

Bat (Chiroptera) Lighting Plan

of

White House Farm,

The Street,

Thorndon,

IP23 7JN

For

Keith and Jane Saunderson

January 2024



DCS **ECOLOGY**



M 07715345462

T 01473 621113

E dcsecology@gmail.com

Revision	Remarks	Author	Date	Checked	Authorised
1	First draft	OM	11/01/24	GK	
2	Second draft	OM	05/03/24	GK	
3	Final draft	OM	06/03/24	DS	DS

This report has been prepared for the sole use of the commissioning party, and its contents remains the property of DCS Ecology Ltd. until payment has been received in full. This report may not be relied upon by any other party without the prior written permission of DCS Ecology Ltd. This report has been prepared in accordance with British Standards 42020:2013 and the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Report Writing and Code of Professional Conduct.

The authors and surveyors used to undertake the work are appropriately qualified for the tasks undertaken. The work undertaken while preparing this report has been carried out with due care, skill, and diligence.

© 2024 Copyright DCS Ecology Ltd. All rights reserved.

DCS Ecology Ltd. is a company registered in England. Company number: 13051825. Registered office: Kikambala, 69 Deben Avenue, Martlesham Heath, Suffolk, IP5 3QR.

CONTENTS

1. INTRODUCTION	3
1.1 BACKGROUND.....	3
1.2 LEGISLATIVE CONTEXT	3
1.3 SITE DESCRIPTION	3
1.4 BAT ECOLOGY.....	4
1.5 SURVEY OBJECTIVES.....	5
2. PREVIOUS ASSESSMENT METHODS AND RESULTS	6
2.1 DESK STUDY	6
2.2 FIELD SURVEY	6
2.3 RESULTS	7
3. CONCLUSIONS AND RECOMMENDATIONS	8
4. REFERENCES	8
5. APPENDICES	9
APPENDIX I – DATA SEARCH SBIS AND SITE LIGHTING	9
APPENDIX II: PREDICTED LIGHT SPREAD AND ISO LUX HEAT MAP.....	11
APPENDIX III : PRE CONSTRUCTION SITE PHOTOS.....	13
APPENDIX IV: MANUFACTURERS DATA SHEETS	14

1. Introduction

1.1 Background

DCS Ecology Ltd was commissioned by Keith & Jane Saunderson to produce a Bat (*Chiroptera*) lighting plan to satisfy Condition 7 (Wildlife Sensitive Lighting Design Scheme) of the Planning Permission granted (ref DC/23/01148) as part of the conversion, alteration, and structural repair of a northern storage wing into habitable accommodation at Whitehouse Farm, The Street, Thorndon, IP23 7JN (central grid reference TM 13646 69909; hereby referred to as the site).

1.2 Legislative Context

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 2021 (as amended). 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.

Several species of bat are a part of UK Biodiversity Action Plan (UKBAP) which include; lesser horseshoe (*Rhinolophus hipposideros*), barbastelle (*Barbastella barbastellus*), noctule (*Nyctalus noctula*), brown long-eared (*Plecotus auritus*), and soprano pipistrelles (*Pipistrellus pygmaeus*).

The National Planning Policy Framework (NPPF) 2023 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.

1.3 Site description

The Site is located in the village of Thorndon, Suffolk, and attached to the northern edge of a Grade II listed building. The towns of Eye and Stowmarket are located approximately 4km to the north and 14.1km to the south-west respectively.

The proposed construction zone is approximately 48m² (0.0048ha) in extent. The area subject to development is a single storey building extension bordered by ornamental vegetation and areas of hardstanding. Adjacent habitats consisted of dense residential housing and rural gardens to the east and west of the site. With arable land located directly to the north, and beyond a road known as ‘The Street’ the south.

In the surrounding area, there were over a dozen bodies of water including ponds and wet ditches, extensive linear hedgerows and tree lines, and sections of deciduous woodland. These features increase the amount of foraging, roosting, and commuting opportunities for nearby bats.

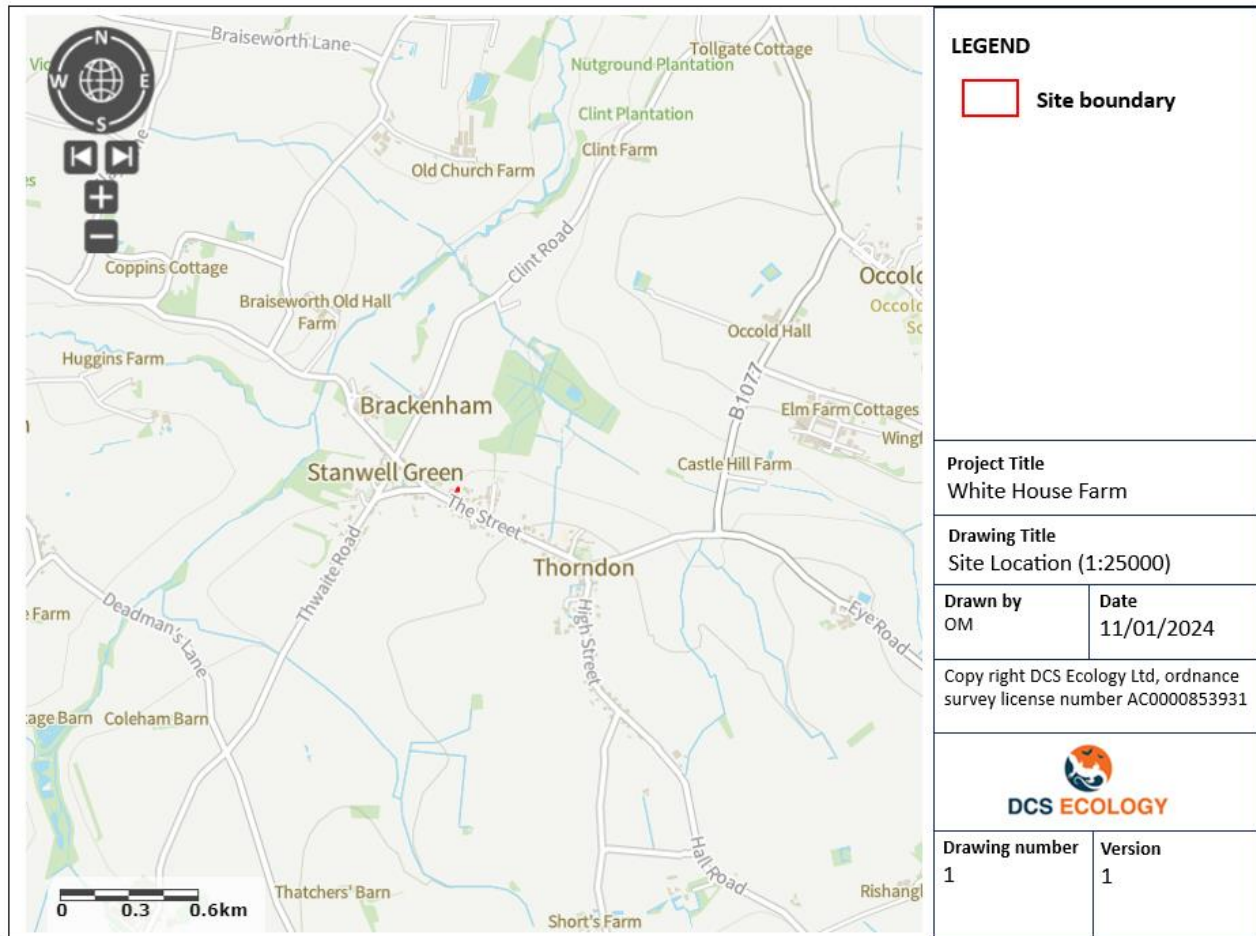


Figure 1. Site location (outlined in red). (1:25000) Based upon Ordnance Survey (c) Crown Copyright under licence AC0000853931.

1.4 Bat Ecology

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, five of these are subject to National Biodiversity Action Plans: these are Lesser Horseshoe (*Rhinolophus hipposideros*), Barbastelle (*Barbastella barbastellus*), Noctule (*Nyctalus noctula*), Brown Long-Eared (*Plecotus auritus*), and Soprano pipistrelle (*Pipistrellus pygmaeus*).

Bats are the only flying mammal, 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).

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.

Roosts provide bats with shelter from predators and variable weather conditions. Bats will use different roost sites throughout the year, which are selected based on current physiological requirements. These roosts can be used for hibernation, reproduction, and as transient day roosts. Bats will 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 can use roof spaces, cavity walls, window frames, weatherboarding, 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.

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. As such, the conservation of these habitat features, as well as their protected roost sites, is very important for bats, and these can be threatened particularly by larger scale development and infrastructure.

1.5 Survey Objectives

The aims of this Bat (Chiroptera) Lighting Plan are:

To assist with discharging relevant conditions, as part of the reserved matters, which were imposed when outline approval for the development was granted; and, to provide information for the provision of “a lighting design scheme for biodiversity”, Condition 7.

The content of the Wildlife Sensitive Lighting Design Scheme shall include the following:

- Identify features on the site particularly sensitive to bats;
- What is likely to cause disturbance along important routes;
- Show external lighting;
- Demonstrate areas to be lit;
- Provide undisturbed areas (unlit).

To conserve and enhance Protected and Priority Species and allow the LPA to discharge its duties under the s40 of the NERC Act 2006 (Priority habitats & species). The works shall be implemented in accordance with the approved details and shall be retained in that manner thereafter.

2. Previous Assessment Methods and Results

2.1 Desk Study

SBIS Data Search

Data obtained from the Suffolk Biodiversity Information Service (SBIS, 05/04/23) by DCS Ecology Ltd. for a Preliminary Roost Assessment in April 2023. A SBIS standard data search¹ for any information regarding statutory and non-statutory sites and records of protected and priority species within a 2km radius of the Site.

For protected bat species, the SBIS data search returned 9 records within a 2km radius from the site. These included brown long-eared (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), and unidentified pipistrelle bat species (*Pipistrellus*). The closest record to the site is of common pipistrelles approximately 340m to the west

The full SBIS data search map can be found in Appendix I.

MAGIC Data Search

A 2km radius search for European Designated Sites, including Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar's was undertaken using MAGIC (<http://www.natureonthemap.naturalengland.org.uk/>).

There were no statutory designated sites found within the 2km search using MAGIC. Many designated sites are protected due to their ecological importance and specialty habitat that support protected or priority species. Although there are no designated sites within 2km, the habitat adjacent to the site still supports populations of bats and other species.

2.2 Field Survey

Preliminary Roost Assessment (PRA)

Prior to the beginning of works, a Preliminary Roost Assessment (PRA) was conducted by DCS Ecology Ltd in March 2023, to check the site for any signs or evidence of bats using the northern extension.

A Preliminary Roost Assessment was carried out by Duncan Sweeting LCG (Natural England Great Crested Newt Class Survey Licence WML-CL08; Natural England Bat Class Survey Licence WML-CL18) and Gemma Kitchin BSc (Hons) on the 31st March 2023 in accordance with standard best practice methodology for Phase 1 Habitat Surveys set out by the JNCC (JNCC 2010). Weather conditions during the survey were overcast, a light breeze (Beaufort scale 2), with good visibility for observing external features. There were no survey limitations.

¹The standard data search identifies designated sites including:- Ramsar; Special Areas of Conservation; Special Protection Areas; Sites of Special Scientific Interest; National Nature Reserves; Local Nature Reserves; County Wildlife Sites; Regionally Important Geological Sites; Ancient Woodland; and protected and priority species identified by the:- Wildlife & Countryside Act 1981 Schedules 1, 5 & 8; Conservation of Habitats & Species Regulations 2010 Schedules 2 & 5; Protection of Badgers Act 1992; Bonn Convention Appendix 1 & 2; Bern Convention Annex 1 & 2; Birds Directive Annex 1; Habitats Directive Annex 2, 4 & 5; NERC Act 2006 Section 41; UKBAP (both local and national); IUCN Red List species; Red & Amber Bird List; Nationally Scarce / Rare; Locally Scarce / Rare; and Veteran trees.

This survey was undertaken in accordance with the Bat Conservation Trust Good Practice Guidelines methodology for preliminary roost assessments of structures (Collins, 2016). The buildings were surveyed externally, for their suitability to support roosting bats. A torch and endoscope were used to investigate accessible features where necessary.

The buildings were systematically searched for potential bat roost features (PRFs) and any evidence of roosting bats was recorded, such as:

- Fur staining
- Urine splashes
- Droppings
- Smoothness at entry points
- Feeding remains, such as butterfly wings.

The survey gave particular attention to the following Potential Roost Features (PRFs):

- Gaps between ridge tiles and roof tiles, usually where the mortar has fallen out or the tiles are broken or lifted
- The ridge area of the roof (particularly between the ridge beam and roofing material)
- Lifted lead flashing associated with roof valleys, ridges and hips, or where lead flashing replaces tiles
- Spaces between external weatherboarding/cladding and the timber frame or walls
- Gaps behind window frames, lintels and doorways including the main doors
- Tenon and mortise joints between truss beams and braces and the principal support columns
- Cracks and crevices in timbers
- Gaps between stones or bricks (especially where purlins enter the wall and by the wall plate)
- Surfaces such as the ground, ledges, windows, sills, or walls

2.3 Results

The northern extension was found to have negligible potential for roosting bats, largely due to a number of factors, including lack of major potential roost features, lack of any signs of bats (e.g. urine splashes, droppings or butterfly wings), light ingress, frequent usage of the extension and adjacent areas, levels of dust and extensive presence of thick cobwebs.

As the surrounding habitats offered good foraging and commuting opportunities, there was a risk of artificial lighting that was part of proposed works impacting bats in the local vicinity. Therefore, a sensitive lighting plan was recommended.

3. Conclusions and Recommendations

There were no previous external lamps on the section of site. Five new lamps will be fitted to external walls on the north, east and western elevations of the proposed extension. They are to be fitted no more than 1900mm (1.9m) above ground level and will be fitted with 5w (2700k) warm white LED bulbs, which meets the recommended light output. The lights will be fitted with PIR sensors and switches, so that the lights can be set to on/off/PIR. These lamps will illuminate doorways and switches as needed and will not result in considerable lighting of surrounding areas.

4. References

Literature

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

Bat Conservation Trust BCT & ILP (2023). Bats and artificial lighting in UK guidance note 08/23.

Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn). The Bat Conservation Trust, London. ISBN 9781739512606.

DCS Ecology (2023) Preliminary Roost Assessment of White House Farm, March 2023.

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

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

Mitchell-Jones, A. J. and McLeish, A.P. (2004) *Bat Workers' Manual*, 3rd edition. JNCC.

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

Reason, P.F. and Wray, S. (2023). *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats*. Version 1.1. Chartered Institute of Ecology and Environmental Management, Ampfield.

Websites

Natural England (2024). Multi-Agency Geographic Information for the Countryside (MAGIC). Available at: <https://magic.defra.gov.uk/magicmap.aspx> (Accessed on: 11/01/24)

Lighting For Gardens (2024). ELIPTA COMPACT OUTDOOR WALL SPOTLIGHT - BLACK - 12V MR16. Available at: <https://www.lightingforgardens.com/compact-wall-spotlight-black-12v-mr16> (Accessed: 01/02/24)

5. Appendices

Appendix I – Data search SBIS and Site Lighting

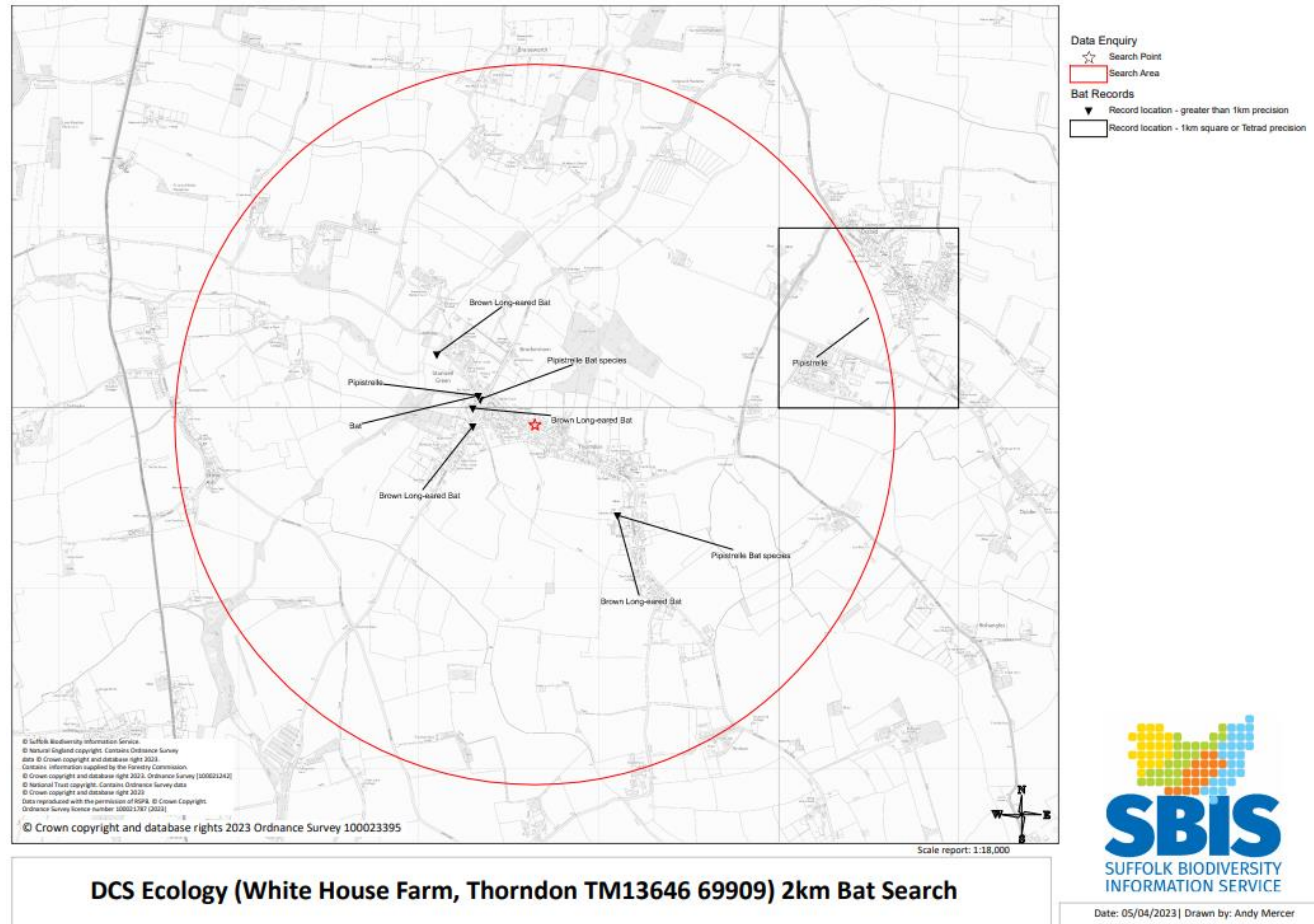


Figure 2: Bat species records within 2km of the Site in Suffolk

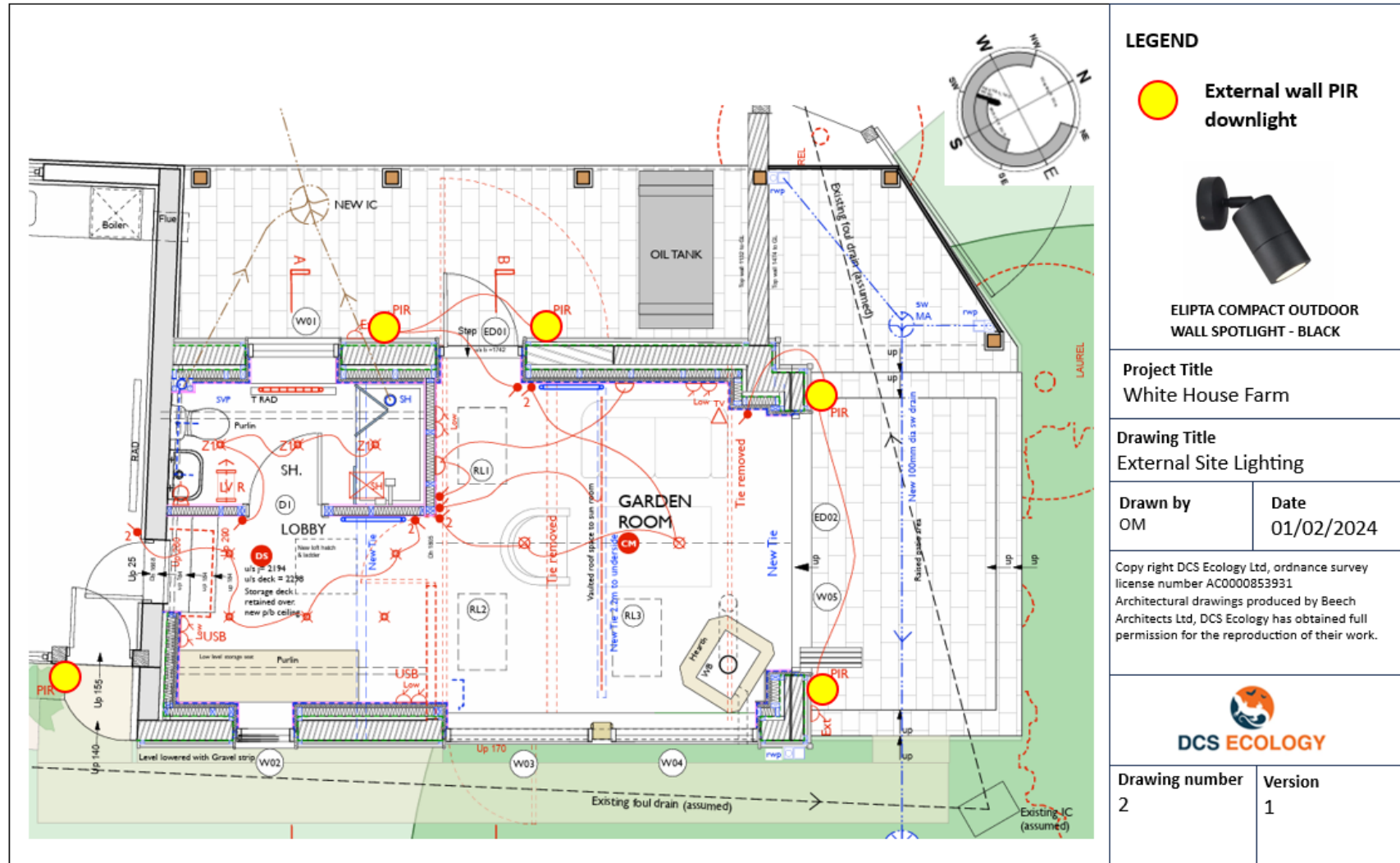


Figure 3: Overall site map of external lighting

Appendix II: Predicted Light spread



Figure 4: Placement of lighting on building exterior

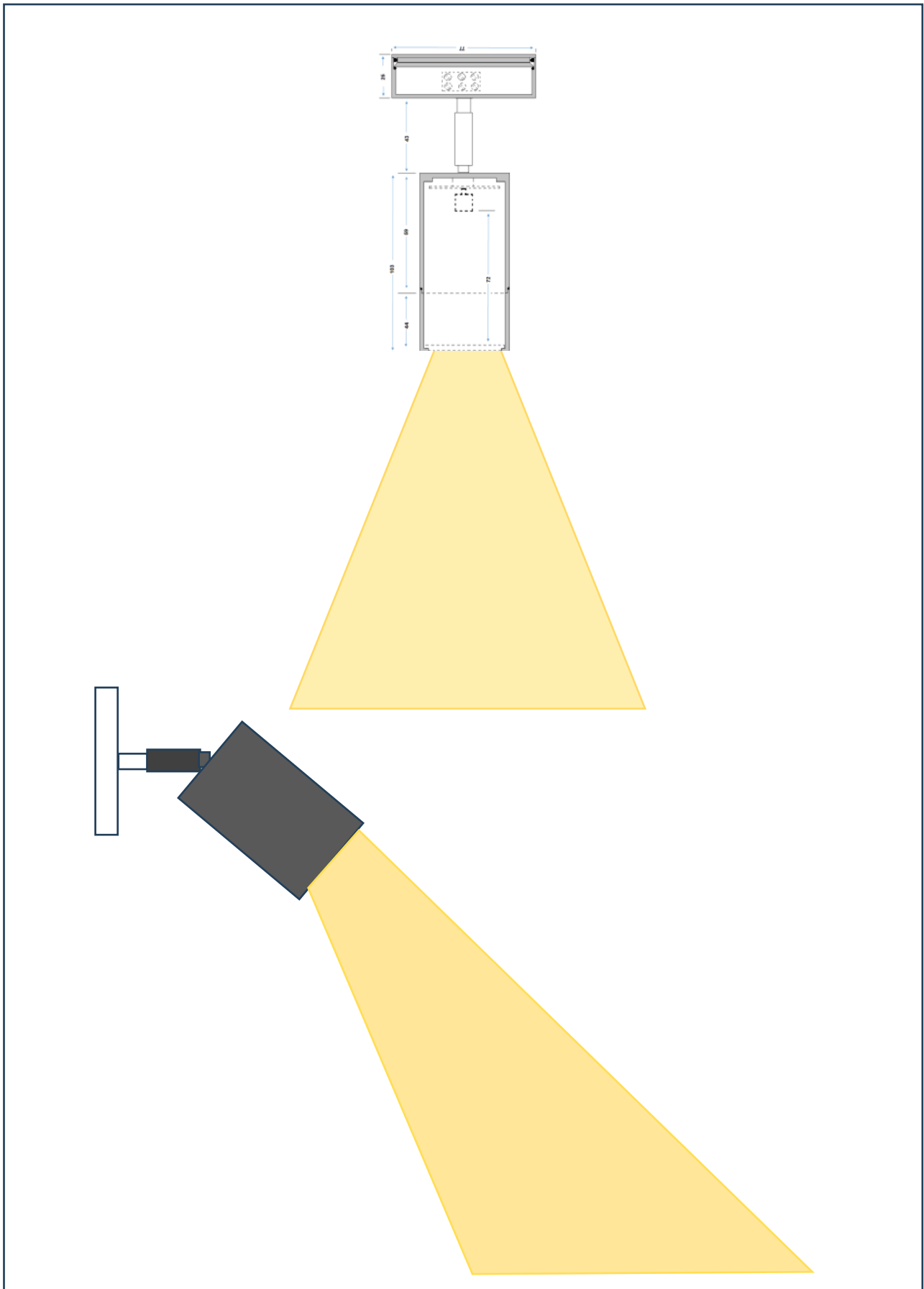


Figure 5: Predicted lights spread of the external wall downlights

Appendix III : Pre Construction Site Photos

Table 2: Site photos (provided for additional context)



View of the eastern elevation of the northern extension



View of the western elevation of the northern extension



View of the northern and eastern elevations of the northern extension.



Cracks in the brickwork of northern elevation of extension.

Appendix IV: Manufacturers data sheets

ELIPTA
the professionals' choice

TECHNICAL DATA SHEET

WALL LIGHTS

E4231L - Elipta Compact Wall Spotlight



Installation notes

Ensure mains supply is isolated prior to installation of this product.

Cable connections can be made using a T9966 IP68 in-line connector or any IP rated junction box.

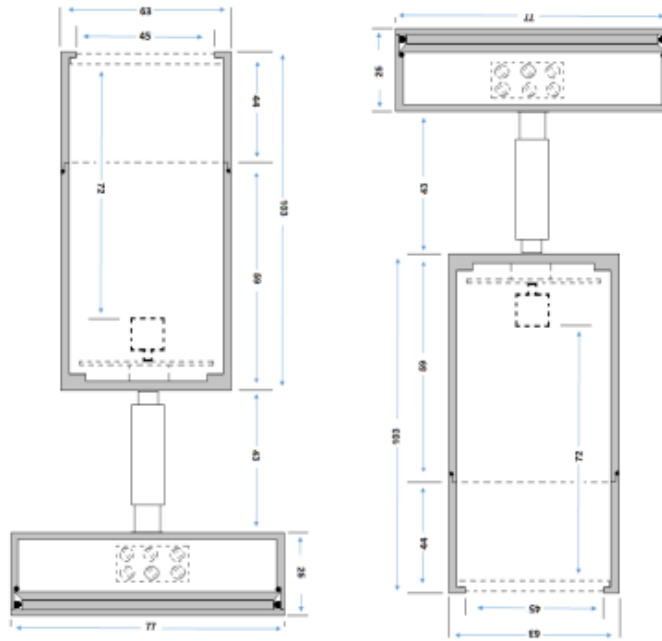
Refer to the instruction manual for further guidance.

Note – This product must be installed by a qualified electrician.

Part code	E4231L
Diffuser	Clear
Dimensions (mm)	Body – 103x63
Construction	Aluminium
Finish	Black powder coat
Class	Class II
IP rating	IP65
Maximum wattage	LED - 10W
Lamp base	MR16
Lamp included	No
Dimmable	Dependant on lamp
Input voltage	12V
Net weight (g)	443
Gross weight (g)	492
Warranty	2 Years
Manufactured in accordance with	BS EN 60598
Origin of manufacture	PRC



ELIPTA COMPACT OUTDOOR WALL SPOTLIGHT - BLACK - 12V MR16



ELIPTA COMPACT OUTDOOR WALL SPOTLIGHT - BLACK - 12V MR16