



# **Barn Owl Box Monitoring Report**

**A1270 Broadland Northway (NDR)**

**Year 3 Post–construction checks 2020**

Norfolk County Council

Environment Team

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Address: Norfolk County Council, County Hall, Martineau Ln, Norwich NR1 2DH

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Date	Revision	Prepared by	Approved by	Comments
25/08/2020	Initial Draft	CR		
08/09/2020	V1	CR		
09/09/2020	V2	DW	CD	Information of the 3 years of monitoring added
24/11/2020	V3	DW		Additional photos added.

Front cover photograph: Barn owl hunting within the highway zone of the Broadland Northway by drainage lagoon 5, 17th June 2020 (Natural Environment Team, NCC)

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## 1. Non-Technical Summary

- 1.1. This document reports on the barn owl nest box checks undertaken in 2020 to identify current occupancy of nest boxes and to determine the success of this post-construction compensation measure of the A1270 Broadland Northway (formally known as the Norwich Northern Distributor Road (NDR)). The monitoring was undertaken as part of Requirement 7 of the Development Consent Order (DCO) for the Northern Distributor Road (NDR) scheme (Norfolk County Council, 2014a).
- 1.2. The County Council was required to erect 10 barn owl boxes to mitigate impacts on the local barn owl population arising from the road. Mitigation measures were informed by a pre-construction barn owl survey in 2013 and described in Environmental Statement (Mott MacDonald, 2014) that accompanied the DCO. As summarised in the NDR Mitigation and Monitoring Table (Norfolk County Council, 2014b) there is a monitoring requirement to undertake monitoring of the use of the barn owl boxes in year one and year three post-construction.
- 1.3. This report describes the barn owl nest box monitoring in 2020, the third-year post-construction. The barn owl nest box checks were undertaken by licenced surveyors and barn owl occupation was characterised in accordance with best practice guidance (Shawyer, 2011).
- 1.4. In 2020, eight boxes were in a condition that could be used by barn owls. Five boxes were inspected by an ecologist engaged by the Natural Environment Team and one box was inspected by the Hawk and Owl Trust. Access limitations as a result of COVID meant that nest boxes at two sites could not be inspected. Three of the six inspected boxes were considered Active Roost Sites (ARS), although there was no evidence of any of the boxes being used for nesting in 2020. There was no evidence of barn owl activity at the other inspected barn owl boxes.
- 1.5. This report also summarises the monitoring undertaken in each of the three years post-construction (2018- 2020). The full results of the monitoring in year one is reported in *Barn Owl Box Monitoring Report: Year 1 Post- construction checks 2018* (Natural Environment Team, NCC; 2018). Barn owl nest box checks were also carried out in year two, outside of Requirement 7 of the DCO.
- 1.6. Since the Broadland Northway opened in spring 2018, a total of four **Active Roost Sites** (Box 3, 5, 6 and 9) and one **Occupied Breeding Site** (Box 7) have been recorded.
- 1.7. It is recommended that additional barn owl boxes should be erected in suitable and easily accessible locations (at least 1.5km from the NDR and ideally within 5km of the road) to increase barn owl nest site availability. The nest boxes should be installed with input from a suitably qualified ecologist to ensure appropriate locations and installation. No further monitoring is required in accordance with Requirement 7 of the DCO, however further monitoring would be beneficial to determine the success of any further barn owl boxes installed.

## 2. Introduction

### Pre-construction barn owl survey

- 2.1. The pre-construction field work in 2013 was undertaken to identify potential and confirmed nest, roost and rest sites and resource utilisation distribution within the Zone of Influence (ZOI) using a standard protocol (Toms *et al*, 2001, cited in Mott MacDonald, 2013). A total of 256 potential roosting sites were identified along the corridor of the route. Of these, six occupied breeding sites (nests) and three roost/rest sites were confirmed.
- 2.2. Based on the records collected in the study and using a Kernel density estimation (Quantum GIS Development Team, 2013, as cited in Mott MacDonald 2013) a utilisation distribution (UD) was produced illustrating the intensity of resource use by barn owl. It was found likely that the home ranges of at least six breeding pairs overlapped with the ZOI.
- 2.3. There is potential for barn owls to be killed if crossing roads where vehicle speeds exceed 40 miles an hour (Shawyer and Dixon, 1999). There is a high proportion of young birds among road casualties, and inexperienced barn owls are disproportionately affected by road schemes. For the Broadland Northway scheme, the standard approach to compensation was followed, specifically the provision of new nesting opportunities away from the road to ensure that the local population of barn owls can be maintained at similar levels to pre-construction, albeit that territories will be located in slightly different places.

### Post construction barn owl box checks

- 2.4. The barn owl survey report (Mott MacDonald, 2013) recommended that, where practicable, nest boxes would be provided in a series parallel to the proposed route at 2km intervals, located no closer than 1.5km from the proposed road (Shawyer, 2011). This is equivalent to approximately 10 boxes given that the proposed route is 20km long.
- 2.5. Eight barn owl boxes were erected in 2017 and 2018 by the ecological clerk of works for the road scheme (working for Balfour Beatty), broadly in-line with the recommendations of the barn owl survey report. Their locations are described in section 3 and mapped in Appendix C, Figures 1-6.
- 2.6. In accordance with the ES and Requirement 7 of the Development Consent Order (DCO) the nest boxes require monitoring to determine the success of this compensation measure post-construction. Monitoring was undertaken in year one post-construction (2018), and year 3 (2020), as part of Requirement 7 of the DCO. Monitoring was also undertaken in year two although this was not specifically required by the DCO.

### 3. Methodology

- 3.1. The barn owl nest box visits were undertaken on the 1<sup>st</sup> August 2020 and the 13<sup>th</sup> August 2020 during dry and sunny weather.
- 3.2. The eight barn owl boxes that required checking had been positioned on mature trees in the following locations (mapped in Figures 1- 6 in Appendix C):
- Box 1 (approximately 1.37km north of the Broadland Northway) at Woodland View School in Spixworth overlooking the playing field.
  - Boxes 2 and 3 (approximately 2.34km north of the NDR) at Taverham Mill in Taverham at the edge of woodland surrounded by rough grassland fields. Only box 3 remains at this location. Box 2 was destroyed, possibly during strong winds in 2018.
  - Boxes 4 and 5 (approximately 5.59km north of the NDR) at Loke Farm in Weston Longville. Box 5 was installed overlooking arable fields and Box 4 was installed next to a pond overlooking the gardens and a private building.
  - Boxes 6 and 7 (approximately 4.72km north of the NDR) at the edge of woodland surrounded by rough grassland at Bluebell Wood Burial Park in Hainford.
  - Box 8 (approximately 9.46km north of the NDR) at Upper Barn Farm in Reepham. This box is installed within a garden surrounded by arable fields. The box was installed on a tree facing the gardens and road. The hole is partially obscured by branches but remains visible from the arable field.
  - Box 9 was installed by the Hawk and Owl Trust in 2019 (approximately 9.87km north of the NDR) as a replacement for the box lost at Taverham Mill. The box is located at Field off Wood Dalling Road in Reepham and is surrounded by an allotment, a garden, and arable fields.

#### *Personnel*

- 3.3. Five of the box checks were undertaken by DT, a surveyor with over 20 years' post-graduate experience of ecological services. He holds the necessary licence for Schedule 1 birds and a bird-ringing licence issued by the British Trust for Ornithology. The sixth box at the Field off Wood Dalling Road in Reepham was checked by the Hawk and Owl Trust.
- 3.4. It was not possible to inspect the boxes at Woodland View School (Box 1) and Upper Barn Farm (Box 8) due to COVID restrictions.
- 3.5. Barn owl occupation was characterised in accordance with best practice guidance (Shawyer, August 2011) as follows:
- Active Roost Site (ARS) is defined as a place at which breeding does not occur, but where the bird is seen or heard regularly and/or there is evidence in the last 12 months of presence.
  - Occupied Breeding Site (OBS) is defined a place where breeding was taking place or where it had done so in the recent past

## 4. Results

- 4.1. Six of the eight extant barn owl boxes were inspected for evidence of barn owl activity in 2020. Three of the boxes inspected were considered **Active Roost Sites**. There was no evidence of barn owl activity at the remaining three inspected boxes. Each box is considered below.

*Box 1: Woodland View School*

- 4.2. It was not possible to inspect the barn owl box at Woodland View School due to access issues.

*Box 2: Taverham Mill (no longer in situ)*

- 4.3. The barn owl box had been detached from the tree (possibly due to strong winds in the winter of 2018/19) and was no longer in situ (Appendix A, Photograph 3).

*Box 3: Taverham Mill*

- 4.4. Evidence of roosting including a lot of pellets and feathers was found in the box (Appendix A, Photograph 1) and therefore this nest box is considered a regularly used **Active Roost Site**.

*Box 4: Loke Farm*

- 4.5. The box located furthest west on the site (Appendix A, Photograph 5) was in use by stock doves sitting on two eggs. No evidence of barn owl activity was recorded.

*Box 5: Loke Farm*

- 4.6. The box located furthest east on the site (Appendix A, Photograph 7) was in use by stock doves sitting on one egg. No evidence of barn owl activity was recorded.

*Box 6: Bluebell Burial Park*

- 4.7. Barn owl feathers were found in the box located furthest east within the woodland at Bluebell Burial Park (Appendix A, Photograph 8) therefore this nest box was considered an occasionally used **Active Roost Site**.

*Box 7: Bluebell Burial Park*

- 4.8. The nest box located furthest west within the woodland (Appendix A, Photograph 10) did not contain any evidence of recent barn owl use. However, in 2019 barn owls were confirmed breeding in this box and three chicks fledged (Appendix A, Photographs 12 and 13). The chicks were from a clutch that was laid in August, and, as such, were likely to be a second brood. In 2020, when the box was being cleared of old nesting material, two young barn owl corpses were discovered deep within the nesting detritus. These may have been from an unsuccessful first clutch in 2019.

*Box 8: Upper Barn Farm, Reepham*

- 4.9. It was not possible to inspect the barn owl box at Upper Barn Farm (Appendix A, Photograph 14) due to access issues.

*Box 9: Field off Wood Dalling Road in Reepham*

- 4.10. The box was found to be used by a roosting un-ringed Male barn owl and therefore this nest box was considered an **Active Roost Site**.

## 5. Summary of monitoring 2018 – 2020

- 5.1. Over the three years of monitoring, one Occupied Breeding Site and four Active Roost Sites were recorded (Table 1).
- 5.2. Nest box 7 was considered an **Occupied Breeding Site** during the site visit in 2019, and three chicks fledged. Additionally, two corpses found in the box during routine cleaning indicate a previous unsuccessful nesting attempt had been made.
- 5.3. Box 3 was considered an **Active Roost Site** during the site visit in 2020, box 5 was considered an **Active Roost Site** during the site visit in 2018, box 6 was considered an **Active Roost Site** during the site visit in 2020, and box 9 was considered an **Active Roost Sites** during the site visit in 2020.

**Table 1. Three years post-construction monitoring**

Box No.	Location	Grid Reference	2018	2019	2020
1	Woodland View School	TG 24377 15599	Inspection not possible due to access issues.	No evidence of barn owl activity	Inspection not possible due to COVID restrictions
2	Taverham Mill	TG 15556 13320	Box was destroyed during a storm.  This box was supplied by the County Council (Balfour Beatty) and installed by Anglian Water.	Box not in situ	Box not in situ
3	Taverham Mill	TG 15537 13332	No evidence of barn owl activity was recorded. Evidence of stock dove and wood pigeon in the form of feathers.  This box was supplied by the County Council (Balfour Beatty) and installed by Anglian Water.	No barn owl activity recorded. Evidence of jackdaws	Evidence of roosting including a lot of pellets and feathers ( <b>ARS</b> )
4	Loke Farm	TG 09048 16038	No evidence of barn owl activity. Adult stock dove was seen flying from the box.	No barn owl activity recorded. Evidence of jackdaws	No evidence of barn owl activity was recorded. Stock doves sitting on two eggs.
5	Loke Farm	TG 09083 16052	Evidence of barn owl activity was identified in the box in the form a single pellet ( <b>ARS</b> ).	No barn owl activity recorded. Evidence of jackdaws	No evidence of barn owl activity was recorded. Stock doves sitting on one egg.



<b>6</b>	Bluebell Wood Burial Park	TG 22555 19646	No evidence of barn owl activity. Stock dove chicks present.	No evidence of barn owl activity. Stock dove nest	Barn owl feathers present ( <b>ARS</b> )
<b>7</b>	Bluebell Wood Burial Park	TG 22538 19635	No evidence of barn owl activity. Stock dove chicks present.	Barn owl nesting recorded. On the 23 <sup>rd</sup> July a female was seen leaving the box and at the time of the visit four chicks were present inside this box. On the 9 <sup>th</sup> October 2019 three chicks were remaining ( <b>OBS</b> ). The chicks were ringed during the visit (see Appendix A, photograph 8)	No recent evidence of barn owl use recorded. However the box was cleared of nesting material and two deceased young barn owls (likely almost ready to fledge from a brood in previous years) were discovered deep within the nesting material
<b>8</b>	Upper Farm Barn, Reepham	TG 10903 23996	No evidence of barn owl use was visible from an external inspection of the box.  This box was supplied by the County Council (Balfour Beatty) and installed by the owner of the property	No evidence of barn owl use was visible from an external inspection of the box.	Inspection not possible due to COVID restrictions
<b>9</b>	Field off Wood Dalling Road	TG 10225 24089	Box erected after the 2018 monitoring surveys to replace the box irreversibly damaged at Taverham Mill.	No evidence of barn owl activity	Roosting un-ringed Male barn owl recorded ( <b>ARS</b> )

## 6. Conclusions and Recommendations

### Conclusions

- 6.1. Requirement 7 of the DCO states 10 barn owl boxes should be installed. Nine boxes have been erected and one of these is no longer in situ. Of the 8 boxes present in 2020, fewer than half were used by barn owls at any point in the monitoring period.
- 6.2. The barn owl survey report (Mott MacDonald, 2013) states nest boxes should be placed no closer than 1.5km from the proposed road. This distance is based on the fact that breeding season home range is between 1km and 1.5km from a nest site. No maximum distance from the road was given for the location of the boxes, but several of the barn owl boxes were installed further than 5km from the road, with the box at Upper Farm Barn approximately 9.5km from the NDR (see Appendix C, Figure 1).
- 6.3. No boxes were installed along the eastern extent of the Broadland Northway. It is understood that this was due to the large-scale development expected in the area.
- 6.4. Several nest boxes were installed in close proximity to each other. While these have value, they are more likely to be used by individuals from a pair, rather than by a second pair of birds.
- 6.5. Given these factors, it is recommended that additional barn owl boxes should be erected in suitable and easily accessible locations (at least 1.5km from the NDR and ideally within 5km of the road) to increase barn owl nest site availability and coverage parallel to the Broadland Northway. The nest boxes should be installed with input from a suitably qualified ecologist to ensure appropriate locations and installation.

### Further Surveys

- 6.6. No further monitoring is required in accordance with Requirement 7 of the DCO, however further monitoring would be beneficial to determine the success of any further barn owl boxes installed.

## 7. References

Mott MacDonald (2014); 6.1 *Environmental Statement: Volume I: Chapter 8. Ecology and Nature Conservation for The Norfolk County Council (Norwich Northern Distributor Road (A1067 to A47(T)) Order*; Document Reference: TR010015

Mott MacDonald (2013); *NDR Barn Owl Survey Report – Technical Appendices; in 6.2 Environmental Statement: Volume II: Chapter 8. Ecology and Nature Conservation*

Natural Environment Team, NCC (2018); *Barn Owl Box Monitoring Report: Northern Distributor Road; Year 1 Post- construction checks 2018* (unpublished report).

Norfolk County Council (2014a); *Development Consent Order for the Norfolk County Council (Norwich Northern Distributor Road (A1067 to A47(T)) Order*; Document Reference: NCC/EX/40

Norfolk County Council (2014b); *NDR Mitigation Table for the Norfolk County Council (Norwich Northern Distributor Road (A1067 to A47(T)) Order*; Document Reference: NCC/EX/81

Shawyer, C. R. (2011). *Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting*. IEEM, Winchester.

Shawyer, C. R. and Dixon, N. (1999). *Impacts of roads on barn owl Tyto alba populations*. Report to The Highways Agency.

## Appendix A – Photographs

### Photograph 1

Barn owl box No. 3 at Taverham Mill.  
Photograph taken August 2020 (Credit:  
Natural Environment Team).



### Photograph 2

Barn owl box No. 3 at Taverham Mill.  
Photograph taken in November 2017 soon  
after the box was installed (Credit: Balfour  
Beatty).



### Photograph 3

Barn owl box no. 2 at Taverham Mill. The box was on the ground beneath the tree. Photograph taken August 2020 (Credit: Natural Environment Team).



### Photograph 4

Barn owl box no. 2 at Taverham Mill in its original location. Photograph taken soon after the box was installed (Credit: Balfour Beatty).



### Photograph 5

Barn owl box no. 4 at Loke Farm.  
Photograph taken in August 2020 (Credit: Natural Environment Team).

This box was in use by an adult stock dove, which was seen flying from the box.



### Photograph 6

Barn owl box no. 4 at Loke Farm.  
Photograph taken in December 2017 soon after it was installed (Credit: Balfour Beatty).



**Photograph 7**

Barn owl box no. 5 at Loke Farm.  
Photograph taken in August 2020 (Credit: Natural Environment Team).

There was evidence of barn owl roosting activity identified in the box in the form a single pellet.



**Photograph 7**

Barn owl box no. 5 at Loke Farm.  
Photograph taken in December 2020 soon after it was installed (Credit: Balfour Beatty).



### Photograph 8

Barn owl box no. 6 at Bluebell Burial Park. Photograph taken in August 2020 (Credit: Natural Environment Team).

Stock dove chicks were present in this box. Barn owl feathers were also present, indicating that it had been used recently and so it is considered an Active Roost Site.



### Photograph 9

Barn owl box no. 6 at Bluebell Burial Park. Photograph taken in January 2018 soon after the box was installed (Credit: Balfour Beatty).





### Photograph 10

Barn owl box no. 7 at Bluebell Burial Park. Photograph taken in August 2020 (Credit: Natural Environment Team).

Stock dove chicks were present in this box. There was no recent evidence of barn owl use recorded in 2020, however the box was cleared of nesting material and two deceased young barn owls (likely almost ready to fledge from a brood in previous years) were discovered deep within the nesting material.



### Photograph 11

Barn owl box no. 7 at Bluebell Burial Park. Photograph taken in January 2018 soon after the box was installed (Credit: Balfour Beatty).



### Photograph 12

In 2019, a brood of barn owls successfully fledged from Barn owl box no. 7 at Bluebell Burial Park. The bird in the photo was one from a clutch of three. The date suggests this was a second brood. Photograph taken 4<sup>th</sup> September 2019 (Credit: Natural Environment Team).



### Photograph 13

The same bird as in photograph 11 when almost fully grown, taken on 9<sup>th</sup> October 2019 (Credit: Natural Environment Team). The three chicks were ringed.



### Photograph 14

Barn owl box no. 8 located in the garden of Upper Barn Farm, Reepham. Photograph taken in August 2020 (Credit: Natural Environment Team).



### Photograph 13

Barn owl box no. 1 located in Woodland View School. Photograph taken in Winter 2017-18, soon after the box was installed (Credit: Balfour Beatty).



## Appendix B – Legislation

Barn Owls are included in Schedule 1 of the Wildlife & Countryside Act 1981 which affords them protection against disturbance whilst nesting in addition to the basic level of protection afforded to most wild birds.

Specifically, under Part 1, Section 1 (5) it is an offence punishable with imprisonment for a period of up to 6 months to intentionally or recklessly:

- Disturb a Barn Owl while it is building a nest or is in, on or near a nest containing eggs or young.
- Disturb a Barn Owl's dependent young.

## Appendix C - Figures

Figure 1. Barn owl nest boxes installed as part of the post-construction compensation measures of the A1270 Broadland Northway.

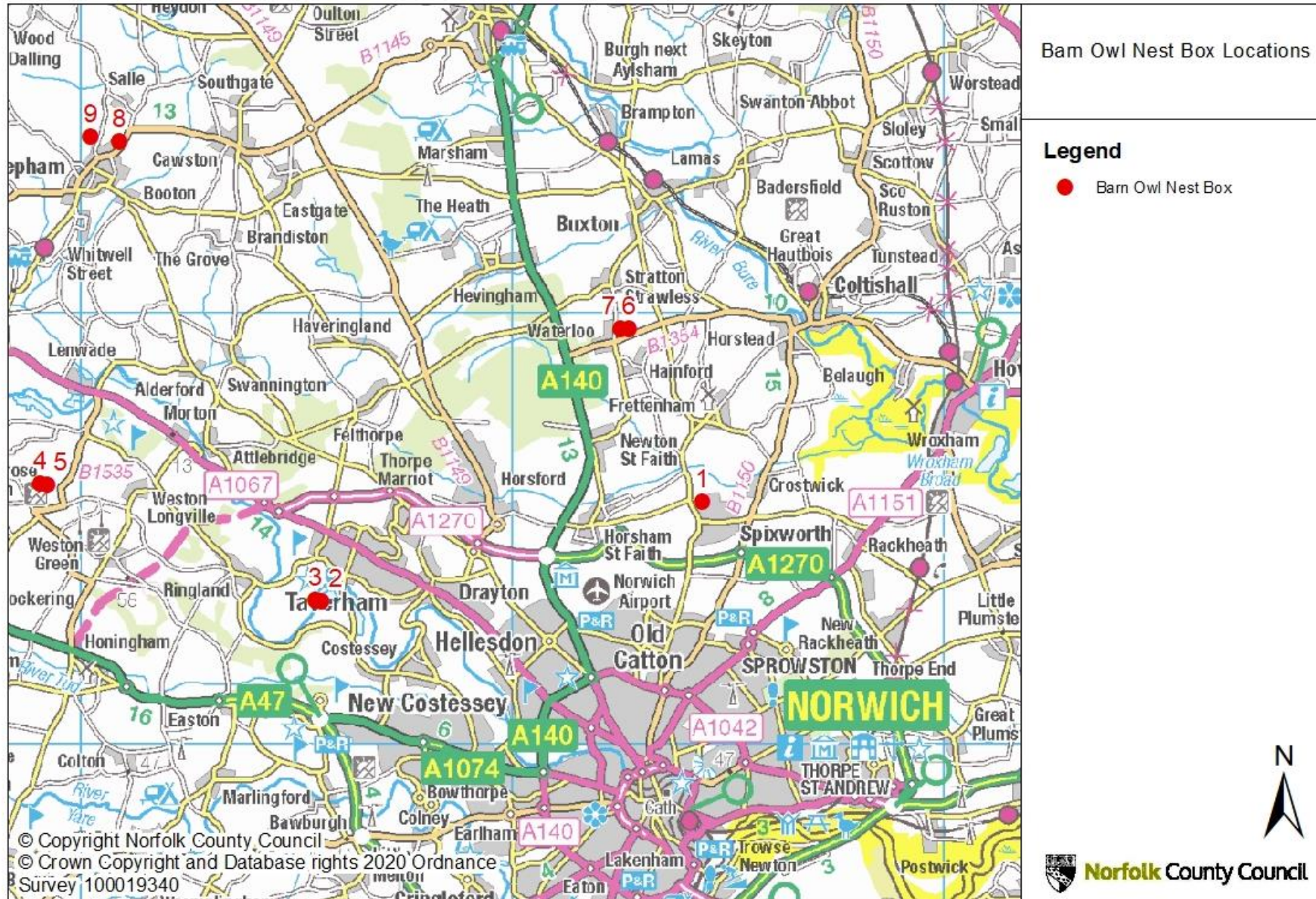


Figure 2. Barn owl nest box at Woodland View School

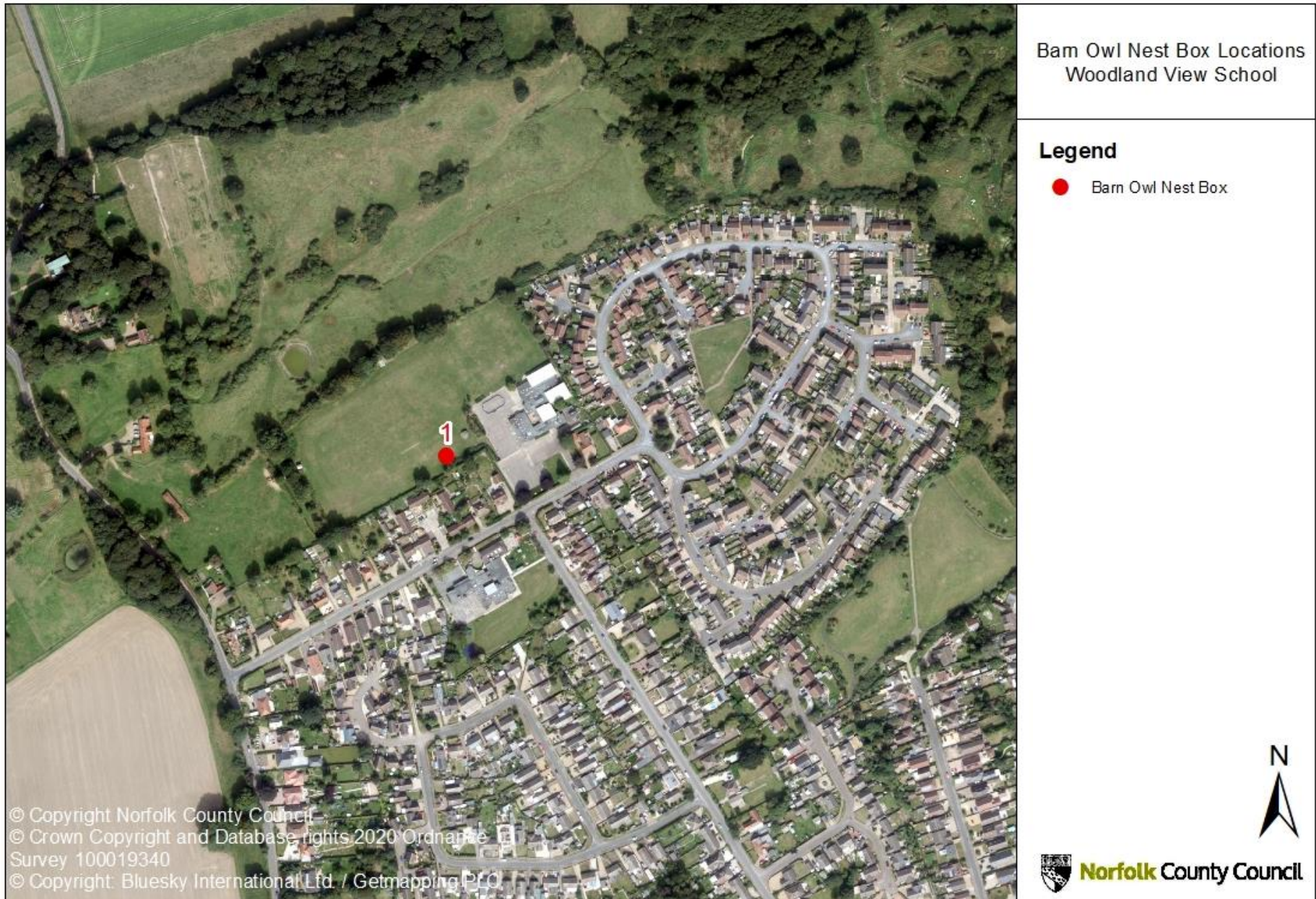


Figure 3. Barn owl nest box at Taverham Mill

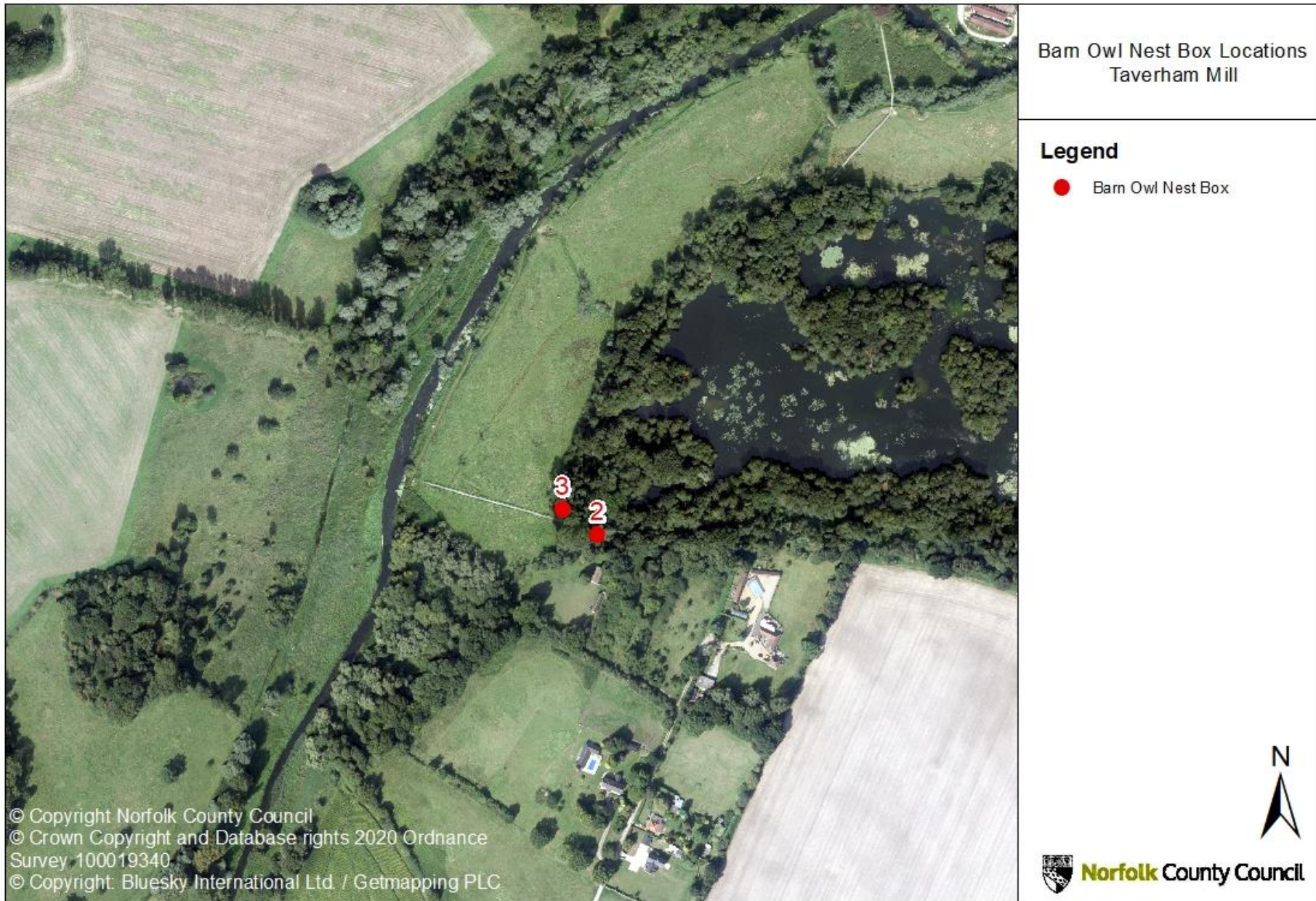


Figure 4. Barn owl nest box at Loke Farm

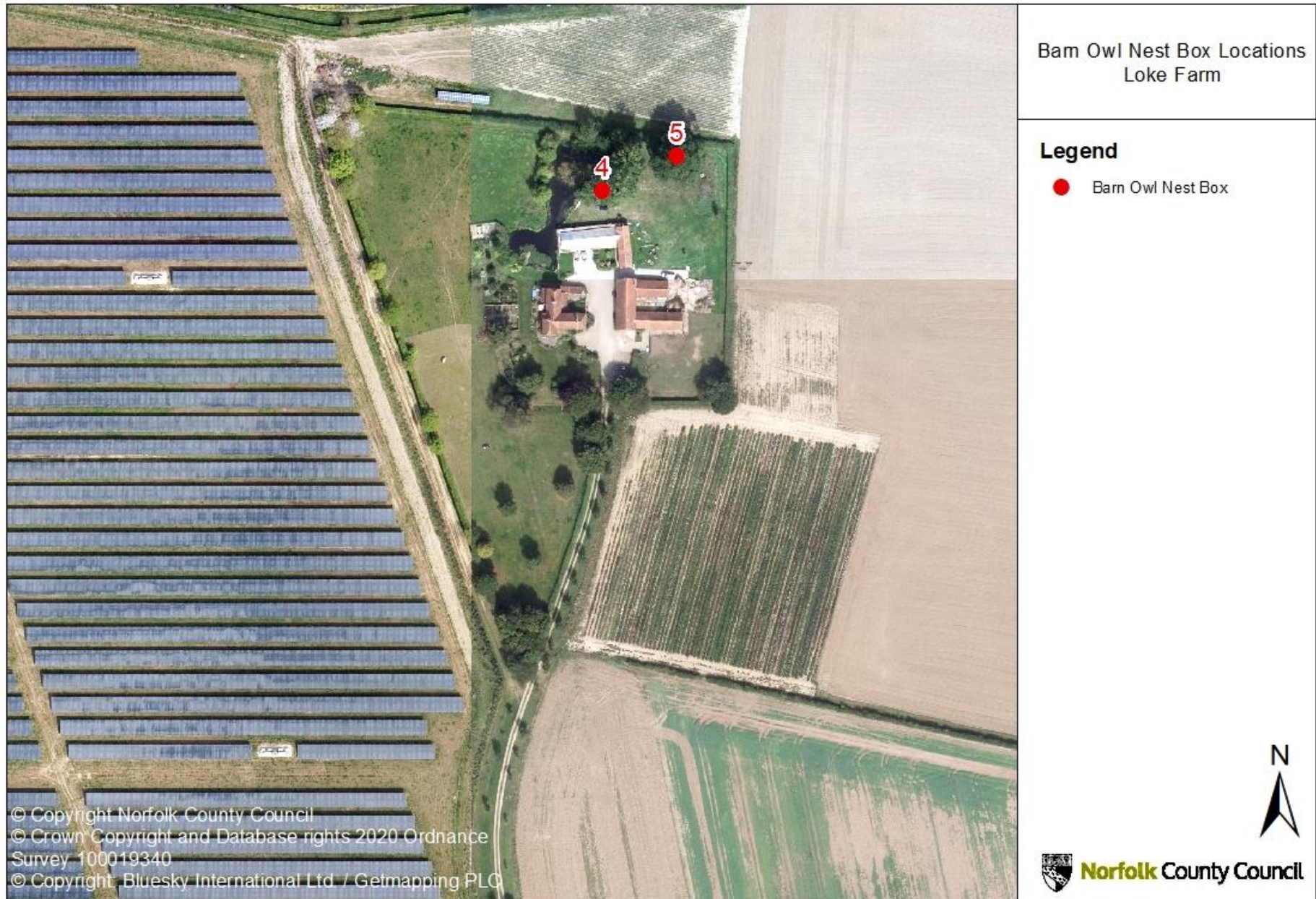




Figure 5. Barn owl nest box at Bluebell Wood Burial Park



Figure 6. Barn owl nest box at Upper Farm Barn (Box 8) and Field off Wood Dalling Road (Box 9)

