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Wildlife Sensitive Lighting Strategy

Survey site:

Abbey Gardens, 4-6 Abbey Street, Reading, RG1 3BA

Client:

Randalswood Construction UK Ltd

Date:

5th June 2026

Project:

This report is prepared to inform a planning application with Reading Borough Council. This proposal can be described as external works to partial areas of all elevations at ground floor level and all areas of each elevation from 1st to 7th floor level, including replacement windows and doors, installation of brickwork following removal of existing glazing, the provision of Juliet balconies on all elevations and protruding balconies on the east and south elevations at 2nd floor level and above, and other associated works.

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Guidelines

This assessment has been designed to meet:

- British Standard 42020 (2013) 'Biodiversity – Code of Practice for Planning and Development'.

Proportionality

> The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.
>
> This approach is enshrined in Government planning guidance, for example, paragraph 174 of the National Planning Policy Framework for England.
>
> The desk studies and field surveys undertaken to provide a preliminary ecological appraisal (PEA) might in some cases be all that is necessary.
>
> (BS 42020, 2013)

In consequence of the scale and intensity of the proposed development, this plan-led report is considered adequate and proportionate. It communicates all relevant information necessary to determine a planning application or support the recommendations for further surveys.

Contents

1.0 Introduction and Context 4
1.1 Background 4
1.2 Site Location 4
2.0 Ecological Conditions Relevant to This Report 6
2.1 Habitats recorded on Site 6
2.2. Potential Lighting Impacts for Other Protected/Notable Species 8
3.0 Wildlife Sensitive Lighting Strategy 9
4.0 Bibliography 13
Appendix 1: Proposed Development Plan 14
Appendix 2: Site Location Plan 15
Appendix 3: Lighting Scheme 16
Appendix 4: Legislation and Planning Policy Related to Bats 17

1.0 Introduction and Context

1.1 Background

Arbtech Consulting Ltd was commissioned by Randalswood Construction UK Ltd to produce a Wildlife Sensitive Lighting Strategy for the new proposed development at Abbey Gardens, 4-6 Abbey Street, Reading, RG1 3BA (hereafter referred to as the site).

External works to partial areas of all elevations at ground floor level and all areas of each elevation from 1st to 7th floor level, including replacement windows and doors, installation of brickwork following removal of existing glazing, the provision of Juliet balconies on all elevations and protruding balconies on the east and south elevations at 2nd floor level and above, and other associated works (hereafter referred to as "the proposed development") was granted approval, with conditions, by Reading Borough Council (PL/26/0091). This plan has been produced to inform the discharge of condition, which states:

Prior to commencement of the development (barring demolition) a report detailing the internal (from windows facing the river) and external lighting scheme and how this will not adversely impact upon wildlife shall be submitted to and approved in writing by the LPA. The report shall include the following figures and appendices:

a) A layout plan with beam orientation

b) A schedule of equipment

c) Measures to avoid glare

d) An isolux contour map showing light spillage to 1 lux.

The internal lighting (from windows facing the river Kennet) shall thereafter be implemented in accordance with the approved details prior to the first occupation of the relevant buildings and maintained as such thereafter. Reason: To limit the impact of light pollution from artificial light on nature conservation in accordance with paragraph 198 of the NPPF (2024) and Policies EN12 and EN16 of the Reading Borough Local Plan 2019

A plan showing the proposed development is provided in Appendix 1.

1.2 Site Location

The site is located at National Grid Reference SU 71964 73435 and has an area of approximately 0.42ha comprising one building. The site is located in an urban setting, immediately surrounded by urban development within the town of Reading. The site is adjacent to the river Kennet on the eastern elevation and further urban development on all other elevations. The local landscape is a densely urbanised one, containing small, scarcely vegetated gardens with only a scattered covering of trees/in which trees are largely absent. The river Thames is located 530m north of the site and there is open parkland to the north. The river Kennet is adjacent to the site

on the eastern boundary. A variable soil and subsoil typically Peat or layered clay, sand and silt (riverine). Mildly Acidic to Neutral (pH: 4.5 - 6.5). There are 5 priority habitats located within 2 km of the site. These comprise deciduous woodland, coastal and floodplain grazing marsh, traditional orchard, ancient & semi-natural woodland and wood pasture and parkland. The closest priority habitat comprises deciduous woodland, located ~440 m N of the site. The site is separated from the woodland by high levels or urban development and limited areas of open parkland. However, the river Kennet could provide a suitable linear feature for commuting bats to the woodland. A site location plan is provided in Appendix 2.

2.0 Ecological Conditions Relevant to This Report

The baseline ecological conditions of relevance to this report were determined as a result of the Preliminary Roost Assessment (PRA) undertaken by Arbtech Consulting Ltd in March 2026, informed by desk study data and subsequent targeted survey work.

2.1 Habitats recorded on Site

Habitats identified within the red-line development boundary comprise the following:

- Developed land and sealed surfaces (hard standing, buildings and structures)
- Tributary to the river Kennet (which runs under a section of the building)
- Scattered trees

These habitats are of low to medium ecological distinctiveness and are typical of a densely urban area. Habitats located outside of the development boundary form part of the wider landscape context and the majority were not included within the impact assessment. With the exception of the river Kennet, which is located along the eastern boundary of the site which will be included in the impact assessment of the new lighting.

2.2 Anticipated Lighting Impacts From New Development

Figures 1 shows the roost assessment map of the building on site (from the PRA, Arbtech, 2026). As shown within the map, the river Kennet is adjacent to the site on the eastern boundary and scattered trees are present to the north. Furthermore, there is already lighting columns and floodlights onsite, located adjacent to the building, river and scattered trees. Light spill from the existing lighting spreads horizontally to the adjacent habitats and has direct glare and light spill into river. Only the building will be affected by the proposed plans. The addition of new lighting fixtures, to replace the old fixtures, externally along the eastern boundary will reduce the light spill onto the river.

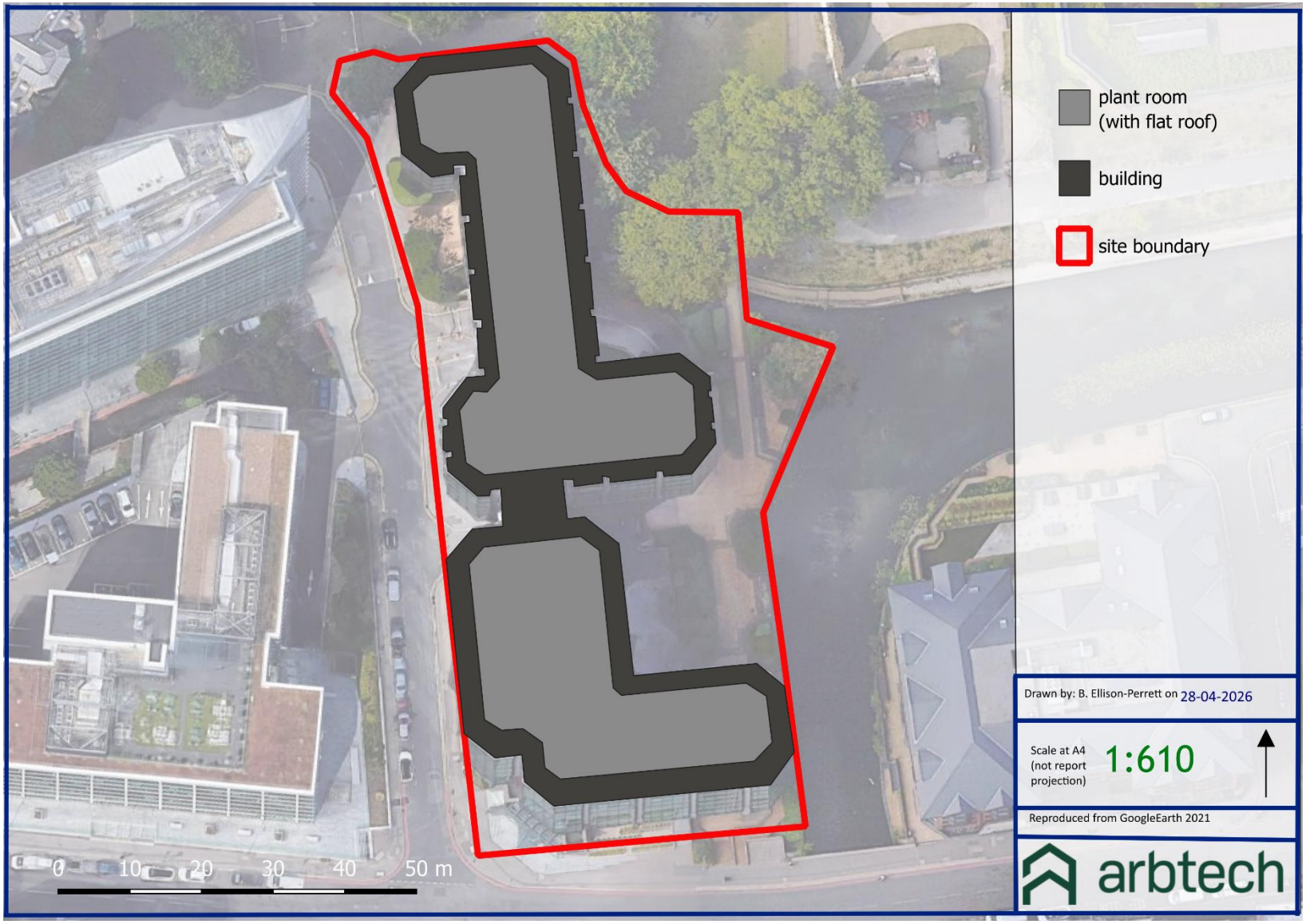

Figure 1: Preliminary Roost Assessment Survey Plan (Arbtech, 2026)

2.3. Potential Lighting Impacts for Other Protected/Notable Species

Terrestrial mammals

No lighting impacts on terrestrial mammals such as hedgehogs; badgers or reptiles is anticipated from the new development. The retention of the trees will protect habitat that may be used by these species. The provision of mitigation lies within the wider landscape and will not be affected by artificial light from the new building.

Birds

No evidence of nesting birds was identified on the site. The trees provide nesting opportunities for common breeding bird species. The trees will be subject to no light spill.

Bats

The building has negligible habitat value for roosting bats. The adjacent trees provide suitable commuting and foraging habitat. The boundary trees will be subject to no light spill. Additionally, the river Kennet could be utilised by foraging and commuting bats. However, through the use of specific lighting, cowls and hoods, the river will not be subject to light spill from the internal or external lighting.

3.0 Wildlife Sensitive Lighting Strategy

The Wildlife Sensitive Lighting Strategy to be implemented at the site is detailed below. The Lighting Strategy aims to mitigate potential impacts of artificial light spill on wildlife as a result the proposed development.

Mitigating impacts of internal Lighting

Impacts of artificial light spill through doors will be mitigated by fitting internal lighting fixtures in line with recommendations within Guidance Note 08/23 (BCT & ILP 2023).

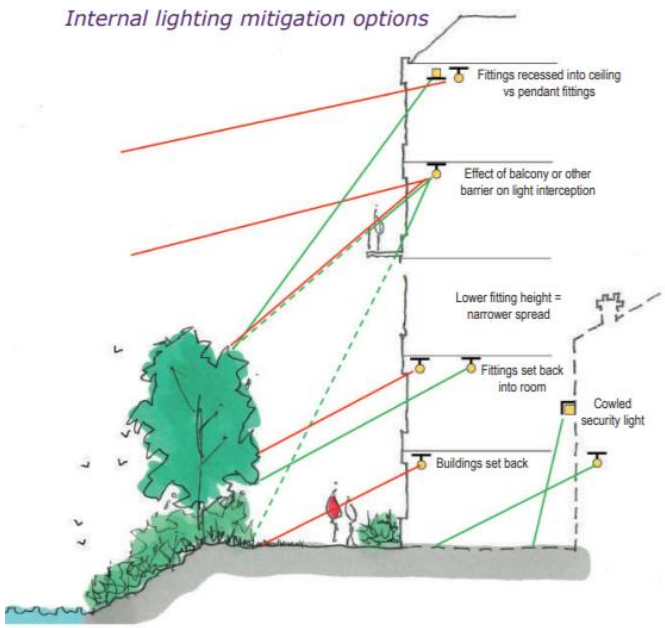

Figure 2: Internal Lighting mitigation options. Image taken from Guidance Note 08/23: Bats and Artificial lighting in the UK (BCT & ILP 2023).

This proposed repurposed building in the centre of Reading is changing its use from commercial office to residential. Therefore, interior lighting will be significantly reduced from 300-500LUX to 50-100LUX, through the change of lighting types, change in colour temperature of lighting and the addition of curtains/ blinds within residential homes.

The following advice **must** be adopted for internal lighting mitigation.

- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used.
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition.
- A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light.
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).
- Internal luminaires can be recessed (as opposed to using a pendant fitting) where installed in proximity to doors to reduce glare and light spill. These should be fitted a minimum of 1m from doors. Lighting should be controlled by dimmers.

Furthermore, the interior lighting would be for residential purposes only. The interior lighting levels would be 50-100LUX, the colour temperature of lighting to be installed would be 2700k, all interior lighting circuits will be dimmable, the new apartments will have smaller windows therefore less light will emit (See architect's details) and all apartments would have blinds and / or curtains. This means there will be significantly less light spill from the apartments due to lower occupancy and hours of use in comparison to an office building

Mitigating impacts of external Lighting

All external lighting will be installed in accordance with current guidance issued by the Bat Conservation Trust and Institute of Lighting Professionals: *Guidance Note 08/23: Bats and Artificial lighting at Night* (BCT & ILP 2023). External lighting will be installed in a way as to limit artificial light spill over habitats of value to protected and/ or notable species potentially using the site. External lighting installation will avoid excessive light spill over:

- Retained habitats of elevated value including the adjacent river Kennet.
- Any newly installed species-specific habitat prescriptions.

High powered security lights should not be installed. Pedestrian routes will be illuminated, with low level bulkhead luminaires, to achieve the recommended lighting parameters as given in BS EN 12464-2: 2024 for a "Walkway Exclusively for Pedestrians". Low-level bulkhead luminaires will be positioned to direct light downwards and ensure the main beam is below 70° to the vertical to reduce glare and light spill and to ensure that light is directed to the intended areas only.

Light spill will be reduced via the use of hoods, cowls, louvers and shields. Additionally, the lighting will use narrow spectrum light sources to lower the range of species affected by lighting and will avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue shortwave length content they should be of a warm / neutral colour temperature <2700 kelvin.

The following lighting design prescriptions are considered suitable for the type and scale of the proposed development to minimise the impacts of artificial lighting on site on bats and other protected/ notable species. External lighting will be installed in accordance with the below design prescriptions:

- **Reducing the operating time of lighting and levels of illuminance provided via:**
  Preventing the use of motion sensors where possible to allow lights to be turned off permanently whilst not in use.
  Where the use of motion sensors is desirable, light sensors should be set to lighting periods of no longer that 1 minute to prevent unnecessary light spill.
  Lighting will be set to "off" by default, to turn up to a predetermined low intensity output in response to a trigger and be combined with a timeclock or photocell to further add an element of seasonal or diurnal control. For example, Passive Infrared (PIR), Artificial Intelligence enabled cameras, on demand controls, or pressure sensors may be used to trigger lights to come on or dim in response to movements.
- **Avoiding light spill via:**
  The use of directional lighting by using luminaires with rear shields and an upwards lighting ratio of zero.
- **Light type:**
  Use of lamps that minimise UV emissions or use UV filters to reduce the attractiveness of the lamp to invertebrates as not to attract invertebrates away from bat foraging habitat.
  Use high-pressure sodium or LED lamps, ideally warm white as this has a low relative attractiveness of invertebrates.

The lighting onsite will include four different types of lighting as shown below.

- **EX1a** – 4.0m Lighting column, with 3No downlight spotlights. Luminaire Name: Palco InOut (Column mounted adjustable downlight spotlights, with 45° cylindrical screen)
- **EX1b** – 4.0m Lighting column, with 4No downlight spotlights. Luminaire Name: Palco InOut (Column mounted adjustable downlight spotlights, with 45° cylindrical screen)
- **EX2** – Wall mounted floodlight. Luminaire Name: Realta (Wall mounted downlight)

- **EX3** – Wall mounted emergency exit bullhead light. Luminaire Name: Realta MICRO (Façade mounted downlight)
- **EX4** – Wall mounted luminaire for car park ramp. Luminaire Name: Realta MICRO (Car park ramp wall mounted downlight)
- **EX5** – Footbridge mini-downlight projector. Luminaire Name: iPro (Bridge structure mounted downlight)

The replacement of the original lighting with these new lights, show a significant difference in overall light spill from the site. Figure 3 shows the isolux contour chart for the proposed lighting at the site. It shows that the river Kennet adjacent to the east and the tributary which runs under the building are now both dark corridors and are under 1.0lux. Therefore, any bat utilising the river for foraging or commuting will not be affected by any light spill from the site.

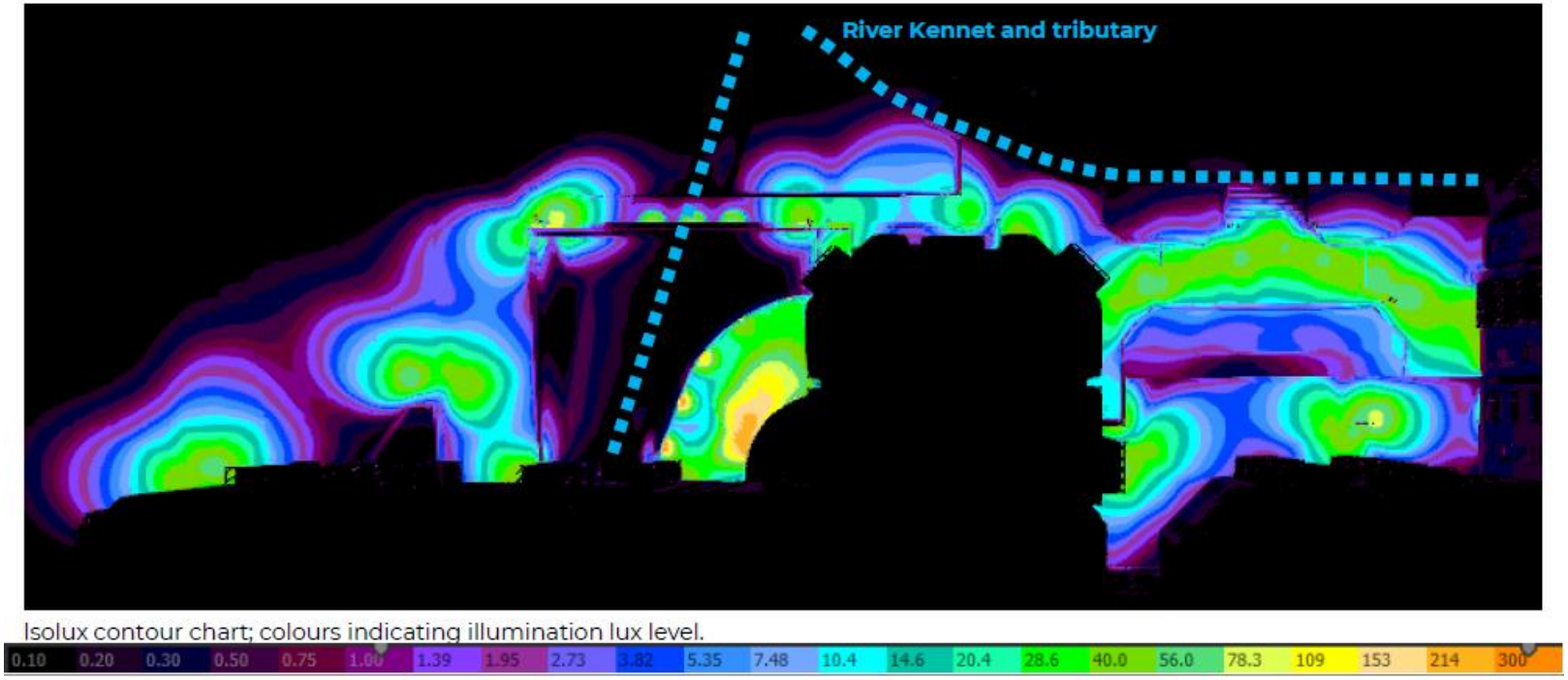

Figure 3: Isolux contour map of the site (SKR Lighting Design, 2026)

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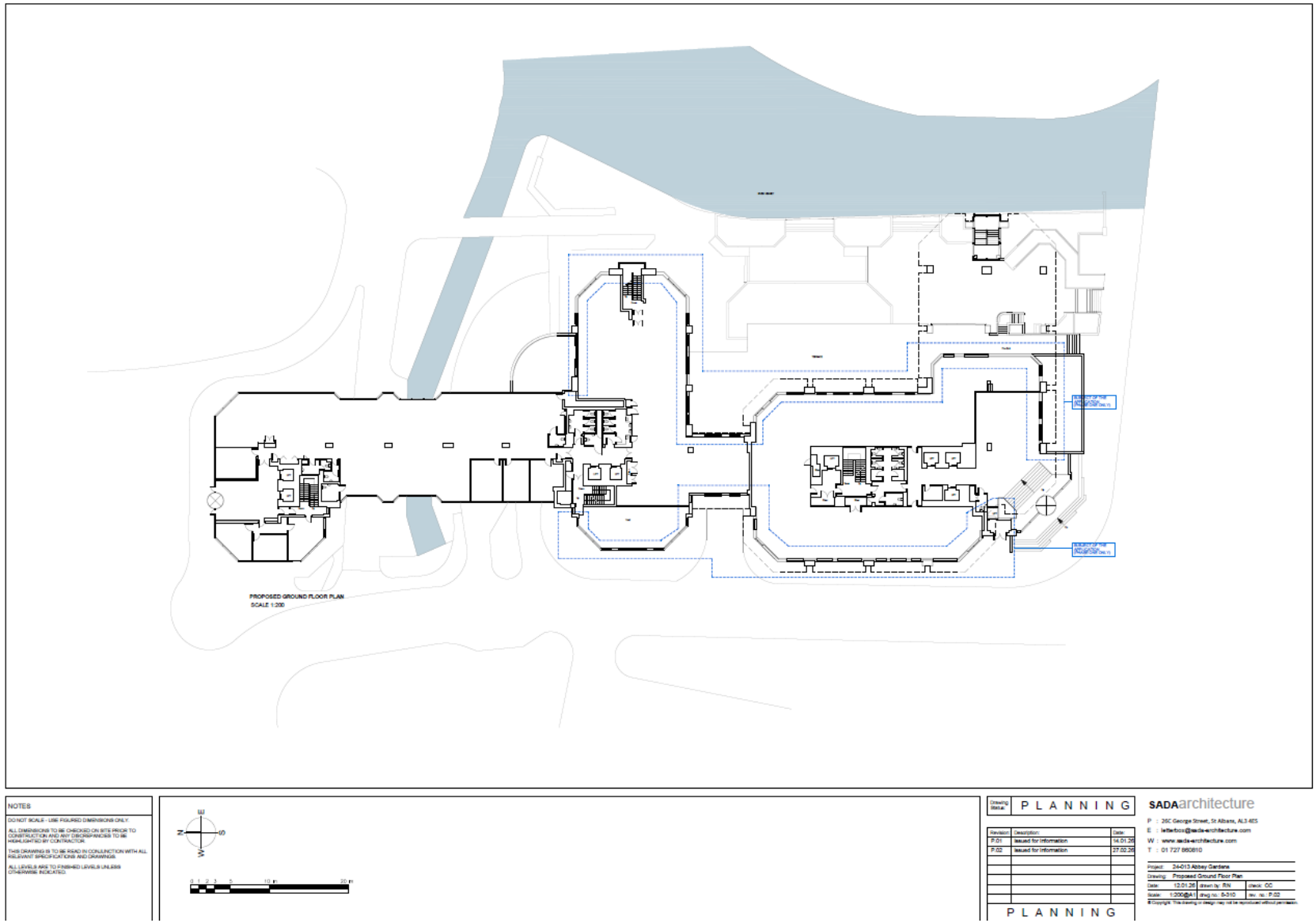
- HMSO: Natural Environmental and Rural Communities Act (2006) http://www.legislation.gov.uk/ukpga/2006/16/contents
- HMSO: The Conservation of Habitats and Species Regulations (2010) http://www.legislation.gov.uk/uksi/2010/490/contents/made
- Institution of Lighting Professionals (2018). Guidance Note 08/18 Bats and Artificial Lighting in the UK. Bats and the Built Environment Series Publication: http://www.bats.org.uk/news.php/406/new_guidance_on_bats_and_lighting
- National Planning Policy Framework, 2021 https://www.gov.uk/government/publications/national-planning-policy-framework--2

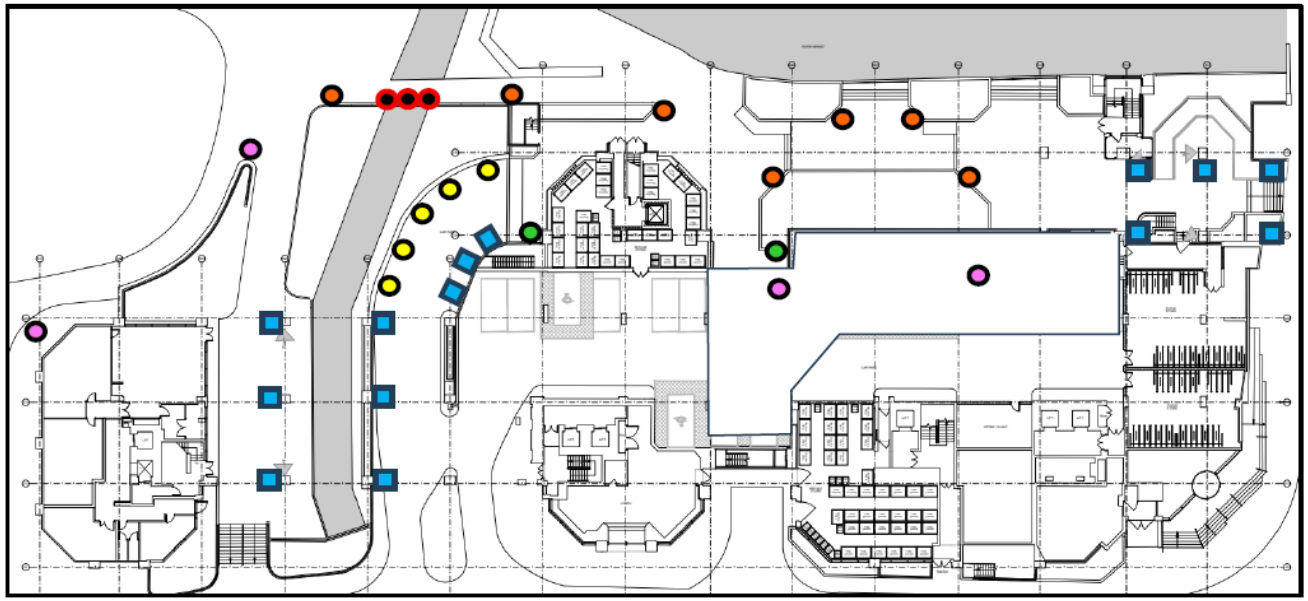
Appendix 1: Proposed Development Plan



Appendix 2: Site Location Plan

Appendix 3: Lighting Scheme showing locations and types of lighting

Site plan - exterior lighting strategy



Outline scope and requirements for buildings and access:

- Safety wayfinding and security for users of the facility.
- Lighting for exterior landscape access.
- Light that is applicable to the area and environment.
- Sensitive application of light for key areas.
- <2700k very warm white light sources will be used.
- Sustainable, reliable and maintainable LED low energy light sources are used.
- Lighting locations in the site and positions on façade precise locations to be coordinated by architect / landscape architect.
- Light control, switching, PIR sensor and timing to be used as required for working purposes.
- Light levels for the distribution of light around the site and spill up to and beyond any boundaries.
- Light levels cut off to below <1.0 lux at or before boundaries.
- Colour LUX lighting scales are shown for guidance.
- All the lighting are down-facing luminaires with zero-Up-light.
- All specifications can be found in section 4 of this report.
- This is a lighting fixture location plan for guidance. Exact setting out by architect / landscape architect.

EX1a – 4.0m Lighting column, with 3No downlight spotlights.

EX1b – 4.0m Lighting column, with 4No downlight spotlights.

EX2 – Wall mounted floodlight.

EX3 – Wall mounted emergency exit bullhead light.

EX4 – Wall mounted luminaire for car park ramp.

EX5 – Footbridge mini-downlight projector

Design 3.1

Abbey Gardens,
4-6 Abbey Street,
Reading, Berkshire
RG1 3BA

Exterior Lighting Survey and Calculation Report

Revision. A

05.05.2026

Project No. 2605-17

NOTE for SUPPLIER and CONTRACTOR TENDER:
The specifications shown within this design document are as 'Performance and preferred specification' to meet local planning, design and tendering requirements and to satisfy the design needs. Any alternate products offered by the contractor must be of equal or better quality than that shown. SKR LIGHTING DESIGN reserve the right to view working samples in a light test environment and / or request lighting calculations for comparison which will be completed by their chosen lighting suppliers.

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SKR Lighting Design

Appendix 4: Legislation and Planning Policy Related to Bats

LEGAL PROTECTION

The ***Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*** came into force when Britain left the European Union on 31st January 2020. It covered amendments relevant to this survey to:

Wildlife and Countryside Act 1981: England and Wales (x1 amendment)

Conservation of Habitats and Species Regulations 2017 (x29 amendments)

All species of bat are fully protected under ***The Conservation of Habitats and Species Regulations 2017*** (amended by the ***Conservation of Habitats and Species Regulations (amendment) (EU Exit) Regulations 2019*** which continue the same provision for European protected species, licensing requirements and protected sites after the UK leaves the EU) through their inclusion on Schedule 2.

Regulation 43: Protection of certain wild animals - offences

(1) A person is guilty of an offence if they:

(a) Deliberately captures, injures or kills any wild animal of a European protected species,

(b) Deliberately disturbs wild animals of any such species,

(c) Deliberately takes or destroys the eggs of such an animal, or

(d) Damages or destroys a breeding site or resting place of such an animal,

(2) For the purposes of paragraph (1) (b), disturbance of animals includes in particular any disturbance which is likely—

(a) To impair their ability:

(i) To survive, to breed or reproduce, or to rear or nurture their young; or

(ii) In the case of animals of a hibernating or migratory species, to hibernate or migrate; or

(b) To affect significantly the local distribution or abundance of the species to which they belong.

Bats are also protected under the ***Wildlife and Countryside Act 1981 (as amended)*** through their inclusion on ***Schedule 5***. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)

- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale

NATIONAL PLANNING POLICY (ENGLAND)

National Planning Policy Framework 2021

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration and re-creation. The protection and recovery of priority species (considered likely to be those listed as species of principal importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006) is also listed as a requirement of planning policy.

In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; measurable gains in biodiversity in and around developments are incorporated; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

The Natural Environment and Rural Communities Act 2006 and the Biodiversity Duty

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.

Section 41 of the Act requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity'. This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

A European Protected Species Licence (EPSL) issued by Natural England will be required for works likely to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficiency/success to be monitored. The legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost (Garland & Markham, 2008).

There are 17 species of bat breeding in England and Natural England issues licences under Regulation 55 of the Habitats Regulations to allow you to work within the law.

Licences are issued for specific purposes stated in the Regulations, if the following three tests are met:

- The purpose of the work meets one of those listed in the Habitats Regulations (see below).
- That there is no satisfactory alternative.
- That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range

The Habitats Regulations permits licences to be issued for a specific set of purposes including:

1. ***include preserving public health or public safety or other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment.***
2. scientific and educational purposes,
3. ringing or marking
4. conserving wild animals

Development works fall under the first purpose and Natural England issues bat mitigation licences for developments.

EUROPEAN PROTECTED SPECIES POLICIES

In December 2016 Natural England officially introduced the four licensing policies throughout England. The four policies seek to achieve better outcomes for European Protected Species (EPS) and reduce unnecessary costs, delays and uncertainty that can be inherent in the current standard EPS licensing system. The policies are summarised as follows:

- Policy 1; provides greater flexibility in exclusion and relocation activities, where there is investment in habitat provision.
- Policy 2; provides greater flexibility in the location of compensatory habitat.
- Policy 3; provides greater flexibility on exclusion measures where this will allow EPS to use temporary habitat; and,
- Policy 4; provides a reduced survey effort in circumstances where the impacts of development can be confidently predicted.

The four policies have been designed to have a net benefit for EPS by improving populations overall and not just protecting individuals within development sites. Most notably Natural England now recognises that the Habitats Regulations legal framework now applies to 'local populations' of EPS and not individuals/site populations.