Report

Boston Alternative Energy Facility

Outline Lighting Strategy

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1 Introduction

1.1 Introduction

1.1.1 This Outline Lighting Strategy (herein 'the Strategy') has been prepared on behalf of Alternative Use Boston Projects Limited ('the Applicant'). The Applicant is applying to the Secretary of State under the Planning Act 2008 for a Development Consent Order (DCO) authorising the construction, operation and maintenance of a power-generation plant, known as the Boston Alternative Energy Facility (herein 'the Facility').

1.1.2 The Facility constitutes a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 by virtue of the Facility requiring the building, commissioning and operating of a generating station with an energy generating capacity greater than 50 megawatts electric (MWe). As the Facility is a NSIP, the Applicant is required to make an application for a DCO to the Planning Inspectorate, which will be decided by the Secretary of State.

1.1.3 The Facility is a proposed Energy from Waste (EfW) plant that would generate approximately 102 MWe (gross) of renewable energy and would deliver approximately 80 MWe (net) to the National Grid. The energy recovery plant would be a thermal treatment facility using refuse derived fuel (RDF) as the feedstock to generate energy. A full project description is given in **Chapter 5 Project Description** of the Environmental Statement (ES) (document reference 6.2.5).

1.1.4 An Operational Lighting Scheme is provided as requirement 15 of the draft DCO (document reference 2.1) (requirement to provide a written scheme for the management and mitigation of operational external artificial light emissions, which must be submitted to and approved by the relevant planning authority before Work Nos. 1, 2, 3, 4 and 5 can commence). It deals solely with external operational lighting required for the Facility.

1.1.5 Matters relating to temporary construction lighting are considered separately in the Outline Code of Construction Practice (OCoCP) (document reference 7.1).

1.2 The Development Consent Order Process

1.2.1 The Applicant must submit a DCO application to the Planning Inspectorate, the government body responsible for operating the planning process for NSIPs, who will first decide whether to accept the application. If accepted, the Planning

Inspectorate will appoint an Examining Authority to examine the application.

1.2.2 Following the examination, the Examining Authority will make a recommendation to the relevant Secretary of State. The Secretary of State must determine the application in accordance with the relevant National Policy Statements (NPSs) for the Facility, which are: NPS EN-1 (Overarching Energy Policy) ((Department of Energy and Climate Change (DECC) 2011a) and NPS EN-3 (DECC, 2011b) (renewable Energy Supply from Waste). If the Secretary of State decides to grant development consent then they will make a DCO which will authorise the construction, commissioning and operation of the Facility.

1.3 Boston Alternative Energy Facility

1.3.1 The Facility is proposed to be located on a 26.8 hectare (ha) Application Site which is split in to two components: the area containing operational infrastructure for the Facility (the 'Principal Application Site'); and an area containing habitat mitigation works for wading birds (the 'Habitat Mitigation Area'). The Principal Application Site (NGR TF33950 42241) covers 25.3 ha and is neighboured to the west by the Riverside Industrial Estate and to the east by The Haven, a tidal waterway of the River Witham between The Wash and the town of Boston. The A16 public highway is located approximately 1.3 km to the west. The Habitat Mitigation Area covers 1.5 ha and is located approximately 170 m to the south east of the Principal Application Site, encompassing an area of saltmarsh and small creeks at the margins of The Haven. The Application Site is denoted by the solid red line on **Plate 1-1**.

1.3.2 The elements of the Facility, which are likely to require artificial lighting are:

- an Energy from Waste facility comprising three thermal treatment units and steam turbine generators to generate up to 102 MW (gross) of energy;
- a wharf with cranes and berthing points;
- a storage bunker and contingency external storage area for the temporary storage of Refuse Derived Fuel (RDF) bales;
- conveyors to transfer RDF bales and processed material and an RDF bale shredding facility (a sealed building) to remove bale wrap and reduce the particle size;
- turbine plant comprising three steam turbine generators, make-up water facility and associated piping and ductwork;
- air-cooled condenser structure, transformer pen and associated piping and ductwork;

- an on-site grid connection and substation to facilitate the export of up to 80 MW to the National Grid;
- a lightweight aggregate manufacturing plant to process the thermal treatment ash and air pollution control residues into two separate aggregate products;
- two carbon dioxide (CO_2) recovery plants and associated infrastructure, including chiller units;
- a storage area for lightweight aggregate product prior to removal (by ship) from the site; and
- associated site infrastructure, including site roads, pedestrian routes, car parking, site workshop and storage, security gate, control room with visitor centre and site weighbridge.

1.3.3 See **paragraph 4.2.1** for more information on operational lighting requirements.

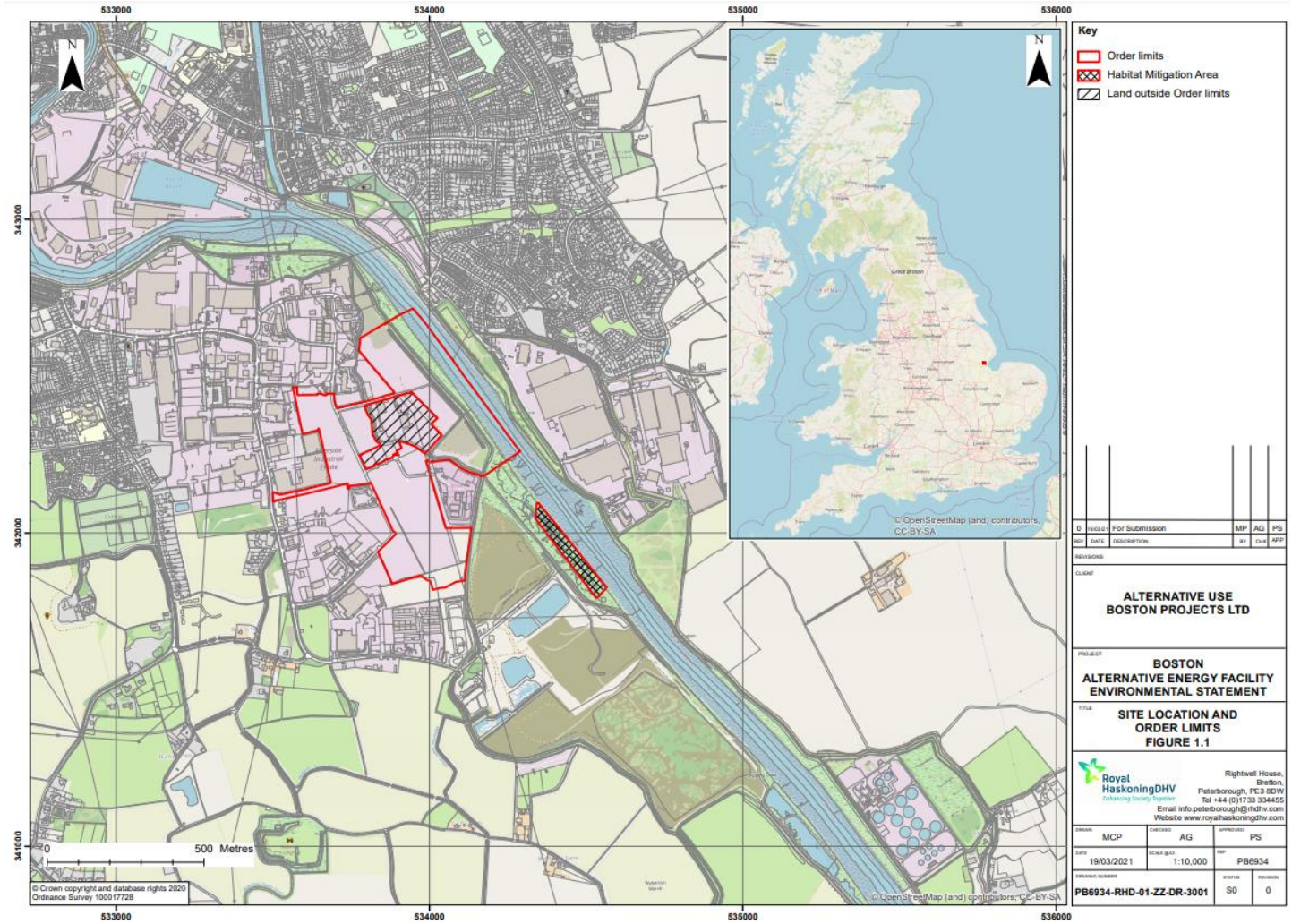

Plate 1-1 Application Site

1.4 Purpose of this Report

1.4.1 The Strategy provides an assessment of the potential effects from obtrusive light that could arise from artificial lighting associated with the operation of the Facility.

1.4.2 The key aims and objectives of this Strategy is to:

- Identify the relevant legislation, policy, guidance and standards that the application for the Facility needs to consider and support;
- Determine the existing ambient lighting conditions at the Application Site;
- Establish the minimum lighting levels required to operate a safe, secure and energy efficient development;
- Identify potential light sensitive receptors which could be affected by exterior lighting required for the Facility; and
- Establish design objectives for the external lighting design to minimise the adverse effects of obtrusive light.

1.4.3 Potential significant effects associated with operational lighting are assessed in specific chapters in the ES, including **Chapter 12 Terrestrial Ecology** (document reference 6.2.12) and **Chapter 18 Navigational Issues** (document reference 6.2.18), however this Strategy provides further information in addition to the mitigation referred to in these chapters.

1.4.4 This Strategy incorporates general principles and recommendations to mitigate identified adverse effects of external lighting on sensitive receptors. At the time of submission of the DCO application detailed design work for the Facility has not been completed. Therefore, the exact specification of the external lighting to be used at the Facility has yet to be confirmed. Nevertheless, it is recognised that potential impacts from external lighting of the Facility may be a concern. Therefore, the Applicant has provided this Strategy to provide the design principles that will be employed at the Facility for the final operational external artificial lighting scheme.

1.4.5 A lighting design with modelling to show illuminance levels (as lux contour lines) will be prepared, as part of the written scheme for the management and mitigation of operational external artificial light emissions before construction in accordance with DCO requirement 15, as approved by the relevant planning authority. This is to demonstrate that the external lighting levels will be kept within the obtrusive light limitations that are appropriate for the Application Site and immediate surrounding area.

2 Legislation, Planning Policy, Guidance and Standards

2.1 Introduction

2.1.1 This section presents a summary of the legislation, planning policy, standards and guidance relevant to potential for obtrusive light.

2.1.2 A detailed review of planning policy and guidance is contained within the Planning Statement (document reference 5.2).

2.2 National Legislation and Planning Policy

Clean Neighbourhoods and Environment Act (2005)

2.2.1 The Clean Neighbourhoods and Environment Act (2005) amended Section 79 of the Environmental Protection Act 1990 by extending the statutory nuisance regime to include light nuisance, by stating the following:

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

National Policy Statements

2.2.2 The Overarching National Policy Statement for Energy (NPS EN-1) (July 2011), provides the primary basis for decisions by the Secretary of State on NSIPs (Department for Energy and Climate Change (DECC), 2011a). Part 5.6 of NPS EN-1 addresses artificial light and sets out the nature/scope of assessment required by applicants (paragraphs 5.6.4-5.6.6), the basis for decision-making by the Secretary of State (paragraphs 5.6.7-5.6.10) and mitigation measures (paragraphs 5.6.11).

2.2.3 Paragraph 5.4.16 of NPS EN-1 also addresses the statutory requirements concerning lighting to tall structures stating:

> *"Where lighting is requested on structures that goes beyond statutory requirements by any of the relevant aviation and defence consultees, the IPC should satisfy itself of the necessity of such lighting taking into account the case put forward by the consultees. The effect of such lighting on the landscape and ecology may be a relevant consideration"* (page 76).

National Planning Policy Framework

2.2.4 At the national level, the need to consider the potential effects of artificial lighting is embodied in the wording of the National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government (MHCLG), 2019a) and should be considered during the application process to reduce the potential for unnecessary delays owing to unacceptable (unknown) potential effects on local amenity and nature conservation.

2.2.5 Paragraph 180 of the NPPF states:

> *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation"* (page 52).

National Planning Practice Guidance

2.2.6 The UK Government's National Planning Practice Guidance (NPPG) (November 2019) for England presents specific guidance on light pollution (also referred to in this Strategy as obtrusive light) in paragraph(s) 001-006 of ID 31 (MHCLG, 2019b). **Table 2-1** below sets out how these paragraphs are relevant to the Facility and how each has been considered.

Table 2-1 Review of National Planning Practice Guidance

NPPG ID 31 Paragraph	Relevance to the Facility
Paragraph 1: What light pollution considerations does planning need to address? (Reference ID: 31-001-20191101)	The potential (without appropriate design or mitigation) for external lighting from the Facility to be obtrusive to people and wildlife or detract from the enjoyment of the night sky, has been identified. Therefore, obtrusive light from the Facility has been considered further within this Strategy.
Paragraph 2: What factors can be considered when assessing whether a development proposal might have implications for light pollution? (Reference ID: 31-002-220191101)	This Strategy considers where, when and how external lighting of the Facility might adversely affect the surrounding environment. This will be further considered in the development of the final lighting design.
Paragraph 3: What factors are relevant when considering where light shines? (Reference ID: 31-003-20191101)	This Strategy considers the potential for light intrusion effecting receptors outside the Application Site which can lead to annoyance to people, compromise existing dark landscapes and affect natural systems.
Paragraph 4: What factors are relevant when considering when light shines? (Reference ID: 31-004-20191101)	This Strategy considers the potential effects of the timing of artificial lighting during low-light situations and hours of darkness. It will recommend that detectors are used to monitor lighting and automatically switch lighting off in areas that are not being used, where lighting is not required
Paragraph 5: What factors are relevant when considering how much the light shines? (Reference ID: 31-005-20191101)	This Strategy considers the requirements to construct and operate the Facility safely and securely, and recommends lighting is limited to that required for safe operation of the site only.
Paragraph 6: What factors are relevant when considering possible ecological impacts of lighting? (Reference ID: 31-006-20191101)	This Strategy specifically considers the potential effects obtrusive lighting may have on terrestrial biodiversity receptors and provides design principles to mitigate any effects.

2.3 Local Planning Policy

Lincolnshire Minerals and Waste Local Plan

2.3.1 The Lincolnshire Minerals and Waste Local Plan (Adopted June 2016) is the main planning policy document for determining waste development (Lincolnshire County Council, 2016). The Core Strategy and Development Management Polices does not contain any specific policies on lighting.

South-East Lincolnshire Local Plan

2.3.2 The South-East Lincolnshire Local Plan (SELLP) was produced jointly by Boston Borough Council, South Holland District Council and Lincolnshire County Council (collectively known as the South-East Lincolnshire Joint Strategic Planning Committee (SELJSPC)) (SELJSPC, 2019). The South-East Lincolnshire Local Plan was adopted on 8 March 2019 and will guide development in South-East Lincolnshire over the next twenty years.

2.3.3 The adopted Plan states, under Policy 3: Design of New Development, that:

> *"All development will create distinctive places through the use of high quality and inclusive design and layout and, where appropriate, make innovative use of local traditional styles and materials. Design which is inappropriate to the local area, or which fails to maximise opportunities for improving the character and quality of an area, will not be acceptable. Development proposals will demonstrate how the following issues, where they are relevant to the proposal, will be secured:*
>
> *…6. the lighting of public places".*

2.3.4 Section 3.4.7 of the Plan states that:

> *"Lighting should be designed to illuminate the desired building or space without spilling out beyond the boundary as this contributes to overnight light pollution and causes disturbance to both the human population and nocturnal wildlife"*

2.3.5 Section 7.4.2 of the Plan states that:

> *"In some cases very bright flood lighting can be seen well away from the site, which adds to the sense of urbanising the countryside".*

2.3.6 Section 7.4.3 of the Plan states that:

> *"…for lighting, the visual impact of the lanterns and light pollution can be ameliorated by careful design and layout of the lighting scheme, including the use and positioning of suitable lighting*

fitments which prevent light spilling upwards and outwards from the area to be lit."

2.4 Guidance

2.4.1 The relevant guidance documents which assist with defining acceptable standards and thresholds for exterior lighting installations include the following:

- The Chartered Institution of Building Services Engineers (CIBSE) – Society of Light and Lighting (SLL) Code for Lighting;
- CIBSE/SLL – Lighting Guide 1 – The Industrial Environment Section 4.4;
- CIBSE/SLL Lighting Guide 6: The Exterior Environment;
- CIBSE/SLL Lighting Guide 15: Transport Buildings;
- Health and Safety Executive (HSE) – HSG38 'Lighting at Work';
- The Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light (2011);
- Bat Conservation Trust (BCT) – Bats and Artificial Lighting in the UK (2018); and
- BCT – Landscape and Urban Design for Bats and Biodiversity (2012).

2.4.2 The ILP's 'Guidance Notes for the Reduction of Obtrusive Light' provides the basis for the comparative analysis when defining whether an installation will be obtrusive to the environment and neighbouring properties. It assists in quantifying and providing acceptable maximum limitations for light intrusion, sky glow and glare from exterior lighting installations.

ILP Environmental Zones

2.4.3 The ILP have established Environmental Zones for exterior lighting based on the existing external ambient lighting levels in the area (**Table 2-2**).

Table 2-2 Environmental Zone Classification (ILP, 2011).

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

2.5 Standards

British Standards

2.5.1 British Standards (BS) documents on lighting that are likely to be applicable to the operational phase of the Facility include the following:

- BS EN 12464-2:2014 Lighting of workplaces – Part 2 (9): Outdoor workplaces. This document provides guidance for a variety of outdoor workplaces and the anticipated lighting requirements, in the form of illuminance levels and uniformities that are used as part of standard practice.
- BS EN 5489-1:2013 Code of Practice for the Design of Road Lighting – Part 1 – Lighting of Roads and Public Amenity Areas: defines lighting classes for road lighting aimed at the visual needs of road lighting aimed at the visual needs of road users and it considers environmental aspects of road lighting.
- BS EN 13201-2:2015 Road lighting – Performance requirements: defines road lighting performance requirements, detailed as lighting classes and considers the environmental aspect of road lighting.

3 Existing Conditions and Sensitive Receptors

3.1 Introduction

3.1.1 This section establishes the existing ambient lighting conditions of the Facility and the surrounding area that form the 'baseline conditions'.

3.1.2 A desktop review of the Facility and immediate surrounding area has been undertaken to identify potential light sensitive receptors and to establish the appropriate ILP Environmental Zone classification for the Application Site, as defined by the ILP's Guidance Notes for Obtrusive Light (2011).

3.1.3 The following sources of publicly available information were reviewed:

- Site visit information;
- Ordnance Survey mapping and aerial photography (2020);
- Google Street View (2019); and
- Defra Multi-Agency Geographic Information for the Countryside (MAGIC) Map Application (2020).

3.2 Existing Lighting Conditions

The Facility

3.2.1 The Facility will operate 24 hours a day, lighting would therefore be required during the hours of darkness to fulfil health and safety requirements.

3.2.2 Night-time landscape character is strongly influenced by existing urban lighting within industrial zones, residential areas and along road corridors.

3.2.3 Existing lighting within the Biomass UK No 3 Ltd development adjacent to the Application Site and at the Port of Boston are notable sources of night time lighting.

3.2.4 Although the industrial estate is close to the town centre, the Application Site combines a mix of lighting along the highways, however, the private roads are currently not lit. Therefore, the Facility is considered to fall within ILP Environmental Zone 'E3' according to **Plate 3-1** below:

Table 1 – Environmental Zones			
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
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Small town centres or suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

Plate 3-1 Lighting environment zones (reproduced from Guidance Notes for the Reduction of Obtrusive Light GN01:2011, ILP)

3.3 Sensitive Receptors

3.3.1 Sensitive receptors on and surrounding the Facility are presented in **Table 3-1**.

Table 3-1 Sensitive Receptors

Receptor	Description
Human receptors with views of the site	Public footpaths and public rights of way: Human receptors with views to the site could, without appropriate design, experience glare or increased sky glow from the Facility.
Ecology (Habitats and Protected Species)	A range of ecological surveys were undertaken in 2017-2019, culminating in an ecological assessment of the Application Site and development proposals. The surveys and assessment determined that habitats within the Application Site are suitable for protected or notable species, some of which are nocturnal and sensitive to changes in the level of light. See **Chapter 12 Terrestrial Ecology** of the ES (document reference 6.2.12) for further details on the ecological findings and assessment. Chapter 12 Terrestrial Ecology sets out that although no bat roosts are present within the Application Site, the hedgerows and areas of scrub have been assessed and a conclusion reached that they could provide suitable foraging and commuting opportunities for bats. Chapter 12 Terrestrial Ecology sets out that although no reptiles were recorded during the 2017 and 2018 surveys, suitable habitat for basking has been noted and therefore there is potential for reptiles to be present within the working areas within the Facility.

Receptor	Description
	Light intrusion from the Application Site could, without appropriate design and mitigation, affect adjacent designated areas including Havenside Local Nature Reserve (LNR) (located approximately 34.5 m east of the Principal Application Site at its closest point on the eastern bank of The Haven).
Navigation of The Haven	Lighting of a large energy from waste facility and lightweight aggregates facility plant this close to The Haven could have an adverse effect on the safety of navigation. Lighting has the potential to adversely affect mariners on The Haven at night by reducing visibility and masking the presence of vessels upstream and preventing safe navigation of The Haven by 'blinding' Pilots and other commercial and recreational mariners. The operational phase lighting will be designed and controlled to limit any potential impact on the surrounding area by minimising sky-glow, glare and light spillage.
Motorist, cyclist and pedestrians	The roads in the immediate vicinity of the Facility (Bittern Way and Nursery Road) are private roads and are not currently lit on the private section of road. It is anticipated that additional lighting will be installed by the Facility to ensure safe operation of the site car park and site entrance/exit, which is likely to bring benefit to users of the private road. The existing public rights of way are not lit. Users of the footpaths will experience light 'patches' depending on which part of the Facility they are near, where lights within the grounds of the Facility will be on timers and motion sensors, to ensure limited visual impact upon the setting of assets within the vicinity during the evening and night.
Heritage	**Chapter 8 Cultural Heritage** of the ES (document reference 6.2.8) details how lights within the grounds of the Facility will be on timers and motion sensors, to ensure limited visual impact upon the setting of assets within the vicinity during the evening and night. Assets that may be impacted include Wybert's Castle, St Botolph's Church, Parish Church of St Nicholas, Maud Foster Sluice, Slippery Gowt Sluice, Skirbeck Conservation Area, Wyberton Conservation Area and the 'Roman Bank'.

4 Lighting Requirements

4.1 Introduction

4.1.1 This section sets out the external artificial lighting requirements for the Facility during its operation. The Facility will be operational 24 hours a day, 7 days a week,

4.2 Operational Lighting Requirements

The Facility

4.2.1 New external artificial lighting will be required at the Application Site so the site can be safely and securely operated during the hours of darkness. Lighting will be required for safe access and wayfinding. In addition to the overall requirements listed in **paragraph 1.3.2** above, this may include:

- Street lighting for any new internal access roads;
- Lighting over entrances and exits to and from buildings (both vehicular and pedestrian);
- Lighting at points where vehicles will be required to stop (for example weighbridges, connection point to the carbon dioxide capture facility, etc.);
- Lighting on gantry structures and external stairways;
- Lighting of the stacks;
- Security/ entrance gate lighting; and
- Wayfinding lights along internal pathways.

Wharf and Berthing Area

4.2.2 The Application Site includes the construction of a wharf where RDF will be offloaded, and lightweight aggregate will be exported. Therefore, new external artificial lighting is required for the wharf to be utilised as part of the Facility.

4.2.3 There will also be an external bale store where bales of RDF that are not immediately conveyed to the RDF bunker will be stored. Motion-sensor lighting will be required to ensure bales can be safely stored or removed from this storage area and loaded onto the conveyor to the bunker.

5 Outline Lighting Strategy

5.1 Design Principles

5.1.1 Design Principles in relation to external artificial lighting are as follows:

Lighting will be appropriate to the local context and will mitigate lighting impacts upon identified habitats, neighbouring occupiers and the wider landscape.

- Intelligently designed low-glare fully shielded fittings pointing downwards will be used;
- Motion sensors will be used to ensure lighting is only used when needed; and
- Blue light emissions will be mitigated by using low colour temperature lighting.

Lighting will provide illumination for the safe operation of the various activities proposed to be carried out at the Facility, including access and wayfinding.

- Subject to meeting the operational and safety requirements, lighting will be designed to reduce the brightness and spread of light during operation;
- The lighting design will mitigate light spill onto The Haven and within the Havenside LNR and be designed to maximise darks areas for wildlife;
- The lighting design will be determined by operational requirements for both day-time and night-time lighting of buildings and external areas whilst mitigating impacts on local ecology;
- The lighting design will provide adequate lighting levels to enable the safe operation of all facilities on-site and support vehicular, pedestrian and cyclist movements;
- The lighting design will be as low as guidelines allow; and
- The lighting design will deliver robust and efficient lighting which creates an attractive and safe environment for staff and visitors.

Lighting elements will be designed to minimise spillage to Havenside LNR

- The height and design of lighting columns will be considered to avoid light spill where possible;
- Lighting elements will be consistent in terms of materials, finish and colours and contribute to the appearance of the Facility;
- All luminaries will be of an energy efficient design and comply with the relevant British Standard; and

- Ease and safe maintenance will be considered as part of selection of light fittings and luminaries.

Lighting elements will be designed to minimise spillage to The Haven

- To avoid attracting fish, lights should not be focused onto the river surface for too long; and
- There are no additional requirements for this. This is because when the tide goes out, the fish will have to swim away, and the vessels will be safely sat on the riverbed.

5.2 Further Recommendations

5.2.1 Further recommendations to be adopted alongside the Design Principles to mitigate any potential impacts from the external artificial lighting required at the Application Site are as follows:

- The final lighting design will be developed to meet the appropriate ILP Environmental Zone (set out in **Table 2-1** above);
- Retained habitats such as scrub and ditch systems around the margins of the Application Site would not be lit; and
- Any adjacent lighting (e.g. lighting required for safety purposes) would be directed to avoid light spill onto retained habitats around the margins of the Application Site with after-dark lighting during the main period when bats are active (April to October) being minimised as far as is practicable.

6 Summary

6.1.1 National and local planning policy sets out requirements for the consideration of obtrusive lighting, and highlights that '*the effect of such lighting on the landscape and ecology may be a relevant consideration*'.

6.1.2 Relevant guidance and standards, listed in **Sections 2.4** and **2.5**, are in place to ensure new developments are designed with appropriate measures to mitigate and manage the use of external artificial lighting and will be considered as part of the final lighting strategy.

6.1.3 **Chapter 12 Terrestrial Ecology** of the ES (document reference 6.2.12) has identified that, the habitats within the Application Site are suitable for protected or notable species, some of which are nocturnal and sensitive to changes in the level of light. Light spill from the Facility could, without appropriate design and mitigation, affect adjacent designated areas including Havenside LNR.

6.1.4 External artificial lighting will form part of the overall final design for the Facility. This Strategy incorporates general design principles and recommendations to mitigate and manage identified adverse effects on sensitive receptors, that will be employed for the final lighting design for operational external artificial lighting for the Facility.

6.1.5 The lighting design with modelling to show illuminance levels (as lux contour lines) will be prepared at the detailed design stage to demonstrate that the lighting levels will be kept within the obtrusive light limitations that are appropriate for the Facility and Application Site, and are within the relevant ILP Environmental Zone limits.

6.1.6 The Outline Lighting Strategy, including design principles set out in **Section 5**, provides the overall measures for the mitigation and management of external artificial lighting required at the Application Site to limit impacts on sensitive receptors as far as possible.

6.1.7 The measures will effectively mitigate any potential effects on receptors identified in **Table 3-1**, including on sensitive ecological receptors present at the adjacent Havenside LNR.

6.1.8 Based on the design principles and lighting strategy secured by the draft DCO (document reference 2.1) no unacceptable effects from artificial lighting on sensitive receptors are anticipated from the Facility.

7 References

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