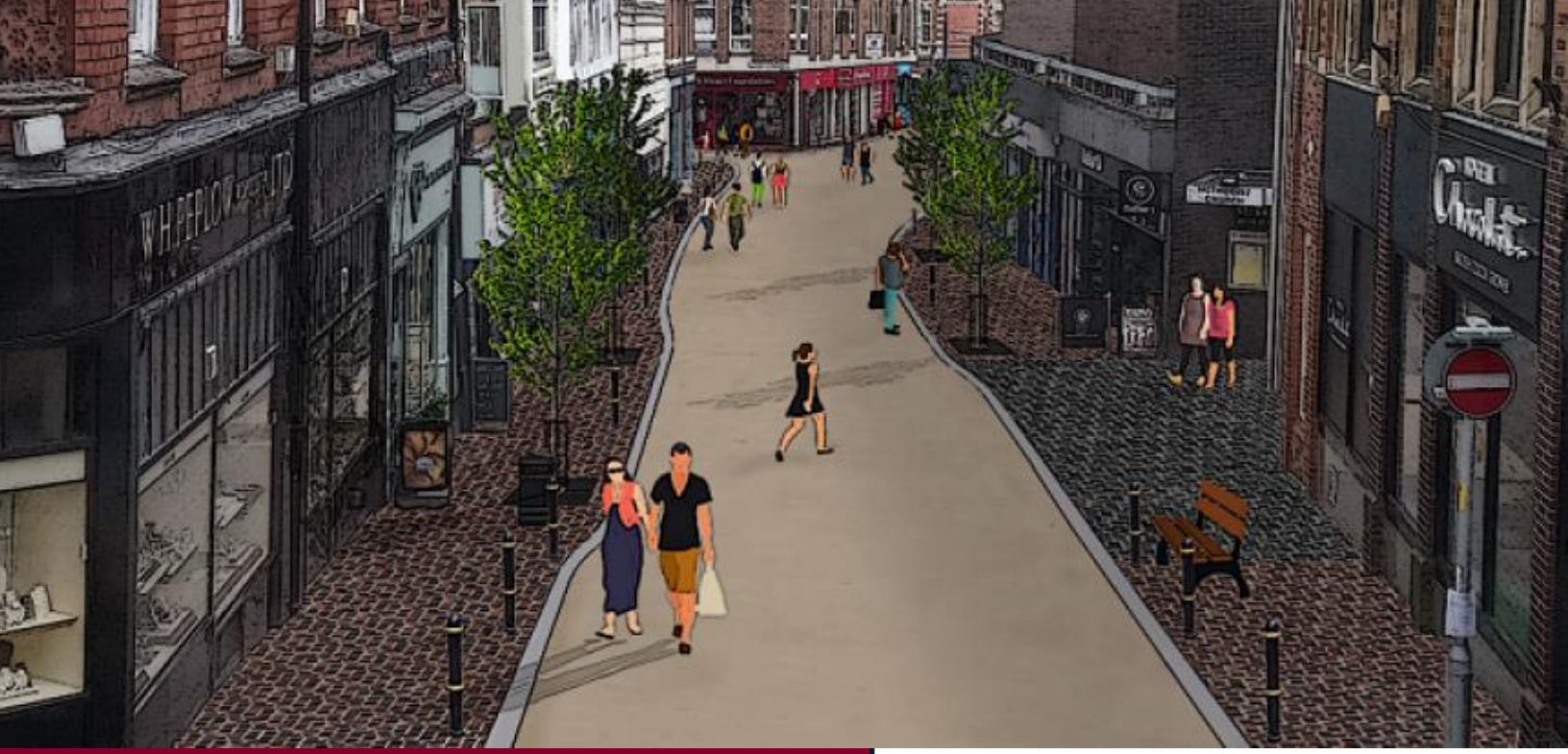

# Chapter 9: Streetlighting

## Streetscape Design Guide 2025

**Worcestershire County Council**

worcestershire
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# Contents

# Streetlighting

## 1. The Aim

The aim of this chapter is to provide guidance to enable promoters of schemes to prepare street lighting designs. It is important to first determine whether there is a need to light or not and to then address the specific requirements of Worcestershire County Council (WCC) in the form of a submission. This chapter should be read in conjunction with the other chapters in the Streetscape Design Guide (SDG) and Worcestershire County Council's Highways Specification.

This chapter is to provide guidance to assist with:

- Clear decision-making and application of Construction Design and Management (CDM) regulations.
- Meaningful consideration of street lighting requirements.
- Open communication about interaction with legislation and potential constraints during Planning Application discussions and the Planning Application process.
- For the developer to deliver sustainable highway lighting schemes which promote highway safety, minimise energy consumption and associated maintenance costs, whilst limiting the impact on the environment and adjacent property.
- Detailed design of highway lighting schemes to the appropriate standards.
- To encourage timely approval of Section 278 and Section 38 proposals and their future adoption.

All submissions will be subject to review by Worcestershire County Council as the Local Highway Authority. The outcome of that review and the decision based on the review will be deemed final and binding.

## 2. Background

Worcestershire County Council currently owns and maintains circa 69,500 illuminated assets. This includes streetlights, illuminated signs, bollards, and traffic signals. This quantity of assets increases year-on-year due to ongoing development within the county and the addition of new infrastructure.

Street lighting accounts for a significant amount of Worcestershire County Council's own absolute carbon dioxide emissions. Most of the street lighting emissions can currently be offset because Worcestershire County Council procure 100% Renewable Energy Guarantees of Origin (REGO) accredited electricity.

Worcestershire County Council invested in energy efficiency measures in line with the Council's own Net Zero Carbon Plan. Overall, this is seeing a significant reduction in energy consumption and direct carbon emissions despite additional assets being added through development.

## 3. Introduction

This chapter t is split into two distinct parts:

- An assessment of the feasibility and scope of street lighting during pre-application consultations and the planning application process.
- The detailed design stage following the award of planning consent.

The processes detailed within the document aim to encourage open and collaborative decision-making and promote good record keeping of design decisions to create efficient and consistent lighting installations across Worcestershire.

With reference to the relevant British Standards and other publications, this document should assist with the design process and enable the production of appropriate and justifiable designs.

There is a wide range of ecology, (including protected species) and sites worthy of conservation within the county. Therefore, all feasibility assessments and detailed designs should give full regard to the biodiversity duty placed on public bodies and statutory undertakers by Section 40 of the Natural Environment and Rural Communities Act 2006 (NERC Act 2006). This states: "*Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity*."

The Crime and Disorder Act 1998 places a duty on Local Authorities and the Police to ensure that community safety is considered in all developments, and this is, therefore, an important consideration in the design of the highway. To comply with Worcestershire County Council's obligations under the Act, the applicant will need to demonstrate how they have considered the effect of the highway lighting design upon crime and disorder. This document applies to developments of seven or more properties. If your development is less than seven, then you must evidence what the development is for, and evidence any potential environmental impact of artificial light at night. The aspirations of the relevant Parish will need to be considered through consultation within the feasibility study.

# Part 1

## 1. Preliminary Design/ Feasibility

The Worcestershire County Council Street Lighting Team is an essential internal consultee to understand the light impact on all Pre-Planning Applications and Planning Applications. Early involvement with the Street Lighting team should provide applicants with a defined scope of private or adoptable exterior lighting. Where a development proposes private lighting, this will enable positive outcomes to reduce its impact on the local environment. Where a development proposes adoptable street lighting, this will expedite the detailed design process during the assessment of Section 278 and Section 38 proposals.

All Designers will need to submit a Street Lighting Feasibility Assessment regardless of whether the intention is to provide lighting or not. This shall be completed prior to commencing any form of discussion with Worcestershire County Council Street Lighting to justify the use of adoptable or private Street Lighting or to propose a no-light highways scenario within their proposals.

Please refer to Annex B for information required and Annex G which describes street lighting decisions and involvement in the feasibility process.

For a scheme where no street lighting is proposed, it is still essential for a Street Lighting Feasibility Assessment to be submitted to ensure its compliance with standards and safety for users. For example (but not limited to), conflict areas, controlled pedestrian crossings and approaches to existing lit junctions are highway safety features and will require adoptable lighting so must be assessed by the developer as part of their submission.

Street Lighting Feasibility Assessments will need to reference and provide commentary for the following elements:

a) Environmental and ecological issues.
b) Accident figures.
c) Security (potential for crime and antisocial behaviour).
d) Road safety.
e) Scheme specific objectives such as enhancing the night-time economy.
f) Parish Council lighting aspirations.

Failure to provide a Street Lighting Feasibility Assessment or to engage with Worcestershire County Council Street Lighting during the Pre-Planning Application or Planning Application process will lead to Worcestershire County Council considering the application incomplete. If there is missing or assumed information present, this could delay or prejudice reviews.

Worcestershire County Council Street Lighting Team or its representative at the Street Lighting Manager's discretion shall undertake the review of the Feasibility Assessment within the time frame agreed.

Worcestershire County Council shall not be liable for any delays to the overall programme or additional costs incurred by the Designer or developer due to a failure to provide a full feasibility document and scope of lighting. Please refer to the flowchart in Annex G in this Street Lighting Guide for decision making process.

## 2. Schemes within or near a National Landscape or sites of ecological interest

Where a scheme is within or adjacent to the setting of a National Landscape (formerly known as an Area of Outstanding Natural Beauty or AONB), a Site of Specific Scientific Interest (SSSI), Local Nature Reserve or a designated Local Wildlife Site, the Feasibility Assessment must consider the lighting impact to the natural environment. It should be noted that Malvern Hills National Landscape and Cotswold's National Landscape have their own aspirations for lighting and the Designer must engage with them where necessary.

Where a scheme interfaces with a river, an ordinary watercourse or recognised wetland, these should be treated as dark corridors. In dark corridors, it is desirable to minimise or avoid new lighting due to its associated risk of significantly and adversely affecting a sensitive ecological receptor unless appropriate technical studies during lighting feasibility assessments demonstrate otherwise.

The applicant will need to provide Worcestershire County Council with accurate details of all ecological constraints which may affect the lighting design during each design stage. This will include up-to-date surveys and information provided by a professional ecologist and where required, include an Ecological Mitigation Strategy (EMS) for a highway lighting report. This must be submitted for consideration before the design process starts to ensure the project aligns with the Flow Chart in Annex G.

The scope of the scheme to be established by the Preliminary Design/Feasibility process will need a good tie-in with any existing Worcestershire County Council lighting provision to an appropriate level, for example, extend a distance equivalent to 5 seconds of driving at the speed limit or 85th percentile (whichever is greater), from the proposed limit of the civil engineering work

The use of Central Management System (CMS) should be at the discretion of Worcestershire County Council Street Lighting.

## Part 2

### 1. Detailed Design/ Detailed Review

At the stage, the applicant decides to proceed with their Section 278 and/or Section 38 submissions and they should appoint a suitably qualified lighting designer. The full process is outlined in Worcestershire County Council Highway Specification section 18. These options will require the submission of a Schedule of Requirements (SoR) detailing the deliverables required to enable a design to be produced or design checked and formal approval to take place. Further guidance on SoR is available in this document.

Upon registration of the satisfactory SoR, Worcestershire County Council will provide the developer with a fee proposal to produce a detailed design or to undertake a design check of the lighting proposals. Work on the design or design assessment will only commence once Worcestershire County Council has received the outstanding fee.

The Worcestershire County Council Street Lighting Team will review the submitted lighting design within the time frames agreed in the fee proposal. Commencement of the review process will be based upon receipt of ALL necessary information as requested within the SoR.

To avoid delays in achieving the Technical Approval for Section 278 and Section 38 proposals, Street lighting designs or the assessment of third-party street lighting designs will no longer take place once the geometry of the Section 278 or Section 38 proposals have been established. The detailed design process or the assessment of third-party street lighting designs run concurrently with the audit of the other design elements included within the Section 278 or Section 38 proposals.

Approval of lighting proposals may take several iterations. Therefore, it is the Lighting Designer's responsibility to liaise with the developer to keep them informed of the approval process status and any additional costs that may be incurred. Worcestershire County Council shall not be liable for any delays to the overall programme or additional costs incurred by the Designer or developer due to a failure to fulfil the requirements outlined within this document or due to the rejection of the design submission on technical or quality issues.

For further clarification, please contact the Street Lighting Team via email:
StreetLighting@worcestershire.gov.uk

### 3. Designer's Competence and Responsibilities

The streetlighting Designer will need to demonstrate the appropriate experience, qualifications, and knowledge to undertake a streetlighting design and fulfil their duties under CDM Regulations. The

streetlighting consultant should be qualified to either incorporated or charted engineer status and be a full Member of the Institution of Lighting Professions (MILP).

The use of this guidance for street lighting does not remove the responsibilities of the Designer under CDM regulations. For instance, when the Designer proposes a departure, this remains the responsibility of the Designer. It will be the Designer's responsibility to consult with the developer and all other relevant parties to obtain all the necessary information to conduct a suitable design. The Designer must ensure the submission is based on the final highway tie-in (as approved by the relevant Worcestershire County Council New Development Officer). Any subsequent amendments to the highway tie-in after approval of the lighting design may require a full resubmission for review and approval and will incur additional fees.

The Designer shall be responsible to ensure:

- A scheme is buildable.
- Completion of Annex B and ensure the table is filled out correctly with accurate information. This shall be supported by references to documents where this information can be assessed / reviewed.
- Submission of their proposals via the relevant New Development officer.
- They provide the information requested by Worcestershire County Council in a single submission including all requested information within section 17 – Schedule of Requirements. If this is not complete, the Designer may incur additional fees and/or delays.
- They use Worcestershire County Council's Project Checklist - Annex E to assist with communication and to help identify issues which may benefit from early engagement.

## 4. Design Standards

Street lighting will need to be designed in accordance with the latest relevant British and European standards and industry guidelines. The main technical documents used in Worcestershire are listed below, the latest versions should be used:

- TD 501 Road Lighting Design
- Design Manual for Roads and Bridges Volume 8, Manual of Contract Documents for Highway Works (MCHW) Volume 1-3
- CIE 115 Lighting of Roads for Motor and Pedestrian Traffic (International Commission on Illumination)
- BS 5489-1 - Code of Practice for the Design of Road Lighting. Lighting of Roads and Public Amenity Areas
- BS EN 13201-2 - Road Lighting – Part 2: Performance Requirements
- BS EN 13201-3 - Road Lighting – Part 3: Calculation of Performance incorporating corrigenda up to Feb 2007

- BS EN 12899: - Fixed, Vertical Road Traffic Signs – Part 1:
- BS EN 12767 - Passive safety of support structures for road equipment — Requirements, classification, and test methods -
- BS 7671 - Requirements for Electrical Installations IET Wiring regulations.
- BS EN 40 Lighting columns
- BS42020(biodiversity: code of practice for planning).
- ILP PLG01 – Central Management Systems
- ILP PLG02 – The Application of Conflict Areas on the Highway
- ILP PLG03 – Lighting for Subsidiary Roads
- ILP PLG04 – Guidance on Undertaking Environmental Light Impact Assessment
- ILP PLG08 – Guidance on the Application of Adaptive Lighting within the Public Realm
- ILP PLG23 – Lighting for Cycling Infrastructure
- ILP GP03 – Code of Practice for Electrical Safety in Highway Electrical Operation
- ILP GP10 – Safety During the Installation and Removal of Lighting Columns and Similar Street Furniture in Proximity to High Voltage Overhead Lines
- ILP TR25 – Lighting for Traffic Calming Features
- ILP TR30 – Guidance on the Implementation of Passively Safe Lighting columns and Signposts
- ILP Guidance Note 01 – Guidance Note for the Reduction of Obtrusive Light
- ILP Guidance Note 08 – Bats and Artificial Lighting in the UK
- ILP Guidance Note 11 – Maintenance Factor Determination and its Impacts on the Performance and Overall Efficiency of LED Luminaires

The above list is not exhaustive, and Worcestershire County Council expect a competent Designer to be aware of additional standards and guidelines which may be relevant to lighting and electrical design and to reference them where necessary.

## 5. Worcestershire County Council Design Requirements/ Specification

### 5.1 Lighting Design

Designers will need to ensure that:

- Only approved equipment stated in Annex C shall be used by Designers.
- Colour temperature of LED’s is to be determined case by case basis dependent on ecological / environmental requirements. Anything other than 3K Correlated Colour Temperature (CCT) (Warm White) will be subject to Commuted Sums which will be applied by Worcestershire County Council.

- Architectural, heritage (incl. conservation areas), subway (underpass), bollards, handrail and any form of bridge lighting which is not covered in the general specification, is subject to Commuted Sums which will be applied by Worcestershire County Council.

## 5.2 Commuted Sums

Any proposed sign lighting luminaires other than those listed in Annex C are subject to Commuted Sums which will be applied by Worcestershire County Council.

Commuted Sum payments shall be payable to cover but not limited to future; maintenance, hosting charges, energy, carbon offset, and replacement costs associated with all associated equipment over. The following lifecycle periods will apply:

- Lighting associated with structural assets; 120-year lifecycle.
- Lighting associated with non-structural assets; 60-year lifecycle.

Street lighting luminaires must be designed in line with Worcestershire County Council Street Lighting Standard Details (see website for downloads available).

The following important points apply:

1. All lighting points, illuminated signs, bollards and any private cable must be located within the adoptable highway boundary.
2. Locating lighting columns within splitter islands or traffic islands is prohibited.
3. The Designer shall locate columns on the boundary between two properties. Columns which are placed outside a building's frontage shall only be accepted in exceptional circumstances where the Designer can demonstrate there is no viable alternative and provide evidence that this has been communicated and agreed with the building owner.
4. The Designer shall specify raise and lower columns on remote footways or locations where maintenance access cannot be gained from a Mobile Elevate Working Platform (MEWP). The Designer shall ensure that there are no obstructions when the column is lowered or raised.
5. Where lighting is proposed on a subsidiary road, overall uniformity shall be greater than 20% unless greater uniformity is required, as per BS5489 i.e., areas of enhanced uniformity such as conflict areas.
6. Careful application of lighting is recommended when designing turning heads, cul-de-sacs, or roads with dead ends. Deviations from 20% uniformity can be arranged with a view to reducing impact on carbon reduction goals and on-going maintenance. Please contact the Street Lighting team for guidance.

7. Lighting columns shall not be within 5m of the final crown spread of any existing or proposed tree, shrub, or other significant foliage.

8. The lighting Designer is responsible for all liaison with the landscape architect to ensure clashes with trees or other landscaping features are eliminated from the design.
9. In extreme cases where a lighting column is essential for safety, and its proposed position clashes with existing trees, Worcestershire County Council may consider a deviation. The Designer will need to consult with Worcestershire County Council's arboriculturist and the relevant Local Planning Authority (LPA) to request removal of the tree. Any correspondence shall be provided within the formal design submission for review.
10. All existing and proposed trees, shrubs or other significant foliage shall be shown on the lighting layout drawing to demonstrate compliance with the required clearances. The symbol used to represent any trees should indicate the extent of the typical crown spread for a mature tree of the relevant specimen.
11. Where lighting classes for subsidiary roads are required i.e., P classes, the Designer shall provide minimum and maximum spacing calculations to show compliance with the recommended lighting class. Area calculations shall only be used for roads with varying widths and irregularly shaped areas.
12. Where area lighting calculations are required for subsidiary road designs i.e., P classes, a grid shall be provided for each individual road.
13. The Designer shall provide a good tie-in with any existing Worcestershire County Council lighting provision to an appropriate level. This tie-in shall extend a distance equivalent to 5 seconds of driving at the speed limit or 85th percentile (whichever is greater).
14. All concrete columns within 5 seconds of driving at the speed limit or 85th percentile (whichever is greater) of a scheme's civils extent shall be replaced at the developer's expense.
15. All SOX, SON and Cosmopolis light sources and luminaire housing within 5 seconds of driving at the speed limit or 85th percentile (whichever is greater) of a scheme's civils extent shall be replaced at the developer's expense.
16. All LED Street lighting luminaires incl. signs and bollards, greater than 5 years in age and within 5 seconds of driving at the speed limit or 85th percentile (whichever is greater) of a scheme's civils extent shall be replaced at the developer's expense.
17. Columns, posts and bollards located in areas of increased risk e.g., conflict areas, central reserves and roundabouts, shall be installed using retention socket systems, permitting quick installation, removal, and replacement in the event of an impact.

## 5.3 Electrical Design

Only approved equipment stated in Annex C shall be used by Designers.

The electrical design must be designed in accordance with Worcestershire County Council's Street Lighting Standard Details. Separate standard detail drawings are available for download on the Streetscape Design Guide website.

## 5.4 Electrical Supply

The following points apply:

1. Electrical supply to Worcestershire County Council's Street Lighting apparatus shall be provided by the Distribution Network Operator (DNO) unless the parameters outlined in point 5 below are applicable.
2. The developer shall consult with the DNO regarding arrangement of electrical supply. No Independent Distributor Network Operators (IDNO) are permitted for adoption.
3. All private cable network (PCN) proposals shall be subject to a Commuted Sum payment and shall be payable to cover but not limited to future; maintenance, hosting charges, energy, carbon offset, and replacement costs associated with all associated equipment over a 60-year lifecycle.
4. Metered supply points are not adoptable on the network, all proposed PCN shall be on an unmetered supply. The Designer shall consult with the DNO to determine maximum un-metered supply fuse size.
5. Requirements for the provision and location of an Earth remain the Designer's responsibility. It is recommended that the Designer consults with the DNO to arrange provision and where it is not feasible that a rod or mat is provided in a suitable, risk assessed location.
6. Illuminated signs and bollards located on roundabouts and splitter islands shall be supplied using a private cable network (PCN) via a dedicated feeder pillar with a DNO supply. The feeder pillar location shall be risk assessed by the Designer and protected by safety barriers where necessary.
7. Typical acceptable locations are at the rear of footway or in the verge at the side of the carriageway.
8. Power supplies shall be provided above a 1 in 100 + climate change flood event level, with suitable maintenance access without the requirement of hiring or leasing additional equipment. Where the Designer does not comply with this request, Commuted Sums will be applied by Worcestershire County Council or be rejected for adoption.
9. The Designer shall provide safe access for maintenance personnel, without the requirement of hiring or leasing additional equipment such as traffic management or mobile elevated platforms. Where the Designer does not comply with this request, Commuted Sums will be applied by Worcestershire County Council or be rejected for adoption.
10. Where a PCN is required in the verge an additional spare duct shall be provided.

11. Where a PCN is required at road crossings, there shall be at least four ducts to reduce impact on future works. All spare ducting shall terminate in a chamber and capped for future use.
12. Refer to the next section for guidance on using PCN in passive safe installations.

### 5.5 Passive Safe Installations

The requirements for passively safe lighting and disconnection systems shall be in accordance with ILP Technical Report 30 Passive Safe Column. Worcestershire County Council reserves the right to determine any reduction or increase of passive safe requirements on a case-by-case basis.

Worcestershire County Council does not permit passive safe equipment which operates by physical electrical disconnection.

Where passive safe equipment is specified, the electrical supply shall be provided by a private cable network (PCN), it is recommended that the Designer consults with the DNO to agree FP locations early in scheme development to reduce potential for delays to schemes. Refer to section 5.2 for Commuted Sum requirements.

### 5.6 Central Management System (CMS)

Determination of the use of CMS shall be at the discretion of the Street Lighting Manager. The Street Lighting Managers decision is final.

The Designer will need to consult with the Street Lighting Manager and Ecologist regarding any proposals to introduce variable lighting levels to lessen impact on protected species or net zero carbon goals.

The Designer shall request confirmation of specification from the Worcestershire County Council Street Lighting team. Where a CMS is provided, a Commuted Sum payment shall be payable to cover future maintenance, hosting charges, energy and replacement costs associated with all associated equipment over a 60-year lifecycle.

## 6. Ecology

Street lighting negatively affects UK fauna and flora by disrupting natural behaviours, such as pollination and feeding patterns, and reducing populations of invertebrates like moths. Bright white, and particularly blue-rich LED lights, a common street lighting type, are particularly harmful to insects compared to older sodium lamps. There are measures to mitigate these impacts which can include dimming or switching off lights at night, using directional downward-facing lights, using warmer coloured lighting, and employing lighting designs that are specific to wildlife needs.

The designer shall consult with the developer to obtain the required planning conditions associated with the scheme to identify any environmental and ecological issues which may affect the lighting design.

The Natural Environment and Rural Communities Act 2006 (NERC Act 2006)(as further strengthened by the Environment Act, 2021) sets out a extends the statutory biodiversity duty set out in the Countryside and Rights of Way (CROW) Act to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity. This Duty is set out in Section 40 of the NERC Act, and this states that: consistent with the proper exercise of their functions Public Authorities must further the conservation and enhancement of biodiversity.

*"Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity."*

Section 41 of NERC Act 2006 refers to a published list of habitats and species which are of principal importance for the conservation of biodiversity in England. This Duty applies to all Local Authorities, Community, Parish and Town Councils, Police, Fire and Rescue Services, Health Authorities, and utility companies.

Where significant environmental issues are present, it is recommended the Designer undertakes early liaison with the Worcestershire County Council Ecologist or person acting on behalf of Worcestershire County Council to understand the restrictions placed upon the lighting design and to agree to an acceptable solution to mitigate any concerns.

Where bats are found using a site, the lighting Designer is responsible for consulting with the scheme's ecologist to confirm proposed lighting design does not impede on bats. Evidence of this liaison is required to approve the scheme. See section 9.1.

### 6.1 Artificial Light at Night (ALAN) and bats

Artificial Light at Night (ALAN) can adversely affect wildlife, especially the declining bat species in the UK. Artificial lighting, particularly blue-rich light can be disruptive to their roosting sites, predation and foraging. The Institute of Lighting Professionals (ILP Guidance Note 8) emphasises the importance of always completing analysis of bat survey data past guild level to species level to understand how species are impacted at a particular site.

The ILP guidance highlights the importance of integrating avoidance measures into developmental design by retaining ecologically functional dark corridors within schemes wherever feasible, and in preference to seeking lighting mitigation strategies.

The ILP guidance also refers to the Government's 25-year plan and commitment to effectively manage light pollution with the application of the 'mitigation hierarchy' which is operated through England's National Planning Policy Framework (2024) that draws attention to potential for light pollution to cause impacts on 'intrinsically dark landscapes' and on nature conservation.

As there are no lux level thresholds available for individual species, therefore following alignment with the Street Lighting Feasibility Process Chart, schemes containing sensitive ecology could be partially lit and include environmental mitigations such as reduced lighting levels, shielding and light sources with reduced blue content to protect wildlife.

This chapter emphasises the importance for the mitigation hierarchy to be applied to the lighting design for a scheme. Early engagement with the Worcestershire County Council Street Lighting, ecology and road safety teams is strongly recommended for advice as there are likely to be opportunities for ecological betterment through a sensitive lighting design that is appropriate for a scheme.

Developers and planners should refer to the guidance for light sensitive fauna as set out in the ILP/BT's Guidance Note GN08/23: Guidance Note 8 Bats and Artificial Lighting | Institution of Lighting Professionals (e.g. refer to Figure 3 "*Ecology process for lighting*") and to Worcestershire County Council's information relating to artificial night: PM45: Artificial light at night in the countryside and PM46: Artificial light at night within the built environment

Light sensitive fauna and flora, such as species of bats are protected by the Conservation of Habitats and Species (EU Exit) Regulations 2019. Damage to roosts or features considered to be functionally linked to roosts (e.g. hedgerows, watercourses, or other Priority habitats), may be critical in supporting the Favourable Conservation Status of the bat population and is strictly protected. Contravention of legislation carries the risk of punitive fines and imprisonment.

### 6.2 The Chartered Institute of Ecology and Environmental Management (CIEEM)

The Chartered Institute of Ecology and Environmental Management (CIEEM) provide standard methods for several types of ecological assessment and surveys and should be referred to as part of any site-and-scheme specific assessments required for street lighting. CIEEM also provide detailed guidance on the lifespan of ecological reports: Advice-Note.pdf. All ecological reports will need to be up-to-date and in line with the CIEEM requirements.

### 6.3 Ecological Mitigation Strategy (EMS)

The Designer shall provide Worcestershire County Council Street Lighting with an approved Ecological Mitigation Strategy (EMS) which shall require approval in principle before detailed design should begin.

The Designer shall provide Worcestershire County Council with details of all ecological constraints which may affect the lighting design during each design stage. This information shall be produced by a competent ecologist and shall include an Ecological Mitigation Strategy in the highways lighting

report to be submitted to Worcestershire County Council for consideration prior to the commencement of the design process.

### 6.4 Trees, shrubs and significant foliage

For trees, shrubs and significant foliage, lighting columns shall not be located within 5m of the final crown spread at full maturity. Any proposed removal or relocation of trees which clash with the lighting design is to be resolved by the lighting Designer in conjunction with the main consultant or landscape architect - a note merely highlighting that a clash that needs to be addressed will not be considered sufficient and the design will be rejected.

Where columns are to be positioned close to trees/planting, due account must be taken of future growth and the effect on the lighting distribution. Damage to tree roots is always to be avoided and the installation is to comply with NJUG 10 (Planning, Installation and Maintenance of Utility Services in Proximity to Trees).

## 7. Attachment to Structures

Lighting equipment and/or illuminated signs subject to adoption should be free standing and not attached to adjacent buildings or private property. The exception to this would be structures e.g., bridges, provided they are subject to adoption.

Worcestershire County Council shall require a drawing detailing the proposals for any equipment to be mounted to an adoptable structure. This drawing shall include a location plan of the affected structure, details of the proposed equipment and the fixing arrangement, the proposed electrical supply point and any cable routes, an elevation of the affected structure showing the proposed equipment position and associated cable routes and structural integrity reports to confirm the structure is suitable to support any proposed attachments.

Notwithstanding the requirements for structural integrity reports for any affected or new structure, the developer shall be responsible for any remedial works required due to damage suffered to the structure because of the installation of the equipment.

All structure mounted lighting equipment or illuminated signs shall be fed via a PCN. The PCN shall be fed via a private feeder pillar and shall use Mineral Insulated Cable clipped directly to the structure unless otherwise specified by Worcestershire County Council. The developer shall be responsible for liaison with the Distribution Network Operator regarding the provision of a service to the feeder pillar and all associated costs.

## 8. General

The following important points apply:

1. Street Lighting and CCTV shall not be mounted on the same structure for ease of maintenance.
2. Where Automated Number Plate Recognition (ANPR) cameras are found attached to Worcestershire County Council structures, it is the developer's responsibility to consult with West Mercia Police (WMP) regarding any works involving a change to the asset's functionality, including removal, re-aiming or disconnection of communications or power. Worcestershire County Council accepts no responsibility for these assets and any costs incurred through the requirement to move, amend, or upgrade them. WMP's decision is final.
3. Requirements for festive lighting are to be determined by the lighting Designer in conjunction with key stakeholders.
4. Where a development is within a Parish area, the Development Control officer shall be contacted to arrange the next steps.
5. For the Designer, standard detail drawings are available for download on the Streetscape Design Guide website.
6. Where standard details are not readily available from Worcestershire County Council, they shall be provided at the developer's expense.
7. Failure to show such noteworthy features on a highway lighting design drawing may result in expensive relocation of columns at the developer's expense before the commencement of the maintenance period.
8. Generally, mounting lanterns at heights below 5 (five) metres will not be accepted, except in the case of covered passages that are to become part of the public highway. The developer shall submit a deviation from BS5489 to include location and extent of the departure, mitigation measures and technical justification, where previously discussed with Worcestershire County Council.
9. The Crime and Disorder Act 1998 places a duty on Local Authorities and the Police to ensure that community safety is included in all developments, and this is, therefore, an important consideration in the design of the highway. To comply with Worcestershire County Council's obligations under the Act, the developer will need to demonstrate how they have considered the effect of the highway lighting design upon crime and disorder.
10. Waste Electrical and Electronic Equipment Directive: Producers and the developers/contractors have responsibility for the safe disposal/recycling of electrical equipment including all street lighting at the end of its life or deemed surplus to requirement. Worcestershire County Council will expect sight of the developers' Site Waste Management Plan to ensure equipment is recycled where possible.
11. As part of the design process, the Lighting Designer must undertake a detailed design risk assessment which will include construction, maintenance, and demolition issues. Evidence of

this risk assessment covering maintenance and demolition issues must be included within the design submission for approval.

12. Commuted Sums will be charged where appropriate unless agreed by the Street Lighting Manager.
13. Installation of equipment must be undertaken by HEA and HERS registered contractors. Evidence of membership must be provided for approval by Worcestershire County Council Street Lighting before installation works are undertaken.

## 9. Design Documentation Required for Approval

### 9.1 Schedule of Requirements.

The Designer shall provide all the information as requested within the Schedule of Requirements (SoR). This document will be provided upon request. Further guidance is given below on the information to be provided.

Feasibility Report BS5489 states '*there is no statutory requirements for a Highway Authority to provide lighting'*, however, where any highway works are proposed, Worcestershire County Council are fully committed to providing safe and sustainable lighting installations where appropriate. Additionally, all designs should balance the needs of our residents, businesses, and visitors, whilst minimising energy consumption and the impact on the natural environment. Therefore, all design submissions shall include a feasibility report which sets out the Designer's proposals and the decision-making process behind them. This report shall include, but not be limited to the following criteria:

1. A brief overview of the scheme objectives and proposed highway improvements, highlighting any proposals which directly impact the lighting design.
2. An assessment of the existing lighting provision both within the scheme extents and adjacent to the scheme, including the age and condition of the existing equipment and suitability for retention, the existing lighting levels provided, confirmation of ownership and method of electrical supply.
3. The justification to light – this shall be thoroughly evidenced including reference to, and commentary upon; planning conditions, environmental and ecological issues, accident figures, potential crime levels, road safety, equality, diversity, and scheme specific objectives such as enhancing the nighttime economy. The Designer shall detail any mitigation which has been considered within their design.
4. The Designer shall consult with Parish and District Councils to obtain feedback on proposals.
5. The recommended lighting levels – this shall include reference to the standards or guidelines used to select the lighting class to include reference to specific clauses or tables used and detailing all the criteria considered.
6. The extent of lighting – this shall detail decisions regarding extents of conflict areas, the use of the five second and tie-in with existing lighting columns.

7. Overview of equipment specification and installation requirements – provide recommended luminaire type, light source, G rating, requirements for passively safe equipment, proposed electrical supply requirements etc.
8. Notable risks or constraints – highlight any significant issues within the scheme, their impact upon design and any mitigation applied (e.g., HV overhead cables, high pressure gas mains, drainage, or structure clashes).
9. Accessibility and maintenance proposals – highlight proposals for maintenance of proposed equipment, including recommendations for off carriageway maintenance areas and safe highway crossing points. Designers should look to design out the requirements for crossing the highway.
10. Departures from standards – outline any departures, deviations, relaxations, or best practice design decisions with reference to supporting documentation which shall be required as detailed elsewhere within this document.
11. Energy and carbon emissions – calculate the predicted energy costs and carbon emissions of the proposed scheme and demonstrate any reduction provided by the proposed design (e.g., by the implementation of a dimming regime).
12. The information and statistics requested as part of the Schedule of Requirements should be supplied when appropriate to the scheme in question, for example 85th percentile vehicle speeds will not be available for new residential settlement Section 38 developments. They should be supplied for Section 278 developments.

## 10. Design Drawings

### 10.1 Lighting and Electrical Layout

The drawings supplied will need to:

a) Contain a unique drawing reference number and title.
b) Show drawing revision and revision history to be fully populated when appropriate.
c) Show any amendments to the drawing content from the preceding revision ‘rev clouded.’
d) Be no larger than A1.
e) Be at a scale of 1:500 or less (e.g., 1:500, 1:250 etc.).
f) Have a minimum text size of 2.5mm when printed.
g) Clearly show a North point.
h) Have cut lines with cross-reference to next drawing sheet where appropriate.
i) Have a key where symbols can be identified when the drawing is printed in colour or black and white.
j) Have drawing notes and references section, as required, to fully communicate design requirements and the essential design standard/guidance documents.
k) Highlight any significant hazards with reference to supporting risk assessment documents.

l) Show all existing street lighting equipment including illuminated signs and bollards within the proposed extent of works whether affected by the works or not. This shall include the maintenance identification number for all equipment.
m) Show overhead lines (LV/HV electricity and BT) where appropriate.
n) Show major underground services (HV electrical cable, high/medium pressure gas, fibre optics, GPSS pipeline etc.) where appropriate.
o) Show contractual scheme extents (e.g., red-line boundary).
p) Show lux contours at 1 lux (blue), 0.5 lux (green) and 0.2 lux contour (red) on all drawings.
q) Tree symbols should be representative of the typical final crown spread when mature to demonstrate compliance with spacing requests.
r) All submitted drawings must be accompanied by a completed Lighting requirement call off schedule to assist Worcestershire County Council in analysing the various equipment types and connections being proposed. This must be comprehensive and cover all lighting requirements. The blank for this is included as Annex I.

### 10.2 Electrical Schematic Drawings

Electrical Schematic drawings shall:

a) Contain a unique drawing reference number and title.
b) Show drawing revision and revision history to be fully populated when appropriate.
c) Show any amendments to the drawing content from the preceding revision 'rev clouded.'
d) Be no larger than A1.
e) Be at a scale of 1:500 or less (e.g., 1:500, 1:250 etc.).
f) Have a minimum text size of 2.5mm when printed.
g) Have a key where symbols can be identified when the drawing is printed in colour or black and white.
h) Have drawing notes and references section, as required, to fully communicate design requirements and the essential design standard/guidance documents.
i) Include appropriate BS/IEC numbers for specified equipment.
j) Include key design assumptions and caveats (e.g., the basis of calculations - i.e., supply details)

## 11. Calculation Files

### 11.1 Lighting Calculation Reports:

Lighting Calculation Reports shall:

a) Contain a unique reference number including revision status that references the drawing they are linked to.
b) Shall provide a brief description of the latest amendments for a revised report.
c) Shall be A4 size.

d) List the columns linked to the calculation by their unique reference number.
e) Detail how the maintenance factor(s) is calculated.

### 11.2 Electrical Calculation Reports:

Electrical Calculation Reports shall:

a) Contain a unique reference number including revision status.
b) Shall provide a brief description of the latest amendments for a revised report.
c) Shall be A4 size.
d) Contain a full cable calculation report.
e) Contain a full cable schedule report.

## 12. Competency Requirements

The Lighting Designer will need to be an ILP member experienced in the design and implementation of road lighting systems and associated infrastructure.

All submissions for checking shall be signed off by an ILP member of at least IEng MILP status or equivalent of another institution to ensure buildability, safety, and maintenance acceptability. This person shall be someone other than the lighting Designer. For clarity, a lighting Designer cannot sign off their own work.

## 13. Hazard Elimination / CDM

The Designer shall ratify all hazards through delivery of a Designer's risk assessment to Worcestershire County Council to be assessed. This will consider the following:

- All notable hazards shall be clearly presented in design drawings.
- The Designer will provide accessibility, buildability, and maintenance proposals. Acceptance of these proposals is subject to approval by the Street Lighting Manager and/or the Term Maintenance Contractor Manager.

## 14. Departure and Deviation Process

Departures from The Design Manual for Roads and Bridges (DMRB) / Manual of Contract Documents for Highway Works (MCHW) and deviations from BS5489 shall be submitted to Worcestershire County Council by the lighting Designer.

Where proposed these remain the responsibility of the Designer under CDM regulations. Where a departure from the DMRB or MCHW is required, the Designer shall use the template in annex A. Where a deviation from BS5489 is required, justification shall be provided in the feasibility report.

## 15. Schedule of Requirements

The following information shall be provided for assessment:

a) Completed project information table from Annex A,
b) Hazard elimination schedule,
c) Lighting feasibility report including all information outlined in Annex B,
d) Completed project checklist for consideration by Designers from Annex E,

e) Proposed lighting extents drawing in CAD and PDF format,
f) Lighting calculations in Reality format, Roadway and Outdoor; raw calculations not PDF,
g) Straight line calculations shall always support an area calculation and must be provided,
h) Proposed lighting and detailed electrical design in CAD and PDF format,
i) Where proposed, Annex F departures from DMRB and MHCW.
j) Statement of how the proposal aligns with the feasibility process chart in Annex G.

A full specification of equipment shall be provided including but not limited to Appendices 5, 13,14 and 19, and any others as applicable from the Specification for Highways Works 'Manual of Contract Documents for Highways Works' published by National Highways. Alternatively, if Worcestershire County Council Term Maintenance Contractor is undertaking the works, an abbreviated specification located on the lighting drawings can be agreed in liaison with Worcestershire County Council Street Lighting Manager.

Once a lighting design package has been submitted, this will be assessed to ensure compliance with this document. Please note the following:

1. Responses to Annex B and E could trigger additional conversations and requests for more supporting information to determine the adequacy of design.
2. The assessment process will not begin until all the complete feasibility and supporting information is received by the assessor, any assumptions or missing information may lead to a delay in assessment.
3. Worcestershire County Council will not be held responsible for any delays associated with the applicant's failure to provide the information required to enable a detailed design assessment.

# Annex A- Project Information Table

| | |
|---|---|
| **Project Name** | |
| **Lighting Designer** | |
| **Principal Designer** | |
| **Developer** | |
| **Planning Application No.** | |
| **Area** | |
| **Date Completed** | |

# Annex B- Feasibility- Supporting Documentation

The supporting documentation requirements detailed in the table below will facilitate the Designer's production of a compliant and meaningful lighting design and enable the recommended investigations and assessments in line with current guidance, such as BS5489-1 Code of Practice for the Design of Road Lighting, and ILP PLG02 The Application of Conflict Areas on the Highway. It is recommended that designers familiarise themselves with the requirements of these documents prior to any submission. In some instances, certain information and statistics may be unavailable or unnecessary for the type of scheme subject to design. A clear and valid reason for not providing the required information must be provided. Not applicable is not an acceptable response unless approved by Worcestershire County Council. Failure to provide the required information and statistics may result in the scheme's rejection.

**Table 1. Deliverables – Supporting Documentation**

| |
|---|
| **Planning Application Conditions** - Related to lighting including planning condition references. |
| **Accident Data** – To evidence the requirement to light and for lighting classification selection in accordance with BS5489-1 risk assessment requirements. Minimum 3-year history required, extending to at least 5 seconds driving distance from the scheme extent. |
| **Crime Data** – To evidence the requirement to light and for lighting classification selection in accordance with BS5489-1 risk assessment requirements. Minimum 3-year history required, extending to the local area surrounding the scheme. |
| **85th Percentile Speeds** - To evidence lighting extents in accordance with ILP PLG02 5 second rule or highlight any disparity. |
| **Existing and Proposed Speed Limits** - To evidence lighting extents and lighting classification selection in accordance with BS5489-1 requirements. |
| **Existing and Proposed 24hr ADT**- To evidence lighting extents and lighting classification selection in accordance with BS5489-1 requirements. |
| **Existing and Proposed Statutory Undertakers Plans** – To evidence safe construction. |
| **Ecological / Environmental Constraints Including Current Survey / Study** – Maximum 18 month old Ecology Survey / Study to evidence compliance with legislation. Indication of (not limited to) conservation species present, type of activity (breeding, hibernating, roosting, foraging etc.), habitat quality and connectivity, the presence of nearby known protected areas etc. Any mitigations proposed/required to ensure protection of light sensitive species should be declared. Survey / Study in accordance with Chartered Institute of Ecology and Environmental Management, Bat Conservation Trust guidance and ILP GN08/23: Bats and Artificial Lighting At Night guidance. |
| **Tree Preservation or Root Protection Orders** – To evidence compliance with legislation. |

| |
|---|
| **Landscaping Proposals** – To evidence the impact of light pollution and maintainability of proposed assets e.g., impact on streetlighting due to retained or proposed trees. |
| **Site Clearance Drawings** – To evidence continuity of light and tie in with adjacent existing lighting. |
| **General Arrangement / Adoptable Limits Drawings** – To evidence adoptability. |
| **Electrical Supply / Liaison with the DNO** – To evidence proposed supply is viable and in accordance with DNO practice. |

# Annex C- Lighting Specification

The table below outlines the various equipment types widely in use and commonly accepted within Worcestershire. The developer is entitled to suggest any manufacturer or provider of the equipment specified. Such proposals, however, will be subject to approval by the Street Lighting Team.

Conservation Areas are unique in their lighting requirements, and it is expected that the developer will engage with the relevant conservation officer to determine the lighting requirements to suit that specific environment. These requirements will be subject to Worcestershire County Council approval.

**Table 2. Approved Equipment and Installation List**

| | |
|---|---|
| Lantern | • TRT ECO or Aspect Range (including Gen2).<br>• Holophane VMAX Range. |
| Lamps | • LED 3000K, 1750K or 1000K CCT depending on project requirements.<br>• Where CCT is lower than 3000K, depending on local biodiversity, rear, side and front shields may be added upon agreement with t. street lighting team. |
| Ballast | • Philips Xitanium or OSRAM.<br>• CLO is requested to be used wherever possible to reduce wasted light and energy. |
| Control | • Five pin Nema socket 1-part electronic cell.<br>• Residential regime 20/20 (dim to 75% 00:00hrs to 05:00hrs).<br>• Traffic Routes regime 35/18 (dim to 75% 00:00hrs to 05:00hrs).<br>• Produced by Lucy Zodion or Royce Thompson.<br>• Where variable levels are required, the Designer contacts Worcestershire County Council. |
| Maintenance Factors | • Typically, luminaires shall be at least L80 B50 with a longevity of at least 100,000 hours but Worcestershire County Council shall be consulted on a project-by-project basis as this area of technology is constantly evolving. |
| Sign illumination | • Simmon signs LUA or LUB (depending on sign size).<br>• Portland Traffic sign lights.<br>• Simmon signs global base light illuminated bollards.<br>• Mallatite Duraflex bollards.<br>• Solar proposals are subject to a Commuted Sum. |

| | |
|---|---|
| Columns & Posts | • Aluminium column type (A.L.C. or SAPA column), specifically no brackets produced to current Worcestershire County Council specification.<br>• Columns and posts shall be installed in NAL sockets at locations of increased risk in accordance with clause 8.1.23.<br>• Where explicitly agreed with a member of the street lighting team, Galvanised steel columns manufactured by C U Phosco or Mallatite produced to current Worcestershire County Council specification will be acceptable.<br>• Where applicable any Raise and Lowering Column should be aluminium and only 5m or 6m height will be considered.<br>• Lighting column setback and protection is to be as per relevant Standards and Codes of Practice.<br>• Absolutely no additional attachments (such as IOT, electrical connections, hanging baskets or flags etc.) to columns unless agreed in writing with a member of the Street Lighting Team. |
| Brackets | • Where possible post top mounted columns are to be used, unless the use of brackets can be proven to significantly reduce the number of columns required or there is shadowing from Trees and other obstacles.<br>• Where brackets are required, they shall be manufactured as one complete extrusion.<br>• No bolt on brackets shall be used on passive safe columns with electrical disconnection systems installed.<br>• All lanterns are to be mounted at 0$^{o}$ tilt overall, to be clear where a bracket is used at 5$^{o}$ tilt, the luminaire shall be set to -5$^{o}$ tilt to allow a 0$^{o}$ tilt overall.<br>• *(Please note the current Worcestershire County Council ESPO specification does not allow for bracket arms on columns and if these are required, certificates of conformity will be required from the column manufacturer.)* |
| Retention Socket Systems | • NAL duck foot and tee bend retention socket systems<br>• Installation and foundations shall be made in accordance with manufacturers' guidelines. |
| Service Arrangement | • Direct fed by DNO supply. |

# Annex D – Required Installation Notes for all Drawings.

**Installation Notes**

All lighting layout drawings are to have the following installation notes included as a minimum requirement, if these are not included the design will be rejected:

- All lighting elements for internal Worcestershire County Council schemes will be installed by Worcestershire County Council's appointed Lighting Contractor unless there are elements outside of their normal scope. Where the Designer proposes specialist equipment or installation, then Worcestershire County Council's lighting engineers must approve these.

- For external schemes (i.e., those proposed by private developers), only recognised lighting contractors shall be used for street lighting and illuminated signs and bollard installation works. They must also be members of HEA and HERS. Current membership numbers for these bodies must be provided to the supervising authority prior to approval by Worcestershire County Council's lighting engineers of the proposed Lighting Contractor. The approved Lighting contractor shall not sub-contract any part of the works.
- All materials shall be to the relevant British Standard. Site works shall comply in general with Department of Transport Specification for Highway Works, and shall also conform to: The Electricity at Work Regulations (1989) The Health and Safety at Work Act
    - Chapter 8 of the Traffic Signs Manual
    - The Control of Substances Hazardous to Health Regulations 2002
    - The Construction (Design and Management) (CDM) Regulations 2015

- Erection and installation works shall comply with the current issue and amendments of BS7671:18$^{th}$ Edition IET Wiring Regulation 2018 Requirements for Electrical Installations, the current editions of the ILP Code of Practice for Electrical Safety in Public Lighting Operations and the Code of Practice for the Erection of Street Lighting published by the Association of Street Lighting Electrical Contractors.

- All Material and equipment shall comply with the Worcestershire County Council Specifications. Any material or equipment proposed by the contractor shall be submitted to Worcestershire County Council for approval before any purchase agreement is entered into. Exact location of lighting columns to be agreed with Worcestershire County Council's Street Lighting or representative before erection. Ducting to comply with the requirements of the DNO or Worcestershire County Council where required.

- Contractor to liaise directly with the DNO or other DNO approved supplier regarding electrical connection requirements.

- Photocell control residential regime 20/20 (dim to 75% output 00:00hrs to 05:00hrs). Traffic Routes regime 35/18 (dim to 75% output 00:00hrs to 05:00hrs).

# Annex E – Project Checklist for consideration by Designers

**Table 3: PROJECT CHECKLIST**

| Question | Y | N |
|---|---|---|
| Has your developer managed a street lighting project in Worcestershire County before? | | |
| Are Worcestershire County Council Street Lighting team aware of the project? | | |
| Does your project interact with land owned by 3rd parties i.e., not owned by Worcestershire County Council? | | |
| Is there any political interest in the project? | | |
| Is there any public interest in the project? | | |
| Is your project team aware of the interdependence of working with Street Lighting? | | |
| Is your site currently lit? **If the site is lit, speak to Worcestershire County Council Street Lighting and Ecology for further advice.** | | |
| Are there power cables nearby to power lighting assets? | | |
| Have you raised power supply ownership with your developer? **Worcestershire County Council do not arrange power supplies unless they are instructed.** | | |
| Is your lead in time for power supply greater than 12 weeks? **New or renovated supplies and disconnection / reconnections.** | | |
| Do you have stats drawings and any swing and sag for overhead cables? | | |
| Are there ecological constraints present? | | |
| Do you have verge space for lighting columns? | | |
| Have you surveyed the conditions of assets to remain or to be re-used? | | |
| Are there any Tree Preservation Orders (TPO's) or Root Protection Orders (RPO's)? | | |
| Are there any cycleway facilities within your scheme? | | |
| Are there any pedestrian crossing facilities within your scheme? | | |
| Are you designing a roundabout or any roads that require passive safe lighting? | | |
| Are there any sign illumination requirements? | | |
| Are the existing and proposed 24hr Annual average daily traffic (AADT's) known? | | |
| Are the existing and proposed speed limits known? | | |
| Do you have the 85th percentile for all roads found within the project? | | |
| Have there been any night-time Road Traffic Collisions (RTC's) near the project? | | |

# Annex F – Departures from DMRB and MHCW Template

**SUBMISSION FOR DEPARTURE FROM STANDARDS TEMPLATE**

| | |
|---|---|
| PROJECT NAME | |
| APPLICANT ORGANISATION: | |
| APPLICANT REF No | |
| HIGHWAY AUTHORITY REF | |
| PREPARED BY | |
| CHECKED BY | |
| DATE SUBMITTED | |

1. PROJECT DETAILS

| | | |
|---|---|---|
| A | Description | |
| B | Location | |
| C | Road Category and type | |
| D | Design speed and speed limit | |
| E | Traffic and NMU flows | |

2. DEPARTURES DETAILS

| | | |
|---|---|---|
| A | Discipline / Type | |
| B | Relevant standard(s) | |
| | Clause | |
| C | Difference between Standard(s) and Proposed Design | |
| D | Reason for Departure (overview) | |

| | | |
|---|---|---|
| E | Associated Project Departures | |
| F | Other options considered | |

3. JUSTIFICATION (POTENTIAL POSITIVE AND NEGATIVE IMPACTS)

| | | |
|---|---|---|
| A | Safety | |
| B | Congestion/ delay | |
| C | Environmental/ Sustainability | |
| D | Capital and Whole Life Cost/Value | |
| E | Accessibility | |
| F | Integration | |
| G | Structural | |
| H | Network Resilience and Maintenance | |

4. COMPENSATORY MEASURES

| | | |
|---|---|---|
| A | Included Measures | |
| B | Rejected Options | |

5. DESIGN ORGANISATION'S CONCLUDING REMARKS

| |
|---|
| |

6. ATTACHMENTS and OTHER INFORMATION

| | | |
|---|---|---|
| A | List of Attachments | |
| B | Consultations | N/A |
| C | Other information | N/A |

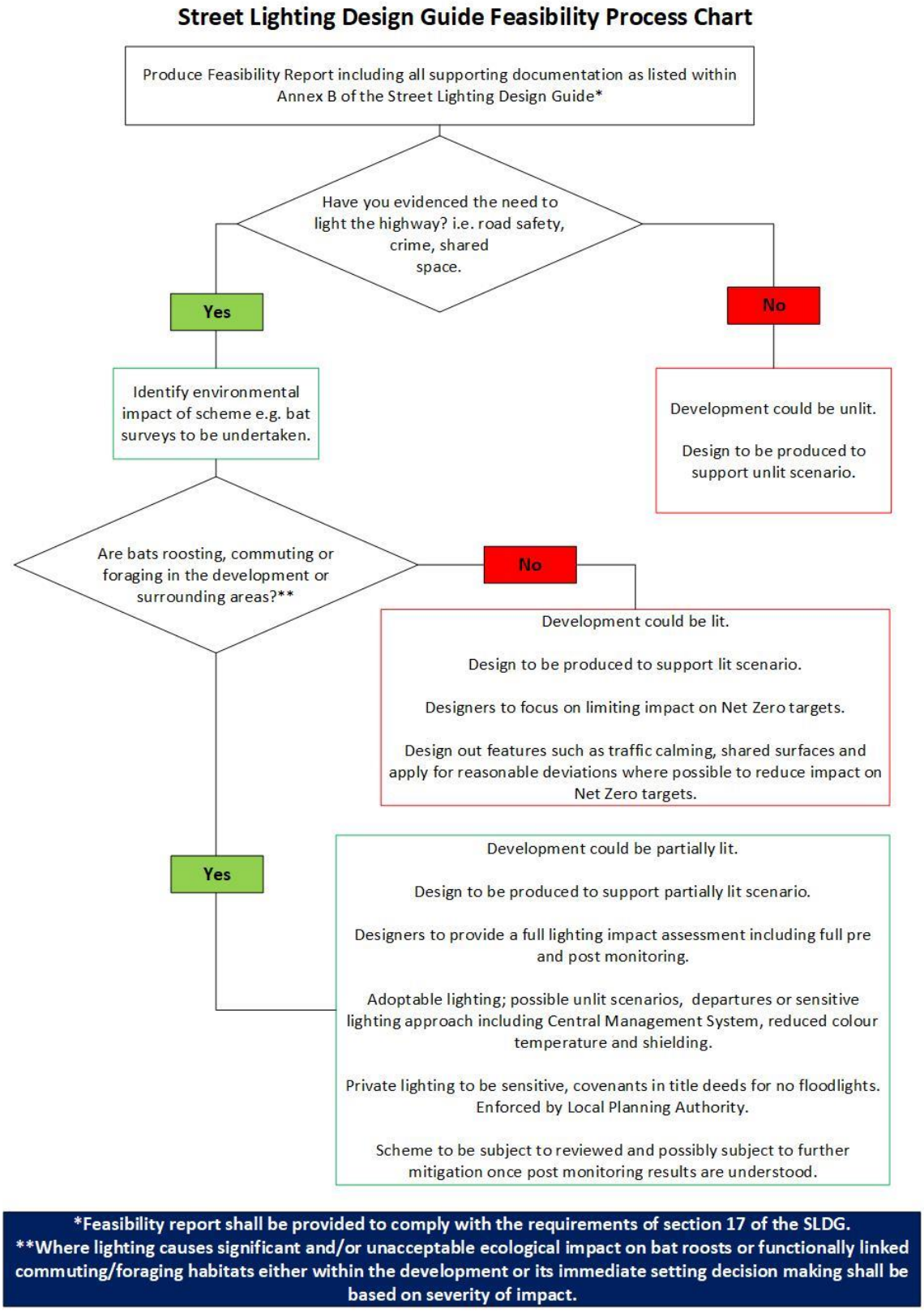
7. SIGNED

| NAME 1 | ROLE | SIGNED | DATE |
|---|---|---|---|
| | | | |
| NAME 2 | ROLE | SIGNED | DATE |
| | | | |

8. DECISION

| DECISION TICK ONE BOX and COMMENT | Tick Box |
|---|---|
| APPROVED | |
| APPROVED WITH COMMENTS | |
| REJECTED | |
| COMMENTS OR REASON FOR REJECTION | |

# Annex G- Feasibility Process




***Feasibility report shall be provided to comply with the requirements of section 17 of the SLDG.**
****Where lighting causes significant and/or unacceptable ecological impact on bat roosts or functionally linked commuting/foraging habitats either within the development or its immediate setting decision making shall be based on severity of impact.**

# Annex H- Case Studies

Case studies are included in relevant ILP documents and the street lighting design guide as examples of some of the excellent work undertaken by the developers and their lighting Designers in Worcestershire.

## No Lighting - Case Study, S38 Lower Howsell Road, Malvern.


Figure 1. S38 Lower Howsell Road, Malvern

**Introduction**

The developer engaged a lighting designer to provide a street lighting design.

The scheme comprised of 110 properties, located near to the Malvern Hills National Landscape formerly known as 'Outstanding Natural Beauty'. Malvern Hills National Landscape has published guidance on lighting, intended to "minimise impacts of lighting on wildlife, people and on natural landscapes." Prior to being developed the land was a greenfield site and had no lighting / dark baseline. This would be classed as dark district brightness as per Institution of Lighting Professionals Guidance Note 1, (ILP GN01/21) the reduction of obtrusive light.

The development is accessed from Lower Howsell Road, which has limited lighting provision. Many adjacent side roads also have limited lighting provision, typical of semi-rural areas of Worcestershire.

The road layout is in line with the Streetscape Design Guide. There were no features that should be illuminated in line with Manual For Streets.

Ecological surveys determined bats were using peripheral hedge lines as linear commuting and foraging features. The project ecologist recommended this feature should remain unlit to avoid impacting light sensitive fauna.

Bats and their roosts are afforded legal protection under international and national legislation. In certain circumstances, such as where foraging or commuting routes are deemed to be 'functionally linked' to a bat roost (and hence important in supporting the favourable conservation status of that bat population) these features may also benefit from strict legal protection.

**Challenge**

Subsequently, during design it became apparent that the entire site was used by Lesser and Greater Horseshoe bats, no longer confined to the extremity of the site as advised during planning.
The species of bats found within the development are highly light averse, if lighting were provided it could fragment or disrupt commuting and foraging habitat.
Due to its location and dark baseline, the site has a semi-rural context and additionally is located within the setting of a National Landscape. Artificial lighting would therefore need to be sensitively controlled. Institute of Lighting Professionals (ILP) GN01/21-the reduction of obtrusive light states: "*lighting should limit the impact of light pollution on intrinsically dark landscapes".*

**Solution**

Due to the significance of the ecological findings, the dark baseline, the semi-rural nature and the provision of a standard road layout, an unilluminated approach was the best option to move forward.

**Benefits**

By not providing Street Lighting, the developer has avoided causing an ecological impact by removing risk to severance effects on an identified linear commuting/foraging feature, thus reducing risk of contravening legislation by un-intentionally disrupting features which might be considered as functionally linked to a bat roost.

- The scheme is in line with national planning policy framework and lighting guidance.
- The scheme has removed maintenance liability and risk to energy revenue budgets.
- Additionally, this removes the carbon burden from the Net Zero plan.

## Lighting - Case Study, S38 Churchfields, Kidderminster.

Figure 1. S38 Churchfields, Kidderminster

**Introduction**

The developer engaged a lighting Designer to provide a street lighting design.

The scheme comprised of 246 properties, located in Kidderminster Town Centre. Prior to being developed the land was a brownfield site. Due to its low to medium lighting baseline, the site would be classed as medium District brightness as per ILP GN01/21- the reduction of obtrusive light.

The development is accessed from Broad Street and Churchfields, which has full lighting provision. Many of the adjacent side roads also have full lighting provision, this is typical of an urbanised area of Worcestershire. The road layout is in line with the Streetscape Design Guide. There were no features that should be illuminated in line with Manual for Streets.

All buildings were demolished during development removing suitability to support roosting bats but an area of woodland to the north of the scheme provides potential for foraging and commuting bats.

**Challenge**

The site is located adjacent to an area with a reasonable amount of localised crime of various severity, so it is unsuitable for a no light scenario. In line with BS5489-1-2020 A.3.3.2 a risk assessment was undertaken that indicated if lighting is provided, to deter crime, lighting levels should be increased to a higher level than that of a typical Worcestershire development.

Ecological assessment requested that the woodland area remains dark but adjacent roads must be illuminated.

**Solution**

On evaluating historic incidences of crime which have been recorded in the scheme's locality, it was determined that provision of lighting was the best option to move forward. However, it must be noted that due to historic incidents of crime, lighting level requirements are 60% higher than what is typically installed within a Worcestershire housing development.

Luminaires installed on roads adjacent to woodland are fitted with shields to reduce illumination in line with the ecological requests.

**Benefits**

The scheme is in line with British Standards but at the time of writing Worcestershire County Council cannot evidence if crime has remained steady, decreased, or increased due to the enhanced lighting provision of the scheme.

## Sensitive Lighting - Case Study, S38 Lea Castle (Phase 1), Kidderminster.

Figure 1. S38 Lea Castle (Phase 1), Kidderminster

**Introduction**

The developer engaged a lighting designer to provide a street lighting design.

The scheme comprised of over 600 properties, based on the former Lea Castle Hospital site, located within Wolverley Parish. It is located north of Kidderminster between Stour Vale Marsh Site of Special Scientific Interest (SSSI) & Puxton Marsh SSSI to the West, and Hurcott Pasture SSSI and Hurcott and Podmore Pools SSSI to the East.

Prior to being developed the land was mostly a greenfield site, with limited private lighting. The lighting designer estimated the site to have an existing very low / almost dark lighting baseline. As

per ILP GN01/21-the reduction of obtrusive light, this site would be classed as mix of dark district brightness and low district brightness.
The development is accessed from Park Gate Road, which has no lighting provision, and Wolverhampton Road (A449), which has a high level of lighting provision associated with a busy A class road. Many of the comparable roads in Wolverley have no lighting provision and are typical of rural areas of Worcestershire.

The road design is in line with the Streetscape Design Guide. There were no features that should be illuminated in line with Manual For Streets, but the main spine road was to be used by a bus service, cyclists, access to shops and be used by schoolchildren.

During planning it was advised that a variety of bat species were using the site. In compensation for licensed destruction of existing roosts, several bat barns were constructed on site. Lesser Horseshoe bats were subsequently understood to be both roosting, foraging and commuting within site boundaries as well as commuting to the nearby network of sites considered to be of conservation significance to forage.

**Challenge**
Bats and their roosts are afforded legal protection under international and national legislation. In certain circumstances, such as where foraging or commuting routes are deemed to be 'functionally linked' or key in supporting the favourable conservation status of the population, these features may also benefit from strict legal protection.
The species of bats found within the development are highly light averse, if insensitive lighting was provided it was deemed likely to risk fragmentation or disruption of bat commuting and foraging features, particularly hedgerow and blocks of linear woodland which were identified in the project ecologist's 'dark corridor' maps.

The developer's ecologist proposed dark corridors on the spine road, but these interacted with sharp bends and were in proximity to junctions and bus stops. Therefore, the dark corridors would not be endorsed by the Highways Authority Development Control team, due to perceived safety issues.

**Solution**
Due to the significance of the ecology, rural nature, use of the spine road and un-endorsed dark corridors for the spine road and provision of a standard road layout for side roads it was decided to masterplan the lighting for the entire development.
The spine road was to be lit in its entirety, but all side roads were to be unilluminated.
The spine road lighting was to include heavy mitigation:

- Red lighting (to reduce potential impact),

- Low levels of lighting during quiet periods of the night,
- Post monitoring of the bats on site to understand impact of lighting,
- Implementation of a Central Management System (CMS) to amend the lighting levels if necessary.

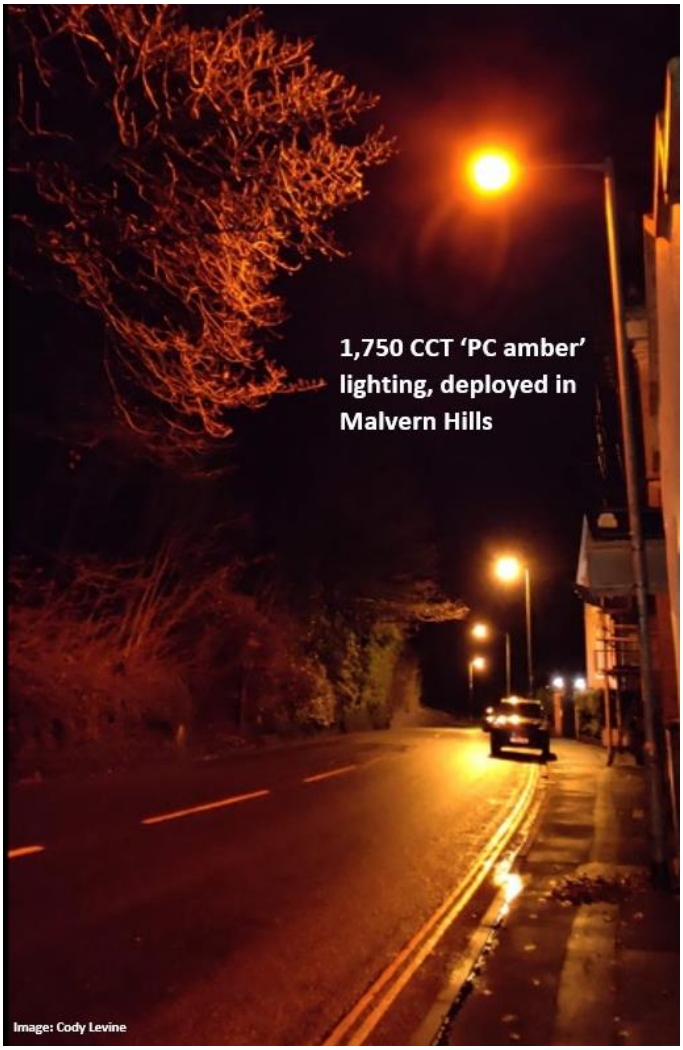
The local planning authority, highway authority development control team and scheme designers felt this was the best option to move the development forward.

**Benefits**

- By providing street lighting on the main spine road, the developer has focused on providing safe usage for the major risk factors; interactions between motorised users incl. buses and non-motorised users enables a safer night-time environment.
- By not providing street lighting on the side roads, the developer has avoided potential for ecological impact to protected bat species by un-intentionally disrupting and severing commuting and foraging routes functionally linked to a known roost. This has the added bonus of being comparable to the lighting status of many roads within the Parish of Wolverley and will help the development feel rural at night.
- The scheme is in line with the national planning policy framework and lighting guidance.
- The scheme has partially removed maintenance liability and risk to energy revenue budgets with its careful approach to lighting. Additionally, this partially removes the carbon burden from the Net Zero plan.
- By securing a period of post-installation bat and lighting monitoring, related to the predicted scale of impact, a refined insight will be gained into the effectiveness of the lighting mitigation strategy for bats.

## Rapid LED Roll-out (RLR) – Case Study.

The Worcestershire County Council Rapid LED Roll-out Case Study is published in 'ILP Guidance Note 08/23: Bats and Artificial Lighting At Night'. It demonstrates how safety and carbon/energy reduction can be balanced alongside biodiversity conservation.




## ADDENDUM 1 – Technological Innovation

Where new technological advances are adopted by Worcestershire County Council as best practice, these will be made apparent to Designers at the relevant stage of the process.