

Site Name:

Bike Park Wales, Gethin Woodland Centre, Abercanaid, Merthyr Tydfil, CF48 1YZ

Report Reference:

WWE25107 Bike Park Wales, Non-Material Amendments to Chalets - Preliminary Ecological Appraisal

Date: 17/04/2026

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Introduction

Bike Park Wales, Gethin Woodland Centre, Abercanaid, Merthyr Tydfil, CF48 1YZ (Grid reference: SO 05132 03460) is subject to planned works (Under approved planning permission, application P/19/0073). This application was for the provision of 36 camping pods and 5 chalets, erection of shower/toilet block and creation of play and picnic area. The application also includes the construction of new parking area (150 spaces) with overflow carpark (46 spaces), together with a trail maintenance yard, new highway access routes, ground profile works, drainage, infrastructure and landscape works.

Non-material amendments have since been made to these approved works. These relate only to the chalets, and include:

- minor amendments to chalet lighting;
- minor amendments to landscaping (planting screen to prevent light spill);
- elevation design (position of windows and doors);
- changes to the internal floor layout and the use of external materials;
- minor changes to layout around chalets, including repositioning of pathways

The Landscape Masterplan outlining these amendments can be found within the appendices of this report (Appendix I).

Potential ecological impacts and necessary mitigation requirements arising from these amendments are considered within this report. Assessments are based on previous ecological survey works conducted on the site, and previous reports by Wildwood Ecology.

A Preliminary Ecological Appraisal (PEA) was undertaken at the site by Wildwood Ecology in 2018. Detailed species surveys were carried out by Wildwood Ecology in 2018, including: bat transect surveys, static monitoring, reptile surveys, and breeding bird surveys. A high-level site walkover, Ground-Level Tree Assessment (GLTA) as well as bat activity surveys (static monitoring and walked transect), and breeding bird surveys were conducted at the site in 2022. The results of these surveys can be found in the previously submitted Ecological Impact Assessment prepared by Wildwood Ecology in 2023 (*WWE18125 EcIA REV A 04/10/2018*).

This EcIA report was updated in 2023 (*WWE22067 EcIA Rev C, 16/01/2023*). A site walkover was undertaken in 2023 when an updated application for part of the area subject to permission P/19/0073 was made and subsequently

granted via P/22/0192. While the chalet area was not part of that application, the area where the chalets are proposed was included and considered within the site walkover and PEA that was prepared. The findings of the 2023 walkover can be found in the previously submitted Ecological Impact Assessment prepared by Wildwood Ecology in 2023 (*WWE22067 EcIA Rev C 16/01/2023*).

WWE22067 EcIA Rev D 27/03/2023 was submitted in accordance with condition 6 of permission P/22/0192. While this application did not relate specifically to the chalets, it is the most up-to-date EcIA that considers the entire site.

A walkover of the site for an update PEA and GLTA was conducted in 2025, to inform the changes proposed within the Non-Material Amendments application. These surveys were undertaken by Dr Amy Williams Schwartz MCIEEM Senior Ecologist at Wildwood Ecology on 16/10/2025, following the Chartered Institute of Ecology and Environmental Management (CIEEM) Preliminary Ecological Appraisal (2017) guidelines and using UK Habitat Classification Version 2.0 codes (UK Hab, 2023).

The aerial image of the site below (Figure 1) shows the site to have consisted of an area of woodland with some open and hardstanding areas, and access tracks running through it.

The wider area included a mix of woodland types on the valley sides above the River Taff. The A470 was situated to the east of the site, running north-west to south-east, and the small towns of Abercanaid and Pentrebach were situated to the east, with industrial, retail, residential, and public spaces present.

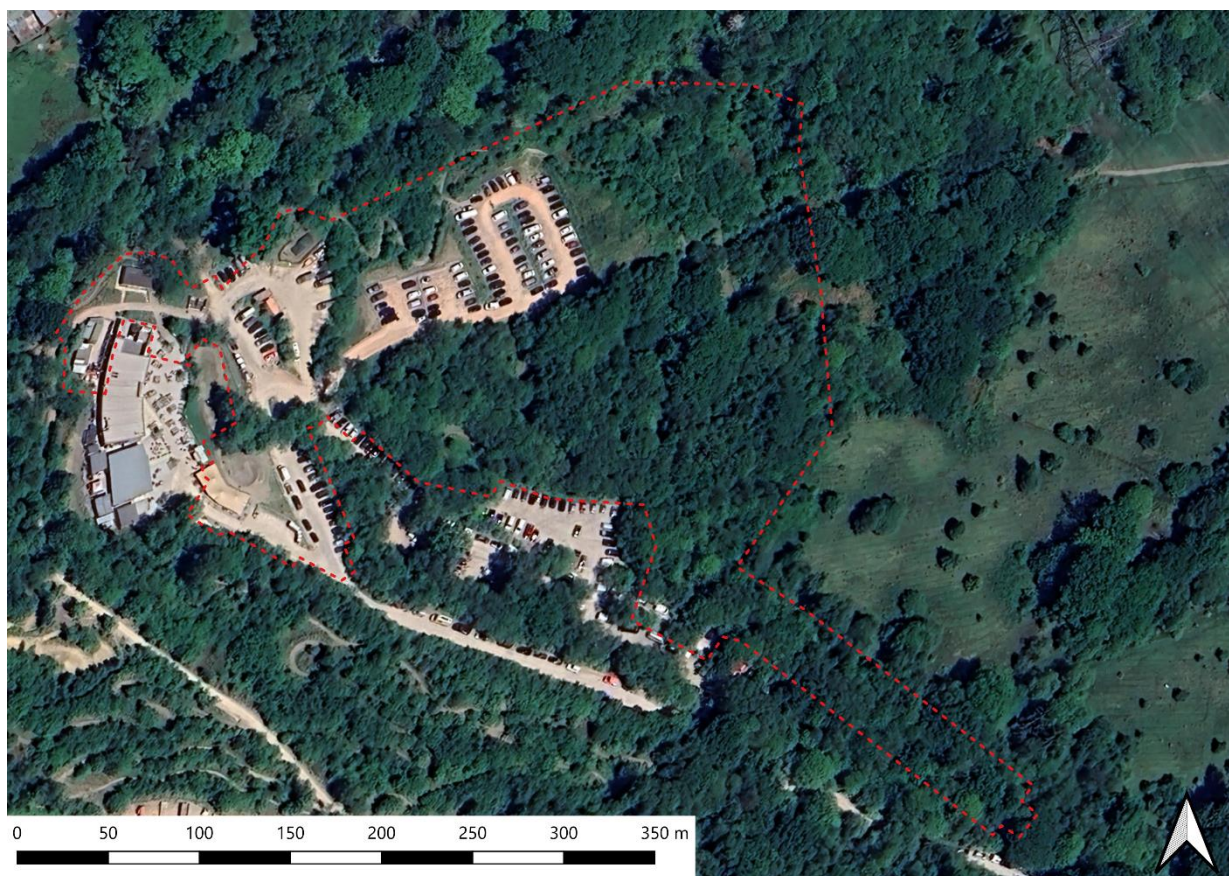


Figure 1: Aerial photograph showing site boundary.

Survey methods

UKHab Habitat Survey

A field survey was undertaken on 16/10/2025.

All habitats present within the site with the suitability to support rare, protected, or otherwise notable species of flora or fauna were noted, as well as incidental observations of species.

A UKHab Habitat Plan was produced in QGIS, incorporating Target Notes used to highlight features of ecological interest (Appendix II).

Desk study

No updated biological records were requested from SEWBrEC as part of this survey, as records were obtained in 2022 and then further updated by findings of the Wildwood Ecology surveys throughout that year. Desk study data was collected from the following sources:

- South East Wales Biodiversity Records Centre (SEWBrEC) (May 2022);
- Multi-Agency Geographic Information for the Countryside (MAGIC) (May 2022 & updated/checked in November 2025); and
- previous surveys on the site by Wildwood Ecology (outlined in *WWE22067 EcIA Rev D, 27/03/2023*).

Designated sites

Results from desk study data showed that there were no designated sites (Special Area of Conservation (SAC), Special Protection Area (SPA), RAMSAR) within 10km, one national designated site (Site of Special Scientific Conservation (SSSI), National Nature Reserve (NNR) within 2km of the site, and six non-statutory, locally designated sites (Local Wildlife Site (LWS), Site of Importance for Nature Conservation (SINC)) within 1km of the site:

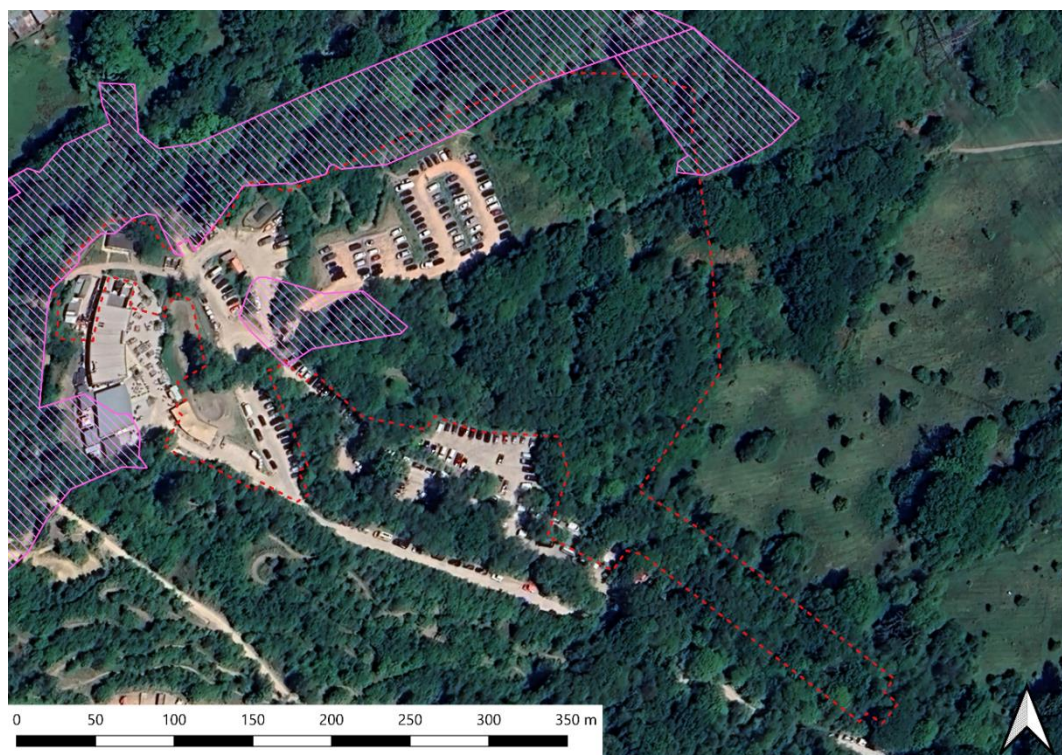
- Cwm Glo a Glyndyrys SSSI (950m north of the site);
- Abercanaid Fields SINC (onsite);
- Graig Gethin SINC (<50m west);
- Rhydycar West SINC (75m north);
- Cwm Woods SINC (450m north-west);
- Buarth-Waunydd SINC (563m south-east); and
- Afon Taf SINC (630m east).

Priority and notable habitats

The following priority/notable habitats were noted within and adjacent to the site:

- lowland mixed deciduous woodland; and
 - a pond (approximately 475m to the east).
-

A small area of the site was assessed to be 'restored ancient woodland site', see the Figure 2 below.



Priority and protected species

Figure 2: Area of restored ancient woodland site (purple polygon) within the site's boundary.

Data taken from taken from DataMap Wales "WOM21 Ancient Woodland Inventory" showing the extent of ancient woodland and restored ancient woodland site in the vicinity.

Priority and protected species records were returned from SEWBRc for species located within 2km of the site, and/or were confirmed during previous Wildwood Ecology surveys, including the following:

Amphibians: common frog, common toad, and palmate newt onsite during surveys. Great crested newt record, unspecified sighting 1.1km from site.

Bats: records of at least six bat species within 2km of the site, five of which were recorded during surveys on site in 2018 (common pipistrelle, soprano pipistrelle, brown long-eared, noctule, and Myotis species), and three in 2022 (common pipistrelle, soprano pipistrelle, lesser horseshoe).

Badger: record, dead on road 0.3km from site.

Birds: a variety of records both existing and during surveys, notable of which was crossbill (a Schedule 1 breeding bird) recorded onsite.

Hazel dormouse: there were no records of hazel dormouse returned from SEWBRC. However, online records from the Natural Resources Wales public register of protected species licences, returned a total of 13 hazel dormouse records in counties neighbouring Merthyr Tydfil. This included – Rhondda Cynon Taf, Caerphilly, and Brecon Beacons. As detailed locations of the licence records were not provided, an assessment of the distance of these records from the site could not be made. However, it is assumed likely that hazel dormouse are also present in the Merthyr Tydfil County (potentially under-recorded in more rural areas with less recent development).

Hedgehog: record, dead on road 0.4km from site.

Otter: record, unspecified sighting 0.8km from site.

Reptiles: common lizard recorded onsite during surveys, slow worm and grass snake recorded 0.8km from site.

Water vole: record, unspecified sighting 1.4km from site.

Field survey

Table 1 - Field survey timings and conditions.

Date	Weather conditions			
	Temp [°C]	Cloud cover [Oktas]	Wind speed [Beaufort scale]	Rain
16/10/2025	11	8	2 (3)	Nil

Field survey limitations

The following limitations relevant to this assessment were noted:

Although the extended Phase 1 Habitat Survey fell outside the recommended seasonal period for botanical surveys, the evaluation and habitat descriptions (and hence the impacts and their significance), are considered to be accurate for the following reasons:

- given the type of vegetation and habitats present, the valuation of the intrinsic interest is considered unlikely to change.
- access was possible to all areas of the site, and the vegetation was clearly visible; and
- previous surveys carried out by Wildwood Ecology in 2018 and 2022 collected extensive information on plant species present on the site.

New biological records were not requested from the Local Records Centre as part of the desk study, as records were previously obtained in 2022 to inform the EcIA report (*WWE22067 EcIA Rev D 27/03/2023*) and further updated by the findings of the ecological survey work conducted throughout the year by Wildwood Ecology.

Habitats

Table 2 sets out descriptions of the habitats present within the site using UK habitat Classification Version 2.0 codes, along with a list of species present.

Habitat	Habitat description	Species present
g1c - Bracken Secondary code: 207 - woodland open space	Area at the east of site with some larger trees but understorey comprised of majority bracken.	Bracken, bramble.
g1d - Other lowland acid grassland Secondary codes: 14 - scattered rushes 16 - tall forbs 202 - young trees - self-set	Area of acid grassland with encroaching scrub and bracken. Previously areas were plantation forestry (cleared before 2013) with successional growth of individual self-seeded trees. Some areas around the car park were recently seeded.	Grasses: cock's-foot, crested dog's tail, perennial rye grass, smaller cat's-tail, sweet vernal grass, Yorkshire fog. Sedges and rushes: compact rush, field woodrush, flowering rush, jointed rush, soft rush. Forbs: bird's-foot trefoil, black medick, cleavers, common nettle, creeping buttercup, creeping cinquefoil, creeping thistle, dandelion, devil's bit scabious, figwort, great willowherb, hedge woundwort, hemp agrimony, herb bennet, herb Robert, lesser trefoil, mare's tail, meadow thistle, meadow vetchling, meadowsweet, sorrel, spear thistle, square-stalked willowherb, tormentil, white clover. Ferns: bracken. Scrub: bramble, buddleia. Individual trees: alder, cherry, hazel, pedunculate oak, willow.
h3h - Mixed scrub Secondary code/s: 202 - young trees - self-set	Areas of scrub were present along the woodland margins, as understorey and encroaching within the acid grassland area. Scrub was particularly dominant at the north-east of the site.	Alder, ash, bracken, bramble, common centaury, creeping buttercup, foxglove, gorse, hawkbit sp., hazel, heath bedstraw, hoary plantain, hogweed, knapweed, lady's mantle, rowan, sowthistle, yellow pimpernel.
r1g - Other standing water Secondary codes: 41 - pond (non-priority) 49 - freshwater - artificial 848 - sustainable drainage system	Reedbed filtration system installed at the west of the site with small area of open water present.	Common reed.
u1b - Developed land; sealed surface	Small hardstanding area around the car park.	N/A
u1c - Artificial unvegetated, unsealed surface Secondary code: 804 - car park	Some gravel tracks/car parking.	N/A

u1e – Built linear features Secondary code/s: 800 (road), 839 (track)	Access road and tracks.	N/A
W1f – lowland mixed deciduous woodland Secondary codes: 28 - ancient woodland site 30 - semi-natural woodland 204 - veteran tree	The majority of the site consisted of mixed deciduous woodland. There were veteran trees present, but many of the trees were of similar age.	Canopy: alder, ash, beech, birch sp., cherry, hawthorn, hazel, ivy, pedunculate oak, sessile oak, sweet chestnut, sycamore, willow sp. Understorey: bracken, bramble, holly. Ground flora: bluebell, comb fern, common nettle, herb Robert, hogweed, ivy, rough meadow-grass, wood sorrel.

The suitability of the site habitats for protected species relevant to the site habitats, the connectivity of the site and observed incidental evidence can be found in Table 3.

Table 2 - Protected species potentially present onsite.

Species or group	Habitat suitability	Site connectivity	Notable onsite features	Presence confirmed?
Amphibians, including great crested newt	Good	Excellent/direct	Filter pond present at north-west of the site, toads found during reptile surveys.	Presence of common amphibians (not including great crested newt) confirmed onsite via incidental evidence
Badger	Excellent	Excellent/direct	No signs of badger directly observed but likely to use the habitat.	Onsite habitat was suitable and the site had good connectivity to the surrounding landscape
Bats: foraging and commuting	Excellent	Excellent/direct	Variety of habitats present for foraging bats.	Confirmed onsite during previous surveys
Fish	Poor	Poor	Some small ditches present but likely to dry frequently.	Onsite habitat was unsuitable and there was no connectivity to the surrounding landscape
Fungi	Excellent	N/A	Lots of standing and lying deadwood supporting saprotrophic fungi.	Confirmed onsite via incidental evidence
Hazel dormouse	Good	Excellent/direct	Dormouse not recorded in Merthyr, however they were known to be present in	Onsite habitat was suitable and the site had some

			neighbouring counties and considered likely to be in the local area.	connectivity to the surrounding landscape
Hedgehog	Excellent	Excellent/direct	Suitable habitat for nesting/foraging/hibernation.	Onsite habitat was suitable and the site had good connectivity to the surrounding landscape
Invertebrates	Good	Excellent/direct	Many different plant species recorded to support a variety of invertebrates.	Onsite habitat was suitable and the site had good connectivity to the surrounding landscape
Nesting birds	Excellent	Excellent/direct	Many bird species identified onsite. Numerous species found to be nesting during previous surveys.	Confirmed onsite during surveys
Otter	Good	Good	Some habitat suitability for otter, and they were likely to at least occasionally use the large pond approx. 475m to the east of the site.	Onsite habitat was suitable and the site had some connectivity to the surrounding landscape
Reptiles	Good	Excellent/direct	Reptiles known to be using scrub/woodland edge and areas of grassland.	Confirmed onsite during surveys
Water vole	Poor	Good	Site did not contain suitable habitats for water vole.	Onsite habitat was unsuitable and there was no connectivity to the surrounding landscape

Invasive species

No species listed on Schedule 9 of the Wildlife and Countryside Act 1981 were incidentally observed to be present onsite.

Ground Level Tree Assessment

Tree reference numbers (where available) taken from the tree plans produced by Treescene. Numbers not in brackets were from tree survey report dated March 2025, bracketed numbers from report dated November 2019.

Tree reference	Tree species	PRF type	PRF description
(T23)	Oak	PRF-I	Small cracks, fissures
Unknown – between (T23) & (T41)	Unknown	PRF-M	Dead tree, highly suitable, 2x woodpecker holes and large rot hole
(T41)	Oak	PRF-M	Broken limb (storm damage) providing large cavity
(T42)	Oak	PRF-I	Large tree with likelihood of PRFs not visible from ground
T1862 (T43)	Oak	PRF-I	Large tree with likelihood of PRFs not visible from ground

T1863 (T44)	Oak	PRF-I	Large hole currently with hornets' nest present, meaning downgrade from PRF-M to PRF-I
T1864 (T45)	Oak	PRF-M	Large cavity on north and west side of main stem. Extensive deadwood throughout crown. Some storm damage.
(T46)	Oak	PRF-I	Small cracks, fissures
Unknown – south of (T46)	Unknown	PRF-M	Hole in main trunk
Unknown, adjacent to above	Alder	PRF-I	Small cracks, fissures
T1867 (T53)	Oak	PRF-I	Various gaps around snapped branches, wounds on large branches
T1868 (T55)	Oak	PRF-I	Small holes where branches have been pruned
T1870 (T57)	Oak	PRF-I	Small cracks, fissures
T1871 (T61)	Alder	PRF-M	Large hole formed from snapped branch
T1873 (T63)	Alder	PRF-I	Small cracks, fissures

Impacts

Due to the proposed works, it is likely that in the absence of mitigation there will be adverse effects on the following designated sites, habitats, and species.

- Designated sites – There were no statutory designated sites in the vicinity of the site that were likely to be impacted by the works. However, there were three local non-statutory designations on and/or adjacent to the site:
 - the designation for Abercanaid Hills SINC extended into the wooded area at the ease of the site. Other SINC's were in close vicinity to the site - Graig Gethin SINC (<50m west), and Rhydycar West SINC (75m north).
- Description of the SINC included the following: "Series of fields situated either side of the A470 containing mainly species-rich semi-improved grasslands and marshy grasslands. Also some small areas of semi-natural oak/birch woodland, scattered scrub and trees."

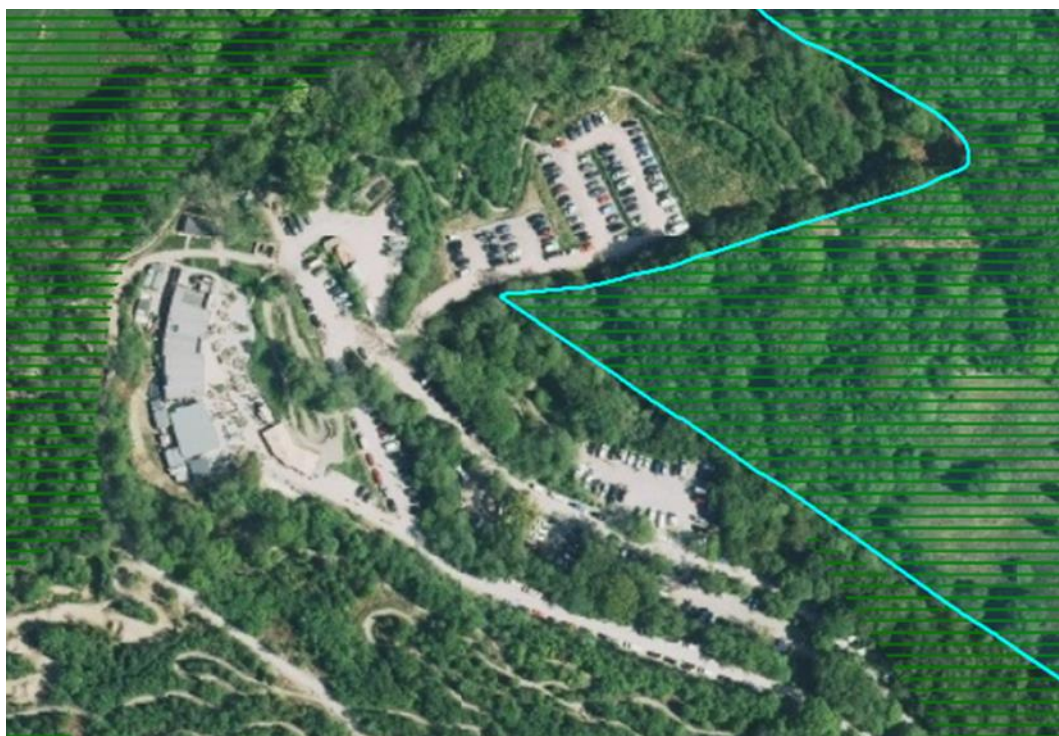


Figure 3: Location of extent of Abercanaid Fields SINC (boundary highlighted in blue).

Other SINC extents visible in the map are Rhydyar West SINC (visible at the north-west of the image) and Graig Gethin SINC (visible at the west and to the south of Abercanaid Fields).

Image produced 20/11/2025 from Merthyr Tydfil County Borough Council Adopted Replacement LDP 2016-2031 Proposals Map.

Priority Habitats

- **Pond** – due to the distance between the site and Webber's Pond, as well as the nature of works, it is not considered that the works will have a negative impact on the pond.
 - **Woodland** - There will be no removal of any mature trees, though there will be a loss of some understorey to allow the construction of new chalets. Additional new planting is proposed to provide screening as per the landscape proposals masterplan and to replace any trees which may be removed, with the species planted to be of local provenance (grown in the UK) and native species only. The management plan as outlined in the landscape proposals masterplan will be implemented to ensure the survival of plants, and if any fail, these will be replaced like-for-like in the next winter season. Therefore, no woodland area will be lost as part of the current proposals. While the woodland habitat will be altered, the overall woodland character will be retained, with only clearance on the footprint of the chalets and associated pedestrian paths. The footprint areas of each small building are not to be changed by the Non-Material Amendments being made.
 - Indirect impacts to the woodland could include the following:
 - breaking connection between veteran trees;
 - reducing semi-natural habitats;
 - increasing light spill, air and soil pollution;
 - increased disturbance to wildlife from increased human activity (including by new lighting), particularly at night, as the site is currently only used during the daytime;
 - increased trampling of plants and soil erosion; and
 - increased fly tipping and litter.
 - **Amphibians** – due to the loss of/damage to suitable terrestrial habitats nearby. There is also a risk of killing/injury of amphibians (legislation triggering) during the clearance and construction phases of development, as well as increased risk of trampling during the operational phase of the development.
 - **European badger** – due to the loss of suitable foraging habitat onsite, higher levels of nocturnal disturbance due to overnight stays on the site and the potential for direct killing/injury of badger (legislation triggering) during the construction phase of the proposed development.
 - **Foraging and commuting bats** – as evidenced by the 2018 and 2022 bat surveys, the site was used as a flight-path and foraging habitat by at least six bat species, including light-sensitive species (brown long-eared, Myotis species, and lesser horseshoe). Due to the loss of understorey habitat in the absence of suitable mitigation, there is a risk of impacts on the local foraging and roosting bat populations at the site.
 - **Hazel dormouse** – due to the impacting of suitable woodland habitat onsite, despite the lack of records for hazel dormouse in the local area, in the absence of suitable mitigation there is a risk of killing or injuring dormouse and habitat removal of EPS (legislation triggering) if they were present at the site (as they were known to be present in neighbouring counties). Indirect impacts could also occur if dormouse were present, as a result of new artificial lighting, noise, and disturbance (including trampling of habitat, informal play, and potential presence of dogs if allowed onsite).
 - **Hedgehog** - loss of suitable foraging habitat onsite, higher levels of nocturnal disturbance due to overnight stays on the site and the potential for direct killing/injury of hedgehogs (legislation triggering) during the clearance construction phase of the proposed development.
 - **Nesting birds** – due to nesting birds being confirmed onsite during previous surveys and onsite habitats being highly suitable for use by nesting birds. Proposals will result in a reduction in available nesting
-

habitat due to removal of scrub as well as increased disturbance. Unmitigated, active bird nests could be destroyed during the construction phase, triggering legislation.

- **Reptiles** – onsite presence of reptiles was confirmed by the 2018 reptile survey (common lizard), as well as presence of suitable habitats and features. Adverse impacts could occur due to confirmed presence onsite, nearby records (slow worm, grass snake) and good connectivity to suitable habitats within the surrounding landscape. It is likely that small numbers of common lizard use the woodland edges, and edges of areas of scrub which are within the proposal area.

Therefore, in the absence of mitigation there is a risk of killing/injury of reptiles (triggering legislation) during the clearance and construction phases of the proposed development.

- **European otter** – due to the potential for otter commuting over the site, increased noise and light pollution at night have the potential to negatively impact otter that may be using the site due to disturbance. Increased traffic at night may increase the possibility of otter killing/ injury.

Recommendations

Habitats and biodiversity enhancements

Local authorities have a duty to seek to maintain and enhance biodiversity in the exercise of their functions. Where possible, the existing onsite habitat of ecological importance should be retained to ensure that habitats and species that rely on them are not adversely affected by the development/works.

As the proposed works will impact on onsite habitats, the development must aim to provide a Net Benefit for Biodiversity (NBB).

The mitigation measures previously outlined for the area remain valid. These are as per the Wildlife Protection Plan associated with condition 6 of P/190073 (*WWE20037 WPP REV D, 04/01/2021*) and a Woodland Management Plan (*WWE20037 WMP REV A, 30/06/2022*), which is being submitted to discharge condition 10 of permission P/190073. These include recommendations for root protection zones, planting, and other management. The approved Habitat Management Plan (*WWE19194 HMP, 10/10/2019*) remains valid.

If any trees as laid out in Table 4 are to be altered or removed as part of the proposals, further investigations for bats and nesting birds will be required.

Priority and protected species

In-depth recommendations for specific species provided within the Ecological Impact Assessment Report (Report Reference: *WWE22067 EcIA Rev D 27/03/2023*) are deemed to remain valid due to the site being in very similar condition to when it was previously assessed.

With consideration to the Non-material Amendments being made to the previously approved proposals: it is considered that the species-specific mitigation measures outlined in *WWE18125 EcIA REV A 04/10/2018* remain relevant despite the minor changes to proposals.

WWE22067 EcIA Rev D 27/03/2023 contains information about sensitive lighting for the wider site, including the chalet area, in Appendix VII. While this version of the EcIA report was submitted for an updated application for amendments to the site masterplan, it is considered that the information relating to site lighting remains relevant as the area containing the chalets is considered. This information within this report should therefore be followed during construction and operational stages.

The sensitive lighting strategy outlines dark corridors to be kept on the site (also see lighting plan in Appendix III of this document), as well as proposed areas for installation of bat roosting boxes on trees.

It is understood from the lighting engineer associated with the project (Paul Hindle, Lumenata) that due to the design of the chalets, there will be no light spill upwards from the internal or external lighting in the lodges, and that any interior lighting will be installed at a higher height than the level of the glazing, meaning that any potential

glare issues would be significantly reduced. All internal lighting will be 2700K and kept away from areas of glazing to further reduce any potential light spill.

The lodges themselves are not placed within any identified flight paths for bats, and as there will be no upward light spill, the new lighting will not impact any potential roosting features (PRFs) in nearby trees. A planting screen will also be created to reduce light spill. Therefore there is not considered to be any negative impacts from proposals to commuting and foraging bats. See lodge lighting comments plan in Appendix IV for further details on lighting in relation to PRFs.

The following points are made for general protection of wildlife, and in relation to habitats:

- to protect all wildlife, no trenches or excavations should be left open without a means of escape (ramps should be left at a 30-degree angle to allow escape);
- all materials, fuel, and chemicals should be kept safely away from animal access;
- retained habitats of importance should be protected during the construction phase by installation of Heras fencing where required, as per best practice. This would help to avoid habitat damage by accidental incursions by plant or inappropriate material storage; and
- if any protected species are encountered during the works, works must stop, and a suitably qualified ecologist contacted for advice.

If any trees included in Table 4 are to be altered or removed as part of the proposals, further investigations for bats will be required.

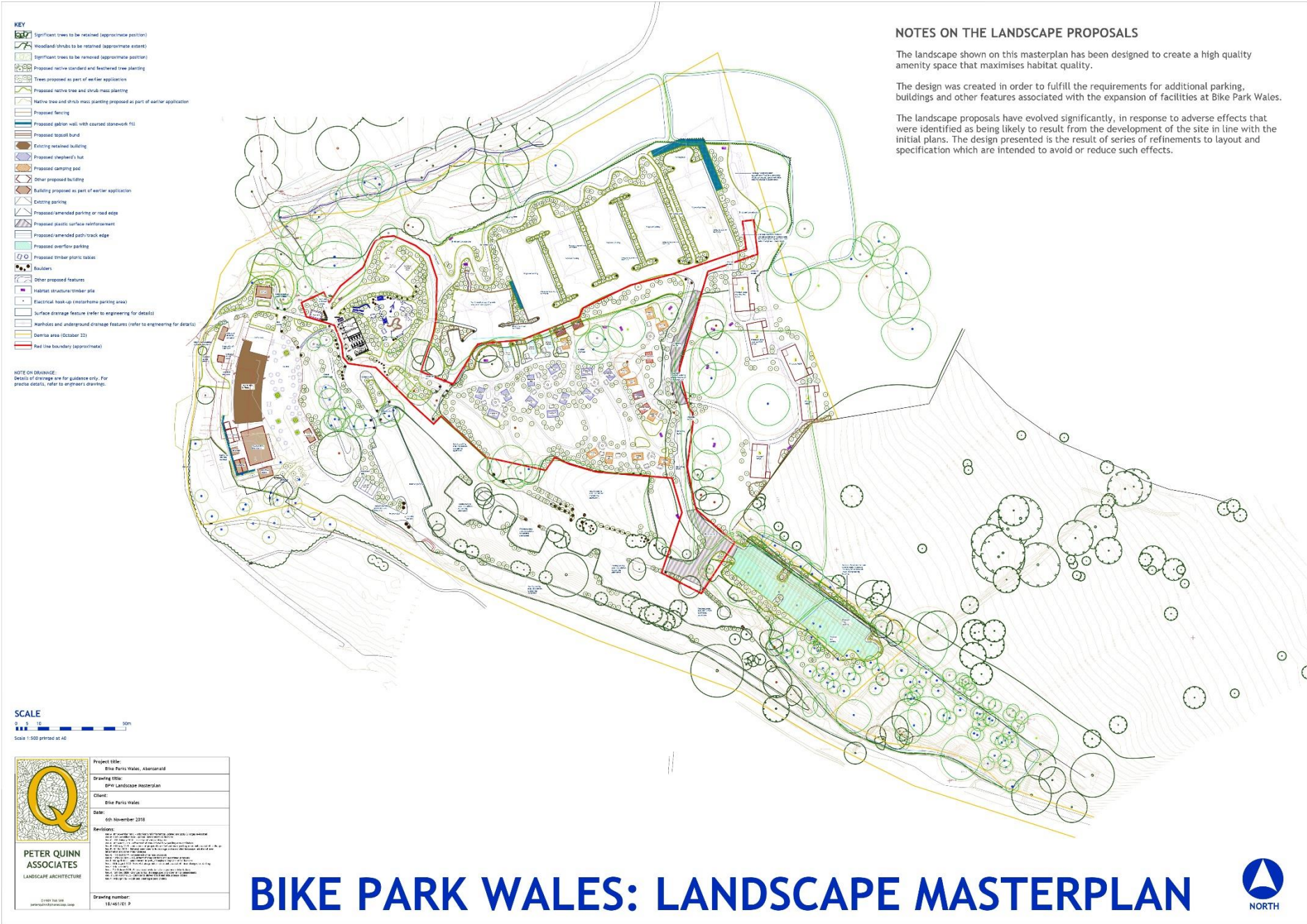
Conclusion

The site was not considered to have changed materially since previous surveys were undertaken on the site, and therefore any previously written reports by Wildwood Ecology regarding the proposed development are considered to continue to be accurate in their content and recommendations.

It is considered that the Non-Material Amendments being made to proposals will have no significant impacts on protected species or habitats.

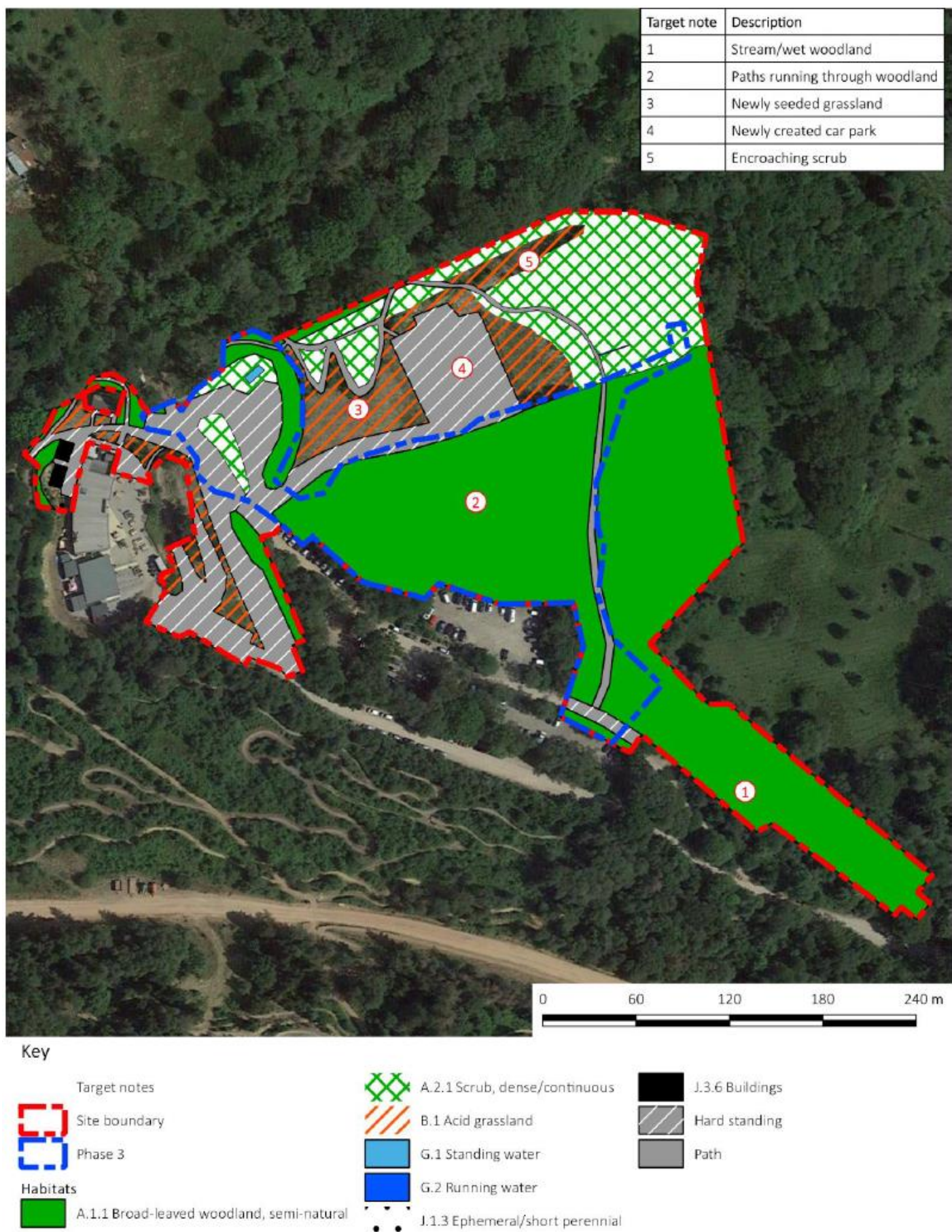
It is also considered that the mitigation recommendations made within previously submitted *WWE18125 EcIA REV A 04/10/2018*) and *WWE25107 PEA – Preliminary Ecological Appraisal (2025)* remain relevant with regards to the Non-Material Amendments being made to proposals.

Appendix I – Proposed Development Landscape Masterplan



Appendix II – Baseline habitat Distribution

Note: This habitat distribution map is from *WWE22067 EclA Rev D (27/03/2023)*.



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Addendum to Planning Application: Lighting Design Strategy for Additional New Lodges at Bike Park Wales

Prepared by Paul Hindle, Director, Lumenata

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1. Executive Summary

Addendum to Planning Application: Lighting Design Strategy for Five New Lodges at Bike Park Wales

This addendum presents a revised lighting design strategy for the proposed development of five new lodges at Bike Park Wales, intended to enhance site safety, accessibility, and aesthetic appeal while minimising environmental impact. The strategy builds upon the approved lighting elements from the original planning application, ensuring consistency with the site's overall design ethos and compliance with relevant standards for light pollution control and energy efficiency.

In this updated design, two primary types of lighting fixtures have been incorporated to illuminate pathways, entrances, and key external areas around the lodges. Firstly, the strategy utilises the same bollard lights that were previously approved as part of the original planning application. These bollards, known for their robust construction and low-level illumination, will be strategically placed along access routes to provide subtle, ground-directed lighting that maintains the natural ambience of the site without causing glare or excessive sky glow.

Secondly, to complement the bollards and address the specific needs of the lodge exteriors, a new wall-mounted light product has been introduced. This fixture is designed for mounting on the outer walls of the lodges, offering focused, downward-directed illumination for doorways, verandas, and immediate surroundings. Selected for its modern, minimalist profile and high-efficiency LED technology, this wall light ensures optimal visibility for guests while integrating seamlessly with the architectural style of the lodges. Full specifications are provided in the technical appendices to demonstrate adherence to best practices in dark sky preservation and sustainability.

Internal lighting within the five new lodges comprises shielded decorative and functional fixtures, including the specified Lindby Tirzana 4-bulb pendant for dining areas and Tattoo 6201 3-light rondel pendant for lounges, both featuring opaque metal shades that direct 100 % of light downward with no horizontal or upward emission. All lamps will be dimmable warm-white LEDs with a correlated colour temperature (CCT) of 2700 K or lower, minimizing blue-light content and ecological disruption.

This lighting approach not only aligns with the original application's approvals but also supports the site's operational requirements as a premier mountain biking destination, promoting safe navigation during low-light conditions without compromising the rural character of the area.

Critical note: The ecological, obtrusive-light, and planning-compliance performance of the entire scheme is wholly dependent on the exact luminaire types, optics, mounting details, shielding, and control settings specified in this document. Any substitution of alternative fittings will invalidate the compliance statements and is very likely to breach planning conditions and/or protected-species legislation. It is therefore essential that the luminaires, controls, and installation details set out in this strategy are adopted without modification at construction stage.

2. Introduction

2.1 Project Description

Bike Park Wales, located in the scenic uplands of Merthyr Tydfil, South Wales, is the UK's leading uplift-assisted mountain bike facility, attracting over 140,000 visitors annually since opening in 2013. Set within Gethin Woodland on land managed by Natural Resources Wales, the park offers an extensive network of graded downhill and cross-country trails, a visitor centre, café, bike shop and upland skills area. To meet growing demand for multi-day visits and to support the local tourism economy, the approved development includes the phased introduction of on-site overnight accommodation. This comprises a mixture of high-quality glamping pods and larger timber-clad lodges, carefully sited to integrate with the existing woodland setting. The accommodation enables riders to extend their stay, reduces pressure on local off-site lodging, and reinforces Bike Park Wales' position as a premier year-round mountain biking destination. This planning addendum specifically addresses the lighting strategy for the five new lodges.

2.2 Site Location and Context

Bike Park Wales is situated within Gethin Woodland, approximately 2 km north-west of Merthyr Tydfil town centre and immediately south of the A470 trunk road. The application site lies on gently sloping, previously disturbed ground within a commercial conifer plantation managed by Natural Resources Wales.

The surrounding area is predominantly upland forestry, interspersed with existing Bike Park Wales infrastructure (uplift track, trails, visitor centre and car parks). To the north and east the site is well screened by dense blocks of mature conifers; to the south and west the land falls away towards open moorland forming part of the Brecon Beacons National Park, located approximately 2.5 km distant at the closest point.

2.3 Purpose of the Lighting Strategy

The purpose of this lighting strategy is to provide a comprehensive and cohesive lighting solution that incorporates the new lodges within the established lighting framework already approved for Bike Park Wales. Rather than introducing an entirely separate or standalone scheme, this strategy has been carefully developed to seamlessly integrate the new accommodation into the existing approved site-wide lighting design.

Wherever practicable, the proposal re-uses the exact bollard luminaires that were assessed and approved under the original planning permission. These proven fittings are employed for all pathway and general circulation lighting around the new lodges, ensuring visual continuity, maintaining the previously accepted low-level character of illumination, and avoiding any need for re-assessment of their performance or environmental impact.

Only where additional building-mounted illumination is required – specifically to safely light entrance doors, verandas and immediate external areas of the lodges themselves – has a new wall-mounted luminaire been introduced. This complementary fitting has been selected to match the colour temperature, output and full cut-off shielding characteristics of the approved bollards, thereby preserving the overall design intent and performance standards of the consented scheme.

This approach minimises change, guarantees consistency with the original approval, and ensures that the new lodges are fully and safely integrated into the existing lit environment without introducing new or unanticipated effects on amenity, ecology or the wider upland landscape.

2.4 Relevant Planning Policies and Legislation

2.4.1 ILP Guidance Note 08/23 – Bats and Artificial Lighting at Night

The Institute of Lighting Professionals, in association with The Bat Conservation Trust has produced a guide for designing lighting schemes that are less harmful to bats. The key points of this report are summarised below:

- All luminaires should lack UV elements
- A warm white spectrum (<2700K) should be adopted to reduce blue light
- Luminaires should feature peak wavelengths higher than 550nm
- Internal luminaires should be recessed in proximity to windows to reduce glare
- The use of low level luminaires such as bollards should be considered where possible
- Column heights should be carefully considered
- Only luminaires with an upward light ratio of 0% and good optical control should be used
- Luminaires should always be mounted on the horizontal plane with no upward light
- A lighting buffer zone should be used where needed
- Screening should be used where needed

All of the above factors have been taken into consideration when designing the lighting for the proposed development as is explained in this report.

2.4.2 ILP Guidance Note 01/21 – The Reduction of Obtrusive Light

The Institute of Lighting Professionals has also issued a guidance note on ‘The Reduction of Obtrusive Light’. In this report, the ILP defines Sky Glow as the brightening of the sky at night, something that we aim to avoid to protect dark skies. The report also states that the primary approach to limit sky glow is to use luminaires with an upward light ratio of 0%, as shown in the extract from the report below:

The Reduction of Obtrusive Light

Limitation of skyglow

Table 6 (CIE 150 table 5): Maximum values of upward light ratio (ULR) of luminaires

Light technical parameter	Environmental zones				
	E0	E1	E2	E3	E4
Upward light ratio (ULR) / %	0	0	2.5	5	15

Note 1 This is the primary approach to limit skyglow and is suitable to compare different single luminaires and mitigate the contribution of each luminaire within an installation.

Therefore, all exterior luminaires used in this lighting design have an upward light ratio of 0%, to protect the dark skies in the area of the site.

2.4.3 Guidance Notes local to the site

Given the site's location, several national and local guidance documents are particularly pertinent to the proposed lighting strategy. These emphasise minimising light pollution, protecting dark sky qualities, and ensuring ecological and amenity benefits in rural, elevated settings. Key summaries are outlined below, focusing on aspects directly applicable to low-level, shielded lighting for pathways and lodge exteriors.

Welsh Government: Good Practice Guidance – Planning for the Conservation and Enhancement of Dark Skies (2025)

This pioneering national guidance, launched in February 2025 and developed in partnership with NRW, local authorities, and designated landscapes (including Brecon Beacons), provides best practices for integrating lighting into planning decisions while preserving Wales's dark skies—over 68% of which fall into the darkest categories. Relevant to this upland site:

- **Lighting Design Principles:** Prioritise fully shielded, downward-directed fixtures (e.g., bollards and wall lights) to eliminate upward light spill, glare, and sky glow. Warm colour temperatures (below 3000K) and low lumen outputs are recommended for rural areas to maintain natural night-time cycles.
- **Integration with Approvals:** Encourages reusing approved fittings (as proposed here) to ensure consistency and avoid re-evaluating environmental impacts. Energy-efficient LEDs with timers or motion sensors are advocated to reduce carbon footprints and operational costs.
- **Outcomes:** Aligns with well-being goals under the Well-being of Future Generations Act, benefiting wildlife (e.g., bats in Gethin Woodland) and the site's role as a year-round destination.

The full document is available via GOV.WALES and is commended by DarkSky International for its role in positioning Wales as a leader in dark sky protection.

Merthyr Tydfil County Borough Council: Light Nuisances and Light Pollution Guidance (Updated 2022)

Under the Merthyr Tydfil Replacement Local Development Plan (LDP) 2016–2031, this environmental health guidance addresses statutory nuisances from artificial light under Section 102 of the Clean Neighbourhoods and Environmental Protection Act 2005. Tailored to the county's mix of urban and rural zones, it is highly relevant given the site's proximity to scattered dwellings (over 1 km away) and its status as an outdoor sports facility:

- **Nuisance Prevention:** Lighting must not prejudice health or amenity (e.g., no intrusion into nearby properties). A "best practicable means" defence applies to recreational sites like Bike Park Wales but requires evidence of minimised spill—achieved here through shielded bollards and wall lights.
- **Exemptions and Controls:** Street or pathway lighting is exempt if not from premises, but lodge-mounted lights must avoid sky glow. The guidance stresses PIR sensors and timers to limit operation to necessary periods, aligning with the site's low-light navigation needs.

- **Planning Integration:** Supplementary Planning Guidance (SPG) under the LDP reinforces pollution controls in sensitive landscapes, supporting the strategy's reuse of approved bollards to maintain visual continuity.

Available on the Merthyr Tydfil CBC website, this ensures compliance with local enforcement priorities.

Welsh Government: Planning Permission and Building Regulations for Lighting (Ongoing)

These technical notes provide baseline controls for external installations, applicable across Wales and reinforced in the LDP:

- **Planning Controls:** Minor domestic fittings are permitted, but security or functional lighting (e.g., for lodges) must avoid neighbour disturbance. Direct beams at ground level, use PIR/timers to prevent unnecessary activation, and consult on listed or sensitive sites—though not applicable here, the rural context demands similar caution near the National Park.
- **Energy Efficiency (Building Regs Part L):** External lights must use lamps $\leq 150\text{W}$ with auto-off in daylight/unneeded hours, or fittings compatible with >40 lumens per circuit-watt efficacy. The proposed LED bollards and wall lights meet this, promoting sustainability in NRW-managed woodlands.

These are accessible via GOV.WALES and the Planning Portal, ensuring the design supports broader net-zero goals.

Natural Resources Wales: Dark Skies and Light Pollution Map and Associated Advice (2023–Ongoing)

NRW's interactive map, based on 1:30am satellite data, classifies Gethin Woodland as a low-pollution upland area. Key points for this site:

- **Pollution Mitigation:** Upgrade to shielded, downward-pointing lights to counteract sky glow from adjacent uplifts or trails. Dimming, part-night operation, or full shut-off where safe is encouraged, directly supporting the strategy's integration with existing approved schemes.
- **Woodland Management Link:** Under the Gethin Forest Resource Plan (approved 2016), recreation (including Bike Park trails) must balance with environmental protection. Lighting should enhance tourism without fragmenting habitats, using the map as evidence for no impact on adjacent ancient woodlands or moorland.
- **Broader Benefits:** Promotes dark sky-friendly designs in planning applications to protect biodiversity and enable green recovery post-development.

The map and guidance are hosted on NRW's site, providing a robust evidence base for the addendum.

These notes collectively affirm the strategy's approach, ensuring the new lodges enhance safety and accessibility while upholding the site's dark rural character. Full compliance is demonstrated through photometric data and site-specific modeling in the technical appendices.

2.4.4 ILP Environmental Zones

The Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light (GN01:2021) define environmental zones to categorise areas based on their ambient brightness and sensitivity to light pollution, guiding appropriate lighting designs to minimize sky glow, glare, and ecological impacts. These zones range from E0 (darkest, most protected) to E4 (brightest, urban), with recommended limits on upward light ratio (ULR), illuminance, and luminous intensity. The zones help ensure lighting is proportionate to the surroundings, preserving dark skies in sensitive areas while providing necessary safety in others.

Zone Surrounding Lighting Environment			Examples
E0	Protected	Astronomical dark skies	observable UNESCO Starlight Reserves, IDA Dark Sky Places
E1	Natural	Intrinsically dark landscapes	National Parks, Areas of Outstanding Natural Beauty (AONB)
E2	Rural	Low district brightness	Villages, relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Small town centres, suburban residential areas
E4	Urban	High district brightness	Town/city centres with high night-time activity

For the Bike Park Wales site in Gethin Woodland, the appropriate ILP environmental zone is E2 (Rural). This classification is based on the site's location in a low-pollution upland area, its rural character within commercial forestry, and the absence of nearby urban development or high night-time activity. While proximate to the Brecon Beacons National Park (2.5 km away, which would typically be E1), the site itself falls outside formally protected boundaries and features existing low-level infrastructure like trails and car parks, justifying E2 to balance safety needs with light pollution controls.

Minimum Average Lux Levels for Footpaths

The Institution of Lighting Professionals (ILP) provides guidance on exterior lighting through documents like GN01:2021 for obtrusive light reduction and by endorsing British Standards such as BS 5489-1:2020 (Code of Practice for the Design of Road Lighting) and BS EN 13201-2:2015, which define performance requirements for pedestrian areas including footpaths. In an E2 rural environmental zone, characterized by low district brightness and minimal ambient light (e.g., villages or outer suburban areas), the recommended minimum average horizontal illuminance for footpaths is 5 lux, corresponding to lighting class P4. This level is selected based on factors such as low pedestrian traffic volume, reduced crime risk, and the need to prioritize dark sky preservation, ensuring safe navigation while limiting over-illumination; it includes a minimum point illuminance of 1 lux for uniformity, with adjustments possible via risk assessment to potentially lower to P5 (3 lux) or P6 (2 lux) in very quiet rural settings, or higher if specific hazards warrant it.

3. Baseline Assessment

No pre-development baseline night-time lighting survey or sky-quality measurement has been carried out as part of this Lighting Strategy.

4. Identification of Sensitive Receptors

Summary of the Preliminary Ecological Appraisal (PEA) Report

This PEA is highly relevant to the lighting strategy for the five new lodges, as it underscores the site's ecological sensitivity—particularly for light-averse nocturnal species like bats (confirmed foraging/commuting corridor with six species, including vulnerable brown long-eared, Myotis, and lesser horseshoe), hazel dormice (likely present in connected woodland), otters (potential commuters), and amphibians/reptiles (on-site presence). The report explicitly flags artificial lighting as a key risk, potentially causing significant impacts on foraging/ roosting behaviours, habitat fragmentation, and disturbance in this currently daytime-only site transitioning to overnight use.

It directly references and endorses the sensitive lighting strategy from the 2025 EcIA (Appendix VII), emphasizing dark corridors, minimised spill, and bat-friendly designs—aligning seamlessly with the proposed strategy's use of the previously approved bollards (no PIR for continuity) and new 1.8 m wall lights (2700K LEDs, >550 nm peaks, zero UV, horizontal mounting for zero glare, 0% ULOR). These features ensure compliance with recommendations for shielded, warm-tone, low-output fixtures to preserve woodland connectivity, reduce sky glow, and support dark sky qualities near SINC's and the Brecon Beacons fringe. By integrating PIR controls only on verandas (private areas), the strategy avoids patchy activation that could disrupt site-wide uniformity while mitigating broader ecological risks. This PEA validates the approach as a low-impact extension of the approved scheme, contributing evidence for planning addendums and Net Biodiversity Gain. If implemented, it would prevent the "new artificial lighting" impacts noted, enhancing safety without ecological harm.

5. Proposed Lighting Design

5.1 Lighting Objectives

The primary objectives of this lighting strategy are as follows:

1. **Consistency with the Approved Scheme** To provide safe and effective illumination for the pathways, access routes, entrance areas and immediate external spaces of the new lodges using, wherever possible, the exact same bollard luminaires that were previously assessed, approved and successfully implemented under the original planning permission. This ensures visual and technical continuity across the entire Bike Park Wales site and avoids any requirement to re-evaluate fittings that have already been accepted by the local planning authority.
2. **Safe and Functional Lighting** To deliver appropriate levels of illumination to satisfy health and safety requirements for guests, staff and emergency access, particularly during hours of darkness. This includes clear definition of pathways, steps, ramps and entrance doors to minimise trip hazards and enable confident navigation in a rural, sloping woodland environment.
3. **Full Compliance with Regulatory and Best-Practice Standards** To ensure the lighting installation fully complies with all relevant legislation, planning policy and guidance, including (but not limited to):
 - Health and safety obligations under the Health and Safety at Work etc. Act 1974 and the Management of Health and Safety at Work Regulations 1999;
 - Building Regulations Part L (energy efficiency) and Part B (fire safety – emergency escape lighting routes);
 - Statutory nuisance controls under the Environmental Protection Act 1990;
 - Ecological protection requirements, particularly with regard to bats and other light-sensitive species present in Gethin Woodland (as informed by the site's EclA and NRW guidance);
 - National and local dark-sky policy, including the Welsh Government's Good Practice Guidance on Planning for the Conservation and Enhancement of Dark Skies (2025), NRW Dark Skies advice, and Merthyr Tydfil CBC light pollution guidance.

By reusing the approved bollard range for all ground-level and pathway lighting, and by carefully selecting a new, fully shielded, warm-tone wall light that matches the performance characteristics of the existing fittings, the strategy achieves these objectives with the minimum possible deviation from the consented scheme while fully satisfying current health, safety, ecological and dark-sky requirements.

5.2 Luminaire Schedule

The lighting strategy for the five new lodges employs only two luminaire types, selected to ensure continuity with the consented scheme and full compliance with current dark-sky, ecological and regulatory requirements:

1. Approved Pathway Bollards (re-used from the original planning permission)

Model: Collingwood Lighting Model - BL03FIS27 – 2700K LED Bollard – Timber Finish

These are the identical bollards that were submitted, assessed and approved under the original planning application for Bike Park Wales. No change is proposed to their specification, location principles or performance. Their continued use for all pathways around the new lodges guarantees complete consistency with the established and accepted site-wide lighting character.

2. New Lodge Wall-Mounted Exterior Luminaire

Model: Illorion Ltd 16576587M15 – 2700K Wall Light – Corten Finish

This compact, purpose-designed exterior wall light has been introduced solely where building-mounted illumination is required. It has been rigorously selected to match or exceed the environmental performance of the approved bollards and fully complies with the latest bat-friendly and dark-sky standards. Key technical characteristics include:

- Colour temperature: 2700 K (warm white)
- No UV Light emitted
- Peak Wavelengths above 550nm
- LEDs mounted in horizontal plane
- LEDs mounted inside the luminaire body to virtually eliminate glare
- Upward light ratio of 0%

3. Decorative Dining Pendant Light

Model: Lights.co.uk Lindby Tirzana pendant light – 4 bulb - black

The dining table lighting within the new lodges utilises the Lindby Tirzana 4-bulb pendant light, selected for its design that ensures responsible and dark-sky-friendly illumination. Featuring opaque black iron metal shades (with a gold-tinted interior for cozy reflections), the fixture directs 100 % of emitted light downward onto the table or surface below, with no upward, sideways, or horizontal projection; the shades fully obscure the light sources from horizontal viewing angles, eliminating direct glare and preventing visibility of the bulbs from outside or within the lodge at eye level.

These pendants will be equipped with dimmable 2700 K LED lamps (E27 base, low-wattage for energy efficiency), mounted at a maximum height of 2 m above floor level to further contain light output close to the intended surface and minimize any potential for spill through windows.

This configuration aligns with best-practice dark-sky principles (e.g., Welsh Government 2025 Guidance, Bat Conservation Trust/ILP GN08/23, and DarkSky International

recommendations for lodging), using warm-spectrum LEDs to reduce blue-light content that could disrupt nocturnal species or contribute to external spill, sky glow, or ecological disturbance. Key technical features of this light include:

- No UV Light emitted
- Peak Wavelengths above 550nm
- LEDs mounted in horizontal plane
- LEDs mounted inside the luminaire body to virtually eliminate glare
- Upward light ratio of 0%

4. Decorative Lounge Pendant Light

Model: Lights.co.uk Hanging light Tattoo 6201 3-light rondel black/gold

The lounge lighting within the new lodges includes the Tattoo 6201 3-light rondel hanging light (black/gold) as the specified decorative lounge pendant fixture, chosen for its design that promotes responsible, contained illumination in line with dark-sky and ecological sensitivities.

The fixture features three individual lampshades (Ø 18 cm, height 17 cm) that direct light downward onto the lounge area below, creating a warm, inviting ambiance while eliminating sideways or upward spill. The opaque shades effectively shield the light sources from horizontal and side viewing angles, preventing direct visibility of the bulbs and reducing glare or external light escape.

These pendants will be equipped with dimmable 2700 K LED lamps (E27 base, low-wattage for energy efficiency), suspended at a maximum height of 2 m above floor level to keep light output focused close to the intended surface and further limit potential spill through windows.

This setup adheres to best-practice dark-sky principles (e.g., Welsh Government 2025 Guidance, Bat Conservation Trust/ILP GN08/23, and DarkSky International recommendations for rural lodging), utilising warm-spectrum LEDs to curtail blue-light disruption to nocturnal species and also ensuring no contribution to external spill, sky glow, or ecological disturbance in the surrounding Woodland. Key technical features of this light include:

- No UV Light emitted
- Peak Wavelengths above 550nm
- LEDs mounted in horizontal plane
- LEDs mounted inside the luminaire body to virtually eliminate glare
- Upward light ratio of 0%

5. Bathroom Recessed Downlights

Model: Illorion Limited - Part No – FRDL-L-MW-R

Recessed low glare IP65 rated LED downlights are used in the bathrooms of the lodges. These lights are selected as

- Colour temperature is 2700K warm-white, well below the 3000K threshold routinely required by local authorities and ecologists for bat-sensitive rural sites.
- The LED sources have a spectral power distribution with peak wavelengths > 500 nm and contain no measurable output in the ultraviolet (< 400 nm) or blue-rich (< 470 nm) bands that are known to be most disruptive to nocturnal insects and bats.
- All light emission is directed downward with the LED light sources mounted in the horizontal plane with zero tilt.
- The optical design and full cut-off shielding deliver an Upward Light Ratio (ULR) of 0 %, eliminating all direct sky glow.

These characteristics ensure that the downlights present negligible risk to the protected bat species and other nocturnal wildlife on and immediately adjacent to the site, while still providing the necessary illumination for safe access, security, and wayfinding.

6. General Recessed Downlights

Model: Illorion Limited - Part No – FRDL-A-MW-R

Recessed tiltable LED downlights are used in the other area of the lodges, eg corridors, kitchen, dining room and lounge. These lights do not need to be low glare as they are installed in the ceilings above the glazing levels so are shielded by the solid walls above this shielding. The ability to tilt the light sources works well with the vaulted ceilings. These lights are selected as:

- Colour temperature is 2700K warm-white, well below the 3000K threshold routinely required by local authorities and ecologists for bat-sensitive rural sites.
- The LED sources have a spectral power distribution with peak wavelengths > 500 nm and contain no measurable output in the ultraviolet (< 400 nm) or blue-rich (< 470 nm) bands that are known to be most disruptive to nocturnal insects and bats.
- All light emission is directed downward with the LED light sources mounted in the horizontal plane with zero tilt.

These characteristics ensure that the downlights present negligible risk to the protected bat species and other nocturnal wildlife on and immediately adjacent to the site, while still providing the necessary illumination for safe access, security, and wayfinding.

5.3 Mounting Heights

Wall lights are mounted at 1.8m above finished floor level. Bollards are 1m high.

5.4 Control Strategy and Operating Hours

To maintain full consistency with the exterior lighting scheme approved under the original planning permission, the control strategy for the exterior lighting mirrors the established approach already in place across the wider Bike Park Wales site:

Pathway and general circulation lighting. All pathway illumination around the new lodges is provided exclusively by the re-used approved bollards. These bollards, as implemented

throughout the original consented scheme, operate without presence detection and are controlled solely by a site-wide astronomical time clock with dusk-to-dawn operation. For complete visual and operational continuity, no presence detectors or PIR sensors have been incorporated into any bollards serving pathways in the new lodge area.

Wall-mounted lights serving pathways and entrance areas The new wall lights that primarily illuminate shared pathways, steps, or entrance routes immediately adjacent to the lodges are wired and controlled in exactly the same manner as the approved bollards (i.e., dusk-to-dawn via the central astronomical time clock, no presence detection). This ensures a uniform lit appearance and avoids any sudden or patchy activation that would differ from the established character of the site.

Veranda and private external seating areas The only exception to the above is a limited number of the same wall-mounted luminaires positioned specifically to serve the private verandas of individual lodges. These fittings are separately circuited and controlled by a discreet PIR occupancy sensor mounted on the veranda ceiling. Activation is therefore on-demand only, limited to the immediate private area of each lodge, and timed to switch off automatically after 5 minutes of no detected movement. This arrangement provides convenience and security for guests using their private outdoor space late at night without affecting the consistent low-level pathway lighting or introducing additional light spill into the wider woodland environment.

Lodge Interior Lighting will be controlled as required by the user/guest.

This layered control approach preserves the calm, uniform and low-impact lighting character already accepted by the local planning authority, while offering practical guest-focused functionality exactly where it is needed on the verandas.

6. Impact Assessment and Modelling

6.1 Assessment Methodology

The entire lighting scheme has been modelled using Dialux Light Modelling Software, incorporating the exact IES photometric files supplied by the manufacturers of the specified wall lights and LED bollards.

6.1.1 Illumination of Footpaths



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
PATHWAYS Perpendicular illuminance (adaptive) Height: 0.150 m	21.7 lx	0.028 lx	184 lx	0.001	0.000	RS2

The image above illustrates the calculated illumination levels across the pathways in the extended lodge area at Bike Park Wales, when exterior lighting only is illuminated. The average lux values are greater than the recommended minimum of 5 lux for a P4 class footpath in an E2 rural zone. This elevated average is primarily due to the supplementary light contribution from the wall-mounted luminaires on the lodge exteriors, which overlap with the pathway areas and naturally increase the overall illuminance in those zones.

Additionally, the bollards produce localised peaks of 50 lux or more directly beneath each fixture, further boosting the pathway average, though the photometric distribution of these bollards results in darker spots between them where light levels drop to maintain energy efficiency and minimise over-illumination.

In practice, the paths remain well-lit for safe navigation without being overlit in the inter-lodge areas, ensuring the scheme fully complies with BS 5489-1:2020 standards, ILP guidance, and ecological considerations for dark sky preservation.

The only means to reduce the average lux level of the pathway would be to install the lights further apart, but that would produce dangerously large dark patches on the path that must be avoided.

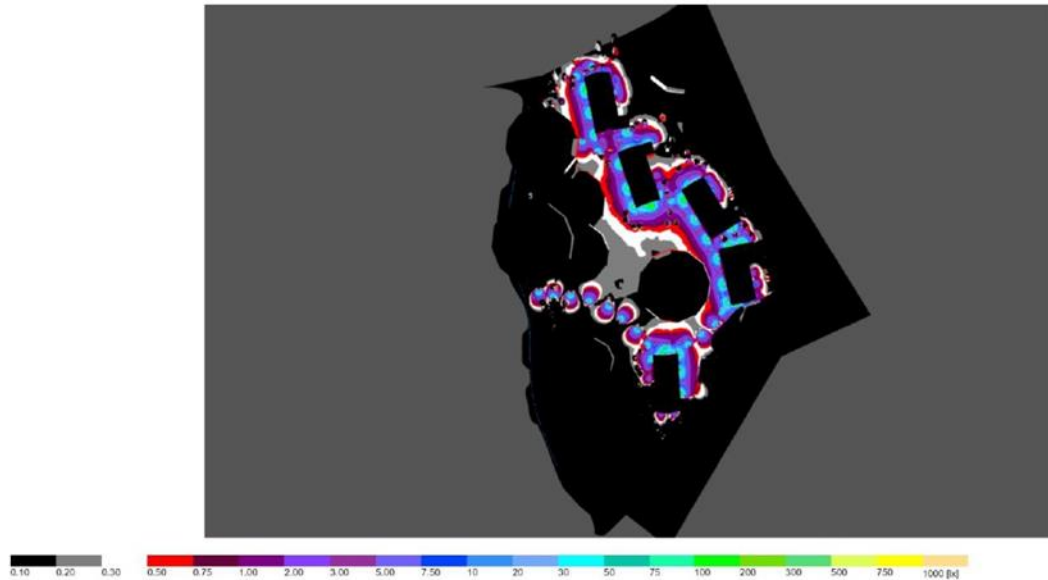
6.1.2 Lodges- Exterior Lighting

The entrances and verandas of the five new lodges are adequately and safely illuminated by the specified wall-mounted luminaires (2700 K, peak wavelengths >550 nm, zero UV emission, LEDs mounted horizontally within a fully shielded body achieving 0 % upward light output ratio). These fittings, installed at 1.8 m height, provide focused downward illumination only onto the immediate doorways, steps and private decked areas, delivering comfortable light levels for guest arrival, departure and evening use without glare or unnecessary brightness. Due to the full cut-off optics and precise beam control, no measurable light spill occurs beyond the lodge footprints or onto the surrounding woodland, pathways outside the immediate entrance zones, or the site boundary. This ensures complete compliance with the site's sensitive lighting strategy (EcIA Appendix VII), preserves established dark corridors for bats and other nocturnal species, and prevents any adverse ecological impact on the light-sensitive habitats and species confirmed present.



6.1.3 Site Wide Light Spill from Lighting

The model below reflects an absolute worst case scenario when all the interior and exterior lights are illuminated. The colours represent the predicted lux levels at ground level.



As can be seen all illumination is kept well away from the bat flight path that is at the left hand side of the image above.

Light spill to the boundary of the site is kept below 0.5 lux by careful positioning of the exterior wall lights and the use of screening in the form of planting where needed (please see landscaping plans for further information).

The above image is provide as a separate high resolution file for more detailed analysis.

8. Conclusions

This lighting strategy for the five new lodges at Bike Park Wales fully complies with all relevant legislation, planning policy, and best-practice guidance, including the Welsh Government's Good Practice Guidance on Planning for the Conservation and Enhancement of Dark Skies (2025), ILP Guidance Note 01:2021, BS 5489-1:2020, the Bat Conservation Trust/ILP Guidance Note 8 (2023), and the sensitive lighting recommendations contained within the site's Ecological Impact Assessment (WWE22067 EclA Rev D). By re-using the exact bollard luminaires approved under the original planning permission and introducing only one highly specified, fully shielded wall light with bat- and dark-sky-friendly characteristics (2700 K, peak wavelengths >550 nm, zero UV, 0 % ULOR), the scheme ensures safe navigation for guests while minimising light spill, glare, and ecological impact in this sensitive upland woodland setting. The strategy also considers interior lighting and its control through fully shielded decorative and functional fixtures (such as the Lindby Tirzana 4-bulb dining pendant and Tattoo 6201 3-light lounge rondel pendant), both equipped with dimmable 2700 K LED lamps and opaque metal shades that direct light 100 % downward with no horizontal or upward emission, mounted at a maximum of 2 m above floor level and supported by blackout blinds or low-transmittance glazing on windows and glazed doors. This integrated approach containing interior light prevents contribution to external spill, sky glow, or disruption, providing a scheme with minimal impact to the sensitive bat corridors and dark corridors adjacent to the site.

Although photometric modelling indicates that average illuminance on some pathway sections exceeds the 5 lux minimum recommended for P4-class footpaths in an E2 rural zone, this modest increase is attributable solely to beneficial spillage from the wall lights mounted on the lodges themselves, which supplement the bollard lighting in the immediate vicinity of entrances and verandas. The bollards alone deliver localised peaks of ≥ 50 lux directly beneath each fitting, with lower levels between them, resulting in a balanced and appropriately dim overall environment that remains well below levels that would constitute over-lighting or cause material harm.

As a result of dense planting/screening, there is no light spill greater than 0.5 lux beyond the site boundary and onto the adjacent open field to the south/south-east.

Critical Implementation Requirement The ecological, obtrusive-light, and regulatory compliance of the entire scheme is wholly dependent upon the exact luminaire types, optics, mounting details, shielding arrangements, and control settings specified in this document. Any substitution of alternative fittings or modifications during construction will invalidate the compliance statements presented herein and is very likely to breach planning conditions and/or protected-species legislation. It is therefore essential that the luminaires, controls, and installation details set out in this approved strategy are adopted without alteration at construction stage.

Appendices

Appendix A: Luminaire Suppliers and Datasheets

The of the luminaires used in this report are details below with data sheets provided on the following pages.

Drawing Ref	Part Code	Quantity	Supplier	Supplier Tel	Supplier Email
WL01	16576587M15	31	Illorion Ltd	01772 319 185	info@illorion.co.uk
B	BL03FIS27	23	Collingwood	01604 495151	sales@collingwoodgroup.com
DL03	TBC	5	Lights.co.uk	N/A	N/A
DL04	TBC	5	Lights.co.uk	N/A	N/A
DL02	FRDL-L-MW-R	20	Illorion Ltd	01772 319 185	info@illorion.co.uk
DL01	FRDL-A-MR-R	90	Illorion Ltd	01772 319 185	info@illorion.co.uk



Sapelo Oak Iroko

BL03

Straight to mains Iroko wood

FEATURES

IP rating	IP65
IK rating	Other
CSP Switchable	Single CCT
Sensor Option	No
Dimmable Option	No
LED Lifetime	L70 70,000h
Colour Rendering Index	CR>85
Colour Consistency	SDCM2
Emergency Option	No

INSTALLATION INFORMATION

Input	200-240V AC
Maximum Ambient Temperature	30°C
Weight	5000g
Install Current	40A 0.027W
Construction Material	Iroko wood
UK Bathroom Zone	N/A
SELV	Yes
Electric Class (I, II, III)	II
Earth Leakage	G1
Suitable for coastal areas	Yes (with appropriate treatment)
UK Building Regulations	N/A

PHOTOMETRICS @ 25°C

Product code	Finish	Type	W	Colour	Beam	lm	lm/W	Lx @ 1m	Energy
BL03FIS27	Natural	Triple LED-Chambered	5W	2700K	30°	54	31	78	

Energy rating is a reflection of the LED light source

WIRING INFORMATION

Cable / Flying Lead	18W 1.0mm SV 2 Core PVC Sheath Braided Cable, 2M Length
Type of Wiring Required	Parallel

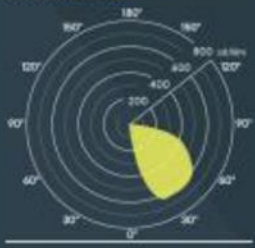
LED DRIVER

Driver	Input	SELV	Dimming	Bathroom Zone
N/A (Integrated SELV driver)	200-240V	Yes	N/A	N/A

ACCESSORIES

BOL LED BRACKET	Stainless steel bracket for BOL LED range	Sold Separately
JBS	Gel filled junction box	Sold Separately

BEAM ANGLE: 110°



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COLLINGWOOD
LIGHTING

LIGHTING INNOVATION

5W

5W at 350mA or 700mA

Coastal Protected

IP65

IP65 ideal for outdoor areas

WARRANTY

Warranty 7 years

FEATURES & BENEFITS

- Choice of wood finishes: Iroko, Sapelo or Oak
- Painted, Chambered or Dished top
- Choice of low-voltage or straight-to-mains
- Side-entry cable or back-entry cable options
- Three colour temperature options: 2700K, 3000K or 4000K
- 7 year warranty

Datasheet



16576587M15



Features

- Low Glare Wall Light
- Warm White LEDs
- Corten Finish

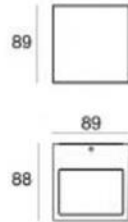
Application

- Low glare exterior wall light with 0% upward light ratio to help protect dark skies

Specifications

General		Optical	
• Size	89mm high x 89mm wide x 88mm high	• Lumen	849 lm
• Colour	Corten (dark brown)	• CCT	2700K
		• CRI	80+
		• Beam Angle	15 degrees

Electrical		Durability	
• Voltage	200-240v	• 5 year warranty	
• Wattage	8.7w	• IP65	
• Driver	Built in Driver		



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Hanging light Tattoo 6201 3-light rondel black/gold

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Datasheet



FRDL-L-MW-R



Features

- Low Glare Recessed LED Downlight
- Low Glare
- IP65 Rated

Application

- Low glare recessed LED downlight with warm white LEDs and IP65 rating for use outdoors and in other wet areas such as bathrooms.

Specifications

General

- Size: 83mm diameter x 75mm deep
- Colour: Black baffle with choice of bezels (white shown)

Electrical

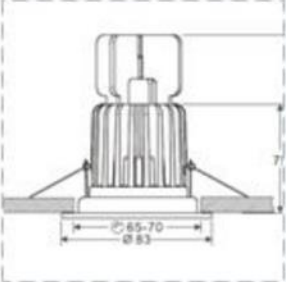
- Voltage: 200-240v
- Wattage: 10w
- Driver: Supplied with remote driver

Optical

- Lumen: 810 lm
- CCT: 2700K
- CRI: 80+
- Beam Angle: 36 degrees

Durability

- 5 year warranty
- IP65



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Datasheet

FRDL-A-MW-R



Features

- Adjustable LED Downlight
- Fire rated
- Dim to Warm LED Technology

Application

- Adjustable LED downlight with warm white LEDs that get warmer as they dim to mimic classic tungsten light sources.

Specifications

General

- Size 90mm diameter x 60mm deep
- Colour Choice of bezels
(white shown)

Electrical

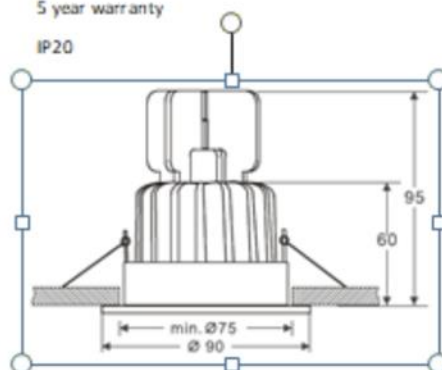
- Voltage 200-240v
- Wattage 10w
- Driver Supplied with remote driver

Optical

- Lumen 810 lm
- CCT 2700K
- CRI 80+
- Beam Angle 36 degrees

Durability

- 5 year warranty
- IP20



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Appendix B – Site Lighting Layout

A separate AUTOCAD file in both pdf and dwg formats accompanies this report showing the exact positions of the lights on the site and inside the lodges.



Survey images (Taken during 2025 PEA Update Survey)



Figure 4: Small drainage pond present onsite.



Figure 4: Typical view of habitat within woodland.



Figure 6: Path through woodland.



Figure 7: Area of predominantly bracken.



Figure 8: Path through woodland.