

Intermodal Logistics Park North Ltd

INTERMODAL LOGISTICS PARK NORTH (ILPN)

Intermodal Logistics Park North (ILPN) Strategic Rail Freight Interchange (SRFI)

Project reference TR510001

Lighting Strategy

October 2025

Planning Act 2008

INTRODUCTION

Instruction

- 1.0 BWB Consulting (BWB) was instructed by Intermodal Logistics Park North Ltd to carry out a Lighting Strategy to support the planning application the provision of a logistics park comprising up to c.767,000 square metres (m²) (gross internal area or GIA) of warehousing and ancillary buildings with a total footprint of up to 590,000m² at ground floor level and up to 177,050m² of mezzanine floorspace, subject to ongoing design and market assessment, comprising a mixture of units with the potential to be rail-connected, rail served and rail accessible units.
- 1.1 The full project description is included in PEIR Chapter 3: The Proposed Development, hereafter referred to as the 'Proposed Development'.

Scope of Works

- 1.2 This report details the relevant lighting policy and guidance that have been reflected when setting the proposed lighting design parameters and criteria for the Proposed Development. This includes details of optics, mounting heights, light direction and proposed luminaires. Performance criteria for average Lux level and uniformity are defined for each type of area, task or activity throughout the Proposed Development. An illustrative lighting plan has been appended to this report.
- 1.3 This report describes the main forms of obtrusive light as described by the applicable national guidance. It sets out the maximum acceptable light pollution limits within the Proposed Development and explains how the external lighting design can be completed within these limits and any resultant obtrusive light can be mitigated against as much as possible.
- 1.4 This report provides mitigation methods to minimise any potentially adverse impact caused by a new lighting installation for the proposed development. The assessment of the likely effects of light pollution upon sensitive human and ecological receptors is set out in Chapters 10 and 11 of the Environmental Statement (Volume 1) which accompanies the application.

RELEVANT POLICY AND GUIDANCE

- 2.1 The relevant international, national, and local policy documents are summarised in this section and have been considered in the production of this Lighting Strategy.

International Guidance

Commission Internationale De L'Eclairage (CIE 150)

- 2.2 The purpose of this guide is to help formulate guidelines for assessing the environmental effects of outdoor lighting and to give recommended limits for relevant lighting parameters to contain the obtrusive effects of outdoor lighting within tolerable levels. As

the obtrusive effects of outdoor lighting are best controlled initially by appropriate design, the guidance given is primarily applicable to new installations; however, some advice is also provided on remedial measures which may be taken for existing installations. This guide refers to the potentially adverse effects of outdoor lighting on both natural and man-made environments for people in most aspects of daily life, from residents, sightseers, transport users to environmentalists and astronomers.

Guidelines for Minimising Sky Glow (CIE 126)

- 2.3 These guidelines prepared by Commission Internationale De L'Eclairage provide general guidance for lighting designers and policy makers on the reduction of sky glow. The report gives recommendations about maximum permissible values for lighting installations. These values must be regarded as limiting values. Lighting designers should seek to meet the lowest specifications for the design. Other uses of the open air areas at night will usually result in less stringent sky-glow requirements. Practical implementation of the general guidance is left to National Regulations.

National Guidance

The National Planning Policy Statement for National Networks 2024

- 2.4 The National Networks National Policy Statement sets out the need for, and Government's policies to deliver, development of nationally significant infrastructure projects (NSIPs) on the national road and rail networks in England. It provides planning guidance for promoters of nationally significant infrastructure projects on the road and rail networks, and the basis for the examination by the Examining Authority and decisions by the Secretary of State. It states that lighting impact on amenity for local communities is likely to be unavoidable but impacts should be kept to a minimum and should be at a level that is acceptable. It also states that national road and rail networks and strategic rail freight interchanges have the potential to affect the health, well-being and quality of life of the population. They can have direct impacts on health because of light pollution.
- 2.5 The National Networks National Policy Statement states that the Secretary of State should be satisfied that all reasonable steps have been taken, and will be taken, to minimise any detrimental impact on amenity from emissions artificial light. This should include the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

National Planning Policy Framework December 2024 amended February 2025

- 2.6 The National Planning Policy Framework (NPPF) provides guidance relating to planning and pollution control for new development in England. The purpose of the planning system is to contribute to achievement of sustainable development. In relation to lighting, Paragraph 198 states: "Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise

from the development. In doing so they should: c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes, and nature conservation.

National Planning Practice Guidance

- 2.7 Light Pollution Planning Practice Guidance¹ (advises on how to consider light within the planning system. It recognises that artificial light provides valuable benefits to society, including extending opportunities for sport, recreation, and commerce, and can be essential to a new development. Equally, inappropriate artificial light has the potential to be obtrusive and to cause light pollution. It can be a source of annoyance, harm wildlife, and undermine enjoyment of the countryside and views of the night sky.

Lighting in the Countryside: Towards Good Practice

- 2.8 The Office of the Deputy Prime Minister (ODPM – now Department for Communities and Local Government) in conjunction with the Countryside Commission published ‘Lighting in the Countryside: Towards Good Practice’ in July 1997, and a revised issue in 2001. The guidance was developed to ‘provide practical advice on the prevention and control of lighting effects through appropriate action by all those involved with lighting in the countryside’. Its objective is ‘to identify good practice in the planning and design of lighting in rural areas; and advise on how it can be achieved, using case study examples’. The guide aims to provide an overview and common understanding of all aspects of good lighting practice stating that close co-operation and participation is required for all those involved in planning, designing, and installing lighting schemes. The guidance provides valuable information on lighting best practice and the standard methodology outlined in this guidance document has been followed as part of this assessment. Whilst the guidance relates to ‘lighting in the countryside’, it is considered best practice to adopt many of the principles contained within the guidance to sites of a more urban nature.

SLL Lighting Guide 1: The Industrial Environment

- 2.9 The scope of this guide is concerned with lighting for the industrial environment. In staff areas used for operational purposes, where specific tasks require a particular lighting treatment, the requirements which differ from the general recommendations of the SLL Code for Lighting are specified.
- 2.10 The Lighting Guide includes reference to the exterior lighting requirements of BS 5489 and emergency lighting as defined by BS 5266.

SLL Lighting Guide 15: Transport Buildings

- 2.11 This Lighting Guide covers all public areas of transport buildings and their related access environments such as airport terminal forecourts and railway station platforms. In staff areas used for operational purposes, where specific tasks require a particular lighting treatment, the requirements which differ from the general recommendations of the SLL

¹ (<http://planningguidance.planningportal.gov.uk/blog/light-pollution>)

Code for Lighting are specified.

- 2.12 Guidance is also given in respect of the interface between road and rail vehicle lighting and the transport installations they serve. The Lighting Guide includes reference to the exterior lighting requirements of BS 5489 and emergency lighting as defined by BS 5266.

British Standards

BS 5489: Code of Practice for the Design of Road Lighting – Part 1: Lighting of Roads and Public Amenity Areas

- 2.13 This standard provides recommendations on the general principles, aesthetic and technical aspects of road lighting and advises on statutory provisions, operation, and maintenance of lighting. The standard provides recommendations for the design of lighting for all types of highways and public thoroughfares, including those specifically for pedestrians and cyclists, and for pedestrian subways and bridges.

BS 13201: Road Lighting – Part 1, 2, 3, 4: Performance Requirements

- 2.14 This standard defines lighting classes for road lighting according to photometric requirements and aiming at the visual needs of road users. It also considers environmental aspects of road lighting.

BS EN 12464-2: Lighting of Workplaces. Outdoor Work

- 2.15 This standard focuses on the recommendations for outdoor workplaces that are used at night. BS EN 12464-2 includes important recommendations on how obtrusive light can be limited, to keep night skies free of light pollution.
- 2.16 The degree of visibility and comfort required in a wide range of outdoor workplaces is governed by the type and duration of activity.
- 2.17 This standard specifies requirements for lighting of tasks in most outdoor work places and their associated area in terms of quantity and quality of illumination. In addition, recommendations are given for good lighting practice.
- 2.18 It is important that all clauses of the standard are followed although the specific requirements are tabulated in the schedule of lighting requirements.

Local Guidance

St Helens Borough Local Plan Up To 2037

- 2.19 *“The St Helens Borough Local Plan sets out the framework for the growth and development of the Borough. It identifies how and where new development and regeneration should take place and thereby promotes and manages the future development of the Borough. It will also shape the investment plans of the Council, other public and voluntary organisations, and the private sector.”*

Policy LPD01: Ensuring Quality Development

2.20 *“All proposals for development will be expected, as appropriate having regard to their scale, location, and nature, to meet or exceed the following requirements:*

1. Quality of the Built Environment

- *a) Maintain or enhance the character and appearance of the local environment, with a focus on the importance of local distinctiveness, as well as using good design to improve the quality of areas that may have become run down and be in need of regeneration, for example with regard to the siting, layout, massing, scale, design and materials used in any building work, the building-to-plot ratio and landscaping;*
- *b) Avoid causing unacceptable harm to the amenities of the local area and surrounding residential and other land uses and occupiers;*
- *c) Ensure that the occupiers of new developments will enjoy a high standard of amenity and will not be unacceptably affected by neighbouring uses and vice versa;*
- *d) Link in with surrounding movement patterns and not be prejudicial to the development of neighbouring land for example by creating landlocked sites;*
- *e) Be located and designed so as to minimise opportunities for crime, for example by maximising natural surveillance;*
- *f) Respect any existing natural features of the site by conserving, restoring or enhancing biodiversity and minimising any adverse impact on important natural features; [...]*

2. Environmental Quality

- *[...] b) Minimise and mitigate to acceptable levels any effects that the development may have on air quality; light, land and / or water pollution (including contamination of soil, surface water and groundwater resources); and levels of noise, vibration, smells, dust and electromagnetic fields in the area; [...]*

Wigan Local Plan: Core Strategy (Wigan Council, 2024)

2.21 *“The Local Plan Core Strategy looks forward to 2026. It leads the regeneration of our communities and addresses the social, environmental and economic challenges the borough faces. It links to and supports our transport strategy, economic framework, housing strategy and corporate strategy amongst others. It will help us deliver the infrastructure the borough needs and put into place a community infrastructure levy that will help fund it.”*

Policy CP 17 Environmental protection

2.22 We will help maintain, enhance and protect our environment for the benefit of people and

wildlife, and make the *borough a better place for people to live and businesses to locate and thrive [...]*

- 2.23 *“Light spillage can have a major impact on people's quality of life and on wildlife and we have already lost much of the night sky due to light. These aspects need to be more widely recognised.”*
- 2.24 The St Helens Borough Local Plan sets out the framework for the growth and development of the Borough. It identifies how and where new development and regeneration should take place and thereby promotes and manages the future development of the Borough. It will also shape the investment plans of the Council, other public and voluntary organisations, and the private sector.

Warrington Local Plan (Warrington Borough Council, 2023).

- 2.25 *“Warrington’s Local Plan was adopted on 4th December 2023. It provides the statutory planning framework for the entire Borough for the period 2021/22 to 2038/39. The Local Plan will be used to guide decisions on planning applications and to identify areas where investment and growth should be prioritised. The Local Plan has replaced the Local Plan Core Strategy (2014).”*

Policy ENV8 - Environmental and Amenity Protection

“General Principles

1. *The Council requires that all development is located and designed so as not to result in a harmful or cumulative impact on the natural and built environment, and/or general levels of amenity.*
2. *Development proposals, as appropriate to their nature and scale, should demonstrate that environmental risks have been evaluated and appropriate measures have been taken to minimise the risks of adverse impacts to air, land and water quality, whilst assessing vibration, light and noise pollution both during their construction and in their operation.”*

“General Amenity Protection

15. *Where development is considered to be appropriate but may still have impacts on the following environmental considerations, in addition to those detailed above, the Council will consider the use of conditions or planning obligations to ensure any appropriate mitigation or compensatory measures are secured:*

[...] b. Levels of light pollution and impacts on the night sky;”

Places for Everyone Joint Development Plan (2024)

- 2.26 The Places for Everyone spatial strategy seeks to deliver sustainable, inclusive growth by focusing significant growth in jobs and housing at the core; boosting northern competitiveness through provision of significant new employment and housing opportunities and infrastructure and supporting key economic drivers in the south.

Policy JP-P1 Sustainable Places

2.27 “We aim to become one of the most liveable city regions in the world, consisting of a series of beautiful, healthy and varied places, each having the following key attributes that all development, wherever appropriate, should be consistent with:

- *Distinctive, with a clear identity.*
- *Visually stimulating, creating interesting and imaginative environments which raise the human spirit through the use of green space, public art and quality design.*
- *Socially inclusive.*
- *Resilient, capable of dealing with major environmental event.*
- *Adaptable, able to respond easily to varied and changing needs and technologies.*
- *Durable, being built to last and using robust materials that reflect local character, weather well and are easily maintained.*
- *Resource-efficient.*
- *Safe, including by designing out crime and terrorism, reducing opportunities for anti-social behaviour and by ensuring that developments make appropriate provision for response and evacuation in the case of an emergency or disaster.*
- *Supported by critical infrastructure, such as energy, water and drainage and green spaces.*
- *Functional and convenient, enabling people and uses to act efficiently with minimal effort, and responding to needs relating to servicing, recycling facilities, refuse collection and storage.*
- *Incorporating inclusive design within all spaces with support for tackling inequality and poverty to form part of creating sustainable places.*
- *Legible, being easy to understand and navigate, with the protection and enhancement of key views and new development well-integrated into the place*
- *Easy to move around for those of all mobility levels, particularly by walking and cycling, with enjoyable routes free from obstacles and disorienting stimuli.*
- *Well-connected to other places, particularly by public transport and digital infrastructure enabling everyone to take advantage of the employment, cultural and leisure opportunities across Greater Manchester and beyond.*
- *Comfortable and inviting, with indoor and outdoor environments:*

- *Offering a high level of amenity that minimises exposure to pollution; and*
- *Addressing microclimate issues such as sunlight, indoor air quality, overheating, shade, wind and shelter.*
- *Incorporating high quality and well managed green infrastructure and quality public realm, with:*
 - *Opportunities for recreation and outdoor play for children, and interaction between the generations;*
 - *Public and private spaces clearly distinguished;*
 - *Development clearly defining, and promoting activity within, public spaces;*
 - *High quality landscaping with schemes.*
- *Well-served by local shops, services and amenities, including education and health facilities.”*

Institute of Lighting Professionals (ILP) Guidance

ILP Guidance Notes for the Reduction of Obtrusive Light (Guidance Note 01/21)

- 2.28 This guide is intended to be used in the planning context and can be applied through planning conditions. It sets out best practice for lighting design and control of obtrusive light (light pollution), defines environmental zone categories based on their capacity to absorb lighting effects, and gives guidance on the limitation of obtrusive light in terms of sky glow, glare and light trespass for each category. It therefore echoes the approach set out in the National Planning Policy Framework that impacts can and should be controlled by appropriate design rather than refusal.
- 2.29 This Guidance Note recommends that the immediate environment is classified into an environmental zone based on ambient lighting levels in the surrounding area. The environmental zones are detailed in Table 2.1. Zone E0 requires the most strict level of control and E4 the lowest.

Table 2.1 Environmental Zones

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places.

Zone	Surrounding	Lighting Environment	Examples
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Natural Beauty etc.
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations.
E3	Suburban	Medium district brightness	Small town centres or suburban locations.
E4	Urban	High district brightness	Town/city centres with high levels of night- time activity.

ILP Guidance Note 08 for Bats and artificial lighting in the UK.

- 2.30 This document is aimed at lighting professionals, lighting designers, planning officers, developers, bat workers/ecologists and anyone specifying lighting. It is intended to raise awareness of the impacts of artificial lighting on bats, and mitigation is suggested for various scenarios.

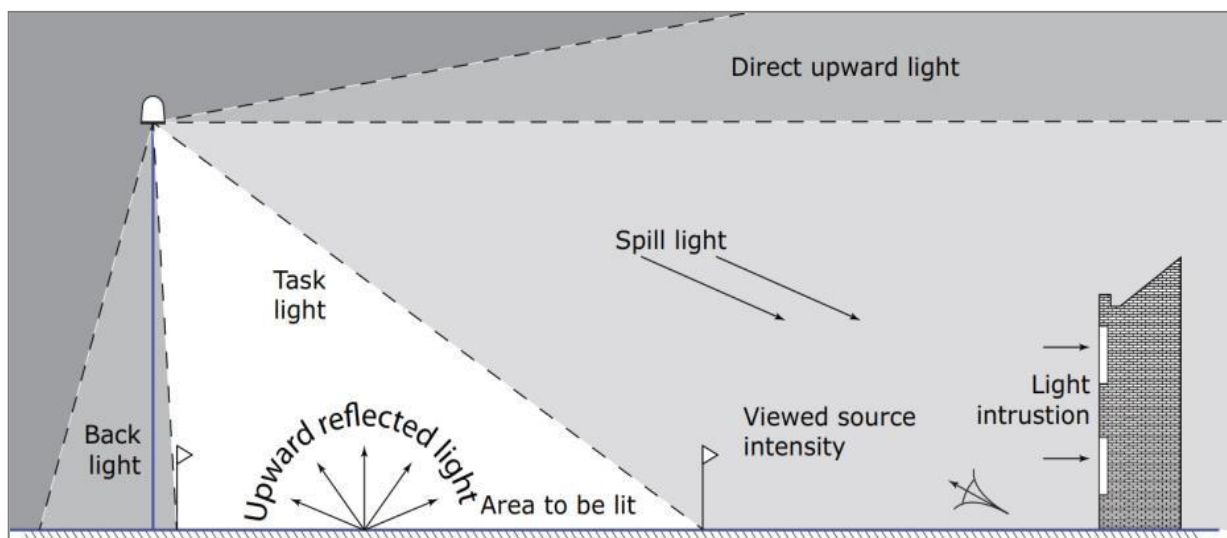
ILP Professional Guidance 05 for The Brightness of Illuminated Advertisements

- 2.31 This document is intended to provide pragmatic guidance to all people involved with exterior illuminated signage and advertisements within the British Isles.
- 2.32 This document provides clear guidance on illuminated signage.
- 2.33 Illuminated signage and advertisements have become an integral part of our street scene and they are designed to have an impact. When considering any application for illuminated signage, thought should be given to how it is to be viewed within the street scene. One sign on its own may have a minimal impact on the street scene however many signs may have a negative impact on the street scene confusing the visual task or visual amenity.

LIGHT POLLUTION

- 3.1 Light pollution is a generic term for all the adverse impacts that artificial lighting can have after dark. The main types of light pollution are shown diagrammatically in Figure 3.1.

Figure 3.1 Types of Light Pollution – Source: ILP Guidance Note 01/21.



- 3.2 Contributing to these direct effects are three design aspects that should be considered alongside the purpose for a new lighting installation and the type of sensitive receptors found in the local area. These are described later in this report.

Types of Light Pollution

Light Spill (Light intrusion, back light)

- 3.3 Light spill is 'the spilling of light beyond the boundary of the site on which a light source is located', such that it causes a noticeably adverse effect. More simply, light spill is often termed as the intrusion of light into homes. It can also have a negative effect on wildlife and ecological systems local to an installation.
- 3.4 As set out in the ILP Guidance Notes, the limits for light spill vary according to the environmental zone of the existing location and have been set to encourage appropriate lighting design. Through careful design, it can readily be ensured that this impact is prevented and that the illumination falling within any residential property can be reduced to zero. This is incorporated into the Lighting Strategy contained within this report.

Sky Glow (Direct upward light)

- 3.5 Sky glow is the 'the brightening of the night sky' above illuminated areas. The brightness created is constantly varying as a function of many parameters such as direct upward-lighting, ground surface reflectance, overhead cloud cover, and the degree of water droplets in the atmosphere - rain, fog/mist, and snow, for example, exacerbate the effect.
- 3.6 Mitigation is achieved by complying with the recommended limits in the ILP Guidance

Notes for upward light emission. The limits vary according to the environmental zone of the existing location and have been set to encourage appropriate lighting design. The Lighting Strategy will ensure that these limits can be met for the Proposed Development.

- 3.7 To mitigate sky glow as much as possible, lighting must be accurately targeted and kept to a minimum, and this design principle is incorporated into the Lighting Strategy.
- 3.8 The magnitude of the impact is a matter of judgement, taking into account the existing night-time view. The magnitude is lessened for those views where an observer is subject to direct illumination from, say, a nearby streetlight, or where light spill from a nearby light source illuminates the foreground, because the observer's vision is not fully dark adapted.

Glare (Viewed source intensity)

- 3.9 Glare occurs when an individual experiences visual discomfort or disability stemming from direct views of lamp sources, or high contrast of a lighting installation against a dark background. The placement of luminaires, their photometric characteristics, and the viewing context contribute to glare, which has been noted to result from uncontrolled private lighting installations, security lighting, street lighting mounted at high level near residences or habitat.

Design Aspects

Building Luminance

- 3.10 This considers the appropriateness and scale of brightness for the lighting / highlighting of built structures. Design criteria is included within ILP guidance notes as more of a main effect. While this is addressed independently, building luminance can also be considered as an indirect contributor to light spill, sky glow and glare.

Light Levels

- 3.11 Light levels, both as designed and installed, have the potential to create areas which have a noticeable difference in brightness. A new lighting installation in an area that has not been lit or is significantly brighter than the surrounding area may affect both adjacent receptors in the form of light spill or glare, and those over a larger area by contributing to sky glow through over-lighting.

Light Colour

- 3.12 Light colour has the potential to alter an individual's perception of their environment with respect to colour and clarity, as the human eye responds best to whiter light with higher quantities of ultraviolet wavelengths. Various wildlife species may respond differently to spectral composition depending on how reliant they are on darkness; many nocturnal animals continue their social habits and feeding behaviours with increased activity in the area while others may decrease their activity and possibly desert their habitat. This type of impact could affect pedestrians, vehicle operators and wildlife, and is likely to occur

where new lighting is placed.

Example Lux Levels

3.13 To give context to the lux levels mentioned to within this report, Table 3.1 provides examples of typical lux levels in various scenarios and applications.

Table 3.1 Example Lux Levels

Zone	Surrounding
British summer sunshine	50,000
Overcast sky	5,000
Well-lit office	500
Minimum for easy reading	300
Passageway / outside working area	25
Main road lighting	5-20
Sunset	10
Typical side road lighting	5
Minimum security lighting	2
Twilight	1
Clear full moon	0.25 to <1
Typical moonlight / cloudy sky	0.1
Typical starlight	0.001

Zone	Surrounding
Poor starlight	0.0001

BASELINE CONDITIONS

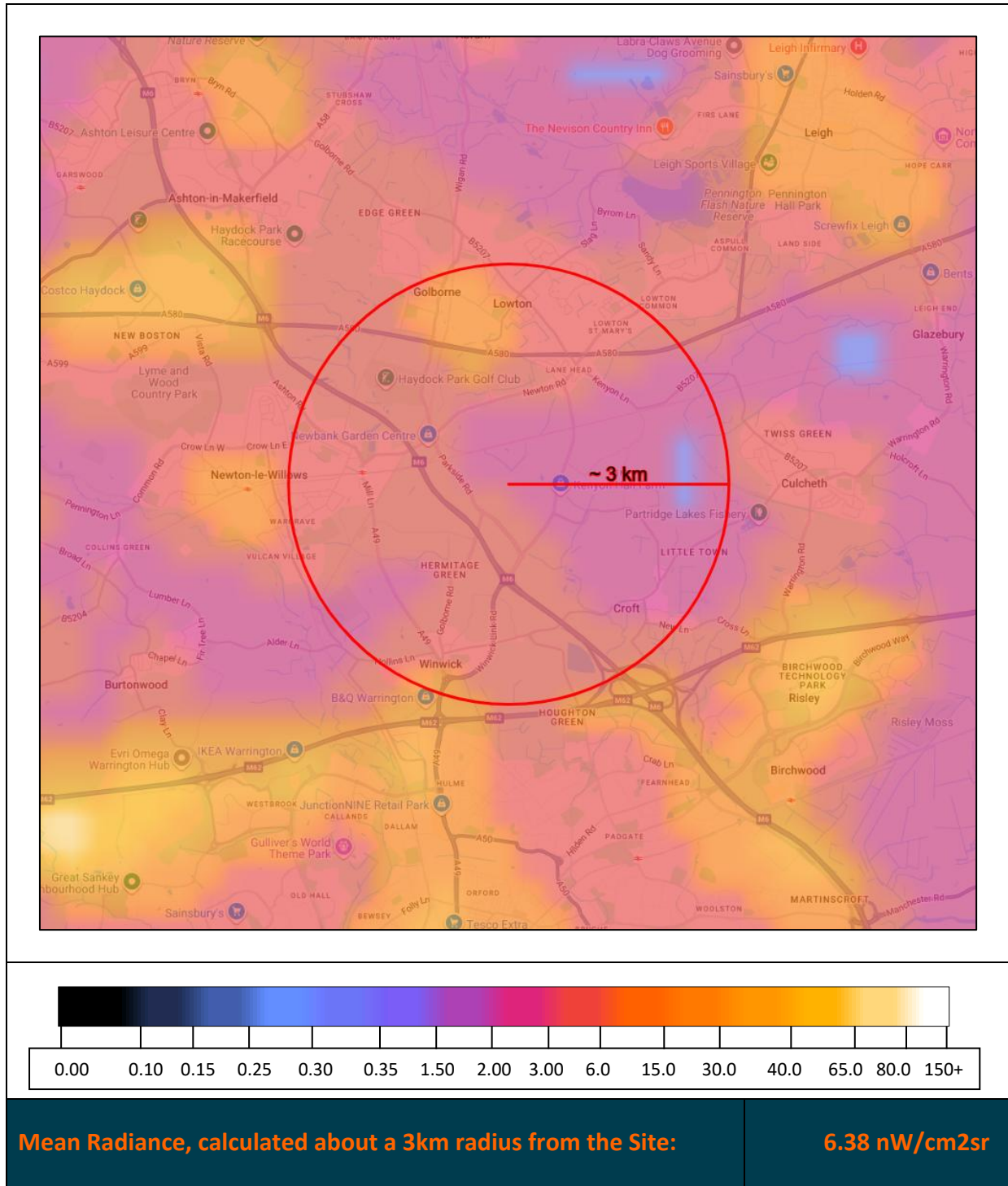
Introduction

- 4.1 The study area includes the application site, the surrounding areas and any sensitive receptors which may have a direct view towards external lighting proposals and/or which may be affected during the construction and operation of the proposed development. Assessment of designation, use, habitat and external lighting condition dictates the classification of Environmental Zone across the proposed site location and surrounding areas.
- 4.2 The Proposed Development is set in a rural area. The site and immediate surroundings include some areas of natural unlit landscape however situated in relative close proximity is Newton-le-Willows.

Local Radiance

- 4.3 The Visible Infrared Imaging Radiometer Suite (VIIRS) is a satellite instrument which orbits earth to collect and record radiance data (light emissions). The latest data was recorded in 2024 and is available in visual format. An extract at the Site location is included in Figure 4.1.
- 4.4 It is important to state that recognised organisations, such as the ILP or CIE, have not calibrated VIIRS radiance data with the Environmental Zones established in Table 2.1. It is also important to note the data should not accurately be relied upon and should be viewed conservatively. The data should be used as one tool to help understand the context of existing light emissions local to the Site.

Figure 4.1 Local radiance.



4.5 The following categories have been determined as potential sensitive receptors which could be impacted by any external lighting proposals of the proposed development:

- Ecological;
- Residential;
- Natural (Direct Sky Glow); and,
- Transport.

Ecology Receptors

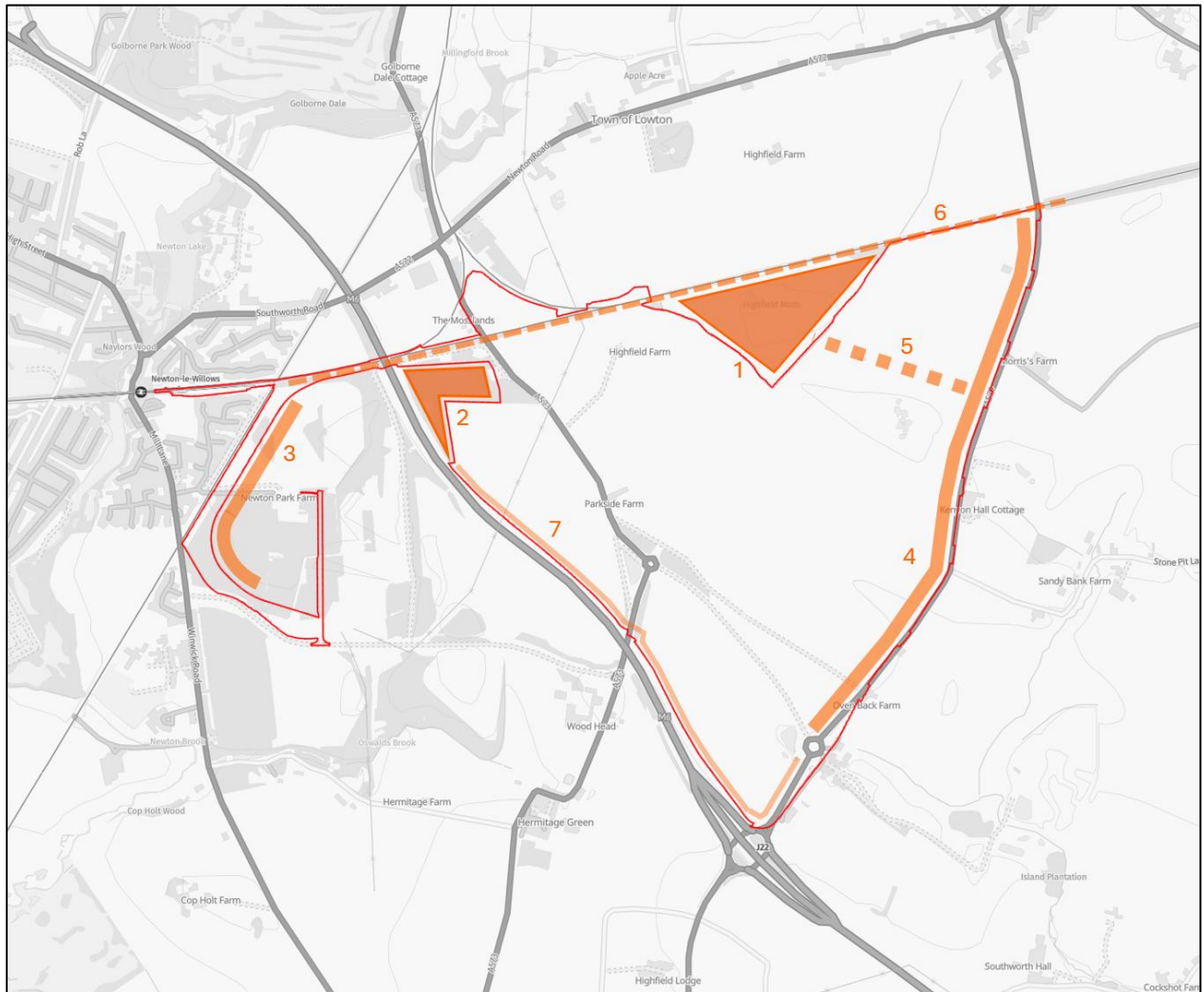
4.6 The ecology receptors surrounding the site are illustrated in Figure 4.3 and have been determined as follows:

1. Highfield Moss Site of Special Scientific Interest (SSSI). **High sensitivity**
2. Existing woodland situated between the Proposed Development and the M6 Motorway. **High sensitivity**
3. Existing woodland situated at the west of the Proposed Development adjacent the proposed railway sidings. **High sensitivity**
4. Eastern boundary including a proposed green corridor with bund. **Medium sensitivity**
5. Proposed habitat corridor, connecting Highfield Moss to the eastern boundary. **Medium sensitivity**
6. Liverpool to Manchester Railway Line. **Medium sensitivity**
7. Existing hedgerow which separates the Proposed Development from the M6. **Medium sensitivity**

4.7 Mitigation measures and lighting modelling is included later in this report.

4.8 Figure 4.2 illustrates the Ecological designations plan.

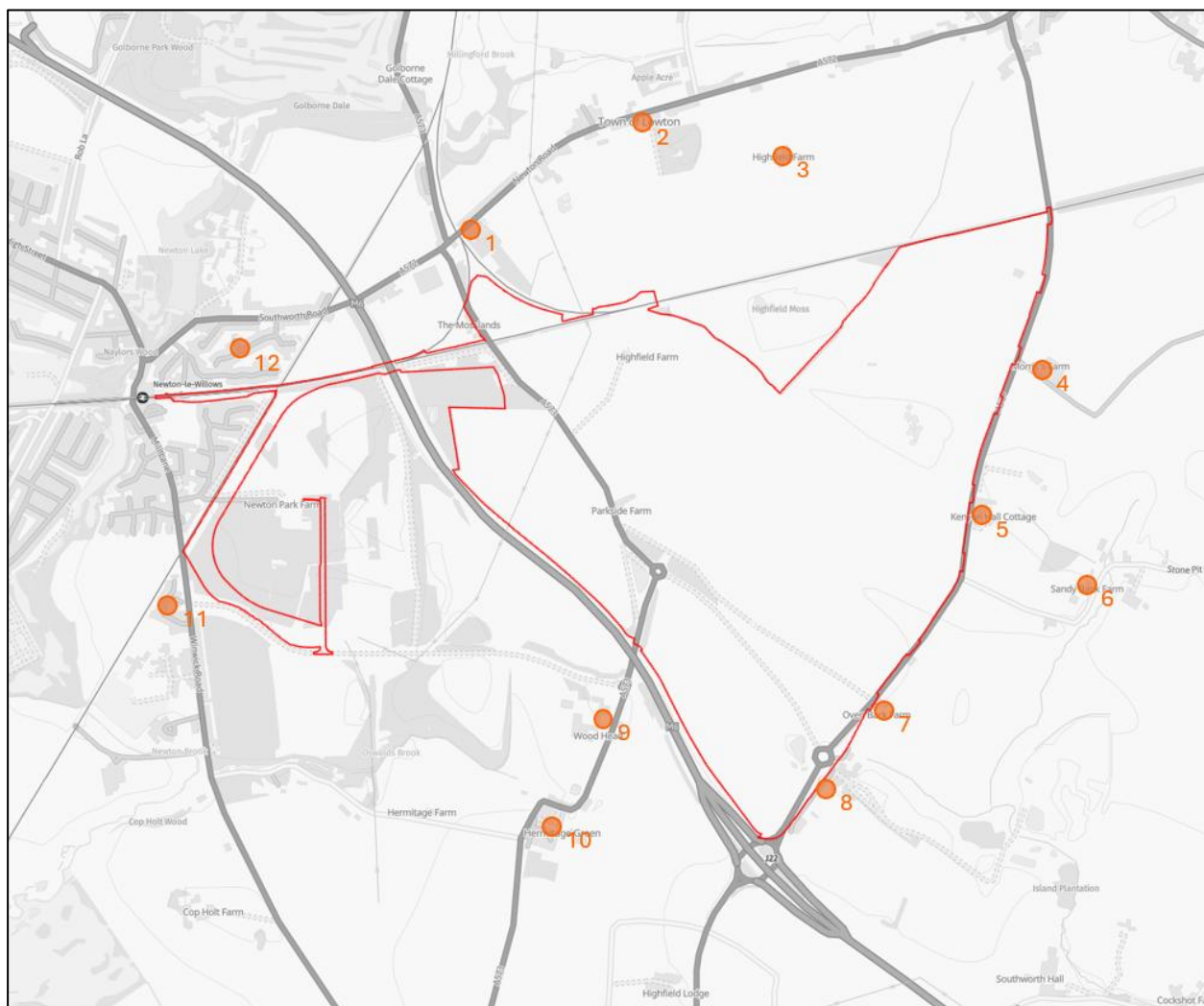
Figure 4.2 Ecological receptors.



Residential Receptors

4.9 The residential receptors surrounding the site are illustrated in Figure 4.3 and have been determined as follows:

1. Residences along Newton Road;
2. Residences within Town of Lowton;
3. Highfield Farm;
4. Morris's Farm;
5. Kenyon Hall Cottage;
6. Sandybank Farm;
7. Oven Back Farm;
8. Residences along Winwick Lane;
9. Wood Head;
10. Residences within Hermitage Green;
11. Residences along Winwick Road;
12. Residences in Newton-Le-Willows;

Figure 4.3 Residential receptors (indicated in orange).

- 4.10 The limits for source intensity (as viewed from nearby residential properties) for Environmental Zone E2 are provided in Table 4.1, extracted from the ILP GN01/21 guidance.
- 4.11 The limits for light intrusion (Illuminance in the vertical plane) for each Environmental Zone are described in Table 4.2, extracted from the ILP GN01/21 guidance.

Table 4.1 Glare (source intensity) limits as viewed from residential properties.

Light Technical Parameter	Application conditions	Luminaire group (projected area A_p in m^2)					
		$0 < A_p \leq 0.002$	$0.002 < A_p \leq 0.01$	$0.01 < A_p \leq 0.03$	$0.03 < A_p \leq 0.13$	$0.13 < A_p \leq 0.50$	$A_p > 0.5$
Maximum luminous intensity emitted by luminaire (I in cd)	E0						
	Pre-curfew	0	0	0	0	0	0
	Post-curfew	0	0	0	0	0	0
	E1						
	Pre-curfew	0.29 d	0.3 d	1.3 d	2.5 d	5.1 d	2,500
	Post-curfew	0	0	0	0	0	0
	E2						
	Pre-curfew	0.57 d	1.3 d	2.5 d	5.0 d	10 d	7,500
	Post-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	500
	E3						
	Pre-curfew	0.86 d	1.9 d	3.8 d	7.5 d	15 d	10,000
	Post-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	1,000
	E4						
	Pre-curfew	1.4 d	3.1 d	6.3 d	13 d	26 d	25,000
	Post-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	2,500

Table 4.2 Maximum values of vertical illuminance on properties.

Light Technical Parameter	Application Conditions	Environmental Zones				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (Ev)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx	1 lx	2 lx	5 lx

Natural – Sky Glow Receptors

4.12 The ILP GN01/21 guidance provides limitations for maximum allowable sky glow percentage for each Environmental Zone as shown in Table 4.3.

4.13 Sky glow is measured as ULR (Upward Light Ratio), the percentage of luminaire flux of a luminaire or a lighting installation that is emitted above the horizontal. Sky glow limitations depend on the Environmental Zone of the lighting installation as set out in the ILP guidance notes. The Environmental Zone categories are previously defined in this report in Table 2.1.

Table 4.3 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

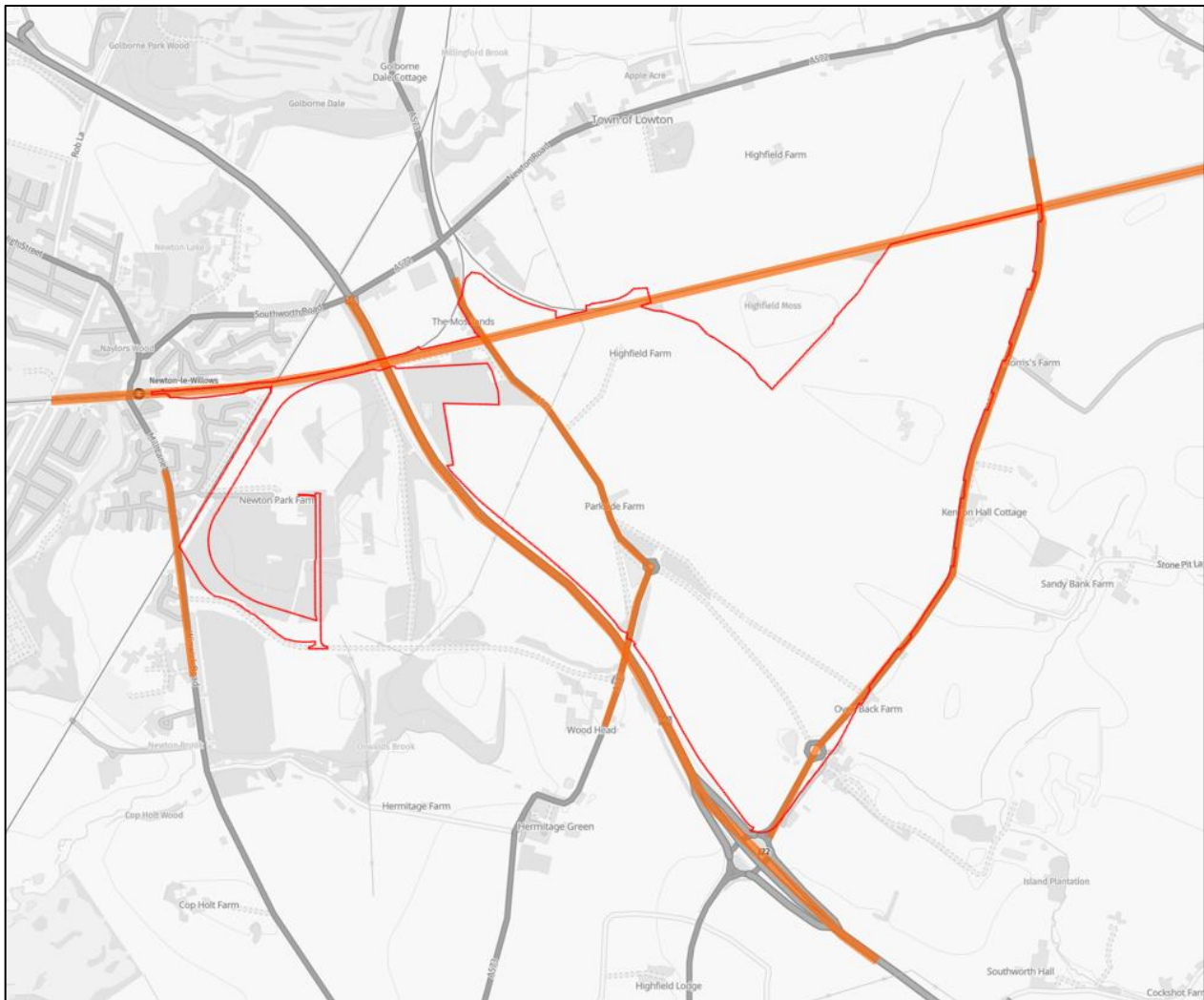
Transport Receptors

4.14 The nearby highway receptors have been identified as follows,

- The A579 (Winwick Lane);
- The A49 (Mill Lane);
- The M6, including Junction 22;
- Parkside Road; and
- Liverpool to Manchester Railway Line.

4.15 The nearby transport receptors are illustrated in Figure 4.4.

Figure 4.4 Transport receptors (indicated in orange).



Highway

4.16 The ILP Guidance Notes for the Reduction of Obtrusive Light provide limitations for the maximum threshold increment (TI) and veiling luminance (LV) for each road classification type, as shown in Table 4.4.

Table 4.4 Obtrusive light limitations for exterior lighting installations – road users.

Road Classification	Threshold Increment (TI)	Veiling Luminance (LV)
No road lighting	15% based on adaptation luminance of 0.1cd/m ²	0.037
M6 / M5	15% based on adaptation luminance of 1cd/m ²	0.23
M4 / M3	15% based on adaptation luminance of 2cd/m ²	0.40
M2 / M1	15% based on adaptation luminance of 5cd/m ²	0.84

Road Classification – as given in BS EN 13201-2:2015 Road lighting performance requirements. Limits apply where users of transport systems are subject to a reduction in the ability to see essential information. Values given are for relevant positions and for viewing directions in the path of travel.

TI - The measure of disability glare expressed as the percentage increase in contrast required between an object and its background for it to be seen equally well with a source of glare present. Note: Higher values of TI correspond to greater disability glare, the reduction in visibility caused by intense light sources in the field of view.

LV - The luminance that would need to be superimposed on a scene in object space to reduce the scene's contrast by an amount equal to the added retinal illuminance from scattered light on the scene's retinal image. It is most commonly used to describe the contrast-reducing effect of a glare source in the field of view.

Railway

4.17 BS 5489-1 provides qualitative guidance on minimising light spill and glare to railway lines but does not contain specific threshold limits. The following guidance shall be put in place:

- Light spill should be minimised in the vicinity of a railway bridge crossing/passing above a road;
- Columns should be placed as far away as practicable from a rail bridge or the fence line of railway track;
- Unwanted glare should be minimised for the train driver by the use of luminaires conforming to an appropriate G class selected from BS EN 13201-2:2015 or shielding.

LIGHTING STRATEGY

Introduction

- 5.1 This section sets out the design principles and external lighting strategy for the Proposed Development.
- 5.2 A modern external lighting installation is vitally important to the Proposed Development for many reasons including, but not limited to, the following:
- To provide safety for pedestrians from moving vehicles, railway and cranes;
 - To provide ease of wayfinding and navigation for staff and visitors;
 - To provide security and deter antisocial behaviour;
 - To set the architectural scene and urban landscape;
 - To control direction signage and their relationship with other illuminated material;
 - To protect installations from accidental or deliberate damage; and
 - To allow safe access and maintenance.
- 5.3 It is important that the lighting applications provide both an aesthetic quality and also the appropriate levels of illumination required for the space they inhabit.
- 5.4 This section focuses primarily on the operational phase lighting strategy. A sub-section specific to construction phase lighting strategy is included at the end of this section.

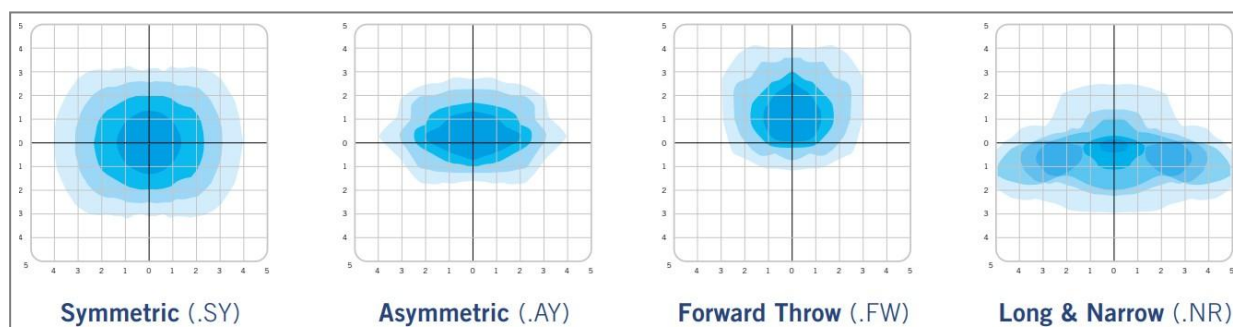
Design Parameters

- 5.5 All external lighting shall be provided in accordance the Relevant Policies and Guidance. It will be designed to minimise obtrusive light and optimise energy use. Lighting will comply with recommendations for Environmental Zone E2 given in ILP Guidance Notes for the Reduction of Obtrusive Light (Guidance Note 01/21).
- 5.6 Luminaires will be LED light source to provide optimum energy efficiency and accurate targeting of light output to keep obtrusive light effects to the absolute minimum.
- 5.7 High mast lighting shall be introduced where standard column mounted lighting is deemed impractical. The use of high mast lighting shall be limited to the Rail Terminal, including the Container Handling Area.
- 5.8 External lighting will be provided wherever necessary to provide a safe and secure environment for staff and other users after dark. 'Secured by Design' principles will be adopted and emphasis will be placed on achieving good uniformity of light distribution. All illumination levels will be set as low as practicable while complying with safety and

security recommendations. Spill of light onto building facades and outside of the target area for illumination will be minimised through careful design, specification and positioning of lighting equipment.

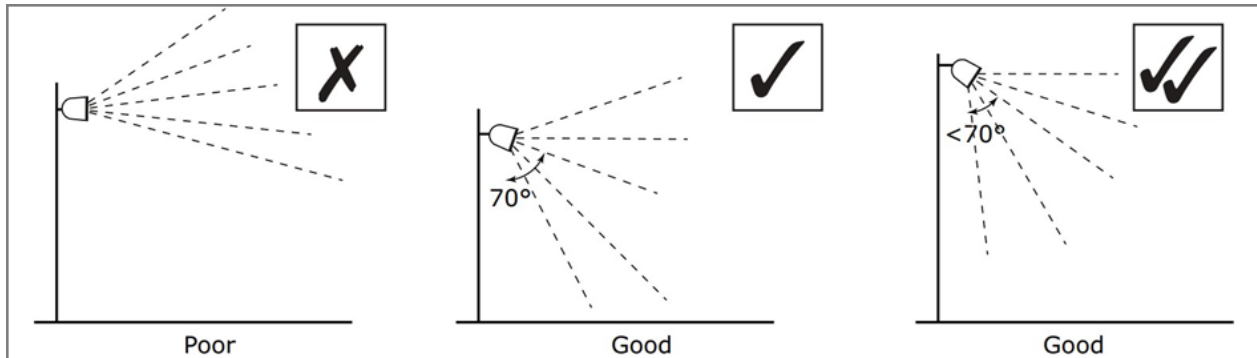
- 5.9 At the outer edges of the Proposed Development luminaires will as far as practicable be positioned so that they are out of view of sensitive receptors. Mounding, fencing and planting that is being provided for visual and noise reduction reasons will be recruited to assist in achieving this.
- 5.10 At the outer edges of the Proposed Development luminaires will be complete with back light shields or optics with sharp cut off will be used where required to minimise impact on sensitive receptors.
- 5.11 Luminaires shall generally be mounted on buildings and on standard lighting columns and shall be arranged to maximise the amount of light reaching trafficked hard surfacing while minimising spill light onto adjacent areas.
- 5.12 Lighting levels will be suitable for pedestrian, vehicular and railway access, and the operation of a CCTV system. Lighting will be installed to provide sufficient illumination for safe circulation and to promote a feeling of safety and security.
- 5.13 G4 compliant luminaires shall be utilised for the road and area lighting. The G rating of a luminaire relates to the luminous intensity of light emitted at angles of 70, 80 and 90 degrees when the luminaire is mounted at a tilt of zero degrees to the finished surface that it is lighting.
- 5.14 Luminaires must utilise optimum optical distribution to direct exactly where needed while allowing maximum spacing between luminaries and minimise the required number of columns. Examples are illustrated in Figure 5.1.

Figure 5.1 Light Distributions.



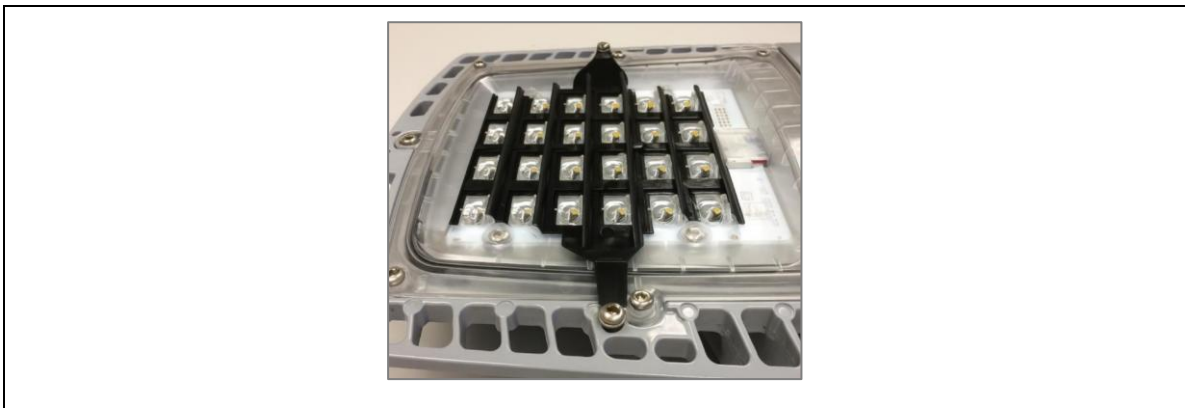
- 5.15 Luminaires shall be of the directional type that emit all their light below the horizontal plane. Glare shall be kept to a minimum by ensuring that the main beam angle of all luminaires directed towards any potential observer is no greater than 70° in line with the recommendations in ILP Guidance Note 01/21, demonstrated in Figure 5.2.

Figure 5.2 Luminaire aiming angles – Source: ILP Guidance Note 01/21.



Spill Control

- 5.16 Light shall be targeted to the intended area and unwanted light spill shall be avoided through the use of use of integrated shielding louvres within the luminaire housing.
- 5.17 These integrated louvres cover individual LED modules and they are specifically engineered to control and direct the light output precisely where it is needed, minimising unnecessary scattering and enhancing overall lighting efficiency.
- 5.18 Externally mounted shields are generally less effective because they are typically retrofitted after installation, which can lead to poor alignment with the luminaire's beam angle and result in uneven or insufficient shielding.
- 5.19 Below is an example of an integrated shielding louvre.



Illuminated Signage

5.20 Any proposed Illuminated signage shall comply with the following guidance given in ILP PLG 05 'The Brightness of Illuminated Advertisements':

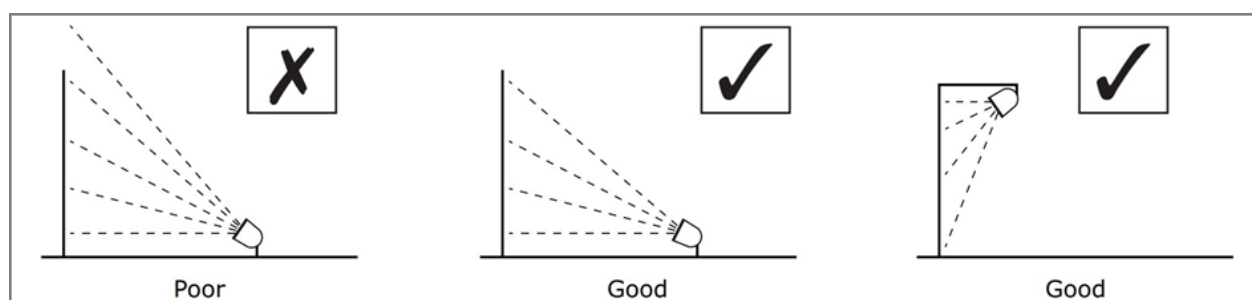
- Lighting shall be static;
- No intermittent light sources, flashing lights, moving parts or features, no exposed cathode tubing, animation or reflective material;
- Illumination in a manner reasonably required to fulfil the purpose of advertisement; and,
- Maximum permitted luminance levels in line with Table 5.1.

Table 5.1 Signage luminance limits in England

Illuminated area	Maximum luminance (cdm2)
More than 10m ²	300
Not more than 10m ²	600

5.21 When lighting vertical structures such as advertising signs, light shall be directed downwards wherever possible. If there is no alternative to up-lighting, the use of luminaires with the correct optical distribution, coupled where required with shields, baffles and louvres, will help minimise spill light around and over the structure. This is demonstrated in Figure 5.3.

Figure 5.3 Facade illumination – Source: ILP Guidance Note 01/21.



Special Measures close to Biodiversity-sensitive areas

- 5.22 Light spill has the potential to affect both flora (plants etc) and fauna (insects, reptiles, wild animals etc). Light spill can disrupt feeding patterns and force ecological receptors to leave their habitat.
- 5.23 There are a number of ecological areas that will be sensitive to lighting effects. Where lighting is to be sited close to such areas there is the potential for such effects to be significant unless special measures are employed.
- 5.24 All lighting sited close to ecologically sensitive areas shall be designed in collaboration with a qualified ecologist to minimise light spill. The design process shall be iterative, and mitigation shall be applied as necessary to reduce light spill.
- 5.25 Potential biodiversity receptors that could be adversely affected are discussed in the Environmental Statement: Chapter 11: Ecology and Biodiversity.
- 5.26 In order to minimise disturbance to potential bat habitat the following measures should be introduced, in line with the recommendations of ILP Guidance Note 08 for Bats and artificial lighting in the UK:
- 5.27 The Guidance Note provides recommendations for appropriate external lighting specification:
- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used
 - LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability
 - A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component
 - Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012)
 - Internal luminaires can be recessed (as opposed to using a pendant fitting.
 - Waymarking inground markers (low output with cowl or similar to minimise upward light spill) to delineate path edges.
 - Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards
 - Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered

- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt
- Where appropriate, external security lighting should be set on motion-sensors and set to as short as possible timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate
- Use of a Central Management System (CMS) with additional web-enabled devices to light on demand
- Use of motion sensors for local authority street lighting may not be feasible unless the authority has the potential for smart metering through a CMS
- The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.

5.28 Where bats are likely to be present guidance from ILP Guidance Note 08 for Bats and artificial lighting in the UK will be followed. Lighting will be LED type, free of UV emissions to prevent adverse effects on flying insect and bat populations.

Performance Requirements

5.29 All illumination levels will be set as low as practicable while complying with safety and security recommendations and the design levels set out in BS EN 12464 'Light and lighting – Lighting of work places – Part 2: Outdoor work places' and BS 5489-1 'Design of road lighting- Lighting of roads and public amenity areas'. A summary of the applicable design levels is detailed in Table 5.2.

Table 5.2 Proposed External Lighting Minimum Design Levels.

Type of area, task, or activity	Maintained illuminance	Type of area, task, or activity
Primary Roads	20	0.40
On Plot Circulation	20	0.40
Service Areas / Yards	30	0.40
Rail Terminal - Crane Gantry and Container Handling	20	0.25
Car Parks	10	0.25
Walkways	10	0.25

5.30 Local illumination of 150 Lux in front of loading doors in line with the recommendations of SLL Lighting Guide 1: The Industrial Environment.

Primary Access Roads

5.31 This includes the Parkside Link Road and internal estate roads. Lighting shall be provided from adoptable column mounted luminaires, installed to meet adoptable standards.

5.32 Primary Access Road lighting shall comply with the lighting policies of the adopting authority that are current at the time of design. Lighting design will consider the environment in which the lighting will be situated.

5.33 Luminaires shall be complete with purposely designed road optics to distribute the light as efficiently as possible whilst controlling and minimising any light spill and to assist in reducing the number of columns required.

5.34 Lighting will comply with the recommendations given in BS 5489-1 'Design of road lighting- Lighting of roads and public amenity areas', and the target average illuminance will be 20 lux.

On Plot Circulation

5.35 On Plot Circulation is considered vehicle movement areas which connect car parks and service yards to the Primary Access Roads. Lighting shall be provided from standalone lighting columns and building mounted luminaires with a limited mounting height not

exceeding eight metres.

- 5.36 Luminaires shall be complete with purposely designed road optics to distribute the light as efficiently as possible whilst controlling and minimising any light spill and to assist in reducing the number of lighting points required.
- 5.37 Lighting will comply with the recommendations given in BS EN 12464 'Light and lighting – Lighting of work places – Part 2: Outdoor work places' and the target average illuminance will be 20 lux.

Service Areas / Yards

- 5.38 Lighting for service areas / yards will be provided from column mounted luminaires around the perimeter of the yard and directed towards the building. Maximum column height will be 10 metres; a lower mounting height will be used wherever practicable. Additional luminaires may also be located over loading bays/lorry dock areas and aimed downwards, mounted at a maximum height of 10 metres.
- 5.39 Lighting will comply with the recommendations given in BS EN 12464 'Light and lighting – Lighting of work places – Part 2: Outdoor work places' and the target average illuminance will be 30 lux.

Rail Terminal

- 5.40 For areas where gantry cranes are operating, the underside of the gantry cranes will carry floodlights to illuminate the working area immediately below the crane.
- 5.41 Lighting will generally be provided from high mast and column mounted luminaires positioned to provide optimum light distribution with minimal light spill to minimise the quantity of masts. High mast luminaires will be limited to a maximum height of 30 metres; a lower mounting height will be used wherever practicable.
- 5.42 Lighting to the container stack will comply with the recommendations given in BS EN 12464 'Light and lighting – Lighting of work places – Part 2: Outdoor work places' and the target average illuminance will be 20 lux.

Car Parks

- 5.43 Car parks will be lit by luminaires mounted on standalone lighting columns. Maximum column height will be 8 metres; lower mounting heights will be used wherever practicable.
- 5.44 The lighting will comply with the recommendations given in BS EN 12464 'Light and lighting – Lighting of work places – Part 2: Outdoor work places'. The target average illuminance will be 20 lux.

Walkways

- 5.45 Walkways shall be illuminated during hours of low natural light and darkness predominantly for safety and security. Lighting shall be provided by luminaires mounted

on lighting columns of as low a height as reasonably practicable. Where possible low level illuminated bollards shall be utilised.

- 5.46 Luminaires shall be complete with purposely designed pathway optics to distribute the light as efficiently as possibly whilst controlling and minimising any light spill, this also assists in reducing the number of columns / bollards required to achieve the lighting levels and uniformity.
- 5.47 External walkway lighting will comply with the recommendations given in BS EN 12464 'Light and lighting – Lighting of work places – Part 2: Outdoor work places'. The target average illuminance will be 10 lux.

Luminaire Selection

- 5.48 The final detailed design may deviate from the luminaires identified but must meet all parameters and criteria as set out in this report and demonstrate equal to or less than the quantity of light spill achieved. An adequate and safe level of lighting must be provided for site tasks, amenity, and security, whilst maintaining acceptable impact on the site surroundings, environment, railway and neighbouring properties.
- 5.49 Included within Appendix 2 is the manufacturer's literature.

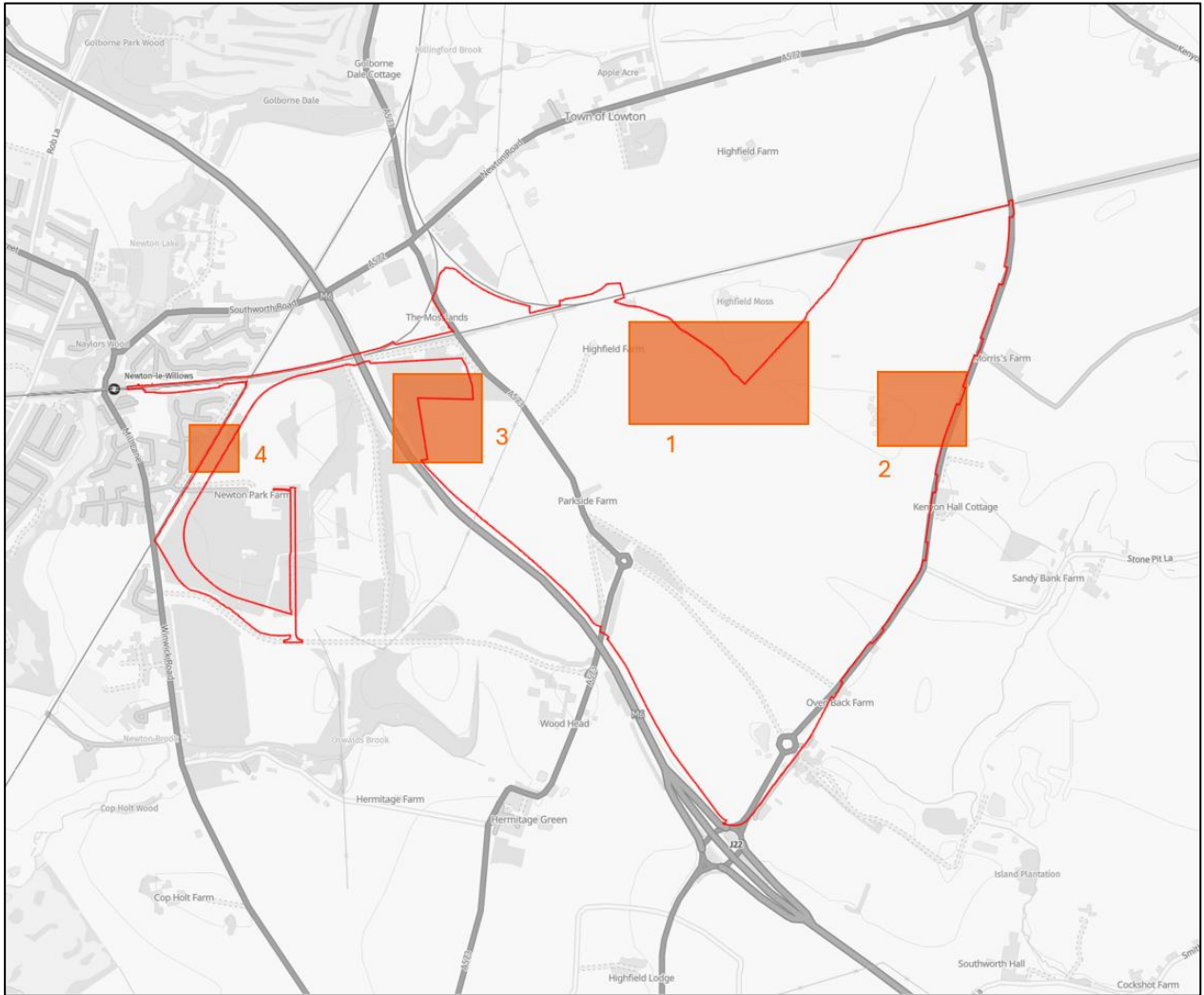
Table 5.3 Proposed luminaires.

Luminaire type	Manufacturer information	Image
Column mounted Building mounted	Holophane Lighting – D-Series Mounting height 6m – 12m 2,000 – 50,000 Lumens CRI>70 Variety of optics Die-cast aluminium body IP65, IK10	
High mast	Holophane Lighting - HMAO Mounting height up to 30m 50,000 – 100,000 Lumens CRI>70 Variety of optics Die-cast aluminium body IP65, IK07	
Column Mounted Primary Access Roads	Holophane V-MAX Mounting height 8m 1000 – 50000 Lumens CRI>70 Variety of optics Die-cast aluminium body	

Luminaire type	Manufacturer information	Image
	IP65, IK09	

Lighting Modelling

- 5.50 Lighting modelling has been undertaken at key areas to illustrate the predicted lighting distribution and how light spill and how light shall be contained within the Proposed Development. The areas are as follows and have been selected in collaboration with the appointed ecologist.
- 5.51 Lighting has been modelled to achieve the performance requirements of this lighting strategy, using the proposed luminaires.
- 5.52 An overview can be seen in Figure 5.4.
1. Rail terminal and the relationship with Highfield Moss
 2. North of Unit 13 and the relationship with:
 - a. the proposed green corridor along the eastern boundary
 - b. the proposed habitat corridor, connecting Highfield Moss to the eastern boundary
 3. West of Unit 06 and the relationship with the adjacent woodland.
 4. Existing (partially retained) woodland situated at the west of the Proposed Development adjacent the proposed railway sidings.

Figure 5.4 Areas of lighting modelling.

5.53 Figure 5.5 – 5.8 include false colour illuminance plots at ground level, measured in lux, and graduated on the scale shown.

Figure 5.5 (1) Rail terminal and the relationship with Highfield Moss

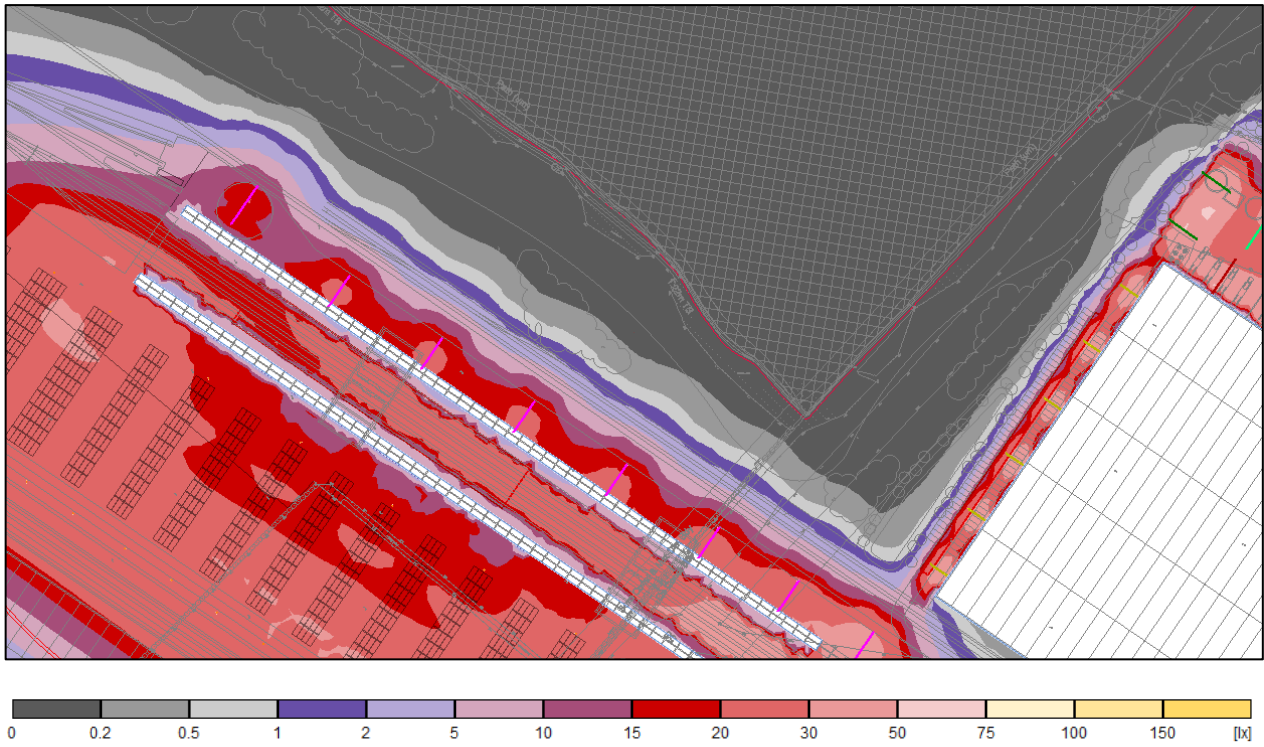


Figure 5.6 (2) North of Unit 13 and the relationship with:

- a) the proposed green corridor along the eastern boundary
- b) the proposed habitat corridor, connecting Highfield Moss to the eastern boundary

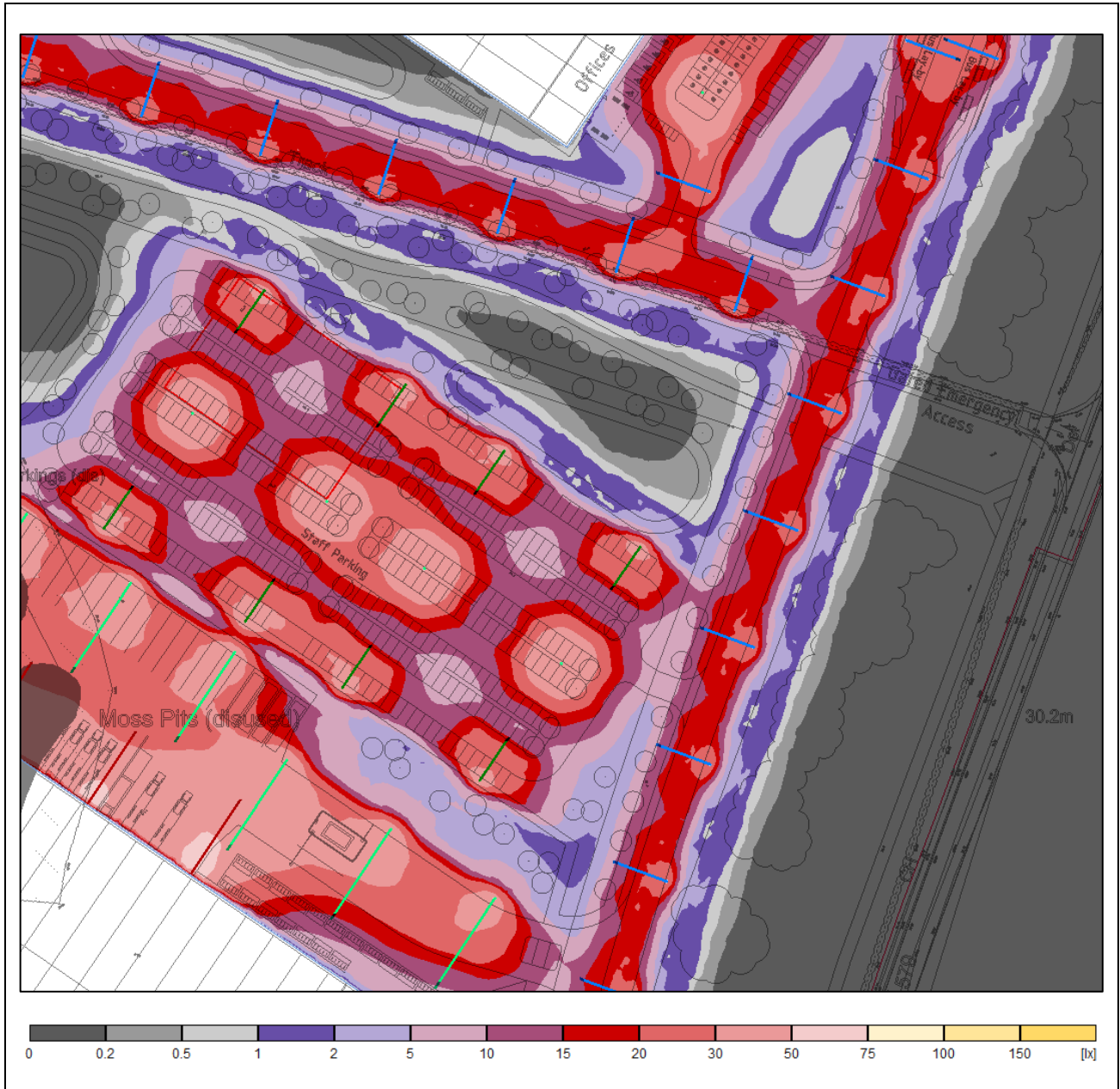


Figure 5.7 (3) West of Unit 06 and the relationship with the adjacent woodland

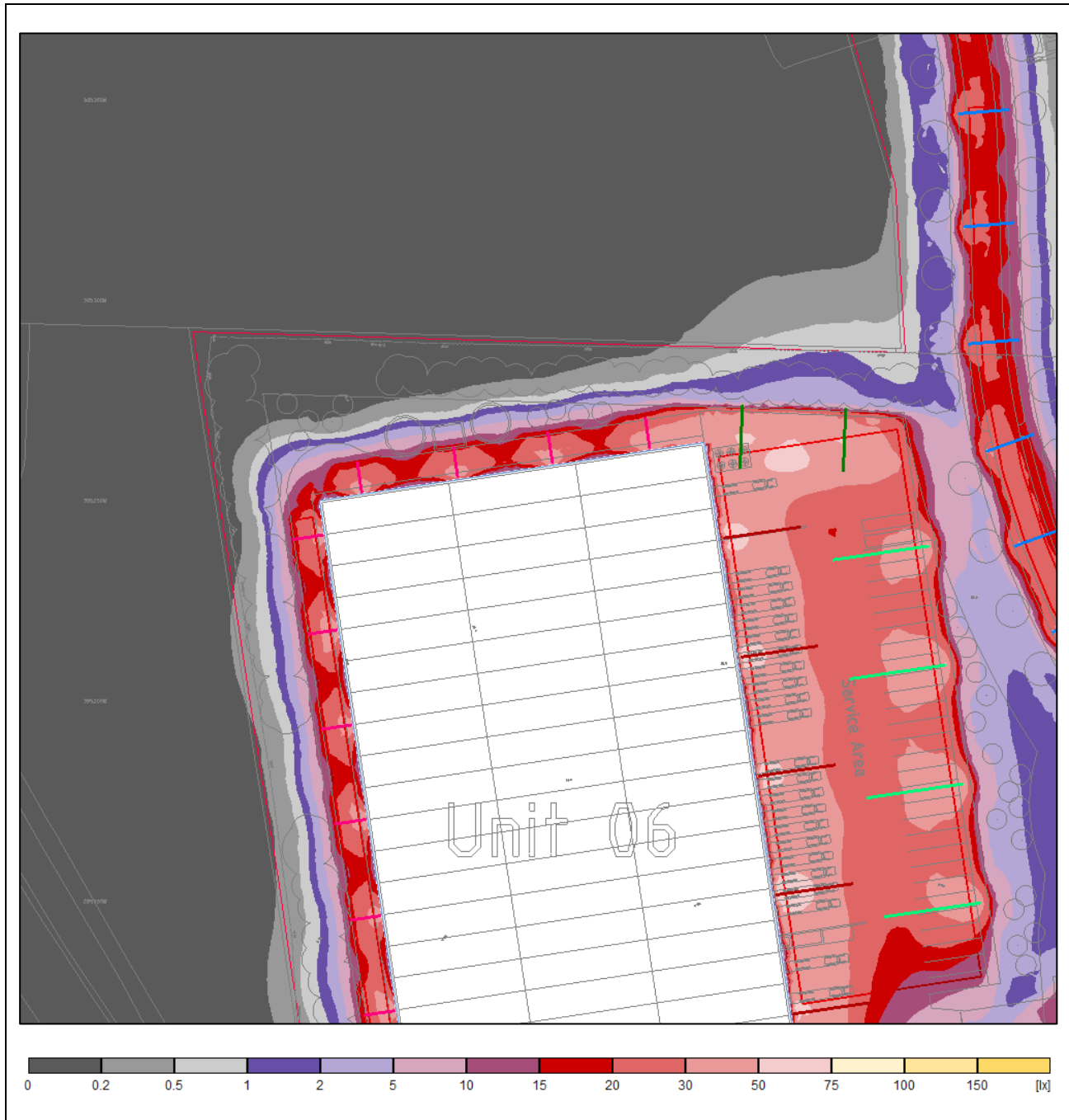
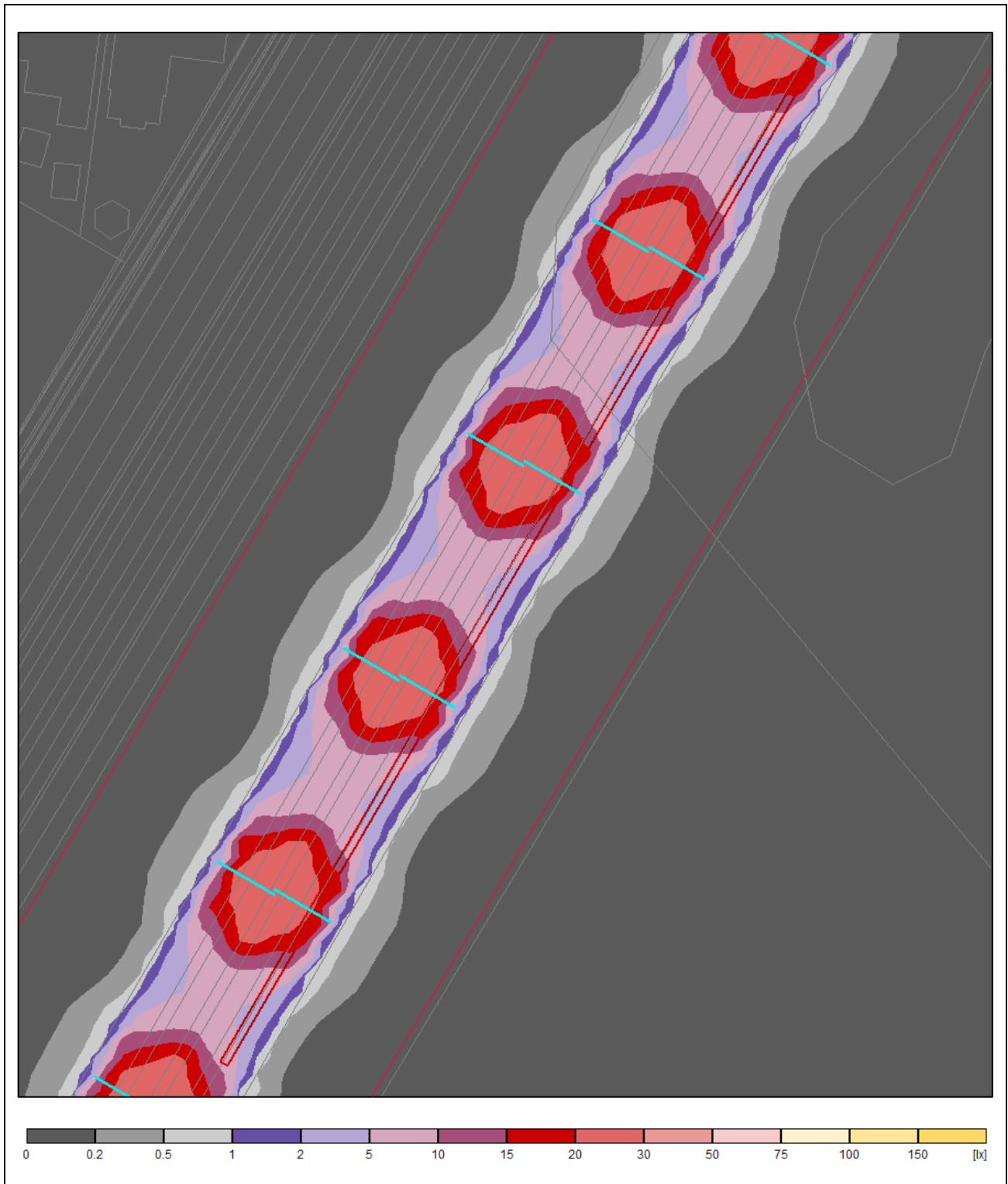


Figure 5.8 (4) Existing woodland situated at the west of the Proposed Development adjacent the proposed railway sidings



Construction Phase Lighting

5.54 While construction phase lighting for the Proposed Development and associated highway mitigation works is expected to be short term and reversible it is important to define the

parameters to minimise light pollution.

- 5.55 Lighting will operate in all external areas used by construction workers after dark in order to provide a safe and secure working environment without over lighting. High quality LED light sources with high colour rendering index (CRI) shall be utilised to maximise visibility with efficient light output.
- 5.56 Lighting shall be provided to meet the target lux level as set out in BS 12464-2 Lighting of Outdoor Workplaces without over lighting. Luminaires shall be mounted at the lowest practical mounting height, providing lighting only where lighting is required.
- 5.57 Lighting controls should be employed to dim or switch off any lighting that is not needed.
- 5.58 Lighting that needs to be sited close to the perimeter or ecologically sensitive areas should be fitted with shielding or be switched off or dimmed when not in use.
- 5.59 Lighting should be controlled in such a way to illuminate high activity, hazardous or high security areas while reducing lighting levels at less pertinent areas.
- 5.60 The Contractor should act responsibly to adjust any temporary lighting reported as causing nuisance.

CONCLUSION

- 6.1 The Proposed Development Lighting Strategy supports relevant policy and guidance.
- 6.2 The final detailed design must meet all parameters and criteria as set out in this document.
- 6.3 An adequate and safe level of lighting must be provided for site tasks, amenity, and security, whilst maintaining acceptable impact on the site surroundings, environment, railway and neighbouring properties.
- 6.4 The reduction of light pollution should not compromise crime prevention and public safety and alternative technological solutions should be explored to ensure these elements are not compromised whilst also mitigating against obtrusive light.
- 6.5 This report will be referenced in Chapters 10 and 11 of the Environmental Statement (Volume 1) to assess external lighting impact on Biodiversity and Landscape and Views.

References

- St Helens Borough Local Plan Up To 2037
- Wigan Local Plan: Core Strategy (Wigan Council, 2024)
- Warrington Local Plan (Warrington Borough Council, 2023).
- National Planning Policy Framework (February 2024)
- Places for Everyone Joint Development Plan (2024)
- ILP Guidance Notes for the Reduction of Obtrusive Light GN01 (2021)
- ILP Guidance Note 8 Bats and Artificial Lighting (2023)
- ILP Professional Lighting Guide 05 The Brightness of Illuminated Advertisements (2014)
- Lighting in the Countryside: Towards Good Practice (2001)
- SLL Lighting Guide 1: The Industrial Environment (2018)
- SLL Lighting Guide 15: Transport Buildings (2017)
- BS 5489: Code of Practice for the Design of Road Lighting – Part 1: Lighting of Roads and Public Amenity Areas (2020)
- BS 13201: Road Lighting – Part 1, 2, 3, 4: Performance Requirements (2015)
- BS EN 12464-2: Lighting of Workplaces. Outdoor Work (2024)
- Commission Internationale De L’Eclairage (CIE 150) (2017)
- Guidelines for Minimising Sky Glow (CIE 126) (1997)
- National Planning Practice Guidance (2014)

Abbreviations

CEMP	Construction Environmental Management Plan
CRI	Colour Rendering Index
EIA	Environmental Impact Assessment
ES	Environmental Statement
Em	Maintained Illuminance
Ev	Illuminance in the Vertical Plane
ILP	Institute of Lighting Professionals
LED	Light Emitting Diode

NPPF	National Planning Policy Framework
ODPM	Office of the Deputy Prime Minister
u0	Illuminance Uniformity
ULR	Upward Light Ratio
UV	Ultraviolet