



**Breeding Bird Monitoring Report  
A1270 Broadland Northway (NDR)  
Year 2 Post-construction Survey 2019**

Norfolk County Council  
Environment Team

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Front cover photograph: Little Ringed Plover (Natural Environment Team, NCC)

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## 1. Non-Technical Summary

- 1.1. This document reports on the breeding bird survey undertaken in 2019 along the A1270 Northern Broadway corridor (formally the Norwich Northern Distributor Road (NDR)). The survey was completed as part of Requirement 7 of the Development Consent Order (DCO) for the NDR scheme.
- 1.2. Breeding bird surveys were undertaken in the years prior to construction, as part of a suite of surveys used to establish the ecological baseline situation and inform the design of the road. In line with the Environmental Statement (Mott MacDonald, 2014), there is a monitoring requirement to undertake bird breeding monitoring surveys for 5 years post-construction.
- 1.3. This report describes the 2<sup>nd</sup> year post-construction breeding bird monitoring. Monitoring was previously undertaken in 2018 (*Breeding Bird Monitoring Report: Northern Distributor Road Year 1 Post-construction Survey 2018*; Natural Environment Team, NCC; 2018).
- 1.4. The methodology of the 2019 breeding bird Year 2 monitoring survey replicated that of the 2018 survey. Full details of the methodology and a comparison of the methodology used to the pre-construction surveys can be found in the Year 1 report<sup>1</sup>.
- 1.5. Breeding evidence was recorded for 54 species within the road corridor. A total of 10 species were recorded that are on the Red List of Birds of Conservation Concern, of which 8 showed evidence of breeding. A further 18 species were recorded that are on the Amber List of Birds of Conservation Concern, of which 10 showed evidence of breeding. This situation was comparable to the Year 1 Post-construction surveys in 2018.
- 1.6. In terms of the species of highest conservation concern, the number and abundance of breeding Red-listed and Amber-listed species recorded pre and post-construction are not very different. Whilst broad patterns may be observable in the data, long-term trends and the natural between-year variation means it is difficult to attribute any observed changes to any factor, either environmental or as a result of the construction of the road.
- 1.7. The breeding bird monitoring will be repeated for a further three years in 2020, 2021, and 2022 in accordance with the DCO, and the breeding bird situation will be reported on as the landscape plantings of the road matures.

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<sup>1</sup> *Breeding Bird Monitoring Report: Northern Distributor Road Year 1 Post-construction Survey 2018*; (2019); Natural Environment Team, NCC; (Unpublished Report).



## 2. Introduction

- 2.1. This document has been produced to report on the Year 2 Post-construction breeding bird monitoring survey undertaken in 2019 along the length of A1270 Northern Broadway (formally the Norwich Northern Distributor Road (NDR)). This survey is the second such survey undertaken post-construction.
- 2.2. Full details of the Development Consent Order (DCO) for the NDR/Northern Broadway can be found in Volume 1 of the Environmental Statement (ES) that was submitted as part of the DCO application (Mott MacDonald, 2014). The details of the DCO including the full ES and the Requirements can be found on Norfolk County Council's webpages<sup>2</sup>. The NDR was completed in early 2018 with the final section opening to traffic on 17<sup>th</sup> April 2018.
- 2.3. Breeding bird surveys were undertaken in the years prior to the construction of the road, as part of a suite of surveys used to establish the ecological baseline situation and to inform the design. The results of the breeding bird surveys are summarised in Chapter 8 of Volume 2 of the Environmental Statement (ES), and a more detailed report is included in Technical Appendices of that document (Mott MacDonald, 2013).
- 2.4. The current monitoring is being completed as part of Requirement 7 of the DCO for the NDR scheme (Norfolk County Council, 2014a). In line with the ES and as summarised in the NDR Mitigation and Monitoring Table (Norfolk County Council, 2014b), there is a monitoring requirement to undertake bird breeding monitoring surveys in the years 1, 2, 3, 4, and 5 post-construction.
- 2.5. The current report describes the 2019 Year 2 Post-construction monitoring survey and compares the results to the 2018 survey (*Breeding Bird Monitoring Report: Northern Distributor Road Year 1 Post-construction Survey 2018*: Natural Environment Team, NCC; 2018) and the previously established baseline (pre-construction) situation.

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<sup>2</sup> <https://www.norfolk.gov.uk/roads-and-transport/major-projects-and-improvement-plans/norwich/broadland-northway>

### 3. Methodology

- 3.1. As required by the DCO, the field methodology for the breeding birds monitoring surveys has been designed to replicate as close as possible the survey undertaken prior to construction (the ‘baseline survey’) and to be easily repeatable over the 5 years post-construction.
- 3.2. The 2019 Year 2 Post-construction surveys repeated the methodology used in Year 1 surveys. Full details of the methodology can be found in the *Breeding Bird Monitoring Report: Northern Distributor Road Year 1 Post-construction Survey 2018* (Natural Environment Team, NCC; 2019).
- 3.3. The monitoring data collection was conducted between 15<sup>th</sup> April 2019 and 27<sup>th</sup> June 2019.
- 3.4. In line with the previous year’s monitoring, surveying generally started around 5.00am, although where weather conditions were sub-optimal, some visits started at 7.00am or slightly later. Surveying was completed by 11.00-11.30am in most cases, although a few visits lasted until around 12.00pm. To complete the coverage in an appropriate timeframe, a number of evening visits were necessary. These continued no later than 9.45pm.

#### Conservation status

- 3.5. In the same way as the 2018 report and the baseline (pre-construction) surveys, bird species recorded were categorised by their Conservation Status. These were as described in *Birds of Conservation Concern 4* (Eaton *et al.*, 2015). The conservation status of some species has changed since the baseline survey. These changes are noted in this report where appropriate.
- 3.6. In the same way as the 2018 report, birds on the Red and Amber lists, i.e. those of the highest conservation status, are given greatest consideration in the analysis of the 2019 monitoring results.

#### Nomenclature

- 3.7. The English vernacular names and scientific bird names used in this report follow that of the British Ornithologists’ Union (2012) and are the same as those used in the 2018 report and the baseline survey report.

## 4. Results

### Overview

- 4.1. In 2019, breeding evidence was recorded for 54 species within the road corridor. Other species were recorded but for which no evidence of breeding was noted.
- 4.2. The most commonly recorded species were Wren, Great Tit, Blue Tit, Chaffinch, Blackbird, Jackdaw and Goldfinch, and all showed evidence of breeding throughout the road corridor.
- 4.3. A total of 10 species were recorded that are on the Red List of Birds of Conservation Concern. Of these, 8 showed evidence of breeding. A further 18 species were recorded that are on the Amber List of Birds of Conservation Concern. Of these, 10 showed evidence of breeding. A full list of species recorded in 2019 is given in Table 1, including whether they showed evidence of breeding and their current conservation status.
- 4.4. 'Hotspots' for breeding birds were identified at 13 locations. These were (from south to north):

#### Southern section:

- Smee Lane (East of Northern Broadway);
- At the eastern side of the Middle Road overbridge;
- Between the road and Green Lane, Rackheath (South of Salhouse Rd);
- Between the road and Green Lane, Rackheath (North of Salhouse Rd);
- Newman Rd Woods (West of Newman Rd overbridge);
- Gazebo Farm Ecological Area (East of Newman Rd overbridge);
- Drainage lagoons (Nos. 18, 18A, 18B), south of Wroxham Rd
- Springs County Wildlife Site, west of Rackheath;
- Drainage lagoon (No.17), adj. to Springs County Wildlife Site

#### Northern section:

- Beeston Hall/Beeston Lane (South of Broadland Northway);
- North of Airport Roundabout
- Bell Farm track overbridge (South of Broadland Northway)
- Marriott's Way (North of Northern Broadway).

- 4.5. The 'Hotspot' locations are shown on Figures 1 (Southern section) and 2 (Northern section), coloured by the number of species showing evidence of breeding.

### Species of Conservation Concern

- 4.6. The eight Red-listed species that showed evidence of breeding were: House Sparrow, Linnet, Marsh Tit, Mistle Thrush, Skylark, Song Thrush, Starling, and Yellowhammer.
- 4.7. House Sparrow colonies were noted in four locations, 2 in the southern section and two in the north (Figure 3 and Figure 4). Linnets were observed along most of the

Northern Broadway with 21 territories identified. Marsh Tits were recorded at the Springs County Wildlife Site, where a minimum of 3 territories were identified, and a single territory was identified at Newman Road Woods (Figure 3).

- 4.8. Skylarks were heard singing along the full road corridor. A minimum total of 37 territories were identified that were wholly or largely within the road corridor. The locations of these territories are plotted in Figures 5 and 6.
- 4.9. Starlings were heard singing at Newman Road Wood and at Green Lane, Rackheath, where territories were associated with the houses/gardens (Figure 3). Singing male Starlings were also heard at two locations on the northern section of the road at Thorpe Marriott, and near Beeston Park (Figure 4). Song Thrushes were heard singing in a minimum of 10 locations. Three singing Mistle Thrushes were recorded on more than 1 visit, although others were observed, and this probably is an underestimate of breeding numbers.
- 4.10. A minimum of 13 Yellowhammer territories were identified. These were scattered along the length of the road in the areas where hedges predominate.
- 4.11. A Cuckoo was heard calling on a single visit, but although heard from the survey zone, the bird was considered to be outside of the defined road corridor. The approximate location is marked on Figure 4 but is not included in the subsequent analysis. Two further Red-listed species were seen in the monitoring surveys but did not show signs of breeding, namely Herring Gull and Yellow Wagtail.

### Other observations

- 4.12. Little Ringed Plover (Green listed) bred in the vicinity of drainage lagoon 8 at the Cromer Road roundabout. Two young were observed. The adult birds were seen flying between lagoons 8 and 8A, and over the roundabout on the northern side of the Northern Broadway to the vicinity of lagoon 9. At least two birds were also observed around lagoon 13 north of the airport near Quakers Farm, and these were considered a separate pair. It is probable that breeding was also attempted in this area although no young were seen, and the breeding attempt may have failed.
- 4.13. Several of the drainage lagoons held water throughout the survey period. Lagoons regularly held groups of 30+ Mallard, and much smaller numbers of tufted duck and teal. There was no direct evidence of breeding Mallards (e.g. presence of ducklings) but it is possible that breeding occurred. A feral Ruddy Shelduck was observed on two occasions and feral Egyptian Geese and Greylag Geese were seen regularly. Moorhens showed evidence of breeding at more than one lagoon. Large numbers of gulls were seen on various lagoons on several visits, notably lagoons 8 and 13.
- 4.14. There were numerous sightings of raptors and owls; up to 8 Kestrels were observed on a single visit, Buzzard sightings were numerous, and a Red Kite was observed flying over the road in May. A Little Owl nest was located in a hole in a tree near Fir Covert Road in which, on a previous survey, a Kestrel had been seen sitting in. Two young Little Owls were subsequently observed sitting close to each other on fence posts in the vicinity of the nest tree. A 'fly-past' Hobby was observed over the Gazebo Farm Ecological area on a single visit in June.



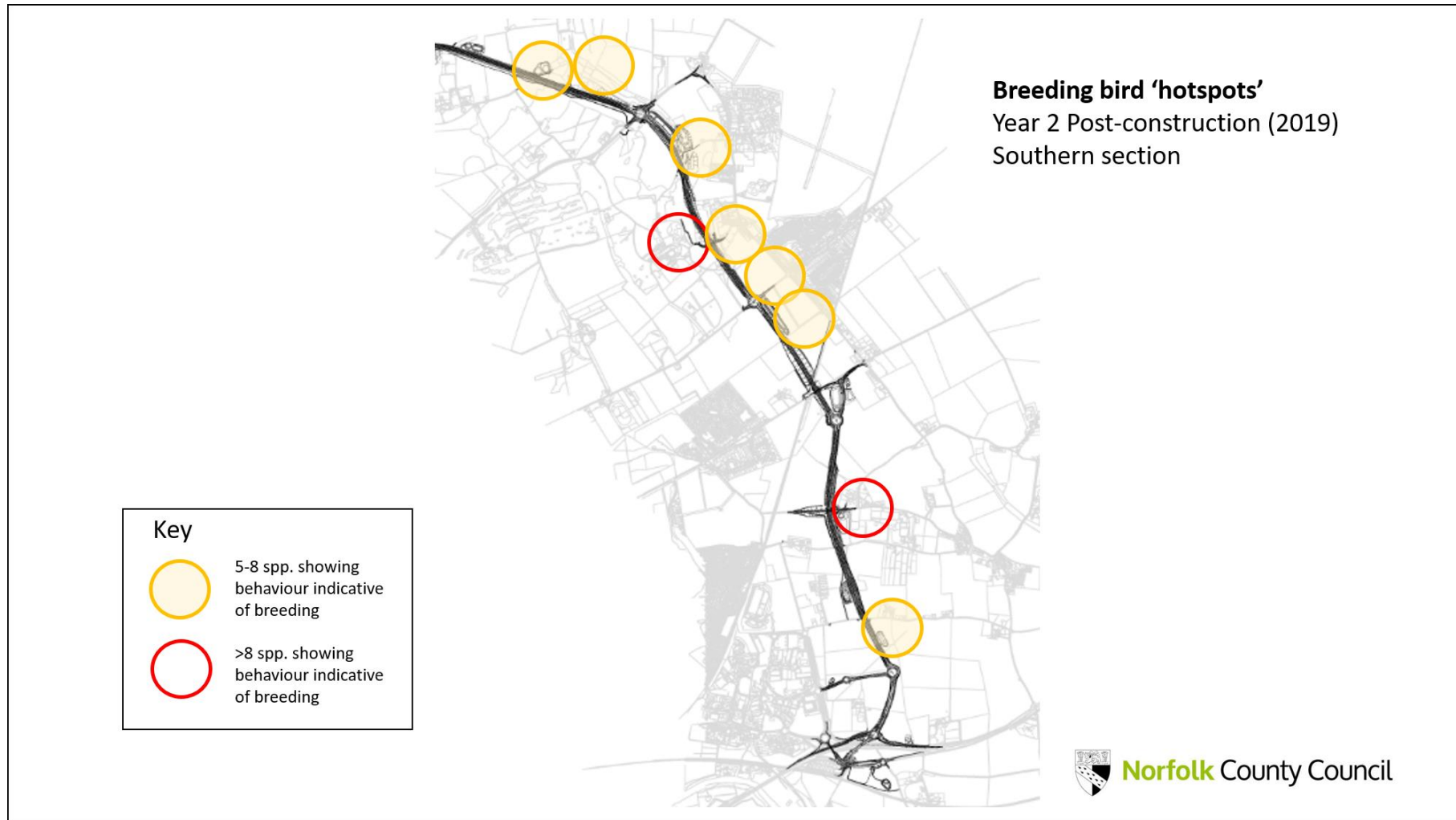
BREEDING BIRD SURVEY: NORTHERN BROADWAY – YEAR 2 POST-CONSTRUCTION (2019)

Table 1: Species list of birds recorded in 2019, noting evidence of breeding where applicable, and the conservation status of each species. The species where the Conservation status has changed since the baseline surveys are marked with an asterisk. In all such cases, the status change has been upward indicating an increasing level of conservation concern.

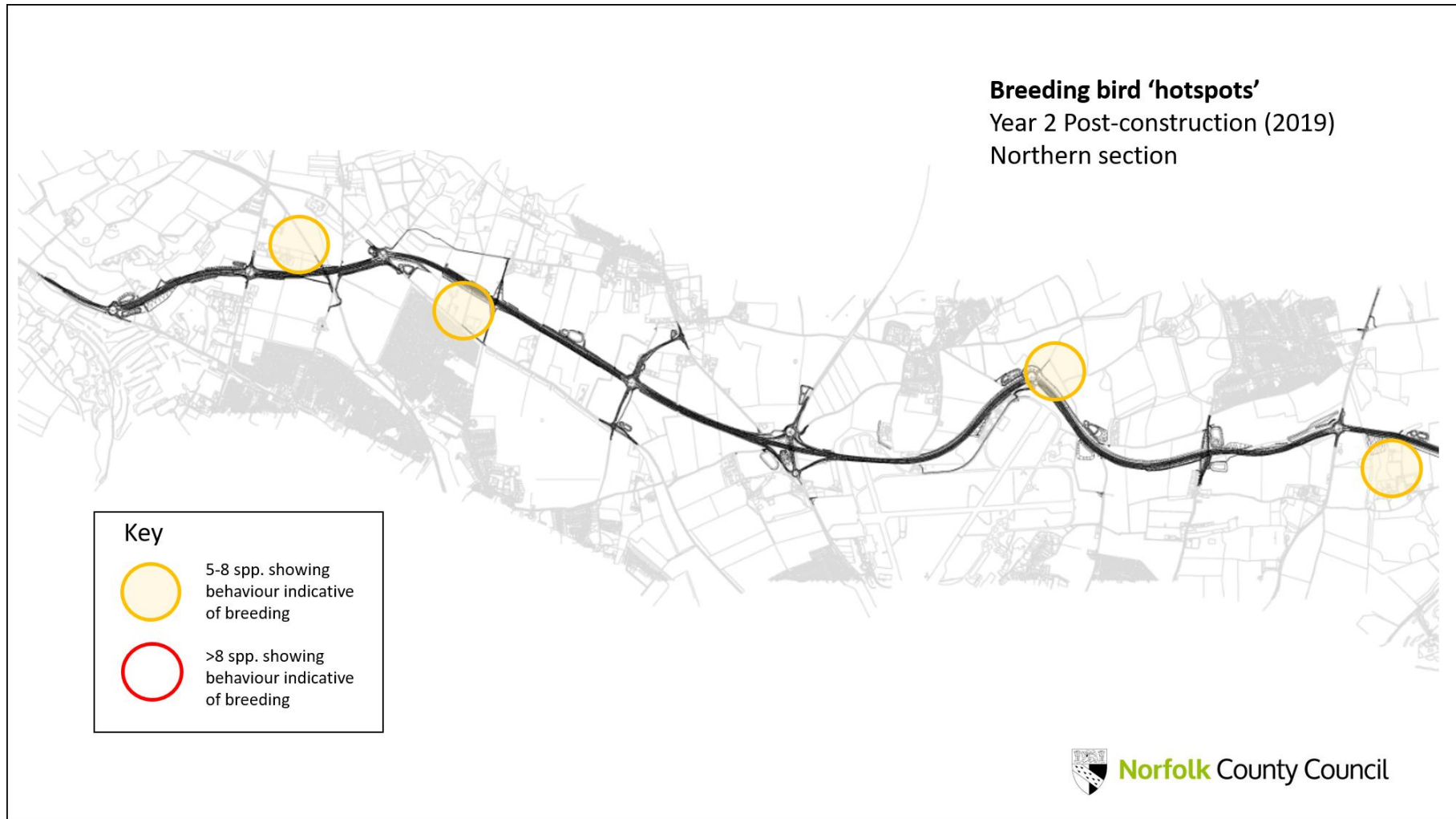
English name	Scientific name	Native or non-native	Evidence of breeding in 2019 Y/N	Birds of Conservation Concern
Blackbird	<i>Turdus merula</i>	N	Y	Green
Blackcap	<i>Sylvia atricapilla</i>	N	Y	Green
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	N	N	Amber
Blue Tit	<i>Cyanistes caeruleus</i>	N	Y	Green
Bullfinch	<i>Pyrrhula pyrrhula</i>	N	Y	Amber
Buzzard	<i>Buteo buteo</i>	N	Y	Green
Canada Goose	<i>Branta canadensis</i>	NN (feral)	N	unlisted
Carrion Crow	<i>Corvus corone</i>	N	Y	Green
Chaffinch	<i>Fringilla coelebs</i>	N	Y	Green
Chiffchaff	<i>Phylloscopus collybita</i>	N	Y	Green
Coal Tit	<i>Parus ater</i>	N	Y	Green
Collared Dove	<i>Streptopelia decaocto</i>	N	Y	Green
Coot	<i>Fulica atra</i>	N	Y	Green
Cormorant	<i>Phalacrocorax carbo</i>	N	N	Green
Dunnock	<i>Prunella modularis</i>	N	Y	Amber*
Egyptian Goose	<i>Alopochen aegyptiaca</i>	NN (feral)	N	Unlisted
Feral pigeon	<i>Columba livia domestica</i>	N (feral)	Y	Unlisted
Garden Warbler	<i>Sylvia borin</i>	N	Y	Green
Goldcrest	<i>Regulus regulus</i>	N	Y	Green
Goldfinch	<i>Carduelis carduelis</i>	N	Y	Green
GS Woodpecker	<i>Dendrocopos major</i>	N	Y	Green
Great Tit	<i>Parus major</i>	N	Y	Green
Green Woodpecker	<i>Picus viridis</i>	N	Y	Green
Greenfinch	<i>Chloris chloris</i>	N	Y	Green
Grey Heron	<i>Ardea cinerea</i>	N	N	Green
Grey-lag Goose	<i>Anser anser</i>	N (feral)	N	Amber
Herring Gull	<i>Larus argentatus</i>	N	N	Red
Hobby	<i>Falco subbuteo</i>	N	N	Green
House Martin	<i>Delichon urbicum</i>	N	Y	Amber
House Sparrow	<i>Passer domesticus</i>	N	Y	Red
Jackdaw	<i>Corvus monedula</i>	N	Y	Green
Jay	<i>Garrulus glandarius</i>	N	Y	Green
Kestrel	<i>Falco tinnunculus</i>	N	N	Amber
Lesser BB Gull	<i>Larus fuscus</i>	N	N	Amber
Lesser Whitethroat	<i>Sylvia curruca</i>	N	Y	Green
Linnet	<i>Linaria cannabina</i>	N	Y	Red
Little Egret	<i>Egretta garzetta</i>	N	N	Green
Little Owl	<i>Athene noctua</i>	NN	Y	Green

BREEDING BIRD SURVEY: NORTHERN BROADWAY – YEAR 2 POST-CONSTRUCTION (2019)

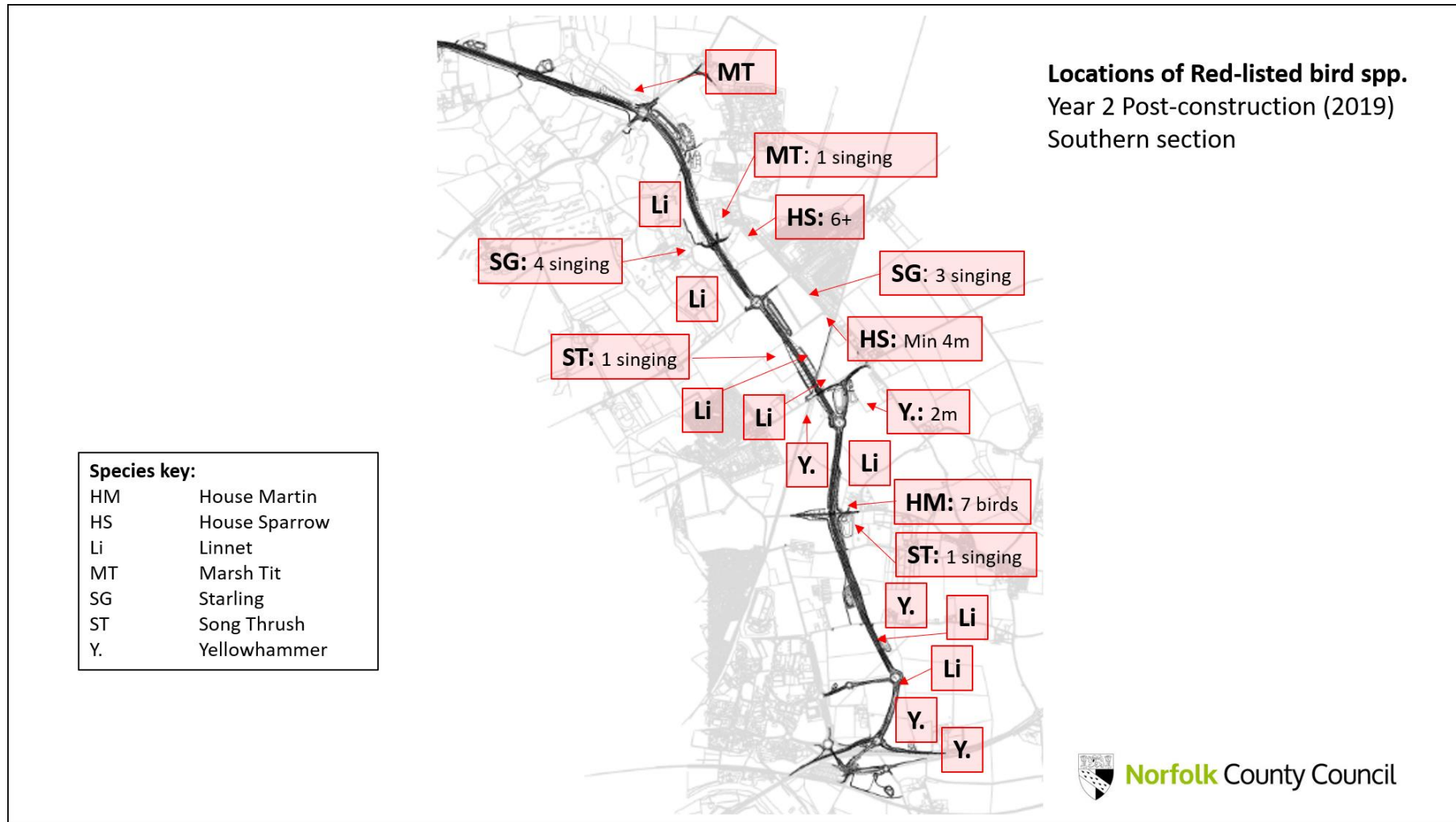
English name	Scientific name	Native or non-native	Evidence of breeding in 2019 Y/N	Birds of Conservation Concern
Little Ringed Plover	<i>Charadrius dubius</i>	N	Y	Green
Long-tailed Tit	<i>Aegithalos caudatus</i>	N	Y	Green
Magpie	<i>Pica pica</i>	N	Y	Green
Mallard	<i>Anas platyrhynchos</i>	N	N	Amber*
Marsh Tit	<i>Poecile palustris</i>	N	Y	Red
Meadow Pipit	<i>Anthus pratensis</i>	N	Y	Amber
Mistle Thrush	<i>Turdus viscivorus</i>	N	Y	Red*
Moorhen	<i>Gallinula chloropus</i>	N	N	Green
Mute Swan	<i>Cygnus olor</i>	N	N	Amber*
Nuthatch	<i>Sitta europaea</i>	N	Y	Green
Oystercatcher	<i>Haematopus ostralegus</i>	N	N	Amber
Pheasant	<i>Phasianus colchicus</i>	NN	Y	Unlisted
Pied Wagtail	<i>Motacilla alba</i>	N	Y	Green
Red Kite	<i>Milvus milvus</i>	N	N	Green
Red-legged Partridge	<i>Alectoris rufa</i>	NN	Y	Unlisted
Reed Bunting	<i>Emberiza schoeniclus</i>	N	Y	Amber
Reed Warbler	<i>Acrocephalus scirpaceus</i>	N	Y	Green
Robin	<i>Erithacus rubecula</i>	N	Y	Green
Rook	<i>Corvus frugilegus</i>	N	N	Green
Ruddy Shelduck	<i>Tadorna ferruginea</i>	NN	N	Unlisted
Sand Martin	<i>Riparia riparia</i>	N	Y	Green*
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	N	Y	Green
Skylark	<i>Alauda arvensis</i>	N	Y	Red
Song Thrush	<i>Turdus philomelos</i>	N	Y	Red
Sparrowhawk	<i>Accipiter nisus</i>	N	N	Green
Starling	<i>Sturnus vulgaris</i>	N	Y	Red
Swallow	<i>Hirundo rustica</i>	N	Y	Green
Swift	<i>Apus apus</i>	N	Y	Amber
Tawny Owl	<i>Strix aluco</i>	N	Y	Amber*
Teal	<i>Anas crecca</i>	N	N	Amber
Treecreeper	<i>Certhia familiaris</i>	N	Y	Green
Tufted Duck	<i>Aythya fuligula</i>	N	N	Amber
Whitethroat	<i>Sylvia communis</i>	N	Y	Amber
Willow Warbler	<i>Phylloscopus trochilus</i>	N	Y	Amber
Wren	<i>Troglodytes troglodytes</i>	N	Y	Green
Yellow Wagtail	<i>Motacilla flava</i>	N	N	Red
Yellowhammer	<i>Emberiza citronella</i>	N	Y	Red



**Figure 1: Locations of 'hotspots' of breeding birds in 2019; Northern Broadway Southern Section.** Locations where 5-8 species showed behaviour indicative of breeding are marked by a yellow circle. Locations where >8 species showed behaviour indicative of breeding are marked with a red circle. The extent of the NDR scheme is shown in black.

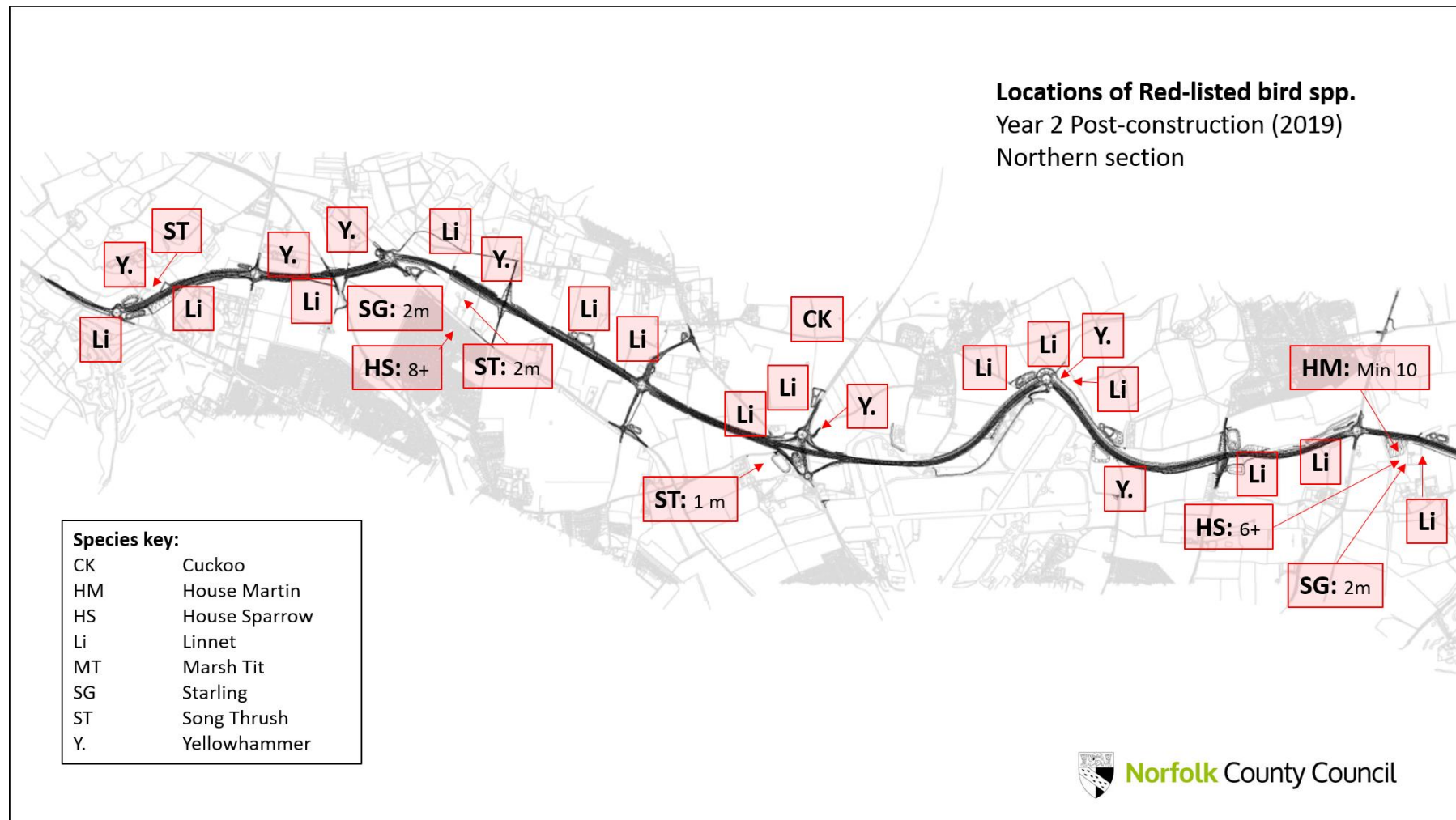


**Figure 2: Location of breeding bird 'hotspots' in 2019; Northern Broadway Northern section.** Locations where 5-8 species showed behaviour indicative of breeding are marked by a yellow circle. Locations where >8 species showed behaviour indicative of breeding are marked with a red circle. The extent of the NDR scheme is shown in black.



**Figure 3: Locations of ‘Red-listed’ bird species showing behaviour indicative of breeding in 2019; Northern Broadway Southern Section.** For Starling and Song Thrush, the number of singing males is shown. For House Sparrow and House Martin, the minimum number of birds present on any single visit is recorded. For Linnet and Yellowhammer, the location is shown where birds were observed holding territory on >1 occasion. Note: Skylark records are omitted from this Figure as they are shown in Figure 5. The extent of the NDR scheme is shown in black.

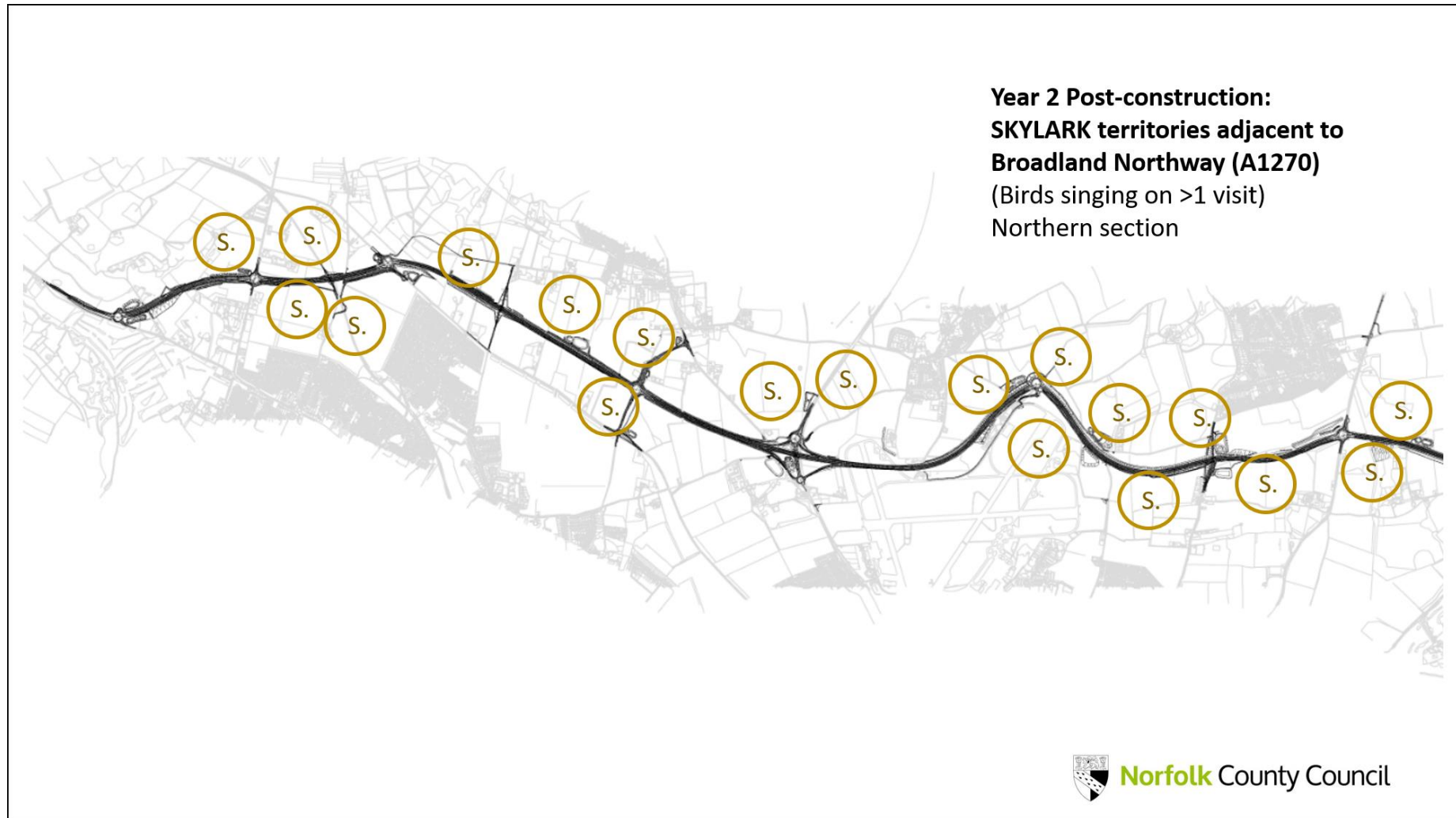




**Figure 4: Locations of 'Red-listed' bird species showing behaviour indicative of breeding in 2019; Northern Broadway Northern Section.** For Starling and Song Thrush, the number of singing males is shown. For House Sparrow and House Martin, the minimum number of birds present on any single visit is recorded. For Linnet and Yellowhammer, the location is shown where birds were observed holding territory on >1 occasion. Note: Skylark records are omitted from this Figure as they are shown in Figure 6. The extent of the NDR scheme is shown in black. The location of a calling Cuckoo is marked, although as this was outside the road corridor it is not included in the analysis.



**Figure 5: Location of Skylark Territories in 2019; Northern Broadway Southern Section.** Locations are marked where singing males were heard on more than one occasion. Skylarks are a 'red-listed' species. The extent of the NDR scheme is shown in black. Note: Other Skylarks held territories that were adjacent to the road corridor, and that were seen and heard during the surveys, but they are not included in the analysis as they were considered to be outside the Zone of Influence (ZOI).



**Figure 6: Location of Skylark Territories in 2019; Northern Broadway Northern Section.** Locations are marked where singing males were heard on more than one occasion. Skylarks are a 'red-listed' species. The extent of the NDR scheme is shown in black. Note: Other Skylarks held territories that were adjacent to the road corridor, and that were seen and heard during the surveys, but they are not included in the analysis as they were considered to be outside the Zone of Influence (ZOI).

## 5. Discussion

### Comparison of the 2019 survey with the Year 1 (2018) and the baseline surveys:

5.1. The results of the 2019 Year 2 Post-construction breeding bird monitoring survey were very similar to those of the Year 1 survey. Breeding evidence was identified for a total of 54 species, one less than in 2018. This compares to 61 species for which breeding evidence was observed in the baseline (pre-construction) surveys undertaken in 2012 and 2013.

### Between-year comparison: Red-listed Species

5.2. In total, over all the surveys (pre and post-construction) 14 species that are currently on the Red-list have bred in the location of the road, but not all in the same year (Table 2 below). In 2019, 8 Red-listed species were observed to be showing signs of breeding. This compares with 10 in 2018 and 13 in the baseline surveys (although note the conservation status of some species changed between the pre-construction and post-construction surveys).

*Table 2: Comparison of breeding Red-listed species observed in the road corridor between the baseline surveys (2012 and 2013) and the post-construction surveys of 2018 and 2019. \*Note 1: A cuckoo was heard on the 2019 survey, but the bird was outside of the road corridor and is not considered in the analysis. The approach to mapping Skylarks differed between the pre and post-construction surveys (see 2018 report for details). \*\*Note 2: the 2018 Year 1 report incorrectly stated that Mistle Thrush was Amber-listed when, in fact, it is on the Red list.)*

Red-listed Species	Baseline Survey (pre-construction)	2018 survey (Year 1 Post-construction)	2019 Surveys (Year 2 Post-construction)
Cuckoo*	Max 2 birds recorded	Not recorded	Heard, but outside the road corridor*
Grasshopper Warbler	Not recorded	1 singing male	Not recorded
Grey Partridge	Not breeding	1 pair	Not recorded
House Sparrow	3 singing males	4 'colonies'	4 'colonies'
Kestrel	Breeding	Numerous sightings, no evidence of breeding	Seen at a suitable nest site, but no evidence of breeding
Linnet	10 singing males	13 singing males	21 singing males
Marsh Tit	2 singing males	4 singing males (1 location)	4 singing males (2 locations)
Mistle Thrush*	10 singing males	4 singing males	3 singing males
Mute Swan	Breeding	Several sightings but no evidence of breeding	Several sightings but no evidence of breeding
Skylark	156 singing males	25 territories	37 territories
Song Thrush	22 singing males	10 singing males	10 singing males
Spotted Flycatcher	1 pair	Not recorded	Not recorded
Starling	4 singing males	17 singing males (5 locations)	11 singing males (4 locations)
Yellowhammer	34 singing males	9 singing males	13 singing males

5.3. The 8 Red-listed species breeding in both 2019 and 2018 were: House Sparrow, Linnet, Marsh Tit, Mistle Thrush, Skylark, Song Thrush, Starling, and Yellowhammer. The two Red-listed species that were not recorded in 2019 but were present the previous year were Grasshopper Warbler and Grey Partridge. A Grasshopper Warbler was heard singing in 2018 in reedbed and scrub on two separate visits at the Springs County Wildlife Site but was otherwise not recorded during the survey. A single pair of Grey Partridge were observed once in 2018 in suitable breeding habitat in grassland immediately adjacent to the road north east of the airport.

**Between-year comparison: Amber-listed Species**

5.4. There is a similarity in the presence of Amber-listed species in the first and second-year Post-construction monitoring surveys, with 18 species recorded each year (Table 3). Also similar was the number of Amber-listed species showing some evidence of breeding; in 2019 there were 9 such species, one less than in 2018.

*Table 3: Comparison of Amber-listed species observed in the road corridor between the and the post-construction surveys of 2018 and 2019, with indication of whether breeding was considered likely. (Note: the 2018 Year 1 report incorrectly stated that Stock Dove was Red-listed when, in fact, it is on the Amber list.)*

Amber-listed Species	Year 1 Survey: 2018 Evidence of breeding (Y/N)	Year 2 Survey: 2019 Evidence of breeding (Y/N)
Black-headed Gull	N	N
Bullfinch	Y	Y
Dunnock	Y	Y
Grey-lag Goose	N	N
House Martin	Y	Y
Kestrel	N	N
Lesser BB Gull	N	N
Mallard	N	N
Meadow Pipit	Y	Y
Mute Swan	N	N
Oystercatcher	N	N
Reed Bunting	Y	Y
Stock Dove	N	Not recorded
Swallow	Y	Y
Swift	Y	Y
Teal	Not Recorded	N
Tufted Duck	Y	N
Whitethroat	Y	Y
Willow Warbler	Y	Y

**Between-year comparison: Hotspots**

5.5. There were some minor differences in the number and locations of ‘Hotspots’ for breeding birds in 2018 and 2019. The 13 locations in 2019 where more than 5



breeding species were recorded was one more location than in 2018. In the southern section there were 9 hotspots in 2019 compared to 7 in 2018, and in the northern section there were 4 compared to 5 in 2018.

### Discussion of differences pre and post-construction

- 5.6. The majority of the birds showing evidence of breeding in 2019 were using habitats that were present before the road was constructed, in areas peripheral to the construction zone. All the identified hotspots were in pre-existing habitats. When the first post-construction breeding bird survey commenced in 2018, the landscaping planting had not been completed. By the start of the 2019 breeding bird surveys, most of the soft landscaping was in place, but naturally the specimens that were planted were very immature. Opportunities for breeding in the newly landscaped areas remain limited.
- 5.7. For bird species in the UK there are identified long-term trends for population change (British Trust for Ornithology, 2018). In addition to the background population trends, there is frequently between-year variation in breeding numbers. This is due largely to weather conditions at critical times in the birds' lifecycles affecting adult survival, fledging rates, migration, dispersal etc (Woodward *et al.*, 2018). The results of surveys must be seen in context; any observed changes in the abundance or density of breeding birds could just be as a result of weather or long-term environmental change, as much as they could be attributable to the road construction.
- 5.8. The Red-listed species that were observed breeding in 2019 are readily detectable species. It is considered reasonable to assume that they would have been equally detectable in both the pre and post-construction surveys. Therefore, and with the caveats described above (paragraph 5.7) in mind, the differences in abundance of the Red-listed species pre and post-construction is considered below.

### Species showing apparent increases post-construction

- 5.9. The number of singing Starlings has increased post-construction. The baseline surveys identified only 4 singing males but there 17 and 11 birds holding territories in 2018 and 2019 respectively. Similarly there were small increases in the numbers of singing House Sparrows and Marsh Tits. All these birds were breeding in habitats that existed pre-construction. Without evidence to the contrary, this is likely to reflect natural variation in breeding numbers between years.
- 5.10. The number of Linnets holding territories has increased post-construction (from 10 in the 2012-13 surveys to 21 in 2019). This too may simply reflect natural variation in breeding numbers between years, as the favoured breeding habitat of scrub and has probably changed little between the surveys.

### Species showing apparent declines post-construction

- 5.11. There has been a decrease in singing Yellowhammer post-construction (34 territories in the baseline surveys compared to 13 in 2019). However, the total in 2019 was an increase from 9 in 2018. The reduction post-construction may be due

to the direct loss of hedgerows as a result of road construction, or an indirect effect of a reduction in field size. However, their apparent decrease might also be - in part - an artefact of recording (see the 2018 Breeding Bird report).

- 5.12. There has been a decrease in the number of territories of Song Thrush and Mistle Thrush recorded post-construction (2012-13: 22 Song Thrushes and 10 Mistle Thrushes; 2019: 10 and 3 respectively). However, there were several other sightings of Mistle Thrushes in 2019, so additional breeding pairs was possible. It may be that Thrush species have declined or moved out of the area as a result of the road construction, or perhaps an increase in traffic noise or other disturbance once the road was operational has meant birds have moved. However, the decrease could also reflect the national pattern of breeding Thrush numbers which have shown declines from 1970 onwards.
- 5.13. It is unclear how as to what extent Skylark numbers have reduced post-construction as it appears likely that the way Skylarks were recorded was different between the survey periods (see 2018 Breeding Report for discussion of this point). In 2019 there was a minimum of 37 territories that were wholly within the defined road corridor ('zone of influence' (ZOI)). Other birds held territories that were considered outside but adjacent to the road corridor and that could be seen and heard during the surveys, but they are not included in the analysis. The number of recorded territories in the road corridor was an increase from the 25 territories identified in 2018.
- 5.14. Grasshopper Warbler and Grey Partridge showed evidence of breeding in 2018 but were not recorded in 2019 or in the pre-construction surveys. These species occur at low densities in this part of Norfolk, and it may only be a matter of chance that they were present in the zone of influence (ZOI) in 2018 but not in 2019 or previously.
- 5.15. A Cuckoo was heard in 2019 but the bird was considered to be outside the road corridor (ZOI). Two had been heard during the baseline surveys in 2012 and 2013 and none were heard in 2018. Spotted Flycatchers were recorded in the baseline survey (as a single male and a separate pair), but none were recorded in 2019 or 2018. Both species are in decline nationally and, in a Norfolk context they have declined markedly in the last 10 years. It is likely that the apparent population changes may not be directly attributable to the road.

## Conclusions and future surveys

- 5.16. The 2019 monitoring survey results are a snapshot in time of the breeding birds in the corridor of the Northern Broadway. In terms of the species of highest conservation concern, there is similarity in the number and abundance of breeding Red-listed species present pre and post construction. Whilst broad patterns may be observable in the data, long-term trends and the natural between-year variation means it is difficult to attribute any observed changes to any factor, either environmental or as a result of the construction of the road.

5.17. The breeding bird monitoring will be repeated for a further three years in 2020, 2021, and 2022 in accordance with the DCO, and the breeding bird situation will be reported on as the setting of the road matures.

## 6. References

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Photograph: Yellowhammer (Natural Environment Team, NCC)