Lighting Assessment

Land off Blackmoorfoot Road and Felks Stile Road, Huddersfield

Client: Empire Knight Group Limited

Reference: 1793-1r3

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Report Issue

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Executive Summary

Redmore Environmental Ltd was commissioned by Empire Knight Group Limited to undertake a Lighting Assessment in support of an outline planning application for a proposed residential-led development on land off Blackmoorfoot Road and Felks Stile Road, Huddersfield.

Artificial lighting associated with the development has the potential to cause impacts at existing sensitive receptors in the vicinity of the site. Additionally, the proposals have the potential to expose future residents to any existing light spillage issues. As such, a Lighting Assessment was undertaken to consider the likely effects.

A baseline study, including desk top information review, was undertaken to determine existing conditions in the vicinity of the site.

The exact level of artificial light experienced by future residents will depend on the final design. As this report has been produced in support of an outline planning application, the site layout is indicative only. Similarly, information on the lighting design for the scheme was not available. As such, light impacts could not be predicted for comparison with the relevant criteria. A qualitative assessment of site suitability was therefore undertaken and further work suggested for inclusion as a planning condition, if deemed necessary.

The assessment indicated that the proposals are unlikely to expose future residents to unacceptable lighting levels. This was due to the nature of existing luminaires in the vicinity of the site, as well as potential control techniques that can be included in the final layout. Due to the distance between the development and the closest sensitive receptor, impacts associated with scheme lighting were not predicted to be significant.

A number of mitigation options were identified for consideration during detailed design. A suitable planning condition was also produced to provide further reassurance that impacts associated with the development will not be significant.

Table of Contents

1.0 INTRODUCTION

1.1 Background

1.1.1 Redmore Environmental Ltd has undertaken a Lighting Assessment on behalf of Empire Knight Group Limited in support of a planning application for a residential-led development on land off Blackmoorfoot Road and Felks Stile Road, Huddersfield.

1.1.2 Artificial lighting associated with the development has the potential to cause impacts at existing sensitive receptors in the vicinity of the site. Additionally, the proposals have the potential to expose future residents to any existing light spillage issues. As such, a Lighting Assessment was undertaken to consider the likely effects.

1.2 Site Location and Context

1.2.1 The site is located on land off Blackmoorfoot Road and Felks Stile Road, Huddersfield, at approximate National Grid Reference (NGR): 411333, 414819. Reference should be made to Figure 1 for a map of the site and surrounding area

1.2.2 The proposals comprise an outline planning application with details of points of access (matters of access, scale, layout, landscaping and appearance are reserved) for the development of up to 770 residential dwellings (Use Class C3), including up to 70 care apartments (Use Classes C2/C3) with doctors surgery of up to 350m^2 (Use Class D1); up to 500m^2 of Use Class A1/A2/A3/A4/A5/D1 floorspace (dual use), vehicular and pedestrian access points off Blackmoorfoot Road and Felks Stile Road and associated works.

1.2.3 The site is located in the vicinity of a number of existing luminaires. These may cause adverse impacts on amenity levels for future residents. Additionally, the development requires provision of suitable fixtures to provide sufficient lighting to future users. These have the potential to cause increases in ambient lighting levels at residential properties within the vicinity of the site. Baseline conditions have therefore been defined within this report, potential impacts considered and relevant mitigation parameters identified.

2.0 LIGHTING BACKGROUND

2.1 Documents Consulted

2.1.1 The following legislation and guidance was used in this assessment:

- Guidance Notes for the Reduction of Obtrusive Light GN01, The Institution of Lighting Practitioners (ILP), 2020;
- Lighting in the Countryside: Towards Good Practice, Department for Communities and Local Government, 1997;
- Clean Neighbourhoods and Environment Act, 2005; and,
- Environmental Protection Act, 1990.

2.2 Legislative Framework

2.2.1 Light pollution was introduced within the Clean Neighbourhoods and Environment Act (2005) as a form of statutory nuisance under the Environmental Protection Act (1990). This was amended to include the following nuisance definition:

> "(fb) artificial light emitted from premises so as to be prejudicial to health or nuisance;"

2.2.2 Although light was described as a statutory nuisance, no prescriptive limits or rules have been set for assessment. Guidance produced by the International Commission on Illumination (CIE), ILP and the Chartered Institute of Building Services Engineers (CISBE) have been referred to whilst undertaking this assessment.

2.2.3 The Lighting in the Countryside: Towards Good Practice guidance produced by the Department for Communities and Local Government aims to identify good practice in the planning and design of rural areas and advises on how this can be achieved. The document states:

> "Lighting itself is not a problem; it only becomes a problem when it is excessive, poorly designed or badly installed."

2.2.4 The document provides advice on how to reduce impacts associated with development, as well as identifying relevant considerations for environmental assessments. Although it is noted the site is not totally located in a rural area, the guidance provides useful background to lighting assessment and has therefore been considered throughout this report as necessary.

2.3 National Planning Policy Framework

2.3.1 The National Planning Policy Framework[1] (NPPF) was published in February 2019 and sets out the Government's planning policies for England and how these are expected to be applies.

2.3.2 Chapter 15 of the NPPF details objectives in relation to pollution. It states that:

> "Planning policies and decisions should 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 are 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."

2.3.3 The implications of the NPPF have been considered throughout this assessment.

2.4 National Planning Practice Guidance

2.4.1 The National Planning Practice Guidance[2] (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019 to support the NPPF and make it more accessible. The light pollution pages are summarised under the following headings:

[1] NPPF, Ministry of Housing, Communities and Local Government, 2018.

[2] https://www.gov.uk/guidance/light-pollution.

1. What light pollution considerations does planning need to address?
2. What factors can be considered when assessing whether a development proposal might have implications for light pollution?
3. What factors are relevant when considering where light shines?
4. What factors are relevant when considering when light shines?
5. What factors are relevant when considering how much the light shines?
6. What factors are relevant when considering possible ecological impacts of lighting?
7. What other information is available that could inform approaches to lighting and help reduce light pollution?

2.4.2 These were reviewed and the relevant guidance considered as necessary throughout the undertaking of this assessment.

2.5 Local Planning Policy

2.5.1 The Kirklees Local Plan was adopted on 27th February 2019 and is the statutory development plan for the district. Review of the Strategy & Policies[3] document from the Local Plan indicated the following policy of relevance to this report:

> "Policy DLP 52 - Protection and improvement of environmental quality
>
> Proposals which have the potential to increase pollution from noise, vibration, light, dust, odour, shadow flicker, chemicals and other forms of pollution or to increase pollution to soil or where environmentally sensitive development would be subject to significant levels of pollution, must be accompanied by evidence to show that the impacts have been evaluated and measures have been incorporated to prevent or reduce the pollution so as to ensure it does not reduce the quality of life and well-being of people or have unacceptable impacts on the environment.
>
> Such developments which cannot incorporate suitable and sustainable mitigation measures which reduce pollution levels to an acceptable level to protect the

[3] Strategies and Policies, Local Plan KC, 2019.

quality of life and well-being of people or protect the environment will not be permitted.

Where possible, all new development should improve the existing environment"

2.5.2 This policy was considered as necessary throughout the assessment.

3.0 METHODOLOGY

3.1 Introduction

3.1.1 The Lighting Assessment included the establishment of baseline ambient light conditions and an evaluation of associated impacts.

3.1.2 The methodology for each element of the assessment is outlined in the following subsections.

3.2 Baseline

3.2.1 Existing lighting conditions in the vicinity of the development site were identified in order to provide a reference for assessment. The Lighting in the Countryside[4] document states the following items should be considered during the determination of a baseline:

- A review of the area and landscape together with any designations;
- An overview of existing lighting;
- Identification of potential receptors; and,
- Environmental Zone Classification.

3.2.2 These were considered by undertaking a detailed desk-top study using relevant mapping resources.

3.2.3 The ILP has developed an Environmental Zone classification system for the categorisation of assessment locations. This is summarised in Table 1.

Table 1 Environmental Zone Classification

Environmental Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Natural Beauty etc

[4] Lighting in the Countryside; Towards Good Practice, Department for Communities and Local Government, 2005.

Environmental Zone	Surrounding	Lighting Environment	Examples
E2	Rural	Low district brightness areas	Village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness areas	Small town centres or suburban locations
E4	Urban	High district brightness areas	Town/city centres with high levels of night-time activity

3.2.4 The criteria shown in Table 1 were utilised to determine the most appropriate Environmental Zone for the development location.

3.3 Assessment Criteria

3.3.1 Luminaires have the potential to cause light trespass and contribute to sky glow. For each Environmental Zone, as defined in Table 1, obtrusive light limitations for exterior lighting installations have been determined by the ILP[5]. These are summarised in Table 2.

Table 2 Obtrusive Light Limitations for Exterior Lighting Installations

Environmental Zone	Sky Glow ULR[(a)] (%)	Light Trespass (into Windows) E_v (lux)[(b)]		Source Intensity I (kcd)		Building Luminance Pre-curfew Average L[(c)] (cd/m²)
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	
E0	0.0	0	0	0	0	< 0.1
E1	0.0	2	0.1 (1*)	2,500	0	< 0.1
E2	2.5	5	1	7,500	500	5
E3	5.0	10	2	10,000	1,000	10
E4	15.0	25	5	25,000	2,500	25

Note: (a) Upward light ratio of the installation - maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky.
(b) Vertical Illuminance measured flat at the glazing at the centre of the window.
(c) Luminance.
(d) From public road lighting installations only.

5 Guidance Notes for the Reduction of Obtrusive Light GN01, ILP, 2020.

3.3.2 The obtrusive light limitations shown in Table 2 have been used to define the relevant mitigation required to ensure impacts associated with the development are not significant.

4.0 BASELINE

4.1 Introduction

4.1.1 Existing conditions in the vicinity of the development site were identified in order to provide a baseline for assessment. These are detailed in the following Sections.

4.2 Surrounding Area

4.2.1 The development is located to the south-west of Huddersfield in an edge of town setting. There is an operational quarry adjacent to the southern boundary of the site with agricultural land and residential dwellings beyond. Residential units are also located around the northern and eastern boundary, with a golf course to the west. The site itself is currently used for the storage and distribution of fireworks.

4.2.2 Review of the Local Plan Allocations and Designations[6] document produced by KC indicated that the site is not located within a designated landscape area.

4.2.3 A study was undertaken to identify any designations in the vicinity of the proposed development. This was completed using the Multi-Agency Geographic Information for the Countryside (MAGIC) web-based interactive mapping service[7], which draws together information on key environmental schemes and designations. The review indicated none of the following in close proximity to the development:

- Country parks;
- Areas of outstanding natural beauty;
- Environmentally sensitive areas;
- National nature reserves;
- National parks;
- Special Areas of Conservation;
- Special Protection Areas;
- Sites of Special Scientific Interest;
- Local Nature Reserves;

6 Local Plan Allocations and Designations, KC, 2019.

7 http://magic.defra.gov.uk/MagicMap.aspx.

- Biosphere reserves;
- Scheduled Monuments; and,
- World Heritage Sites.

4.3 Existing Lighting

4.3.1 The baseline review indicated that there is existing street lighting along the following roads:

- Blackmoorfoot Road; and,
- Crosland Hill Road;

4.3.2 There is low level security lighting associated with the following:

- The Johnsons Wellfield Quarry facility to the south of the site;
- The Lowdhams Huddersfield Warehouses to the east of the site;
- The Crosland Heath Golf Club to the west of the site; and,
- The Crosland Moor Airfield to the south-west of the site.

4.4 Environmental Zone

4.4.1 Based on the criteria displayed in Table 1 and the results of the desktop study, the assessment extents were defined as Environmental Zone E2 and E3. This was because the site is situated in a suburban setting with a medium to low level of existing lighting. As such, the criteria for Environmental Zone E2 stated in Table 1 were used throughout the assessment as a worst-case.

5.0 ASSESSMENT

5.1 Site Suitability

5.1.1 The results of the baseline assessment indicated that the development is located in Environmental Zone E2 to E3. As such, a level of night-time lighting would be expected due to the outer suburban setting of the proposals. However, existing lighting was not found to cause significant adverse impacts across the site.

5.1.2 The exact level of light trespass and source intensity experienced by future residents will depend on the unit orientations and luminaires installed as part of the proposals. As this report has been produced in support of an outline planning application, the site layout is indicative only and final building locations will not be finalised until a reserved matters application is submitted. Similarly, information on the lighting design for the scheme was not available as this will be determined following confirmation of the layout. As such, light trespass and source intensity values could not be predicted for comparison with the relevant criteria. A qualitative assessment of site suitability has therefore been undertaken and further work suggested for inclusion as a planning condition, if deemed necessary by KC.

5.1.3 The baseline study indicated the most significant lighting sources are associated with the existing land uses to the east of the site within the Lowdhams Huddersfield Warehouses and uncovered storage areas. As shown in Figure 2, the indicative layout shows the positioning of car parking and back gardens allow for a buffer zone between unit façades and the warehouses. Solid fencing is also likely to be installed along the plot boundaries, providing a further barrier to light trespass. The layout also retains the existing vegetative buffer adjacent to Blackmoorfoot Road, which would reduce any impacts associated with street lighting upon the development. Street lighting on other links is similar to that provided on standard residential roads and is therefore considered unlikely to result in significant effects.

5.1.4 Based on the baseline assessment and review of the indicative layout it is considered the site is suitable for the proposed residential usage. However, should residual concerns be held by KC then a planning condition could be attached to the consent to provide further confidence that light levels will not be an issue at the site. This could require a detailed model of existing and proposed lighting to be produced to ensure light trespass

and source intensity values are below the relevant criteria for Environmental Zone E2 at all windows within the development. Potential condition wording is provided in Section 6.0.

5.2 Development Impacts

5.2.1 The proposed development may include the following lighting fixtures:

- Street lighting;
- Area lighting, including that for car parks; and,
- Pedestrian lighting.

5.2.2 Lighting in itself is not a problem; it only becomes a problem where it is excessive, poorly designed, badly installed or poorly maintained. Detailed proposals for development luminaires have not been produced at this stage of the design process. As such, similarly to site suitability, potential impacts on light trespass and source intensity cannot be accurately determined until the final scheme layout is chosen. Due to the nature of the proposed development, a residential estate with little requirement for excessive lighting, it is considered unlikely that luminaires of the type associated with the proposals would cause noticeable change in lighting levels at existing receptors in the vicinity of the site. As such, impacts associated with the development are not predicted to be significant.

5.2.3 Should KC require further reassurance in regards potential impacts, then the proposed planning condition could be varied to also require the prediction of impacts at sensitive locations in the vicinity of the site.

6.0 MITIGATION

6.1.1 The final layout should ensure that the relevant criteria for Environmental Zone E2 are achieved within all units and at all sensitive locations in the vicinity of the site. The relevant values are summarised in Table 3.

Table 3 Proposed Control Criteria

Environmental Zone	Sky Glow ULR (%)	Light Trespass (into Windows) E_v (lux)		Source Intensity I (kcd)		Building Luminance Pre-curfew Average L (cd/m²)
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	
E2	2.5	5	1	7,500	500	5

6.1.2 There are a number of mitigation controls which can be included within the final scheme design to ensure the criteria in Table 3 are achieved. These include:

- The landscape buffer zone should be maintained along the southern site boundary to provide distance attenuation for existing light sources in these directions;
- Building orientation should be carefully considered to limit the number of windows to habitable rooms along facades facing south and east if gardens are not provided to act as a buffer in these directions;
- The inclusion of solid fencing should be considered as necessary to provide screening against light spillage;
- Scheme lighting is to be directed downwards to illuminate its target. There is no requirement for building or up lighting for a development such as that proposed;
- Lighting should be designed to the correct standard for the task and should not over light;
- Lighting should be directed to minimise and preferably avoid light spillage onto neighbouring properties;
- The lights used should be the most efficient taking into account cost, energy use, colour rendering and the purpose of the lighting scheme required; and,
- The lighting scheme should meet all relevant British Standards.

6.1.3 Based on the assessment results, the following condition has been produced. This could be attached to the planning consent for the development to provide KC with further reassurance of predicted impacts:

"No development shall take place until a report detailing the lighting scheme and predicted light levels at all proposed residential properties has been submitted to and been approved in writing by the Local Planning Authority.

Predicted lighting levels must conform to the requirements of the Obtrusive Light Limitations for Exterior Lighting Installations for Environmental Zone - E2, contained within Table 1 of the Guidance Notes for the Reduction of Obtrusive Light, GN01, The Institution of Lighting Practitioners, dated 2011.

Reason: In order to ensure a suitable level of amenity for future development occupiers"

7.0 CONCLUSION

7.1.1 Redmore Environmental Ltd has undertaken a Lighting Assessment on behalf of Empire Knight Group Limited in support of an outline planning application for a proposed residential-led development on land off Blackmoorfoot Road and Felks Stile Road, Huddersfield.

7.1.2 Artificial lighting associated with the development has the potential to cause impacts at existing sensitive receptors in the vicinity of the site. Additionally, the proposals have the potential to expose future residents to any existing light spillage issues. As such, a Lighting Assessment was undertaken to consider the likely effects.

7.1.3 A baseline study was undertaken to determine existing conditions in the vicinity of the site. The results were utilised to classify the surrounding area as Environmental Zone E2 - rural and E3 - suburban.

7.1.4 The exact level of light trespass and source intensity experienced by future residents will depend on the unit orientations and luminaires installed as part of the proposals. As this report has been produced in support of an outline planning application, the site layout is indicative only and final building locations will not be finalised until a reserved matters application is submitted. Similarly, information on the lighting design for the scheme was not available as this will be determined following confirmation of the layout. As such, light trespass and source intensity values could not be predicted for comparison with the relevant criteria. A qualitative assessment of site suitability was therefore undertaken and further work suggested for inclusion as a planning condition, if deemed necessary by KC.

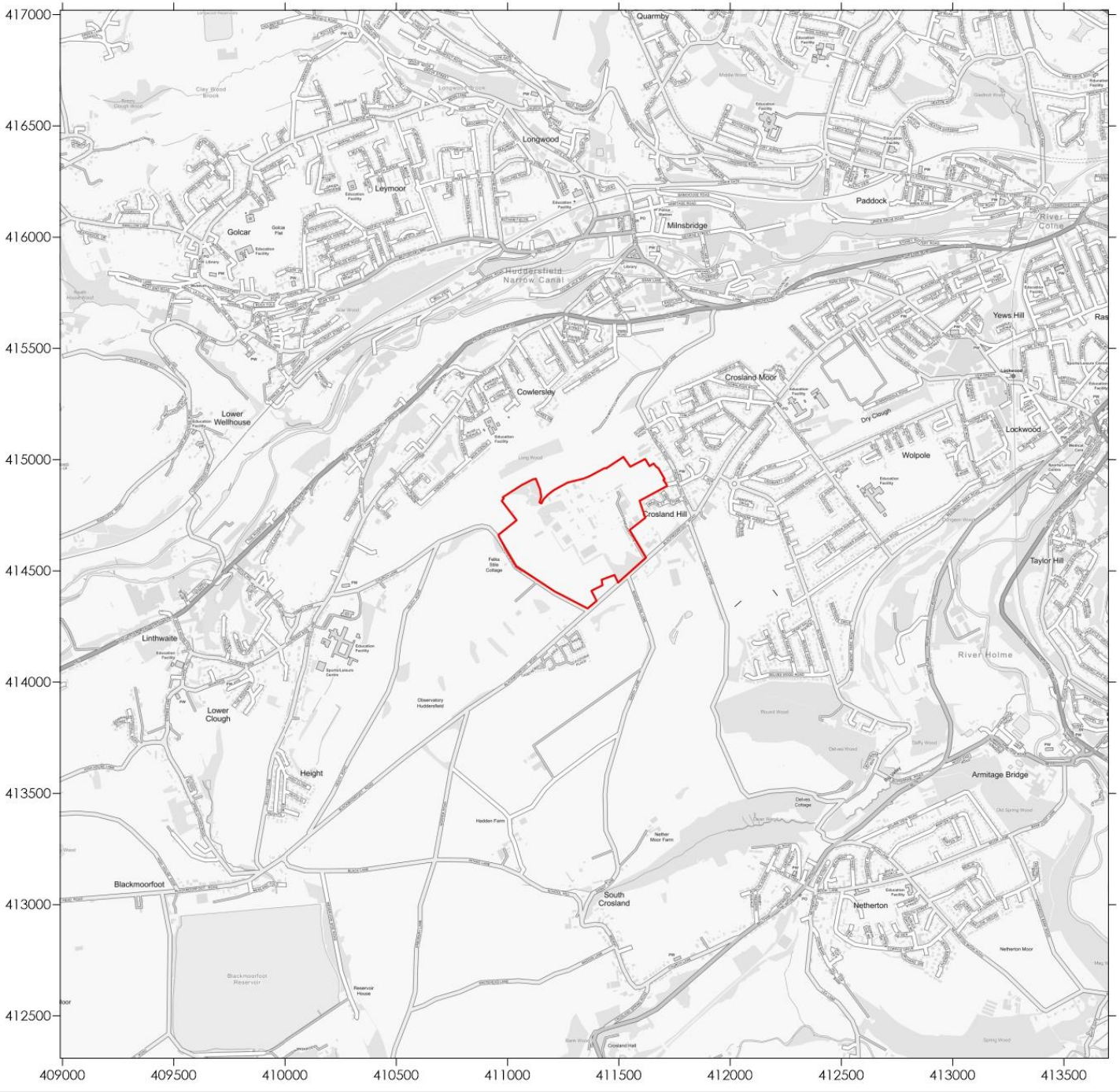
7.1.5 The assessment indicated that the proposals are unlikely to expose future residents to unacceptable lighting levels. This was due to the nature of existing luminaires in the vicinity of the site, as well as potential control techniques that can be included in the final layout. Due to the nature of the development, impacts associated with lighting of the scheme are not predicted to be significant.

7.1.6 A number of mitigation options were identified for consideration during detailed design. A suitable planning condition was also produced to provide further reassurance to KC that impacts associated with the development will not be significant.

8.0 ABBREVIATIONS

CIBSE	Chartered Institute of Building Services Engineers
CIE	International Commission on Illumination
GR_{max}	Glare Rating Limit
I	Source Intensity
ILP	Institute of Lighting Practitioners
KC	Kirklees Council
MAGIC	Multi-Agency Geographic Information for the Countryside
NGR	National Grid Reference
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
ULR	Upward Lighting Ratio

Figures



Legend

Site Boundary

Title
Figure 1 - Site Location

Project
Lighting Assessment
Land off Blackmoorfoot Road and Felks Stile Road, Huddersfield

Project Reference
1793-1

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Legend

Site Boundary

Title
Figure 2 - Indicative Site Layout

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