

Appendix 4.2 – *‘LETTER: Lighting Plan for proposed development at Harbour Point, Bray, Co. Wicklow’, Bat Eco Services, 2022.*

2022

LETTER: Lighting Plan for proposed development at Harbour Point, Bray, Co. Wicklow.



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NPWS licence C13/2020 (Licence to handle bats, expires 31st December 2022);

NPWS licence 08/2020 (Licence to photograph/film bats, expires 31st December 2022) ;

NPWS licence DER/BAT 2022-36 (Survey licence, expires 24th March 2025).

Statement of Authority: Dr Aughney has worked as a Bat Specialist since 2000 and has undertaken extensive survey work for all Irish bat species including large scale development projects, road schemes, residential developments, wind farm developments and smaller projects in relation to building renovation or habitat enhancement. She is a monitoring co-ordinator and trainer for Bat Conservation Ireland. She is a co-author of the 2014 publication *Irish Bats in the 21st Century*. This book received the 2015 CIEEM award for Information Sharing. Dr Aughney is a contributing author for the Atlas of Mammals in Ireland 2010-2015.

All analysis and reporting is completed by Dr Tina Aughney. Data collected and surveying is completed with the assistance of a trained field assistant.

Mr. Shaun Boyle (Field Assistant) NPWS licence DER/BAT 2022-37 (Survey licence, expires 24th March 2025).

To whom it may concern:

Bat Eco Services was requested Atkins, on behalf of client, to undertake a bat survey of proposed development lands at Harbour Point, Bray, Co. Wicklow. This was completed in 2020 (report dated 16/10/2020).

Citation: Bat Eco Services (2020) Bat assessment prepared for Proposed Planning Application. Harbour Point, Bray, Co. Wicklow. Unpublished report prepared for Atkins.

In 2022, Atkins requested a review of the lighting plan for the proposed development (Phase 1, Coastal Quarter). In the bat assessment report, mitigation measures relating to lighting was presented in detail in order to reduce potential impact on local bat populations. These mitigation measures were in accordance with the BCT Lighting Guidelines (2018).

Bat Conservation Trust (2018) Bats and artificial lighting in the UK: bats and the built environment series. Guidance Note 08/2019. BCT, London.

The mitigation measures from the bat assessment report is as follows:

(Taken from page 40-41, bat assessment report)

“Lighting Plan

It is important that any proposed lighting for the proposed residential development is wildlife friendly and that there is a provision for continued dark zones to facilitate movement of light sensitive bat species such as Daubenton’s bats.

Nocturnal mammals are impacted by lighting. Therefore it is important that lighting installed within the proposed development site is completed with sensitivity for local wildlife while still providing the necessary lighting for human usage. It is also important that developments reduce their impact on the night sky and reduce sky glow. The “Dark Sky” principal should be followed – i.e. no upward lighting to reduce light pollution. The following principles should be followed:

- *Luminaire design for any street lighting or lighting on buildings is extremely important to achieve an appropriate lighting regime. Luminaires come in a myriad of different styles, applications and specifications which a lighting professional can help to select. The following should be considered when choosing luminaires. This is taken from the most recent BCT Lighting Guidelines (BCT, 2018).*
 - *All luminaires used will lack UV/IR elements to reduce impact.*
 - *LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.*
 - *A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).*
 - *Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.*
 - *Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible. Ballard lighting should be considered for pedestrian and greenway areas, if deemed necessary.*
 - *Only luminaires with an upward light ratio of 0% and with good optical control will be used.*

- *Luminaires will be mounted on the horizontal, i.e. no upward tilt.*
- *Any external security lighting will be set on motion-sensors and short (1min) timers. The intensity of external lighting should be limited to ensure that skyglow does not occur in order to reduce light pollution.*
- *As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.*

In addition to above the following should also be followed:

No lighting, where possible, should be erected in the following areas:

- *Along treeline boundaries.*
- *Along the southern boundary adjacent to the River Dargle.*
- *Within and adjacent to retained woodland habitat.*
- *In vicinity of alternative roosting sites (includes bat boxes, Rocket bat boxes, Bat walls etc.)*

The lighting plan for cycle routes and pedestrian walkways should strictly adhere to the guidelines listed above. Where possible, no lighting should be installed or bollard lighting/dim lighting (lighting that dims or turns off during the night when humans are less active) should be considered. There is no lighting in the People's Park and as a consequence, there was a high level of bat activity along the river bank within this area. This type of scenario is important to replicate to ensure that there is dark corridors through our urban area to allow nocturnal wildlife to operative effectively."

In consultation with Atkins, Atkins confirmed that the points presented above have been incorporated into the lighting design and that the shortest column height, without conflicting with engineering designs, have been set at 6m.

As part of this review, the outdoor lighting report (dated 1/7/2022) was examined. Luminaire D and F have a Kelvin value of 3,000 Kelvins, which exceeds the Kelvin value recommended by the BCT Lighting Guidelines. All other luminaires meet the BCT Lighting Guidelines.

The Horizontal illuminance map indicates that average LUX level is 5.52 (range 1.09 to 22.50). The illuminance map indicates that the lighting spill is controlled to be 0.1 LUX along the majority of the boundary of the proposed development. All European bat species, including Irish bat species, are nocturnal. Light levels as low as typical full moon levels, i.e. around 0.1 LUX, can alter the flight activity of bats (Voigt *et al.* 2018). Any level of artificial light above that of moonlight can mask the natural rhythms of lunar sky brightness and, thus, can disrupt patterns of foraging and mating and might, for instance, interfere with entrainment of the circadian system. Therefore it is important that landscaping, to act as a buffer, is considered for areas where lighting spill is greater than 0.1 along the boundary of the proposed development (e.g. eastern boundary).

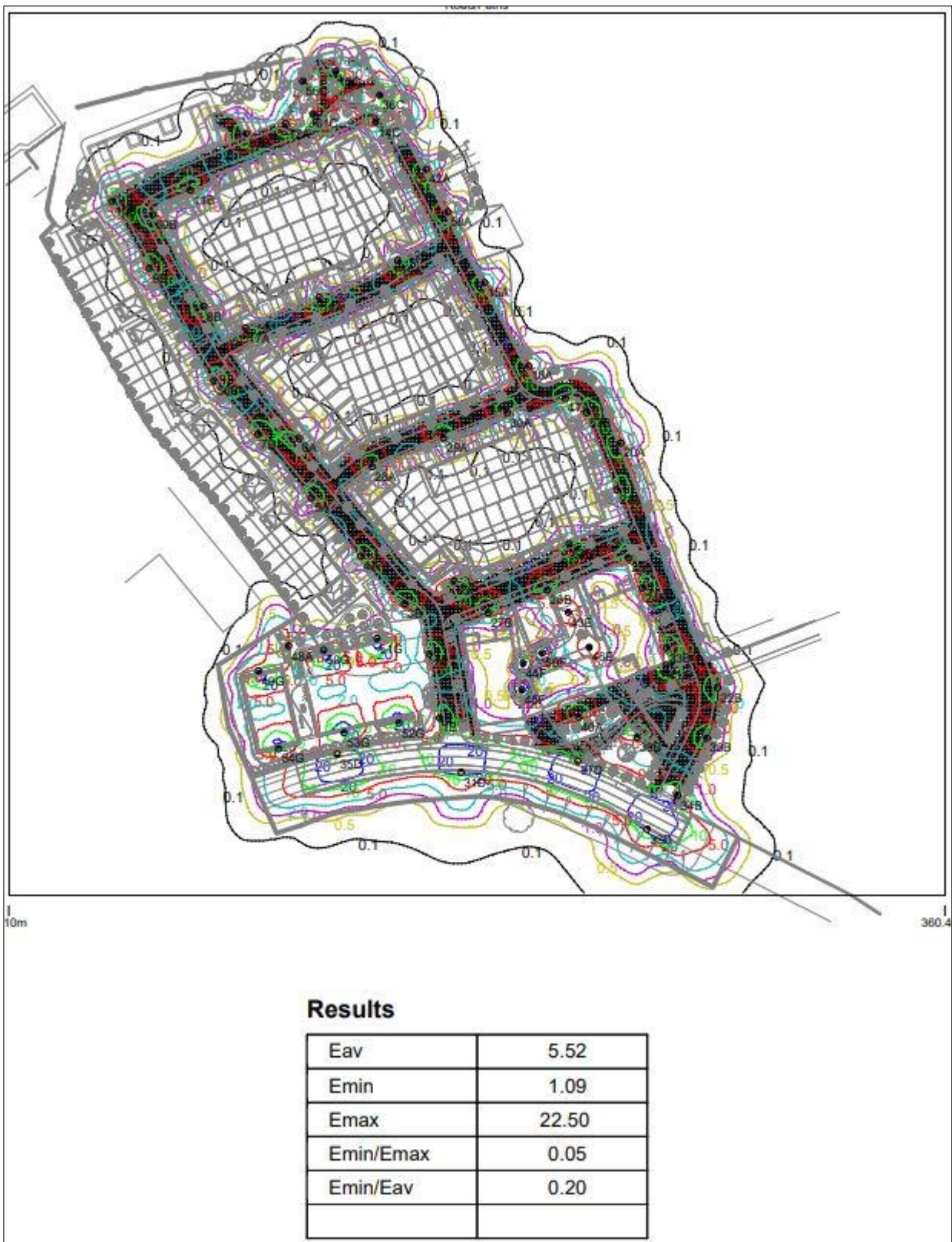


Figure 1: Horizontal Illuminance map – taken from Outdoor Lighting Report (Source: Atkins).

The bat species recorded in the area of the Coastal Quarter are common Irish bat species (common pipistrelle, soprano pipistrelle and Leisler’s bat). The first two bat species are considered to be Semi-tolerant (Category 3, Table 1) while the latter bat species is consider to be Light-tolerant (Category 2, Table 1).

Rydell (2006) divides bats into four categories in terms of their characteristic behaviours at street lamps. The four categories are based on bat size, wing morphology and echolocation call characteristics which were highlighted by Norberg and Rayner (1987) to determine flight speed, manoeuvrability, and prey detection capabilities of bats. Rydell (2006) stated that the large, fast flying bats, which are confined to open airspace, fly high over lit areas and are rarely observed near ground level. None of these, typically large free-tailed bats (e.g. large species of the family Molossidae), are found in Ireland. The second category are the medium-sized fast flying species, including the *Nyctalus* species, which patrol the street well above the lights and can be seen occasionally as they dive for prey into the light cone. This group includes the Leisler's bat, which is found in Ireland. Rydell's third category describes the small but fast flying bats that are manoeuvrable enough to forage around light posts or under the lights, and includes the small *Pipistrellus* species of the old world, three of which are found in Ireland. The fourth category includes broad-winged slow flyers, most of which are seldom or never observed at lights. Slow flying bat species may be more vulnerable to predation by diurnal birds of prey and this may restrict their exploitation of insects around artificially illuminated areas (e.g. Speakman 1991). There are also the concerns that some bat species are more light sensitive and therefore actively avoid lit up areas. This is particularly relevant for lesser horseshoe bats. Therefore from this, we can categorise the suite of Irish bats species as follows (please note that the sensitivity category is the author's description):

Table 1: Potential light sensitivity of the Irish bat fauna using categories described by Rydell, 2006.

Species: Common Name	Rydell Category	Sensitivity
Daubenton's bat <i>Myotis daubentonii</i>	Category 4	Light sensitive
Whiskered bat <i>Myotis mystacinus</i>	Category 4	Light sensitive
Natterer's bat <i>Myotis nattereri</i>	Category 4	Light sensitive
Leisler's bat <i>Nyctalus leisleri</i>	Category 2	Light tolerant
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	Category 3	Semi-tolerant
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Category 3	Semi-tolerant
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	Category 3	Semi-tolerant
Brown long-eared bat <i>Plecotus auritus</i>	Category 4	Light sensitive
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Category 4	Light sensitive

Due to the pattern of the proposed lighting plan, the internal area of the development are unlikely to be accessed by local bat populations as lighting essentially acts as a barrier to commuting and foraging bats. Therefore it is essential that the overall proposed development scheme for Harbour Point considers the following points:

- Areas of suitable bat habitat remaining in the landscape post development and are located along the boundary of the proposed development are part of a continuous dark zone that allows nocturnal animals, including bats, to travel during the hours of darkness. These dark zones should be connected to the wider landscape such as the River Dargle and the People's Park located south of the proposed development, woodland are to the north and to the coastal area to the east of the proposed development.

- Greater consideration in lighting plans to use dynamic lighting controls to reduce lighting outside the prime hours of human activity (Voigt *et al.*, 2018).

If you require any further information, please do not hesitate to contact me.

Yours sincerely,

Dr Tina Aughney.

References

Norberg U.M. and Rayner J.M.V. (1987). Ecological morphology and flight in bats (Mammalia; Chiroptera): wing adaptations, flight performance, foraging strategy and echolocation. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*. **316**: 335-427.

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