



# **NDR Ecological Post- Construction Monitoring: Year Three**

Bat Hibernation Monitoring

April 2021



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# Contents

Executive summary	1
1 Introduction	2
1.1 Project description	2
1.2 Baseline data	2
1.3 Study area	2
1.4 Scope of report	2
1.5 Legislation	2
2 Methodology	3
2.1 Hibernation Survey Methodology	3
2.2 Survey Limitations	3
3 Results	4
3.1 Previous Survey Results	4
3.2 Survey results for 2021	5
4 Discussion	6
Appendices	8
A. Study area and hibernation roost locations	9
B. Site Photos	10

## Executive summary

The Norwich Northern Distributor Road (NDR) is a 22km dual carriageway which runs between Fakenham Road (A1067), west of the city (near Attlebridge) to the A47 east of the city (near Postwick). Construction was largely completed over winter 2017/2018 and opened to traffic in April 2018, with on-going localised construction until August 2018. The post-construction monitoring of known and potential hibernation sites is a requirement of the Development Consent Order.

All bat species are protected under Conservation of Habitat and Species Regulations 2017 (as amended), with additional protection under the Wildlife and Countryside Act 1981 (as amended). This report provides the results of the hibernation survey prior to construction of the NDR and the winter 2018/2019 (Year One Post-Construction) and winter 2020/2021 (Year Three Post-Construction) monitoring surveys completed at sites identified as having hibernation potential.

During the 2021 surveys hibernating bats were observed at Horsham Church, the military buildings at Gazebo Farm and Spixworth icehouse. Fresh droppings were found within the chancel of Horsham, Little Plumstead, Ringland, Spixworth, Taverham and Witton Churches. Bats may have been present and hibernating within the churches, but it is not possible to fully inspect all areas of the churches due to the height of the roofs of the chancels. Similarly, not all hibernation roosts were accessible in 2021, due largely to the Covid-19 pandemic.

# 1 Introduction

## 1.1 Project description

Mott MacDonald Ltd has been appointed by Norfolk County Council to undertake the monitoring of bat populations as part of the Norwich Northern Distributor Road (NDR), now known as Broadland Northway. This monitoring consists of post-construction surveys as detailed in the Development Consent Order (DCO) mitigation table. The NDR runs from the Fakenham Road (A1067) to the west of the city (near Attlebridge), eastwards around the north of the city to join with the A47 at Postwick. The route is approximately 22km in length.

## 1.2 Baseline data

As part of the environmental impact assessment, extensive bat surveys were undertaken between 2008 and 2013, by a team of experienced ecologists from Mott MacDonald and various sub-consultancies; 2008 (EcoGraphics and Kepwick Ecological Surveys), 2013 and 2010 (Mott MacDonald and BSG, with Greena Ecological Consultancy, Geckoella and Corylus Ecology) and 2012 (Mott MacDonald and Greena Ecological Consultancy). These surveys were to support the assessment of the potential impacts of the NDR scheme on local bat populations and to determine required mitigation and licencing requirements. Detailed information can be found in the Norwich Northern Distributor Road – Technical Appendix for Bats from the Environmental Statement).

## 1.3 Study area

The study area includes 22 structures considered suitable to support hibernating bats within 2km of The Scheme. Appendix A shows the study area and the locations of these structures.

## 1.4 Scope of report

Mott MacDonald has been commissioned to undertake post-construction ecological monitoring surveys, including bat surveys, in surrounding areas of the NDR. The objectives of this report are:

- To present the results from previous years of hibernation surveys for the scheme
- To present the results from 2021 hibernation surveys for the scheme
- To conclude the findings from present and previous years surveys and identify any possible impacts to bats from the scheme.

## 1.5 Legislation

All bat species are protected under Conservation of Habitat and Species Regulations 2017 (as amended), with additional protection under the Wildlife and Countryside Act 1981 (as amended). In effect, this legal protection makes it an offence to:

- Deliberately capture, injure, or kill a bat.
- Damage or destroy a breeding or resting place of a bat.
- Obstruct access to a bat's resting or sheltering places.
- Possess, sell, control or transport live or dead bats.
- Intentionally or recklessly disturb a bat while it is in a structure or place of shelter or protection.
- Intentionally or recklessly disturb a bat at a roost.

## 2 Methodology

### 2.1 Hibernation Survey Methodology

Bat hibernation surveys were completed on buildings and structures which had been identified prior to construction, as having potential to support hibernating bats within 2km of the Scheme. The majority of these buildings and structures were churches, with 22 buildings/structures identified to be surveyed.

Surveys were completed by experienced, licenced ecologists between January 20<sup>th</sup> and January 21<sup>st</sup>, 2021, in accordance with Bat Conservation Trust best practise guidelines. The surveys included a close and systematic inspection of all cracks, crevices, voids, or other cavities. Where needed, surveyors used torches, binoculars, endoscope, and a thermal imaging camera to inspect for bats. Any signs of bat presence (such as droppings, staining, feeding remains, scratch marks or actual presence of bats dead or alive) were recorded.

In churches where tower access was permissive, the tower was entered using the in-situ ladder or access stairs. Any rooms that were accessible were entered and subject to the same systematic exploration. Other features such as bell support structures were mostly inaccessible and therefore were looked upon from several meters using torches.

The bell towers for Great Plumstead, Witton and Taverham Churches were not accessible due to locked doors and hatches.

### 2.2 Survey Limitations

Of the 22 buildings/structures originally surveyed, 11 were accessible in 2021. This is primarily due to Covid-19 restrictions, with key holders unwilling or unable to meet our surveyors on site due to concerns about the potential transmission of Covid-19. This is discussed further in Section 4.

Hibernating bats are often under-recorded as they will crawl deep into crevices and can therefore be difficult to find. In many of the churches inspected, there were features within the roof or otherwise out of reach of the surveyors so there is some possibility that hibernating bats were under-recorded during these surveys. This applies to all years.



## 3 Results

### 3.1 Previous Survey Results

A total of 24 buildings and structures were initially identified as having hibernation potential during hibernation surveys conducted in 2013 (Mott MacDonald, 2013). During the Year One (winter 2018/2019) surveys, it was not possible to survey Little Plumstead Hospital which burnt down in 2016, or Hall Farm, which was demolished during construction of the NDR, meaning 22 buildings/structures remained to be surveyed in Year One (winter 2018/2019).

Access to Crostwick Church, Postwick Church, the underground shelter at Newman's Farm, Rackheath bridge and Morton Hall was denied during the 2019/2020 surveys, meaning that 17 were surveyed.

The results of the winter 2018/2019 (Year One Post-Construction) hibernation surveys on these buildings and structures, and the corresponding results from the 2013 surveys are shown below in Table 1 and the locations are presented in Appendix A.

**Table 1: NDR Bat Hibernation Monitoring Results for 2013 and 2019**

Building or Structure	Grid Reference	2013 Survey Findings	2019 Survey Findings
Attlebridge Bridges	TG 12818 16768	No evidence of hibernating bats	No evidence of hibernating bats
Attlebridge Church	TG 12942 16866	No evidence of hibernating bats	No evidence of hibernating bats
Drayton Church	TG 18049 13740	No evidence of hibernating bats	No evidence of hibernating bats
Great Plumstead Church	TG 30203 09964	No evidence of hibernating bats	No evidence of hibernating bats
Horsford Church	TG 19682 15381	No evidence of hibernating bats	No evidence of hibernating bats
Horsham Church	TG 21596 15088	No evidence of hibernating bats	No evidence of hibernating bats
Little Plumstead Church	TG 30745 10862	No evidence of hibernating bats	No evidence of hibernating bats
Military Buildings, Gazebo Farm	TG 27403 12839	Brown long eared bats ( <i>Plecotus auritus</i> ) and Barbastelle ( <i>Barbastella barbastellus</i> ) observed	No evidence of hibernating bats
Old Catton Church	TG 23061 12326	No evidence of hibernating bats	No evidence of hibernating bats
Ringland Church	TG 13379 14069	One serotine bat ( <i>Eptesicus serotinus</i> ) and five <i>Pipistrellus sp</i> observed	Fresh bat droppings observed in the chancel
Spixworth Church	TG 24068 15773	No evidence of hibernating bats	No evidence of hibernating bats
Spixworth Hall Icehouse	TG 23586 15279	Natterer's bat ( <i>Myotis nattereri</i> ) and Daubenton's bat ( <i>Myotis daubentonii</i> ) observed	One <i>Myotis sp</i> observed
Sprowston Church	TG 24948 12527	No evidence of hibernating bats	No evidence of hibernating bats
Rackheath Church	TG 27022 14963	No evidence of hibernating bats	No evidence of hibernating bats
Taverham Church	TG 16074 13817	No evidence of hibernating bats	No evidence of hibernating bats
Witton Church	TG 31426 09716	No evidence of hibernating bats	No evidence of hibernating bats
Whitlingham Country Park Lime Kiln	TG 26731 07799	<i>Myotis sp</i> observed	Five Natterer's bats and three Daubenton's bats

### 3.2 Survey results for 2021

A total of 22 buildings/structures were identified to be surveyed in 2021 for hibernating bats following the previous years surveyed. Access was denied for Sprowston Church, Morton Hall, Attlebridge Church, Rackheath Church, Rackheath Bridge, Crostwick Church, Postwick Church, Whitlingham Country Park Lime Kiln, Newman's Farm and Dayton Church. Access to Attlebridge Bridge was agreed however high-water levels prevented access to survey the bridge.

The results of the hibernation surveys were completed in 11 buildings and structures, as shown in Table 2 below and the location of all buildings and structures presented in Appendix B.

**Table 2: NDR Bat Hibernation Monitoring Results for 2021**

Building or Structure	Grid Reference	2021 Survey Findings
Great Plumstead Church	TG 30203 09964	No evidence of hibernating bats.
Horsford Church	TG 19682 15381	No evidence of hibernating bats.
Horsham Church	TG 21596 15088	One common pipistrelle ( <i>Pipistrellus pipistrellus</i> ) and one brown long-eared bat observed in a storeroom. Fresh droppings also found within the chancel.
Little Plumstead Church	TG 30745 10862	Fresh droppings observed within the chancel. No hibernating bats observed.
Military Buildings, Gazebo Farm	TG 27403 12839	Seven soprano pipistrelle ( <i>Pipistrellus pygmaeus</i> ) and one Daubenton's bat observed within the two northern buildings.
Old Catton Church	TG 23061 12326	No evidence of hibernating bats but older droppings were identified within the bell tower and chancel.
Ringland Church	TG 13379 14069	Fresh droppings observed within the chancel. No hibernating bats observed.
Spixworth Church	TG 24068 15773	Fresh droppings noted within the chancel. No hibernating bats observed.
Spixworth Hall Icehouse	TG 23586 15279	Five Daubenton's bats observed in bat bricks attached to the walls inside the icehouse.
Taverham Church	TG 16074 13817	Fresh droppings observed within the chancel. No hibernating bats observed.
Witton Church	TG 31426 09716	Fresh droppings observed within the chancel. No hibernating bats observed.

One common pipistrelle and one brown long-eared bat were observed hibernating within a storeroom with Horsham church tucked between the brick wall and wooden coving that surrounded the room.

Seven soprano pipistrelle bats were recorded hibernating within the north eastern military building, within the northern section between a gap within two concrete doorways. One Daubenton's bat was recorded hibernating within the north western military building, within the southern section, between a gap within two concrete doorways. The military buildings are located in the woodland to the immediate north of Gazebo Covert, approximately at grid reference TG 27400, 13001.

Five Daubenton's bats were recorded hibernating inside two hanging bat bricks that had been installed just within the entrance tunnel to Spixworth icehouse. No other bats were noted within the icehouse; however, it could not be fully explored due to health and safety risks inside the structure.

Fresh droppings were found within the chancel of Horsham, Little Plumstead, Ringland, Spixworth, Taverham and Witton Churches. Bats may have been present and hibernating within the churches, but it is not possible to fully inspect all areas of the churches due to the height of the roofs of the chancels. Equipment such as binoculars and a thermal imaging camera was used with no signs of hibernating bats.

## 4 Discussion

Four (of the 22) sites were confirmed as hibernation roosts in 2013, prior to construction. These were:

- The military buildings at Gazebo Farm,
- Ringland Church,
- Spixworth Hall Icehouse and
- Whitlingham Country Park Lime Kiln.

In the winter of 2018/2019, the Year One Post-Construction monitoring surveys identified three of these as being used by hibernating bats:

- Ringland Church
- Spixworth Hall Icehouse
- Whitlingham Country Park Lime Kiln

No hibernating bats were identified at the military buildings at Gazebo Farm, which are notably closer to the NDR than the other three sites (285m compared to 1.9km, 1km and 2.8km, respectively).

Of the four originally confirmed hibernation roosts, only three were accessible for surveys in the winter of 2020/2021, the Year Three Post-Construction monitoring surveys. No access was available for the Whitlingham Country Park Lime Kiln.

Presence was again confirmed at:

- The military buildings at Gazebo Farm,
- Ringland Church,
- Spixworth Hall Icehouse

Of these three, hibernating bats were confirmed at two (Spixworth Hall Icehouse and the military buildings at Gazebo Farm), and recent evidence confirmed at one (Ringland Church).

These results would indicate a generally consistent level of use as hibernation roosts across the various survey years, although the gaps between the surveys dates must be borne in mind.

During the Year Three Post-Construction monitoring, hibernating bats were also found within Horsham church, which has not been recorded either in 2013 (pre-construction) or Year One (winter 2018/2019).

Evidence of recent use by bats was identified at several more of the sites than in previous years (both pre- and post-construction). Fresh droppings were found at Little Plumstead, Spixworth, Taverham and Witton churches. Older droppings were also identified at Old Catton church.

This increase in evidence of recent use could be for a number of reasons. Most likely are the effects of the ongoing Covid-19 lockdown, which is greatly affecting the use of churches in two ways. Firstly, general use of churches by the congregation is likely to have been far less over Year Three (winter 2020/2021) than in previous years, so general disturbance is likely to have been less this year than previously.

Secondly, it is likely that cleaning in churches will also have been far less frequent than previously, meaning that evidence of use by bats is more likely to have been found during the Year Three (winter 2020/2021) surveys than previously.

## 4.1 Conclusion

In general, it appears that bats are being found hibernating in the same locations they were utilizing pre-construction. This is encouraging as it suggests the locations still offer suitable hibernation potential.

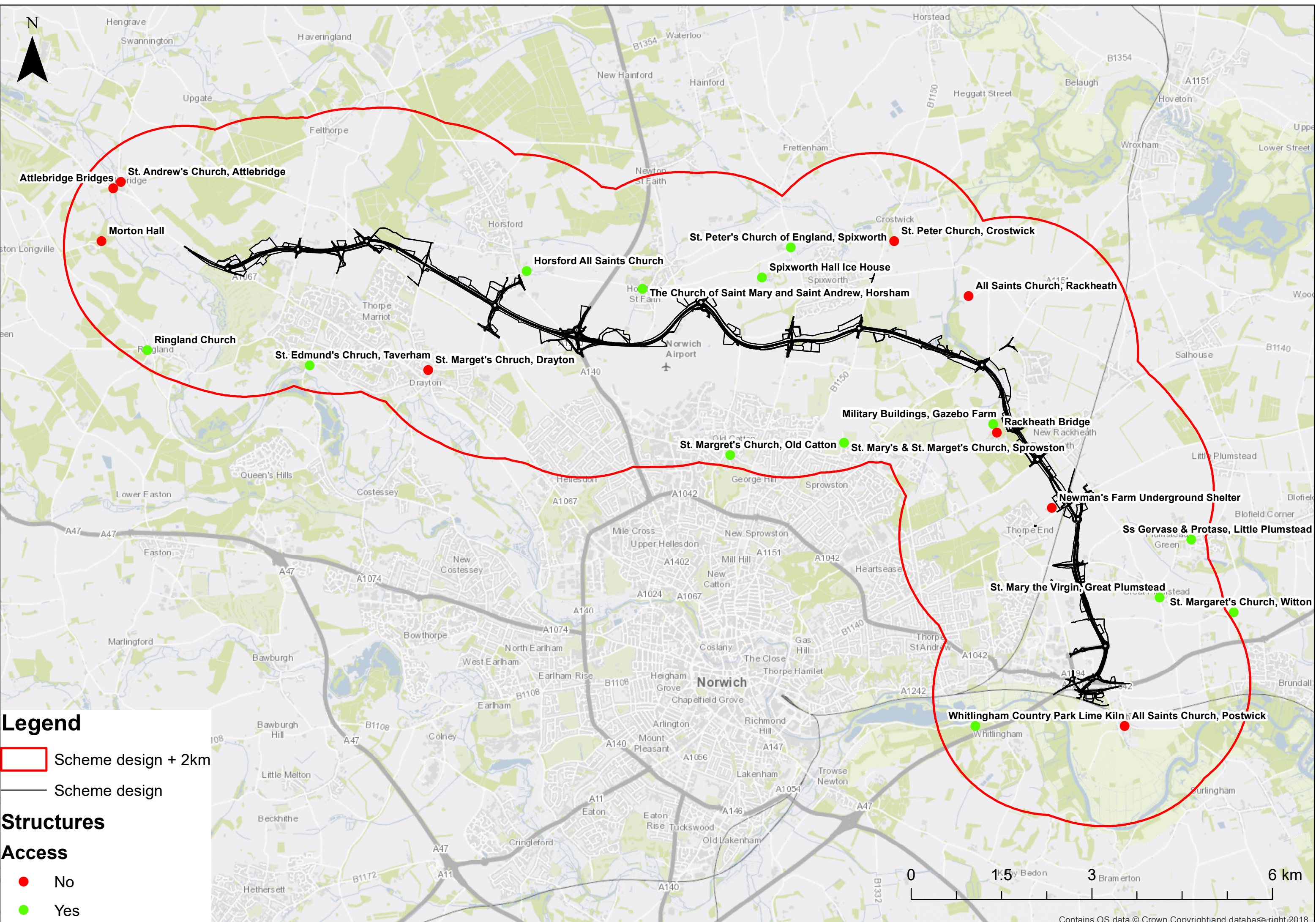
It is harder to draw conclusions relating to those sites where evidence has been found, where previously it has not, due to the marked change in use and disturbance during the Covid-19 pandemic.

# Appendices

A.	Study area and hibernation roost locations	9
B.	Site Photos	10




## **A. Study area and hibernation roost locations**







## B. Site Photos

Description	Photograph
One of five Daubenton's bats hibernating within the bat bricks within the Spixworth Icehouse.	 A close-up photograph of a Daubenton's bat hibernating in a dark, confined space, likely within bat bricks. The bat is curled up, and its wings are tucked. The background is dark and textured. A timestamp in the bottom right corner reads "2020-01-01 03:04:29".
Common pipistrelle bat hibernating in with the storeroom of Horsham Church.	 A close-up photograph of a common pipistrelle bat hibernating in a dark space, likely within the storeroom of Horsham Church. The bat is curled up, and its wings are tucked. The background is dark and textured. A timestamp in the bottom left corner reads "2020-01-01 21:49:05".
Brown long-eared bat hibernating in with the storeroom of Horsham Church.	 A close-up photograph of a brown long-eared bat hibernating in a dark space, likely within the storeroom of Horsham Church. The bat is curled up, and its wings are tucked. The background is dark and textured. A timestamp in the bottom right corner reads "2020-01-01 21:54:30".



Seven soprano pipistrelle bats hibernating within the military buildings at Gazebo Farm



A Daubenton's bat hibernating within the military buildings at Gazebo Farm



