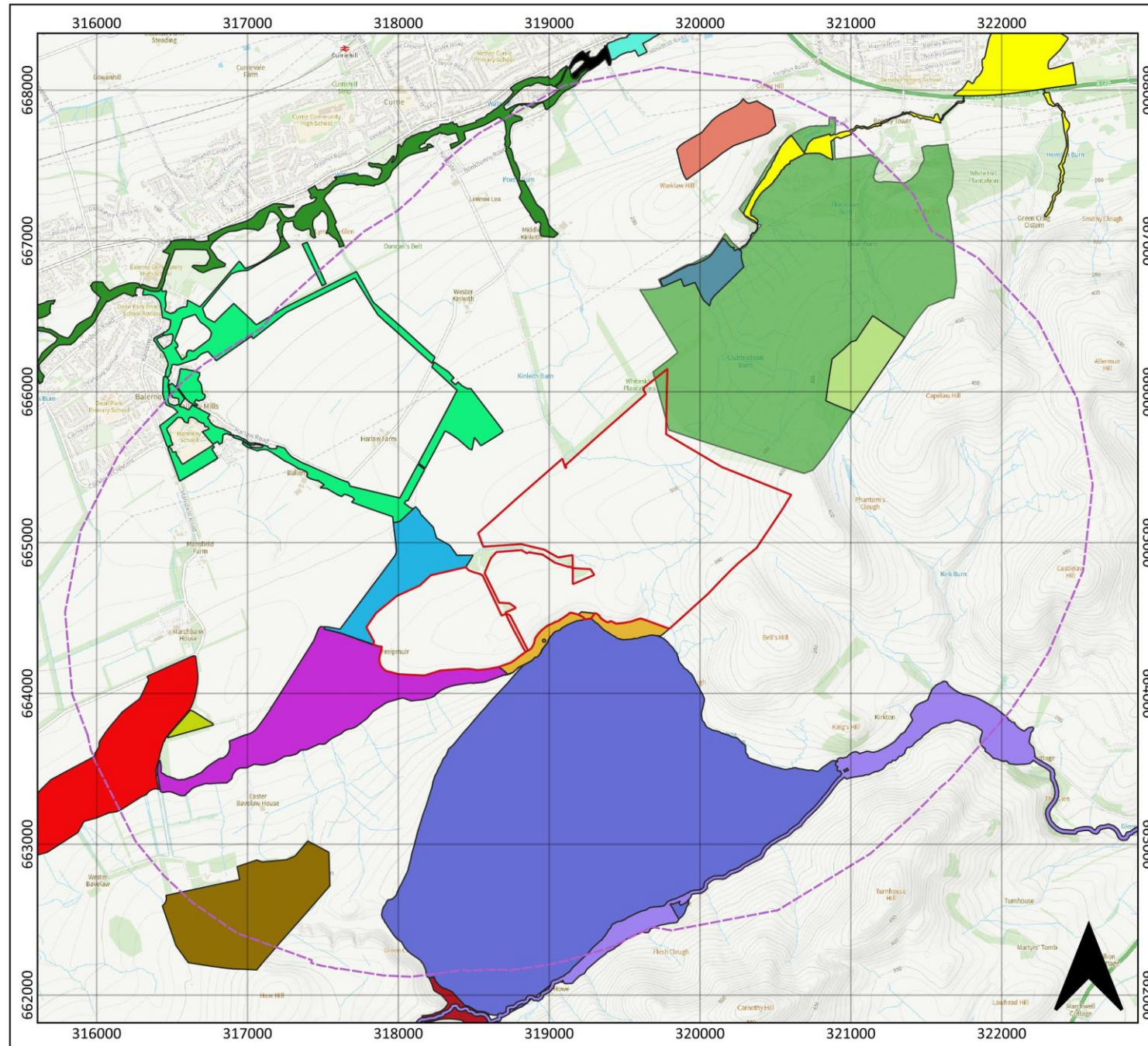
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3.3 Biological Record Search:

The biological record search extended to 500m from the site boundary. TWIC returned 6065 bird records. Those from the last 10 years included 47 species that are on the BoCC 5 red or amber list, including linnet, cuckoo, greenfinch, tree sparrow, mistle thrush, yellowhammer and spotted flycatcher. There were several recent records for curlew, lapwing, snipe and oystercatcher during the breeding season, but none for redshank or common sandpiper. Sparrowhawk, kestrel and buzzard were the only raptors recorded during the same period. Short-eared owl and a single record for long-eared owl were from over 10 years ago. There were also old records for species such as redstart, tree pipit, grey partridge, quail, woodcock and kingfisher.

There were 2 black grouse records from sometime between 1988 and 1994. Only Tetrad locations were provided for these lek sites.

Pink-footed goose have been recorded in the Threipmuir area regularly over the last 10 years between the end of September and the beginning of April. There were 52 records in total, and most are presumed to be from the British Trust for Ornithology (BTO) Wetland Bird Survey (WeBS).

3.4 Black Grouse Survey:

A combination of aerial imagery, 1:25,000 scale maps, a walkover survey, and historic ornithological data provided by TWIC were used to identify suitable habitat for black grouse leks. The preferred habitats being mosaics of moorland or heathland, woodland, plantations and rough grazing. Four locations were selected for survey, but only one area was considered to have potentially favourable habitat.

Black grouse were not recorded during the lek surveys and there were no signs or sightings of black grouse during the breeding bird surveys.

3.5 Breeding Bird Survey:

The number of territories per species is provided in Table 2, followed by separate wader and 'all other birds' territory maps. Each territory centre has a coloured red, amber or green circle denoting the species conservation status. Black signifies no status. An evaluation of any impacts tree planting may have on breeding red and amber listed species is provided in sections 3.5.1 to 3.5.14.

A total of 68 bird species were recorded during the surveys, 47 of which bred within the survey site and/or buffer zone. Of the breeding species recorded, 8 species are listed as having red conservation status, 17 listed as amber, 20 as green, and 2 have no conservation status. Of the non-breeding species, 5 are classed as red, 5 as amber, 10 as green, and one has no status.

Table 2: Number of breeding bird territories per species within the core survey area and buffer zone

Breeding bird territories						
● indicates non-breeding species in the core only (except waders) – foraging, flyover etc						
BTO code	Common name	BOCC status	SBL	LBAP	Core Survey Area	Buffer Zone
Wildfowl						
MS	Mute Swan		-	-		1
GJ	Greylag Goose		-	-	●	
CG	Canada Goose	N/A	-	-	●	
MA	Mallard		-	-		3
TU	Tufted Duck		-	-	●	
GN	Goldeneye		-	-	●	
GD	Goosander		-	-	●	
Grouse						
RG	Red Grouse		✓	-	3	2
Partridges and Pheasants						
RL	Red-Legged Partridge	N/A	-	-	1	
PH	Pheasant	N/A	-	-		2
Cormorants						
CA	Cormorant		-	-	●	
Hérons						
H.	Grey Heron		-	-	●	
Birds of Prey						
OP	Osprey		-	-	●	
BZ	Common Buzzard		-	✓	●	
K.	Kestrel		✓	-	●	1
Rails and Crakes						
WA	Water Rail		-	-		1
Waders (750m buffer for waders)						
OC	Oystercatcher		-	-	●	2
GP	Golden Plover		✓	-		●
L.	Lapwing		✓	-		3
CS	Common Sandpiper		-	-		1
RK	Redshank		-	-		●
CU	Curlew		✓	-	2	3
SN	Snipe		-	-	4	5
Gulls						
BH	Black-headed Gull		✓	-	●	
HG	Herring Gull		✓	-	●	
LB	Lesser Black-backed Gull		-	-	●	

Breeding bird territories						
● indicates non-breeding species in the core only (except waders) – foraging, flyover etc						
BTO code	Common name	BOCC status	SBL	LBAP	Core Survey Area	Buffer Zone
<u>Pigeons and Doves</u>						
WP	Wood Pigeon		-	-	●	19
<u>Cuckoos</u>						
CK	Cuckoo		✓	-		1
<u>Swifts</u>						
SI	Swift		✓	✓	●	
<u>Woodpeckers</u>						
GS	Great Spotted Woodpecker		-	-		1
<u>Larks</u>						
S.	Skylark		✓	-	27	6
<u>Swallows and Martins</u>						
SL	Barn Swallow		-	-	●	
HM	House Martin		-	-	●	
<u>Pipits and Wagtails</u>						
MP	Meadow Pipit		-	-	27	8
PW	Pied Wagtail		-	-	1	
<u>Wren</u>						
WR	Wren		-	-	5	20
<u>Accentors</u>						
D.	Duncock		✓	-	1	
<u>Thrushes and Chats</u>						
R.	Robin		-	-	1	12
W.	Wheatear		-	-	3	
SC	Stonechat		-	-	1	
ST	Song Thrush		✓	-	1	6
M.	Mistle Thrush		-	-		2
FF	Fieldfare		-	-	●	
B.	Blackbird		-	-	1	6
<u>Warblers</u>						
BC	Blackcap		-	-		3
WH	Whitethroat		-	-		1
SW	Sedge Warbler		-	-		2
GH	Grasshopper Warbler		✓	-		1
WW	Willow Warbler		-	-	1	26
CC	Chiffchaff		-	-		9
<u>Crests</u>						
GC	Goldcrest		-	-		10

Breeding bird territories						
● indicates non-breeding species in the core only (except waders) – foraging, flyover etc						
BTO code	Common name	BOCC status	SBL	LBAP	Core Survey Area	Buffer Zone
Tits						
GT	Great Tit		-	-		3
CT	Coal Tit		-	-		13
BT	Blue Tit		-	-		1
LT	Long-tailed Tit		-	-		1
Nuthatches and Creepers						
TC	Treecreeper		-	-		3
Crows						
MG	Magpie		-	-	●	1
JD	Jackdaw		-	-	●	
RO	Rook		-	-	●	Rookery (nests not counted)
C.	Carrion Crow		-	-	●	3
RN	Raven		-	-	●	
Starlings						
SG	Starling		✓	-	●	
Finches						
CH	Chaffinch		-	-	2	16
LI	Linnet		✓	-	2	
LR	Redpoll (Lesser)		✓	-		1
GO	Goldfinch		-	-	●	5
BF	Bullfinch		✓	-		2
Buntings						
RB	Reed Bunting		✓	-	2	5
Results Summary					Core Survey Area	Buffer Zone
Total number of breeding bird species recorded in the core and buffer area					18	41
R = Red, A = Amber, G = Green, NS = No Status					R: 3; A: 8; G: 6; NS: 1	R: 7; A: 15; G: 18; NS: 1
Total number of breeding bird species in the core and buffer area combined					47	
					R: 8; A: 17; G: 20; NS: 2	
Total number of non-breeding bird species in the core and buffer area combined.					21	
					R: 5; A: 5; G: 10; NS: 1	
Total number of breeding & non-breeding bird species recorded					68	
					R: 13; A: 22; G: 30; NS: 3	

West Kinleith

Figure 3: Breeding Wader Territory Map

- Site Boundary
- 100m buffer
- 750m buffer

- CS - Common Sandpiper
- OC - Oystercatcher
- SN - Snipe
- CU - Curlew
- L - Lapwing

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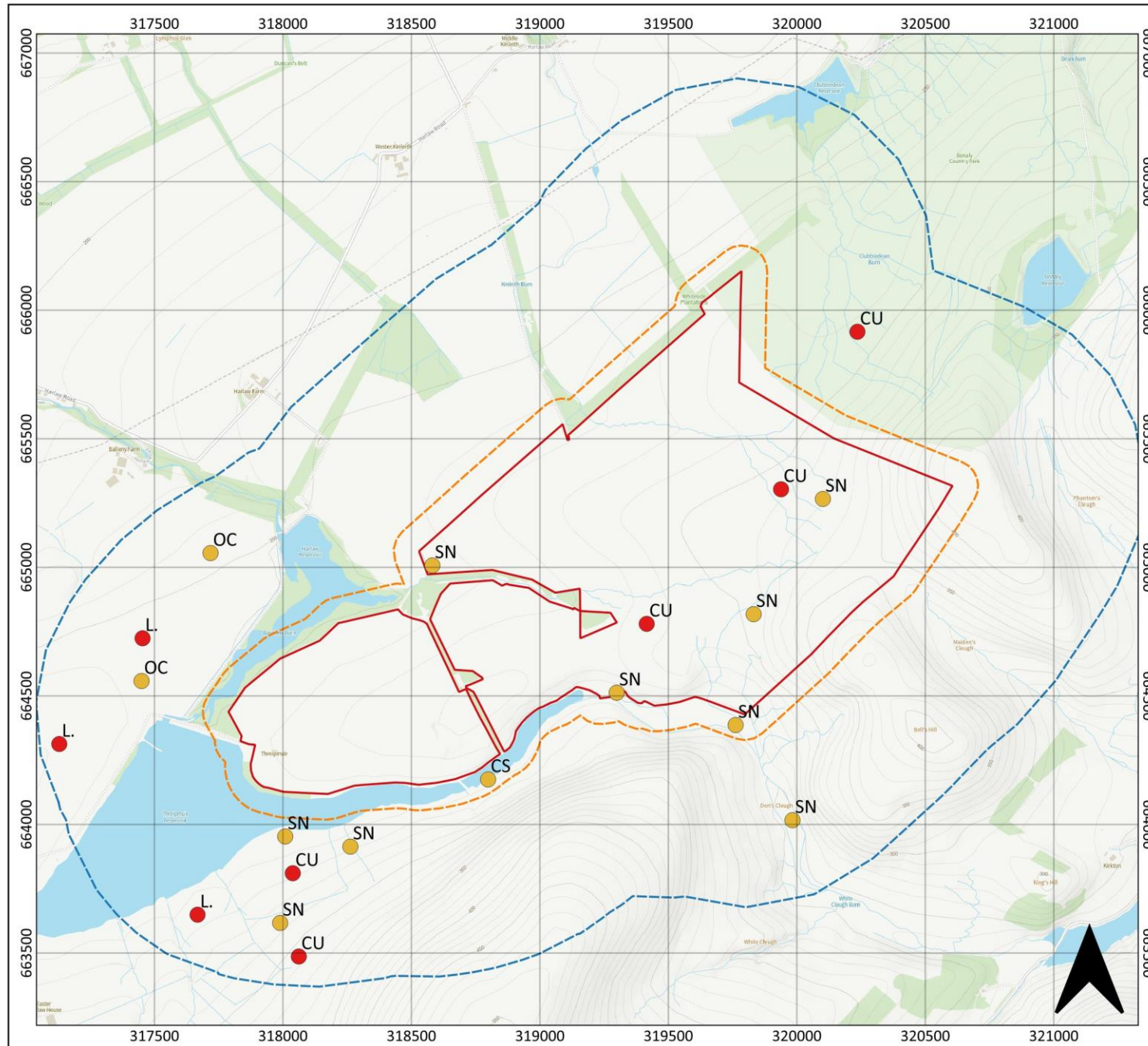
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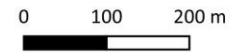
West Kinleith (south-west)

Figure 4: Breeding Bird Survey Territory Map (excluding waders)

- Site Boundary
 - 100m buffer
- | | |
|---------------------------------|------------------------|
| ● B. - Blackbird | ● LT - Long-tailed Tit |
| ● BC - Blackcap | ● MG - Magpie |
| ● BT - Blue Tit | ● MS - Mute Swan |
| ● C. - Carrion Crow | ● PW - Pied Wagtail |
| ● CC - Chiffchaff | ● R. - Robin |
| ● CH - Chaffinch | ● RG - Red Grouse |
| ● CT - Coal Tit | ● SC - Stonechat |
| ● GC - Goldcrest | ● TC - Treecreeper |
| ● GO - Goldfinch | ● WA - Water Rail |
| ● GT - Great Tit | |
| ● GS - Great Spotted Woodpecker | |
| ● BF - Bullfinch | ● ST - Song Thrush |
| ● D. - Dunnock | ● SW - Sedge Warbler |
| ● K. - Kestrel | ● W. - Wheatear |
| ● MA - Mallard | ● WH - Whitethroat |
| ● MP - Meadow Pipit | ● WP - Wood Pigeon |
| ● RB - Reed Bunting | ● WR - Wren |
| ● RO - Rookery | ● WW - Willow Warbler |
| ● CK - Cuckoo | |
| ● GH - Grasshopper Warbler | |
| ● LI - Linnet | |
| ● LR - Lesser Redpoll | |
| ● M. - Mistle Thrush | |
| ● S. - Skylark | |
| ● PH - Pheasant | |
| ● RL - Red-legged Partridge | |

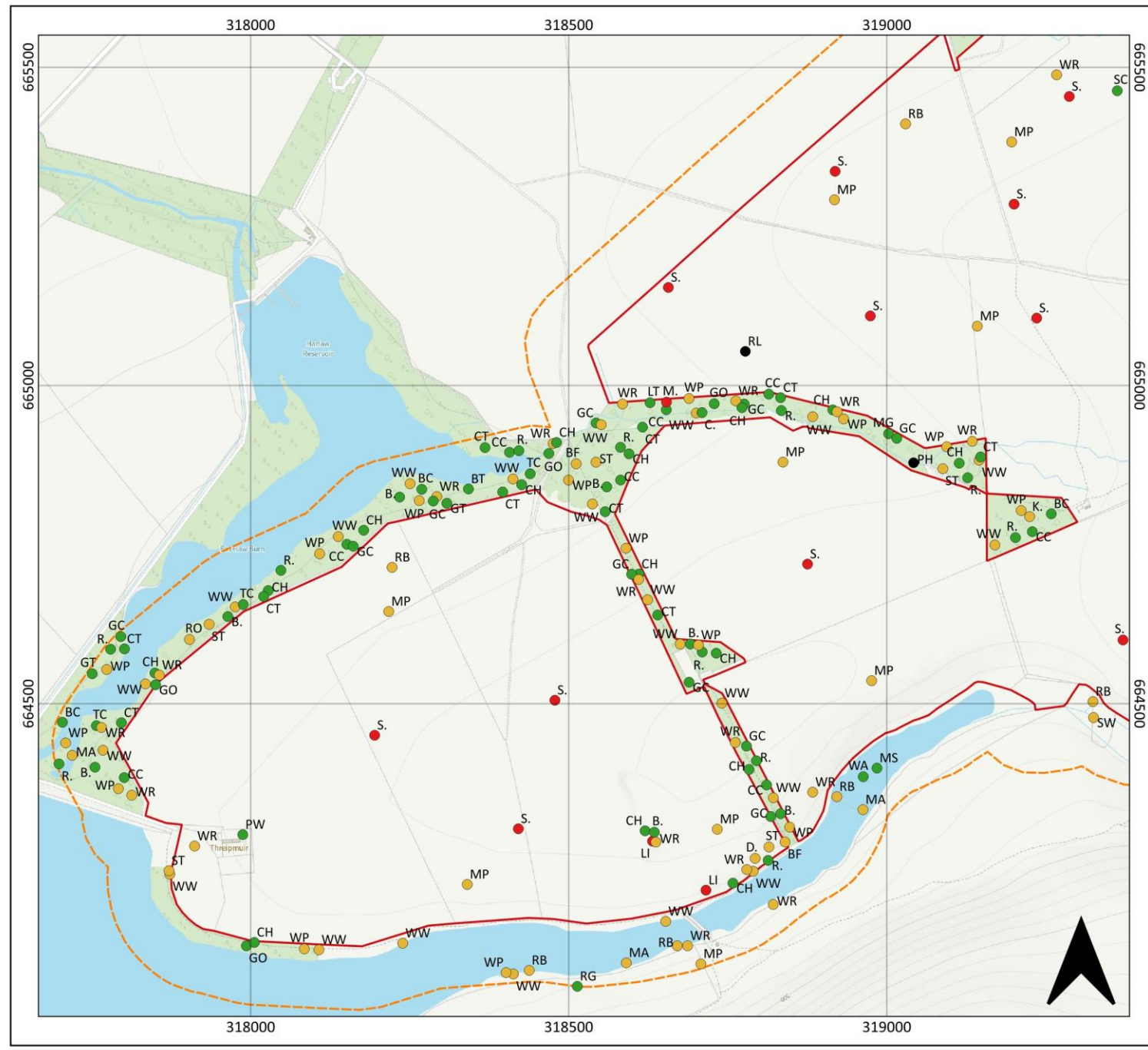
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West Kinleith (south-east)

Figure 5: Breeding Bird Survey Territory Map (excluding waders)

Site Boundary
 100m buffer

● B. - Blackbird	● LT - Long-tailed Tit
● BC - Blackcap	● MG - Magpie
● BT - Blue Tit	● MS - Mute Swan
● C. - Carrion Crow	● PW - Pied Wagtail
● CC - Chiffchaff	● R. - Robin
● CH - Chaffinch	● RG - Red Grouse
● CT - Coal Tit	● SC - Stonechat
● GC - Goldcrest	● TC - Treecreeper
● GO - Goldfinch	● WA - Water Rail
● GT - Great Tit	
● GS - Great Spotted Woodpecker	
● BF - Bullfinch	● ST - Song Thrush
● D. - Dunnock	● SW - Sedge Warbler
● K. - Kestrel	● W. - Wheatear
● MA - Mallard	● WH - Whitethroat
● MP - Meadow Pipit	● WP - Wood Pigeon
● RB - Reed Bunting	● WR - Wren
● RO - Rookery	● WW - Willow Warbler
● CK - Cuckoo	
● GH - Grasshopper Warbler	
● LI - Linnet	
● LR - Lesser Redpoll	
● M. - Mistle Thrush	
● S. - Skylark	
● PH - Pheasant	
● RL - Red-legged Partridge	

Date: 06/07/2023

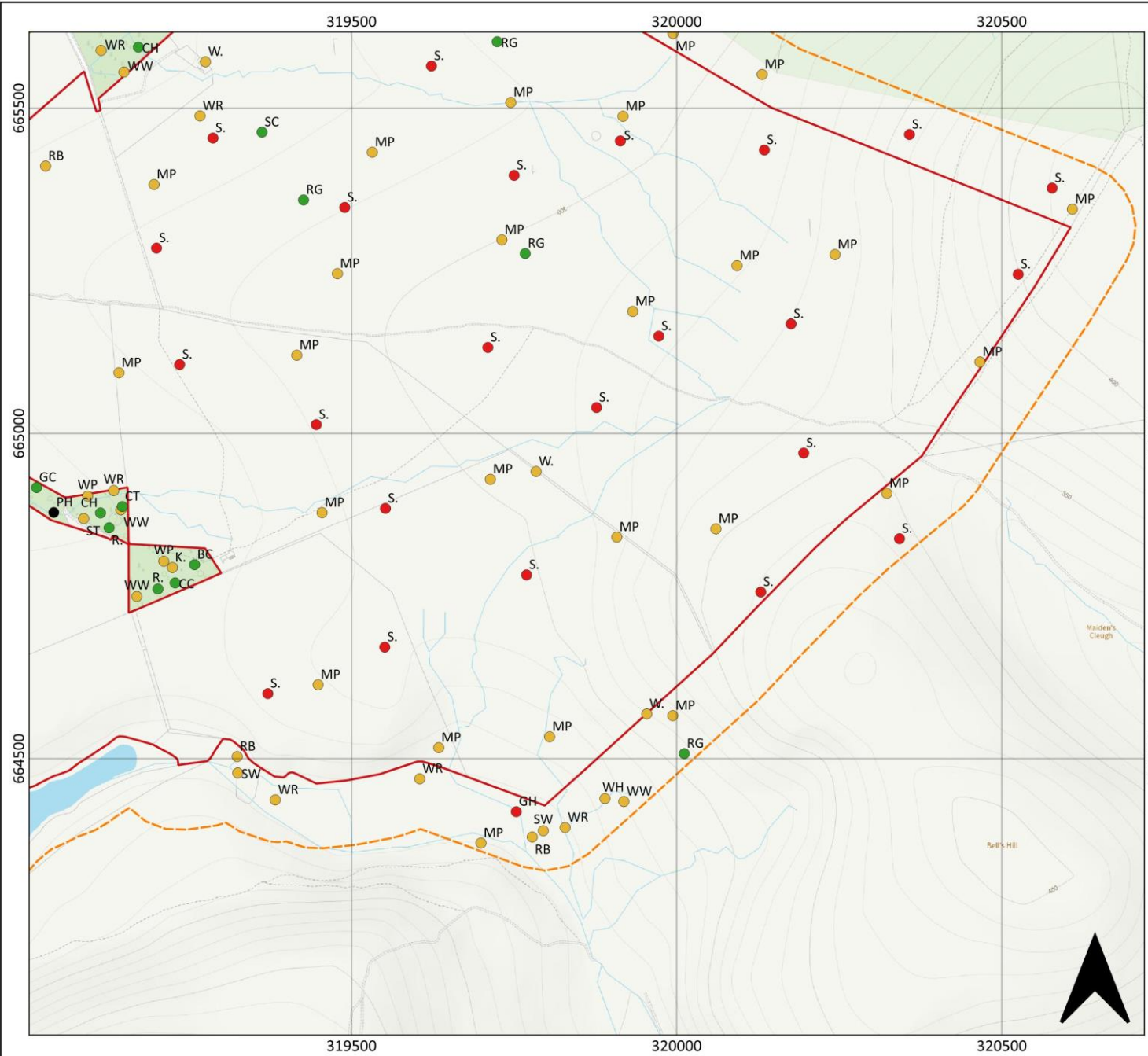
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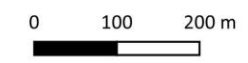
West Kinleith (north)

Figure 6: Breeding Bird Survey Territory Map (excluding waders)

- Site Boundary
 - 100m buffer
- | | |
|--|---|
| ● B. - Blackbird | ● LT - Long-tailed Tit |
| ● BC - Blackcap | ● MG - Magpie |
| ● BT - Blue Tit | ● MS - Mute Swan |
| ● C. - Carrion Crow | ● PW - Pied Wagtail |
| ● CC - Chiffchaff | ● R. - Robin |
| ● CH - Chaffinch | ● RG - Red Grouse |
| ● CT - Coal Tit | ● SC - Stonechat |
| ● GC - Goldcrest | ● TC - Treecreeper |
| ● GO - Goldfinch | ● WA - Water Rail |
| ● GT - Great Tit | |
| ● GS - Great Spotted Woodpecker | |
| ● BF - Bullfinch | ● ST - Song Thrush |
| ● D. - Dunnock | ● SW - Sedge Warbler |
| ● K. - Kestrel | ● W. - Wheatear |
| ● MA - Mallard | ● WH - Whitethroat |
| ● MP - Meadow Pipit | ● WP - Wood Pigeon |
| ● RB - Reed Bunting | ● WR - Wren |
| ● RO - Rookery | ● WW - Willow Warbler |
| ● CK - Cuckoo | |
| ● GH - Grasshopper Warbler | |
| ● LI - Linnets | |
| ● LR - Lesser Redpoll | |
| ● M. - Mistle Thrush | |
| ● S. - Skylark | |
| ● PH - Pheasant | |
| ● RL - Red-legged Partridge | |

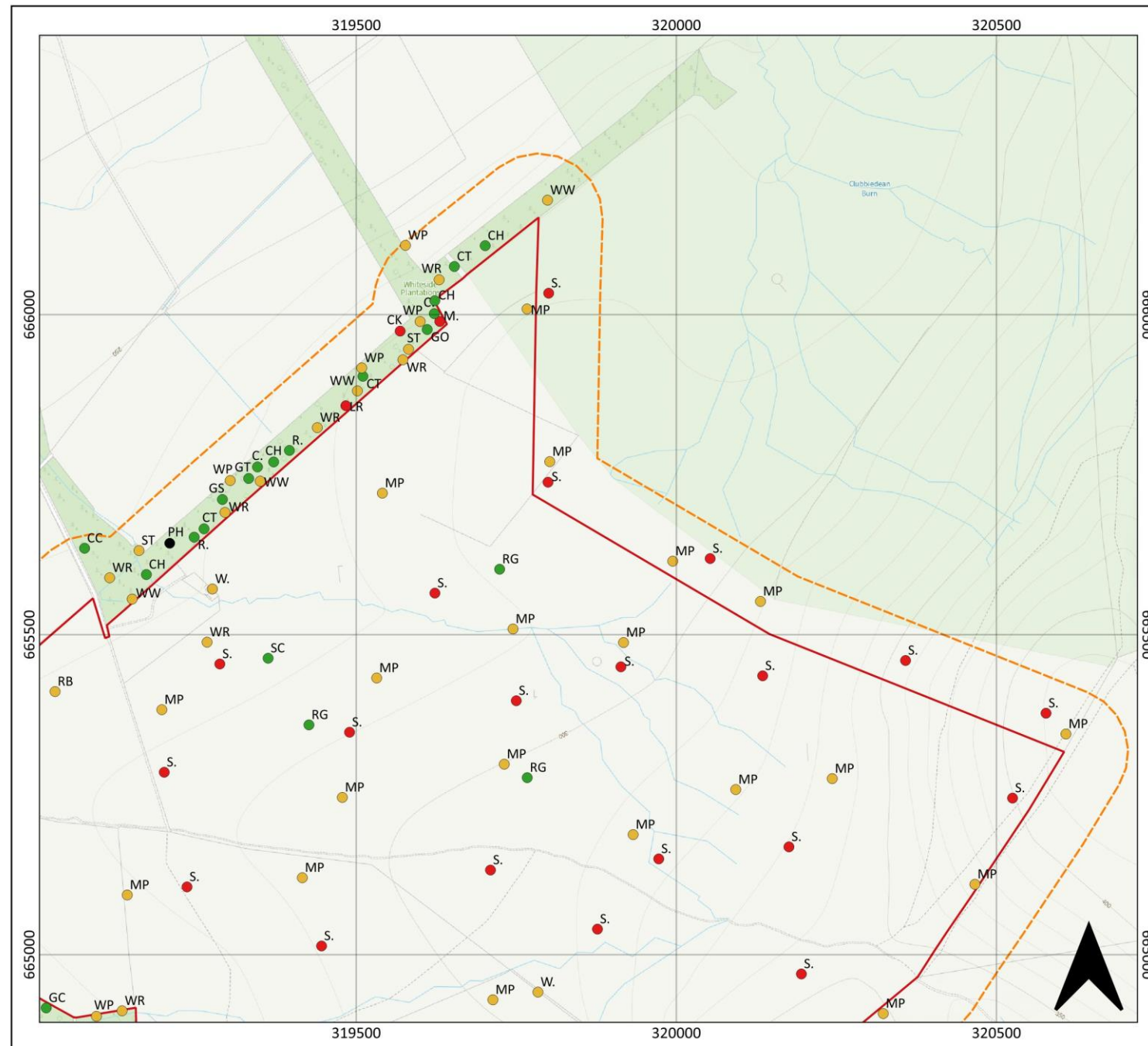
Date: 06/07/2023

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Ecological & Environmental Services



3.5.1 Wildfowl:

Mallard – Amber listed

Three breeding territories were recorded in the 100m buffer zone. The species requires tall vegetation at the edges of open water such as ponds, rivers or streams. Tree planting in the core survey area is therefore unlikely to have a negative impact on Mallards breeding on the fringes of open water, or along riparian corridors within the buffer zone.

3.5.2 Birds of Prey:

Kestrel – Amber listed

A kestrel nest was located in a small woodland block in the buffer zone; an area that is almost encircled by the main survey area. The species has declined markedly across the UK. The reasons are unknown, but some suggestions include agricultural intensification, poisoning, a reduction in good vole years, and predation by other raptors. The availability of nest sites is not thought to be a cause of the decline (Heavisides & Holling, 2019). Rough grazing and new conifer plantations are good for voles and tend to attract higher kestrel numbers than other habitats. It is anticipated that tree planting will therefore have a small positive effect in the short term, but over the medium to long term there will be a small negative impact as available foraging ground reduces.

3.5.3 Waders:

The number of territories and the breeding density per km² for oystercatcher, lapwing, curlew, snipe and ‘all wader species’ (excluding common sandpiper) is provided in Table 3.

One redshank was recorded on the south shore of Threipmuir Reservoir, and the species may well have bred locally outside the buffer zone. A golden plover was recorded during the May survey on the slightly lower and northerly summit of Bell’s Hill, but behaviour did not indicate a nest nearby.

Table 3: The number of territories and breeding densities per km² from all survey sites

Wader Species		Core Survey Area	Core + Buffer Zone
Oystercatcher	no. of territories	-	2
	density per km ²	-	0.22
Lapwing	no. of territories	-	3
	density per km ²	-	0.32
Curlew	no. of territories	2	5
	density per km ²	0.84	0.54
Snipe	no. of territories	4	9
	density per km ²	1.68	0.97
All Wader Species			
All Wader Species	no. of territories	6	19
	density per km ²	2.52	2.01

Oystercatcher – Amber listed

Oystercatchers occupy lowland habitats often near the coast, rivers or standing water. Two territories were recorded within survey buffer zone on the north-west side of a shelterbelt and Harlaw Reservoir. One territory was approximately 340m from the site boundary and the other was 470m away. A few oystercatchers were occasionally recorded flying over the west end of the core survey area, but none were observed foraging within it. It is therefore considered that tree planting will have a neutral impact on the species.

Lapwing – Red listed

Lapwing have suffered widespread declines throughout the UK in recent decades, with good evidence to attribute the declines to agricultural intensification. The south-east Scotland breeding population is thought to have shrunk by around 75% since 1994 (Murray *et al.*, 2019). Three lapwing territories were recorded in the 750m buffer area around West Kinleith. Two were located in the same area as the oystercatchers above, whilst the third was to the south-west of the survey area and on the south side of Threipmuir Reservoir. The territories on the north side were around 420m and 650m from the potential planting area, and the territory to the south side was 540m distant. No lapwing were observed foraging or loafing within the core survey area, however several were seen along the south shore of Threipmuir Reservoir and in the improved fields of Easter Bavelaw in the buffer area. As lapwing territories recorded during this year's surveys were all over 400m from the site boundary, it is anticipated that tree planting within the core survey area will have a neutral effect on the species.

Common Sandpiper – Amber listed

The species is traditionally found along watercourses and medium to large waterbodies, notably reservoirs in south-east Scotland. One common sandpiper territory was located in the buffer area on the south side of Threipmuir Reservoir; less than 50m from the survey site. Tree planting is likely to have a small negative effect on the species.

Curlew – Red listed

The breeding population in south-east Scotland has declined from an estimated 11,450 pairs (1988-1994), to only 3,500-5,300 pairs between 2007-2013 (Dot *et al.*, 2019). Two curlew pairs were recorded in the core survey area giving a breeding density of 0.84 pairs per kilometre (km)². Unfortunately one of these nests was predated (Fig. 7). Three further territories were located in the buffer area approximately 300m, 400m and 600m away from the site boundary. The breeding density in the core survey area and buffer zone combined was 0.54 per km². Much of the site and adjacent open habitats is favourable to curlew, however nest predation was confirmed and disturbance may also be a problem due to high numbers of visitors to the site. Within the buffer area there was a cluster of wader territories at Easter Bavelaw, which included two pairs of curlew. A recently planted conifer plantation to the south of these territories and a new strip of native trees planted along the south shore of the reservoir may reduce this areas suitability for some breeding wader species in the future. Overall given the factors discussed, further tree planting is predicted to have a small negative regional impact on the species in the short, medium and long-term.



Figure 7: predated curlew nest in the core survey area.

Snipe – Amber listed

Snipe is generally considered to be under recorded using the Brown & Shepherd methodology due to their peak activity time being highly specific, i.e. at dusk and during periods with low wind speeds (Hoodless & Baines, 2006). There was only one survey day with moderate wind speeds, all other days were either calm, light, or light to moderate. Four snipe territories were recorded in the core survey area, and a further 5 in the 750m buffer. All territories were located within marshy grassland, flushes, or around the margins of swamps. The breeding density was 1.68 pairs per km² in the core survey area, and 0.97 per km² across the total survey area. Tree planting would have a medium negative local impact over the medium to long-term due to the loss of breeding and foraging habitat.

3.5.4 Pigeons and Doves:

Wood Pigeon – Amber listed

Wood pigeon breed in a variety of woodland habitats. An increase in tree cover will benefit the species by increasing the available breeding habitat. The loss of open ground suitable for foraging is a negative, but most of the habitats present are not productive for wood pigeon with only the relatively small areas of pasture being suitable. Tree planting is predicted to have a medium positive long-term effect on the species.

3.5.5 Cuckoos:

Cuckoo – Red listed

One cuckoo territory was located during field surveys. Cuckoo lay their eggs in the nests of other species, with meadow pipit being one of most commonly targeted species. They rely on a variety of habitats for many aspects of their life-cycle, including woodland. The loss of large areas of open ground will displace and reduce the meadow pipit population and therefore reduce host species for the cuckoo. Other species of native woodland can be used as an alternative for egg laying, though this behaviour is less frequent.

Although some open habitats will be lost, tree planting may provide different breeding and foraging opportunities which should mitigate some of the negative impact. It is therefore considered that tree planting will have a neutral effect on the species, though this will depend on the mix and density of trees to be planted.

3.5.6 Larks:

Skylark – Red listed

A total of 27 territories were found in core survey areas, which equates to approximately 11.34 pairs per km². The species is an abundant and widespread bird within the UK and south-east Scotland. Despite this the skylark is red listed due to dramatic declines, 14% in the UK since 1995 and much larger declines since the 1960s. Declines have been attributed to changes in agricultural practices such as intensification and the reduction of winter stubble affecting survival and breeding success (Brown *et al.*, 2000). There have been some positive signs of recovery in recent years however, with UK populations increasing by 9% over the past 10 years and by 8% in the last 5. In Scotland the population has increased by 16% over the past decade (Heywood *et al.*, 2023). Overall, due to the species widespread distribution and abundance and recent promising increases in the population, it is thought that a planting scheme will have a small negative local impact on the species in the short, medium and long-term.

3.5.7 Pipits and Wagtails:

Meadow Pipit – Amber listed

A tally system is often used to count meadow pipits during a survey visit and then the total assigned to a 'possible' breeding category, however this usually results in an overestimate of the population as the species is sexually monomorphic and some of the registrations will inevitably be females and potentially juveniles. Therefore territories were mapped using the same methodology as other species, but extra care was taken not to over record birds. As a consequence, it is likely that the 27 territories recorded in the core survey area will be an under estimate. Meadow pipits require open habitats with a medium sward length such as moorland and rough grassland. Tree planting would eventually displace the species to surrounding open ground. In south-east Scotland it is estimated that the population has declined by 7% between 1988-94 and 2008-13 (Dot *et al.*, 2019). There is likely to be a small negative local effect over the long-term as a result.

3.5.8 Wren:

Wren – Amber listed

Five wren territories were recorded in core areas and a significantly higher number in adjacent woodland and scrub within the buffer. This is an abundant and widespread species both regionally and nationally. The species occurs in a range of habitats where vegetation is above 1m in height. They are also found in most woodland communities. A potential planting scheme will most likely have a medium positive effect on the population.

3.5.9 Accentors:

Dunnock – Amber listed

There was one dunnock territory recorded in gorse scrub. The national population fell by 47% between 1974 and the mid 1990s, but has stabilised since. The reasons for the decline are not well known. This is an abundant species both nationally and within the region. The species may benefit from a reduction in open country and an increased amount of potentially more suitable breeding and foraging habitat. As such, tree planting is likely to have a medium positive local effect on the species over the medium to long-term.

3.5.10 Thrushes and Chats:

Wheatear – Amber listed

The wheatear is a species of open country and rocky habitats. Three territories were located in the core survey area, and these would become unsuitable for the species following a change to coniferous or broadleaved woodland. Although declining, it is a widespread species both regionally and nationally so there is potential for these pairs to be displaced into the surrounding countryside. It is likely there will be a small negative local and long-term impact on the species.

Song Thrush – Amber listed

One song thrush territory was recorded in the core area, and a further 6 in woodland within the 100m buffer. The UK population declined steeply in the 1970s and 1980s, but has since stabilised and more recently has shown signs of a slight recovery. The distribution in south-east Scotland has not changed much between 1994 and 2013, and the population is also thought to have been relatively stable (Murray *et al.*, 2019). The song thrush is essentially a woodland bird with a preference for young and semi-mature forests. Mature forests are less attractive to the species due to the lack of light under a closed canopy reducing grass and herb growth. As there was only one territory within the core survey area, it is predicted that the local song thrush population will see a medium to high positive effect in the short to medium-term.

Mistle Thrush – Red listed

Two mistle thrush territories were recorded in buffer areas. They were also observed feeding in open grassland within core areas. This is a species that most frequently breeds in mature woodland and often forages either within woodland or across a range of open habitats with a short sward. As a result, it is likely the species will see a small positive effect from a planting scheme in the medium to long-term.

3.5.11 Warblers:

Whitethroat – Amber listed

One territory was recorded in an area of scattered scrub in the 100m buffer. Scrub is the favoured habitat, particularly when surrounded by open ground. Tree planting would initially increase the amount of scrub habitat available for the species, but its suitability would decrease over time as the canopy closed. Therefore, a small positive effect is predicted over the short to medium term.

Sedge Warbler – Amber listed

Sedge warbler is a species of open habitats often near watercourses or where ground is saturated such as swamps, marshes or fens. Two territories were found in marsh and swamp habitat in the buffer area just outside the southern boundary of the site. The wettest habitats within potential planting areas that are near to these territories are likely to be retained as open ground, therefore it is expected there will be a neutral effect on the species.

Grasshopper Warbler – Red listed

One grasshopper warbler territory was recorded in approximately the same area as sedge warbler were present. The species likes areas of scattered scrub, thick grassland, the edges of reedbeds, and recently planted forestry. As a result, tree planting is likely to have a small positive effect on the population in the short to medium term, but over the long-term these gains will be lost as trees mature.

Willow Warbler – Amber listed

Overall 27 willow warbler territories were recorded, with 26 being in the buffer area. The species prefers young, open or scrubby woodland with small trees, including coppice and young plantations up to about 20 years old. Given there was only one territory in areas proposed for tree planting, it is likely that there will be a high positive local impact on the population in the short to medium-term.

3.5.12 Crows:

Rook – Amber listed

Rooks were observed foraging in improved grassland fields at the west end of the site, and there was a rookery in the buffer area immediately adjacent. Nests are often built in the tops of deciduous trees, though in south-east Scotland many rookeries are in conifers which are sometimes less obvious and easy to count. A rookery is defined as any nest or group of nests more than 100m from the next nearest nest or group of nests. Individual nests were not counted, but the total was estimated to be between 30 and 50 active nests. The UK population has declined by around 20% since 1995, but in the Lothian region it is thought to have declined by 40% between 1975 and 2013 (Welch *et al.*, 2019). The reasons for this are unclear, but habitat change and increased disturbance could be partially responsible. Tree planting would reduce foraging habitat in areas of pasture, but over the longer term mature trees could provide increased nesting opportunities. The predicted impacts are likely to be a small negative one in the short-term and, depending on the planting density and species planted, potentially a medium positive effect over a longer timescale.

3.5.13 Finches:

Linnet – Red listed

Two linnet territories were identified, and all were associated with gorse scrub. Their UK population declined dramatically between the mid-1960s and 1980s. The population is still on a downward trajectory, but the decline has slowed. In south-east Scotland however, the population appears to have increased by 30% since 1994, which is bucking the national trend with Scotland as a whole showing declines of between 20 -30% (Murray *et al.*, 2019). Tree planting is expected to result in a small negative effect locally in the short, medium and long-term due to the loss of farmland and scrub communities which the species is reliant upon.

Lesser Redpoll – Red listed

Lesser redpoll is mostly strongly associated with birch and young spruce plantations (Smart *et al.*, 2007). The highest breeding densities are found in upland spruce plantations where they principally breed in young growth stages of plantations 5-15 years old, with few, if any, in older plantations (Sweeney *et al.*, 2010). The species declined by 84% during the period 1970-2011 (Eaton *et al.*, 2013), but since 2008 they have increased across Britain in part due to new forestry habitats (Risely *et al.*, 2012). One territory was located in a shelter belt in the north-east corner. Increased tree cover will have a medium short-term positive impact on the species, but these will become less pronounced as the trees mature. Locally therefore, planting is likely to result in a small positive effect over the medium to long-term.

Bullfinch – Amber listed

Broadleaved and mixed woods are favoured by bullfinches, particularly at the scrub and pre-thicket stage. They also occur in coniferous forests but at a lower density. Bullfinch is a species that can be under recorded due to its liking for thick vegetation. The species declined steeply at the end of the 1970s, though it has recovered a little since. The UK population is still around 40% lower than in the 1960s. The most recent Breeding Bird Survey report indicates a notable difference in fortunes across the UK, with the population in England declining by 16% between 1995 and 2021, but increasing by 42% in Scotland over the same period (Heywood *et al.*, 2023). There are regional differences in south-east Scotland too, with bullfinch populations in Edinburgh and the Lothians doing better than those in the Borders (Pyatt *et al.*, 2019). Two territories were recorded in woodland blocks at West Kinleith. It is likely that tree planting will have a medium positive effect on the species in the short to medium term.

3.5.14 Buntings:

Reed Bunting – Amber listed

Reed bunting were well represented with 7 territories, 5 of which were in the 100m buffer. They are typically found in wet vegetation, but they also utilise farmland during the breeding season where there is suitable emergent and rank vegetation for nesting and foraging. There has been a gradual increase in the UK population since the 1990s, and this is also the case in Scotland as a whole and the south-east too. Previous declines had been attributed to agricultural intensification reducing winter food availability. A planting scheme may reduce the amount of suitable breeding habitat for reed bunting, although it is likely that the wettest areas may be retained as open ground. Early growth stages of a new woodland may indeed be beneficial to nesting and foraging reed buntings due to an increase in rank vegetation. Over the long term however, it is predicted that tree planting will have a small local negative impact on the species.

3.6 Incidental Wildlife Records:

Mammals recorded were brown hare, rabbit, mole, field vole, roe deer, fox and grey squirrel. Butterfly species observed included green-veined white, orange tip, peacock and red admiral, and a northern eggar moth caterpillar was also noted. A common toad was seen in grassland not far from Black Springs wetland area.

4). Evaluation of Bird Interests and Recommendations:

A total of 68 bird species were recorded during 3 BBS visits to core and buffer areas. Of this number, 47 were considered to have bred or attempted to breed. If the core area only is considered, 18 species bred or attempted to breed. As it parasitises meadow pipit, cuckoo was added to this number. Of these 19 species, 4 are red listed, 8 are amber, 6 green, and one has no conservation status.

With the exception of patches of gorse near the southern boundary, almost all the main survey area was open ground. It is inevitable therefore that extensive tree planting will, on the whole, be detrimental to species that preferentially breed in these areas. The scale of negative or positive impacts on each species will vary depending on the number of territories present, displacement potential into the surrounding landscape, and a species regional and national population status. The predicted effects may also change over time as trees mature.

Including cuckoo, of the 12 red and amber listed species that bred in potential tree planting areas, willow warbler, dunnock, song thrush and wren are likely to benefit; reed bunting may initially benefit during early growth stages and then decline; linnet, skylark, curlew, snipe, wheatear, and meadow pipit are predicted to be negatively impacted; and for cuckoo the impact is considered to be neutral. Most of the negative impacts are considered to be small for most species.

Wader species such as curlew and snipe are likely to be the most negatively affected by tree planting at West Kinleith. Snipe is the most numerous breeding wader. Retaining wet open areas where it occurs next to adjacent open ground could potentially still attract breeding snipe. One snipe territory at West Kinleith was very close to a shelterbelt. A softening of the hard interface between woodland edge and open ground through low density planting of native shrubs and small trees could also reduce the deterrent effect trees can have, while also being beneficial to biodiversity more widely. One curlew nest was lost to predation, and it is possible that human disturbance also impacts on nesting success and foraging opportunities in some high footfall areas. Lapwing and oystercatcher territories were all in the 750m buffer and some distance from potential planting sites. It is unlikely therefore that either will be directly impacted by new woodland. However, given the known predation risk, an increase in tree cover is likely to increase the number of predators and elevate the level of risk to nests in the wider landscape. Some form of predator control could be considered to counter this.

Retaining areas of gorse scrub near the southern boundary along with some open ground would be beneficial for species such as whitethroat, and importantly it may help retain the red listed linnet as a breeding species.

Greylag geese and Canada geese were recorded as flyovers only. During the winter, pink-footed geese are more likely to utilise surrounding arable fields for feeding and loafing. Most of the core survey area does not appear to provide good forage for geese, although they could conceivably utilise improved fields in the western half of the site. High numbers of visitors probably make this area unattractive however. Nonetheless, due to the number of biological records returned for the species and the close proximity of Threipmuir Reservoir LBS, which is locally important for wintering wildfowl such as pink-footed geese, it is recommended that a request is made to NatureScot, British Trust for Ornithology (BTO) and the Royal Society for the Protection of Birds (RSPB) for information they may hold on pink-footed goose movements in the area and if the survey site in particular is utilised for forage or refuge.

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