

Bat Lighting Plan
for
Cattle Shed
Ryes Farm, Pettaugh Lane
Gosbeck
IP6 9SF

Carried out for:

Tim Owens

1st

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● Executive Summary

DCS Ecology was commissioned by Tim Owens Ltd to produce a bat (wildlife) lighting plan for the Cattle shed at Ryes Farm, Pettaugh Lane, Gosbeck IP6 9SF.

1 Introduction

● Background

- 1.1 DCS Ecology Ltd was commissioned by Tim Owens, to undertake a Bat Lighting plan at the Cattle shed at Ryes Farm, Pettaugh Lane, Gosbeck IP6 9SF. (central grid reference TM16965693 (hereafter referred to as 'the Site').
- 1.2 This was required following a planning application condition on the conversion of an old cattle shed into a dwelling.
- 1.3 The plan was required to inform the planning authority of the impact of the proposed external lighting on nocturnal wildlife such as bats. The permitted development application at the Site; was to convert the old cattle shed into a dwelling. Existing 500w halogen flood lights had been previously used for external lighting. The site survey and plan are to check that the new lighting complies with Bat Conservation Trust guidelines and the lighting plan has not created any barriers to some species of bats.
- 1.4 The survey and plan is aimed to ascertain the levels of light prior to and after fitment of new lamps on site. To make sure no unnecessary light barriers have been created with the new external lighting.

● Legislative Context

- 1.5 All bat species and their roosts are protected under the Wildlife and Countryside Act 1981 (as amended) (WCA) and the Conservation of Habitats and Species Regulations 2017. Under this legislation it is an offence to intentionally or recklessly:
 - Capture, injure or kill a bat;
 - Disturb a bat;
 - Destroy or obstruct access to a bat roost.
- 1.6 The National Planning Policy Framework (NPPF) 2018 places responsibility on Local Planning Authorities (LPAs) to aim to conserve and enhance biodiversity in and around developments. Section 40 of the NERC Act requires every public body to "have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity". Biodiversity, as covered by the Section 40 duty, is not confined to habitats and species of principal importance but refers to all species and habitats. However, the expectation is that public bodies would refer to the Section 41 list (of species and habitats) through compliance with the Section 40 duty.



● Survey Objectives

1.7 The objectives of this survey were:

- To visit the site, ascertain existing lighting.
- Identify new lamps comply with BCT (Bat Conservation Trust) and ILP guidelines;
- To make recommendations prior to development enhancements or alterations.

● Site description

- 1.8 The Cattle shed, Ryes Farm, Gosbeck is located between the hamlets of Crowfield, Gosbeck and Helmingham. Less than 1.6km to the east is the deer park of Helmingham Hall with wooded areas. Rye's farm is in the rural countryside and surrounded by mainly arable fields. There is one mainly bat linear feature which is a hedge row running on the east side of the farm.
- 1.9 The Site itself comprises the old cattle shed which is attached off the site to an adjoining workshop and the old farm yard which has been used for storage. To the south of the site is the farm house, to the east a small timber barn used for storage. These surrounding buildings were not surveyed at this time but had been previously.

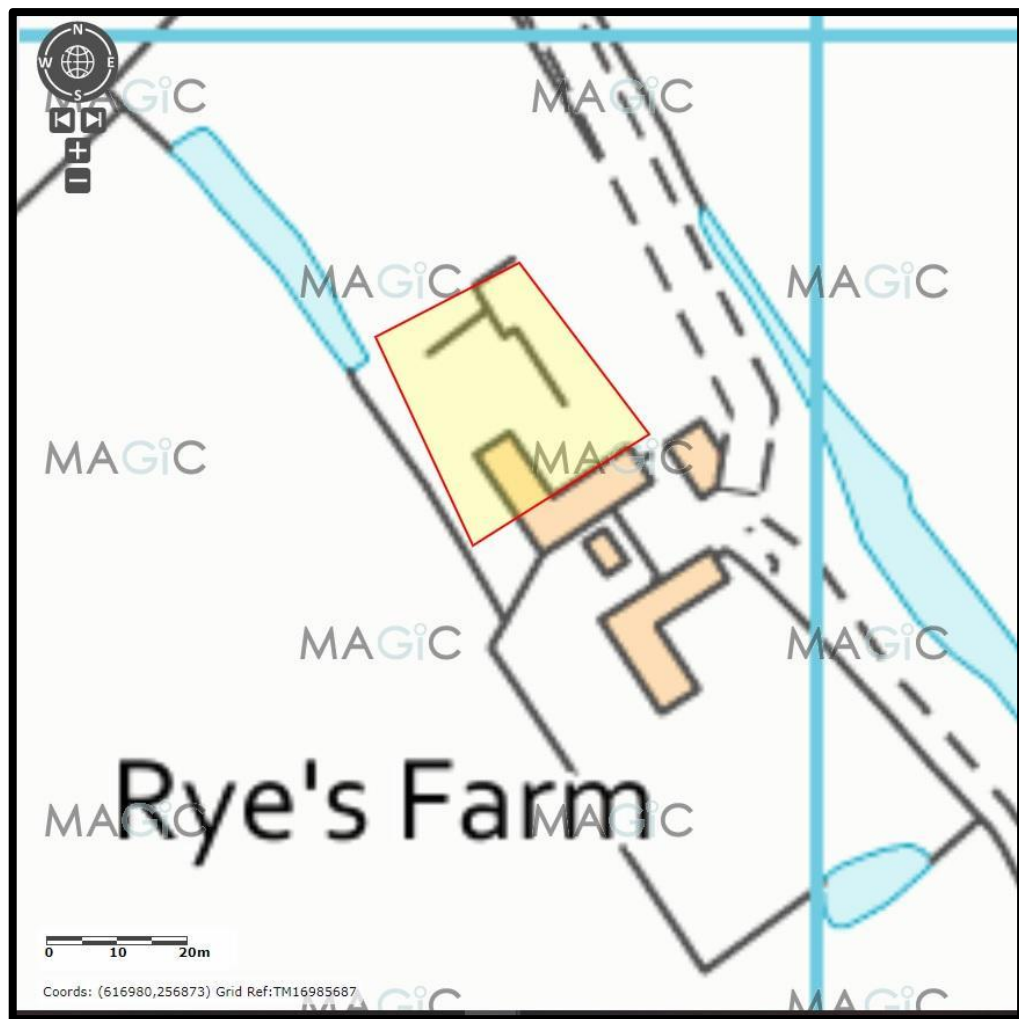


Figure 1. Site location.

● Proposals and Potential Impacts

- 1.10 The proposals include the installation of 7 new downlights on external walls at access points or walk ways of the site. These would be replacing two 500w halogen flood lights which previously lit the cattle yard.
- 1.11 The Site building is not part of any linear feature that bats might use, however it is close to an adjacent barn which is off the site and has a known bat roost in it. As such, opportunities exist surrounding the Site for bats to use the linear foraging habitat within the surrounding area especially to the east.

● Bat Ecology

- 1.12 There are eighteen species of bat found in the UK, of which seventeen are known to be breeding. Thirteen species have been recorded in Suffolk.
- 1.13 Bats are the only flying mammals, their wings have a similar structure to the hand and arm of a human, with skin stretched between long fingers and the body. In Britain, bats range in size from 4-7g (pipistrelles) to 40g (noctules).
- 1.14 Bats are found around the world and many species eat fruit and nectar; however, all British bats are insectivorous. Bats utilise different methods to hunt (such as catching insects on the wing and gleaning), hunt a variety of prey species (including midges, beetles and spiders), and use echolocation, passive hearing, and vision to find their prey at night (passive hearing is used by gleaning bats that capture non-flying insects on the ground or trees). Echolocation is a very sophisticated sonar system, whereby bats emit short, high frequency sounds and use the information/echoes returning to them to construct an image of their environment and locate their prey.
- 1.15 Roosts provide bats with shelter from predators and variable weather conditions. Bats use different roost sites throughout the year, selected based on current physiological requirements. These can be used for hibernation, reproduction, and as transient day roosts. Bats utilise natural roost sites (including tree-holes, caves, and cavities in exposed rocks) and those provided by human construction (such as houses), which mimic natural roost sites. Opportunities are abundant within residential housing; bats use roof spaces, cavity walls, window frames, weather-boarding, tiles, and many other crevices and cavities. Roost sites are often near to foraging habitat or commuting routes, most likely this is near woodland or water, however roost sites can, and have, been found in apparently isolated locations.
- 1.16 Foraging habitat generally consists of any habitat which attracts invertebrate prey, such as trees, hedgerows, woodland, scrub, rivers, and waterbodies and open areas such as grassland (particularly where this is grazed, as livestock attract some invertebrates). Linear features such as hedgerows, woodland edges and rides, tree lines and rivers are typically used for commuting between roosting locations and foraging habitat, particularly by smaller bat species which seek cover from predators and shelter from weather. Such corridors are also used by migratory bat species, such as Nathusius' pipistrelle *Pipistrellus nathusii* and noctule *Nyctalus noctula* when moving longer distances between maternity and hibernation areas.
- 1.17 Some species will not use foraging routes if these become lit, and a lit-up section of the foraging route can be a barrier that bats will not cross. Myotis species (e.g. Daubenton's, Whiskered, Natterer's) and Long-eared Bats are known to be particularly sensitive. (ref: Table 5.2 of Stone (2013))

2 Methods

● Desk Study

- A 2km data search for bat records was requested from Suffolk Biodiversity Information Service (SBIS).
- Data was provided by SBIS on the 2nd of September 2020. Data were used to determine whether any
- records of bats had been submitted for the Site, and what species had been recorded within the area. The
- type of record (e.g. roosting, detector record, droppings etc.) were also noted (Abrehart Ecology Ltd).
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● Field Survey

Bat Lighting Impact Plan survey

- 2.1 Prior to Construction.
- 2.2 Due to the potential for the Site to support roosting bats, a walkover was undertaken by Duncan Sweeting LCG (Natural England Level 2 Bat Class Survey Licence), on the 12th of March 2021. During the survey, the temperature was 7.1°C with light air (Beaufort scale 1), cloud cover was approximately 0%, and visibility was good.
- 2.3 All accessible areas of the cattle shed were inspected for their potential to support, or signs of, roosting bats including entry/egress points, droppings, urine splashes, staining, scratch marks, feeding remains, bat-fly (Nycteribiidae) cases, squeaking noises, odours and live or dead bats, according to methods described by Collins (2016). The building was surveyed using a 'bottom up' approach (beginning with external assessment and finishing with areas considered most likely to contain bats at the time), to maximise data collection while minimising disturbance to bats.
- 2.4 Equipment included Ridgid Micro CA-330 endoscope, Argus 3 thermal imaging camera and Pentax 8.5 X 21 Papilion binoculars, ladder, head torch, extendable mirror and handheld torch.



3 Results

● Field Survey

Table 1: Survey Timings Summary and Weather Conditions

Survey Date	Survey Type	Buildings Surveyed	Temperature (°C)	Precipitation	Wind Speed (Beaufort)	Cloud Cover (%)
12/03/2021	Bat Lighting plan survey	Old cattle shed	7.1	none	1 NNW	0

Table 1. Recorded Features During the Survey

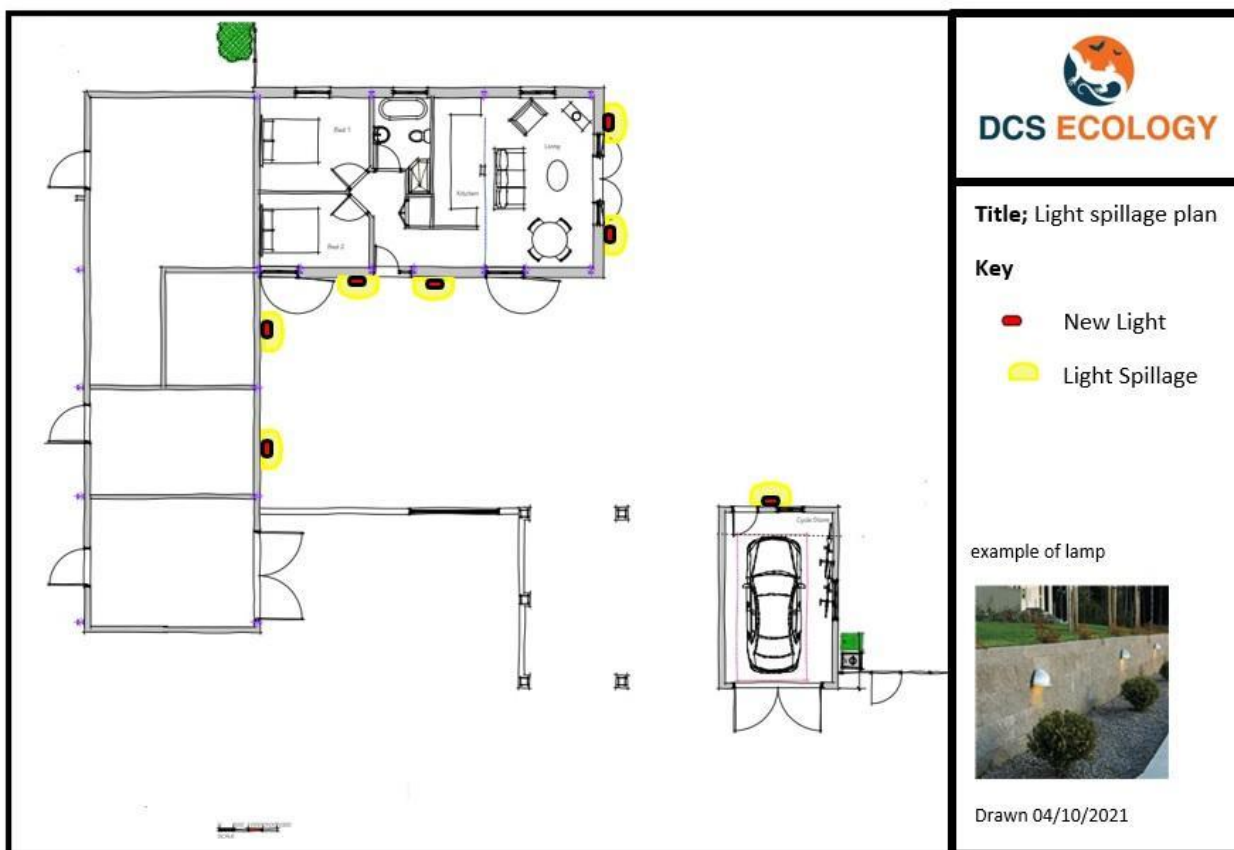
Photo	Description
	<p><i>External view of the old cattle shed</i></p> <p>The old cattle shed is a timber clad building with concrete and block base, the roof of the cattle shed is corrugated cement/asbestos. The section of the building being converted is to the left in the photo.</p>
	<p><i>Internal views of the Old Cattle Shed</i></p> <p>The building had a block base construction with above timber cladding and a corrugated concrete/asbestos roof. The building was considered to have negatable bat roost potential due to gaps where support beams join the roof and at apex beam joints, the building was light and airy and no bat signs were found.</p>



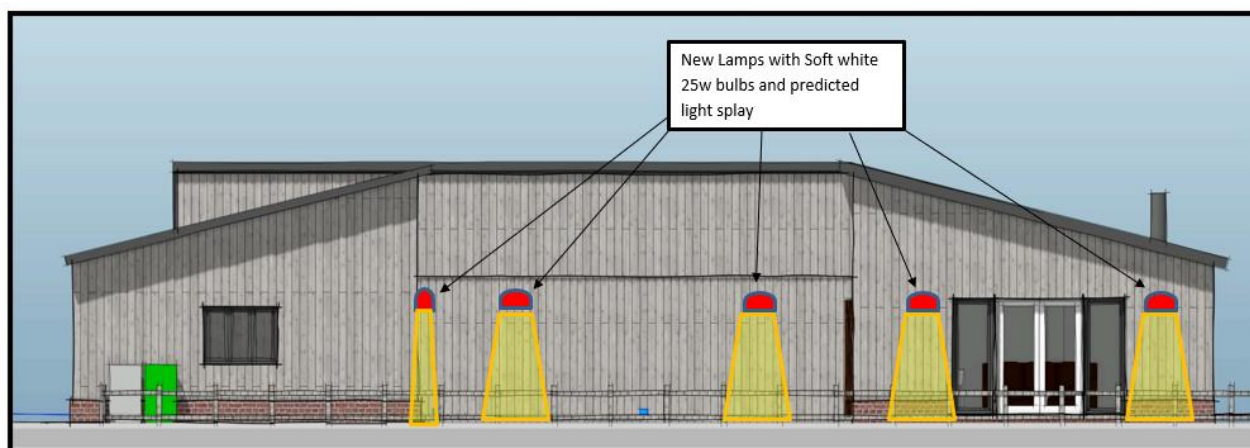
Internal views of the Old Cattle Shed



External view of the old cattle shed
External view of the old cattle shed



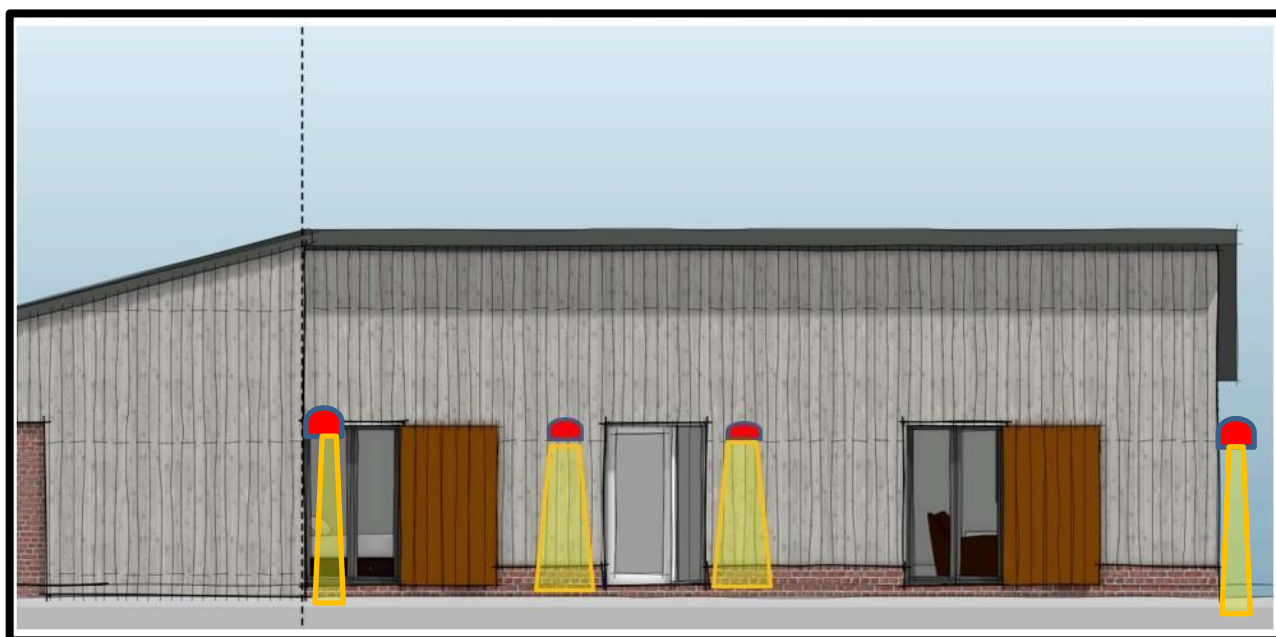
Over view of new lamps and predicted downward light spillage



Elevation drawing with new lamps and predicted light spillage (view from North)



Elevation drawing with new lamps and predicted light spillage (view to east)



Elevation drawing with new lamps and predicted light spillage (view to west)

- **Survey Limitations**

3.1 There was no survey limitation to note old flood lighting was not working.

4 Conclusions and Recommendations

- 4.1 The previous lamps (500w halogen flood lamps) emitted 5000 -7500 lumens each where the new lamps emit 200-250 lumens for an incandescent or LED bulb. There are seven new lamps compared to the two flood lamps, an over 70% light reduction over all.
- 4.2 The change in the type of lamp used and the light beam direction (downward) using a soft white light will enhance the habitat to be used by nocturnal animals especially bats. It is recommended to use the lamp quoted in this document or one that is very similar should be used. In addition it would also be recommended the planting of plant species like such as Honeysuckle (*Lonicera perichlymenum*), White jasmine (*Jasminum officinale*), Tobacco plant (*Nicotiana glauca*), Night-scented stock (*Matthiola bicornis*) and Evening primrose (*Oenothera biennis*).
- 4.3 The recommended lamp with bulb and building placement of said lights is totally suitable for external use on a rural dwelling.

5 References

Literature

Abrehart Ecology Ltd. (Oct 2020) Bat Survey Report for Ryes Farm Gosbeck, Suffolk.

Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1.

Bat Conservation Trust BCT & ILP (2018). Bats and artificial lighting in UK guidance note 08/18(Bats and the Built Environment series

Emery, M. (2008) Effect of Street Lighting on Bats. Urbis Lighting

Fure, A. (2006) Bats and Lighting. The London Naturalist, 85.

The Institution of Lighting Engineers. (2005) Guidance notes for the Reduction of Obtrusive Light. ILE

Stone, E.L. (ed.) (2013) Bats and Lighting: Overview of Current Evidence and Mitigation. Bats and Lighting Research Project , University of Bristol.

● **Appendix I – Lamp Specification**

Lamp: KONSTSMIDE TORINO OUTDOOR WALL WASHER LIGHT - GALVANISED STEEL

Lamp details: Galvanised Steel finish with opal glass diffuser

IP23 rated, recommended for sheltered outdoor use

Requires max 25W small screw bulb, sold separately. For our recommended bulbs see 'related products'

Size: H 105 x W 200 x D 100mm



Bat Lighting Plan Report
The Cattle shed, Ryes Farm , Gosbeck

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