

# Redevelopment of Porthcawl Waterfront

## CHAPTER 13 – External Lighting

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## 13.1. Introduction

### Background

- 13.1.1. The following Chapter has been prepared by Stantec.
- 13.1.2. This Chapter of the Environmental Statement (ES) assesses the likely significant effects of the Proposed Development, as described in Volume 1, Chapter 4 of this ES, in terms of External Lighting.
- 13.1.3. This Chapter should be read in conjunction with the following Technical Appendices:
- Volume 3, Appendix 13.1: [Lighting Impact Assessment]
  - Volume 3, Appendix 13.2: [Porthcawl Lighting Masterplan]
  - Volume 3, Appendix 13.3: [Spine Road Detailed Lighting Design]

### Site Location and Description

- 13.1.4. The site is located at Porthcawl, Bridgend County between Hillsboro Place to the West and Trecco Bay Caravan Park to the East. It is currently a multi-use site consisting of brownfield, car parks, a fair ground, a campsite and sea front commercial establishments. It is located approximately 380 metres east of Porthcawl town centre, and the Site lies immediately north of Porthcawl's Sandy Bay beach and Rhych Point peninsula.

### Proposed Development

- 13.1.5. The "Proposed Development" comprises:

*Up to 980 homes; Approximately 20 ha of open space including a series of new significant public open spaces with different offers; 2.2 ha of land for educational use; Approximately 130,000 square feet of commercial and leisure floorspace including retail uses, a Hotel, Lido, and a Gym / Studio Space; Enhancement of Porthcawl Harbour environment; New coastal defence works; A flexible meanwhile leisure use space (approximately 23,500 square feet); Approximately 6,500 square feet of flexible community / civic space; Provision of up to 600 public parking spaces within the site*

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*area; New spine road access from the Eastern Promenade to Sandy Bay; Enhancement of the Griffin Park and proposed new facilities including MUGA.*

13.1.6. Outline Planning Permission is sought for all elements except the proposed Spine Road for which Full Planning Permission is sought.

**Legislation and Policy Framework**

13.1.7. There are several relevant documents of Legislation and Policy Framework which set out requirements and considerations to best protect and conserve the environment to minimise negative impact when changing or implementing artificial lighting to an area, which are:

- Planning Policy Wales (Edition 12, 2024)
- Environment Act (Wales) 2016
- Future Wales: National Plan 2040
- Wildlife and Countryside Act 1981
- Conservation of Species and Habitats Regulations 2010
- Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)
- BS EN 12464-2:2014 – Provides standards for lighting of outdoor workplaces.
- UK Ecodesign Regulations for Lighting Products (2023 update)
- Bridgend County Borough Council Local Biodiversity Action Plan (LBAP) and Landscape Character Assessment (LCA)

13.1.8. Additionally, there are numerous guidance documents that are produced by professional bodies which set out further recommendations and best practices for design and implementation of artificial lighting to minimise disruption, nuisance, and obtrusion and protect the night-time environment, which are:

- Institute of Lighting Professionals (ILP) GN01: Guidance Notes for the Reduction of Obtrusive Light (2021)
- Institute of Lighting Professionals (ILP) GHN08: Bats and Artificial Lighting at Night (2023)

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- Institute of Lighting Professionals (ILP) PLG04: Guidance on Undertaking Environmental Lighting Impact Assessments (2013)
- SLL Lighting Guide 6: The Exterior Environment (2016)
- SLL Lighting Guide 21: Protecting the Night-Time Environment (2021)
- SLL Code for Lighting (2022)

13.1.9. Planning Policy Wales states in section 6.8:

13.1.10. There is a need to balance the provision of lighting to enhance safety and security to help in the prevention of crime and to allow activities like sport and recreation to take place with the need to:

- protect the natural and historic environment including wildlife and features of the natural environment such as tranquillity;
- retain dark skies where appropriate;
- prevent glare and respect the amenity of neighbouring land uses; and
- reduce the carbon emissions associated with lighting.

13.1.11. Dark sky reserves exist in various parts of Wales, including Snowdonia, Brecon Beacons and the Elan Valley. Dark sky reserves can contribute positively to an area in economic and environmental terms and their characteristics should be taken into account when preparing development plan strategies and policies and when considering individual development proposals.

13.1.12. Lighting to provide security can be particularly important in rural areas or for specific purposes such as defence or to create calming environments. Where this is the case, planning authorities should adopt policies for lighting, including the control of light pollution, in their development plans.

13.1.13. Planning authorities can attach conditions to planning permissions for new developments that include the design and operation of lighting systems, for example, requiring energy-efficient design and to prevent light pollution.

13.1.14. Bridgend Country Borough Council's Local Biodiversity Action Plan (LBAP) lists local habitats as well as risks to them and makes suggestions for conserving them.

13.1.15. The LBAP identifies the Porthcawl Coastline areas and notes "Biodiversity is important in coastal grasslands, agricultural hedgerows and field margins." The LBAP also identifies important opportunities for "Maintenance, extension and enhancement of the coastal

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grasslands” and “sensitive recreational management is required to prevent further degradation of the coastal habitats.”

13.1.16. The LBAP identifies Porthcawl itself and notes “Recreation is important in the greenspaces and playing fields of the town, and especially along the shore where many tourists come to enjoy the natural environment.” It also notes “Greenspace in Porthcawl is important for wellbeing and health, and helps to join up patches of habitat allowing species to move through the urban environment.”

13.1.17. Although the LBAP does not address lighting directly, its identification of areas of importance and opportunity for biodiversity should be kept in mind as areas that need particular attention for careful sympathetic lighting design.

13.1.18. The Landscape Character Assessment (LCA) provides a sound evidence base for planners and developers to consider the character and sensitivity of the different landscapes of the County Borough when considering new developments. It also promotes an understanding of how the landscapes of the County Borough are changing (as a result of a combination of natural, economic, and human factors), and how they can be strengthened in response.

## 13.2. Assessment Methodology

### Desktop Survey

13.2.1. Assessing current site conditions was undertaken by conducting a desk top study of the site and review of findings of conditions identified by ecology surveys. Identifying and commenting on the existing lighting profile. This included:

- An assessment of the site using Google Maps and existing drawings;
- Reviewing and commenting on a David Clements Ecology LTD report (2023) and working alongside with Bioscan UK (the current ecologists) to determine sensitive areas where lighting mitigation measures will need to be in place;
- Establishing the site Environmental Zone ratings as per current Institute of Lighting Professionals (ILP) and Bat Conservation Trust guidance;
- Consultation with previous lighting designer for existing streetlighting in the area for establishing existing equipment and conditions.

13.2.2. It has been assessed that a desk top study is sufficient for this stage and an on-site nighttime lighting survey of the site is not necessary at this point in time. Justification for this includes:

- There is confidence that known poor existing light spill is being improved—an example being the floodlights towards the east of the site being removed;
- The significant dark unlit areas of importance in the existing site will be remaining dark or we are strictly controlling and mitigating our new lighting design around the sensitive receptors.

13.2.3. The desktop study was used to identify areas of existing artificial lighting that were acceptable to remain or problematic and to be rectified.

13.2.4. The desktop study also identified areas of sensitive receptors even where not subjected to any artificial light currently, and which are to be protected from problematic negative impact from the newly proposed lighting scheme in this planning application.

13.2.5. Sensitive receptors to Obtrusive Light on the site have been identified using existing and proposed plans, along with the Ecologist's (Bioscan's) input. Assessment for dealing with these sensitive receptors is identified in the next sections of this document. The sensitive receptors of the site have been identified as the following:

- Residential dwellings surrounding the site;
- Proposed residential dwellings;

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- Coastline;
- Sand dunes and Rhych Point;
- Existing light sensitive species on site – mainly bats. Please see the Lighting Masterplan for the specific locations of these bat highways.

**Guidance Notes Zoning and Limits**

13.2.6. Guidance Notes for the Reduction of Obstructive Light GN01:2020 (ILP, 2020) classifies environmental zones into five categories, shown in Table 13.1. The lighting limitations for each environmental zone are described in Table 13.2, extracted from the same document. Limits are set in terms of:

- Permissible maximum upward light %;
- Illuminance into windows;
- Source intensity; and 'building luminance', which sets upper values for decorative lighting of any structure, statue etc.

Table 13.1. Environmental Lighting Categories.

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, village, 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

13.2.7. (SQM = Sky Quality Measurements)



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Table 13.2. Obtrusive Light Limitations for Exterior Lighting Installations - General Observers.

Zone	Sky Glow ULR (Max %)	Light Intrusion (into windows) E <sub>v</sub> (Lux)		Luminaire intensity I (candelas)		Building Luminance L (Pre-curfew)
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average L (cd/m <sup>2</sup> )
E0	0	0	0	0	0	0
E1	0	2	0 (1*)	2500	0	0
E2	2.5	5	1	7500	500	5
E3	5	10	2	10000	1000	10
E4	15	15	5	25000	2500	25

(ULR = Upward Light Ratio of the installation; E<sub>v</sub> = Vertical illuminance in lux; I = Light intensity in candelas; L = Luminance in candelas per square meter. \*permitted only from public road lighting installations.)

- 13.2.8. These limits should then be applied to any new lighting in the area. Following the desk, the site has been classified as Environmental Zone E3.
- 13.2.9. Where possible, any new lighting proposed by the development should conform to the limitations provided in Guidance Notes for the Reduction of Obstructive Light GN01:2020 (ILP, 2020).

### Ecologically Sensitive Receptors and Guidance

- 13.2.10. The Ecologist (Bioscan) has identified the following areas of ecological importance and provided commentary on the improvements to existing lighting and protections required for any new lighting proposals for these areas.
- 13.2.11. Eastern Promenade / Salt Lake / Hillsboro: no concerns have been raised as bat interest here is very limited, likely due to a combination of a paucity of suitable habitat and fairly high existing lighting levels.
- 13.2.12. Flood Defences area: Light levels should be kept to a minimum.
- 13.2.13. Sand dunes and Rhych Point should remain unlit.
- 13.2.14. With respect to the area just north of the sand dunes (pathway & mini golf, plus the southern edge of the residential area): The existing lighting situation north of the sand

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dunes is very bad for bats, with extremely bright lights mounted on poles in the caravan areas (hardstanding north of the dunes, and north-west of the dunes), which spill out over the dunes.

- 13.2.15. The tree line along the eastern edge of Griffin Park is a hotspot for bat activity, a sensitive lighting design for bats (further to GN08 Bats and Artificial Lighting at Night) should be employed.
- 13.2.16. With respect to the area around the eastern, northern and part of western edges of the Sandy Bay East area, the lighting here should be kept to a minimum (and close attention also paid to minimising light spill into these areas from the residential area by employing a sensitive lighting strategy here). The importance of sensitive lighting at this location is underlined by the presence of the rare (and extremely light sensitive) species lesser horseshoe bat, in particular in the north-eastern corner but likely to move along the edge habitat.
- 13.2.17. Lighting should be kept to a minimum in the corridor extending from Griffin Park through the Monster Park and into the sand dunes, with sensitive lighting design again employed here. Sports pitches may have be an exception, but lighting should be minimised and directed away from the Griffin Park tree line on its eastern side.
- 13.2.18. Lighting at these sensitive boundaries will be below 0.2 lux horizontal and 0.4 lux vertical.
- 13.2.19. The impact on these receptors and lighting mitigation for achieving the limits set out are covered further throughout this document and Appendices.

**Baseline Conditions****Existing Lighting Conditions**

- 13.2.20. Refer to Volume 3, Appendix 13.2: [Porthcawl Lighting Masterplan] for reference to the "Area" numbering used to delineate areas of existing lighting conditions referred to in this section.
- 13.2.21. Area 01 includes existing lighting for an Aldi supermarket and associated car park. This lighting's arrangement and any associate spills onto the areas within this masterplan is deemed appropriate for the area and use.
- 13.2.22. Area 01 includes unlit area adjacent to the Eastern Promenade that is to be developed on. A road lighting buffer exists between this space and properties to the west, and the Eastern promenade exists as a buffer between it and the beach. The new lighting design for this area will be predominant and baseline conditions are negligible.

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- 13.2.23. Area 01 includes existing Hillsboro car park. This car park will be redeveloped with new lighting and existing baseline conditions are negligible. It is noted that existing dwellings to the west are sensitive receptors for consideration.
- 13.2.24. Area 02 consists of the Eastern Promenade. It is currently being lit by numerous 83W, 4000K column mounted luminaires. These luminaires are utilised to light both the roadway and the pedestrian walkway adjacent. Due to their function as roadway lighting, they provide a higher level of light than will be needed for the pedestrianised area that will be introduced to replace the road. This is identified as an opportunity for improvement via the reduction of light spill and lowering of light levels, as well as lowering of colour temperature to reduce nuisance illumination.
- 13.2.25. Areas 03 and 04 are currently commercial / leisure sea front area with little consideration for sympathetic environmental lighting. All existing lighting will be removed and so this represents an opportunity for improvement on the external lighting to the area with a new lighting design following regulations and guidelines.
- 13.2.26. Area 05 represents Griffin Park and adjacent area which will be developed into a New Linear Park, Pump track, Monster Park, and Community Garden. Griffin Park is predominantly unlit, with only nominal lighting associated with the small structures on site. The Linear Park area is currently fair ground area, which will have any existing lighting removed. The Monster Park is of ecological importance and is not itself lit, but is bordered by lit roadways with poor light spill. These areas represent an opportunity for improvement over the baseline conditions.
- 13.2.27. Area 06 consists of the car park for the existing fairgrounds. Existing lighting is sparse, and where it does exist it consists of unsympathetic flood lighting without control for light spill. Sensitive receptors exist to the north of this area—domestic dwellings—and in the new masterplan to the south—planned ecological route. In both cases, the new lighting design can be sensitive to light spill onto these receptors.
- 13.2.28. Area 07 consists of the new Spine Road. The existing lighting condition is the same as that identified in Area 05 which sits just to the north of Area 07. Sensitive receptors within Area 05 is particularly of focus for lighting design of the Spine Road to ensure the avoidance of nuisance or detrimental lighting spill to the areas of ecological importance.
- 13.2.29. Area 08 consists of the perimeter area of Sandy Bay Ecological Remedial Works and Drainage. No existing external lighting is noted in this area.

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- 13.2.30. Area 09 consists of the Sandy Bay Bowl and camping / therein. It is Sporadically lit with pole-mounted lighting with uncontrolled light spill. These will be removed as part of the development works in the area. As this area will be heavily developed with a new residential dwelling neighbourhood, the existing light levels and spill from these luminaires is of nil import.
- 13.2.31. Areas 10, 11, and 12 depicts Sandy Bay Park, Mini Golf, Sea and Beach Facility, and the Community Pavilion areas. Lighting present is limited to pole mounted lights along the walking path and adjacent to camping/caravan areas. These existing luminaires are very poor for the area and are identified as detrimental to the ecology in the area, including spill onto the sand dunes. Improvement is anticipated by the removal of these luminaires and the introduction of sympathetic lighting design with controlled levels and spill.

### 13.3. Assessment of potential Effects, Mitigation Measures and Residual Effects

#### Potential Effects

- 13.3.1. Where existing lighting is present within the development area, this lighting is to be mostly removed and replaced with new lighting in each area, suitable for each area's use and with consideration to limiting light spill and obtrusive light, while also protecting sensitive receptors nearby.
- 13.3.2. The removal of existing lighting will have noted beneficial effects, as existing lighting is generally unsympathetic to sensitive surroundings and has no light spill control. Lighting introduced back into these areas after removal will have significant improvement by introducing:
- Lower lighting levels, such as on the Eastern Promenade
  - More appropriate lighting types with better spill control, such as the area north of the Sand Dunes
  - More appropriate lighting colour temperature throughout, which is less obtrusive to ecology
- 13.3.3. The introduction of new lighting generally to the development areas within this application is anticipated to increase the overall ambient lighting and subsequent sky glow. See next section for mitigation.
- 13.3.4. The new lighting design will also have a positive effect on the security and safety of the area, particularly for designated footpath routes to be lit. These routes are strategically chosen and designed to protect receptors sensitive to light.
- 13.3.5. New street lighting to be introduced for the Spine Road will increase lighting in areas adjacent to the ecologically important route between Griffin Park towards the East, north of the Monster Park. There is a risk of spill from this lighting negatively affecting bats. See next section for mitigation.
- 13.3.6. There is the potential for occupants or wildlife to be adversely impacted by external lighting both during construction and operation phase. This includes both within and potentially outside of the project boundary. See next section for mitigation.

**Mitigation and Enhancement Measures**

- 13.3.7. Enhancements to the existing lighting is anticipated along the Eastern Promenade, where the existing luminaires will be fit with warmer colour temperature LEDs, and dimmed to a lower output suitable for the proposed pedestrianised areas. This will significantly reduce the over-lighting of the area currently in place due to these luminaires lighting the adjacent vehicle roadway, which is to be removed in the proposed development.
- 13.3.8. Potential increase in overall development Sky Glow effect will be mitigated and minimised by using luminaires that are Dark Sky compliant with minimum upward light. This will additionally be mitigated by the use of photocell and timeclock control, and curfew dimming where appropriate. Presence detection control will also be considered for areas of intermittent traffic.
- 13.3.9. Light spill from the Spine Road has been calculated for the developed design and shown to fall below the thresholds recommended by the Ecologist for the ecological route between Griffin Park eastward along the treeline (0.2lx, 0.4lx vertical). This has been achieved by careful luminaire selection and design with a high degree of directional light control. The design and performance of this lighting design can be seen in Volume 3, Appendix 13.3: [Spine Road Detailed Lighting Design].
- 13.3.10. The construction planning for any temporary lighting should follow the same principles set out for the permanent lighting, with input from the Ecologist as appropriate for each stage. It is expected that construction lighting would be carefully positioned away from sensitive receptors, and provided with appropriate controls to reduce duration of any unnecessary increased lighting levels.
- 13.3.11. The use of additional cowls on luminaires may be considered and introduced for any particular instance of nuisance lighting. This can be implemented for temporary lighting, as well as simulated for the proposed permanent lighting design where needed.
- 13.3.12. Further, it is anticipated that a Construction Environmental Management Plan will be secured via planning condition. The CEMP will set out appropriate working hours, primarily focussed in the daylight hours.

**Residual Effects**

- 13.3.13. Light spill from existing areas which are outside of the scope of this proposal will remain. These areas include the Aldi site, and Static Caravan site to the East. Light spill from these areas are not anticipated to contribute significantly light spill to sensitive areas, but should be reassessed periodically as the design develops.

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13.3.14. Where new lighting is to be installed for parking and roadway areas, proposed lighting columns could have an effect on the new housing development. The spill into windows etc. will be reduced but using low level columns with shielding where necessary. The lighting designed will need to be developed in detail when window positions are confirmed to ensure any light spill adheres to Reduction of Obstructive Light GN01:2020 (ILP, 2020).

**Cumulative Effects**

13.3.15. Increased Sky Glow is inevitable as a result of developing and introducing artificial light in areas that were predominantly unlit. The residual effect of this, however, falls within the expected limits provided in Guidance Notes for the Reduction of Obstructive Light GN01:2020 (ILP, 2020) for the Environmental Lighting Zone for this area of Porthcawl.

13.3.16. The proposed design will greatly improve the quality and consistency of light throughout the site, contributing to a cohesive space and increasing a feeling of safety and security for users of the space.

## 13.4. Conclusions

- 13.4.1. Stantec has undertaken a desk top study along with ecologist input to determine sensitive boundaries and receptors as well as identify poor existing illumination that has a detrimental effect to the environment and particular ecology.
- 13.4.2. A new proposed lighting design has been put forward for the redeveloped masterplan. Poor performing lighting is proposed to be removed and replaced with new lighting which is sympathetic the environment and ecological constraints.
- 13.4.3. Where a risk of light spill onto such sensitive receptors exists, mitigation will be in place to ensure acceptable levels of light along these boundaries and receptors. Mitigation is primarily achieved through careful selection of luminaires and lighting design. Where necessary, cowls for blocking further spill will remain an option if needed.
- 13.4.4. Even though a greater number of fixtures will be present throughout the overall quality of light will be greatly increased. Further detailed lighting designs will be undertaken at each phase of the redevelopment to prove we are meeting the targets set out in this report.



## **13.5.References**

Volume 3, Appendix 13.1: [Lighting Impact Assessment]

Volume 3, Appendix 13.2: [Porthcawl Lighting Masterplan]

Volume 3, Appendix 13.3: [Spine Road Detailed Lighting Design]