



LIGHTHOUSE GREEN FUELS PROJECT

Preliminary Environmental Information Report

Chapter 1: Introduction

The Inspectorate Reference: EN010150

May 2024

Volume 1

TABLE OF CONTENTS

1. INTRODUCTION	1
1.1. Background.....	1
1.2. Requirement for Development Consent.....	3
1.3. Requirement for EIA.....	3
1.4. National Policy Statements	4
1.5. Purpose of this PEIR.....	5
1.6. References.....	14

TABLE

Table 1-1: Information for Inclusion in the ES	7
--	---

1. INTRODUCTION

1.1. BACKGROUND

THE APPLICANT

- 1.1.1. Lighthouse Green Fuels Ltd (LGF) (herein known as ‘the Applicant’) is wholly owned by Alfanar Global Development Company (‘Alfanar’). Alfanar (and its affiliates) is a global project development, manufacturing, and engineering company founded in 1976 and headquartered in Saudi Arabia, with a presence in 24 countries, mainly in the Middle East, Asia, Africa, and Europe. The group turnover is more than US\$3 billion annually and it employs more than 18,000 people, including 2,000 engineers. LGF has developed significant in-house waste-to-Sustainable Aviation Fuel (SAF) expertise, and also has experience developing renewable projects and providing turnkey Engineering, Procurement and Construction (‘EPC’) contractor services. This experience will be utilised to successfully construct and operate the LGF Project (the ‘Proposed Scheme’).
- 1.1.2. The Proposed Scheme represents an investment of approximately £1.5 billion in domestic SAF production within the UK with the development of a ‘waste-to-sustainable aviation fuel’ facility in Teesside with two distinct generating stations, making use of its existing 49.9MW TV1 generating station and a new up to 49.9MW auxiliary boiler with associated generating equipment. The facility will treat waste and biomass feedstock and convert it to various energy-related products, including SAF and naphtha.
- 1.1.3. It is anticipated that the Proposed Scheme will employ approximately 120 direct full-time employees (FTEs), with an additional 120 FTE’s at other facilities forming part of the Project, 600 indirect FTEs from jobs at other locations in the UK, and up to 2,600 temporary construction staff anticipated during the construction phase.
- 1.1.4. Development of domestic SAF production will bring significant economic benefit to the UK; the Gross Value Added (GVA) arising from the Project is estimated to be in excess of £470 million. In addition to the Proposed Scheme, the Applicant has plans for additional SAF facilities within the UK to be developed in the future.

OVERVIEW

- 1.1.5. The Applicant is planning to submit an application for a Development Consent Order (DCO) to construct, operate and decommission the Proposed Scheme in Billingham, UK (the ‘Site’). The Proposed Scheme is anticipated to be the UK’s first commercial scale SAF project to be constructed and would comprise the following key elements, which are considered in this PEIR:
- SAF Plant;
 - Refurbished existing 49.9MW combined cycle gas turbine power plant located on TV1;
 - New up to 49.9MW auxiliary boiler with associated generating equipment;

- Bulk Liquid Storage (for SAF and Naphtha);
- Pipeline and Cable Connections (import and export) and Utility Corridors;
- Heavy Haul Road (for construction phase only);
- Conveying Corridors;
- Rail Terminal;
- Marine Transport Infrastructure (for construction and operational purposes); and
- Other associated infrastructure.

1.1.6. The location and extent of the Proposed Scheme can be seen on **Figure 1-1 (Volume 2)** and **Figure 1-2 (Volume 2)**. The elements of the Proposed Scheme listed above are described in detail in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.

BACKGROUND TO THE PROPOSED SCHEME

- 1.1.7. Following the successful development of large-scale renewable energy projects globally (i.e. wind and solar), the Applicant is now focusing its group efforts on projects to decarbonise transport and, in particular, the decarbonisation of aviation. The Proposed Scheme is the Applicant's flagship decarbonisation project, and it will be located in Teesside.
- 1.1.8. Transport decarbonisation is one of the most significant challenges in achieving Net Zero ambitions. Decarbonisation of aviation, unlike other forms of transport, faces a greater challenge. Several decarbonisation routes have been proposed, however, SAF presents the only currently viable near, mid- and long-term solution, offering significant greenhouse gas savings, whilst also being capable of being used within the existing distribution, storage and refuelling infrastructure for aviation.
- 1.1.9. Global demand for SAF is expected to grow at near exponential rates towards 2050 as countries across the world strive to achieve Net Zero. Demand is expected to reach up to 500 million tonnes per annum (Mtpa) by 2050¹.
- 1.1.10. Currently the UK uses approximately 12 Mtpa of aviation fuel (2019 data). To meet the UK's ambitions of 10% SAF uptake by 2030, 1.2 Mtpa of low carbon SAF are required. This equates to approximately 14 plants of similar size to the Proposed Scheme being required to meet the demand. The Applicant believes that this demand is best met by domestic SAF production plants rather than relying on costly imports.
- 1.1.11. The Applicant also considers that the UK is ideally placed as a key global aviation hub with access to permanent geological carbon stores and these benefits should be leveraged to allow the UK to become a world-leader in the production of low carbon SAF. The growing market for SAF, alongside regulatory and Governmental support, has created an attractive location to construct large-scale SAF facilities within the UK.

1.2. REQUIREMENT FOR DEVELOPMENT CONSENT

- 1.2.1. Part 3 of the Planning Act 2008 defines what projects constitute Nationally Significant Infrastructure Projects (NSIPs). Once classed as an NSIP, development consent is required under Part 4 of the Act. The Proposed Scheme does not automatically fall under the definition of NSIP.
- 1.2.2. Therefore, on 07 October 2022, the Applicant formally requested a direction by the Secretary of State for Business, Energy and Industrial Strategy (SoS), (now the Secretary of State for Energy Security & Net Zero) pursuant under Section 35(1)² of the Planning Act 2008 (as amended) ('2008 Act')³ that the Proposed Scheme be treated as an NSIP for which development consent is required.
- 1.2.3. The SoS, in his letter dated 25 October 2022, directed that the Proposed Scheme should be considered a development of national significance and would require development consent. The SoS is satisfied that⁴:

*“The Proposed Development is in the field of energy and development;
The Proposed Development will be wholly within England and waters adjacent to England up to the seaward limits of the territorial sea and the Renewable Energy Zone when completed;
The Proposed Project does not currently fall within the existing definition of a “nationally significant infrastructure project” and therefore it is appropriate to consider use of the power in section 35(1) of the Planning Act 2008; and
The Applicant’s request constitutes a “qualifying request” in accordance with section 35ZA(11) of the Planning Act 2008.”*

- 1.2.4. In coming to this conclusion, the SoS recognised that *“the Proposed Development is nationally significant”*.
- 1.2.5. Due to the evolving design of the Proposed Scheme, the Applicant has submitted a request on 26 March 2024 for a variation to the existing direction from the SoS, pursuant to Section 35 of the 2008 Act² that the Proposed Scheme (as described in this PEIR) be treated as an NSIP for which development consent is required. The SoS, in their letter dated 23 April 2024, directed that the Proposed Scheme agreed to the request for a variation of the existing Direction and reconfirmed the project should be considered a development of national significance and would require development consent.

1.3. REQUIREMENT FOR EIA

- 1.3.1. As a result of being determined as an NSIP (subject to the Applicant’s request for a variation to its existing S35 request), the Proposed Scheme qualifies as an Environmental Impact Assessment (EIA) development under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations)⁵. The process and content of an EIA is summarised in Regulation 5 of the EIA Regulations.

The preparation of an Environmental Statement ('ES') and the carrying out of associated procedural steps, including consultation, publicity, and notification, is central to the process of an EIA.

- 1.3.2. Regulation 4 of the EIA Regulations prohibits the grant of consent for NSIPs that falls under the definition of an "EIA development" without consideration of specific environmental information and processes set out in Regulation 5 of the EIA Regulations⁵.
- 1.3.3. As the Proposed Scheme requires development consent pursuant to the 2008 Act, the processes set out, and documents stated within The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) (2009 Regulations)⁶ must be followed and prepared. This includes "*the environmental statement required ... and any scoping or screening opinions or directions*".
- 1.3.4. Regulation 8 of the EIA Regulations letter, along with an EIA Scoping Report⁷, was submitted to the SoS on 26 July 2023. This confirmed that the Applicant intends to submit an application for development consent.

SCOPING OPINION AND CONSULTATION

- 1.3.5. As part of the EIA process, consultation is ongoing with both statutory and non-statutory consultees.
- 1.3.6. The purpose of consultation with statutory consultees is to:
 - brief them on the Proposed Scheme;
 - seek feedback on the proposed approach to the assessment; and
 - mitigation of the development and to obtain baseline data.
- 1.3.7. Technical and procedural consultation has been ongoing and will continue with statutory bodies, including their responses to this statutory consultation. A summary of consultation undertaken to date for each topic is included in **Chapter 5: Air Quality (Volume 1)** to **Chapter 19: Cumulative Effects (Volume 1)** of this PEIR.
- 1.3.8. The EIA Scoping Opinion⁸ was received by the Applicant from the Planning Inspectorate on behalf of the Secretary of State on 01 September 2023. The responses from the Planning Inspectorate and other Statutory Bodies in relation to the Introductory Chapters and Technical Chapters of the EIA Scoping Report⁷ are set out in **Chapter 3: Approach to EIA (Volume 1)**.

1.4. NATIONAL POLICY STATEMENTS

- 1.4.1. Under the 2008 Act³, the policy framework for examining and determining applications for development consent is provided by National Policy Statements (NPSs). Section 5 of the 2008 Act allows the relevant SoS to designate NPSs setting out national policy in relation to the types of NSIPs listed at Section 14 of the Act. The NPSs are the primary policy used by the relevant SoS to examine and determine applications for NSIPs.

Further details on NPSs can be found in **Chapter 4: Planning Policy (Volume 1)** and in **Appendix 4A: Policy, Legislation and Guidance (Volume 3)**.

1.5. PURPOSE OF THIS PEIR

- 1.5.1. As described in the Planning Inspectorate’s Advice Note 7⁹, the purpose of this PEIR is to provide preliminary environmental information reasonably required to enable members of the public (including local communities), local authorities, statutory bodies, and people whose land or interests would potentially be affected to understand the likely significant environmental effects of the Proposed Scheme. This helps to inform their consultation responses so that they may provide meaningful feedback during the statutory consultation for the Proposed Scheme. The Applicant will have regard to all relevant comments made by consultees during this consultation, prior to the proposals for the Proposed Scheme being finalised.
- 1.5.2. This PEIR provides information about the Proposed Scheme that reflects the emerging design and allows preliminary assessment of environmental effects, and preliminary understanding of environmental effects by consultees. Further design information and updates to the environmental assessments will be provided as part of the ES.
- 1.5.3. The 2008 Act³ and Regulation 10 of the EIA Regulations require the Applicant of a proposed DCO to make preliminary environmental information available during the statutory consultation. Typically, this information takes the form of a PEIR.
- 1.5.4. Preliminary environmental information is required by the EIA Regulations and defined in Regulation 12(2) as information referred to in Regulation 14(2), which:
- “a) has been compiled by the Applicant; and*
 - b) is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of a development (and of any associated development)”.*
- 1.5.5. Paragraphs 8.4 and 8.5 of Advice Note 7⁹ states in regarding to the role of this PEIR:
- “There is no prescribed format as to what PEI should comprise and it is not expected to replicate or be a draft of the ES. However, if the Applicant considers this to be appropriate (and more cost-effective) it can be presented in this way. A good PEI document is one that enables consultees (both specialist and non-specialist) to understand the likely environmental effects of the Proposed Development and helps to inform their consultation responses on the Proposed Development during the pre-application stage.”*
- “Therefore, the level of detail and type of PEI may vary depending on:*
- at what stage in the design process the consultation is carried out;*
 - the target audience; and*
 - the complexity of the Proposed Development and the receiving environment”.*

- 1.5.6. Regulation 14(2) and Schedule 4 specify what environmental information must be included within the ES (subject to it being reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects) and which has been used to inform this PEIR. A summary of the information required is given in **Table 1-1** below.

Table 1-1: Information for Inclusion in the ES

Location in EIA Regulations 2017	Requirement	Location in PEIR
Reg 14(2)(a)	<i>“a description of the proposed development comprising information on the site, design, size and other relevant features of the development.”</i>	Chapter 2: Site and Proposed Scheme Description (Volume 1)
Schedule 4(1)(a) to (d)	<p><i>“A description of the development, including in particular—</i></p> <ul style="list-style-type: none"> <i>-a description of the location of the development;</i> <i>-a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;</i> <i>-a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; and</i> <i>-an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.”</i> 	<p>Chapter 2: Site and Proposed Scheme Description (Volume 1)</p> <p>Chapter 5: Air Quality (Volume 1) to Chapter 18: Marine Navigation (Volume 1)</p>
Reg 14(2)(b)	<i>“A description of the likely significant effects of the proposed development on the environment.”</i>	Chapter 5: Air Quality (Volume 1) to Chapter 19: Cumulative Effects (Volume 1)
Schedule 4(4)	<i>“A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population, human health,</i>	

Location in EIA Regulations 2017	Requirement	Location in PEIR
	<i>biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.”</i>	
Reg 14(2)(c)	<i>“A description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.”</i>	
Schedule 4(7)	<i>“A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced, or offset, and should cover both the construction and operational phases.”</i>	
Reg 14(2)(d)	<i>“A description of the reasonable alternatives studied by the Applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.”</i>	Chapter 3: Approach to EIA (Volume 1)
Schedule 4(2)	<i>“A description of the reasonable alternatives (for example in terms of development design, technology, location, size, and scale) studied</i>	

Location in EIA Regulations 2017	Requirement	Location in PEIR
	<i>by the developer, which are relevant to the proposed scheme and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.”</i>	
Reg 14(2)(e)	<i>“A non-technical summary of the information referred to in subparagraphs (a) to (d).”</i>	A summary of the significant effects identified in this PEIR is set out within Chapter 20: Summary (Volume 1) . A separate Non-Technical Summary (NTS) of this PEIR is included as part of the statutory consultation for the Proposed Scheme. An NTS will also be prepared as part of the ES in the application for development consent.
Schedule 4(9)	<i>“A non-technical summary of the information provided under paragraphs 1 to 8.”</i>	
Reg 14(2)(f)	<i>“Any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.”</i>	Chapter 5: Air Quality (Volume 1) to Chapter 18: Marine Navigation (Volume 1)
Schedule 4(3)	<i>“A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.”</i>	Chapter 2: Site and Proposed Scheme Description (Volume 1) Chapter 5: Air Quality (Volume 1) to Chapter 18: Marine Navigation (Volume 1)

Location in EIA Regulations 2017	Requirement	Location in PEIR
Schedule 4(5)(a)	A description of the likely significant effects of the development resulting from - <i>“the construction and existence of the development, including, where relevant, demolition works.”</i>	Chapter 5: Air Quality (Volume 1) to Chapter 18: Marine Navigation (Volume 1)
Schedule 4(5)(b)	A description of the likely significant effects of the development resulting from - <i>“the use of natural resources, in particular land, soil, water, and biodiversity, considering as far as possible the sustainable availability of these resources.”</i>	Chapter 7: Terrestrial Ecology (Volume 1) Chapter 8: Freshwater and Marine Ecology (Volume 1) Chapter 9: Water Environment and Flood Risk (Volume 1) Chapter 13: Materials and Waste (Volume 1)
Schedule 4(5)(c)	A description of the likely significant effects of the development resulting from - <i>“the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste.”</i>	Chapter 5: Air Quality (Volume 1) Chapter 6: Noise and Vibration (Volume 1) Chapter 7: Terrestrial Ecology (Volume 1) Chapter 8: Freshwater and Marine Ecology (Volume 1) Chapter 10: Landscape and Visual (Volume 1) Chapter 11: Greenhouse Gases (Volume 1)

Location in EIA Regulations 2017	Requirement	Location in PEIR
		<p>Chapter 12: Climate Change Resilience (Volume 1)</p> <p>Chapter 13: Materials and Waste (Volume 1)</p> <p>Chapter 15: Population and Human Health (Volume 1)</p>
<p>Schedule 4(5)(d)</p>	<p>A description of the likely significant effects of the development resulting from - <i>“the risks to human health, cultural heritage or the environment (for example due to accidents or disasters).”</i></p>	<p>Chapter 2: Site and Proposed Scheme Description (Volume 1)</p> <p>Chapter 5: Air Quality (Volume 1)</p> <p>Chapter 6: Noise and Vibration (Volume 1)</p> <p>Chapter 14: Socioeconomics (Volume 1)</p> <p>Chapter 15: Population and Human Health (Volume 1)</p> <p>Chapter 17: Major Accidents and Disasters (Volume 1)</p>
<p>Schedule 4(5)(e)</p>	<p>A description of the likely significant effects of the development resulting from - <i>“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.”</i></p>	<p>Chapter 19: Cumulative Effects (Volume 1)</p>

Location in EIA Regulations 2017	Requirement	Location in PEIR
Schedule 4(5)(f)	A description of the likely significant effects of the development resulting from - <i>“the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change.”</i>	<p>Chapter 11: Greenhouse Gases (Volume 1)</p> <p>Chapter 12: Climate Change Resilience (Volume 1)</p>
Schedule 4(5)(g)	A description of the likely significant effects of the development resulting from - <i>“the technologies and the substances used.”</i>	<p>Chapter 5: Air Quality (Volume 1) to Chapter 18: Marine Navigation (Volume 1)</p>
Schedule 4(6)	<i>“A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.”</i>	<p>Chapter 3: Approach to EIA (Volume 1)</p> <p>Chapter 5: Air Quality (Volume 1) to Chapter 18: Marine Navigation (Volume 1)</p>
Schedule 4(8)	<i>“A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and / or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU of the European Parliament and of the Council (3) or Council Directive 2009/71/Euratom (4) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the</i>	<p>Chapter 17: Major Accidents and Disasters (Volume 1)</p>

Location in EIA Regulations 2017	Requirement	Location in PEIR
	<i>environment and details of the preparedness for and proposed response to such emergencies.”</i>	
Schedule 4(10)	<i>“A reference list detailing the sources used for the descriptions and assessments included in the Environmental Statement.”</i>	Chapter 1: Introduction (Volume 1) to Chapter 20: Summary (Volume 1)

1.6. REFERENCES

- ¹ Air Transport Action Group. (2021). 'Fuelling Net Zero: How the aviation industry can deploy sufficient sustainable aviation fuel to meet climate ambitions'. Available at: https://aviationbenefits.org/media/167495/fueling-net-zero_september-2021.pdf
- ² Direction By The Secretary Of State Under Section 35 Of The Planning Act 2008 Relating To The Lighthouse Green Fuels Project
<https://assets.publishing.service.gov.uk/media/6357e572e90e0777aca3e8f9/lighthouse-green-fuels-project-sos-direction.pdf>
- ³ UK Government. (2008). 'Planning Act 2008'. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents>
- ⁴ Secretary of State for Business, Energy and Industrial Strategy. (2022). 'Direction by the Secretary of State Under Section 35 of the Planning Act 2008 Relating to the Lighthouse Green Fuels Project. Available at: <https://www.gov.uk/government/publications/lighthouse-green-fuels-project-waste-to-sustainable-aviation-fuel-section-35-direction-planning-act-2008>
- ⁵ UK Government. (2017). 'The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 [SI 2017/572].' Available at: <https://www.legislation.gov.uk/ukxi/2017/572/contents/made>
- ⁶ UK Government. (2009). 'The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009.' Available at: <https://www.legislation.gov.uk/ukxi/2009/2264/contents/made>
- ⁷ Lighthouse Green Fuels DCO. (2023). 'Environment Impact Assessment Scoping Report' Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010150/EN010150-000006-LGF%20EIA%20Scoping%20Volume%20I%20-%20Main%20Text%20and%20Figures.pdf>
- ⁸ The Planning Inspectorate. (2023). 'Scoping Opinion.' Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010150/EN010150-000012-EN010150%20-%20Lighthouse%20Green%20Fuels%20-%20Scoping%20Opinion.pdf>
- ⁹ National Infrastructure Planning. (2020). 'Advice Note 7 (Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements'. Available at: <https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-an>

The logo for Lighthouse Green Fuels, featuring the company name in a bold, green, sans-serif font. The text is contained within a white rectangular box with a thin green border. The background of the top half of the page is a solid green color, with a blue diagonal stripe running from the bottom left towards the top right.

**Lighthouse
Green Fuels**

Lighthouse Green Fuels Limited

1 Cornhill
London
EC3V 3ND

www.alfanar.com