



BROWN FISHER
ENVIRONMENTAL
REPORTS 4 PLANNING



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LIGHTING IMPACT ASSESSMENT

Land adjacent to Telephone Exchange
Middle Stoke
Limpley Stoke
Wiltshire
BA2 7GF

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Report Ref: 267103LIA – P9772-LR1-V2

Report Date: 27th April 2026



DATE ISSUED: 27TH APRIL 2026

REPORT REFERENCE P9772-LR1-V2

BROWN FISHER ENVIRONMENTAL

LIGHTING IMPACT ASSESSMENT REPORT

**LAND ADJACENT TO TELEPHONE EXCHANGE,
MIDDLE STOKE, LIMPLEY STOKE, WILTSHIRE**

REPORT VERSION CONTROL:

Document Reference	Date	Report Prepared by	Report Checked / Authorised by
P9772-LR1-V2	27/04/26	A. D. Anderson, IEng MILP	M. J. Malone, MIOA

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1 INTRODUCTION

- 1.1.1 By instruction from Reports4Planning, on behalf of Chris Foulkes ('the client'), NoiseAir was commissioned to undertake a lighting impact assessment (LIA) to accompany a planning application (Ref: PL/2024/09844) in support of a proposed development, east of the A36 (Warminster Road), on Middle Stoke, Limpley Stoke, BA2 7GG, herein referred to as the 'Site'.
- 1.1.2 It is understood that the Client is seeking to erect a self-build split level dwelling with a detached garage. The site of the proposed dwelling is situated on land adjacent to an existing telephone exchange. The proposed new build has the potential to impact the surrounding woodland habitat. As such, an assessment report on the impact of the external/internal light spill in the surrounding area is required.
- 1.1.3 This report assesses, in terms of artificial lighting, the likely effects of outdoor lighting at the proposed site. The lighting assessment includes information on the baseline lighting conditions within the area, quantitatively assesses the potential effects of the proposed floodlighting on surrounding sensitive receptors and if required considers possible mitigation measures to reduce potential light spill into neighbouring properties and ecological receptors, upward light (which can create sky glow) and visual source intensity (glare).
- 1.1.4 It is proposed that the photometric accuracy model we received is based on precise calculations using calibrated lamps, luminaires, and their specific configurations. In practical applications, however, gradual and unavoidable variations may occur. For this reason, the provided data cannot be guaranteed. This limitation of liability applies regardless of the legal basis and includes both direct and consequential damages that may affect users or third parties.

1.2 Disclaimer

- 1.2.1 NoiseAir has completed this report for the benefit of the individuals referred to in paragraph 1.1.1 and any relevant statutory authority which may require reference in relation to approvals for the proposed development. Other third parties should not use or rely upon the contents of this report unless explicit written approval has been gained from NoiseAir.
- 1.2.2 NoiseAir accepts no responsibility or liability for:
- The consequence of this documentation being used for any purpose or project other than that for which it was commissioned; and,

- The issue of this document to any third party with whom approval for use has not been agreed.

1.3 Site Location, Description and Context

1.3.1 The site is located within the small settlement of Limpley Stoke 4 km south-east of Bath, which consists of an area of sloping land, with mainly bramble and tall ruderal herb dominated vegetation. It lies on the northern side of Middle Stoke and is surrounded by several residential dwellings. Grid Reference (NGR): 51.34610, -2.31725 and is in the jurisdiction of Wiltshire Council.

1.3.2 The proposed site is currently bound by:

- Woods Hill to the north, with the major source of light coming from the existing 5 m high street lighting columns along its length. Between the site and Woods Hill there is a playground obscured by trees and hedges. A residential dwelling is situated further north.
- Crowe Hill to the east, with no major source of light. Between the Site and Crowe Hill there are several residential dwellings, trees and hedges.
- Middle Stoke to the South, with the major source of light coming from the existing 5 m high street lighting columns along its length. Further south is a small bed and breakfast (Wood Hill) and several residential dwellings.
- Middle Stoke to the west which runs in a southerly direction. The major source of light is coming from the existing 5 m high street lighting columns along its length. Further west lies the A36 (Warminster Road). There are also several residential dwellings opposite the Site.
- The area is predominately suburban with one prominent B road running north to south through the area. There are several smaller roads leading into sparsely populated residential areas.

1.3.3 **Figure 1** shows an aerial photograph of the site with respect to the local area and its context. The site boundary is highlighted in red.

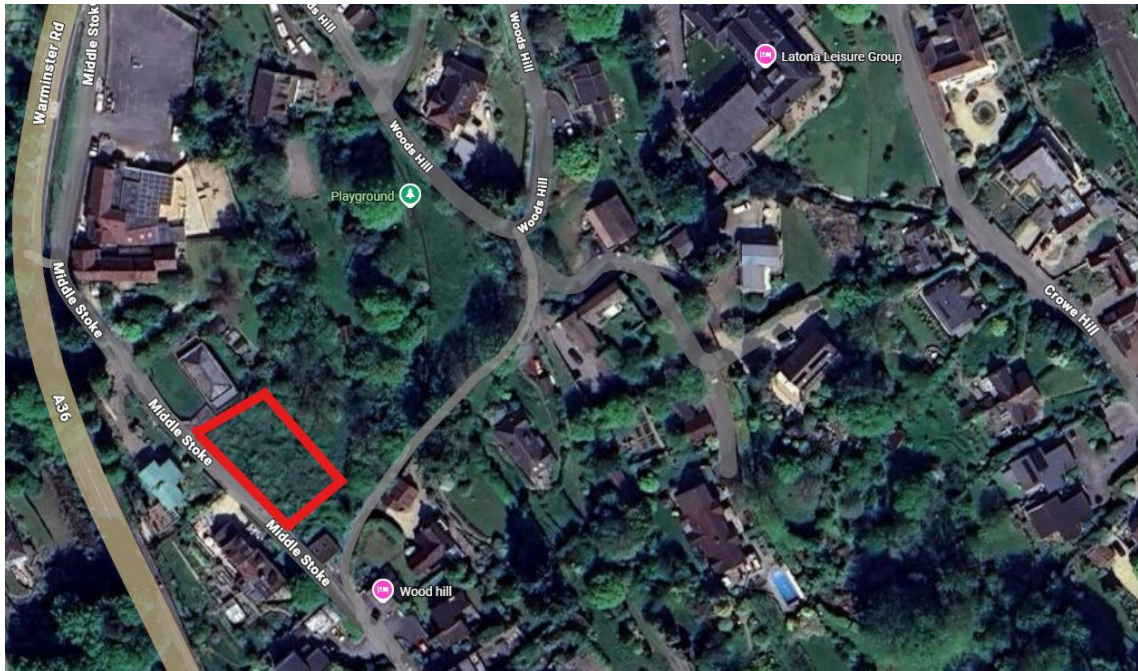


Figure 1: Site aerial photograph.

1.4 Development Proposals

- 1.4.1 Development proposals outline the erection of a self-build split level dwelling with a detached garage. The site of the proposed dwelling is situated on land adjacent to an existing telephone exchange. The Site is located within Wiltshire Council's 'consultation zones' for several species of bats, specifically the Greater and Lesser Horseshoe Bat.
- 1.4.2 The proposed site layout is presented in **Figure 2**.

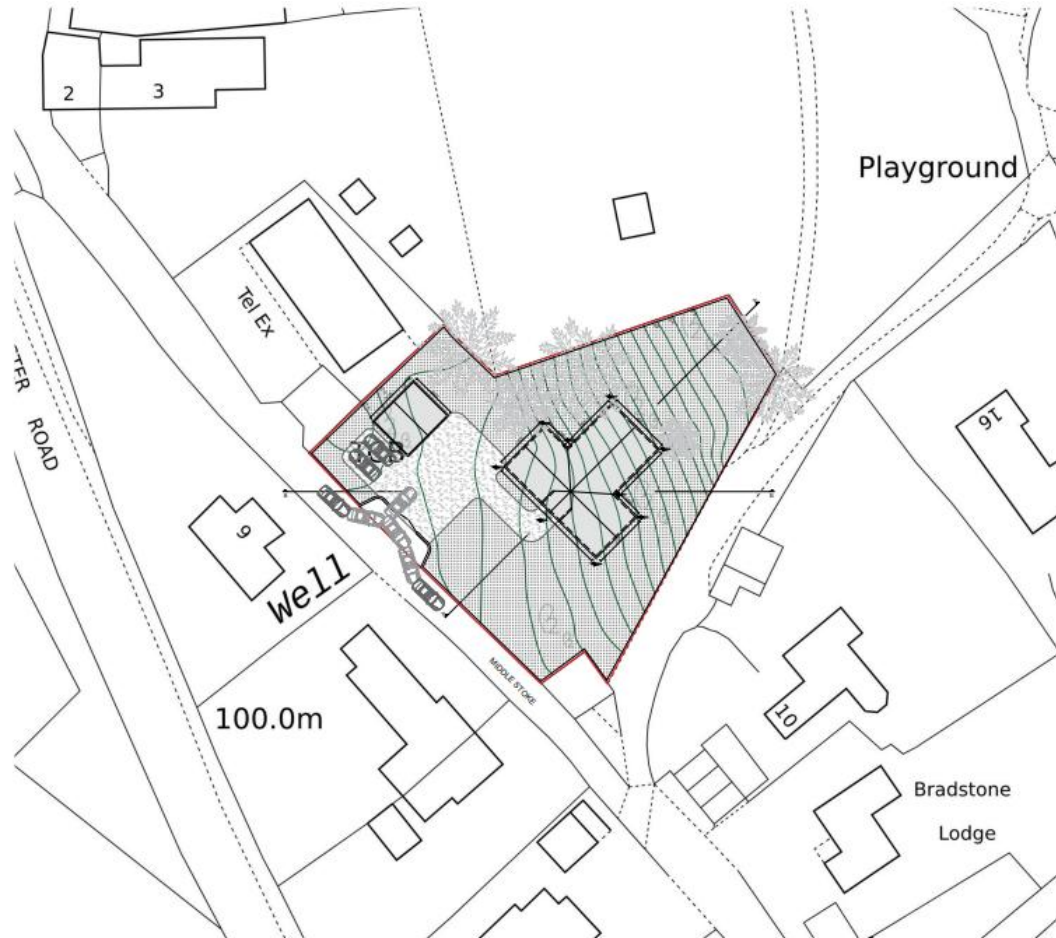


Figure 2: Proposed Site Layout.

2 POLICY AND GUIDANCE

2.1 Planning Guidance and Lighting

2.1.1 This lighting report has been prepared in support of a proposed planning application and therefore it is considered that reference should be made to the appropriate planning guidance documentation, specifically:

- National Planning Policy Framework (NPPF), 2024;
- National Planning Practice Guidance – Lighting, 2019;

2.1.2 A summary of the relevant planning documentation and its relevance with respect to lighting is provided below.

2.2 National Planning Policy Framework [NPPF 2024]

2.2.1 The National Planning Policy Framework (NPPF), published in December 2024, sets out the governments planning policies for England and how they are expected to be applied and provides a framework for local plans. With regards to lighting, the following is stated:

- Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:
- Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

2.3 National Planning Practice Guidance - Lighting [PPG 2019]

2.3.1 This report also has taken into account the relevant questions the PPG advises on how to consider light within the planning system detailed below;

- What light pollution considerations does planning need to address?
- What factors can be considered when assessing whether a development proposal might have implications for light pollution?
- What factors are relevant when considering where light shines?
- What factors are relevant when considering when light shines?
- What factors are relevant when considering how much the light shines?
- What are relevant when considering possible ecological impacts of lighting?
- What other information is available that could inform approaches to lighting and help reduce light pollution?

2.4 Relevant British Standards & Design Mitigation

2.4.1 The most applicable British Standards for lighting that relates to the proposed development are:

- ILP Guidance Notes for the Reduction of Obtrusive Light (GNO1:2021)*
- BS 5489-1:2020 – Code of Practice for the Design of Road Lighting Part1: Lighting of roads and public amenity areas.
- BS EN 13201
- NPPF and Wiltshire Councils local planning policies on Lighting and Amenities
- Wildlife and Countryside Act 1981, where applicable

2.5 Relevant Institute of Lighting Professional Documents

2.5.1 The following Institute of Lighting Professional (ILP) guidance documents have been consulted with regard to lighting from the proposed development;

- PLG 04- Guidance on Undertaking Environmental Lighting Impact Assessments, ILP, 2013;
- Guidance Note 08/23 Bats and artificial lighting in the UK ILP, 2023
- ILP Guidance Notes for the Reduction of Obtrusive Light (GN01:2021)
- HSG38 (Lighting at Work) Outdoor/External Lighting Guidance
- CIBSE LG06 (The Exterior Environment)

3 ASSESSMENT METHODOLOGY

3.1 Introduction

3.1.1 A desk-top study has been undertaken to identify relevant legislation, planning policy and good practice guidance in relation to lighting. The methodology takes guidance from the Institution of Lighting Professionals PLG 04 document “Guidance on Undertaking Environmental Lighting Impact Assessments”. This sets out good practice which was followed during the assessment.

3.2 Methodology

3.2.1 Guidance notes produced by the Institution of Lighting Professionals are among the most commonly referenced guidance notes for good practice within the lighting design industry.

3.2.2 The methodology of this report is as follows:

- Identify the environmental zone of the site and surrounding sensitive receptors in accordance with ILP GN01/21 and PLG 04;
- Produce a detailed 3D model if required using industry-standard light modelling software and quantitatively assess the following parameters; light intrusion, source intensity and upward light spill/sky glow; and
- If required, consider possible mitigation measures to reduce potential light intrusion into neighbouring properties and ecological receptors, upward light (which can create sky glow) and visual source intensity (glare).

3.2.3 In accordance with Guidance Notes for the Reduction of Obtrusive Light, the following definitions are used to describe lighting effects in this assessment:

- Light intrusion – light intrusion into windows (the spilling of light beyond the boundary of a property which may cause a nuisance to others).
- Source intensity – how bright the source appears to an observer (uncomfortable brightness of the light source against a dark background which results in dazzling the observer, which may cause a nuisance to residents and a hazard to road users).
- Skyglow – a combination of direct upward light and indirect upward light, (the upward spill of light into the sky which can cause a glowing effect and is often seen above cities when viewed from a dark area). **Figure 3** illustrates the different types of intrusive light taken from Guidance Notes for the Reduction of Obtrusive Light; 2021 (ILP)

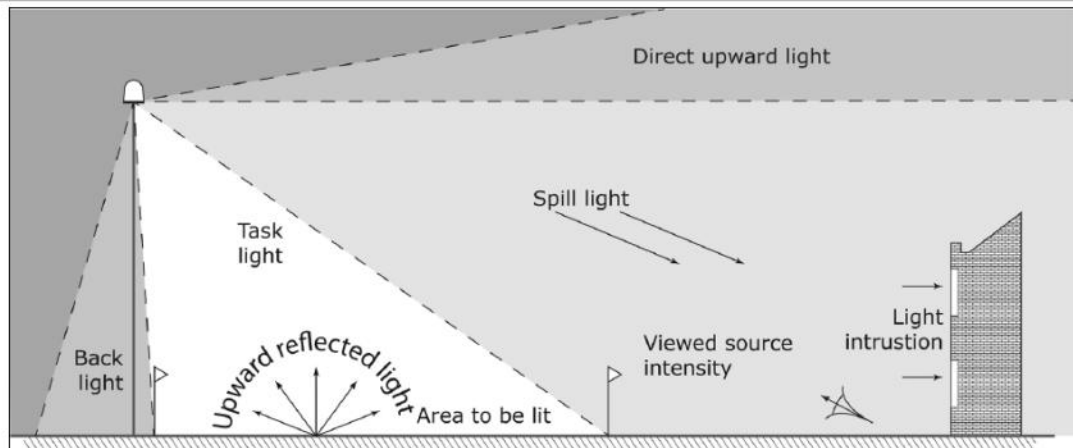


Figure 3: Light Obtrusion Characteristics.

3.2.4 The ILP Guidance Notes for the Reduction of Obtrusive Light: GN01/21 define environmental zones appropriate to the location of the proposed development shown in **Table 1**:

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, villages or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small-town centres of suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

3.2.5 The environmental zone appropriate for the proposed development is considered to be **Zone E2**. The obtrusive light limits defined in ILP GN01/21 are summarised in **Table 2**, **Table 3** and **Table 4**.

Application Conditions	Environmental Zone				
	E0	E1	E2	E3	E4
Pre-curfew (07:00-23:00)	n/a	2lx	5lx	10lx	25lx
Post-Curfew (23:00-07:00)	n/a	<0.1 lx*	1lx	2lx	5lx

*Note: If the installation is for public (road) lighting then this may be up to 1 lx.

3.2.6 The limits for the luminous intensity of bright luminaires are dependent on the viewing distance d , (between the observer and the bright luminaire(s)) and the projected area A_p , of the bright part of the luminaire in the direction of the observer. **Table 3** shows the maximum

values for the luminous intensity of luminaires in designated directions where views of bright surfaces of luminaires are likely to be a nuisance to occupants of premises or from positions where such views are likely to be maintained, that is, not momentary or short-term.

Table 3: Maximum values of vertical illuminance on properties						
Application Conditions	Luminaire Group (Projected area A_p in m^2)					
	$0 < A_p \leq 0.002$	$0.002 < A_p \leq 0.01$	$0.01 < A_p \leq 0.03$	$0.03 < A_p \leq 0.13$	$0.13 < A_p \leq 0.50$	$A_p > 0.5$
E0 Pre-Curfew	0	0	0	0	0	0
Post-Curfew	0	0	0	0	0	0
E1 Pre-Curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	2,500
Post-Curfew	0	0	0	0	0	0
E2 Pre-Curfew	0.57 d	1.3 d	2.5 d	5.0 d	10 d	7,500
Post-Curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	500
E3 Pre-Curfew	0.86 d	1.9 d	3.8 d	7.5 d	15 d	10,000
Post-Curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	1,000
E4 Pre-Curfew	1.4 d	3.1 d	6.3 d	13 d	26 d	25,000
Post-Curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	2,500
Aid in gauging A_p	2 to 5 cm	5 to 10 cm	10 to 20 cm	20 to 40 cm	40 to 80 cm	>80 cm
Geometric mean of diameter (cm)	3.2	7.1	14.1	26.3	56.6	>80
Corresponding A_p representative area (m^2)	0.0008	0.004	0.016	0.063	0.251	0.5>
Notes: d is the distance between the observer and the glare source in metres; A luminous intensity of 0 cd can only be realised by a luminaire with a complete cutoff in the designated directions; A_p is the apparent surface of the light source seen from the observer position For further information refer to Annex C of CIE 150 Upper limits for each zone shall be taken as those with column $A_p > 0.5$						

3.2.7 Based upon the criteria found in CIE 112 – Glare Evaluation System for Use Within Outdoor Sports and Area Lighting, **Table 4** contains a practical meaning for the Glare Rating to assess the impact of lights upon.

Table 4: Glare Assessment Criteria		
Glare Control Mark	Impact	Glare Rating
1	Unbearable	90
2		80
3	Disturbing	70
4		60
5	Just Admissible	50
6		40
7	Noticeable	30
8		20
9	Unnoticeable	10

- 3.2.8 Skyglow is the brightening of the night sky caused by artificial lighting resulting from the reflection of radiation (visible and non-visible); ULR (Upward Light Ratio) is the maximum permitted percentage of luminaire flux that goes directly into the sky. The ILP limits for ULR are shown in **Table 5** below.

Table 5: Maximum values of upward light ratio (ULR) of luminaries					
Application Conditions	Environmental Zone				
	E0	E1	E2	E3	E4
Upward Light ratio (ULR)/%	0	0	2.5	5	15

4 BASELINE CONDITION

4.1 Introduction

4.1.1 A desk top study has been undertaken, and due to the presence of light-sensitive species such as bats along the boundary of the site, it has been assumed for the basis of this report that the lighting levels along the boundary of the site will be <0.1 lux vertically. This is considered to be a conservative approach.

4.2 Receptors

4.2.1 Following a desk top survey of the site and having liaised with the project team the following light-sensitive receptors have been identified.

- Residential.
- Ecological

4.3 Residential Receptors

4.3.1 The following residential dwellings to the west (Middle Stoke), southwest (Middle Stoke) and south (Middle Stoke) of the Site have been identified and assessed based on their proximity to the site and the potential impact of the proposed lighting on it. Each receptor has been modelled at 4.0 metres to represent a first-floor bedroom view. The locations of these receptors are visually presented in **Figure 4** as well as below in **Table 6**. The site boundary is highlighted in red.

Table 6: Residential Receptor Location			
Receptor	Location Description	Height (m)	Environmental Zone (ILP)
R1	To the west of the proposed site on Middle Stoke. Front of house. Approximate distance of 11 metres	4	E2
R2	To the southwest of the proposed site on Middle Stoke. Front of house. Approximate distance of 18 metres	4	E2
R3	To the south of the proposed site on Middle Stoke. Front of house. Approximate distance of 27 metres	4	E2



Figure 4: Residential Receptor Locations.

4.4 Ecological Receptors

4.4.1 The ILP Guidance Note 08/23 specifies that when a planning application includes additional artificial lighting, developers should ensure that a lighting assessment is completed alongside an ecological assessment. Lighting can impact light-sensitive species such as bats by impacting roosting, commuting and foraging behaviour.

4.4.2 The project ecologists have been contacted during the production of this survey report and at the time of writing an ecological assessment has been provided by the client. It is considered that there is potential that several wildlife species are anticipated to use the treeline and hedges surrounding the site, especially several different bat species. There are also bat commuting routes where there are low flying bats in and around the hedges in the northeast part of the site. Therefore, ecology receptors have been located at these locations at a height of 3 m. The locations of these receptors are visually presented in **Figure 5**, as well as in Table 7. The site boundary is highlighted in red.



Figure 5: Ecological Receptor Locations.

Table 7: Ecological Receptor Location		
Receptor	Location Description	Height (m)
E1	Treeline and hedgerow to the north of the proposed site	3
E2	Treeline and hedgerow to the northeast of the proposed site.	3
E3	Treeline and hedgerow to the east of the proposed site.	3

5 LIGHTING ASSESSMENT

5.1 Introduction

5.1.1 Proposals outline the erection of a self-build split level dwelling with a detached garage. The site of the proposed dwelling is situated on land adjacent to an existing telephone exchange. There is an area of sloping land, with mainly bramble and tall ruderal herb dominated vegetation. The Site lies on the northern side of Middle Stoke and is surrounded by several residential dwellings. It is proposed that external lighting shall be several illuminated bollards highlighting a path to the detached garage.

5.1.2 It should be noted that light spill from internal sources is to be considered in the assessment. No lighting manufacturer details or photometric data have been supplied by the client. As a result, photometric data of a comparable standard luminaire from the lighting manufacturer Philips Lighting (Signify) has been assumed to assess the internal light spill from the proposed residential dwelling.

5.1.3 It should be noted that the external and internal light spill values presented in this report do not account for potential obstructions such as buildings, trees, or woodland. In practice, these features may reduce the level of light reaching a measurement point; for example, a brick wall located between the light source and the measurement point would significantly limit the light spill.

5.2 Assessment

5.2.1 A proposed site plan (**Appendix B**) was provided by the project architect for the development. The lighting specification has also been discussed with the project team and the ecologist. The following considerations have been taken in relation to lighting the proposed site.

- No lighting directed on known, potential or newly created bat roost access points and roosting features.
- Only movement activated timed security lighting used outside of potential and known roosting locations.
- All luminaires will include directing lighting away from the adjacent woodlands, trees and ponds and be designed to minimise back light spill.
- Column heights to be carefully considered to minimise light spill and glare visibility. The use of downlighting to ensure that suitable roosting features and foraging and commuting habitats remain unlit is advised as well as the use of bollard-style path lights.

- A LED light source of 2700 K (Kelvin) or lower will be utilised throughout the lighting design installation as stipulated in the Static Bat Recording Assessment.
- No Lighting of over 2000 lumens (150 W) to be used for fixed/ permanent lighting on site in accordance with the Bat Conservation Trust, Bats and Lighting in the UK guidance (2009).
- Luminaires with zero Upward Light Ratio are to be utilised and mounted with no upward tilt.
- Accessories such as hoods and baffles should be considered to reduce light spill and direct light where needed, but only as a last resort.

5.2.2 The comparable standard luminaire for the external lighting shall be from Thorn Lighting and is the Thorn Lighting Urba Bollard 4L105 730 CL1 96275589. The bollard is DarkSky compliant and utilises a LED light source with a correlated colour temperature (CCT) of <3000 Kelvin. Upon installation, the bollard will provide an Upward Light Ratio (ULR) of 0%. The ILP limits for ULR can be referenced in **Table 5** above. The bollard will also provide glare free distribution. Reference is made in **Table 4** which contains a practical meaning for the Glare Rating to assess the impact of lights upon.

5.2.3 Comparable internal luminaires used will be the Philips Greenspace Evo Mini Pendant (Ref: 910505104929) and the Philips LuxSpace Mini, recessed downlight (Ref: 910505100916).

5.2.4 The lighting calculations for the illuminated bollards and internal luminaires have been undertaken to assess potential light spill and obtrusive light to residential dwellings and the habitat in the surrounding area. Residential receptors are approximately 15-20 metres from the site boundary, so vertical illuminance measurements have been simulated along this plane as shown in **Figure 12**. The results are very minimal and are below the recommended ILP pre-curfew and post-curfew criteria. Therefore, the indication is that there are no concerns regarding obtrusive lighting.

5.2.5 The Thorn Lighting Urba Bollard 4L105 730 CL1 96275589 LED illuminated bollard is visually represented and can be seen in **Figure 6** Figure 6.



Figure 6: The Thorn Lighting Urba 4L105 730 CL1 96275589 LED illuminated Bollard.

5.2.6 The Philips Greenspace Evo Mini Pendant can be seen in **Figure 7** and the Philips LuxSpace Mini, recessed downlight can be seen in **Figure 8**.



Figure 7: The Philips Greenspace Evo Mini Pendant Luminaire.



Figure 8: The Philips LuxSpace Mini, recessed Downlight.

- 5.2.7 The assessment currently considers 24 hours operation of the light fittings as a worst-case scenario.
- 5.2.8 A model has been produced using an industry-standard light modelling software Lighting Reality as we were not instructed to carry out any design from the outset. The model only considers the effect of solid structures so natural structures such as trees will be assessed qualitatively outside the model calculations.
- 5.2.9 A visualisation of the model can be seen in **Figure 9** shows the simulated proposed illuminated bollard locations and the horizontal illuminance contour values. The lowest value contour (0.5 lux) is highlighted in black; 1 lux is highlighted in yellow, and 5 lux is highlighted in magenta.

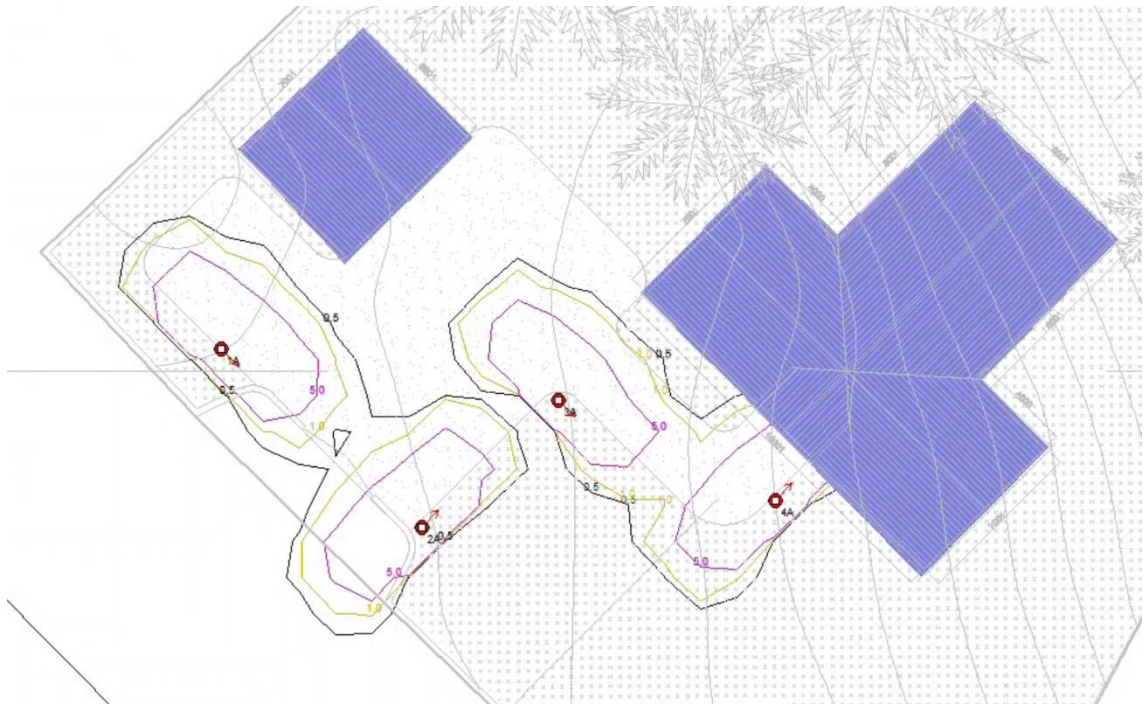


Figure 9: Simulated Horizontal Illuminance Contour Values.

5.2.10 **Figure 10** shows simulated horizontal illuminance lux values at various points around the site. It is anticipated that the values are very minimal and are below the maximum parameters for the receptor locations and therefore it is likely that there will be no concerns regarding obtrusive light.

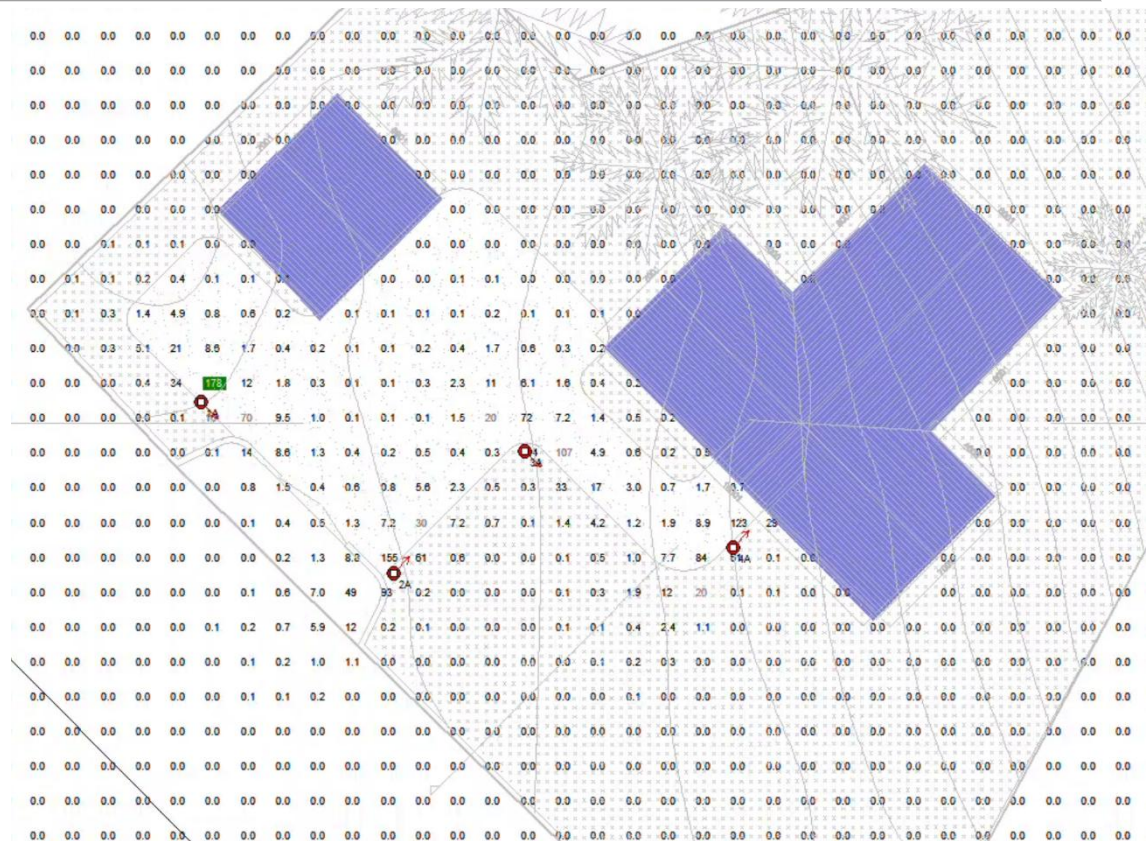


Figure 10: Simulated Horizontal Illuminance Lux Values.

5.2.11 **Figure 11** shows the vertical illuminance grid (highlighted in yellow). The grid is located approximately 10 metres from the site boundary which is the front of the residential dwellings on the other side of Middle Stoke. The height of the grid is 4 metres high to represent the first-floor observer view.

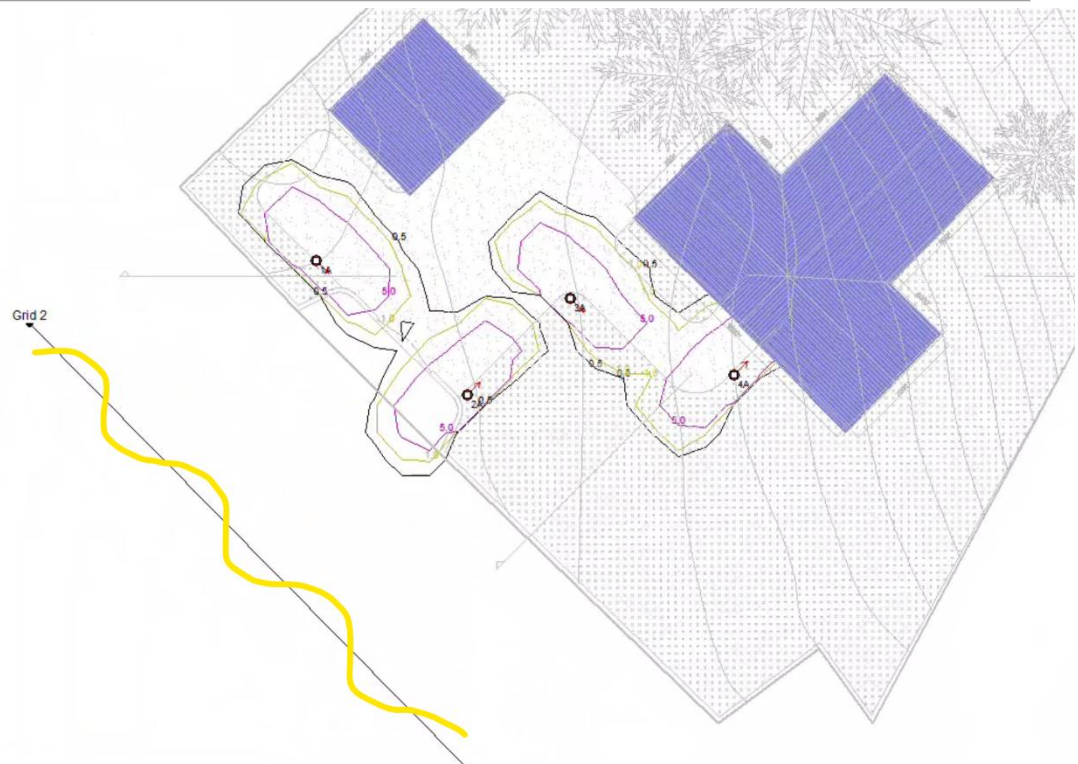


Figure 11: Vertical Illuminance Grid 2 (Highlighted in Yellow).

5.2.12 **Figure 12** shows that the vertical illuminance grid viewed from the southeast and looking at the residential dwellings opposite the site. With the lux values across the plane being 0.0 lux, the predicted values remain well within acceptable limits and are unlikely to exceed the recommended ILP pre- and post-curfew criteria for the applicable Environmental Zone.

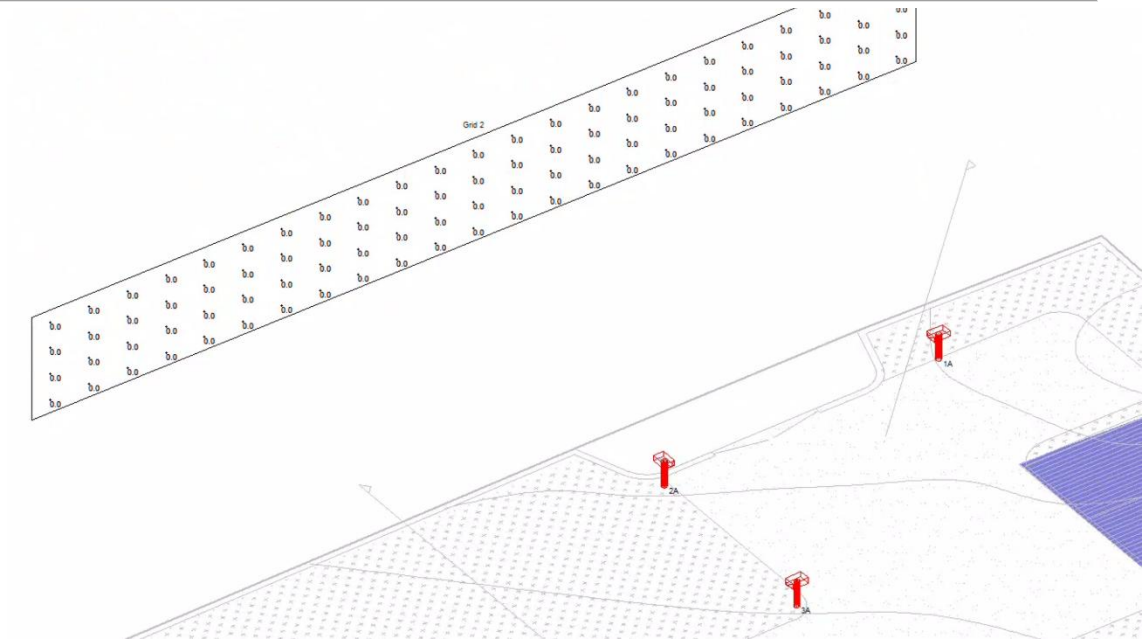


Figure 12: Vertical Illuminance Grid Values viewed from the Southeast of the Site.

5.2.13 **Figure 13** shows the internal light spill from the proposed residential dwelling. The horizontal illumination lux value contours are highlighted as follows:

- 25 lux = Blue
- 10 lux = Cyan
- 5 lux = Magenta
- 1 lux = Yellow
- 0.1 lux = Black

5.2.14 **Figure 14** shows the internal spill light horizontal illuminance values at approximately 1 metre square points across the whole site and beyond. It is to be noted that under real world conditions the internal light will come from out of the windows whilst most of the light will be impacted by the walls of the proposed dwelling.

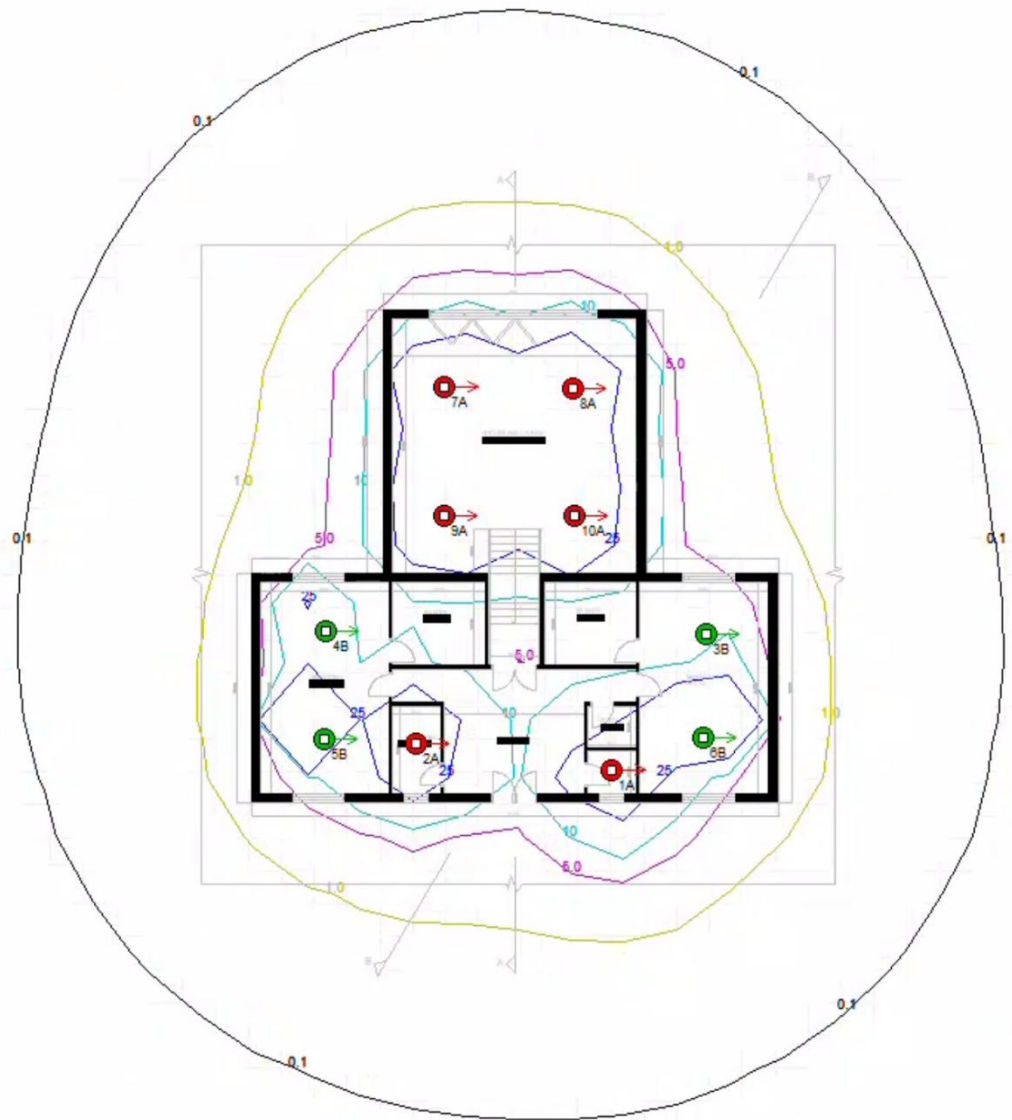


Figure 13: Internal Light Spill (Horizontal Illuminance Lux Values) from internal Sources from Residential Dwelling.

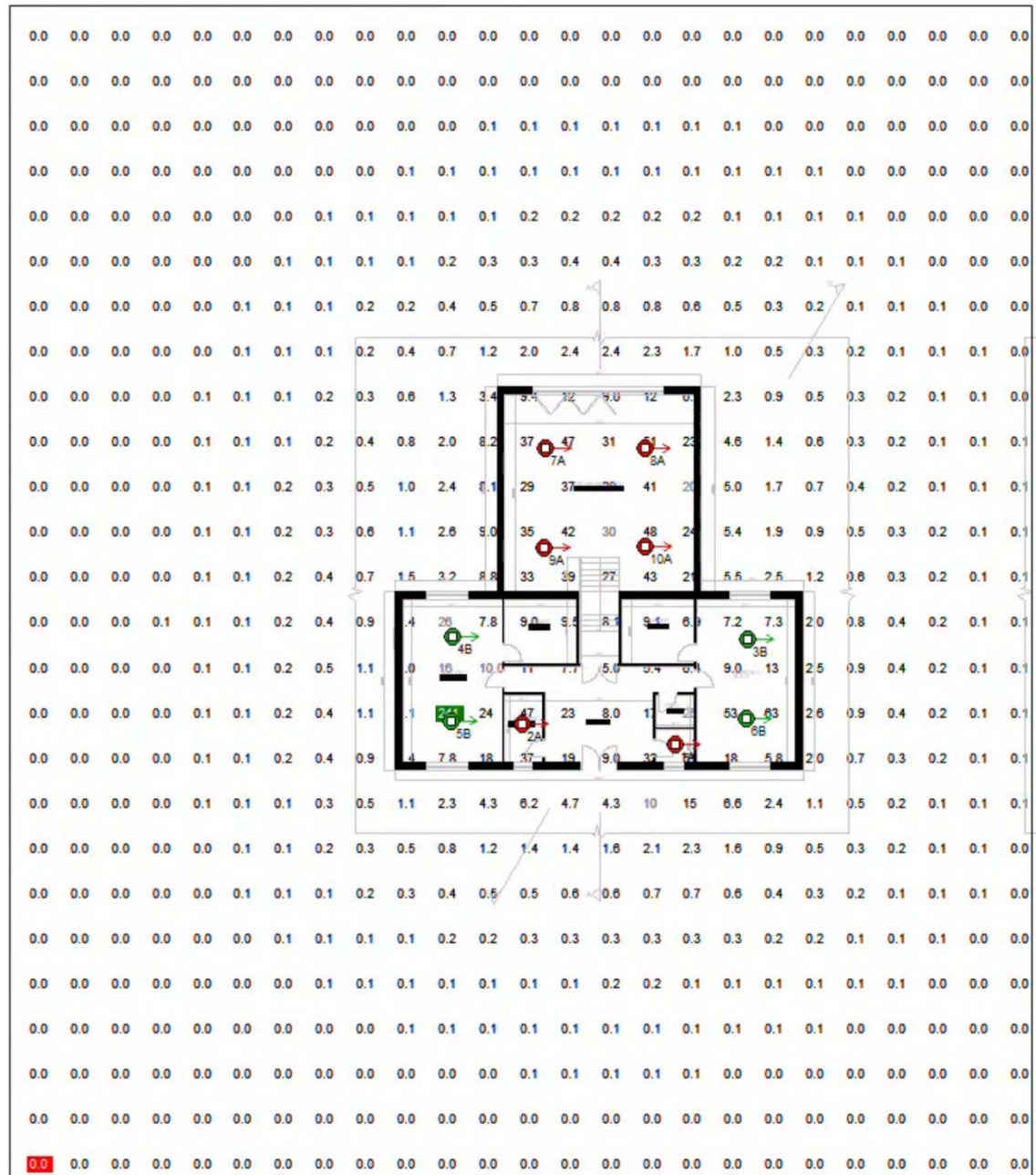


Figure 14: Internal Light Spill (Horizontal Illuminance Lux Values) at 1 Metre Points.

5.2.15 **Figure 15** shows a 3D visualisation of the proposed residential dwelling and two vertical illumination grids approximately 15 metres away to the north northeast and northeast.

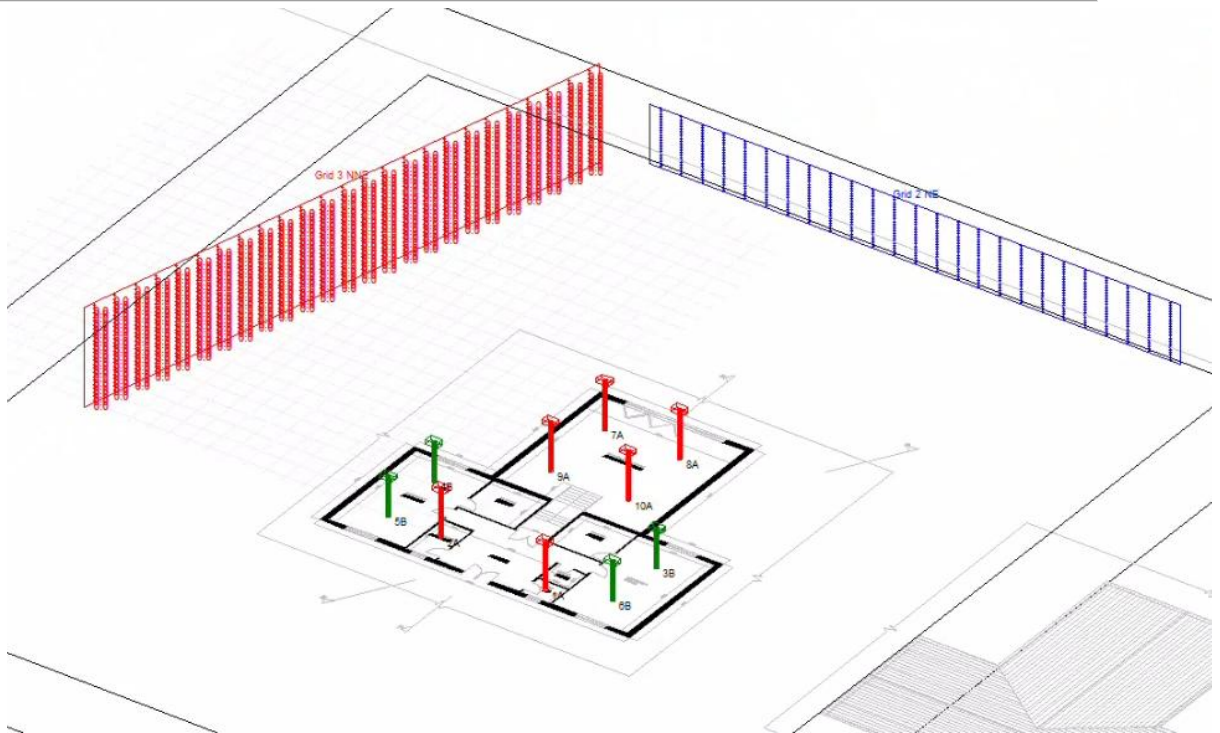


Figure 15: 3D Visualisation of Residential Dwelling and Vertical Illumination Grids.

5.2.16 **Figure 16** shows the vertical illumination results for Grid 2 Northeast. **Figure 17** shows the vertical illumination results for Grid 3 North Northeast.

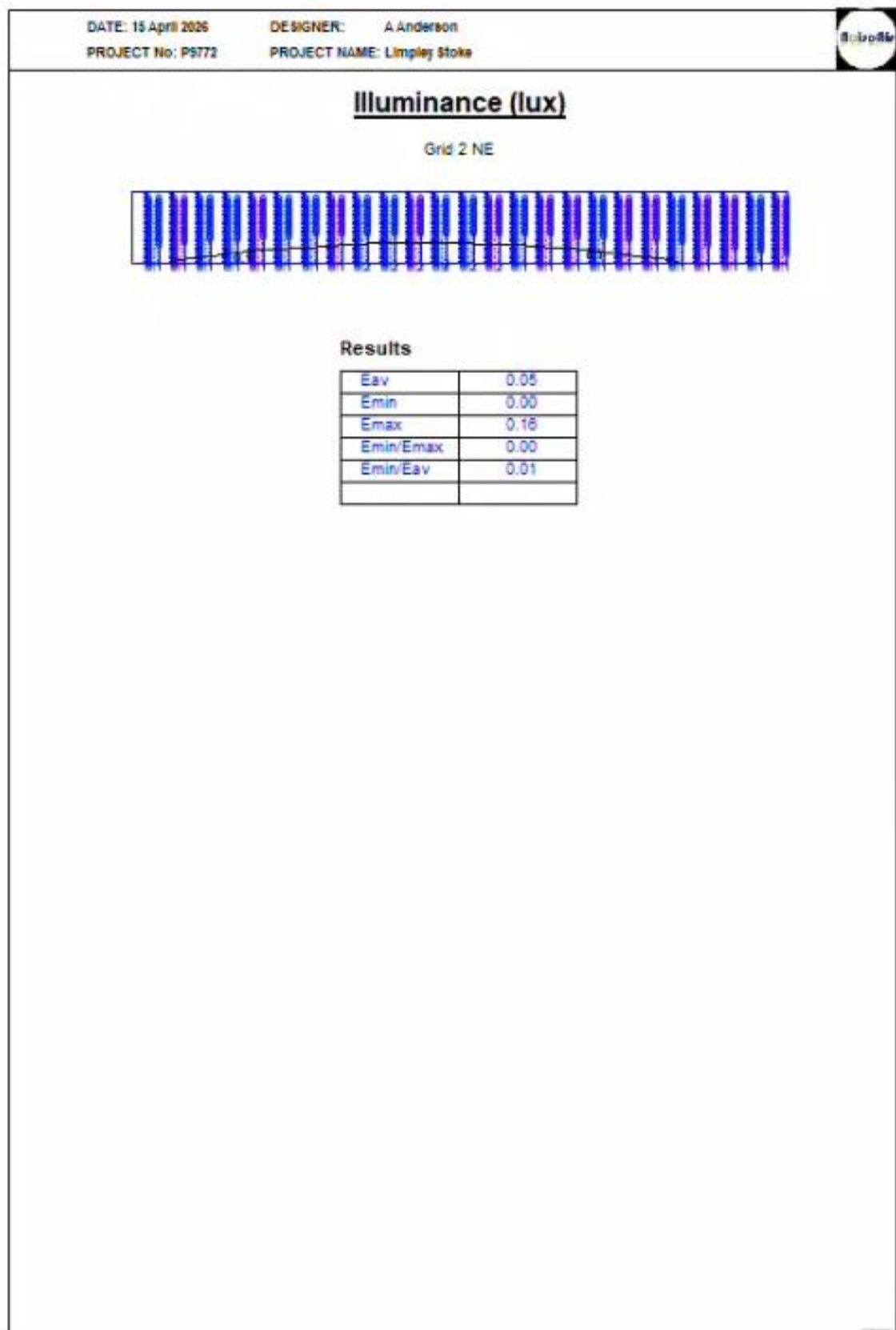


Figure 16: Vertical Illumination results for Grid 2 Northeast.

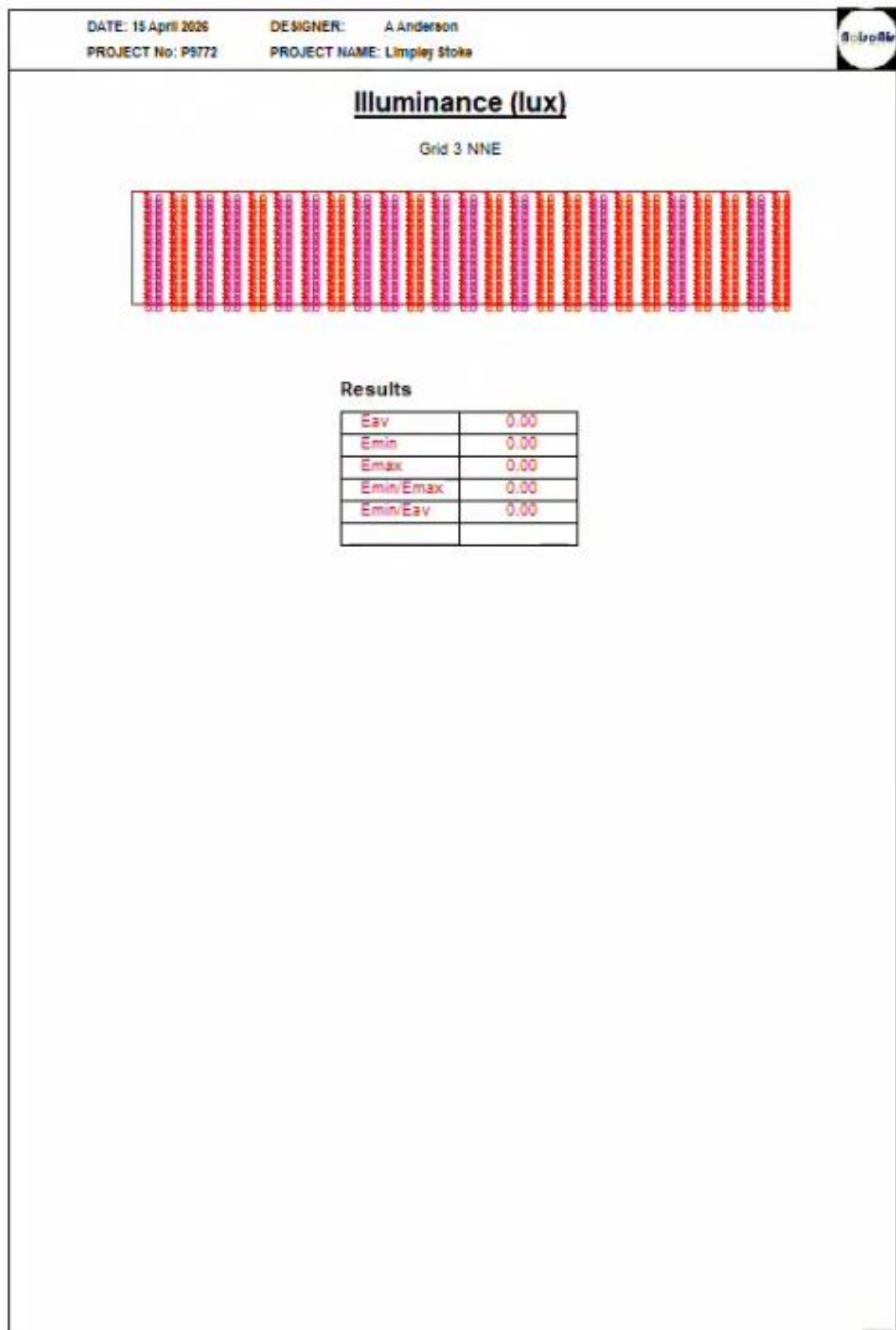


Figure 17: Vertical Illumination results for Grid 3 North Northeast.

5.2.17 **Figure 18** is a simulation of the internal light scene from the rear of the proposed dwelling. A value of 0.20 lux is recorded approximately 8 metres from the kitchen and lounge window.

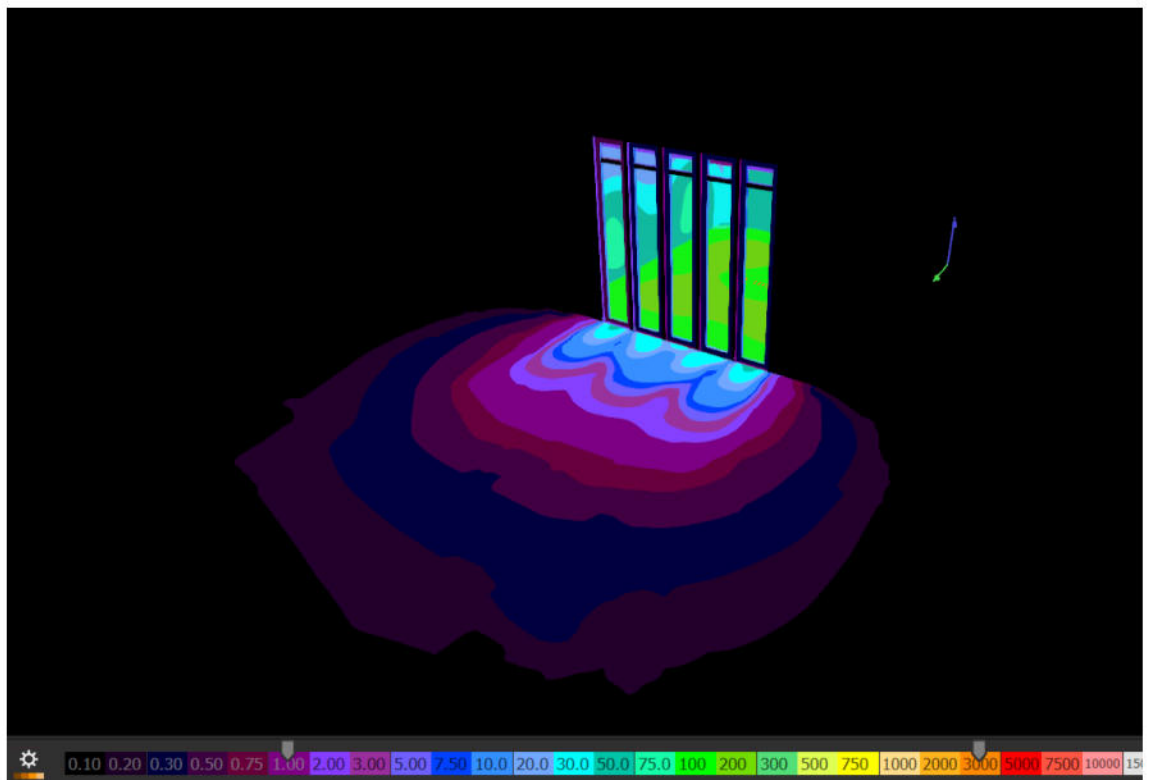


Figure 18: Internal Light Scene from the Kitchen and Lounge Window.

5.3 Light Intrusion Residential Receptors

5.3.1 Table 7 compares the modelled light intrusion at the surrounding residential properties with the relevant ILP environmental zone criteria as specified in **Table 1** and **Table 2**. For this assessment based upon the site location and survey results, this will be Environmental Zone E2 – Rural Area of Low District brightness with the criteria being 5 lux pre curfew and 1 lux post curfew. The vertical illumination has been calculated, and the following has been predicted based of these results.

Table 8: Residential Receptor Results			
Receptor	Predicted Model Illuminance	ILP Pre-curfew criteria (Lx)	ILP Post Curfew Criteria (Lx)
R1	<0.03	5	1
R2	<0.02	5	1
R3	<0.01	5	1

- 5.3.2 The results in the table above show that with the proposed development in place, lighting from the site is not likely to exceed the recommended ILP pre-curfew criteria. This will serve to reduce light pollution, glare and minimise any light trespass to the dwellings.

5.4 Ecology Receptors

- 5.4.1 The ILP Guidance Note 08/23 specifies that acceptable lux limits should be used to assess the impact of lighting upon ecological species including bats. Therefore, impacts will be considered significant where predicted vertical illuminance levels exceed 0.1 lux vertically. The results of this assessment can be found in Table 9.

Table 9: Ecology Receptor Results	
Receptor	Predicted Model illuminance
E1	<0.01
E2	<0.02
E3	<0.01

- 5.4.2 The results show that lux levels along the bat commuting routes where in and around the hedges in the northeast part of the site, will be below 0.1 lux vertically, therefore lighting is not anticipated to have a significant impact on any light-sensitive species using this space.

5.5 Glare

- 5.5.1 The model has been used to calculate predicted glare/ uniformity (Emin/Eave) for area lighting and has been designed within the range set out in BS 5489, BS EN 13201 and the CIBSE Guide (LG06). The external bollard installation, although falling slightly below the required illumination average meets the required uniformity ratios and will not have any adverse effects regarding glare and visual discomfort. The achieved uniformity ensures safe and comfortable conditions for pedestrian movement while avoiding excessive brightness. This confirms that disability glare is effectively controlled and that the proposed installation provides appropriate visual comfort for all observers. Overall, it is anticipated that the lighting installation conforms to the standards set out in BS 5489, BS EN 13201 and CIBSE LG06, provides adequate visual conditions, and does not give rise to significant adverse lighting or glare effects.
- 5.5.2 The CIE 112 Glare Rating (GR) evaluation for the proposed illuminated bollards confirms that the glare directly from the luminaires within the site that may affect any residential dwellings is minimal and will most likely have a Glare Rating of 30 and therefore is categorised as

'Noticeable', meeting the ILP limitations. Reference can be made regarding the Glare criteria in **Table 4** above.

5.6 Sky Glow

- 5.6.1 The proposed external illuminated bollards design utilises full cut-off luminaires, ensuring that the predicted Upward Lighting Ratio (ULR) is effectively controlled. The manufacturers data and proposed design uplift of the wall mounted luminaires and bollards indicates a sky glow value of 0.0%. Reference can be made to the luminaire specification in paragraph 5.2.1 of the Lighting Assessment. As illustrated in **Table 5**, the ILP sky glow limitation for an area classified as Environmental Zone E2 is 2.5% ULR. Accordingly, the indicative lighting scheme complies with ILP guidance and is not anticipated to give rise to adverse effects on the dark sky environment.

6 CONCLUSIONS

- 6.1.1 NoiseAir has been commissioned by Brown Fisher Environmental to undertake a Lighting Impact Assessment for Land adjacent to the Telephone Exchange, Middle Stoke, Limpley Stoke, Wiltshire, BA2 7GG.
- 6.1.2 The proposals outline the erection of a self-build split level dwelling with a detached garage. The site of the proposed dwelling is situated on land adjacent to an existing telephone exchange. There is an area of sloping land, with mainly bramble and tall ruderal herb dominated vegetation. The Site lies on the northern side of Middle Stoke and is surrounded by several residential dwellings. It is proposed that external lighting shall be several illuminated bollards highlighting a path to the detached garage.
- 6.1.3 We calculate lux levels at the northeast side of the proposed residential dwelling at a height of 3 metres to be below 0.1 lux vertically, therefore lighting is not anticipated to have a significant impact on any light-sensitive species using this space.
- 6.1.4 The proposed external illuminated bollards do not achieve the typical area lighting requirement of 5 lux average illuminance. The calculated average illuminance is marginally lower at approximately 4 lux, which is attributed to the luminaire characteristics and the limited availability of suitable installation locations. The uniformity ratios, however, are considered acceptable, and the overall design is in accordance with relevant standards and Chartered Institution of Building Services Engineers (CIBSE) guidance. The slight decrease in average illuminance is not considered significant and is not expected to materially affect the assessment outcomes.
- 6.1.5 With the proposed installation and structure in place, external and internal lighting from the site is not likely to exceed the recommended ILP pre- and post-curfew criteria.
- 6.1.6 The proposed lighting scheme is therefore likely to comply with all relevant British Standards and the Institution of Lighting Professionals lighting guidelines with regard to uniformity and will serve to ensure safety and security of all areas of the development can be effectively maintained.

APPENDIX A - REPORT LIMITATIONS

This Report is presented to Brown Fisher Environmental and may not be used or relied on by any other person or by the client in relation to any other matters not covered specifically by the scope of this report.

Notwithstanding anything to the contrary contained in the report, NoiseAir Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by to Brown Fisher Environmental and NoiseAir shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

This report has been prepared by NoiseAir Limited. No individual is personally liable in connection with the preparation of this report. By receiving this report and acting on it, the client or any other person accepts that no individual is personally liable whether in contract, tort, for breach of statutory duty or otherwise.

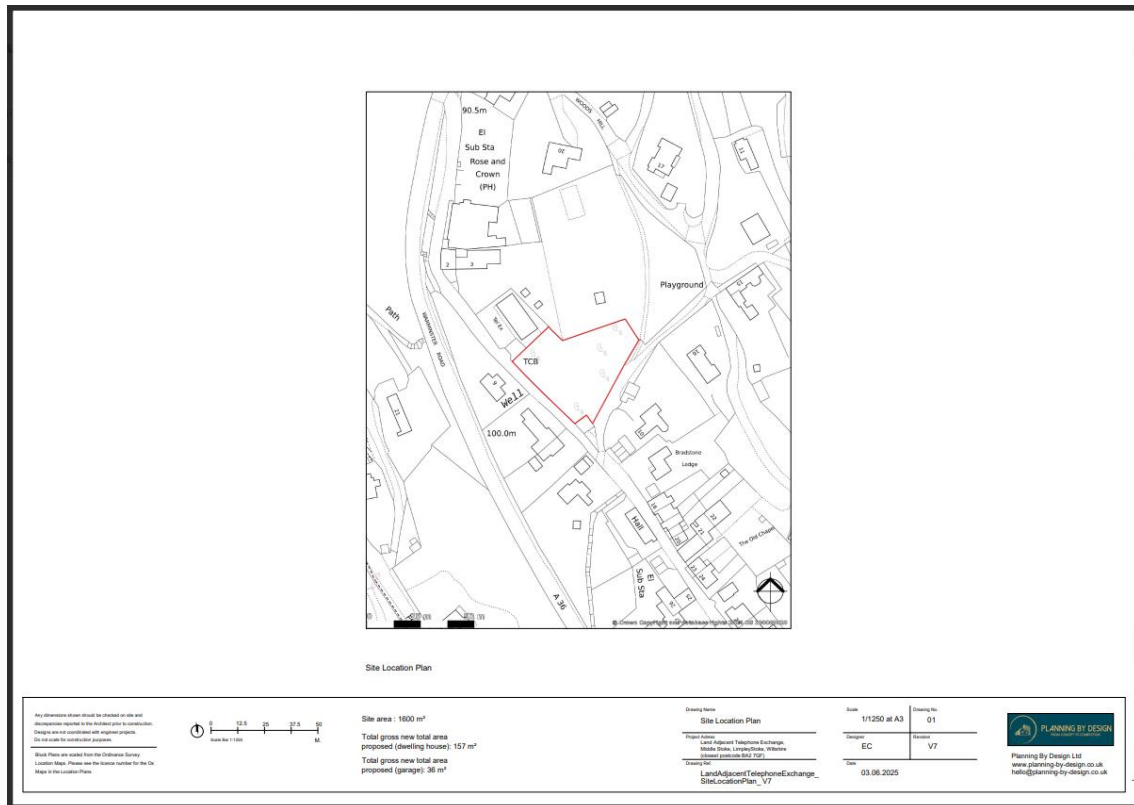
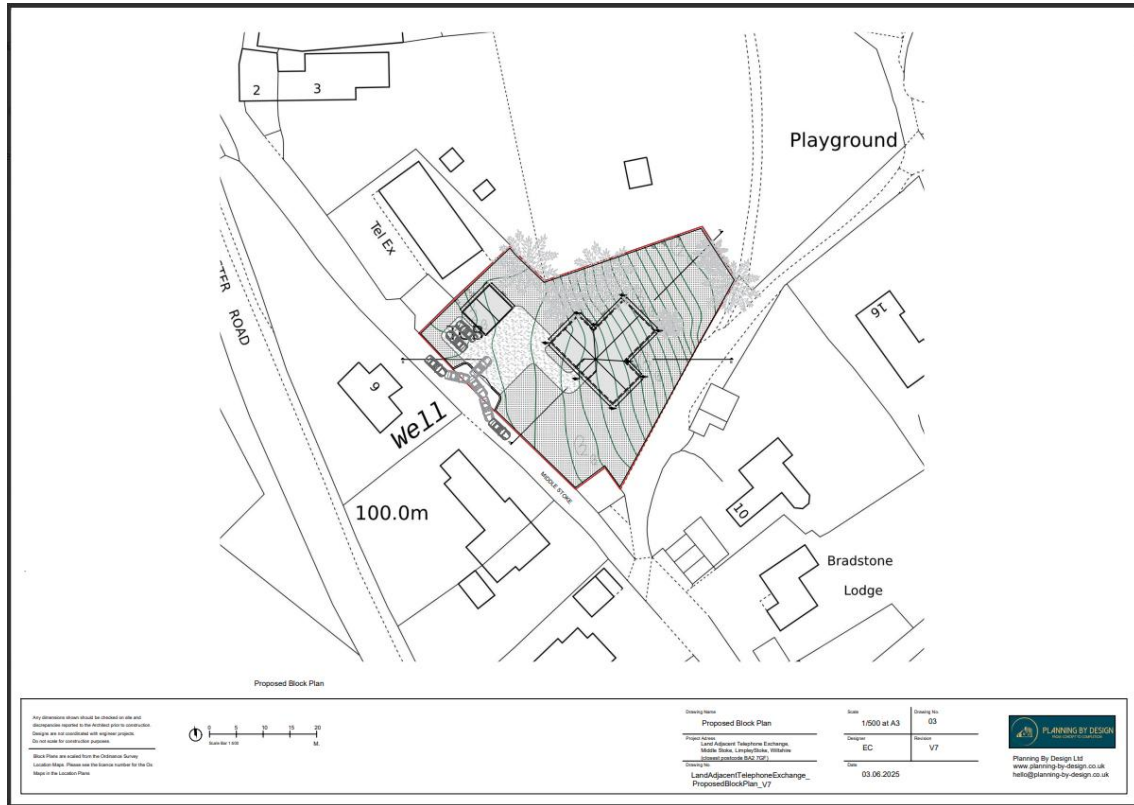
The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from who it has been requested and that such information is accurate. Information obtained by NoiseAir Limited has not been independently verified by NoiseAir Limited unless otherwise stated in the report and should be treated accordingly.

Where assessments of works or costs identified in this report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

Where / if estimates and projects are made within this report, are made based on reasonable assumptions as of the date of this report, such statements however by their very nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. NoiseAir Limited specifically does not guarantee or warrant any estimates or projects contained in this report.

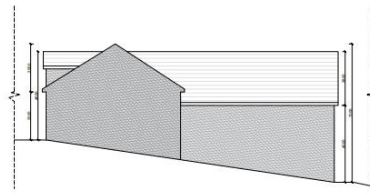
DISCLAIMER- This report was prepared by NoiseAir Limited. The material in it contains NoiseAir Limited best judgment in light of the information available at the time of preparation of this report. Any use which a third party makes of this report, or any reliance on, or decisions based on it are the responsibility of such third parties. NoiseAir Limited accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

**APPENDIX B – EXISTING BLOCK PLAN - 02 REV V7, PROPOSED BLOCK
PLAN - 03 REV V7, SITE LOCATION PLAN - 01 REV V7, PROPOSED
ELEVATION - 05 REV V7, PROPOSED PLAN - 04 REV V7.**





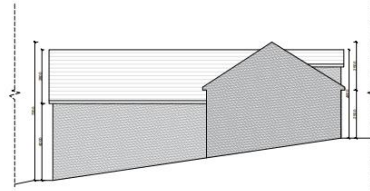
Proposed South Elevation



Proposed East Elevation



Proposed North Elevation



Proposed West Elevation

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Drawings

Proposed Elevations

Client: Planning Application

Project: Planning Application

Location: [Address]

Scale: 1:100

Date: 03.08.2025

Revision

No.	Description	Date
01	Issue for Planning	03.08.2025

Planning Application

Application No: [Number]

Site: [Address]

Proposed Use: [Use]

Proposed Development: [Development]

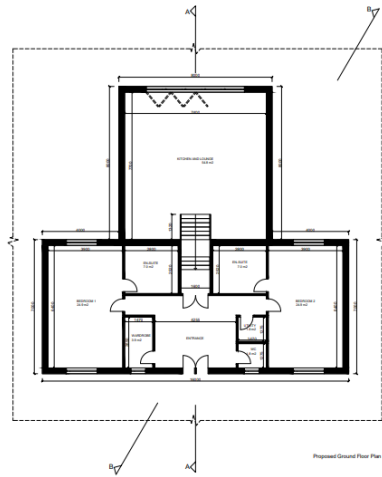
Planning Application

Application No: [Number]

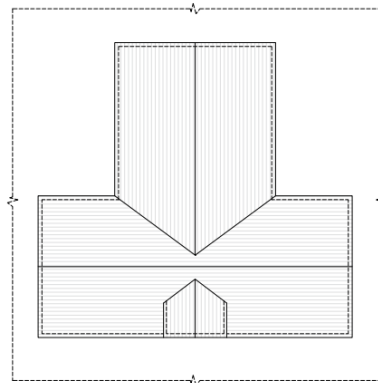
Site: [Address]

Proposed Use: [Use]

Proposed Development: [Development]



Proposed Ground Floor Plan



Proposed Roof Plan

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Drawings

Proposed Plans

Client: Planning Application

Project: Planning Application

Location: [Address]

Scale: 1:100

Date: 03.08.2025

Revision

No.	Description	Date
01	Issue for Planning	03.08.2025

Planning Application

Application No: [Number]

Site: [Address]

Proposed Use: [Use]

Proposed Development: [Development]

Planning Application

Application No: [Number]

Site: [Address]

Proposed Use: [Use]

Proposed Development: [Development]

APPENDIX C - GLOSSARY

Ambient Light	The natural light that is already present before the introduction of any additional artificial lighting.
Calculation Plane	An even grid of points denoting the anticipated or modelled intensity (candelas) or illuminance (lux) at a given point.
Candela (cd)	A measure of luminous intensity, the intensity of light in each direction.
Colour Rendering Index (CRI)	A scale from 0 to 100 percent indicating how accurate a given light source is at rendering colour when compared to a reference light source. The higher the number, the better a light source is at revealing the actual colours present at a surface or object.
CCT	(Engl. Correlated colour temperature) Body temperature of a thermal radiator which serves to describe its light colour. Unit: Kelvin [K]. Allocation of the light colours to the colour temperature ranges acc. To EN 12464-1: Light colour – colour temperature [K] warm white (ww) <3,300 K neutral white (nw) ≥ 3,300 – 5,300 K daylight white (dw) > 5,300 K
DarkSky Approved	‘DarkSky’ is recognised as the global authority on light pollution and is the leading organisation combating this issue worldwide. The DarkSky Approved seal is a highly regarded accreditation for manufacturers. The process to achieve this accreditation reviews key features and benefits of a luminaire, its fundamental design and deep dive analysis of photometric data to ensure the product meets strict requirements to limit light pollution.
Efficacy	A measure of light output against energy consumption measured in lumens per watt.
Light Pollution	The spillage of light into areas where it is not required. Also known as obtrusive light.
Luminance	The intensity of light emitted from a surface per unit area in a given direction.
Lux	A measure of illuminance, the total amount of light that falls on a surface; the higher the Lux value, the brighter a subject appears.
Illuminance	The total luminous flux incident on a surface, per unit area. It is a measure of how much the incident light illuminates the surface.
Horizontal Illuminance	An expression of the level of illuminance on a horizontal working plane.
Vertical Illuminance	An expression of the level of illuminance on a vertical working plane.
Glare	A visual phenomenon caused by excessive contrast between bright and dark areas, leading to discomfort and impaired visibility. It can result from high luminance levels or inappropriate distribution of

	bright light, causing a reduction in visual performance and disturbance in perception.
Glare Rating	A measure used to quantify the intensity of glare produced by lighting fixtures in a given space.
Kelvin Scale (K)	A measure of temperature, especially extreme temperatures. This includes the temperature of a light bulb filament.
Environmental Zones	A classification system used in outdoor lighting to define the allowed brightness and light-control requirements of an area based on its sensitivity to artificial light. Zones range from intrinsically dark natural environments to high-brightness urban districts.
Maintenance Factor (MF)	A numerical value used in lighting design to account for the reduction in light output over time due to lamp lumen depreciation, dirt accumulation on luminaires, and environmental conditions. Applied to calculate the required initial lighting so that the target illuminance is still achieved at the end of the maintenance cycle.
Obtrusive Light	Unwanted or excessive artificial light that spills beyond the area intended to be illuminated, causing visual discomfort, reduced visibility, or environmental disturbance.
Skyglow	The brightening of the night sky caused by the scattering of artificial light in the atmosphere.
Upward Light Output Ratio (ULOR)	The proportion (%) of direct light transmitted from the luminaire above 90° in the vertical plane.