Bat Activity Survey Report and Indicative Proposed Mitigation for Common Pipistrelle Bat and Barn Owl	
For:	MHH Contracting Ltd
Site	Bridge at: Green Lane, Barnburgh, Doncaster DN5 7HR
Date:	June 2017

Surveying Ecologist:
Natasha Estrada BSc (Hons), MRes, MCIEEM
Natural England Bat Licence: 2015-12213-CLS-CLS

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

Company Reg. No: 06305254
VAT No: 217401149

Client:	MHH Contracting Ltd
Site Name:	Bridge at: Green Lane, Barnburgh, Doncaster DN5 7HR
Grid Reference:	SE 47425 03606
Report:	Bat Activity Report and Indicative Proposed Mitigation for Common Pipistrelle Bat and Barn Owl
Date of survey:	May & June 2017
Surveyed by:	Natasha Estrada BSc(Hons), MRes, MCIEEM

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Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

Summary

Estrada Ecology Ltd was commissioned to conduct bat activity surveys on the bridge at Green Lane, Barnburgh, Doncaster DN5 7HR.

A phase one habitat survey, conducted by Skyline Ecology in November 2016, recorded the bridge to have moderate potential to support bats for roosting, or as a place of shelter. Bat activity levels could not be obtained during the daytime survey. To ascertain the nature of bat use on the bridge, it was recommended that three activity surveys be conducted within the bat activity season 2017.

Findings and recommendations

Bats and roosts

Bat activity surveys following BCT survey guidelines were undertaken during May and June 2017.

During the two dusk and pre-dawn surveys, a small number of common pipistrelle bats were recorded emerging from, and re-entering the bridge. No contacts from any species of bat were recorded during the surveys.

No evidence was found of maternity roosts and the bridge was assessed as having negligible potential for hibernacula use.

Consultation with Natural England suggests that a European Protected Species Mitigation Licence (EPSM licence) is necessary for the development to proceed.

The surrounding area recorded a low amount of bat activity and is not thought to be a major commuting route for bats.

Hibernating bats

Crevice dwelling bats, such as pipistrelle species, use buildings for shelter and protection in winter when they hibernate. During hibernation, bats need roosts that are cool and remain at a constant temperature. They are difficult to detect in hibernation, in well-concealed crevices, and leave no obvious signs of their presence. The bridge on site was assessed for its potential to support features which bats could utilise for hibernation. The bridge recorded negligible features

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

for hibernacula use, predominantly due to thermal fluctuations and lack of suitable roosting areas.

Breeding birds

No evidence of breeding birds was recorded at the time of survey and no impacts are predicted. Presence of occasional use by roosting barn owl, *Tyto alba* was recorded within the bridge. A suitable mitigation strategy in respect of barn owl use will be required to facilitate the works.

Note:

Every effort has been taken to ensure the accuracy of this report and its contents. However, in view of potential ecological constraints to development, or the likely presence or absence of species, it must only be viewed as a snap shot in time and not be viewed as definitive. Due to external factors, such as seasonality, weather etc, having the potential to affect survey results, no liability can be assumed for omissions or changes that may, or may not occur, after the date this report was produced.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

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Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

1 Introduction and Site Description

1.1 Estrada Ecology Ltd was commissioned by MHH Contracting Ltd to conduct two dusk, and one pre-dawn activity surveys on the bridge at Green Lane, Barnburgh, Doncaster DN5 7HR (hereafter referred to as the 'site').

During a previous phase one habitat survey, the bridge on site was assessed as having potential for features which could be utilised for bats for roosting, or as a place of shelter.

Estrada Ecology Ltd was commissioned in May 2017 to conduct bat activity surveys of the bridge. During the daytime inspection, the bridge was recorded to contain potential to support roosting bats. Field sign evidence synonymous with common pipistrelle bat was recorded. Due to field sign evidence being recorded, three activity surveys were undertaken to ascertain the nature of use.

1.2 The central OS grid reference is recorded as SE 47425 03606.

1.3 Under current proposals, the bridge and former railway cutting is proposed to be infilled.

1.4 The site is located outside the rural village of Barnburgh between Doncaster and Barnsley. Such rural habitats provide several natural roosting, foraging and commuting opportunities for bat species of local provenance:

- The former railway cutting provides linear swathes of deciduous woodland and scrub habitats bordered by agricultural land. Such areas provide suitable natural foraging and roosting habitat for bats.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

Figure 1: The site in its wider setting (shown with yellow pin).



2 Protected Species Legislation

2.1 All species of bat and their breeding sites or resting places (roosts) are fully protected under The Conservation of Habitats and Species Regulations 2010 (as amended).

The Regulations prohibit: the deliberate killing, injuring or taking of bats; the deliberate disturbance of any bat species in such a way as to be significantly likely to affect:

- their ability of to survive, hibernate, migrate, breed, or rear or nurture their young; or the local distribution or abundance of that species.
- damage or destruction of a breeding site or resting place (roost);
- the possession or transport of bats or any other part thereof.

Bats are also protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion in Schedule 5.

Under the Act, they are protected from:

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

- intentional or reckless disturbance (at any level); obstruction of access to any place of shelter, breeding or rest; selling, bartering or exchange of these species, or parts of.

Seven British bat species are listed as Species of Principle Importance (SPI) under the Natural Environment and Rural Communities (NERC) Act 2006. These are: barbastelle *(Barbastella barbastellus);* Bechstein's (*Myotis bechsteinii);* noctule *(Nyctalus noctula);* soprano pipistrelle *(Pipistrellus pygmaeus);* brown long-eared *(Plecotus auritus);* greater horseshoe *(Rhinolophus ferrumequinum);* and lesser horseshoe *(Rhinolophus hipposideros)*.

2.2 Under the National Planning Policy Framework 2012, the presence of any protected species is a material planning consideration. The Framework states that impacts arising from development proposals must be avoided where possible, or adequately mitigated/ compensated for, and that opportunities for ecological enhancement should be sought.

2.3 Under certain circumstances, a licence may be granted by Natural England to permit activities that would otherwise constitute an offence. In relation to development, a scheme must have full planning permission before a licence application can be made.

2.4 The UK Biodiversity Action Plan sets out the priorities for the UK regarding habitats and species of principle importance for conserving biodiversity in the UK. Local areas have then identified the habitats and species within their areas which are on the national list, and those which are of importance locally.

2.5 Each county has its own local Biodiversity Action Plan (LBAP). The site falls within the Doncaster Biodiversity Action Plan area.

3 Survey Objectives

3.1 The objective of this survey was to establish the presence or absence of bats, and whether bats (all species) were using the site for roosting, or as a place of shelter; and, if present, to identify to species level, determine the population size and nature of any roosts within the bridge.

The report presents the findings of bat activity surveys undertaken in May and June 2017 and aims to:

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

- Outline any potential impacts of the proposed development on bat activity as a result of the findings of the desk study and field surveys;
- Provide recommendations for mitigation and / or compensation measures to ensure any impacts on bat activity is avoided or minimised;
- Provide recommendations for enhancing the site for bat activity where possible; and
- Provide recommendations for mitigation and / or compensation measures to ensure any impacts on breeding bird species is avoided or minimised.

4 Survey Methodology

4.1 Desk top study

A data records search was requested from South Yorkshire Bat Group for a 1 kilometre radius from the site.

Further inspection, using colour 1: 25,000 OS base maps (www.ordnancesurvey.co.uk), Magic map (www.magic.gov.uk) and aerial photographs from Google Earth (www.maps.google.co.uk), was also undertaken to provide additional context and identify any features of potential importance for nature conservation in the wider countryside.

4.2 Initial inspection survey

An initial inspection survey of the property was undertaken in May 2017, following guidance from Collins, J., Bat Conservation Trust (BCT) Bat Surveys for Professional Ecologists, Good Practice Guidelines, 3rd Edition 2016, during the optimum survey period and in optimum weather conditions.

Where accessible all cavities, holes, cracks and fissures in timber, tiles and brickwork (where applicable), were examined using high-powered lamps, an explorer premium image recording endoscope and close-focusing binoculars. These features were examined for bat field signs to identify bats in situ, potential roost sites and access points and any signs of occupation such as scratch marks, droppings, smudge marks, discarded moth wings and urine staining etc.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

Any evidence of breeding birds within the bridge was also noted during the survey.

4.3 Bat activity surveys

Bat activity surveys were undertaken using guidance from Collins, J., Bat Conservation Trust (BCT) Bat Surveys for Professional Ecologists, Good Practice Guidelines, 3rd Edition 2016.

Activity surveys were undertaken during May and June 2017. The number of surveys on the property was determined by: their potential to support bats; any field sign evidence gathered during the initial inspection survey in May 2017; and any subsequent activity recorded during activity surveys.

Appendix Three summarises the dates on which the surveys were undertaken, weather conditions, timing of the survey and sunset / sunrise times. The dusk emergence surveys commenced thirty minutes prior to sunset and continued one and a half hours after sunset. Dawn re-entry surveys were carried out two hours before sunrise and ceased twenty minutes after sunrise.

An Anabat Walkabout and Bat box II and Bat Box duets were used to aid identification of the species.

4.4 Timings

The initial inspection survey took place on 15 May 2017.

Activity surveys were conducted on 15 May, 1 June and 15 June 2017, during suitable weather conditions as outlined in Appendix Three.

4.5 Personnel

The initial inspection survey was carried out by Natasha Estrada, BSc (Hons), MRes, MCIEEM (Natural England Bat Survey Class Licence 2015-12213-CLS-CLS), a full member of CIEEM and the named ecologist on several bat EPS licences.

Bat activity surveys were carried out by bat ecologist Natasha Estrada, accompanied by a field assistant experienced in bat survey work to maximise effort and results.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

5 Survey Findings

5.1 Desk top study

Table 1: Bat records for a 1 kilometre radius from grid, supplied by South Yorkshire Bat Group

Date	GridRef 6Fig	House number/name	Access points	Notes	Species	Number
	SE473034		Gable apex		Pipistrelle sp.	25
	SE473034			Died	Common pipistrelle	1
	SE484032			R.	Soprano pipistrelle	1
	SE482052	Hickleton Hall		2 M.mys appeared to fly from stableyard building.	Vespertillionidae	Unknown
	SE4805	Hickleton Hall, Hickleton, DN5 7BB			Daubenton's bat	1
	SE4805	Hickleton		Roost	Natterer's bat	Unknown
	SE4805	Hickleton		Roost	Daubenton's bat	Unknown
	SE4805	Hickleton		Roost	Brown long-eared bat	Unknown
	SE4805	Hickleton		Roost	Common pipistrelle	Unknown
	SE4805	Hickleton		Feeding	Noctule	Unknown
09.07.13	SE481052	Linenfold in Stableblock, Hicketon Hall		29 bats recorded emerging from hatch in west elevation of Stable Block	Brown long-eared bat	29
10.07.13	SE482051	North wing coal store, Hickleton Hall		67 bats recorded emerging from voids in stone work of former coal store	Daubenton's bat	67
06.06.13	SE481051	Garden stairwell, Hickleton Hall		Two bats recorded roosting within void below stairs	Common pipistrelle	2
06.06.13	SE483050	South Tower, Hickleton Hall		10 bats recorded emerging from east window	Brown long-eared bat	10
06.06.13	SE483050	South Tower, Hickleton Hall		Roosting confirmed by DNA of bat droppings recorded from interior of tower	Natterer's bat	
18.02.16	SE499037	Barnburgh Crags		1 bat recorded roosting in cave entrance	Brown long-eared bat	1

5.2 Initial inspection survey

5.2.1 Evidence of bats

The bridge

The bridge is constructed from a typical uniform beam design, consisting of a metal beam laid upon red brick plinths. The pointing between the brickwork is generally intact, with limited features which bats could utilise for roosting recorded.

Below the metal bridge beams, between the beams and the red brick plinths, are areas (approximately ten inches) providing suitable access under the beam which bats could utilise for roosting or as a place of shelter. One common pipistrelle "type" dropping was recorded on the brickwork below this area during the initial inspection survey.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

Several discarded feeding pellets and splashings were recorded at the base of the bridge on the former railway cutting floor. The field sign evidence was synonymous with use of the bridge by barn owl. The void recorded provides a flat level surface suitable for use by barn owl for roosting and or breeding.

Potential to support features which bats could utilise for roosting: High; confirmed bat field signs.

5.3 Bat activity surveys

Prior to all activity surveys, the property was surveyed for any fresh signs of bats use, including droppings and fresh feeding remains. No fresh field sign evidence to indicate use by bats was recorded prior to the three activity surveys.

Bat activity surveys on the bridge were undertaken during May and June 2017, in optimum weather conditions (see Appendix Three for weather conditions for activity surveys).

A low number of common pipistrelle bats were recorded to be emerging from the bridge, with one bat recorded re-entering the bridge during the pre-dawn activity survey. No bat contacts of any species other than common pipistrelle bat were recorded during the dusk and pre-dawn surveys.

Table 2: Summary results of emergence and pre-dawn re-entry surveys at the bridge.

Date	Survey	Result- Emergence from bridge	Result- Re- entry into bridge	Barn Owl
15/05/2017	Dusk emergence	5 x C. Pip emerging from bridge eastern elevation at 21:59, 22:01, 22:03, 22: 06 and 22:07. Foraging in fields to the east for circa 13 minutes before dispersing beyond	1 x C. Pip re- entering bridge at 22:03 and re-emerging at 22:07 no further re- entry behaviour	Negative
01/06/2017	Pre-dawn re-entry	1 x C.Pip recorded emerging from the bridge (eastern elevation) 5 minutes after entering 03.49	1 x C. Pip entering the bridge at 03:34	Negative
15/06/2017	Dusk emergence	21:49 1xC. Pip from bridge 4 x C. Pip passes under bridge Foraging behaviour recorded between 22:02 -22:10 by 4 x C. Pip No further contacts	Negative	22:13 Barn owl recorded flying under bridge with food. No entry into bridge recorded. Barn owl emerged from bridge 22:20 no return during the survey

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

5.4 Commuting route assessment

Bats are known to utilise linear features as commuting lines to foraging grounds and between roosts. The former railway cutting provides a suitable linear corridor shelter by tree-lined banks and scrub suitable for use by bats. However, during the activity surveys only a low level of bat foraging use was recorded within the areas either side of the bridge.

No bat contacts of any species other than common pipistrelle bat were recorded during the three activity surveys, with favoured foraging grounds from field sign evidence appearing to be in fields and woodland to the east of the site. As a result, no important commuting and / or foraging routes were identified during the survey.

6 Survey and Site Assessment

6.1 The presence of common pipistrelle "type" droppings, along with emergence of low numbers of the species from the eastern elevation of the bridge, confirms that it is used by the species. Field sign evidence suggests a low level of use by bats on a, most probably, night-roost basis.

6.2 The low number of droppings and bats recorded using the bridge to roost indicates that the building has been used sporadically by low numbers of bats on a, most probable, transitional night roost basis. No evidence to indicate use by a larger maternity or bachelor roost was recorded throughout the surveys, and the bridge is deemed to provide hostile conditions for such use due to its construction type and materials.

6.3 The bridge provides negligible potential for use as hibernacula, predominantly due to thermal fluctuations providing unsuitable conditions.

6.4 Barn owls were recorded using the bridge on a non-breeding basis, as confirmed by the low number of discarded pellets recorded on the cutting floor, as well as the emergence of a barn owl from the bridge on the third activity survey.

6.5 Following guidance outlined in the Bat Mitigation Guidelines 2004, a roost used by low numbers of common species is considered to have low conservation significance.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

6.6 Field sign evidence recorded during the three activity surveys indicates that the site and surrounding land does not form an important foraging and / or commuting line for bats of local provenance. This may be due, somewhat in part, to elevated levels of white light overspill via street lighting on the adjacent Green Lane particularly on the eastern elevation of the bridge. *Plecotus* and *Myotis* species are known to be more sensitive to artificial white light.

6.7 The building is considered to have negligible potential for use by bats of any species for hibernation, predominantly due to thermal fluctuations and a lack of suitable features due to the construction materials and type.

7 Ecological Constraints

7.1 The activity surveys were undertaken during optimum weather conditions as outlined herein and undertaken within the bat activity survey 2017. Due to the nature of the bridge, some areas were not accessible for endoscopic survey.

8 Interpretation and Evaluation

8.1 The structure is confirmed as being used by low numbers of common pipistrelle bat on a, most probable, transient / night-perch / roost basis.

8.2 Common pipistrelle bats are known to move between non-breeding roosts during the activity season for a host of reasons. However, it could be expected that surveys undertaken from the optimum periods of May and June 2017 would reveal a greater level of activity from the species, if the site were to be used regularly by larger numbers.

8.3 The survey results demonstrate the immediate area is one that does not support large populations of bats, and the cutting within the vicinity of the bridge does not provide important foraging areas and / or commuting lines. No contacts from any species, other than common pipistrelle bat, were recorded throughout the surveys.

8.4 Overspill from adjacent street lighting on Green Lane is of an intensity that could deter more light intolerant species of bat from using the immediate area and eastern elevation of the bridge.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

8.5 Hibernating bats

The bridge was recorded to contain negligible features which bats could utilise for hibernation, predominantly due to the construction materials and type failing to provide suitable features and thermal stability.

9 Assessment of Potential Impacts

9.1 Impacts on bats and their roosts

The results of the three bat activity surveys confirmed the bridge is being used by low numbers of common pipistrelle bat on a probable transient night-perch basis.

The activity survey results recorded no evidence to suggest use of the site as a maternity roost and / or large bachelor roost. The construction design and materials of the property largely fail to supply features for such use. It is considered that further survey work would not provide a more accurate picture of bat use of the bridge.

The general area was recorded to contain a low level of bat activity during the surveys. It is likely that the general area supports a low level of bat activity. The survey site recorded very low use by common pipistrelle bat for foraging / commuting grounds and no impacts are predicted.

Following consultation with Natural England, it is considered that a European Protected Species Mitigation Licence will be required to facilitate the works on the bridge.

9.2 Impacts on habitat

A very low level of bat activity was recorded on site and, as such, the site is deemed to not be an important foraging ground for bats within the locality. Whilst the tree and scrub lined cutting offers shelter and a linear corridor, favoured foraging grounds were recorded throughout the survey to the east.

9.3 Artificial lighting

Illuminating entrances to roosts has been shown to deter bats from using traditional roosts and, in certain circumstances, light

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

disturbance has led to bats abandoning the roost site all together (Briggs W. R. 2006).

Illuminating habitat used for foraging and commuting bats can affect the way bats respond to features in the landscape. Artificial light can act as a barrier to bats and disrupt flight paths of some species.

Different species of bats have differing light tolerances when commuting and foraging with bat species that emerge later in the evening, such as *Myotis* or *Plecotus* species being more sensitive to increased light levels (Stone, 2014), whereas species such as *Pipistrellus, Nyctalus* and *Eptesicus* are thought to be less affected.

The elevated light levels on the eastern boundary, illuminating Green Lane, is of an intensity which could deter foraging and commuting on this elevation.

It is deemed based on field survey results that there is negligible potential that altering the illumination of the proposed development site will change the foraging and commuting behaviour of bats, or have an adverse effect.

A summary of the key bat behaviour likely to be affected by artificial light disturbance and predicted impact can be seen in Figure 2.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

Figure 2: Summary of predicted impacts of lighting for each species/group according to bat behaviour, to be used as guidance only. Source: Stone, 2014.

Impact / Behaviour	High	Medium	Low
Maternity roost	All species	-	-
Night roost	*Rhinolophus hipposideros* *Rhinolophus ferrumequinum* *Myotis* spp. *Plecotus* spp.	*Pipistrellus* spp. *Nyctalus* spp. *Eptesicus serotinus* *Barbastella barbastellus*	-
Emergence	All species	-	-
Foraging	*Rhinolophus hipposideros* *Rhinolophus ferrumequinum* *Myotis* spp. *Plecotus* spp.	-	*Pipistrellus* spp. *Nyctalus* spp. *Eptesicus serotinus* *Barbastella barbastellus*
Commuting	*Rhinolophus hipposideros* *Rhinolophus ferrumequinum* *Myotis* spp. *Plecotus* spp.	-	*Pipistrellus* spp. *Nyctalus* spp. *Eptesicus serotinus* *Barbastella barbastellus*
Swarming	All species	-	-
Hibernation	All species	-	-

9.4 Impacts on breeding birds

No breeding birds, nests or attempts to make nests were recorded throughout the survey. Thus, no impacts are predicted. Barn owl was recorded using the bridge and, as a result, proportionate mitigation in respect of use should be included with any planning application.

10 Conclusions and Recommendations

10.1 Mitigation, compensation and enhancement for loss of bat roosts and bat habitat

The bridge is confirmed as being used by a low numbers of common pipistrelle bat on a, most probable, night-roost basis.

Low numbers of common pipistrelle bat (<10) were recorded emerging from the bridge during the survey. The survey recorded no bat contacts of any other bat species throughout their duration.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

No evidence to suggest important foraging grounds and commuting lines was recorded throughout the survey. No impacts are predicted, and the proposed action will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Consultation confirms that a European Protected Species Mitigation Licence will be required to facilitate the proposed infilling of the railway cutting and bridge.

10.2 Enhancement for bats

The development should seek to enhance the site for bats in line with planning policy.

Examples of how the proposed development may encourage foraging and commuting activity across the site include:

- enhancing habitat across the site. For example, through a planting scheme which includes night scented species to attract insects
- installation of additional bat boxes to enhance roosting opportunities at the site
- Due to the proposed creation of a bridleway within the locality, it is deemed that this provides a suitably opportunity to enhance the area for bats.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

11 INDICATIVE METHOD STATEMENT IN RESPECT OF COMMON PIPISTRELLE BATS AT:

THE BRIDGE, GREEN LANE, BARNBURGH, DONCASTER DN5 7HR.

The following methodology has been guided by the Bat Worker's Manual 2003, and the Bat Mitigation Guidelines 2004. The statement is compiled by Natasha Estrada BSc (Hons), MRes, MCIEEM, who is suitably qualified in bat survey and mitigation proposals, and being the named ecologist on several EPS mitigation licences in respect of bats.

Summary of the proposed mitigation strategy

A This document relates to the bridge located at Green Lane, Barnburgh, Doncaster, South Yorkshire which is confirmed as a night roost for common pipistrelle bat.

B The bridge and railway cutting are planned to be infilled.

C Internal and external inspections were conducted during early mid May 2017 by Natasha Estrada of Estrada Ecology Ltd, who is licenced and experienced in undertaking inspection surveys for bats. The bridge was recorded as containing moderate to high potential for roosting bats. One dropping synonymous with common pipistrelle bat was recorded on brickwork below the bridge. Bat activity surveys, comprising of two dusk and one pre-dawn, confirm the bridge is being used by low numbers of common pipistrelle bats on a probable night perch basis. Consultation with Natural England confirms an EPS licence is required to facilitate works on the bridge and destruction of the roosts.

D Activity surveys were conducted at the site during May and June 2017 to further inform bat use of the site. A low number (<10) common pipistrelle bats was recorded emerging from the bridge throughout the survey period. No contacts of any other species were recorded throughout the survey period.

E The infilling of the bridge requires a suitable mitigation strategy in respect of bat use.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

F It is recommended the works are conducted under EPS licence.

G The exact method of infilling works is not known to date, thus an indicative method statement outlining likely methods has been included. Mitigation methods will be confirmed via consultation with Natural England during the EPS licence application.

1 IMPACT ASSESSMENT

Pre, mid and long-term activity impacts

The site is identified as being used by very low numbers of common pipistrelle bats, as a night roost. No field sign evidence to indicate use as a maternity or large bachelor roost was recorded, and the bridge is deemed to have limited potential to support such roosts.

It is likely that bats use other roosts within the locality.

Fragmentation and isolation

Under current proposals, the railway cutting (which runs underneath the bridge) will be infilled. There are proposals for the creations of a bridleway within the vicinity of the site. Field sign evidence suggests the railway cutting within the vicinity of the bridge does not form a major commuting line or foraging grounds. No important flight lines, commuting routes and foraging areas were recorded throughout the survey.

There will not be any significant long-term impacts relating to fragmentation and isolation. Habitat loss is reversible via a suitable landscaping scheme of the proposed new bridleway.

Predicted scale of impact

The overall scale of impacts at this site is judged to be low. Suitable roosting provision will be made for low numbers of common pipistrelle bats, to compensate for the loss of use of the bridge to be infilled. This will be in suitable commuting / foraging habitat, and near (within three hundred metres) the site, and will therefore be better connected to the wider environment.

Estrada Ecology ltd
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Nobel Way
Dinnington
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Bat surveys at the site

Surveys recorded a small number of common pipistrelle bats using the bridge as a probable night roost. No field sign evidence to suggest the former railway cutting as an important commuting line or foraging grounds was recorded.

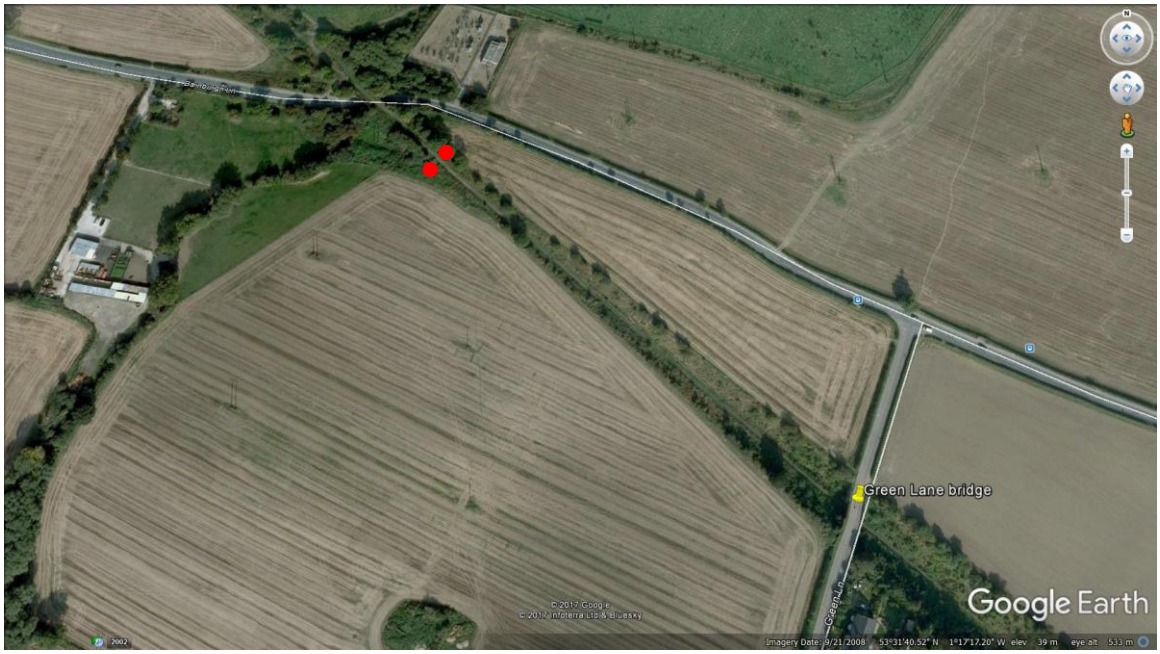
2 Proposed mitigation and methods

Timing, efforts, methods

Timing

No restrictions on timings are proposed, due to the low numbers and use by a common species. The roost is deemed to be of low conservation status following best practice guidelines.

Figure 3: Proposed location of bat mitigation boxes (shown by red circles).



WORKS TO BE UNDERTAKEN BY THE ECOLOGIST OR SUITABLY EXPERIENCED PERSON

Capture and Exclusion

The bridge will be examined by the named ecologist and, where feasible, dismantled by hand under the supervision of a licenced bat ecologist. If the beams cannot be removed by hand to destroy

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
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the roost, the gap at the wall top will be permanently sealed (using expanding foam or similar) to prevent bats accessing the building prior to infilling.

This will ensure no bats will be left between the beam and brick wall.

Any other areas suitable for roosting bats will be inspected and dismantled with an ecologist present.

A pre-works bat inspection survey will be undertaken in areas that can be safely inspected by a licenced bat ecologist under EPS licence.

Should destruction of the roost by hand not be feasible due to the nature of the infilling works, then the roost entrance and all suitable areas which bats could utilise for roosting, or as a place of shelter will be subject to bat excluders.

Bat excluders will be placed over roost entrances and left in situ for a period of five consecutive nights with temperatures being 8°C or higher. Upon completion of this timeframe, the roost will then by examined by the named ecologist and, if deemed free of bats, will be infilled and destroyed (under EPS licence). Should bats be discovered, they shall be removed by the named ecologist, placed in a suitable container and released into pre-erected bat boxes within three hundred metres of the site.

WORKS TO BE UNDERTAKEN BY THE DEVELOPER / LANDOWNER

New roost creation (including bat houses, cotes and bat boxes)

Prior to the start of works, six Schwegler 1FF bat boxes bat boxes will be erected around the site.

The bat boxes will be located sufficiently high on pressure treated timbers or suitable mature trees retained on site to protect any bats using the boxes from predation or human disturbance and to allow any bats sufficient height to emerge safely without risk of becoming grounded. These boxes will be retained for the long-term. The areas containing the bat boxes should remain unlit by external lighting.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

Boxes will be placed at different orientations on retained trees and / or pressure treated timbers to provide differing environmental conditions to maximise use.

4 POST DEVELOPMENT SITE SAFEGUARDS

Habitat management and maintenance

Bat boxes have a finite lifespan. If bat boxes are damaged by 'natural causes' (*e.g.* trees falling in bad weather), they will not be replaced.

Population monitoring and proposed mitigation evaluation

No post-works monitoring is required for low conservation roosts.

Habitat Regulations Derogation Tests

Test 1

Preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment.

The infilling of the bridge and railway cutting is the only route the client can follow, due to the poor structural state of the bridge and the costs of remediating structural decline.

As a result, the maintenance and remediation works on the bridge are likely to provide a financial burden on already restricted budgets, should it remain in situ. Retention of the bridge is likely to lead to further structural decline, posing a potential health and safety concern.

Test 2

There is no satisfactory alternative

The bridge, in its current state, does not meet any of the client's requirements. Retaining the bridge will continue to place a financial burden in terms of maintenance and the retention of unusable assets.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
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Email: enquiries@estradaecology.co.uk

To adopt the "do nothing" option would ultimately accelerate the cycle of decline of the bridge, leading to sub-optimal conditions for bats and ultimately lead to deterioration of the existing night roost.

If the bridge is left in its current state, the cycle of structural decline is likely to pose a potential risk to the public.

Test 3

***The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range*.**

The proposals will permanently destroy a roost used by low numbers of common pipistrelle bats as a night perch.

The level of impact on the site is considered low, as proportionate mitigation will be provided for the species prior to infilling.

The impact is low in a wider context and is not thought to contribute in any way to the reduction in abundance or distribution of any bat species, or roosting habitat in a regional or national context. Therefore, the favourable conservation status of the species would not be detrimentally affected by the demolition of the property.

No impacts in respect of changes to the foraging and commuting landscape for bats are predicted under current plans. Foraging grounds and commuting lines outside the site boundary are unaffected by the proposed works.

The proposed creation of a bridleway post works within the locality provides an opportunity to enhance the area, via a suitable landscaping scheme.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

12 METHOD STATEMENT IN RESPECT OF BARN OWL, TYTO ALBA AT:

THE BRIDGE, GREEN LANE, BARNBURGH, DONCASTER DN5 7HR.

Introduction

Mitigation has been guided by the Barn Owl and Rural Planning Applications (2015) and focuses on both permanent, and continuous roosting provision.

A phase one survey undertaken by Estrada Ecology Ltd in May 2017 recorded field sign evidence of barn owl, *Tyto alba* roosting. Fresh and aged pellets were recorded within the former railway cutting beneath the bridge. A single barn owl was recorded emerging from beneath the bridge on one occasion during bat activity surveys.

The bridge was recorded as having limited potential for nesting and no evidence to suggest breeding use was recorded.

Mitigation will focus on provision, outlined in Table 7 of Barn Owls and Rural Planning Applications (2015), and shown in Figure 4. Continued roosting provision will be provided throughout the works, with permanent provision in situ post-works.

No habitat creation is proposed due to the structure being located within optimum foraging and commuting grounds for barn owl. No suitable habitat for barn owls is being lost through the proposed works. Enhancement for barn owl can be created by incorporating a suitable landscaping scheme within the proposed bridleway, to be created post-works.

No timing restrictions of the works are recommended. The bridge was recorded as having no evidence to suggest use by breeding barn owl.

Where applicable all works will be supervised by a suitably qualified ecologist.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
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Dinnington
Sheffield S25 3QB
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Email: enquiries@estradaecology.co.uk

Legislation

Relevant legislation includes the Birds Directive (79/409/EEC) and the Wildlife and Countryside Act 1981 (as amended), which states that all birds, their nests and eggs are protected by law. Special considerations of Schedule 1 birds and European protected species should be made.

Wild barn owls are given the highest level of legal protection possible under the 1981 Wildlife and Countryside Act. Doing, or attempting any of the following actions against a wild barn owl is illegal and punishable by a maximum fine, upon conviction, of £5,000 and / or sixth months' imprisonment: killing or injuring a barn owl; catching a barn owl; taking or destroying any egg of a barn owl; damaging or destroying the active nest site with eggs or young or before eggs are laid; disturbing the dependent young of a barn owl; possessing, offering for sale or selling a barn owl; release or allow the escape of a barn owl into the wild

Figure 4: Required mitigation as outlined within Barn Owls and Rural Planning Applications (2015)

7. Decision Table

Ecological survey results	Mitigation, compensation and enhancement measures				
	Make temporary alternative provision nearby	Require an immediately pre-development survey	Impose a timing restriction (March to August incl.)	Require a built-in nesting place	Require foraging habitat creation and management
No Barn Owl evidence but site suitable	*No*	Yes	*No*	Yes	Yes
Barn Owl roosted here over 2 years ago	*No*	Yes	*No*	Yes	Yes
Barn Owl roosted here within the last 2 years	Yes	Yes	*No*	Yes	Yes
Barn Owls nested historically/ pair roosting	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Barn Owl evidence found here (unspecified)	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Incomplete survey or inadequate survey report	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Action Required	As soon as possible; erect one or more Barn Owl nestboxes within 200m and in clear line of sight of the development at least 30 days before any works commence. This alternative provision should be kept free from disturbance by on-site protection measures such as signage and fencing. In order of preference, nestboxes should be erected; i) in suitable buildings. If there are no suitable buildings, then; ii) in suitable trees. If no suitable trees then; iii) on poles.	Require a full survey for evidence of Barn Owl occupation by a suitably qualified person, to be conducted no more than 3 days before development works start to ensure no offence is committed under the Wildlife and Countryside Act (1981) as amended. Survey reports must identify, age and map evidence of occupation by Barn Owl, state occupation status (e.g. nest site) and provide specific recommendations stating what needs to happen (where, when, how) and in what order.	Restrict the timing of the development; works must not commence and disturbance must not increase between 1st March and 31st August. This will help ensure no offence is committed under the Wildlife and Countryside Act (1981) as amended. Approximately 75% of nesting cycles occur between March and August inclusive so at sites with evidence of nesting, either current or historic, or where a pair of birds is in residence, a timing restriction is an essential safeguard.	A permanent accessible roosting and nesting place for Barn Owls must be created inside (i.e. within) the development: typically in a roof void or within the structure of a roof or wall at least 3 metres above ground level. The owls' access should replicate the existing owl access point. If there is no existing access, face the access towards open countryside.	Create as a minimum the same amount of suitable Barn Owl foraging habitat to that which is being lost by development to ensure no net loss in biodiversity. This can be on or off-site. A habitat management plan should specify a topping regime of not more than once a year and not before 15th July. Annual topping on a rotational basis can help ensure there is always some optimum foraging habitat available for the Barn Owls.

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Estrada Ecology ltd
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Dinnington
Sheffield S25 3QB
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MITIGATION- Temporary

Thirty days prior to infilling of the bridge, a barn owl box will be erected on existing trees, as highlighted in Figure 5. The site lies approximately one hundred metres east from the existing roosting site. Clear and unobstructed flight lines exist to and from the temporary roost location. This measure will ensure suitable undisturbed continuity of roosting / provision for the species during the site works.

The box will be positioned at a suitable height with access unobstructed and out onto open farmland to enhance the potential for use as highlighted in Figure 5. The box will be seeded with pellets from the existing roost site to maximise habituation to the box.

Figure 5: The proposed location of temporary roosting provision, with clear flight lines identified on both elevations, as shown by the blue circle.



Pre-works survey

No more than three days prior to the commencement of infilling works, a pre-works barn owl survey will be conducted on the bridge. Due to the lack of breeding evidence within the bridge, it is not envisaged that mitigation proposed herein will need to be altered.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

MITIGATION-Permanence

Mitigation is aimed at ensuring that there is no detriment to the maintenance of the local barn owl population. Measures proposed are primarily aimed at maintaining roosting activity at the site; such that it will continue to act as a source of roosting for generations of barn owl which may disperse and populate / repopulate from other areas, thereby maintaining / reinforcing numbers in the wider area. Under current proposals, the bridge and cutting beneath are to be infilled. Therefore, proportion roosting provision for barn owl will not be ecologically functional within the bridge. No built structures suitable for use by barn owl or any which could house suitable mitigation boxes were recorded within the cutting. It is therefore proposed that continuous roosting provision will be achieved via:

- the provision of alternative suitable roosting sites (both temporary and permanent).
- Pre-works surveys to ensure the avoidance of direct impacts on barn owl
- the retention of hunting habitat
- the maintenance of suitable habitat connectivity between proposed roosting sites and the wider habitat

To compensate for the loss of the existing roosting site, a replacement nest box will be provided in addition to the temporary provision highlighted herein, and act as a permanent feature within the site of the former railway cutting on site post-works. This will be located upon a pressure treated timber (telegraph pole) approximately 3.5 m above ground level.

Under current plans this is to be provided within the existing location of the bridge post infilling. The box will be of the standard barn owl nest box designed and supplied by the Barn Owl Trust (or similar). Access and egress will be unimpeded for the species by vegetation and at a suitable height to minimize any predation of chicks.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
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Email: enquiries@estradaecology.co.uk

Figure 6: Proposed location of permanent roosting provision, as shown by yellow circle



Clear and unobstructed flight lines exist to extensive agricultural land beyond. A small minor road with a low traffic volume exists outside the site boundary. Due to the nature and location of the road it is not deemed restrictive to barn owl use and no enhanced hazards via road strikes predicted.

MITIGATION- Habitat Creation and Maintenance

The site is located within optimum foraging and commuting grounds for barn owl. Under current proposals no feeding grounds will be lost during the works and no further habitat enhancement or creation is proposed. Post infilling works, if no landscaping plans are proposed, the site is likely to be colonized by self-set scrub species providing suitable habitat for small mammals and thus feeding sources for barn owl.

Observations of barn owls during the survey indicate favoured foraging grounds within agricultural land adjacent to the railway cutting.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

Figure 7: The site in its wider rural setting within optimum feeding and commuting grounds for barn owl.



Figure 8: The proposed barn owl nest box designed and supplied by the Barn Owl Trust.





www.barnowltrust.org.uk

Timings

As the bridge is confirmed as a non-breeding roost, no restrictions on timings are imposed.

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

WORKS TO BE UNDERTAKEN BY THE ECOLOGIST OR SUITABLY EXPERIENCED PERSON

- Pre-works survey- to ensure no breeding activity present
- Erection of the proposed continuity provision
- Supervision of installation of the proposed permanent provision within the compensation site.
- Post-works monitoring

Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

Appendix One: Barn owl splashings and pellets beneath the bridge



Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
Mob: 07958 340877
Web: www.estradaecology.co.uk
Email: enquiries@estradaecology.co.uk

Appendix Two: Evidence of barn owl use below the bridge



Estrada Ecology ltd
Unit 1 Flexspace Dinnington
Nobel Way
Dinnington
Sheffield S25 3QB
Tel: 01909 807177
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Appendix Three: Weather conditions during the bat activity surveys

Date	Sunset / Sunrise	Start time	End time	Environmental conditions
15 May 2017	21:02	20:45	23:08	Visibility very good, Humidity 33%, Wind speed 7 mph SSE, Temperature 13°C
1 June 2017	04:45	02:33	05:02	Visibility good, Humidity 84%, Wind speed 4mph SW, Temperature 12°C
15 June 2017	21:39	21:18	23: 17	Visibility good, Humidity 81%, Wind speed 3mph WSW, temperature 17°C

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