

**Bradley Villa Farms Lighting Study and Report**  
**Artificial Lighting Environmental Assessment**

**BVFL-BHE-XX-XX-RP-E-0001**

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## Glossary

Term	Definition
<b>Ave</b>	Average value
<b>Building Luminance</b>	This is the amount of light on the façade of the building being built with reference to the exterior luminaires used to light it. This is being measured to ensure the building suits the general district lighting and avoid over lighting and excessive visible brightness.
<b>Colour Rendering (Ra)</b>	An indicator of how accurately colours can be distinguished under different light sources. The colour rendering index (measured in Ra) compares the ability of different light sources to render colours accurately. This measures the ability of a light source to render colours naturally, without distorting the hues seen under a full spectrum radiator (like daylight). The colour rendering index (CRI) ranges from 0 to 100. Colour rendering index CRI
<b>Colour temperature</b>	The colour temperature provides an indication of the light colour and is expressed in Kelvin (K). Lamps are generally rated between 2700K (warm), 4000K (neutral) and 6500K (cool). Unit: kelvin, K.
<b>Control gear</b>	A 'package' of electrical or electronic components including ballast, power factor Correction capacitor and starter. High frequency electronic control gear may include other components to allow dimming, etc.
<b>Glare</b>	The uncomfortable brightness of a light source against a darker background which results in dazzling the observer or may cause nuisance. Condition of vision in which there is discomfort or a reduction in the ability to see significant objects, or both, due to an unsuitable distribution or range of luminance.
<b>Glare Rating (GR)</b>	Glare Rating values may be calculated for sports and area lighting applications to indicate the amount of glare present for an observer within the lighted area. GR values range from 10 to 90 (regardless of US or Metric units), where a value of 10 indicates unnoticeable glare and a value of 90 indicates unbearable glare. For most applications, the CIE (International Commission on Illumination) recommends that the maximum amount of glare allowed should be less than 45 to 55, depending on the application.
<b>Horizontal Illuminance (E, Eh)</b>	Illuminance incident on the horizontal surface. Unit: lux (lx) = lm/m <sup>2</sup> Symbol: E, Eh
<b>Illuminance</b>	The amount of light falling on a surface of unit area. The unit of illuminance is the lux, equal to one lumen per square metre. Unit: lux (lx) = lm/m <sup>2</sup>
<b>LED</b>	Light Emitting Diode used as a light source. Solid-state semiconductor device that converts electrical energy directly into light of a specific colour or even white light.
<b>Light Output Ratio (LOR)</b>	Ratio of the total light emitted by a luminaire to the total light output of the lamp(s) it contains measured at standard operating conditions.
<b>Light Spill</b>	The unwanted spillage of light onto adjacent areas which may affect sensitive receptors, particularly residential properties and ecological sites.
<b>Light Trespass</b>	The spilling of light beyond the boundary of a property which may cause nuisance to others, particularly when spilling into windows of neighbouring properties.
<b>Lumen</b>	Unit of luminous flux, used to describe the amount of light produced by a lamp or falling on a surface.

<b>Lumen Depreciation</b>	The decline in the light output of a light source during its lifetime.
<b>Luminaire</b>	The correct term for a light fitting. An apparatus which controls the light from a lamp and includes all components for fixing and protecting the lamps or light source, as well as connecting them to an electrical supply.
<b>Luminance</b>	This is the maximum luminance of any illuminated or self-luminous surface as seen from any potentially obtrusive direction.
<b>Maintained Illuminance (Luminance)</b>	Value below which the average illuminance on the specified surface is not allowed to fall. The maintained illuminance is specified at the end of the maintenance cycle, taking into consideration the maintenance factor. It is one of the main specification elements for the lighting designer. In the various lighting standards, the maintained illuminance is specified for various areas/activities. Unit: lux Symbol: Em. (Eave)
<b>Maintenance Factor</b>	Correction factor used in lighting design to compensate for the rate of lumen depreciation, caused by lamp ageing (lumen depreciation and lamp failure) and dirt accumulation (luminaire and environment). It determines the maintenance cycle needed to ensure that illuminance does not fall below the maintained value.
<b>Sky Glow</b>	The upward spill of light into the sky which can cause a glowing effect and is often seen above cities when viewed from a dark area.
<b>Source Intensity</b>	This is the brightness of the source of the luminaires and applies to each source in the potentially obtrusive direction, outside of the area being lit.
<b>Uniformity Ratio</b>	Ratio of the minimum over the average illuminance for a specified area (E <sub>min</sub> /E <sub>ave</sub> ). When defined as such, the uniformity ratio is also the ratio of the minimum over the maximum illuminance for a specified surface area (E <sub>min</sub> /E <sub>max</sub> ).
<b>Vertical Illuminance</b>	Illuminance incident on the vertical surface. Unit: lux (lx) = lm/m <sup>2</sup> Symbol: Ev

# 1 Introduction

## 1.1 Purpose of the Report

The aim of this report is to provide the Kirklees Council Planning Department with a clear statement on the impact of the external lighting associated with the proposed full allocation development and the mitigation measures that can aid the reduction of this impact.

The report comprises the following

- A description of the existing sites, giving historical background and context to the current site.
- An overview of the proposed Residential and Non-Residential areas of the development, including a description of their composition.
- The guidance being followed (including comments from Kirklees Council on the Scoping Opinion Report),
- An explanation of the measures of lighting control and mitigation recommended by the guidance.
- An analysis of the landscape to assess any potential receptors that will be impacted, supplemented by observations at the site and surrounding areas including photographic records.
- And finally, a brief overview of the design standards and proposed conceptual design with observations regarding the visibility and mitigation measures.

## 2 Site Overview

### 2.1 The Existing Site

The proposed development is allocated in the adopted Kirklees Local Plan (2019) as a housing allocation Site Reference: HS11. The site is a mixture of privately and Council owned land with the Council owned element not currently progressing for development. The proposed whole allocation development site comprises the Bradley Park Golf Course and farmland to the west of Shepherds Thorn Lane. To the North West is the M62 Motorway. To the south are existing dwellings along the entirety of the site served by Bradley Road. The south west corner of the proposed development



Figure 2-1 Location Plan of Site

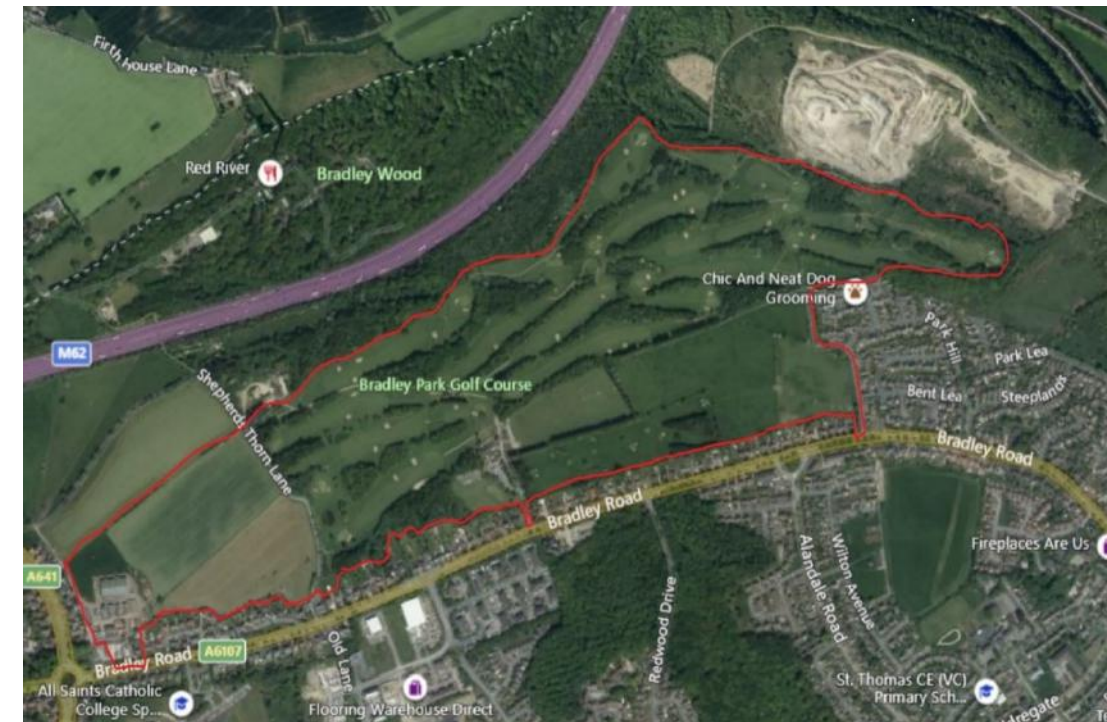


Figure 2-2 Red line boundary of full allocation site – aerial view



Figure 2-3 Redline boundary of proposed full allocation site – plan view

### 3 The Proposed Development

#### 3.1 The full allocation.

The proposed masterplan for the full allocation comprises a mix of residential housing, 2 form Primary School, public amenity spaces, sports and recreational facilities and retention of 9 Holes of the original Golf Course with additional Driving Range and two 3G pitches. See Figure 3-1 Proposed Full allocation development. The Bradley Villa Farm phase of development is located within the red shaded area and can be seen in more detail in Figure 3-2 Proposed Bradley Villa Farm phase of development redline including swale and the housing layout can be seen in more detail in Figure 3-3.



Figure 3-1 Proposed Full allocation development



Figure 3-2 Proposed Bradley Villa Farm phase of development redline including swale



Figure 3-3 Proposed Bradley Villa Farm phase of development – housing only

## 4 Kirklees MBC Requirements, Legislation and other Guidance

### 4.1 EIA Scoping Opinion in response to EIA Scoping Report

Further to the issue of the EIA Scoping Opinion Request in September 2020 and the response by Kirklees Council on the 30 October 2020 the following table aims to capture the comments relevant to this report.

Source	Comment	Response
Scoping Opinion letter	The Scoping Report notes that crime would be assessed. Please ensure this assessment is linked to detailed aspects of design, including lighting, and the need for areas of public realm (including pedestrian routes) to be adequately overlooked and activated, and not lined with side and rear garden fences.	This report assesses this in the lighting proposals.
Scoping Opinion letter	Lighting Impact Assessment With reference to the Scoping Report, the general proposals and methodology regarding artificial lighting issues are considered to be satisfactory insofar as they relate to environmental health considerations. As noted in paragraphs 6.96 to 6.101, chapter 15 will also need to consider the effects of lighting on road safety, wildlife and amenity. Please also ensure general safety (particularly of pedestrians and cyclists) at night is considered with reference to crime prevention objectives.	Refer to ES but also reflected in this report.
Scoping Opinion letter	Allocated site HS11 is located within an area expected to undergo significant change in the coming years as a result of developments at allocated sites (proposed and adopted) in both Kirklees and Calderdale. It is essential that the cumulative impacts of these developments be considered in any ES. The scale of expected change, and the potential for cumulative impacts, has been recognised by both authorities in their commissioning of a cross-boundary masterplan for the M62 Junction 25 garden community corridor, covering Brighouse, Bradley, Cooper Bridge, Mirfield Moor and other areas.	Refer to ES but also reflected in this report.
Highways England Response	Chapter 15 – Lighting Impact Assessment Whilst it is noted that this chapter will, in part, include effects of car lights from the M62 traffic, it is recommended that consideration also be given to any influence lighting provisions within the site may have on M62 traffic.	Refer to ES but also reflected in this report.
KC Environmental Health Response	Lighting Impact Assessment – Chapter 15 We have considered references to the artificial lighting during the construction period and area lighting during the operational period and its impact on light sensitive receptors. We have not considered highway lighting and any impacts on ecology which are outside our remit. The general proposals and methodology regarding artificial lighting issues are considered to be satisfactory.	Refer to ES but also reflected in this report.
KC Landscape Response	Concept lighting information should be provided addressing safe routes to the greenspaces and children and young people’s facilities and sports facilities. It should be well thought out to also meet biodiversity constraints/needs, (bats, minimise light spill etc.). The landscape scheme should also demonstrate how street trees and street lighting have been specified together to avoid tree canopies from obstructing large amounts of street light to ensure safe levels of lighting at street level once trees mature for any pedestrian/cycle routes.	Refer to ES but also reflected in this report.

Table 4-1 EIA Scoping opinion response

### 4.2 Polices and regulations

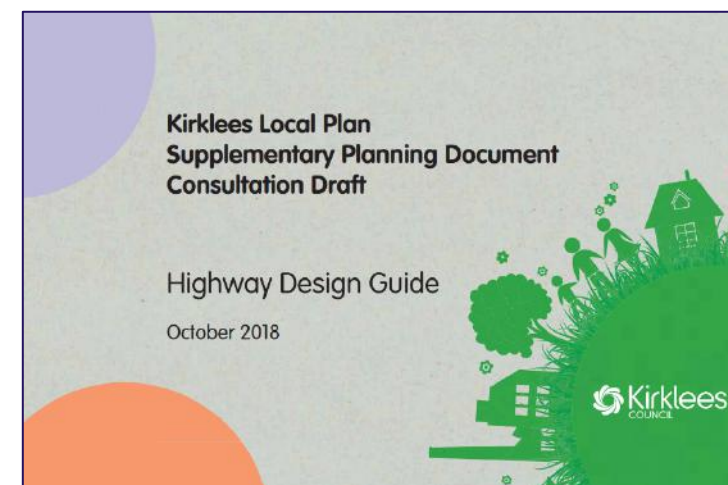
#### The Kirklees Council -

- 1- The development should not be within a sensitive area where the presence of relatively rare or protected species/habitats which could be present on the land.
- 2- The Development is not at risk of flooding
- 3- The development should be viewed in alignment with other on-going residential developments in the area.
- 4- The development should not provide risks to the environment in terms of nature conservation, flood risk, emissions, traffic, noise, vibration and visual intrusion and historic environment.

**“Condition 23 states:** A lighting design strategy for the areas of public open space within the site that is designed to mitigate the impact on nocturnal species of wildlife (including bats) shall be submitted to and approved in writing by the Local Planning Authority before the development is first brought into use. Lighting of the areas of public open space shall be provided in accordance with the approved lighting design strategy and thereafter retained as such. Reason: To mitigate the impacts of the development on biodiversity and to accord with guidance in the National Planning Policy Framework. Lighting should be designed to minimise disturbance to nocturnal species within the landscaped areas because these areas have the potential to be used as breeding sites, resting places and foraging habitat for wildlife.”

#### Kirklees Highway Design Guide SPD

– “Street lighting is often dual purpose and must adequately illuminate both the highway and the footway”.



#### Residential Street Design – Kirklees Highway Design Guide SPD Table 1:

Kirklees Council recommends that for a type A residential Street type with a potential number of 300-700 dwellings the following applies: At least two points of vehicular entry/exit to maximise accessibility, connectivity and efficient operation.

The table below summarises the parameters to be applied to different street types.

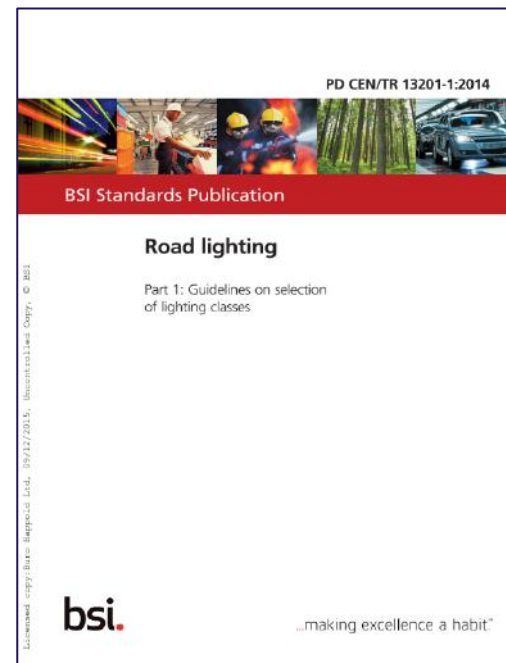
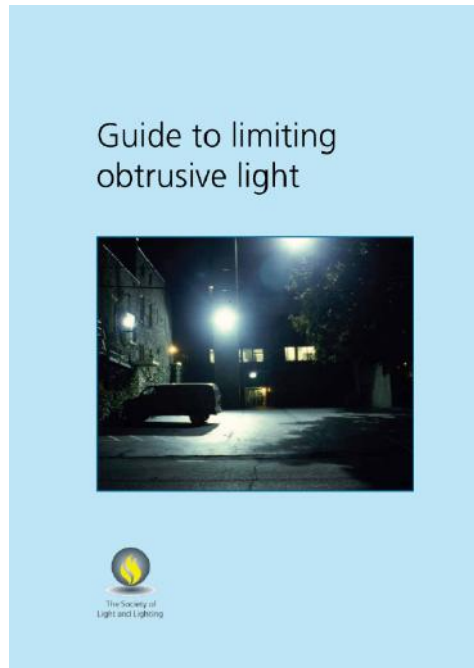
**Table 1: Summary of Residential Street Types**

Type	A	B	C
Title	Residential Connector Street	Local Residential Street	Shared Surface Street
Potential number of dwellings	300 - 700	200 - 300	An amount generating no more than 100 VPH
Alignment	Curvilinear	Curvilinear	Angular with alignment shifts
Design speed	25 mph	20 mph	15 mph
Speed restraint feature separation (Maximum)	100 metres	60 metres	40 metres
Forward visibilities (Minimum)	33 metres	25 metres	23 metres
Centreline radius (Minimum)	35 metres	20 metres	Based on vehicle tracking
Cross-section	2 metre footway - verge - carriageway - verge - 2 metre footway	2 metre footway - carriageway - 2 metre footway	hard margin - carriageway - hard margin
Carriageway width (Minimum)	6.75 metres	4.8 - 5.5 metres (5.5 metres for 50+ units)	4.8 - 5.5 metres
Crossfall	Balanced either side of centreline	Uniform fall across carriageway	Uniform fall across carriageway
Pedestrian provision	Segregated	Segregated	Shared
Verges	1.2 metre grassed verge between footway and carriageway on both sides	Desirable but generally not required	0.6 metre wide hard margin on both sides (except where a footway is provided)
On-street parking	On-street parking to be provided by laybys and carriageway widening	On-street parking to be provided by laybys and carriageway widening	On-street parking to be provided by laybys and carriageway widening

**Figure 4-1 Kirklees Council Summary of Residential Street Types**

**4.3 The Society of Light and Lighting – Guide to Limiting Obtrusive Light and British Standards**

These documents are referred to in this report for guidance on the types of lighting and mitigation measures that can be considered for the proposed development.



## 5 Mitigation Measures

### 5.1 Dark Skies and Zero Upward Light component

The use of luminaires for street lighting, building mounted lighting and area lighting which has zero or minimal upward lighting component and spill will help to reduce glare, sky glow and maintain areas suitable for promoting the development of local ecology.

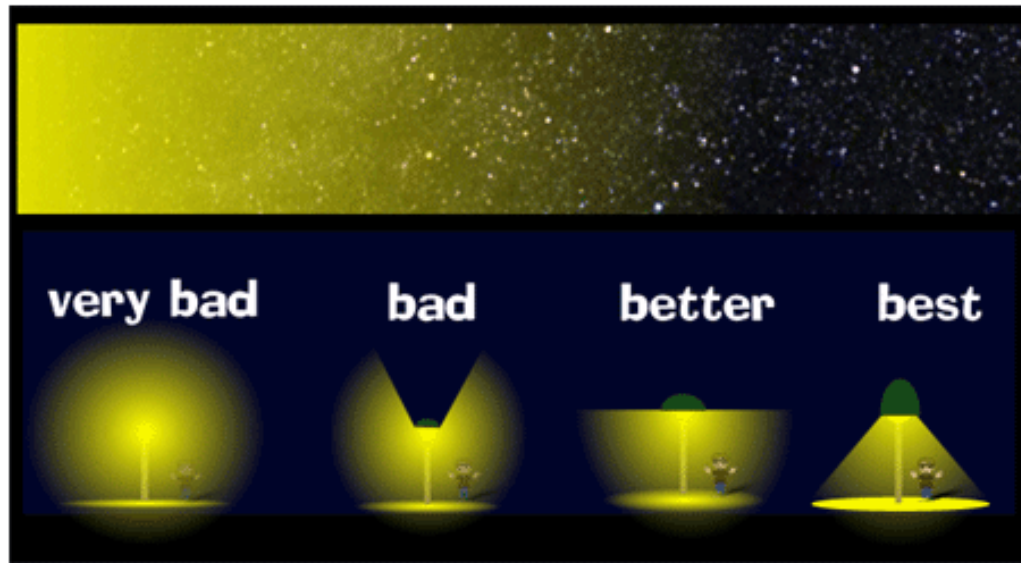


Figure 5-1 Diagram of illumination control and light spill.

### 5.2 Lighting Control

In order to limit the impact of the lighting during the late evening hours and overnight, the use of lighting controls to either dim the lighting or turn off some or all luminaires will be considered. Other technologies such as Adaptive lighting control will also be explored.

### 5.3 Switching

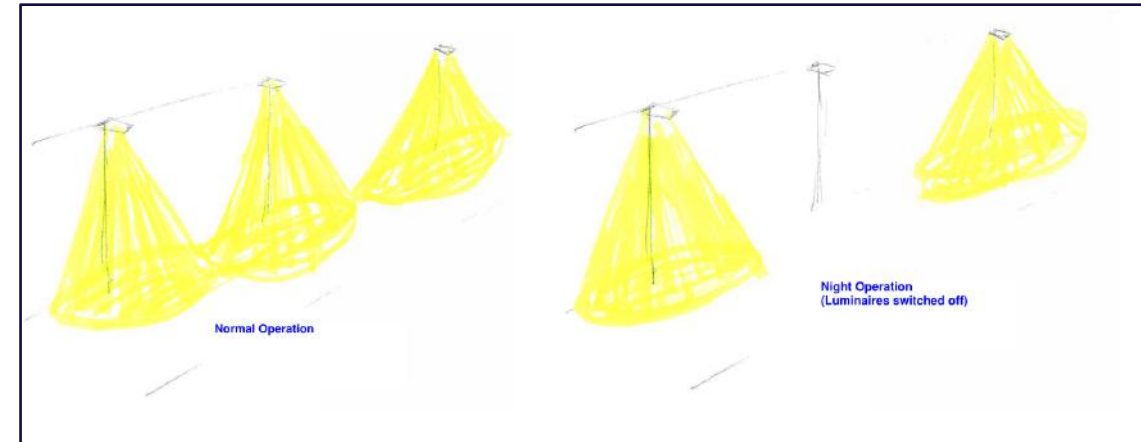


Figure 5-2 Either switching off alternate luminaires or all luminaires

### 5.4 Dimming



Figure 5-3 Alternatively dimming luminaires overnight.

## 5.6 Legislative framework

In terms of legislation the Clean Neighbourhoods and Environment Act (CNEA) 2005 (Department for Environment, Food and Rural Affairs (Defra), 2005) gives local authorities and the Environment Agency additional powers to deal with a wide range of issues by classifying light pollution as a statutory nuisance.

The statutory nuisance regime does not include light emitted from light sources which are used for transport purposes and other premises where high levels of light are required for safety and security reasons. It is expected that the following sources will generate the most complaints to local authorities:

- Domestic security lights
- Commercial security lights
- Healthy living and sports facilities e.g. floodlit sports facilities
- Domestic decorative lighting
- Exterior lighting of buildings and decorative lighting of landscapes
- Laser shows / sky beams / light art

## 5.7 Planning Policy

The National Planning Policy Framework by the Department of Communities and Local Governments seek to minimise the negative impacts of artificial lighting (by reference to the ILP Guidance).

## 5.8 Guidance from the Institution of Lighting Professionals

The Institute of Lighting Professionals (ILP) has produced the 'Guidance Notes for the Reduction of Obtrusive Light, GN01 :2011 - The guidance defines various forms of light pollution and describes a series of environmental zones and how to provide external lighting in each of these zones to mitigate unwanted light. The ILP guidance notes provide suitable criteria against which the effects of artificial lighting can be assessed, are widely recognised by planners and local authority lighting engineers and have been used as a benchmarking tool in this assessment.

The International Dark Sky Association's recommendation are also to be adopted to limit light pollution onto the natural night sky.

## 5.9 The ILP Guidance Notes for the reduction of Obtrusive Light GN01:20

The Main themes and requirements of the Guidance notes are outlined below: -

**Obtrusive Light**, whether it keeps you awake through a bedroom window or impedes your view of the night sky, is a form of pollution, which may also be a nuisance in law and which can be substantially reduced without detriment to the lighting task.

**Sky glow**, the brightening of the night sky, **Glare** the uncomfortable brightness of a light source when viewed against a darker background, and **Light Intrusion ("Trespass")**, the spilling of light beyond the boundary of the property or area being lit, are all forms of obtrusive light which may cause nuisance to others and waste money and energy.

The Image below illustrates the different types of Obtrusive Light.

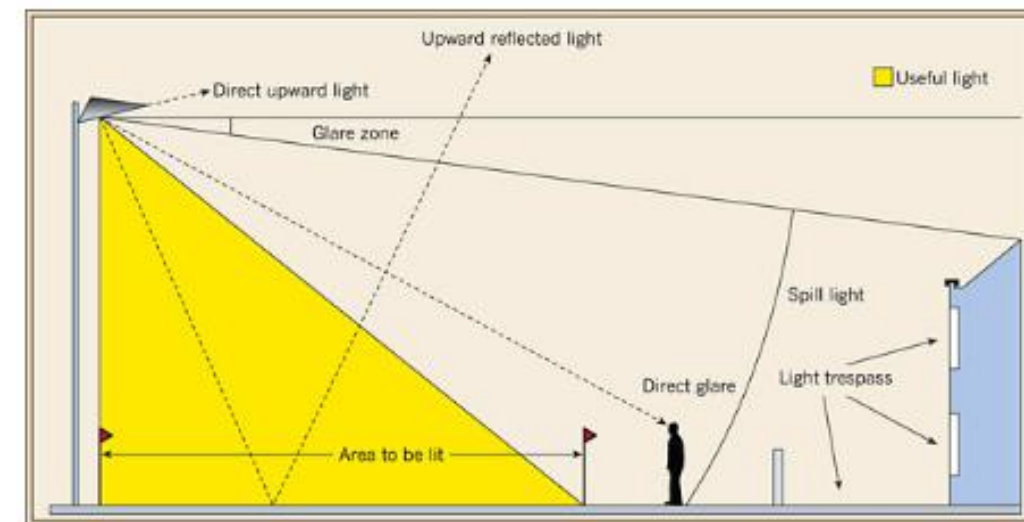


Figure 5-4 Excerpt ILP GN01:20

### Luminaires

Care should always be taken when selecting luminaires to ensure that appropriate products are chosen and that their location will reduce spill light and glare to a minimum.

Use specifically designed lighting equipment that minimises the upward spread of light near to and above the horizontal. For most sports and area lighting installations the use of luminaires with double-asymmetric beams designed so that the front glazing is kept at or near parallel to the surface being lit should, if correctly aimed, ensure minimum obtrusive light. Where luminaires are tilted above the horizontal, hood attachments or similar can be provided to prevent upward light spill if required.

### Installation

In most cases it will be beneficial to use as high a mounting height as possible, giving due regard to the daytime appearance of the installation.

Keep glare to a minimum by ensuring that the main beam angle of all lights directed towards any potential observer is not more than 70°. Higher mounting heights allow lower main beam angles, which can assist in reducing glare.

**Design Guidance**

The following limitations may be supplemented or replaced by Kirklees own planning guidance for exterior lighting installations. As lighting design is not as simple as it may seem, you are advised to consult and/or work with a professional lighting designer before installing any exterior lighting.

Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane ( $E_v$ )	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

**Figure 5-5 ILP GN01:20 CIE 150 Table 2: Maximum values of vertical illuminance on properties.**

The table in Figure 5-5 denotes the maximum values of vertical illuminance permissible on a property outside the boundary of development.

The proposed development is assessed as being within the classification of Environmental Zone 2, where the maximum permissible vertical illuminance outside the boundary adjacent properties is 5lux pre-curfew and 1lux post curfew.

The following three tables show:

- The limits for the luminous intensity of bright luminaires. (Figure 5-6)
- The maximum values of threshold increment and viewing direction in the path of travel. (Figure 5-7)
- The maximum values of upward light ration (ULR) of the luminaires. (Figure 5-8)

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 <i>d</i>	0.63 <i>d</i>	1.3 <i>d</i>	2.5 <i>d</i>	5.1 <i>d</i>	2,500
	Post-curfew	0	0	0	0	0	0
	E2						
	Pre-curfew	0.57 <i>d</i>	1.3 <i>d</i>	2.5 <i>d</i>	5.0 <i>d</i>	10 <i>d</i>	7,500
	Post-curfew	0.29 <i>d</i>	0.63 <i>d</i>	1.3 <i>d</i>	2.5 <i>d</i>	5.1 <i>d</i>	500
	E3						
	Pre-curfew	0.86 <i>d</i>	1.9 <i>d</i>	3.8 <i>d</i>	7.5 <i>d</i>	15 <i>d</i>	10,000
	Post-curfew	0.29 <i>d</i>	0.63 <i>d</i>	1.3 <i>d</i>	2.5 <i>d</i>	5.1 <i>d</i>	1,000
E4							
Pre-curfew	1.4 <i>d</i>	3.1 <i>d</i>	6.3 <i>d</i>	13 <i>d</i>	26 <i>d</i>	25,000	
Post-curfew	0.29 <i>d</i>	0.63 <i>d</i>	1.3 <i>d</i>	2.5 <i>d</i>	5.1 <i>d</i>	2,500	
Aid to gauging $A_p$		2 to 5cm	5 to 10cm	10 to 20cm	20 to 40cm	40 to 80cm	>80cm
Geometric mean of diameter (cm)		3.2	7.1	14.1	26.3	56.6	>80
Corresponding $A_p$ representative area ( $m^2$ )		0.0008	0.004	0.016	0.063	0.251	>0.5

**Notes:**

1. *d* is the distance between the observer and the glare source in metres;
2. A luminous intensity of 0 cd can only be realised by a luminaire with a complete cut-off in the designated directions;
3.  $A_p$  is the apparent surface of the light source seen from the observer position
4. For further information refer to Annex C of CIE 150
5. Upper limits for each zone shall be taken as those with column  $A_p > 0.5$

**Figure 5-6 ILP GN01:20 CIE 150 Table 3 Limits for the luminous intensity of bright luminaires**

**Table 5 (CIE 150 table 4): Maximum values of threshold increment and viewing direction in the path of travel.**

Light technical parameter	Road classification*			
	No road lighting	M6/M5	M4/M3	M2/M1
Veiling luminance <sup>†</sup> ( $L_v$ )	0.037 cd/m <sup>2</sup>	0.23 cd/m <sup>2</sup>	0.40 cd/m <sup>2</sup>	0.84 cd/m <sup>2</sup>
Threshold increment	15% based on adaption luminance of 0.1 cd/m <sup>2</sup>	15% based on adaption luminance of 1.0 cd/m <sup>2</sup>	15% based on adaption luminance of 2.0 cd/m <sup>2</sup>	15% based on adaption luminance of 5 cd/m <sup>2</sup>

*Notes:*

\* Road classifications as given in CIE 115:2010  
† The veiling luminance values specified in this table are based upon on a permissible TI value of 15%

*Definitions:*

TI The measure of disability glare (the reduction in visibility caused by intense light sources in the field of view) 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.  
 $L_v$  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.

Figure 5-7 ILP GN01:20 CIE 150 Table 4: Maximum values of threshold increment and viewing direction in the path of travel.

**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:*

This does not take into account the effect of light reflected upwards from ground that also contributes to sky glow. This is the traditional method to limit sky glow and is suitable to compare different single luminaires.

Figure 5-8 ILP GN01:20 CIE 150 Table 5: Maximum values of upward light ratio (ULR) of the luminaires.

## 6 Site Observations

### 6.1 Site survey

The Map below in Figure 6-1 shows the location and direction of each of the following site photos

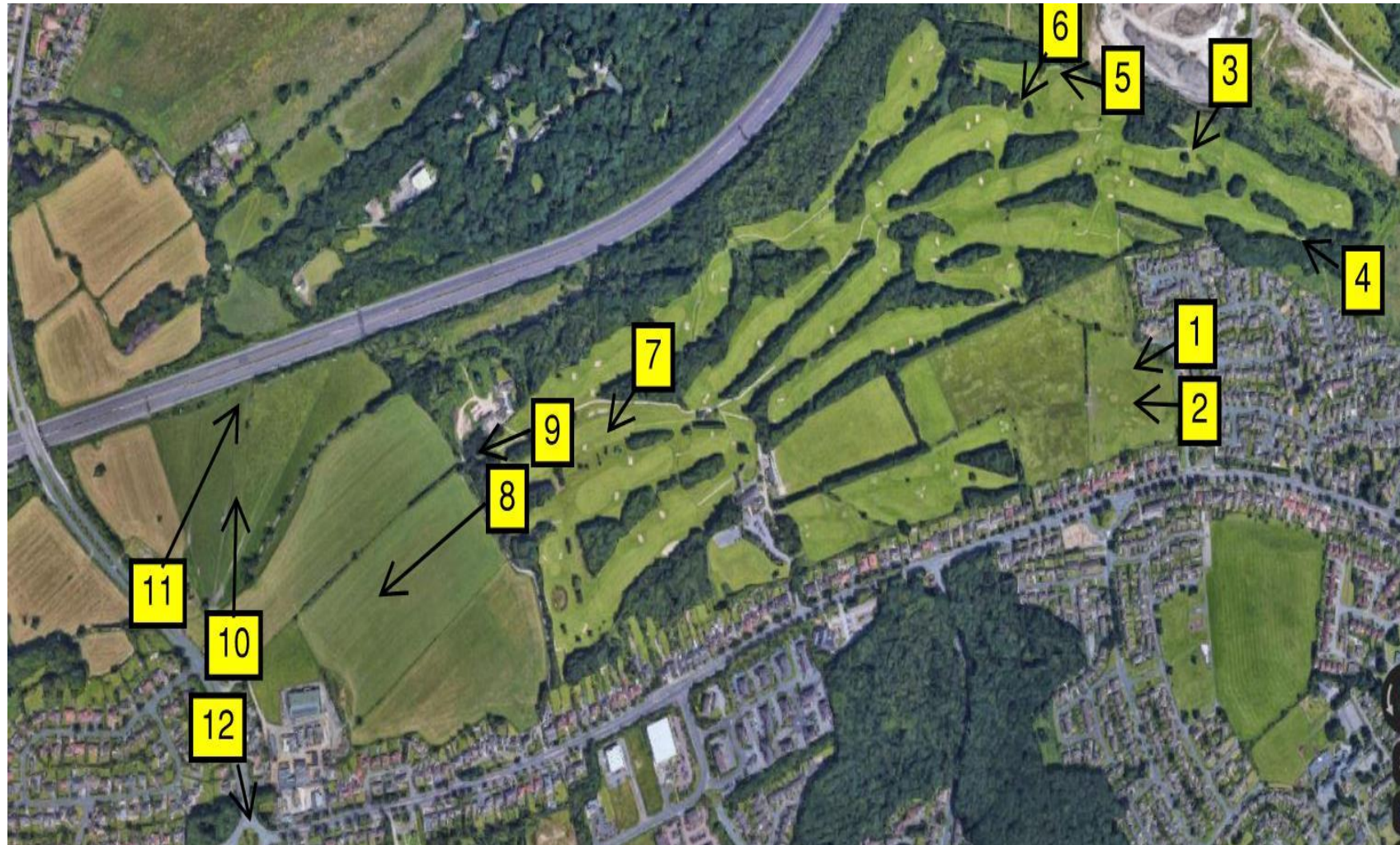


Figure 6-1 OS Map showing location of views in images.



Site Image 1- View west from Bradley



Site Image 2- view of site from boundary with Bradley



Site Image 3- view from north eastern boundary of site



Site Image 4- view of wooded area at the eastern edge of the site



Site Image 5- view of golf course



Site Image 6- golf course and view of Bradley wood



Site Image 7- golf course view



Site Image 8- view of the Bradley Villa Farm phase of development site from golf course



Site Image 9- View from dwelling at perimeter of site towards Bradley Villa Farm phase of development



Site Image 10- view across the Bradley Villa Farm phase of development site



Site Image 11- view towards M62 from edge of site



Site Image 12- view of road junction into Bradley

## 6.2 Ecology

Within the Bradley Villa Farms site area existing areas of Ecological Interest highlighted in the map in light and dark green below. The existing wooded areas to the north, east and within the development area are important ecological areas,



Figure 6-2 OS Map showing areas of ecological value.

## 7 Conceptual Lighting Design

### 7.1 Design Criteria

The following tables 2 and 3, from BS EN 1320-1 identify the Zone definition (E2) and recommendations for obtrusive light limits (E2).

**Table 2 The zoning system of the Commission Internationale de l'Eclairage (2003)**

Zone	Zone description and examples of such zones
E1	Areas with intrinsically dark landscapes: national parks, areas of outstanding natural beauty (where roads are usually unlit)
<b>E2</b>	<b>Areas of 'low district brightness': outer urban and rural residential areas (where roads are lit to residential road standard)</b>
E3	Areas of 'middle district brightness': generally urban residential areas (where roads are lit to traffic route standard)
E4	Areas of 'high district brightness': generally urban areas with mixed recreational and commercial land use with high night-time activity

**Table 3 Lighting recommendations for avoiding obtrusive light for area lighting (Institute of Lighting Professionals, 2011)**

Environmental zone	Maximum upward light ratio (%)	Maximum illuminance on windows (lx)	Maximum luminaire luminous intensity (cd)
E0	0.0	0	0
E1	0.0	2	2500
<b>E2</b>	<b>2.5</b>	<b>5</b>	<b>7500</b>
E3	5.0	10	10 000
E4	15.0	25	25 000

Figure 7-1 BS EN 13201 – 1 Zone definition and obtrusive light limits.

The levels of illumination will meet the requirements of BS EN 13201 – 2 as defined by the following tables taking into account vehicular and pedestrian use and where the two come into conflict.

**Table 2 – C lighting classes based on road surface illuminance**

Class	Horizontal illuminance	
	$\bar{E}$ [minimum maintained] lx	$U_o$ [minimum]
C0	50	0,40
C1	30	0,40
C2	20,0	0,40
C3	15,0	0,40
C4	10,0	0,40
C5	7,50	0,40

NOTE 3 The C classes are mainly intended for use when the conventions for road surface luminance calculations do not apply or are impracticable. This can occur when the viewing distances are less than 60 m and when several observer positions are relevant. The C classes are simultaneously intended for other road users on the conflict area. The C classes have further application for pedestrian and pedal cyclists in such cases, where P and HS classes defined in 6.1 are not adequate.

**Table 3 – P lighting classes**

Class	Horizontal illuminance		Additional requirement if facial recognition is necessary	
	$\bar{E}^a$ [minimum maintained] lx	$E_{min}$ [maintained] lx	$E_{v,min}$ [maintained] lx	$E_{sc,min}$ [maintained] lx
P1	15,0	3,00	5,0	5,0
P2	10,0	2,00	3,0	2,0
P3	7,50	1,50	2,5	1,5
P4	5,00	1,00	1,5	1,0
P5	3,00	0,60	1,0	0,6
P6	2,00	0,40	0,6	0,2
P7	performance not determined	performance not determined		

<sup>a</sup> To provide for uniformity, the actual value of the maintained average illuminance shall not exceed 1,5 times the minimum  $\bar{E}$  value indicated for the class.

NOTE 4 A high colour rendering contributes to a better facial recognition.

Figure 7-2 BS EN 13201 – 1 Zone definition and obtrusive light limits.

Table 2 and 3 from BS EN 13201 -2 define respectively the levels of illumination required for vehicular and pedestrian Roads and the illumination levels required when the two come into conflict.

Figure 7-3 BS EN 12464 – illumination levels for service yards.

**Table 5.1 – General requirements for areas and for cleaning at outdoor work places**

Ref. no.	Type of area, task or activity	$\bar{E}_m$ lx	$U_o$ -	$R_{GL}$ -	$R_a$ -	Specific requirements
5.1.1	Walkways exclusively for pedestrians	5	0,25	50	20	
5.1.2	Traffic areas for slowly moving vehicles (max. 10 km/h), e.g. bicycles, trucks and excavators	10	0,40	50	20	
5.1.3	Regular vehicle traffic (max. 40 km/h)	20	0,40	45	20	At shipyards and in docks, $R_{GL}$ may be 50
5.1.4	Pedestrian passages, vehicle turning, loading and unloading points	50	0,40	50	20	
5.1.5	Cleaning and servicing	50	0,25	50	20	All relevant surfaces

## 7.2 Impact of Scheme

The map below identifies key receptors identified as potentially being impacted by the lighting within the development.



Figure 7-4 Map showing receptors with potential high visibility

Ref	Receptor with Potential High Visibility
A	Ecological Habitat
B	Bradley
C	Adjacent Farmland
D	Adjacent dwellings
E	Adjacent Farm
F	M62

Table 7-1 References of locations of potential visual impact

The following locations of potential impact are considered.

Ref	Location of Potential High Visibility	Observation & Mitigation Measures	Resultant Outcome
A	Ecological Habitat	<ul style="list-style-type: none"> <li>Utilise efficient luminaires with zero Upward Light and limit spill by optics.</li> <li>Utilise lighting which has appropriate colour temperature so as to minimise impact on local wildlife</li> <li>Provide dimming/time control to limit levels during hours 11pm to 6am.</li> </ul>	Although there will be roads and paths that cross through the wildlife habitats, the impact of the lighting on the wildlife here will be limited using the mitigation methods described in the column to the left.
B	Bradley	<ul style="list-style-type: none"> <li>Utilise efficient luminaires with zero Upward Light and limit spill by optics.</li> <li>Provide dimming/time control to limit levels during hours 11pm to 6am.</li> </ul>	Although some screening is provided by the hedge and wooded area adjacent the railway line there will likely be some impact on the existing houses that border the development.
C	Adjacent Farmland	<ul style="list-style-type: none"> <li>Utilise efficient luminaires with zero Upward Light and limit spill by optics.</li> <li>Provide dimming/time control to limit levels during hours 11pm to 6am.</li> </ul>	Although the development will border with the farmland, the impact of any lighting on the wildlife here will be limited using the mitigation methods described in the column to the left.
D	Adjacent dwellings	<ul style="list-style-type: none"> <li>Utilise efficient luminaires with zero Upward Light and limit spill by optics.</li> <li>Provide dimming/time control to limit levels during hours 11pm to 6am.</li> </ul>	Although some screening is provided by the wooded area adjacent the railway line there will likely be some impact on the existing houses that border the development.
E	Adjacent Farm	<ul style="list-style-type: none"> <li>Utilise efficient luminaires with zero Upward Light and limit spill by optics.</li> <li>Provide dimming/time control to limit levels during hours 11pm to 6am.</li> <li></li> </ul>	Although the development will border with the farmland, the impact of any lighting on the farm will be limited using the mitigation methods described in the column to the left.
F	M62	<ul style="list-style-type: none"> <li>Utilise efficient luminaires with zero Upward Light and limit spill by optics.</li> <li>Provide dimming/time control to limit levels during hours 11pm to 6am.</li> </ul>	The development is largely shielded from the M62 by Bradley Wood; however, a portion of the development may still be visible from the road.

Table 7-2 Locations of Potential Visual Impact

### 7.3 Assumed road and access route hierarchy within proposed development

The below Bradley Villa Farm phase of development, residential masterplan excerpt shows the assumed hierarchy of roads within the development.

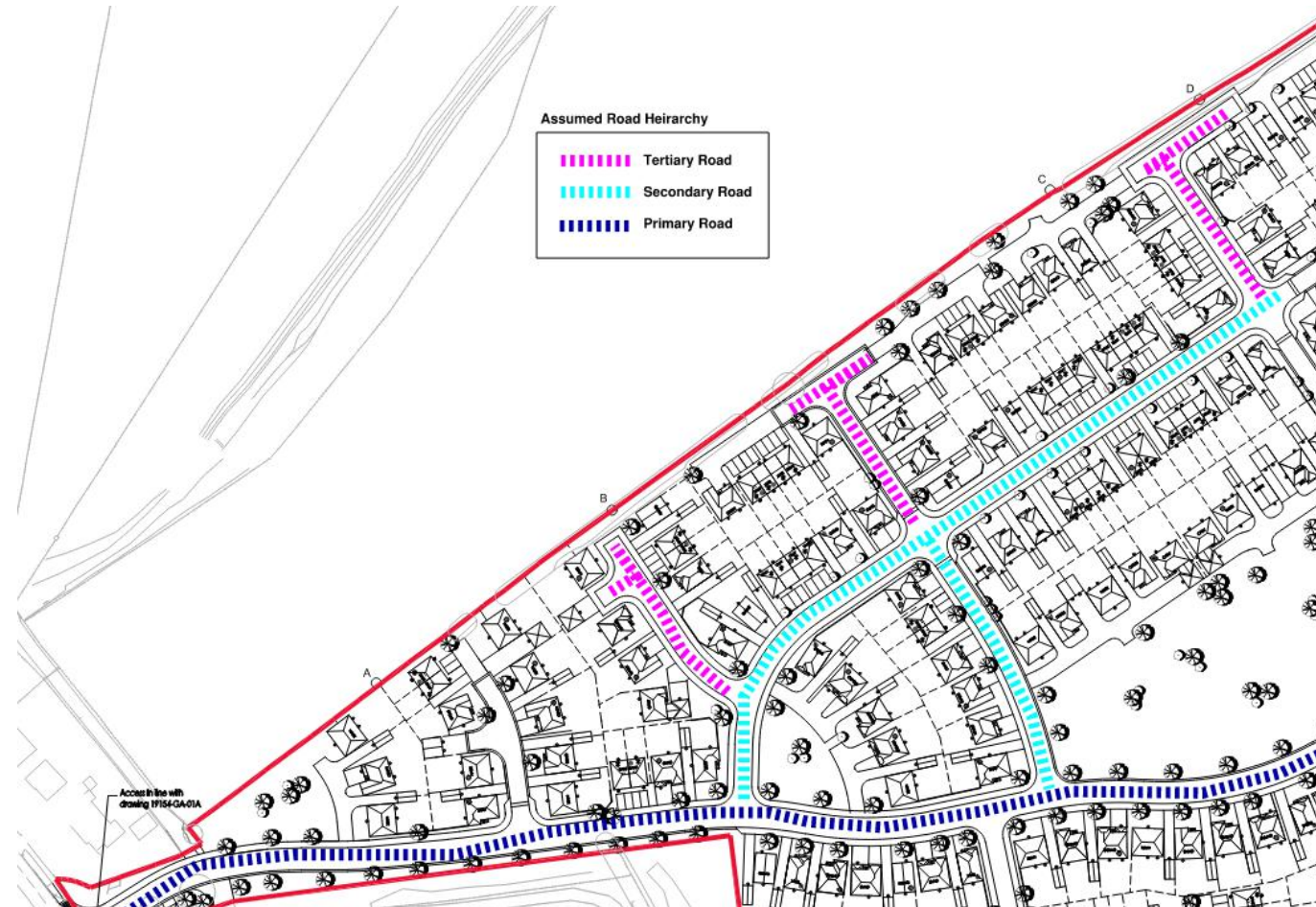


Figure 7-5- Assumed road and access route hierarchy

### 7.4 Typical Residential Street Lighting

The below plan shows the provisional spacings of lighting columns sited on alternate sides of the road, with their beams focused directly on to the middle of the road utilising a limited beam angle.



Figure 7-6- Typical Residential Street Lighting

### 7.5 Cycle path and pedestrian right of way path lighting

Cycle paths and pedestrian right of way paths within the Bradley Villa Farms Development will be illuminated by low level bollards. The bollards will be suitably IK rated against impact. Having low level rather than high level illumination along these paths is important, as it will lessen the impact of the lighting on any areas of ecological interest, the new houses within the development and any existing dwellings that have paths in close proximity. As with the street lighting, which will be column mounted, this lighting will have zero upward light and an optic which directs light only on to the area which requires illumination.

### 7.6 Typical Street Lighting Fitting

Illumination of the Residential Roads will be provided by 6m lighting columns to provide illumination to parking, access road and pedestrian routes, making the area safe for drivers, as well as pedestrians.

Columns will be positioned following the Road perimeter to reduce the risk of being hit by vehicles.

The luminaire recommended will be IP67 appropriate to outdoor conditions and IK09 to resist any physical impacts.

Each lantern will be equipped with an LED Light source at 2700K colour temperature following the Kirklees City Council regulations, in order to protect the sourcing natural habitats and environment. The lantern will also be equipped with an IP67 robust housing which is ideal for external use.



Figure 7-7- SHINE SH1101 LED Street Light

## 8 Summary

The current Kirklees Council and BS EN Guidance will be followed in developing the external lighting design for the development.

The site has been surveyed and observations taken from locations in and around the existing site. Furthermore, key receptors (both ecological and residential) were identified and assessed. As a result of this, a strategy has been developed for each area of High Potential Visibility with the resultant anticipated outcome

The strategies established for the areas of high potential visibility will be adopted throughout the development.

The above responds to the considerations identified in the response to the EIA Scoping Document (refer to Appendix A) and the outcomes described in this report are as follows:

- The lighting will be designed carefully in accordance with all standards noted in this document including but not limited to: Replacement Kirklees Highway Design Guide SPD; SLL Guide to limiting obtrusive light; BS EN 13201-2:2015; PD CEN/TR 13201-1:2014 and the proposals within this document, as well as any other relevant standards.
- The impact of lighting from the development on the ecological receptors are considered and addressed,
- The impact of lighting from the development on the existing residential properties are considered and addressed

## Appendix A Kirklees Council EIA Scoping Opinion



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Date: 30-Oct-2020  
Our Ref: 2020/20413

Dear Ms Hunter,

### Request for an EIA Scoping Opinion Land north of Bradley Road, Bradley, Huddersfield (allocated site HS11)

I acknowledge receipt of your request for an EIA Scoping Opinion, received on 23/09/2020. Your request was made in accordance with Regulation 15(1) of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2017 ("the EIA Regulations").

This is the Scoping Opinion provided by Kirklees Council in respect of the content of the Environmental Statement for the development of land at the above site. The council's Scoping Opinion is based on the information provided in the document titled "Request for an Environmental Impact Assessment (EIA) Scoping Opinion", dated September 2020 and prepared by ID Planning on behalf of Redrow Homes. That document is hereinafter referred to as "the Scoping Report".

For the avoidance of doubt, matters are not scoped out unless specifically addressed and justified by the applicant, and confirmed as being scoped out by Kirklees Council.

This Scoping Opinion should not be construed as implying that the council agrees with the information or commentary set out in the Scoping Report, unless explicitly stated.

#### Introduction

This Scoping Opinion is made in response to the Scoping Report and should be read in conjunction with it.

The EIA Regulations define "EIA development" (Regulation 2(1)), and stipulate that any proposed development falling within the description of a "Schedule 2 development" (within the meaning of the EIA Regulations) will be subject to EIA where such development is likely to have significant effects on the environment by virtue of factors such as its nature, size or location.

Given the nature of the proposed development in regard to the redevelopment of the site, and the overall scale of development, EIA is considered appropriate to test the likely significant effects of the proposed development (NB – although no EIA Screening Opinion is hereby issued, the conclusion drawn at paragraph 1.9 of the Scoping Report is accepted).

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Of note, the Scoping Report relates to *all* of allocated site HS11. This is considered appropriate, as the *cumulative* environmental impacts of development at both parts of site HS11 (Bradley Villa Farm and the council-owned land) need to be considered together, and you would need to submit an EIA Environmental Statement that relates to all parts of HS11 in support of a future planning application that only related to the Bradley Villa Farm site.

The council has a duty under Regulation 15 to consult before adopting an EIA Scoping Opinion. A full list of the consultation bodies is provided at Appendix A. Responses received to date are appended to this Scoping Opinion.

The Environmental Statement ("the ES") submitted in support of your forthcoming planning application should demonstrate consideration of the points raised by the consultation bodies. It is recommended that a table is provided in the ES summarising the scoping responses from the consultation bodies and how they are, or are not, addressed in the ES.

This Scoping Opinion incorporates and/or refers to advice set out in the consultation responses received to date. Late responses will continue to be forwarded to you and will be made available on the council's website. You should also give due consideration to those comments when carrying out EIA and preparing the ES.

#### Proposed Development

Paragraph 4.4 of the Scoping Report refers to site allocation HS11, and indicates that development comprising the following would be brought forward:

- Circa 1,460 residential dwellings (with additional capacity for a further 498 dwellings post plan period);
- A main access road to the west onto Bradford Road (A641);
- A two-form entry primary school;
- A sustainable drainage network;
- Ecological enhancements; and
- Public open space.

Given the reference in site allocation HS11 to 1,460 and 498 dwellings, it is unclear why, at paragraph 4.3 of the Scoping Report, you have set out an intention to only refer to a development of circa 1,460 dwellings in the ES. The ES will need to refer to the maximum quantum of development that may be brought forward at the allocated site, including up to 1,958 dwellings.

Please also note that the description of development (and the development that is assessed in the ES) must also refer to the other requirements of site allocation HS11, including early years and childcare provision, a spine road, and a repurposed nine-hole golf course combined with a floodlit driving range, clubhouse and two full-sized 3G pitches. The possibility of a new local centre will also need to be taken into account. Please also consider the requirements of other planning policies (including the need to achieve a biodiversity net gain) when describing the proposed development.

Paragraphs 4.17 and 4.18 of the Scoping Report suggest that the proposed development (to be assessed in the ES) would comprise a development of circa 300 dwellings at the Bradley Villa

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Farm part of allocated site HS11, and a development on the council-owned part of the site as illustrated by the indicative masterplan at Appendix 1 of the Scoping Report. As you will recall from recent discussions, the council as Local Planning Authority expects further masterplanning work to be carried out (for the entire allocated site) before any further planning applications are submitted, and you are therefore advised to await the outcome of that further masterplanning work before fixing the scale and nature of the development to be assessed in the ES.

#### Site Description and Site Context

There is nothing incorrect in the site description set out at paragraphs 4.6 to 4.9 of the Scoping Report, however the following detailed site description is provided to assist you with identifying the site and contextual attributes relevant to EIA, and potential receptors.

The allocated site (HS11) is located to the north of Bradley Road (the A6107), and occupies much of the land between that road and the M62 to the north, including the 18-hole municipal golf course and driving range at Bradley Park. The allocated site is in two ownerships – the majority (including the golf course and driving range) is council-owned, while Bradley Villa Farm at the west end of the allocated site is in private ownership.

The allocated site has a 68.34 hectare gross site area, and a 62.84 net site area (excluding ponds and a buffer area to the north of the site from the developable area). These figures are reflected in paragraph 4.8 of the Scoping Report.

The western part of the allocated site generally slopes downhill from southwest to east and northeast, while the eastern part of the allocated site has more varied topography, including Park Hill and undulations at the golf course. The highest part of the allocated site is close to Bradford Road (approximately 165m AOD). The lowest parts of the allocated site are at the junction of Bradley Road and Tithe House Way (approximately 110m AOD) and the northern tip of the allocated site (approximately 100m AOD).

Vehicular access points currently exist at Bradford Road (the A641), Shepherds Thorn Lane, Lamb Cote Road and Tithe House Way. Public Rights of Way enter and/or run through parts of the allocated site – these include HUD/3/10, HUD/3/20, HUD/3/30 and HUD/4/10.

There are residential properties adjacent to the allocated site to the west, south and east, as well as buildings in agricultural use at Bradley Villa Farm. Land to the north is in the green belt. An area of land to the east of the allocated site is designated as urban green space in the Local Plan.

In relation to minerals, all of the allocated site is within a wider mineral safeguarding area relating to surface coal resource (SCR) with sandstone and/or clay and shale.

The east end of the allocated site includes part of a former landfill site, and a 250m buffer zone extends into the allocated site. A 250m buffer zone of another landfill site also includes the northern tip of the allocated site. Landfill gas affects land to the north of the allocated site, and a landfill gas buffer covers the northern and eastern parts of the allocated site.

In relation to the area's coal mining legacy, parts of the allocated site are within the Development High Risk Area as defined by the Coal Authority, while other parts are within the Low Risk Area.

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There are no designated heritage assets within the allocated site, however the Grade II listed barn at Shepherds Thorn Farm (Historic England ref: 1290881) is just outside, and parts of the allocated site are within the setting of that designated heritage asset. The allocated site is not within or close to a conservation area. Site allocation HS11 notes that the western part of the allocated site includes an archaeological site. Non-designated heritage assets also exist in the area.

The Wildlife Habitat Network covers parts of the allocated site, and areas outside it, including the ancient woodlands at Bradley Wood to the north and Screamer Wood and Dyson Wood to the south. Local Wildlife Sites exist immediately outside the allocated site, to the north and east. The majority of the allocated site is within a Biodiversity Opportunity Zone (Mid-Altitudinal Grasslands for most of the site, Built-up Areas for a small part of the west end of the site, and Valley Slopes along the site's northeastern boundary). Bats are known to be present in the area.

Tree Preservation Order 17/98/t18 protects a Hawthorn tree at the west end of the allocated site.

The allocated site is not located within an Air Quality Management Area (AQMA), however it is relatively close to AQMA 1 (Bradley Road / Leeds Road junction), where elevated levels of Nitrogen Dioxide have been measured.

The allocated site is located within Flood Zone 1 and is therefore at low risk of flooding. Part of the allocated site (at Tithe House Way) is at risk of surface water flooding, as is an area at the northern edge of the golf course. To the east of Shepherds Thorn Farm, a watercourse runs northeastwards (via a pond), joining Deep Dike, Bradley Park Dike and, eventually, the River Calder. Another watercourse runs eastwards from a pond adjacent to the golf course club house. Other unmapped watercourses may exist within and close to the allocated site. Yorkshire Water sewers exist beneath Bradford Road, Bradley Road and Tithe House Way.

Overhead power lines cross the golf course.

Regarding the social and other infrastructure currently provided and available in Bradley, the area has a small number of pubs, churches, eating establishments and other facilities. There are also schools, nurseries, playspaces and open spaces. Regarding public transport, while the main roads are reasonably well served at times by the X63 bus service along Bradford Road and the 328 bus service that terminates at Alandale Road, the reference to a "regular" bus service at paragraph 4.10 of the Scoping Report may be less applicable towards the centre of the site. The nearest railway stations are at Brighouse and Deighton. Cycle lanes have been provided on the carriageway of Bradley Road, and this route forms part of the existing Core Walking and Cycling Network. An expansion of the network is proposed under the Local Plan via Shepherds Thorn Lane.

Parts of the allocated site are visible from the M62, and therefore the landscape and visual impacts of development may be experienced by a large number of people. Parts of the allocated site are also visible from Calderdale borough. As defined in the Castle Hill Settings Study, a significant ridgeline runs roughly east-west across the allocated site.

#### Structure of the Environmental Statement

You have set out a proposed structure for the ES at section 6.0 of the Scoping Report. As you correctly note, no required ES structure has been defined by the Government and the council similarly has no defined structure.

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Please ensure all the requirements of Regulation 18 (and not only those listed under (3)) are met, and additionally refer to Schedule 4 of the EIA Regulations, as you have at paragraph 5.2 of the Scoping Report.

Please ensure all chapters of the ES, and reports to be appended to it, are consistent, up-to-date and appropriately cross-referenced. All ES contributors should be made aware of any changes to the development proposals, in case those changes have a hitherto-unconsidered bearing on their earlier contributions.

Regarding the assessment of the significance of effects (discussed at paragraph 5.4 of the Scoping Report), please include commentary in each chapter regarding the *geographical* extent of each likely effect. It is suggested that this would be determined by several factors, including the physical extent of each intervention, the distance over which effects would be significant, and the presence and type of pathways along which impacts may be spread.

Regarding the development description, it is accepted that, once the above-mentioned masterplanning work has been completed, there are likely to be some elements (of the development likely to come forward in the future at the council-owned part of the allocated site) that will still be unfixed by the time you prepare the ES, because the council (as landowner) may need to retain a degree of flexibility, and because a workable masterplan needs to be flexible and adaptable (to an extent) in any case. This will mean a range of scenarios and effects may need to be assessed in the ES, with parameters of development (relating to quantum, scale and location, and agreed with the council as landowner) and worst-case scenarios clearly set out and assessed.

The ES should test different phasing plans to ascertain which would result in the least significant effects (in terms of magnitude and duration). This is particularly relevant to construction-related effects.

Paragraph 6.15 states that relevant planning policies would be set out. Please note that the full text of planning policies need not be set out in either the ES or any accompanying Planning Statement.

The following sections of this Scoping Opinion addresses the content of the Scoping Report, using the headings set out at paragraph 6.2.

#### **Socio-Economics and Community**

Please ensure assessments of socio-economic impacts are linked to assessments of the sustainability of the proposed development, including in relation to local employment opportunities (at Bradley Business Park and elsewhere), journeys to work, and available social infrastructure.

Given the possibility of a new local centre being provided within the allocated site, some assessment of its location and economic effects should be provided, although a sequential test and impact assessment need not be included in the ES.

Reference should be made to the council's affordable housing and housing quality policies, the Interim Affordable Housing Policy (2020) and the Strategic Housing Market Assessment (2016).

The Scoping Report notes that crime would be assessed. Please ensure this assessment is linked to detailed aspects of design, including lighting, and the need for areas of public realm (including

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pedestrian routes) to be adequately overlooked and activated, and not lined with side and rear garden fences.

Although strongly linked to socio-economic considerations, it would be preferable if human health was given its own chapter within the ES.

Having regard to Local Plan policy HS47 and the council's Joint Health and Wellbeing Strategy, the cumulative public health impacts of the proposed development and development at other sites will need to be assessed, however *opportunities* should also be considered – for example, improved pedestrian and cycle connections can be provided between the various development sites, enabling active travel and exercise throughout the area. Co-ordination of facilities across the various sites could also help avoid duplication, and could result in a more comprehensive and varied health, sports and leisure offer.

Health-related issues such as inclusive environments, dementia-friendly design, mental health and loneliness, opportunities for inter-generational interaction and the space, design and amenity implications of the Covid-19 epidemic should also be considered.

The ES should also consider the effects of the scheme on access to health services.

#### **Traffic, Transport and Accessibility**

Commentary on the proposed scope of chapter 6 of the ES will be provided once Highways Development Management officers have returned from leave, however in the meantime you are advised that junction assessments to be provided in the Transport Assessment should include the following junctions within Kirklees:

- Bradley Bar Roundabout
- Bradley Road/Leeds Road/Colne Bridge Road
- Cooper Bridge Road/Wakefield Road/Leeds Road

Consideration should also be given to providing improved cross-boundary connectivity for pedestrians, cyclists and equestrians via Shepherds Thorn Lane and the existing bridge over the M62. As noted above, an expansion of the Core Walking and Cycling Network is proposed under the Local Plan via Shepherds Thorn Lane. In the context of ongoing cross-boundary masterplanning work, scope for an improved connection over the motorway (via the bridge at Shepherds Thorn Farm) should be considered. This could provide a traffic-free route from Bradley Park to Brighouse, and could potentially join other routes linking Bradley Park to Huddersfield.

Walking-to-school routes (including routes across the borough boundary) should be planned for, and the related effects should be assessed in the ES.

Please also ensure the ES and Transport Assessment addresses the attached comments of the council's Public Rights of Way team, Highways England and Calderdale Council.

#### **Landscape and Visual Assessment**

The reference (at paragraph 6.30) to the scope of this chapter being agreed with officers is noted. This matter can be discussed at a forthcoming pre-application meeting, to which KC Landscape officers can be invited.

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Please ensure the Castle Hill Settings Study (Atkins, 2016) is referred to, that the attached comments of KC Landscape and Calderdale Council are addressed, and that the landscape and visual impacts as experienced from locations within Calderdale and by users of the M62 are assessed.

Please also be aware of the White Rose Forest initiative, which is promoted by the council and which is intended to greatly increase tree cover within the borough. Proposals for the allocated site will be expected to respond positively to the aims of this initiative. Treeplanting to complement nearby ancient woodlands would also be expected. These expectations will have a bearing on the landscape and visual impacts of the development, which will need to be assessed in the ES.

#### Ecology and Nature Conservation

Having regard to the ecological designations listed above, and those in neighbouring Calderdale, please ensure chapter 8 addresses the attached comments of KC Ecology, Natural England, the Environment Agency, Calderdale Council and the Yorkshire Wildlife Trust.

A Biodiversity net gain will need to be achieved, and the ES will need to include (or will need to refer to other application documents that include) a thorough assessment of the allocated site's baseline ecological value, biodiversity metric calculation(s), and full details of how the required net gain would be achieved. Without this information you would not be able provide a reliable assessment of ecological effects in the ES.

A masterplanned approach (including in relation to sites in Calderdale) to ecological enhancement would be appropriate, given the importance of wildlife corridors and linkages.

#### Trees

The scope of the proposed assessment with regard to trees is broadly acceptable, however the attached comments of KC Trees should be addressed in the ES.

#### Archaeology and Heritage

A complete list of heritage assets is not provided at paragraphs 6.62 to 6.73 of the Scoping Report, however you are aware that the barn at Shepherd Thorn Farm is Grade II listed. The attached response from Calderdale Council lists heritage assets that will need to be referred to in the ES. Please also consider whether Anchor Pit Lock (grade II listed, Historic England ref: 1133862) has a relationship with the allocated site that would require assessment for impacts.

You are also aware that the western part of the allocated site includes an archaeological site, and that there is much online conjecture regarding the possible route of a Roman road through Bradley.

As no above-ground designated heritage assets exist within the allocated site, the assessment in the ES will largely relate to settings. The ES should include an assessment of the contribution that setting makes to the significance of each heritage asset, and should take this into account when considering the overall impact on significance.

The attached comments of KC Conservation and Design, West Yorkshire Archaeology Advisory Service, the Council for British Archaeology and Calderdale Council will need to be addressed in

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the ES in relation to archaeology and heritage. Historic England did not wish to offer any comments on the Scoping Report.

#### Air Quality

The impact of the development on the nearest Air Quality Management Area (AQMA 1) within Kirklees (at the junction of the A62 and A644 at Cooper Bridge) will need to be considered in the ES. Please see: <https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/AirQualityAreaOrder1.pdf>. Chapter 11 should be cross-referenced with the Transport Assessment, to ensure vehicle movement predictions are consistent across the application submission. Please also ensure that the attached comments of Calderdale Council are addressed, including in relation to the Air Quality Management Area at Brighouse: <https://www.calderdale.gov.uk/v2/businesses/pollution/air-quality/air-quality-management-areas-aqma>.

In addition, the air quality assessment for the operational phase impacts should include the cumulative effects from other nearby large sites that are allocated in the Local Plan, together with similar nearby sites within Calderdale. Please also consider the air quality measures being implemented in relation to the Aflex Hose development at Bradley Business Park (application ref: 2018/91432).

Otherwise the general proposals and methodology regarding air quality issues are considered to be satisfactory.

Up-to-date air quality data for Kirklees can be obtained from Andrew Jameson (x70833 and [andrew.jameson@kirklees.gov.uk](mailto:andrew.jameson@kirklees.gov.uk)).

#### Noise and Vibration

The impact of noise from outdoor sports activities within the development, on both existing and future residential uses, needs to be included in the list of potential noise impacts.

Please note that, both in terms of noise and air quality, there is the potential for highways mitigation measures (such as traffic signals, if required) to alter traffic flows resulting in queuing traffic. That in itself could affect properties in close proximity, especially those closest to the proposed/existing junctions and signals. This should be considered in the ES.

Otherwise the general proposals and methodology regarding noise and vibration issues are considered to be satisfactory.

#### Ground Conditions, Contamination and Coal Mining Risk

Council-held records indicate that part of the east end of the allocated site is potentially contaminated.

With reference to the Scoping Report, the general proposals and methodology regarding land contamination issues are considered to be satisfactory.

The Coal Authority have been consulted, and they are pleased to see that the chapters proposed for the ES include consideration of ground conditions. The ES should consider the presence of

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mine entries, given that building over the top of, or in close proximity to, entries should be avoided wherever possible (even after they have been capped), in line with Coal Authority policy.

#### Flood Risk and Drainage

Paragraphs 6.91 to 6.95 of the Scoping Report provide very little information regarding the proposed scope of chapter 14 of the ES in relation to flood risk and drainage. Commentary on the proposed scope will be provided once the Lead Local Flood Authority have reviewed the Scoping Report, however in the meantime reference should be made to the desk top work and site assessment carried out during the preparation of the Local Plan (in particular, see the report by RES Environmental, ref: 543KLE\H1747-H351 rev P1) and in support of the planning application (ref: 2018/93965) relating to part of the allocated site.

Of note, the allocated site drains to the same watercourses as other allocated sites in Calderdale do. This water then flows through areas of higher flood risk within Calderdale and Kirklees. Development at the allocated site must not be allowed to increase flood risk or limit opportunities for development at other allocated sites, and cumulative flood risk impacts will need to be assessed.

The ES should consider flood routing based on the current topography. The analysis should then factor in any changes to the land levels needed to accommodate the proposed development, and consider how this may affect overland water flows. This information should inform the ES and the wider drainage strategy for the site.

Early engagement with the Environment Agency is recommended in relation to the above matters, as is early consultation with Highways England, as in some cases drains and watercourses (serving adjacent land) connect with the M62's drainage infrastructure. Flood risk to this nationally-important infrastructure must not be increased.

#### Lighting Impact Assessment

With reference to the Scoping Report, the general proposals and methodology regarding artificial lighting issues are considered to be satisfactory insofar as they relate to environmental health considerations.

As noted in paragraphs 6.96 to 6.101, chapter 15 will also need to consider the effects of lighting on road safety, wildlife and amenity. Please also ensure general safety (particularly of pedestrians and cyclists) at night is considered with reference to crime prevention objectives.

#### Conclusions and Environmental Mitigation Measures

Chapter 16 should clearly set out what (if any) residual impacts are likely to occur after development and mitigation has been carried out.

#### Cumulative Impacts

Schedule 4 of the EIA Regulations states that an ES should include a description of the likely significant effects of the development on the environment resulting from the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.

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The following advice reiterates that provided to Calderdale MBC on 18/06/2020 in relation to the Brighouse Garden Suburb site (emerging Local Plan reference: LP1451).

Allocated site HS11 is located within an area expected to undergo significant change in the coming years as a result of developments at allocated sites (proposed and adopted) in both Kirklees and Calderdale. It is essential that the cumulative impacts of these developments be considered in any ES. The scale of expected change, and the potential for cumulative impacts, has been recognised by both authorities in their commissioning of a cross-boundary masterplan for the M62 Junction 25 garden community corridor, covering Brighouse, Bradley, Cooper Bridge, Mirfield Moor and other areas.

Notwithstanding paragraphs 5.10 to 5.15 of the Scoping Report, an ES for the allocated site would need to take into account (or would need to be cross-referenced with other application documents that take into account) development being implemented, already approved, or expected at the following allocated sites within Kirklees:

- HS12 – Land north and west of Gernhill Avenue, Fixby. Housing allocation (indicative capacity: 377 units). Planning permission granted for 252 units under application ref: 2018/92055.
- ES1 – Land at Bradley Business Park (Aflex Hose site), Dyson Wood Way, Bradley. Employment allocation (indicative capacity: 15,155sqm floorspace). Planning permission granted for 19,202sqm B1(a), B1(b), B2 and B8 floorspace under application ref: 2018/91432.
- HS13 – Land to the east of Netheroyd Hill Road, Cowcliffe. Housing allocation (indicative capacity: 68 units).
- HS14 – Land north of Ashbrow Road, Brackenhall. Housing allocation (indicative capacity: 162 units). Planning permission granted for 161 units under application ref: 2019/92940.
- ES9 – Former Cooper Bridge Waste Water Treatment Works, Leeds Road. Employment allocation (indicative capacity: 14,910sqm floorspace).
- MXS6 – Land at Slipper Lane and Leeds Road, Mirfield. Mixed use allocation (indicative capacities: 166 residential units and 17,234sqm employment floorspace). Various permissions granted for residential and employment development.

You are aware that planning permission has already been granted at part of the allocated site (105 dwellings approved 04/09/2020 under application ref: 2018/93965).

The site allocations set out in the Local Plan Allocations and Designations document (<https://www.kirklees.gov.uk/beta/planning-policy/pdf/local-plan-allocations-and-designations.pdf>) include information regarding the constraints applicable to each of the above-listed sites.

Several sites within Calderdale also need to be taken into account in any assessment of cumulative impacts. Please refer to the attached response from Calderdale Council for the full list of sites.

Major developments at the allocated site, the above-listed sites in Kirklees, site LP1451 in Calderdale, and other sites in Calderdale will require significant infrastructure to render the sites ready to take development, to support development during their operational phase, and to mitigate their impacts. It is essential that the total infrastructure requirements of these developments are

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identified at an early stage. Any ES would need to be cross-referenced with other application documents identifying what infrastructure is required, when these works and provisions are required (phased delivery of some works may be appropriate), their costs, and who would be responsible for their delivery.

**Other Matters**

There is no mention of odour in the Scoping Report. Please note that site allocation HS11 identifies an odour source near the site (the landfill site to the northeast), and requires the submission of an odour assessment. A chapter regarding odour should therefore be included in the ES.

Further to Victor Grayson's email of 09/04/2020, the Scoping Report does not explicitly state that certain other matters (such as wind and microclimate, electrical interference, solar glare and daylight, sunlight and overshadowing) are to be scoped out of the ES. If you believe the development is unlikely to result in significant environmental effects in relation to those matters, and can therefore be scoped out, explanatory commentary should be submitted for further consideration by the council.

No information is included in the Scoping Report regarding climate change and sustainability, despite the fact that the construction and operational phases of the development will give rise to greenhouse gas emissions, and the relevance of climate change to flood risk and drainage. The National Planning Policy Framework emphasises that responding to climate change is central to the economic, social and environmental dimensions of sustainable development. The council encourages and supports development that helps to reduce and mitigate climate change, that is adaptable so that the potential future impacts of climate change are reduced, and that helps the transition towards a low carbon economy. The council approved Climate Emergency measures at its meeting of full Council on 16/01/2019, and you may also be aware of the West Yorkshire Combined Authority's pledge for the Leeds City Region to reach net zero carbon emissions by 2038.

The ES should accurately quantify the development's direct and indirect effects on climate change and should consider the vulnerability of those affected. In terms of potential mitigation, measures such as a district heat network provision or offsetting could be considered. The impact of the development on the climate (for example, given the expected levels of greenhouse gas emissions) and the vulnerability of the development to climate change should be considered in the ES in terms of the likely significant environmental effects.

Please note that the advice set out in this letter is given without prejudice, and that any future planning application for development at this site would be subject to public consultation. Should you wish to discuss the contents of this letter, or require further information, please contact the case officer Victor Grayson on the number above, or by email.

Yours sincerely,

*David Wordsworth*

David Wordsworth  
Team Leader, Majors and Minerals

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**Appendix A – consultation bodies**

Consultee name	Date of response
Environment Agency	15/10/2020
Natural England	09/10/2020
Highways England	21/10/2020
Historic England	06/10/2020
Sport England	05/10/2020
Coal Authority	09/10/2020
National Amenity Societies – Council for British Archaeology	29/10/2020, 30/10/2020
West Yorkshire Archaeology Advisory Service	15/10/2020
West Yorkshire Police Designing Out Crime Officer	13/10/2020
West Yorkshire Fire Authority	
Yorkshire Water	
National Grid (Cadent)	
Northern Gas Networks	13/10/2020
Yorkshire Wildlife Trust	15/10/2020
Calderdale Council	23/10/2020
KC Lead Local Flood Authority	
KC Highways	
KC Highway Structures	
KC Conservation and Design	15/10/2020
KC Ecology	26/10/2020
KC Trees	29/10/2020
KC Landscape	28/10/2020
KC Parks and Recreation	
KC Parks and Leisure	
KC Public Rights of Way	29/10/2020
KC Minerals	
KC Strategic Waste	05/10/2020
KC Waste Strategy (Refuse and Cleansing)	
KC Environmental Health	29/10/2020
KC Education	
KC Strategic Housing	29/10/2020
KC Public Health	
KC Adult Services	
KC Planning Policy	
KC Business, Economy and Regeneration	

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