

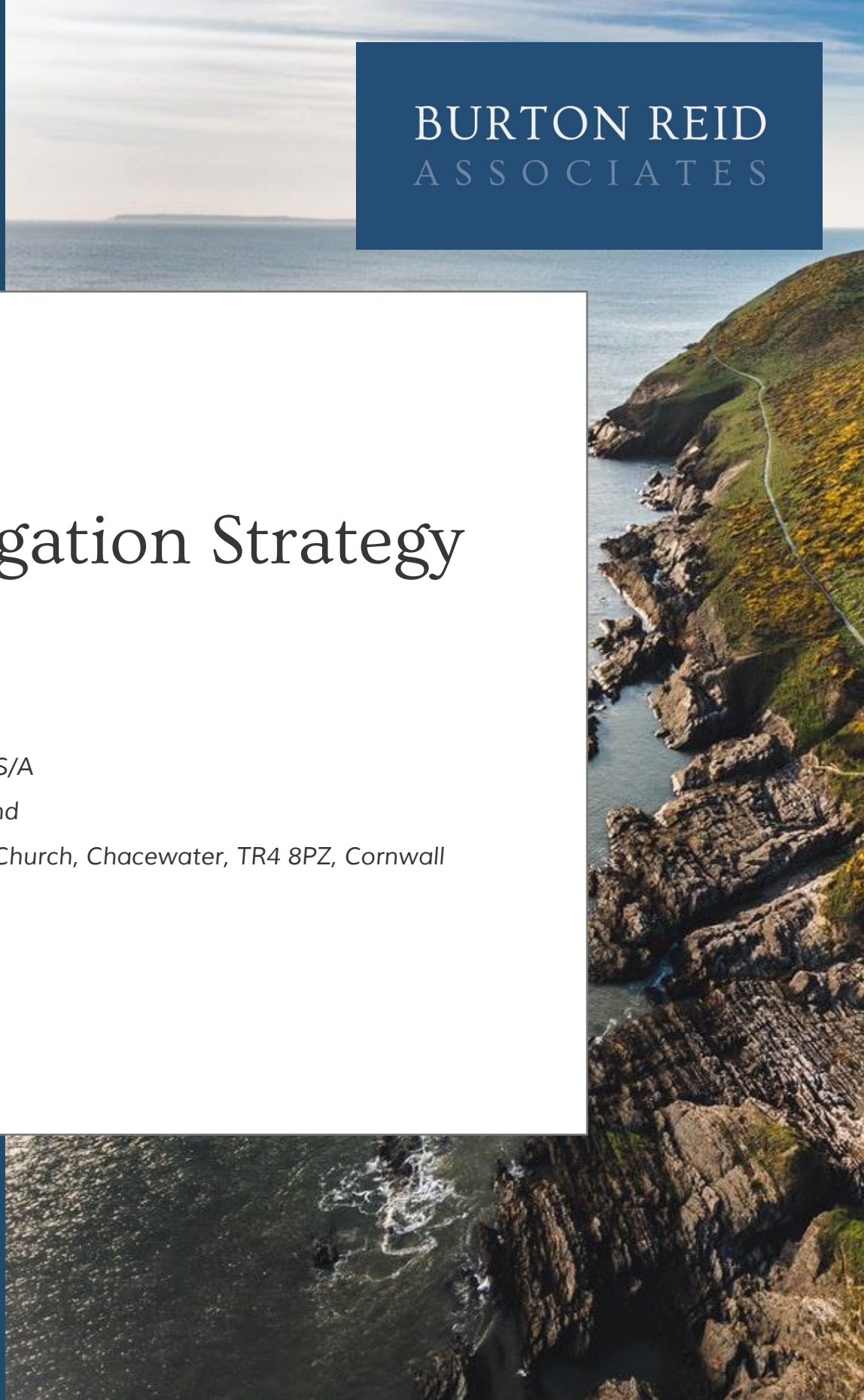
OCTOBER 2020

Bat Mitigation Strategy

DOC REF: BR0424/DMS/A

CLIENT: Natural England

SITE NAME: St. Paul's Church, Chacewater, TR4 8PZ, Cornwall



BAT MITIGATION STRATEGY

Document ref:	BR0424/DMS/A
Client:	Natural England
Site Name:	St. Paul's Church, Chacewater, TR4 8PZ, Cornwall

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<i>Issue date</i>	9th October 2020
<i>Revision</i>	A

DECLARATIONS OF COMPLIANCE

The report which we have prepared and provided is in accordance with the Chartered Institute for Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

This report has been produced in accordance with British Standard 42020:2013 "Biodiversity, Code of practice for planning and development" and the Chartered Institute of Ecology and Environmental Management's Guidelines for Ecological Report Writing (CIEEM, 2017).

DATA VALIDITY

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CONTENTS

1	INTRODUCTION	1
1.1	Background and Objectives	1
1.2	Site Description and Location	1
1.3	Impacts of Bats on the Church	1
2	SURVEY BACKGROUND AND METHODS	2
2.1	Cornwall Environmental Consultants (2017-19).....	2
2.2	Burton Reid Associates (2020).....	2
2.2.1	Light Touch Survey	2
2.2.2	Nocturnal Emergence & Re-entry Survey	2
2.2.3	Constraints.....	3
3	SURVEY FINDINGS.....	5
3.1	Light Touch Surveys.....	5
3.2	Nocturnal Emergence / Re-Entry Surveys	5
3.2.1	2019 Survey Summary (CEC, 2019).....	5
3.2.2	2020 Dusk/Dawn Survey	6
4	EVALUATION AND IMPACT ASSESSMENT.....	7
4.1	Roost characterisation and evaluation.....	7
4.2	Legislation and Planning Policy.....	7
4.3	Assessment of potential impacts on bats	7
5	MITIGATION STRATEGY.....	9
5.1	Description of management proposals.....	9
5.2	Timing of Works.....	9
5.3	Implementation of mitigation proposals	10
5.3.1	Installation of scaffolding.....	10
5.3.2	Pre-works inspections	10
5.3.3	Void cleaning	10
5.3.4	Enabling works (one-way exclusion)	10
5.3.5	Sealing the void under watching brief	10
5.3.6	Sealing the southern aisle access.....	11
5.3.7	Safe care of bats.....	11
6	MONITORING.....	12
6.1	During-construction.....	12
6.2	Annual management monitoring.....	12
7	REFERENCES.....	13
8	APPENDICES	14

Appendix I: Bat Survey Results Summary Plan (External) 14
Appendix II: Bat Survey Results Summary Plan (Internal)..... 15
Appendix III: Mitigation Proposals 16

1 INTRODUCTION

1.1 Background and Objectives

This document has been prepared by Burton Reid Associates Limited (t/a Burton Reid Associates) on behalf of Natural England in support of an application for registration of St. Paul's Church, Chacewater, TR4 8PZ, Cornwall, hereinafter referred to as 'the Site'. under the Bats in Churches Class Licence (BiCCL) scheme as part of the 'Bats in Churches' partnership project.

A suite of bat surveys, including internal inspections and nocturnal surveys, were carried out at the church between 2017 and 2019 by Cornwall Environmental Consultants Ltd. (CEC) and in 2020 by Burton Reid Associates. The surveys recorded the presence of a Brown Long-eared *Plecotus auritus* maternity roost with around 21 individuals recorded, and 4no. Common Pipistrelle *Pipistrellus pipistrellus* bats.

In accordance with the reporting requirements for an application for registration of the church under the Bats in Churches Class Licence (BiCCL) scheme, this document includes a summary of surveys undertaken and details of the mitigation scheme proposed at the church whilst aiming to retain bat roosts within the buildings and maintain the Favourable Conservation status of all bat species recorded using the church.

This report should be read in conjunction with the Bat Survey Report: St. Pauls Church, Chacewater, Cornwall (CEC, 2019), which provide details of the full suite of surveys carried out prior to 2020.

1.2 Site Description and Location

The Site is centred on National Grid Reference SW 7509 4407 and is located within the small village of Chacewater, near Redruth, Cornwall. Surrounding the church is a churchyard dominated by mostly mown grassland with scattered mature trees including a mix of native and introduced species. The wider surrounds are dominated by small agricultural grassland fields bounded by bushy hedgebanks and frequent trees, and occasional areas of scrub and woodland. A small number of residential properties occur along Church Hill which borders to the west of the Site and the boundary of the main village is approximately 200m north of the church.

1.3 Impacts of Bats on the Church

The church has had ongoing issues associated with accumulations of droppings and urine staining due to the maternity roost that is present within the barrel roof. This has led to some damage of artifacts, stonework, furniture and materials within the church. The impacts on the church congregation is an increased burden due to the cleaning regime associated with the droppings and urine and a balance between the needs of the bats and the congregation is needed.

2 SURVEY BACKGROUND AND METHODS

2.1 Cornwall Environmental Consultants (2017-19)

A suite of surveys carried out by Cornwall Environmental Consultants Ltd. (CEC) included a dedicated daytime inspection of the church in August 2017 and three nocturnal emergence/ re-entry surveys undertaken between June and August 2019. Further inspections of the internal area of the church were undertaken either side of the nocturnal surveys.

Full details of these surveys are provided in the Bat Survey Report: St. Pauls Church (CEC, 2019). A summary of the survey findings is provided in Section 3 below.

2.2 Burton Reid Associates (2020)

2.2.1 Light Touch Survey

An update Light Touch Survey (LTS) was undertaken by Burton Reid Associates on 10th March 2020. The church was inspected both externally and internally in accordance with best practice guidance (Collins, 2016) to search for bats, signs of their presence including droppings, staining, urine stains and feeding remains, and potential roosting features and access points. Suitable roosting features and signs of bats were recorded onto a base map.

The update LTS was undertaken by Jenni Reid CEnv MCIEEM (Natural England Bat Licence Number 2015-115427-CLS-CLS Level 2), a Registered Consultant for the Bats in Churches Class Licence. The inspection was undertaken using an endoscope, high-powered torch, headtorch, camera, binoculars and ladder.

The bat droppings observed within the building were identified as being those from Long-eared bats. Grey Long-eared bats are currently confirmed as being present within the counties of Sussex, Hampshire, the Isle of Wight, Dorset, Devon and Somerset¹. Due to the absence of records of Grey Long-eared bats within Cornwall, the droppings observed within the building were determined to be those of Brown Long-eared bats. Therefore, it was not considered to be necessary to conduct DNA analysis of the bat droppings located within the building.

2.2.2 Nocturnal Emergence & Re-entry Survey

A single nocturnal survey visit (combined dusk emergence and dawn re-entry survey) was conducted by Burton Reid Associates in August 2020 to confirm that the baseline survey data collected in the previous season by CEC had not significantly changed and to provide confidence in the mitigation scheme to be proposed. Times and weather conditions for the survey visit are displayed in Table 1 below.

¹ As per Bat Conservation Trust Website, The University of Bristol Bat Ecology and Bioacoustics Lab Website, and The People's Trust for Endangered Species Website.

Table 1: Times and weather conditions of 2020 nocturnal survey visit

SURVEY	DATE AND TIME	WEATHER CONDITIONS
Dusk (Sunset: 20:45)	13/08/2020 20:25 – 21:35	Temp: 18-16°C Wind ¹ : 0-1 Cloud ² : 8/8 Rain: None
Dawn (Sunrise: 06:09)	14/08/2020 05:15 - 06:10	Temp: 16°C Wind ¹ : 0 Cloud ² : 8/8 Rain: None

1: Wind as per Beaufort scale

2: Cloud cover given in Oktas (/8)

The dusk emergence / dawn re-entry survey were undertaken to confirm previous survey findings and timings were adapted to the weather conditions and the behaviour of the bats, hence the dusk survey finished when sufficient information to support a robust assessment of the overall numbers of bats, and roost locations and building access points had been established.

The nocturnal surveys were undertaken by 3no. surveyors: Jenni Reid CEnv MCIEEM (Natural England Bat Licence 2015-115427-CLS-CLS Level 2, Bats in Churches Class Licence, Bat Low Impact Class Licence), Alex Leishman GradCIEEM (CL18 Bat Survey Licence Level 2 Ref. 2017-29436-CLS-CLS), and Tamsyn Bridger ACIEEM. 1no. surveyor was positioned inside the church to observe internal activity and behaviour, 1no surveyor was positioned outside on the southern elevation and 1no. surveyor was positioned on the east-facing gable ends close to where external access points had previously been identified by CEC. Walkie-talkies were used to communicate movements of bats between the inside and outside of the church.

Surveyors used Wildlife Acoustic EM3+ or EMTouch Pro full-spectrum bat detectors. Bat calls were identified to species level (where possible) in the field and were recorded for later analysis using call analysis software (Kaleidoscope Viewer and Analook). Where directly observed all access and egress points were noted during surveys, as were incidental results (i.e. foraging and / or commuting activity), with flight lines recorded onto base maps in the field.

On the dusk and dawn surveys, up to 3no. infrared video cameras in combination with infrared lamps were used inside and outside the church to aid visibility and were either hand-held or positioned to focus on identified roosts and access points. Videos were recorded to enable later viewing to confirm observations made during the survey if necessary.

2.2.3 Constraints

No significant constraints were encountered during the update surveys which enabled the baseline survey findings to be confirmed and, in combination with surveys conducted by CEC,

provide sufficient information to support an assessment of the roosts present and development of appropriate mitigation scheme.

3 SURVEY FINDINGS

3.1 Light Touch Surveys

The internal inspection carried out by CEC in 2017 noted a light scattering of Long-eared bat droppings over most of the church, on the floor and furniture, with a larger accumulation around the pulpit at the eastern end of the main aisle (chancel).

Similar findings were recorded during the inspection carried out by Burton Reid Associates in March 2020, but higher concentrations of scattered droppings were found to be concentrated around the whole chancel including the alters, which is located beneath the enclosed area of void where Long-eared bats roost during the day. A small concentration of droppings was identified in the corner of the vestry (see Appendix II: Point E) during the 2020 emergence survey, suggesting a Long-eared bat perch.

3.2 Nocturnal Emergence / Re-Entry Surveys

The results of the nocturnal bat survey effort are summarised in the sections below. A plan showing the key locations on the building, including roosts and access points, are shown on the plans in Appendix I (external layout) and Appendix II (internal layout). The letters in brackets in the text below refer to points labelled on this plan.

3.2.1 2019 Survey Summary (CEC, 2019)

CEC carried out 2x dusk emergence surveys and 1x dawn re-entry survey. During the two emergence surveys around dusk, Long-eared bats were recorded emerging into the main internal area of the church from their roost in the enclosed roof void above the chancel (Point A) via a gap at the eastern end of the barrelled wooden ceiling cladding (Point D). Up to 14no. Long-eared bats (14 and 13 on the first and second surveys respectively) were recorded during the emergence surveys. Bats that emerged from the roost flew up and down the church then either re-entered back above the ceiling cladding and exited the church via a gap at the apex of the eastern gable end of the main roof (Point C) or via a gap above the wall of the southern aisle above the entrance to the vestry (Point B).

During the re-entry survey 8no. Brown Long-eared bats re-entered the church via the access point on the southern aisle (Point B) and 5no. re-entered at a different point into the roof of the central aisle at the apex of the higher of the two east-facing gable ends (Point C).

The emergence surveys also recorded 6no. Common Pipistrelle bats emerging from various points along the southern eaves close to Point B.

3.2.2 2020 Dusk/Dawn Survey

During the dusk survey, the first Brown Long-eared bats were heard inside the church at 20:33 (Sunset 21:45), shortly after the survey commenced. These bats were first observed flying up and down the underside of the church roof above the collar beams. No bats were seen to have entered from the edge of barrelled ceiling cladding (Point D) as recorded during the CEC surveys, however small numbers may have done but were missed due to the low light levels. It is much more likely that bats entered into church simply by flying down through the roof timbers after exiting the enclosed void via the open end.

A number of the Long-eared bats were then recorded flying around the inside of the church and then gradually made their way over to the wall of the southern aisle where they entered the gap at the top of the wall (above the vestry divide), as previously identified by CEC (Point B). 19no. Brown Long-eared bats were recorded emerging from the church outside at this point. At least 2no. Brown Long-eared bats were still flying along the roof timbers below the apex of the roof when the survey finished, which could have been young bats left in the church overnight (observations from surveys of other churches undertaken by Burton Reid have identified that young Brown Long-eared bats will often stay roosting and flying within the church during the period that adults are feeding outside, presumably to practice flying and feeding and as a safety mechanism to avoid predation). Therefore, a total of at least 21no. individuals were recorded.

During the dawn survey, at least 1no. Brown Long-eared bat was present in the church at the beginning of the survey at 5:15. From 05:20, 8no. Brown Long-eared bats re-entered from the outside of the church at Point B at the eaves of the southern aisle and 10no. BLE re-entered via the gap at the apex of the east-facing gable end of the main roof (Point C) as previously identified by CEC.

An accumulation of droppings recorded in the corner of the vestry at eastern end of the southern aisle was monitored for perching activity but none was observed during the surveys, however the number of fresh droppings present would suggest this perch had been regularly used just prior to the survey. No other perching activity was observed around the church.

Common Pipistrelle bats were also heard and seen flying around the church from shortly after the beginning of the dusk emergence survey, with 3-4no. individuals estimated. It is thought that a small number entered gaps at the top of wall on the southern aisle around the same time as Brown Long-eared were doing the same. 4no. Common Pipistrelle were recorded emerging externally from various points close to Point B. At dawn 2no. Common Pipistrelle bats were recorded re-entering the same gaps at the top of the southern wall. Common Pipistrelle were recorded flying inside the church between 05:42 and 05:53.

4 EVALUATION AND IMPACT ASSESSMENT

4.1 Roost characterisation and evaluation

Based on the findings of the suite of surveys, it is considered that the church supports a maternity roost of Brown Long-eared bats (21no.) and day roosts for small numbers of non-breeding Common Pipistrelle bats (6no.).

Wray et al. (2010) evaluate the scarcity of bat species within England categorising each species as common, rarer or rarest. Brown Long-eared and Common Pipistrelle are categorised as “common” species (i.e. are present within England in populations of over 100,000 individuals).

Evaluation methodology from Wray et al. (2010) allows for the evaluation of roosts within a geographic context. Roosts identified at the Site have been assigned a geographic value based on this, the results of which are displayed in Table 2 below.

Table 2: Assessment of Bat Roost Value

Roost type	Roost value
Brown Long-eared (common species) - maternity roost.	County Value
Common Pipistrelle (common species) day roost, small numbers of non-breeding bats.	Local Value

4.2 Legislation and Planning Policy

All bats are afforded full protection under UK and European Legislation including the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). Together, this legislation makes it illegal to:

- Intentionally or deliberately take, kill or injure a bat;
- Damage, destroy or obstruct access to bat roosts;
- Deliberately disturb bats.

Due to this protection and their status as a European Protected Species (EPS) it is necessary to obtain a licence from Natural England for any development works which will impact on individual bats or their roosts, either by destruction, modification or disturbance. It is also necessary for individuals to hold a class licence from Natural England in order to disturb or handle bats.

4.3 Assessment of potential impacts on bats

A maternity colony of Brown Long-eared bats, a ‘void dwelling’ bat species, are known to be using the internal area of the church for light sampling and socialisation before emerging from the building to forage, and for flight and foraging practice by young pups. Therefore, works to isolate

bats from internal areas of the church have the potential to result in the modification of roost sites, perches and flight areas, and to interrupt access into the roosts.

It is considered that suitable opportunities for the Brown Long-eared maternity colony roosting within St. Pauls Church can be maintained through appropriate mitigation design. Key considerations with the preferred management proposals described include the maintenance of suitable roosting areas within the roof of the church separate from the congregational areas of the church which are considered large enough to fulfil all roost functions, including light sampling and pre-emergence warming up. The void above the chancel which is enclosed by the barrelled ceiling cladding, which is used by the maternity colony of Brown Long-eared bats for roosting during the day, will be retained for the sole use of the bat colony with the existing access point at the apex of the eastern gable end to be retained as the main access to the roost. The mitigation and monitoring strategy is described in Section 5 below.

The locations of roosts for crevice dwelling bat species (i.e. Common Pipistrelle bats) recorded during the surveys were not confirmed, however it is likely given pipistrelle bat roosting preferences that at least some of the 6no. Common Pipistrelle recorded roost along the top of the southern aisle wall where external access points for these species were recorded. There may be other roosts located within the structure of the church and bats may fly over to the southern wall from these roosts to emerge from the building. However, no specific works to exclude or modify roosts or access points for Common Pipistrelle bats are proposed, although it is possible that they also share the Brown Long-eared access into the church which will be blocked. This would prohibit access for pipistrelle in this location where the Long-eared bat access on the southern aisle wall, although impacts of this will be monitored during the works. If small numbers of individual Common Pipistrelle bats are still able to access the inside of the church following works then it is not expected that this would result in significant detrimental impacts on the church or its users.

Due to the legal protection afforded to bats and their roosts, works on the church cannot commence until the Site has been registered under the BiCCL scheme to permit the modification and disturbance of bat roosts. This will be subject to the approval of mitigation and protection measures (management proposals) by Natural England and should only be sought once Faculty Permission for the proposed works has been obtained from the Chancellor to the Diocese.

5 MITIGATION STRATEGY

5.1 Description of management proposals

A diagram showing a summary of the proposed management measures is provided in Appendix III.

The intention of the proposals is to isolate the maternity colony of Brown Long-eared bats within the barrelled ceiling which they already use as their main daytime roost. It is considered that this area provides sufficient area to fulfil all roost functions for this void dwelling species, including pre-emergence warming up. The minimum cross-section area of the void between the roof timbers is approximately 1.25m high and 2.5m wide, which is already used regularly by bats flying up and down the church. The length of the void is estimated at around 6m.

The void above the chancel is currently open ended so bats can fly out of this section into the main internal area of the church. It is intended that a screen will be built to provide an end wall to the void. Other gaps that would allow bats to access the church (e.g. gap at the eastern end of the barrelled ceiling at Point C) may be sealed through the use of appropriate materials following monitoring surveys during the 2021 survey season and dependent on the success of the screen. The roost access at the apex of the gable end (Point C) will then become the main access point for bats to exit and enter the roost. The screen will be set-back slightly from the current opening at the end of the barrelled ceiling so that it is hidden out of the immediate line of sight from the nave.

This work will be timed to ensure minimum disturbance to the maternity colony and will be monitored closely to observe how bats adapt to the modified roost and access to ensure the safety of the colony. This is further detailed below.

5.2 Timing of Works

As the church supports a maternity roost for Brown Long-eared bats, the main suite of works will be timed to avoid disturbance during the bat maternity period (May to August inclusive), which is a vulnerable time for pregnant bats and young pups that are likely to be present. Works will also need to be carried out outside of the hibernation period (generally November to February inclusive) when bats are active.

It is intended that the works will be carried out in in Spring 2021, starting in March and being completed by April in order to avoid the summer maternity period and the hibernation period.

A suite of monitoring surveys will be undertaken during the works and the following active season to ensure that no bats are inadvertently trapped within newly isolated areas of the church.

5.3 Implementation of mitigation proposals

5.3.1 Installation of scaffolding

To enable access to the roof to undertake the works, scaffolding will first be erected inside the church up to the barrelled ceiling.

5.3.2 Pre-works inspections

Immediately prior to the commencement of works on each day, an inspection will be carried out by a licensed bat ecologist to check for the presence of roosting bats from the areas of the church to be affected by the works.

5.3.3 Void cleaning

The void above the barrelled ceiling will also be inspected and cleaned of any large accumulations of bat droppings prior to installation of the permanent screen to reduce the time before future cleaning may be required to clear the gradual build-up of droppings. A hatch will be built into the screen to allow for access into the void and a layer (e.g. plywood boarding/ plastic sheeting) could be placed across the base of the void to protect the ceiling cladding from potential damage by bat droppings and urine.

5.3.4 Enabling works (one-way exclusion)

At the time of works commencing, a one-way exclusion device will be fitted to the outside of the Brown Long-eared access point at the top of the southern aisle wall above the entrance to the vestry (Point B). This will mean that bats that enter into the congregational area of the church will be able to exit the church but only return via the eastern gable end access point (Point C) back into the main roost void during and after the void is sealed. This will allow bat activity to be monitored at dusk to confirm if the void is properly sealed (see Section 4) and will encourage bats to start exclusively using the eastern gable apex access to their roost. If other smaller day roosts within the church are present, then this will also help these to be identified and bats exiting the church from these locations will only be able to re-enter back into the main roost. It is envisaged that the one-way exclusion device will be in place until the licensed bat ecologist is satisfied that no bats will be trapped within the church once the access point is blocked permanently.

5.3.5 Sealing the void under watching brief

The licenced bat ecologist will supervise the construction of the new screen at the western end of the void above the barrelled ceiling and sealing of any other gaps identified around the edge of the cladding, including the gap between the cladding the eastern wall (Point C), where required.

The new screen will be constructed of appropriate materials and will be set-back slightly from the existing open end of the void to stay unobtrusive when viewed from below. The bat ecologist will check for bats in the vicinity of works so no bats are harmed or become trapped when areas are

sealed. Only light mechanical tools will be needed to carry out the work so disturbance can be kept to a minimum.

All areas of the cladding will be checked for gaps to ensure that bats cannot exit the void into the congregational areas. The absence of access pathways for bats to enter the congregational areas will be further confirmed during the works through nocturnal monitoring (see Section 4).

5.3.6 Sealing the southern aisle access

When monitoring has confirmed that no Brown Long-eared bats are accessing the congregational areas of the church and/or that no bats are of harm of becoming trapped Inside the church the one-way exclusion device can be replaced with permanent exclusion.

5.3.7 Safe care of bats

Any bats found within the working area will be moved to a place of safety by the licenced bat ecologist.

6 MONITORING

6.1 During-construction

Although existing roost sites for Brown Long-eared bats will be retained including one of the main access routes into the roost via the eastern gable end, the bats will have to adapt to using this single void and access when excluded from using the roost access point on the southern aisle. The mitigation strategy detailed in Section 5 sets out how the management proposals will be carried out in a way to best ensure that the Brown Long-eared bats can adapt and accept the changes made to their roost.

To support this methodology, it is proposed that monitoring is undertaken during works in order ensure the safety of bats during their exclusion from the congregational areas of the church, and to assess how they are adapting to changes in flight areas and access routes into their roost.

Proposed monitoring will include manned nocturnal dusk and dawn surveys within and outside the church to confirm that bats can safely exit the one-way exclusion devise on the southern aisle and are all re-entering the roost via the access at the eastern gable end apex. These monitoring visits will also be necessary to confirm that Brown Long-eared bats are not still accessing the congregational areas of the church, confirming that the void is properly sealed. Some of this aspect of the monitoring could also include the use of static detectors to provide long-term monitoring inside the church during and following completion of the internal works. The monitoring will be an iterative process so the exact scope of the monitoring effort will be dependent on the findings of the inspections and bat activity recorded during the works.

6.2 Annual management monitoring

In accordance with the requirements of the Bat in Churches Class Licence, annual surveys will be carried out to monitor the bat roosts within the church over the duration of the project works to assess the success of the management. The exact scope and timing of the monitoring surveys will be determined upon determination of the work schedule and methodologies, and could be subject to change based on progress of the project and findings of monitoring during the works. The baseline survey effort is considered to be 2no. nocturnal activity surveys of the whole building each year between 2022 and 2025.

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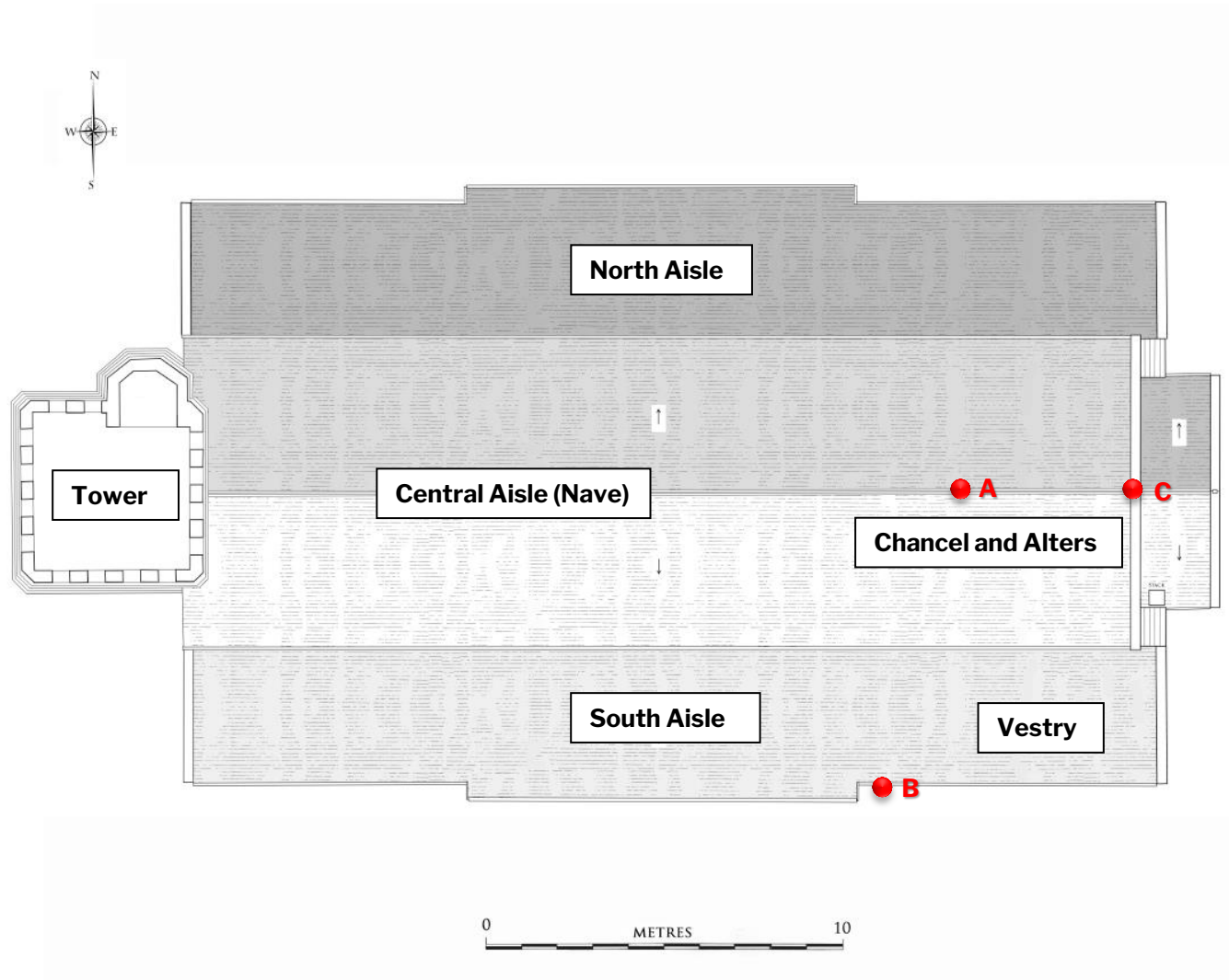
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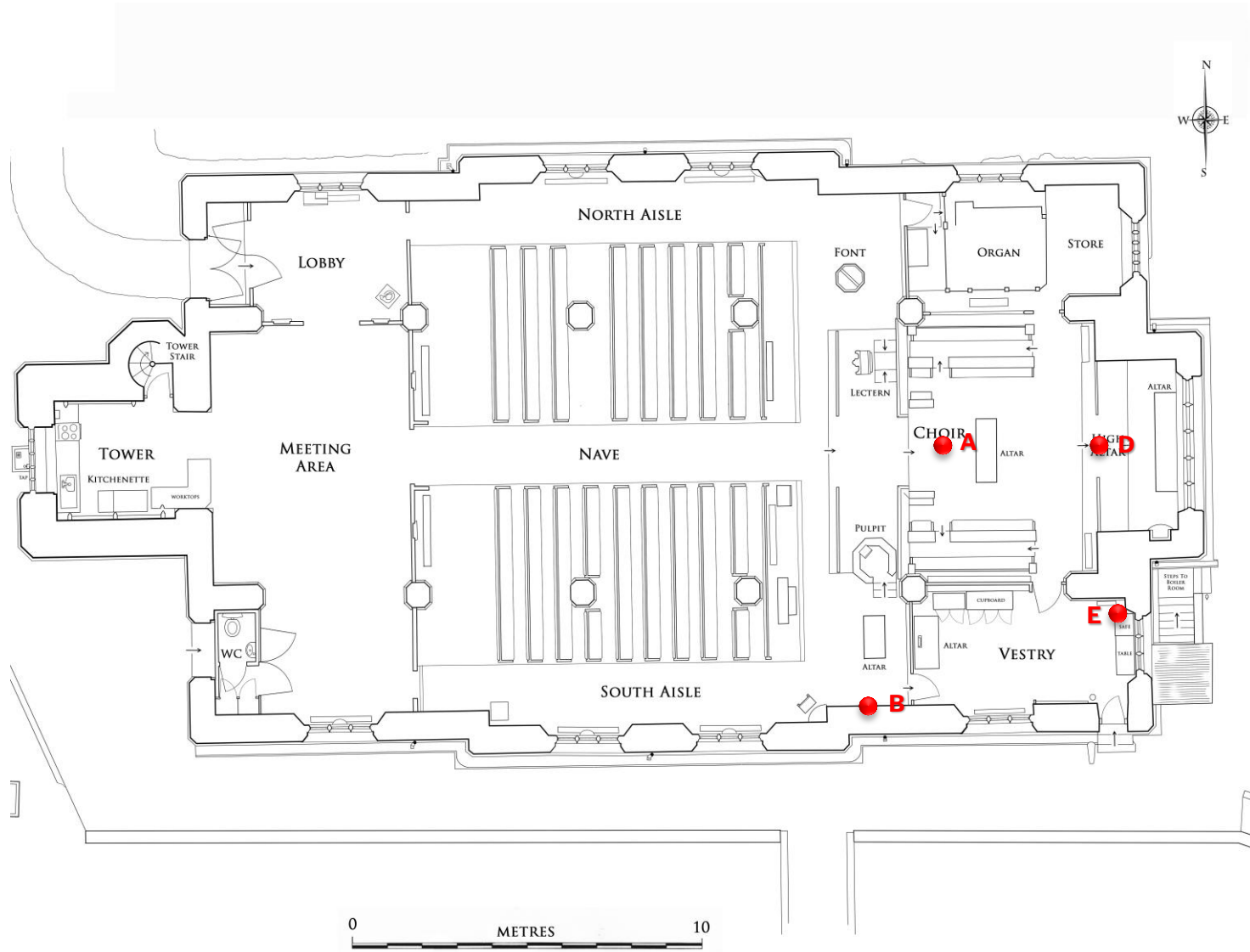
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8 APPENDICES

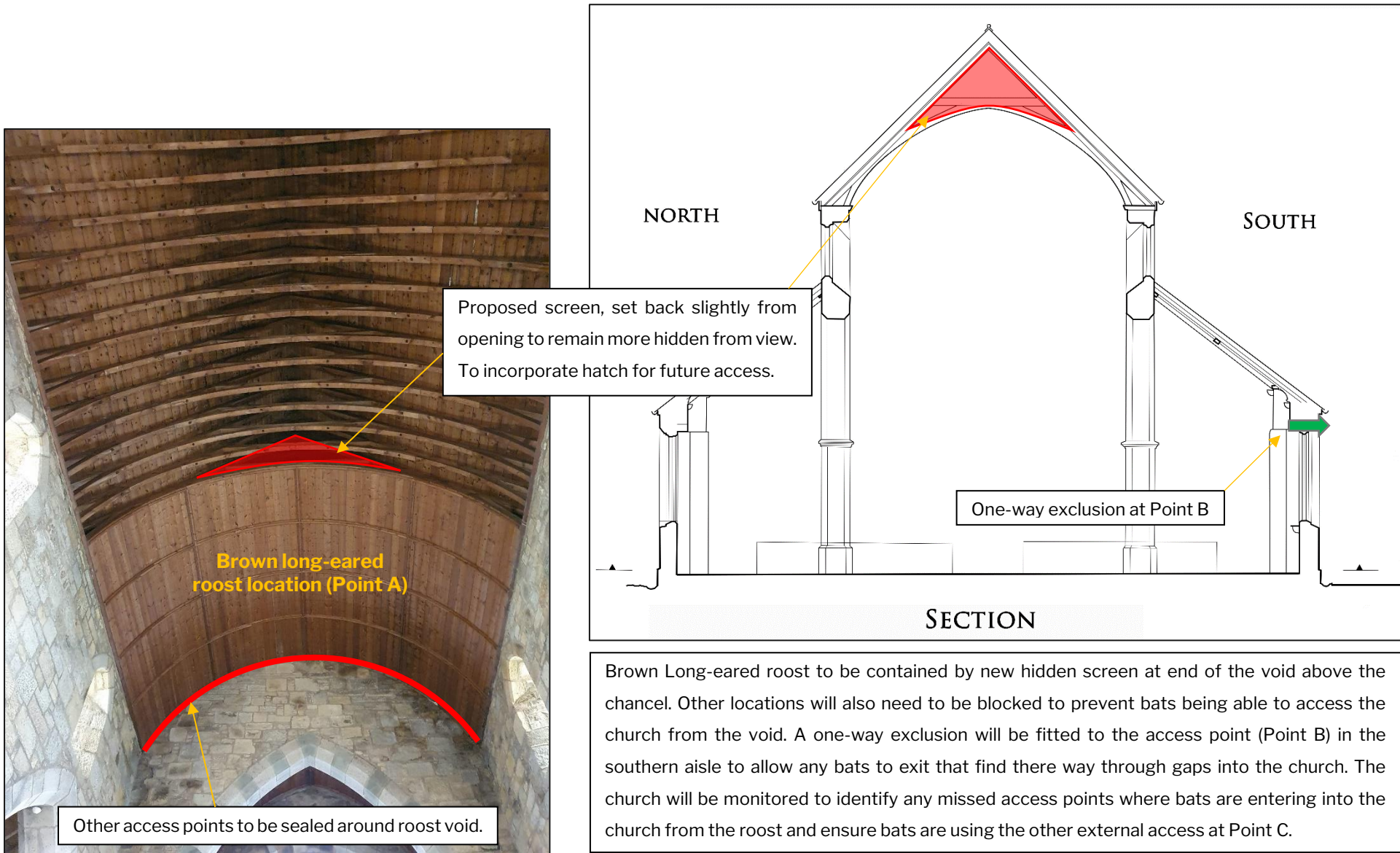
Appendix I: Bat Survey Results Summary Plan (External)



Appendix II: Bat Survey Results Summary Plan (Internal)



Appendix III: Mitigation Proposals



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