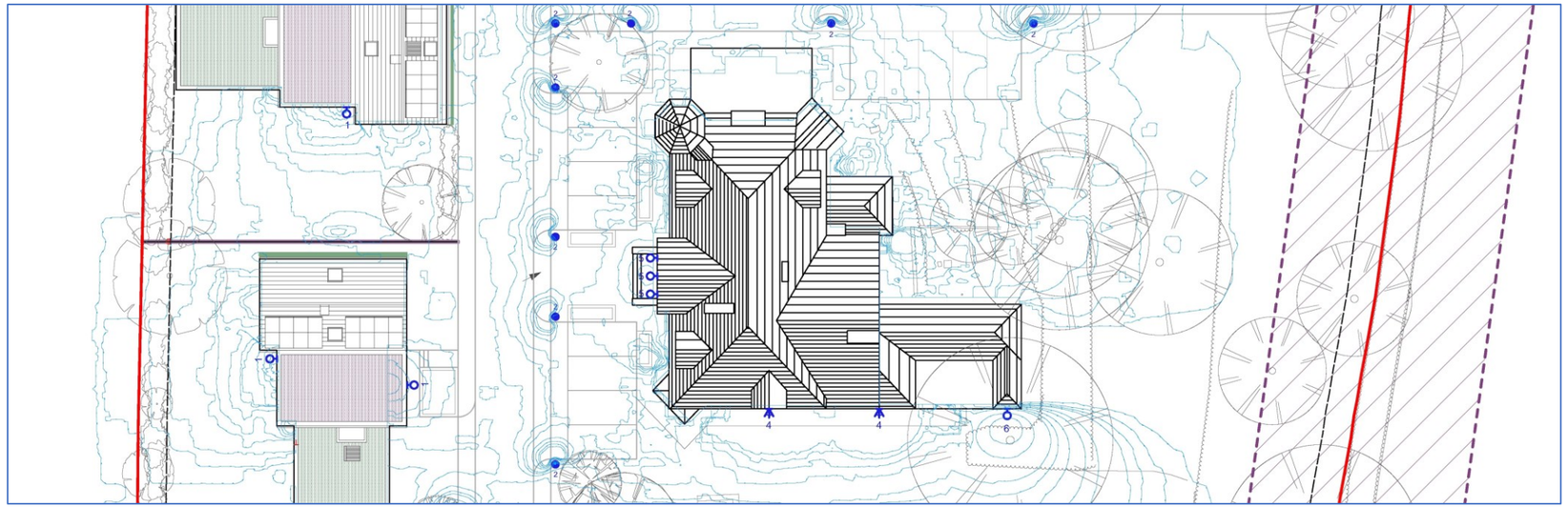

Courtleigh, Westbury Leigh, Wiltshire
Lighting Impact Assessment

jhconsultingarchitects
architecture I conservation I consultancy

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Cover Image: View looking North East towards Courtleigh House

Introduction

Section 1.0

An introduction to the project.

1.1 Background

This report has been prepared by Jhconsulting Architects Ltd for the Institution of Engineering Designers (I.E.D) in support of a Full Planning application for a small scale development of 3no. residential dwellings located at Courtleigh, Westbury Leigh, Westbury.

Consultation response received during the determination of the Full Planning Application (REF: **PL/2023/08411**) process has requested additional information on the lighting strategy proposed for the new development.

This report presents a Lighting Impact Assessment for the proposed residential development.

1.2 Scope of Report

The aim of this Lighting Impact Assessment is to provide an assessment of the impact of the external, internal, and wider site external lighting from the proposed development on sensitive ecological receptors.

The report outlines the lighting strategy and mitigation measures that the assessment is based on.

This lighting assessment is based on the following information:

- Proposed site layout (JHC218-P-100 REV A) see **Appendix Item 1**;
- Proposed site landscape plan (JHC218-P-0020) see **Appendix Item 2**;
- Proposed house type E, F & G plans and elevations (JHC218-P-112 to 117) see **Appendix Item 3**.
- Assessment of Ecological Impacts report by ECS Ltd;

The strategy outlines the proposed lighting (including any assumptions), and mitigation measures to demonstrate predicted impacts on the proposed features used by SAC bats are maintained as dark corridors (0 lux) with no net increase in light levels as a result of the development.

1.3 Legislation and Guidance

The relevant legislation and policy relating to protected species has been outlined in more detail in Appendix 1 of the Assessment of Ecological Impacts report by ECS Ltd.

These include:

- Conservation of Habitats and Species Regulations 201730 (as amended);
- The Wildlife & Countryside Act 1981 (as amended);

The following guidance documents have been used to aid in the identification and assessment of sensitive features and the subsequent assessment of potential impacts and proposed mitigation strategies:

- The Bats Special Areas of Conservation (SAC) planning guidance document published by Wiltshire Council and Natural England (2015)
- Guidance Note 8: Bats and Artificial Lighting in the UK published by The Bat Conservation Trust and the Institute of Lighting Professionals (ILP) (2018);

1.4 Existing Site

The site is located to the southern edge of Westbury Leigh, Westbury. The approximate site co-ordinates for the centre of the site are Latitude: 51.24897° N, Longitude: 2.19642° W, with the post code of BA13 3TA. The site location is shown outlined in red below.



Site Location Map –Courtleigh Site Outlined in Red

The site (*outlined in red on the aerial image below*) is occupied by a large premises (*marked A*) which is in active continuous mixed use as a commercial company headquarters and residential use with large areas of associated car parking and shared open lawned garden.

The site is immediately bounded by C20 residential development to the east (*Labelled B*) with additional C20 and C21 infill residential development to the north (*Labelled C*). To the west, C21 residential development (*Labelled D*) has expanded into the agricultural land bounding to the west.

The southern boundary borders Sandhole Lane (*dashed E*) with the agricultural land to the South of Sandhole lane (labelled F), now consented for a large scale residential development.



(Opposite) Aerial view Courtleigh site illustrating surrounding areas of developed land.

Corresponding views of the bounding development are provided opposite as follows:



View B: Eastern boundary along Sunpath Lane with adjacent residential development of Leigh Close



View C: Northern boundary with adjacent residential development of no.57 and 61a Westbury Leigh



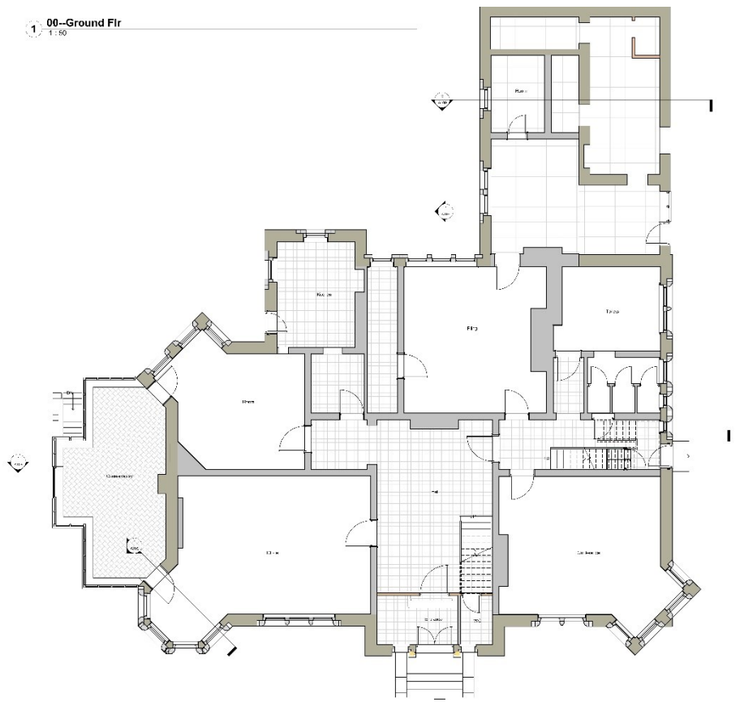
View D: Western boundary with adjacent residential development of Leigh Close



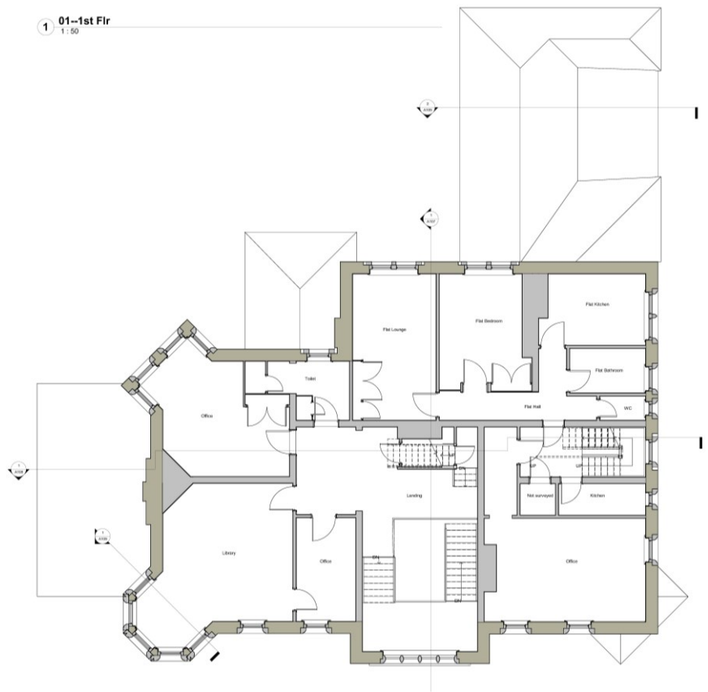
View E: Southern boundary with adjacent route of Sandhole Lane

1.5 Existing Building

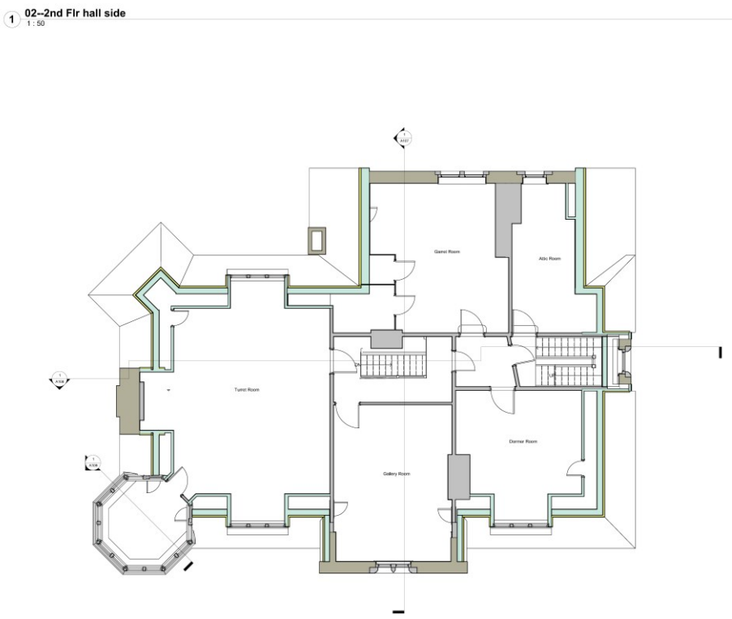
The existing building on the site has been accurately modelled to facilitate the calculation of existing light spill from existing glazed openings and exterior lighting mounted to the outside of the building



Courtleigh House - Ground floor plan – As Existing



Courtleigh House - First floor plan – As Existing



Courtleigh House – Second floor plan – As Existing

1.6 Existing Building Luminaires

External Light Fixtures

A visual survey of the existing building has recorded the following external luminaires to be incorporated into the calculation software analysis.



3no. exterior lanterns to front entrance



1no. floodlight to west elevation entrance



1no. floodlight to south west corner of west elevation



1 no. external bulkhead light to west elevation

Interior Light Fixtures

A visual survey of the existing building interior has recorded type of luminaires installed to the commercial offices for incorporation into the calculation software analysis.











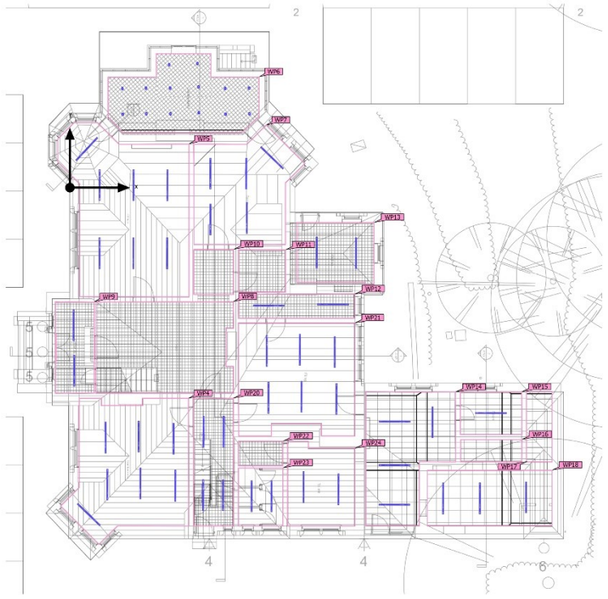
Courtleigh House – Existing Building Lighting Plans

The calculation model has incorporated the lighting types identified to the interior and exterior of the existing building to facilitate analysis of the existing site pre and post development.

Project

DIALux

Building 4 · Storey 1 (Light scene 1)
Calculation objects

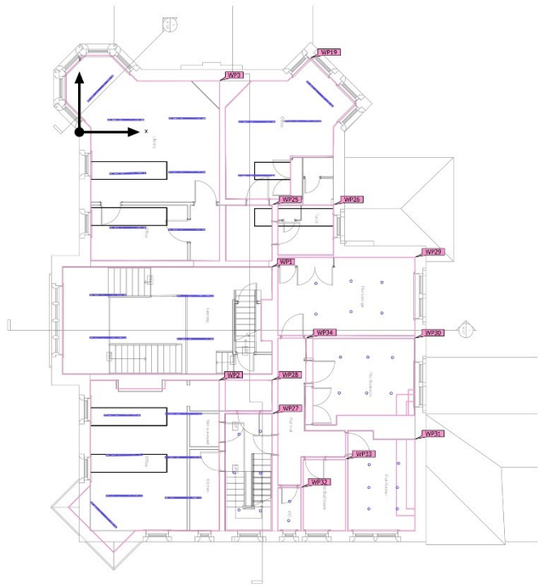


Ground Floor Lighting Plan – As Existing

Project

DIALux

Building 4 · Storey 2 (Light scene 1)
Calculation objects

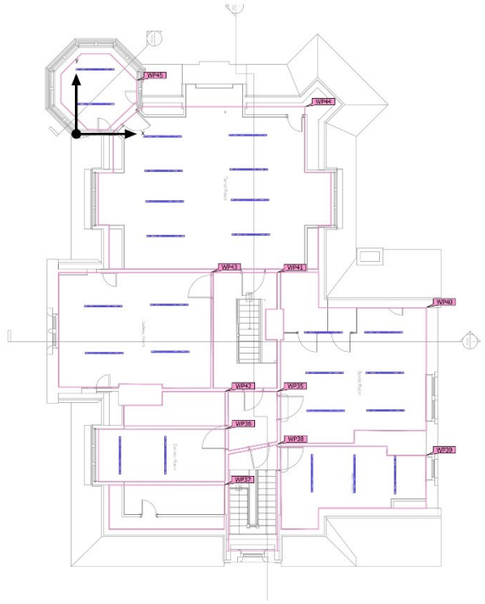


First Floor Lighting Plan – As Existing

Project

DIALux

Building 4 · Storey 3 (Light scene 1)
Calculation objects



Second Floor Lighting Plan – As Existing

1.7 Existing Site Designation

Courtleigh is located approximately 520m from a roost site for greater horseshoe bats which is a 'Core Site' forming part of the 'Bradford on Avon Bats SAC.' and falls is within the 4km Consultation Zone of this roost.

<u>The Bradford on Avon Bat SAC</u>
The Bradford on Avon Bat SAC guidelines specify that the following impacts must be assessed when a development proposal falls within one of the Core Areas and could potentially affect one or more Sensitive Features.
Impacts relate to the four qualifying species i.e. greater horseshoe, lesser horseshoe, barbastelle and Bechstein's bats.

These potential 'broad' impacts are identified as follows:

1. Physical changes – alteration / demolition / removal of a potential roost feature including environmental conditions (temperature, humidity, internals light levels etc), loss, damage or change of management of potential foraging habitat, removal /fragmentation / modification of habitats in a potential commuting corridor;
2. Lighting – artificial lighting close to potential roosting, foraging and commuting features;
3. Noise and vibration – construction / demolition activities close to potential roost features;
4. Recreational disturbance – increasing the risk of recreational visits both organised and informal
5. Pollution – dust and fumes close to potential roost features; and
6. Mortality – predation by domestic cats at roost entrances, collision risk from wind turbines.

And that the basic principles of sensitive development are:

a) Maintain bat roosts in situ;
b) Maintain dark corridors around foraging areas and commuting corridors with no net increase in light levels as a result of the development in areas used by bats;
c) Locate potential sources of disturbance away from bat roosts and bat habitats to avoid impacts;
d) Maintain the extent and quality of all semi-natural habitats in foraging areas and commuting routes and design the development around existing habitats.

Accordingly, additional Phase 2 surveys were recommended and conducted by ECS Ltd to assess the importance of the garden for foraging and potentially commuting bats. The outcomes of the surveys and subsequent recommendations are included in the ECS Ltd report 'Assessment of Ecological Impacts' previously submitted with the application which are discussed in the following sections.

1.8 Ecology Assessment

A site-specific ecological assessment has been carried out by ECS Ltd (Assessment of Ecological Impacts) for the site at Courtleigh, Westbury Leigh.

The report's summary evaluation noted:

> *"The building supports at least three day roost sites for common species of bat. These roost sites are legally protected but will not be impacted by the proposals. A small number of bats forage in the garden; the majority of these are common and widespread species. Greater horseshoe bat is a rare species but the number of passes demonstrates that activity is limited to what is probably a single individual undertaking very limited foraging bouts and roosting off-site.*
>
> *Courtleigh is considered to be of Local (Site) Value for bats."*

ECS Ltd commented that the vegetation along Sandhole lane may represent a commuting route for small numbers of bats.

A single greater horseshoe bat was heard more frequently in the darker corridor of vegetation between the house and southern hedgerow (bats could also commute along Sandhole lane).

The assessment also appropriately included reference to recent adjacent surveys and appraisal undertaken for the site to the south of Courtleigh known as 'Land South of Sandhole Lane' (app ref: 20/11515/OUT). These associated surveys undertaken by EADrecorded more greater horseshoe bat activity (over a longer survey period) along the western boundary of their site (adjacent to Sandhole Lane).

The assessment also appropriately included reference to recent adjacent surveys and appraisal undertaken for the site to the south of Courtleigh known as 'Land South of Sandhole Lane' (app ref: 20/11515/OUT).

This adjacent assessment concluded that small numbers of greater horseshoe bats may commute from south to north of their site along its western boundary. This report provided further illustrated information on Greater Horseshoe Bat commuting routes identifying a 'potential commuting' route along Sandhole Lane restricted by existing lighting.

These aggregate routes have been illustrated on the plan included in **Appendix Item 4** for reference.

1.9 Ecological Mitigation Strategy

As identified in their assessment of the Courtleigh site, ECS Ltd noted in their report that the only qualifying species recorded was greater horseshoe bat.

It was further recorded that no greater horseshoe bat roosts are present within or immediately adjacent to the site and only occasional foraging by one or at most two individuals has been recorded passing through the site.

None of the above impacts (1-6) noted above will result from the proposals.

As proposed by ECS Ltd, lighting provision for the new development is to be managed so that any new lighting is directed away from bat roosts/foraging areas and a 'dark corridor' will be retained across the southern part of the site.

This co-ordinates with the outcomes identified with the assessment of Land south of Sandhole Lane where the Sandhole lane route was identified with potential as a commuting route for Greater Horseshoe Bats.

The extent of the proposed 'dark corridor' is shown on the Lighting Plan (JHC218-P-0023) in **Appendix Item 5** of this report.

This identifies the proposed areas where lighting levels would need to demonstrate no net increase in existing lux levels be maintained at ground level and at 2m above the ground.

Various mitigation measures have been considered to reduce the effects of direct light (as well as light spill).

These include:

- Avoiding the use of luminaries which have UV elements, avoiding the use of metal halide or fluorescent sources as these are all more harmful to bats.
- Using LED lights where possible as they have a sharp cut off, lower intensity, good colour rendition and dimming capability.
- Using warm white spectrum (<2700 kelvin) to reduce harmful blue light components where appropriate.
- Using luminaries with peak wave lengths higher than 550nm to avoid the most disturbing light components to bats (Stone et al, 2012).
- Using specialist low level luminaries with directional light.
- Always mounting luminaries on the horizontal i.e. no upward tilt.
- Utilising motion sensors on security lighting (1 min max).

Proposed Lighting

Section 2.0

Describing the Proposed Lighting Strategy

2.1 General

The existing premises at Courtleigh and the proposed new development have been modelled and calculations provided, using industry standard software.

The three new proposed dwellings have been modelled in detail, with internal and external lighting to establish potential lighting impacts to the surrounding site and the proposed dark corridor to establish any required mitigation measures.

Due to the configuration of the site layout, there is also potential for the proposed external private lighting to the front and rear of the three residential plots to impact on the dark corridor. This has therefore been included in the modelling and assessment.

There is also potential for the proposed external lighting to the access road and parking areas to impact on the dark corridor. This has also been included in the modelling and assessment.

The lighting strategy and assessment process for each lighting element is outlined in the following sections.

An iterative process has been applied to establish the required mitigation measures, and therefore, results are not shown for each area/ scenario prior to mitigation.

Section 3 details the mitigation measures that are deemed to be required and have been applied.

The calculation models are based on AutoCAD drawings of the existing and proposed site development layout with each House Type (E, F & G) individually modelled and based on the plans and elevations included in **Appendix Item 3**.

2.2 Internal Lighting and External Lighting Calculations

The combined impact of internal light spill, external building mounted lighting and access road and parking lighting has been calculated using Dialux Evo Lighting Software.

Dialux Evo is an industry standard computer calculation package which utilises 3D modelling to model the real-world output of chosen light fittings.

The existing building at Courtleigh has been separately modelled and in combination with the proposed new residential development in 3D including all glazed elements.

From the Dialux calculation software, drawings illustrating the illuminance levels have been produced so that the lighting scheme's impact can be assessed.

Vertical calculation planes (2m in height) have been included to show existing and proposed levels of illuminance along the Southern dark corridor boundary. These have also been provided for the Northern, Eastern and Western boundaries.

The ligting plan showing the positions and references of the vertical calculation planes has been included in **Appendix Item 5**.

The proposed dark corridor has also been identified on the plan positioned to the south of the site including Sandhole Lane.

The calculation model (illustrated by illuminance levels on a drawing) does not include any proposed or existing planting/ hedgerows/ trees on site.

The calculation model is intended to represent the worst case scenario, with internal lighting outputs calculated with all the luminaires switched on, at full output and with no internal obstructions modelled, such as curtains or blinds.

The Visible Light Transmittance of the window glazing has been set to 80%, as this represents typical double glazing.

There are no set levels of design illuminance for private dwellings and the levels of internal design illuminance for the new dwellings have been based on the requirements for communal residential buildings as referenced in SLL Lighting Guide 9: Lighting for communal residential buildings as set out below:

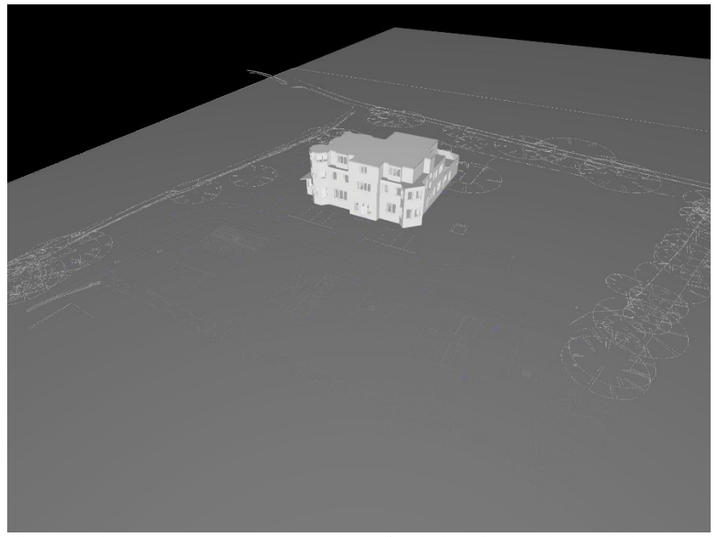
Room Type	*Level of design illuminance (lux)*
Kitchen	*200*
Dining	*150*
Lounge	*100*
Hall/Stairs	*100*
Bathroom	*150*
Toilet	*100*
Bedroom	*100*

Table of Levels of design illuminance from SLL Lighting Guide 9: Lighting for communal residential buildings

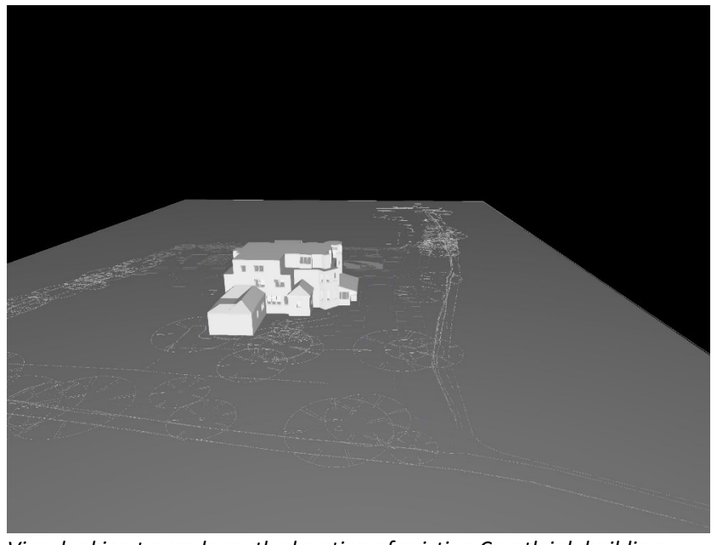
For the calculation of the existing commercial offices located within the existing I.E.D Headquarters building, lighting standards set out the recommended lux values for office functions at 500 lux.

Due to the potential proximity of the dark corridor zone, levels of lighting have been based on recessed lighting (down lights) throughout the proposed new residential units, instead of pendants, to further minimise light spill.

The 3D calculation model for the existing Courtleigh building is illustrated below:

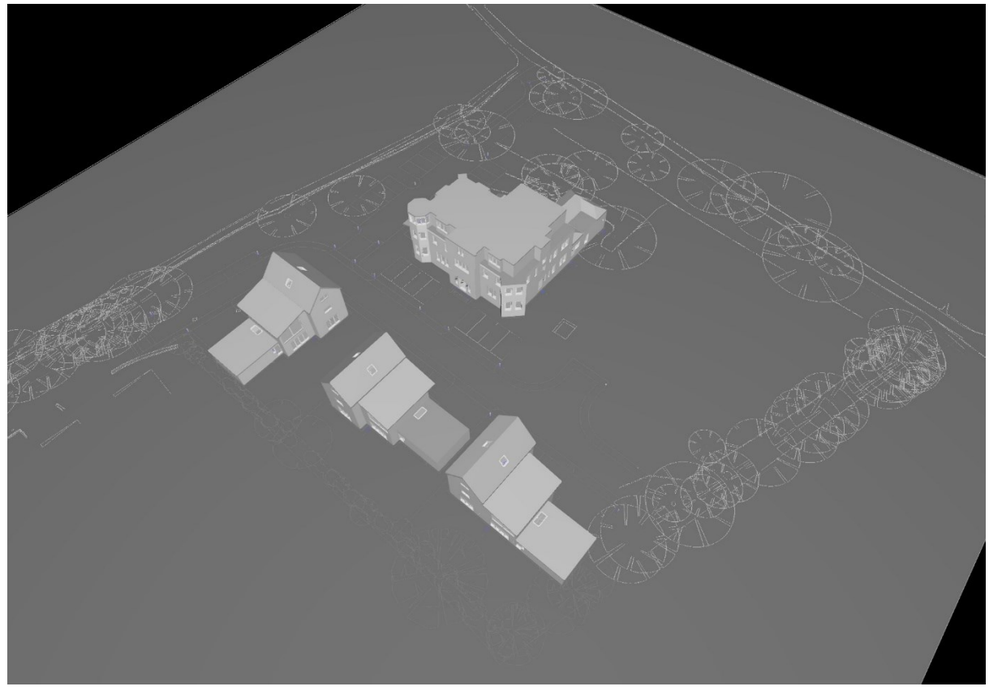


View looking towards north elevation of existing Courtleigh building

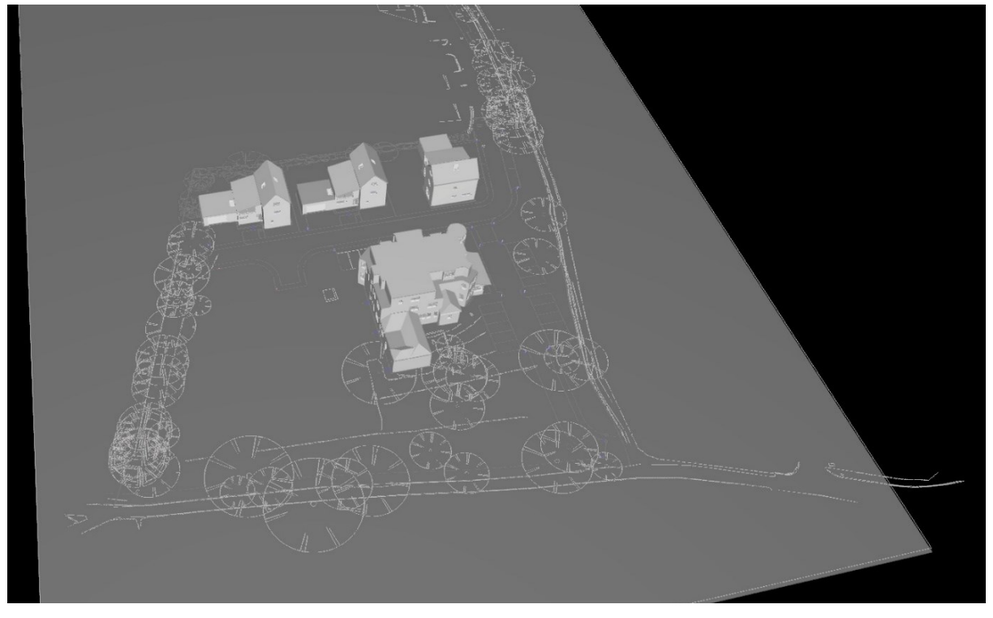


View looking towards south elevation of existing Courtleigh building

The 3D calculation model for the proposed development including the existing Courtleigh building is illustrated below:



Aerial *view looking south east towards new development*



Aerial *view looking north towards new development*

The results from the calculation model produces the isolines detailed on the drawing included in **Appendix Item 6** , which represent levels of illuminance at ground level.

Results have also been produced to show the levels of illuminance falling on a vertical calculation plane placed along the edge of the proposed dark corridor located towards the southern aspect of the site and includes Sandhole Lane.

Vertical calculation planes have also been placed on the northern, eastern and western site boundaries.

Refer to the Lighting Plan in **Appendix Item 5** for the locations and references related to the vertical calculation planes, and **Appendix Item 8** for the results.

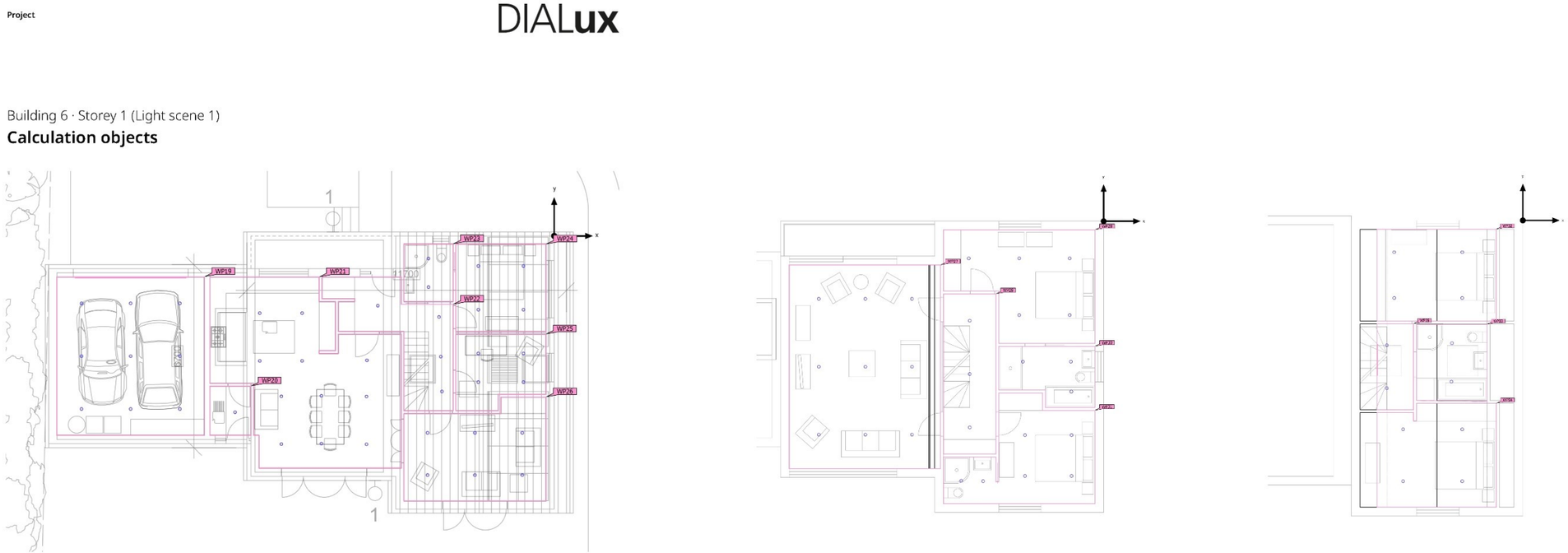
2.3 External Private Lighting to the Dwellings

An external wall mounted light with integrated PIR (movement) detection for operation is proposed to the front and rear of each dwelling.

Downward directional wall lights have been specified to minimise the lighting impacts on bats.

The luminaires will utilise LED lamps with a warm white colour temperature of <3000K. These luminaires are included in the calculation model.

Manufacturers information for the downward directional wall light that the calculations are based on is shown in **Appendix Item 9**.



Proposed Interior Lighting Layouts for new residential dwellings

2.4 External Lighting Strategy – Access & Parking

The proposed access road within the site will remain private and under a management company. Street lighting to BS 5489 and adoptable S38 standards is not proposed to keep the resulting levels of illuminance significantly lower.

Accordingly, low level bollard lighting is proposed as per the external lighting strategy plan and is included as part of the Dialux calculations.

2.5 Impact Assessment and Significance Criteria

The significance of effect will be informed by considering the level of illuminance predicted at the edge of the proposed dark corridor.

In accordance with the Bats and Artificial Lighting in the UK Guidance Note 8/2018, levels of illuminance have been calculated horizontally at ground level, and on the vertical calculation planes 2m in height at the edge of the proposed dark corridor. The north, east and west site boundaries have also been included.

Illuminance levels of greater than 0.5 lux horizontally at ground level and vertically up to 2m in height are considered to be significant.

2.6 Mitigation Measures

The new residential development has been positioned to the north of the site, away from the proposed dark corridor identified as a potential commuting and foraging route for greater horseshoe bats in survey information for this site and adjacent development site surveys.

Mitigation of the effects of the lighting installation during the operational phase will be achieved by providing the proposed lighting and mitigation measures outlined in this report.

The mitigation measures included are summarised below. Also, refer to the Proposed Lighting Plan in **Appendix Item 5**:

- Recessed downlight luminaires to be provided to all rooms with apertures that are adjacent to the proposed dark zones. (Typically, downlight luminaires used, and sold for use, in residential properties will have beam angles of 30-40 degrees. The recessed nature of downlights, and smaller beam angles reduces light spill, compared with pendant luminaires.)

- External lighting will be minimal and limited to building mounted lighting only to the front and rear entrances of each dwelling, and low level bollard lighting to the access road and parking areas, as shown on the Lighting Plan.

- The external building mounted luminaires to the front and rear entrances will be downward directional wall lights. These luminaires will utilise LED lamps and will therefore emit no UV light, and will have a warm white colour temperature of 3000K or less.

- Building mounted external lighting will operate on PIR (movement) detectors. The bollard luminaires are proposed to operate dusk till dawn via photocell, with a 7 day programmable time switch to be provided to allow the timings of operation to be reduced if required.

Further mitigation measures beyond this are not deemed to be required.

2.7 Predicted Impacts from Artificial Lighting

Light spill from the combined internal and external proposed lighting calculated at the edge of the proposed dark corridor is predicted to be no greater than that created by the existing development on the site.

This includes light spill calculated both horizontally at ground level, and vertically on the calculation planes (up to 2m in height) included.

The lighting impacts from the proposals with the mitigation measures outlined are therefore not considered to be significant.

It should also be noted that the calculation model represents the worst case scenario, with all lights switched on simultaneously, and no blinds or curtains included, and the screening effect of any vegetation and planting not being included, levels of illuminance will be further reduced when these factors are taken into account.

Furthermore, the proximity of adjacent residential development to the northern, eastern and western boundaries has not been included in any modelling where additional light spill would be expected.

The images included in **Appendix Item 7** show the calculation model and summarise the results.

Refer also to the drawing showing levels of illuminance predicted horizontally at ground level in **Appendix Item 6** (JHC218-P-0024), and the vertical plane calculation results in **Appendix Item 8** for further detail.

The figure below illustrates the 'false colour' scale utilised in the modelling to illustrate levels of illuminance measured in Lux.

For ease of legibility, levels above 0.5 lux are coloured, and levels below 0.5 lux are shown in shades of grey/black



False Colour Lux Level Chart

2.8 Conclusion/ Summary

The aim of this Lighting Impact Assessment is to provide an assessment of the impact of the external, internal, and wider exterior site lighting from the proposed development on sensitive ecological receptors.

The report outlines the lighting strategy and mitigation measures that the assessment is based on.

Due to the recording of Greater Horseshoe bat sounds to the southern area of the site indicating some low level foraging and commuting, there is a requirement to ensure that a proposed dark corridor zone be maintained.

The majority of the site boundaries have been identified with existing lux levels above 0.5 including the southern calculation plane positioned to the edge of proposed dark corridor.

This lighting assessment has been based on the existing and proposed site layout, and house types forming the subject of the submitted application.

The strategy outlines the proposed lighting (including any assumptions), and mitigation measures to demonstrate predicted impacts on to the proposed dark corridor.

The site has been modelled and calculations provided, using industry standard software.

The impact of light spill from internal and external lighting has been calculated using Dialux Evo Lighting Software.

Light spill from the combined internal and external calculated at the edge of the proposed dark corridor is predicted to be no greater than that created by the existing development on the site.

It should be noted that the calculation model represents the worst case scenario, with all lights switched on simultaneously, no blinds or curtains included, and the screening effect of any vegetation and planting not being included, levels of illuminance will be further reduced when these factors are taken into account.

In conclusion, the lighting impacts from the proposals with the proposed mitigation applied, are not predicted to be significant.

Appendix

Section 3.0

3.1 Appendix Item 1 – Proposed Site Layout



A - Pre-Application adjustements June 2022

NOTES

1. This drawing is copyright and may not be reproduced without the permission of the author
2. All dimensions are to be checked on site and any discrepancies reported before work commences
3. Any ambiguities or discrepencies between this drawing and any other information given elsewhere must be reported to for clarification before works proceed.
4. All drawings to be read in conjunction with the project specification with all works carried out in accordance with the latest Bristish Standards and codes of practice.
5. Drawing based on survey information provided by others.
6. Not for construction.

Client: Institution of Engineering Designers	Date: April 2022	Drg: 218-P-100	Rev: A	Scale: 1:500 @ A3	North
Project: Courtleigh, Westbury Leigh	By: JH	Title: Site Layout as Proposed			
	Chk				

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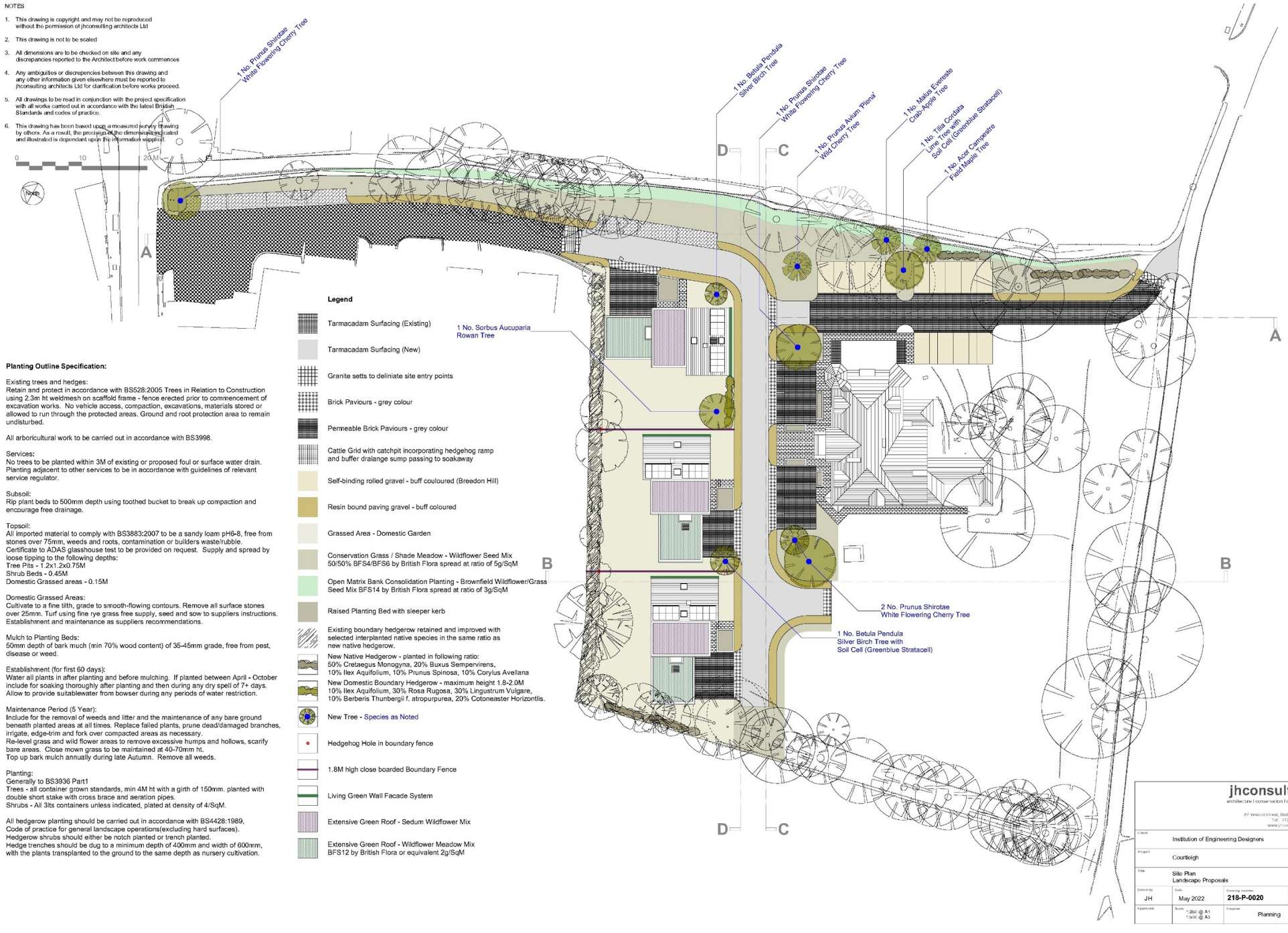
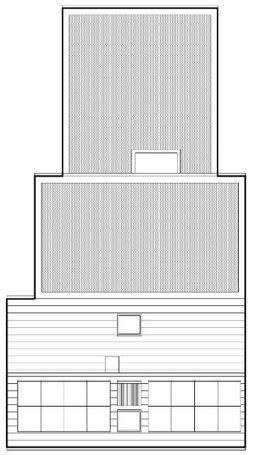
architecture I conservation I consultancy
87 Walcot Street Bath BA1 5BW
01225 471345
www.jhconsulting.org

3.2 Appendix Item 2 – Landscape Plan

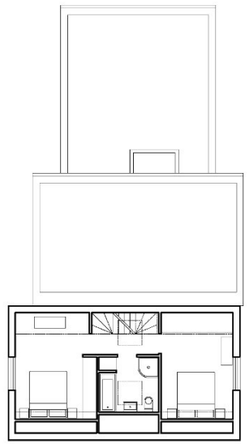


3.3 Appendix Item 3 -House Type Plans

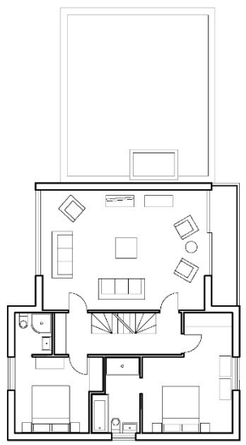
House Type E



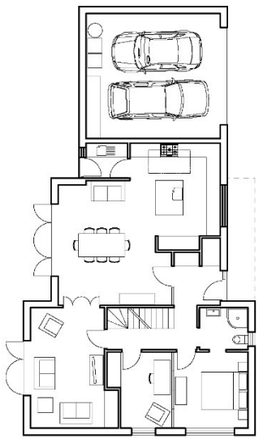
Roof



Second Floor



First Floor



Ground Floor



NOTES

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3. Any ambiguities or discrepencies between this drawing and any other information given elsewhere must be reported to for clarification before works proceed.
4. All drawings to be read in conjunction with the project specification with all works carried out in accordance with the latest Bristish Standards and codes of practice.
5. Not for construction.

Client: **Institution of Engineering Designers**	Date: **Mar 2022**	Drg: **218-P-112**	Rev: **-**	Scale: **1:200 @ A3** **1:100 @ A1**	
Project: **Courtleigh** **Westbury Leigh**	By: **JH**	Title: **Proposals** **House Type E** **Plans**			
	Chk:				

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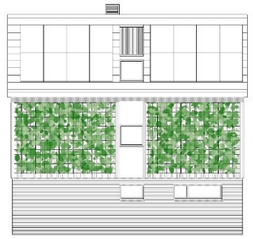

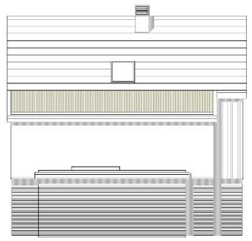



0 5 15 M

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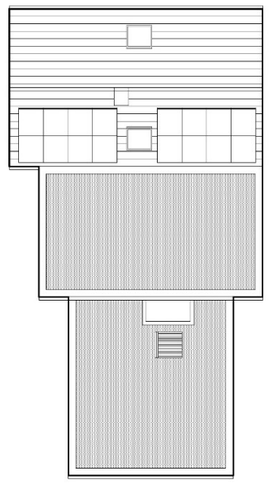
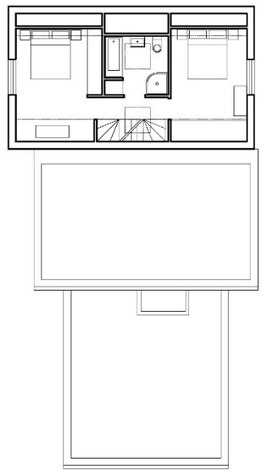
5. Not for construction.

Client: **Institution of Engineering Designers**	Date: **Mar 2022**	Drg: **218-P-113**	Rev: **-**	Scale: **1:200 @ A3** **1:100 @ A1**	**jhconsulting** architecture I conservation I consultancy
Project: **Courtleigh** **Westbury Leigh**	By: **JH**	Title: **Proposals** **House Type E** **Elevations**			87 Walcot Street Bath BA1 5BW 01225 471345 www.jhconsulting.org
	Chk				

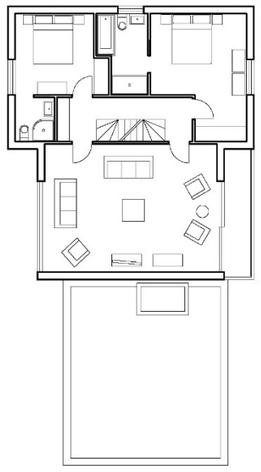
House Type F



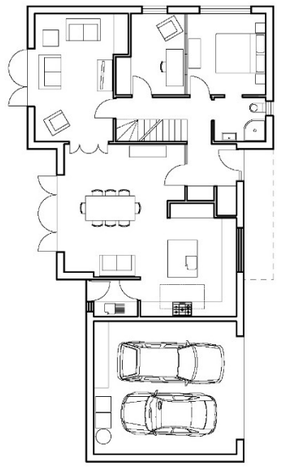
Roof



Second Floor



First Floor



Ground Floor

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5. Not for construction.

Client: **Institution of Engineering Designers**	Date: **Mar 2022**	Drg: **218-P-114**	Rev: **-**	Scale: **1:200 @ A3** **1:100 @ A1**	
Project: **Courtleigh** **Westbury Leigh**	By: **JH**	Title: **Proposals** **House Type F** **Plans**			
	Chk				

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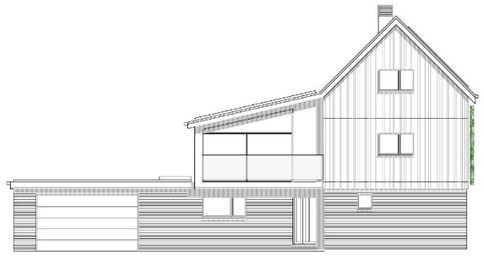

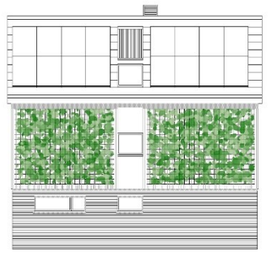

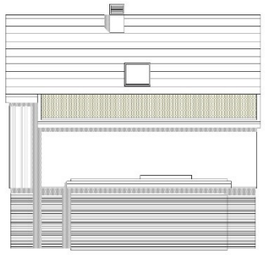



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5. Not for construction.

Client: **Institution of Engineering Designers**

Project: **Courtleigh**
Westbury Leigh

Date: **Mar 2022**

By: **JH**

Chk:

Drg: **218-P-115**

Rev: **-**

Scale: **1:200 @ A3**
1:100 @ A1

Title: **Proposals**
House Type F
Elevations

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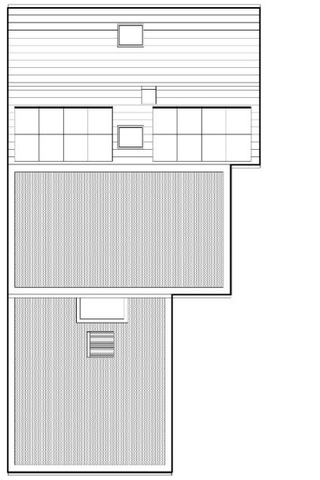
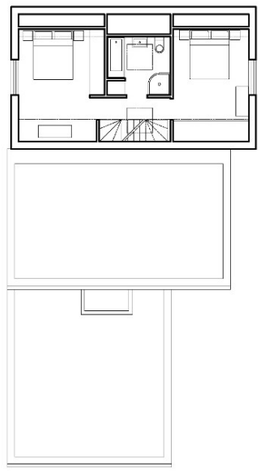
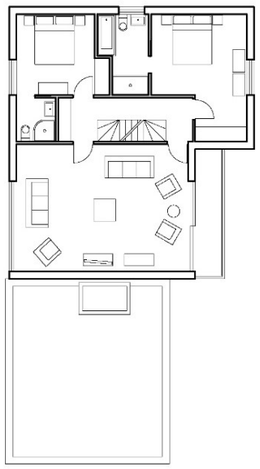
House Type G



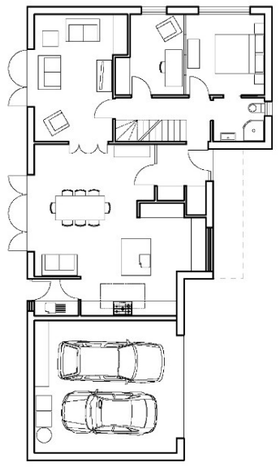
Roof



Second Floor



First Floor



Ground Floor

0 5 15 M

NOTES

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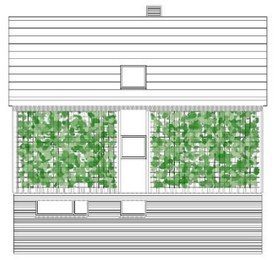
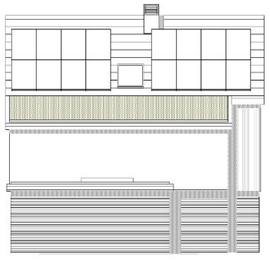
5. Not for construction.

Client: Institution of Engineering Designers	Date: Mar 2022	Drg: 218-P-116	Rev: -	Scale: 1:200 @ A3 1:100 @ A1	jhconsulting architecture I conservation I consultancy
Project: Courtleigh Westbury Leigh	By: JH	Title: Proposals House Type G Plans			87 Walcot Street Bath BA1 5BW 01225 471345 www.jhconsulting.org
	Chk				









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4. All drawings to be read in conjunction with the project specification with all works carried out in accordance with the latest Bristish Standards and codes of practice.
5. Not for construction.

Client: **Institution of Engineering Designers**

Project: **Courtleigh**
Westbury Leigh

Date: **Mar 2022**

By: **JH**

Chk

Drg: **218-P-117**

Rev: **-**

Scale: **1:200 @ A3**
1:100 @ A1

Title: **Proposals**
House Type G
Elevations

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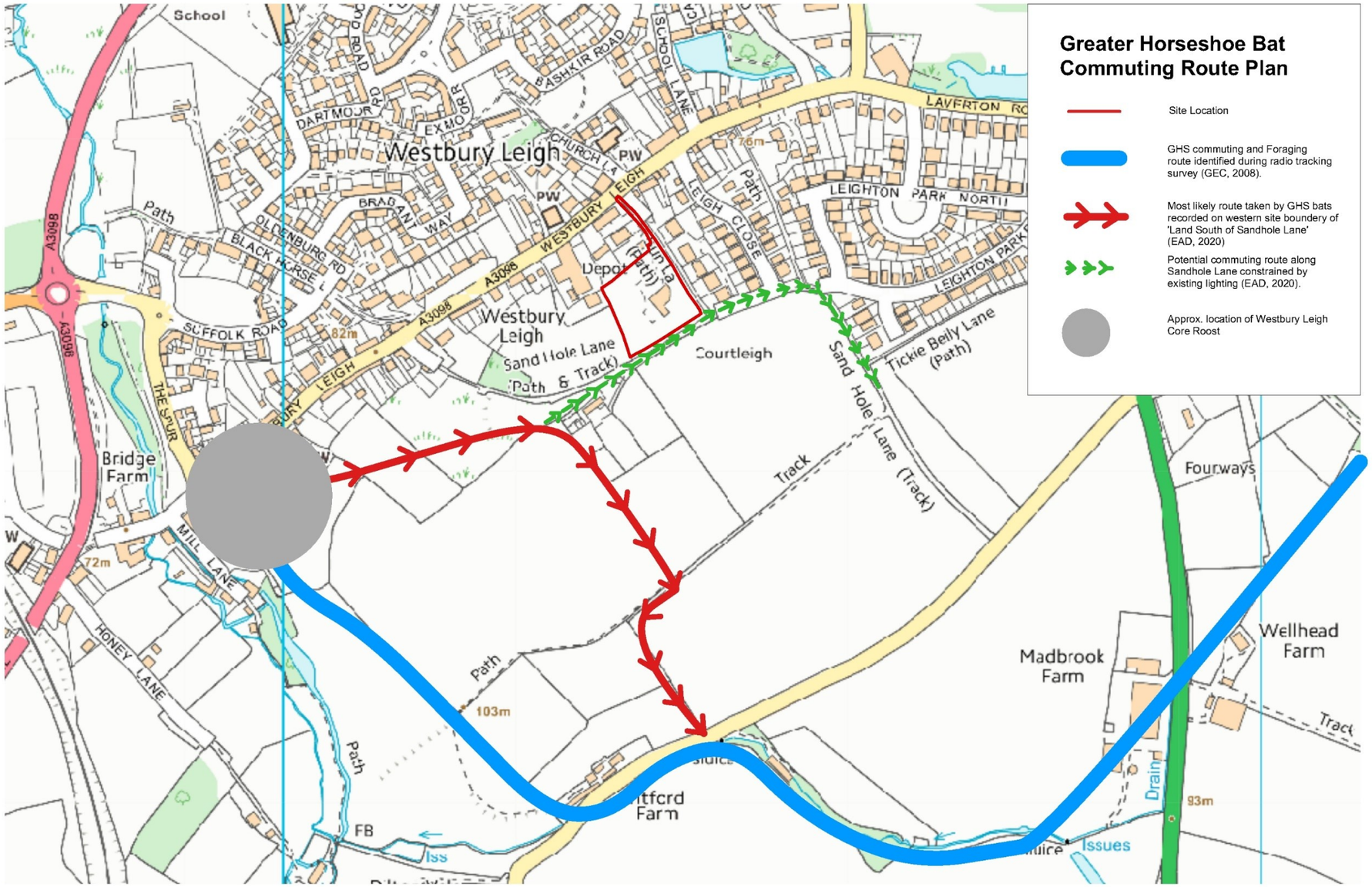
3.4 Appendix Item 4 – Bat Commuting Route Plan



3.5 Appendix Item 5 – Lighting Plan

NOTES

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5. All drawings to be read in conjunction with the project specification with all works carried out in accordance with the latest British Standards and codes of practice.
6. This drawing has been based upon a measured survey drawing by others. As a result, the precision of the dimensions indicated and illustrated is dependant upon the information supplied.
7. Not for Construction

0 10 20 M

North



Legend - Lighting Layout Plan

1 IP65 rated downward directional wall luminaire, mounted at 1.0m AFFL with integrated PIR movement sensor. Tube by Amtuce Lighting or equal and approved. Fitted with an LED 3000K or less (350 Lumens / Maximum 5.5W) lamp.

2 IP65 2700K LED 0.614m high downward directional bollard luminaire with rear beffloc 180° distribution. WE-EF KTY234 [C60] or equal and approved.

4 Existing external floodlight mounted at approx. 3m AFFL

5 Existing external wall mounted entrance lights at approx. 3m AFFL

6 Existing external wall mounted light at approx. 2.5m AFFL

Site Boundary

Proposed Dark Corridor

VP1 Vertical Calculation Plane

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Tel 01225 471340
www.jhconsulting.org

Client: Institution of Engineering Designers

Project: Courtleigh

Lighting Plan
As Proposed

Drawn by	Date	Drawing number	Revision
RR	Jan 2024	218-P-0023	-
Approved	Scale: 1:250 @ A1 1:500 @ A3	Purpose: Planning	

3.6 Appendix Item 6 – Isoline Plan

NOTES

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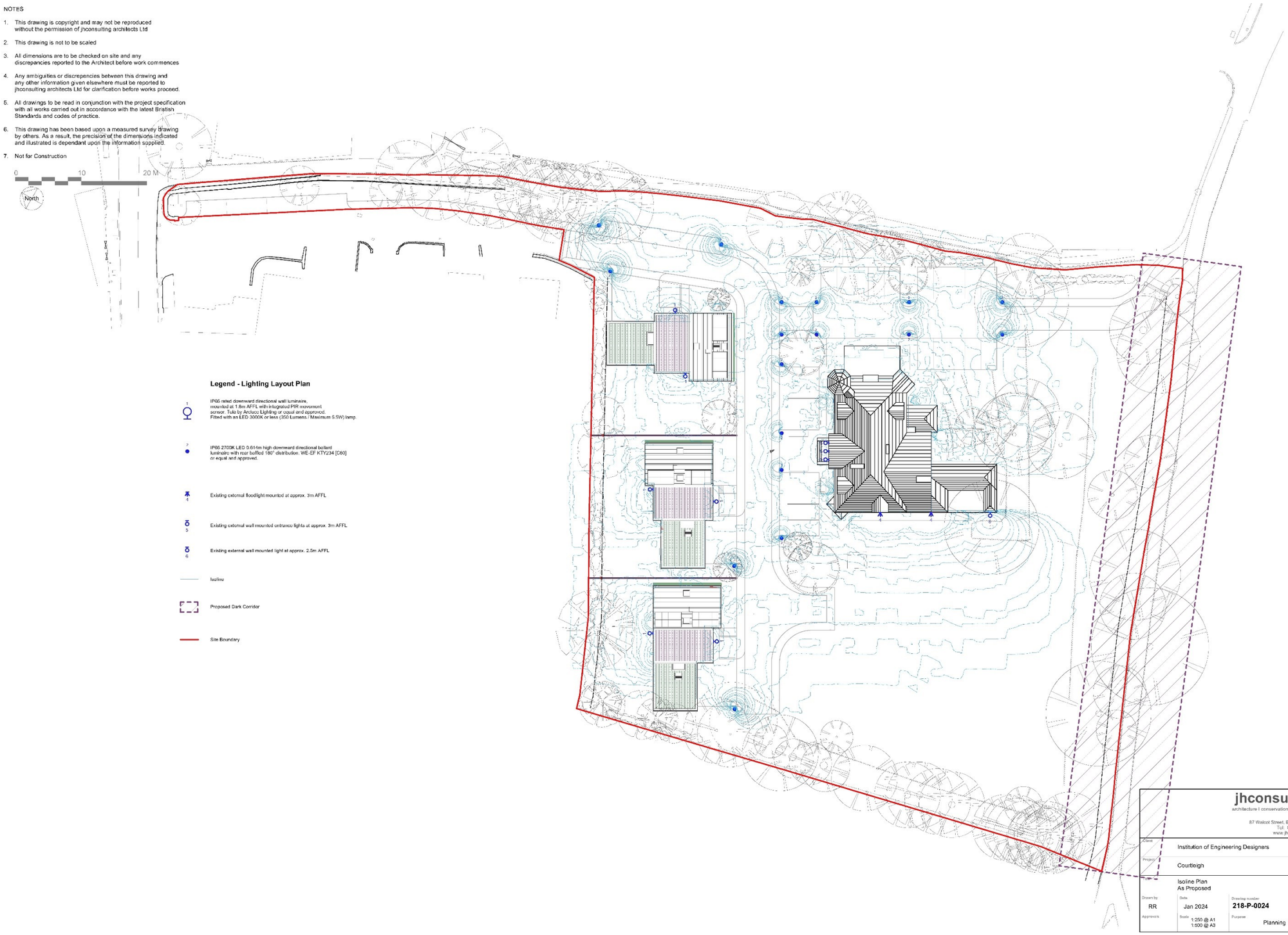
5. All drawings to be read in conjunction with the project specification with all works carried out in accordance with the latest British Standards and codes of practice.
6. This drawing has been based upon a measured survey drawing by others. As a result, the precision of the dimensions indicated and illustrated is dependant upon the information supplied.
7. Not for Construction

0 10 20 M

North



Legend - Lighting Layout Plan

1 — IP65 rated downward directional wall luminaire, mounted at 1.8m AFFL with integrated PIR movement sensor. Tula by Arcluce Lighting or equal and approved. Fitted with an LED 3000K or less (350 Lumens / Maximum 5.5W) lamp.

2 — IP65 2700K LED 0.614m high downward directional bollard luminaire with rear baffled 180° distribution. WE-EF KTY234 [C60] or equal and approved.

4 — Existing external floodlight mounted at approx. 3m AFFL

5 — Existing external wall mounted entrance lights at approx. 3m AFFL

6 — Existing external wall mounted light at approx. 2.5m AFFL

Isoline

Proposed Dark Corridor

Site Boundary

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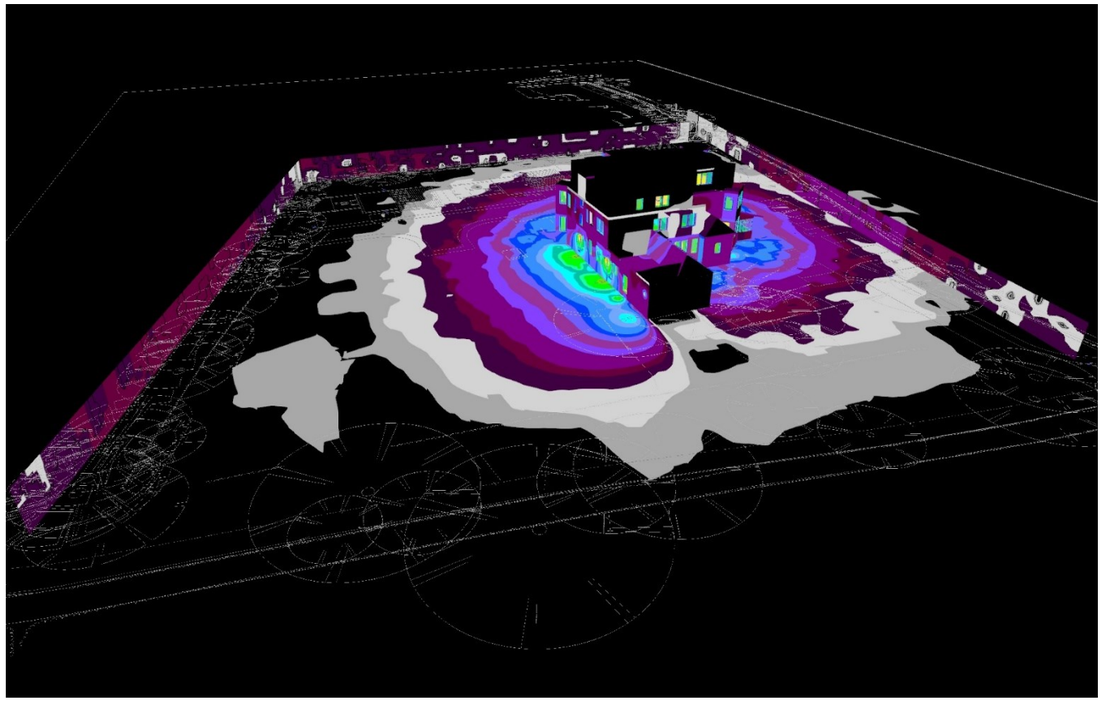
Tel: 01225 471345
www.jhconsulting.org

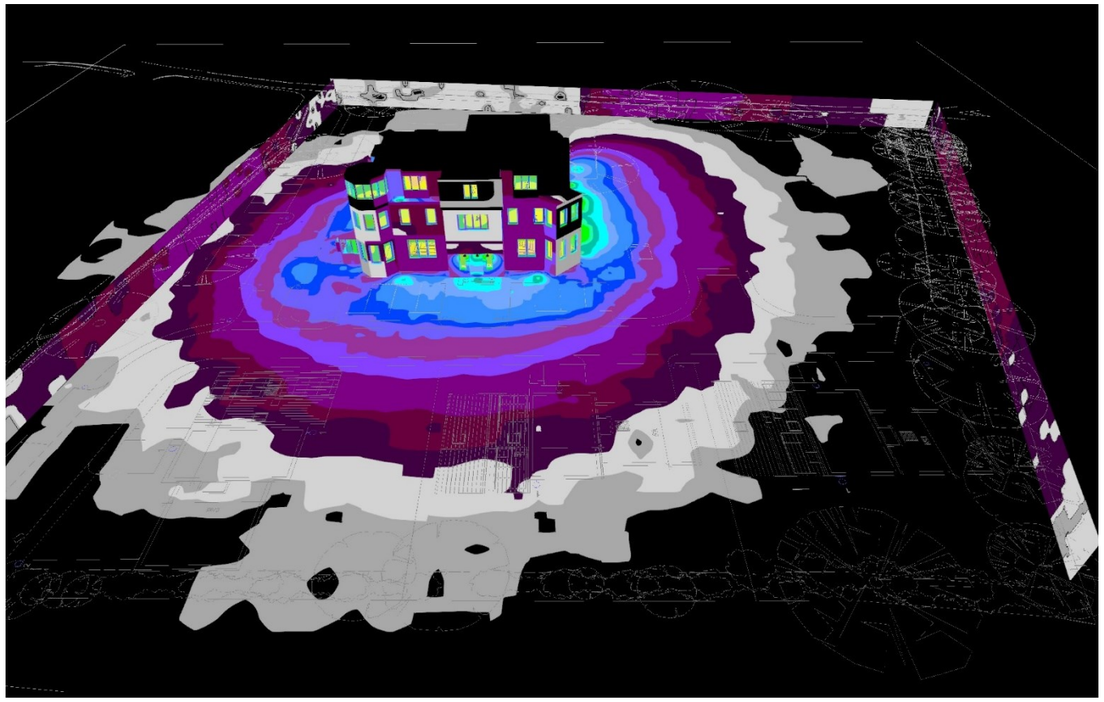
Client	Institution of Engineering Designers
Project	Courtleigh
Title	Isoline Plan As Proposed
Drawn by: RR	Date: Jan 2024
Drawing number: 218-P-0024	Revision: -
Approved:	Scale: 1:250 @ A1 1:500 @ A3
Purpose: Planning	

3.7 Appendix Item 7 – Calculation Result Images

Existing Site Calculation Model

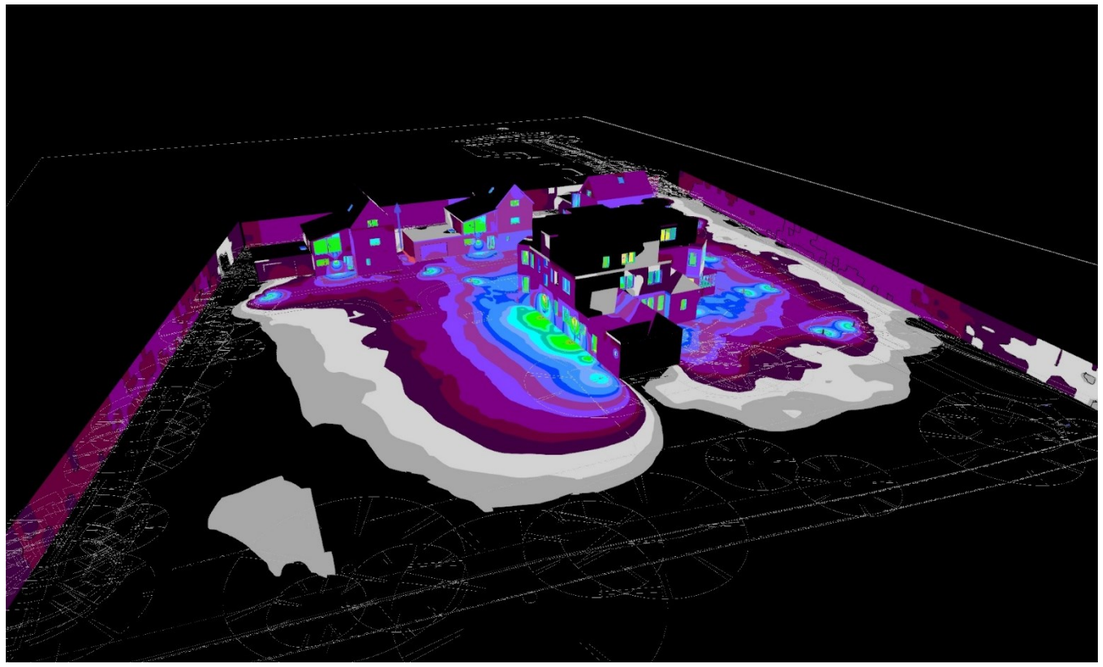


View north

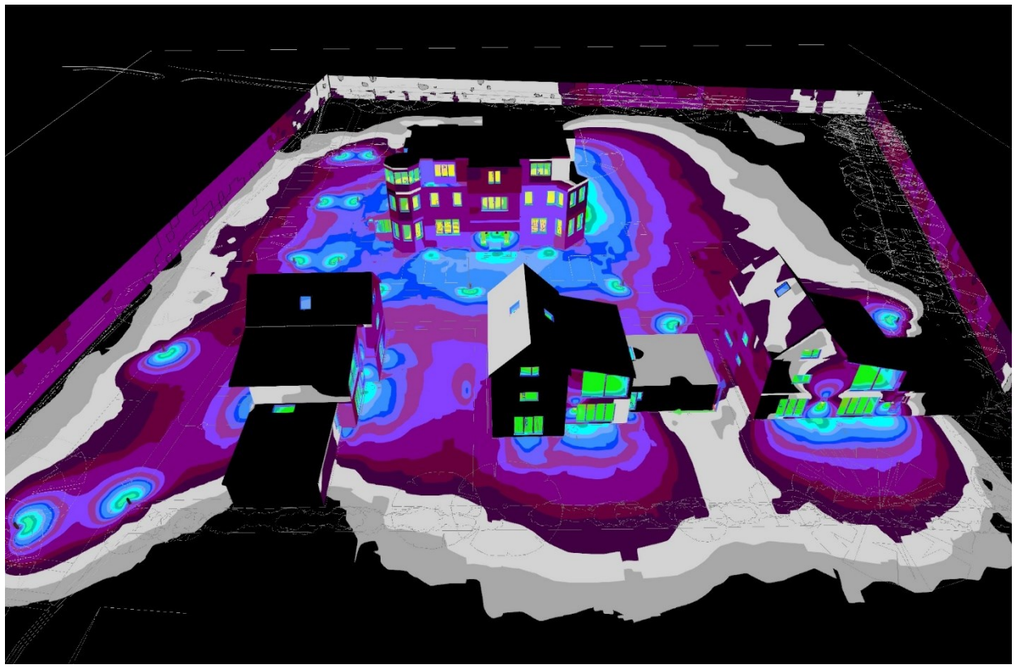


View south

Proposed Site Calculation Model



View north



View south

3.8 Appendix Item 8 – Vertical Calculation Plane Results

The Vertical Plan Calculation Objects for the existing and proposed site have been presented together for direct comparison and appraisal.

Existing Site Calculation Objects

Project

DIALux

Site 1 (Light scene 1)
Calculation objects



Site 1 (Light scene 1)
Calculation objects

Calculation surfaces

Properties	Ē	E_{min}	E_{max}	U_0 (g_1)	g_2	Index
Vertical Plane 1 Perpendicular illuminance (adaptive) Height: 2.000 m	0.62 lx	0.15 lx	1.37 lx	0.24	0.1[illegible]	CG1
Vertical Plane 4 Perpendicular illuminance (adaptive) Height: 2.000 m	0.69 lx	0.10 lx	1.47 lx	0.14	0.068	CG2
Vertical Plane 2 Perpendicular illuminance (adaptive) Height: 2.000 m	0.72 lx	0.29 lx	0.97 lx	0.40	0.30	CG3
Vertical Plane 3 Perpendicular illuminance (adaptive) Height: 2.000 m	0.63 lx	0.28 lx	0.8[illegible] lx	0.44	0.3[illegible]	CG4

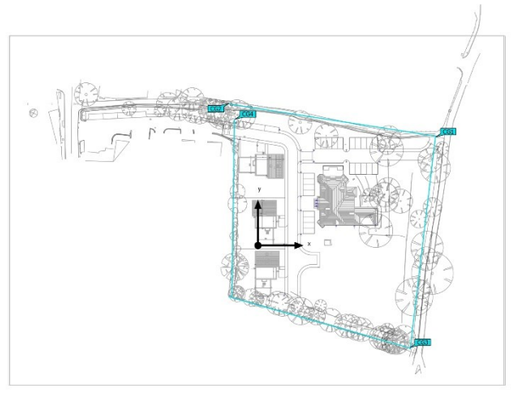
Utilisation profile: DIALux presenting (5.[illegible].4 Standard: Outdoor transportation areas)

Proposed Site Calculation Objects

Project

DIALux

Site 1 (Light scene 1)
Calculation objects



Site 1 (Light scene 1)
Calculation objects

Calculation surfaces

Properties	Ē	E_{min}	E_{max}	U_0 (g_1)	g_2	Index
Vertical Plane 1 Perpendicular illuminance (adaptive) Height: 2.000 m	0.63 lx	0.26 lx	1.29 lx	0.41	0.20	CG1
Vertical Plane 4 Perpendicular illuminance (adaptive) Height: 2.000 m	[illegible].10 lx	0.2[illegible] lx	1.82 lx	0.19	0.12	CG2
Vertical Plane 2 Perpendicular illuminance (adaptive) Height: 2.000 m	0.79 lx	0.030 lx	1.15 lx	0.038	0.026	CG3
Vertical Plane 3 Perpendicular illuminance (adaptive) Height: 2.000 m	[illegible].46 lx	0.22 lx	99.6 lx	0.15	0.002	CG4

Utilisation profile: DIALux presenting (5.[illegible].4 Standard: Outdoor transportation areas)

Existing Site Calculation Model – Vertical Plane 1

Project

DIALux

Site 1 (Light scene 1)
Vertical Plane 1





Properties	Ē	E_{min}	E_{max}	U_0 (g_1)	g_2	Index
Vertical Plane 1 Perpendicular illuminance (adaptive) Height: 2.000 m	0.62 lx	0.15 lx	1.37 lx	0.24	0.11	CG1

Utilisation profile: DIALux presetting (EN 12464-2 Standard (outdoor transportation areas))

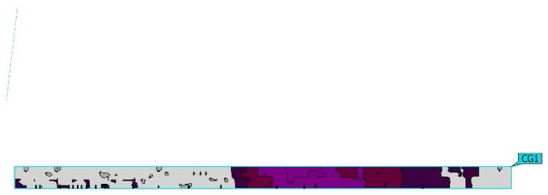
1

Proposed Site Calculation Model – Vertical Plane 1

Project

DIALux

Site 1 (Light scene 1)
Vertical Plane 1





Properties	Ē	E_{min}	E_{max}	U_0 (g_1)	g_2	Index
Vertical Plane 1 Perpendicular illuminance (adaptive) Height: 2.000 m	0.63 lx	0.26 lx	1.29 lx	0.41	0.20	CG1

Utilisation profile: DIALux presetting (EN 12464-2 Standard (outdoor transportation areas))

1

Existing Site Calculation Model – Vertical Plane 2

Project

DIALux

Site 1 (Light scene 1)

Vertical Plane 2



Properties	$\bar{E}$	E_{min}	E_{max}	U_0 (g_1)	g_2	Index
Vertical Plane 2 Perpendicular illuminance (adaptive) Height: 2.000 m	0.72 lx	0.29 lx	0.97 lx	0.40	0.30	CG3

Utilisation profile: DIALux presenting (5.1.4 Standard (outdoor transportation area))

1

Proposed Site Calculation Model – Vertical Plane 2

Project

DIALux

Site 1 (Light scene 1)

Vertical Plane 2



Properties	$\bar{E}$	E_{min}	E_{max}	U_0 (g_1)	g_2	Index
Vertical Plane 2 Perpendicular illuminance (adaptive) Height: 2.000 m	0.79 lx	0.030 lx	1.15 lx	0.038	0.026	CG3

Utilisation profile: DIALux presenting (5.1.4 Standard (outdoor transportation area))

1

Existing Site Calculation Model – Vertical Plane 3

Project

DIALux

Site 1 (Light scene 1)
Vertical Plane 3





Properties	Ē	E_{min}	E_{max}	U_0 (g_1)	g_2	Index
Vertical Plane 3 Perpendicular illuminance (adaptive) Height: 2.000 m	0.63 lx	0.28 lx	0.81 lx	0.44	0.35	CG4

Utilisation profile: DIALux preselling (EN 12464 Standard (outdoor transportation area))

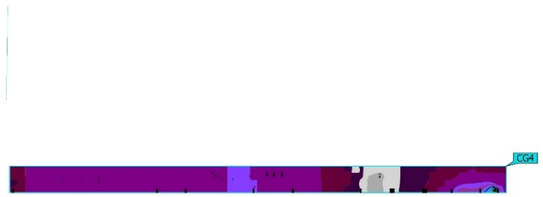
1

Proposed Site Calculation Model – Vertical Plane 3

Project

DIALux

Site 1 (Light scene 1)
Vertical Plane 3





Properties	Ē	E_{min}	E_{max}	U_0 (g_1)	g_2	Index
Vertical Plane 3 Perpendicular illuminance (adaptive) Height: 2.000 m	7.46 lx	0.22 lx	99.6 lx	0.15	0.002	CG4

Utilisation profile: DIALux preselling (EN 12464 Standard (outdoor transportation area))

1

Existing Site Calculation Model – Vertical Plane 4

Project

DIALux

Site 1 (Light scene 1)
Vertical Plane 4





Properties	Ē	E_{min}	E_{max}	U_0 (g_1)	g_2	Index
Vertical Plane 4 Perpendicular illuminance (adaptive) Height: 2.000 m	0.69 lx	0.10 lx	1.47 lx	0.14	0.068	CG2

Utilisation profile: DIALux preselling (EN 12464 Standard (outdoor transportation area))

Proposed Site Calculation Model – Vertical Plane 4

Project

DIALux

Site 1 (Light scene 1)
Vertical Plane 4





Properties	Ē	E_{min}	E_{max}	U_0 (g_1)	g_2	Index
Vertical Plane 4 Perpendicular illuminance (adaptive) Height: 2.000 m	1.10 lx	0.21 lx	1.82 lx	0.19	0.12	CG2

Utilisation profile: DIALux preselling (EN 12464 Standard (outdoor transportation area))

3.9 Appendix Item 9 – Luminaires

Existing Building Luminaires

Project

DIALux

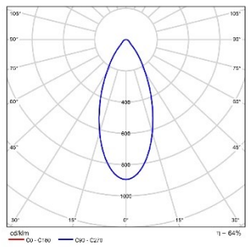
Product data sheet

FLOS S.p.A. - EASY KAP 105

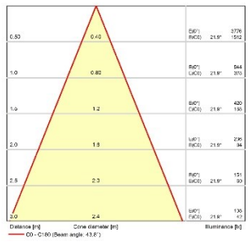


Article No.	03.4450.B´/QR-CBC/50W/´0°24°36° 60°
P	50.0 W
Φ_{Lamp}	´054 lm
$\Phi_{Luminaire}$	670 lm
η	63.55 %
Luminous efficacy	´3.4 lm/W
CCT	3000 K
CRI	99

Luminaire for recessed mounting on ceilings for halogen, metal halide and LED lamps. The Easy Kap version, incorporates body injected in zamak with liquid paint finish and outer diameter of ´105mm with opal glass diffuser. Pre-frame instalation not necessary. The Kap version incorporates body injected in aluminium with liquid paint finish. It is available in two sizes: 105mm and ´145mm, always in No Trim installation. Main view made of anodized gloss aluminium with diffuser element made in borosilicate glass. Lampholders with heatsink element in injected aluminium and embedment ring of the optical body in thermoplastic material. Finishings: white (B´), matt gold (GL), blue (BU) and black (74).



Polar LDC



Cone diagram

Project

DIALux

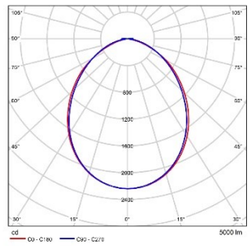
Product data sheet

LEDVANCE - FLOODLIGHT COMPACT SENSOR 50W 840 SYM 100 BK



Article No.	4058075575325
P	50.0 W
$\Phi_{Luminaire}$	5000 lm
Luminous efficacy	´00.0 lm/W
CCT	4000 K
CRI	80

Sensor floodlight with up to 5000 lm light output. Product features: Flexible motion and daylight sensor. Sensor with 350° pan and ´80° tilt. Reflector-based, symmetric light distribution with ´00° x ´00° beam angle. Mounting bracket with 30° angle and wide rotation area. Pre-installed, flexible 1 m cable (H05RN-F), wrapped 3 x 1.0 mm² single wires. Product benefits: Robust, yet light and compact design. Demand optimized illumination due to flexible and programmable sensor. Easy adjustment of sensor range, daylight detection and hold time. Always-on override, activated via special mains switching pattern. Safe and very uniform illumination, due to frosted and tempered glass diffuser. No upper light output ratio (ULOR 0%) when mounted at 0° tilt. Energy savings of up to 90 % compared to halogen lamp floodlights. 3 years guarantee. Areas of application: Replacement for floodlights with halogen lamps. Outdoor use (IP65). Public areas. Building facades. Gardens, balconies and other outdoor areas. Construction areas.



Polar LDC

Project

DIALux

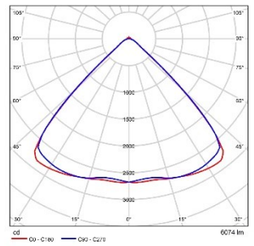
Product data sheet

Regiolux - SDT-System IP20-SDGOB/1500 LED - Geräteträger fix Individual.Lens.Optic | Device mount fix Individual.Lens.Optic

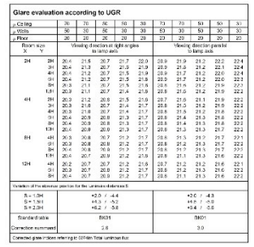


Article No.	6000.37W.840.DALI2 vw RAL 9016 (SDT_1500_IP20_vw +´85´0206600)
P	37.4 W
$\Phi_{Luminaire}$	6074 lm
Luminous efficacy	´62.4 lm/W
CCT	4000 K
CRI	80

SDT-Quick-fit mounting system, Device mount, Modullänge/1500. Device mount made of a galvanised, profiled steel sheet; surface coated with polyester resin. Tool-free attachment with design-integrated pressure caps guarantee protection against theft and dismantling. Housing colour traffic white RAL 9016; Direct, wide-beam light distribution using individual LED lens optic made of PMMA plastic. The single lens optics ensure absolute ease of assembly and are simple to maintain thanks to the easily cleaned surface. The inner rhythm of the 3-row single lens arrangement and the overriding device mount are perfectly in tune to guarantee a homogeneous appearance in the object. Heat-resistant cables including fixed 5-pole rapid installation plug connector with tool-free phase preselection and locating finger. They are exchangeable, permit modernisation and reliably prolong the service life of the overall system. Dimensions (LxWxH/DxH): 1537 mm x 95mm x 33mm Beam angle: 95° (C0) / 95 ° (C90) Placement: LED, Colour rendering/ Light colour CRI ≥ 80 / 4000K Colour tolerance: 3SDCM Photobiological safety (Luminaire): RG1 LED service life: 50000h L80/ B10 (Tq 40°C) Luminaire luminous flux: 6074lm Luminaire luminous efficiency: ´62lm/W Controller: Electronic driver DALI2 (1 pcs.) System output: 37W Energy efficiency class/light source: D Mains voltage: 230V Mains frequency: 50Hz Impact resistance (IK rating): IK03 (-20°C bis 40°C)



Polar LDC



UGR diagram (SHR: 0.25)

Product data sheet

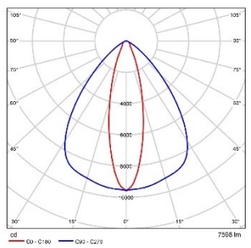
Regiolux - SDT-System IP20-SDGOB/1500 LED - Geräteträger fix Individual.Lens.Optic | Device mount fix Individual.Lens.Optic

Ambient temperatur: ta -20°C to 40°C Special properties: Ready for IoT UGR lat./long.: 20.0 / 20.4 Certification mark: IP20, Protection class I, ENEC10 VDE, F, HACCP DIN10500/Food/IFS-application-related suitability/BRC, Indoor, CE: Regiolux GmbH Type: SDGOB /1500 LED 6000 840 DALI2 vw RAL 9016 Article number: ´8510206600 Product deep link: https://www.regiolux.de/en/article/18510206600 5 years warranty on all LED luminaires.

Product data sheet

Regiolux - SRT-System IP64-SRGSVCT/1500 LED - Geräteträger variabel Central.Line.Optic | Device mount variable Central.Line.Optic

Article No.	8000-4800 46W 830 IP64 LIM vw RAL 9016 (SRT +´9527004230)
P	46.´ W
$\Phi_{Luminaire}$	7598 lm
Luminous efficacy	´64.8 lm/W
CCT	3000 K
CRI	80



Polar LDC

SRT-Quick-fit mounting system, IP 64 variable device mount, Modullänge/1500. Device mounts made of galvanised, profiled sheet steel with zinc coating combined with polyester resin paint guarantees good corrosion protection; tool-free attachment with design-integrated push locks ensure protection against theft and disassembly. Integrated end faces made of plastic with sealing lips and an all-round closed seal to the support rail for a protection type up to IP54. Variable position on the support rail. Housing colour traffic white RAL 9016; Direct, narrow-beam light distribution using the Central.Line.Optic made of PMMA plastic. The lens optics have a transparent seal, ensure absolute ease of assembly and are simple to maintain thanks to the easily cleaned surface. The compact 1-row arrangement of the lenses ensures that the dots merge into a line with a homogeneous appearance in the object. Electrical connection by means of a 1m connection cable for variable device mount positioning with a 3-pin, quick-fit plug connector in the light run with free phase pre-selection. The device mount can be adjusted variably in steps with a multi-lumen driver (default setting: maximum lumen output). They are exchangeable, permit modernisation and reliably prolong the service life of the overall system. Dimensions (LxWxH/ DxH): 1531mm x 55mm x 37mm Beam angle: 25° (C0) / 100 ° (C90) Placement: LED. Colour rendering/Light colour CRI ≥ 80 / 3000K

Glare evaluation according to UGR

x Ceiling		70	70	50	50	30	70	70	50	50	30	30
x Walls		50	30	50	30	30	50	30	50	30	30	30
x Floor		20	20	20	20	20	20	20	20	20	20	20
Room size X	Y	Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	21.7	24.7	21.0	24.0	26.2	23.0	21.3	23.3	24.2	24.8	
	3H	20.8	23.8	20.2	23.2	25.4	22.1	20.5	22.4	24.0	24.5	
	4H	20.8	23.8	20.2	23.2	25.4	21.5	19.9	21.8	23.7	24.3	
	6H	20.8	23.8	20.2	23.2	25.4	21.3	19.7	21.6	23.6	24.2	
	8H	20.8	23.8	20.2	23.2	25.4	21.3	19.7	21.6	23.6	24.2	
	12H	20.8	23.8	20.2	23.2	25.4	21.3	19.7	21.6	23.6	24.2	
4H	2H	21.7	24.7	21.0	24.0	26.2	23.0	21.3	23.3	24.2	24.8	
	3H	20.8	23.8	20.2	23.2	25.4	22.1	20.5	22.4	24.0	24.5	
	4H	20.8	23.8	20.2	23.2	25.4	21.5	19.9	21.8	23.7	24.3	
	6H	20.8	23.8	20.2	23.2	25.4	21.3	19.7	21.6	23.6	24.2	
	8H	20.8	23.8	20.2	23.2	25.4	21.3	19.7	21.6	23.6	24.2	
	12H	20.8	23.8	20.2	23.2	25.4	21.3	19.7	21.6	23.6	24.2	
8H	4H	19.9	22.9	19.3	22.3	24.5	21.3	19.5	21.4	23.3	24.0	
	6H	19.9	22.9	19.3	22.3	24.5	21.1	19.3	21.2	23.2	23.8	
	8H	19.9	22.9	19.3	22.3	24.5	21.1	19.3	21.2	23.2	23.8	
	12H	19.9	22.9	19.3	22.3	24.5	21.1	19.3	21.2	23.2	23.8	
12H	4H	19.8	22.8	19.2	22.2	24.4	21.2	19.4	21.3	23.2	23.9	
	6H	19.8	22.8	19.2	22.2	24.4	21.0	19.2	21.1	23.1	23.7	
	8H	19.8	22.8	19.2	22.2	24.4	21.0	19.2	21.1	23.1	23.7	
	12H	19.8	22.8	19.2	22.2	24.4	21.0	19.2	21.1	23.1	23.7	

Variation of the reference position for the Luminous distances S

S = 1.5H	+0.4 / -0.5	+0.2 / -0.5
S = 1.5H	+0.9 / -0.8	+1.4 / -1.2
S = 2.0H	+1.3 / -0.5	+2.3 / -2.3
Standard table	B636	B601
Correction summand	0.9	5.2

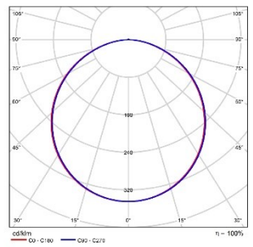
Corrected glare index referring to 3500lm Total Luminous flux

UGR diagram (SHR: 0.25)

Product data sheet

Resistex - POLYEVO DALI 4000K GRAPHITE

Article No.	88301 7
P	25.8 W
Φ_{Lamp}	2942 lm
$\Phi_{Luminaire}$	2942 lm
η	´00.00 %
Luminous efficacy	´´4.0 lm/W
CCT	4000 K
CRI	85



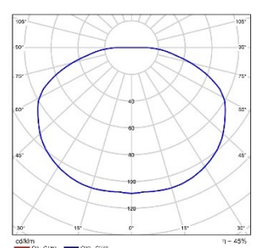
Polar LDC

Luminaire RESISTEX POLYEVO 2942lm DALI 4000K Réf. 883017 Hublot plat design épuré sans vis apparente Hublot équipé d'une platine LED SMD , Graphite, IP 65, IK 10, Vis antivandale, Diam. 320mm x Haut. 75mm, Flux restitué 2942lm, Conso. système 25.8W, Efficacité lumineuse produit complet 1´3lm/ W, LM80 L80H10 > 60000 heures (Ta25°C), SVM : 0.00%, PstLM : 0.001, Diffuseur Polycarbonate Direct/Symétrique Opalescent, Corps en Polycarbonate, IRC 85, Garantie 5 ans, Empreinte carbone 2.32 gCO2/h, Indice de réparabilité : 9,2

Product data sheet

WE-EF - ALA359-CFM18

Article No.	624-0031
P	20.0 W
Φ_{Lamp}	´200 lm
$\Phi_{Luminaire}$	541 lm
η	45.´2 %
Luminous efficacy	27.´ lm/W
CCT	2700 K
CRI	82



Polar LDC

IP55. Surface mounted wall luminaire. Suitable for installation over 4" recessed junction box.

Glare evaluation according to UGR

x Ceiling		70	70	50	50	30	70	70	50	50	30	30
x Walls		50	30	50	30	30	50	30	50	30	30	30
x Floor		20	20	20	20	20	20	20	20	20	20	20
Room size X	Y	Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	15.8	18.4	14.2	16.7	18.9	13.9	15.4	14.2	15.7	15.6	
	3H	16.9	17.2	15.2	15.9	17.9	15.0	13.3	15.2	17.6	17.5	
	4H	17.4	16.7	15.8	15.3	16.9	15.7	12.9	16.0	18.0	18.0	
	6H	17.4	16.7	15.8	15.3	16.9	15.8	12.8	17.4	18.7	19.0	
	8H	17.7	16.8	16.1	15.2	16.9	15.8	12.7	16.4	18.1	19.2	
	12H	17.9	16.7	16.3	15.1	16.8	15.8	12.6	16.1	18.0	19.4	
4H	2H	14.7	16.1	15.1	16.4	18.7	14.7	16.1	15.1	18.4	18.7	
	3H	17.0	16.1	17.4	16.4	18.8	17.0	15.1	17.4	19.4	19.8	
	4H	17.9	15.8	18.3	16.1	17.9	18.0	14.5	18.3	19.8	19.7	
	6H	18.1	15.7	18.7	16.0	17.8	18.2	14.4	18.2	19.7	20.0	
	8H	18.1	15.8	18.8	15.9	17.8	18.3	14.3	18.2	19.6	20.1	
	12H	18.1	15.8	18.8	15.9	17.8	18.3	14.3	18.2	19.6	20.1	
8H	4H	18.3	16.2	17.8	16.9	18.9	18.3	14.7	18.4	19.6	20.0	
	6H	18.7	15.7	18.2	16.5	18.7	18.7	14.2	18.6	19.9	20.5	
	8H	18.8	15.6	18.3	16.3	18.6	18.9	14.0	18.8	19.9	20.7	
	12H	18.8	15.6	18.4	16.2	18.6	19.0	13.9	18.9	19.9	20.8	
12H	4H	19.1	16.2	18.6	16.9	18.9	19.2	14.7	19.2	19.9	20.6	
	6H	19.4	15.7	19.0	16.5	18.7	19.6	14.2	19.5	20.2	21.1	
	8H	19.5	15.6	19.1	16.3	18.6	19.8	14.0	19.7	20.2	21.3	
	12H	19.5	15.6	19.2	16.2	18.6	19.9	13.9	19.8	20.2	21.4	

Variation of the reference position for the Luminous distances S

S = 1.5H	+0.1 / -0.1	+0.1 / -0.1
S = 1.5H	+0.2 / -0.3	+0.1 / -0.2
S = 2.0H	+0.3 / -0.4	+0.2 / -0.4
Standard table	B636	B601
Correction summand	0.5	0.1

Corrected glare index referring to 3500lm Total Luminous flux

UGR diagram (SHR: 0.25)

Proposed Luminaires for residential dwelling interiors, exterior and site access and parking areas

Project

DIALux

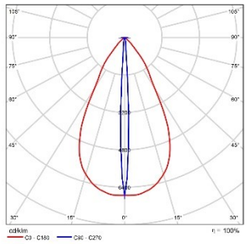
Product data sheet

ARCLUCE S.p.A. - TULA - 4W+3W - 275lm + 160lm - Ultra Wide Flood 88° - Elliptic 5°x57°

Arcluce



Article No.	0472026P-830
P	7.0 W
Φ_{Lamp}	435 lm
$\Phi_{Luminaire}$	435 lm
η	99.96 %



Polar LDC

IP DEGREE : IP66

IK RATING : IK07

ELECTRICAL INSULATION CLASS: I

LUMINAIRE

Die-cast aluminium body (EN 47100).

Double layer polyester powder paint resistant to corrosion and salt spray fog.

Silicone rubber gaskets.

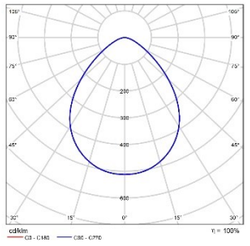
AISI 316 stainless steel external screws.

PMMA lenses for LEDs.

Opal PMMA screen or 5mm thermal-shock resistant tempered safety glass.

High quality LED sources characterized according to IES LM-80, with high color consistency <3SDCM and long useful life >60000 hours at L80.

It complies with standards EN 60598-1 and EN 60598-2-1.



Polar LDC

Product data sheet

ARCLUCE S.p.A. - TULA - 4W+3W - 275lm + 160lm - Ultra Wide Flood 88° - Elliptic 5°x57°

INSTALLATION

Wall mounted.

Waterproof grommet for single cable entry.

Die-cast aluminium base plate (EN 47100).

Project

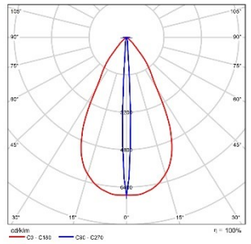
DIALux

Product data sheet

ARCLUCE S.p.A. - TULA - 4W+3W - 275lm + 160lm - Ultra Wide Flood 88° - Elliptic 5°x57°

Luminous emittance 1

Fitting	1x Indirect Source
P	3.0 W
Φ_{Lamp}	160 lm
$\Phi_{Luminaire}$	160 lm
η	99.96 %
Luminous efficacy	53.3 lm/W
CCT	3000 K
CRI	80



Polar LDC

Project

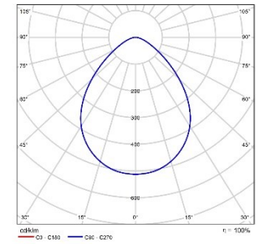
DIALux

Product data sheet

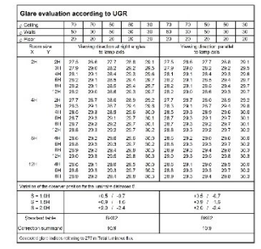
ARCLUCE S.p.A. - TULA - 4W+3W - 275lm + 160lm - Ultra Wide Flood 88° - Elliptic 5°x57°

Luminous emittance 2

Fitting	1x Direct Source
P	4.0 W
Φ_{Lamp}	275 lm
$\Phi_{Luminaire}$	275 lm
η	99.97 %
Luminous efficacy	68.7 lm/W
CCT	3000 K
CRI	80



Polar LDC



UGR diagram (SHR: 0.25)

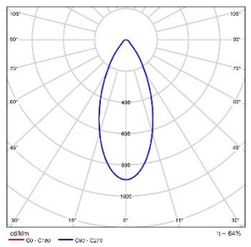
Product data sheet

FLOS S.p.A. - EASY KAP 105

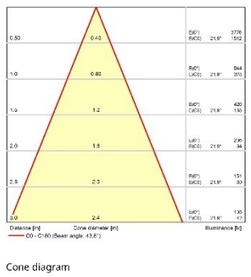


Article No.	03.4450.B´/QR-CBC/50W/10°24°36° 60°
P	50.0 W
Φ_{Lamp}	´054 lm
$\Phi_{Luminaire}$	670 lm
η	63.55 %
Luminous efficacy	´3.4 lm/W
CCT	3000 K
CRI	99

Luminaire for recessed mounting on ceilings for halogen, metal halide and LED lamps. The Easy Kap version, incorporates body injected in zamak with liquid paint finish and outer diameter of ´105mm with opal glass diffuser. Pre-frame instalation not necessary. The Kap version incorporates body injected in aluminium with liquid paint finish. It is available in two sizes: 105mm and ´145mm, always in No Trim installation. Main view made of anodized gloss aluminium with diffuser element made in borosilicate glass. Lampholders with heatsink element in injected aluminium and embedment ring of the optical body in thermoplastic material. Finishings: white (B´), matt gold (GL), blue (BU) and black (74).



Polar LDC



Cone diagram

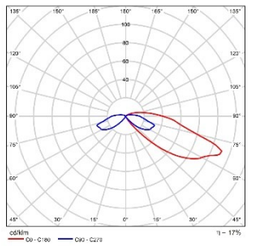
Product data sheet

WE-EF - KTY234 [C60] IP66:LED-6/18W/2,7K + LS180



Article No.	´´4-0176
P	2´.0 W
Φ_{Lamp}	2460 lm
$\Phi_{Luminaire}$	430 lm
η	´7.46 %
Luminous efficacy	20.5 lm/W
CCT	2´00 K
CRI	80

IP66, Class I, IK´0. Marine-grade, all aluminium construction. 5CE superior corrosion protection including PCS hardware. Silicone CCG® Controlled Compression Gasket. Polycarbonate lens. Integral EC electronic converter in thermally-separated compartment. CAD-optimised indirect optics for superior illumination and glare control. Factory installed LED circuit board. Pre-wired post complete with cable connecting box and fuse for mains connection.



Polar LDC

Reference

Section 4.0

4.1 Primary Sources and Bibliography

Wiltshire Core Strategy

NPPF (2023)

Planning Practice Guidance (PPG)

The Bats Special Areas of Conservation (SAC) planning guidance document published by Wiltshire Council and Natural England (2015)

Guidance Note 8: Bats and Artificial Lighting in the UK published by The Bat Conservation Trust and the Institute of Lighting Professionals (ILP) (2018)

Assessment of Ecological Impacts (ECS Ltd)

Conservation of Habitats and Species Regulations 201730 (as amended)

The Wildlife & Countryside Act 1981 (as amended)

4.2 Credits and Acknowledgements

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DIALux Evo Lighting Software

4.3 Issue Log

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Issue History

Rev.	Date		Comments
-	09-02-2024		