

Lighthouse Green Fuels

Development Consent Order

Preliminary Environmental Information Report

Chapter 1: Introduction

Planning Inspectorate Reference: EN0110025

2nd December 2025

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1. Introduction

1.1 Background

- 1.1.1 This Preliminary Environmental Information Report (PEIR) has been prepared by Ove Arup and Partners Ltd (Arup) on behalf of LGF Projects Ltd (the Applicant), to support a proposed application (the Application) to be made to the Secretary of State (SoS) for Energy Security and Net Zero seeking Development Consent for the construction, operation, maintenance and decommissioning of the Lighthouse Green Fuels project on land at Stockton-on-Tees and Redcar and Cleveland on Teesside (the Proposed Development) (Figure 1.1: Site Location Plan (PEIR Volume 2)).
- 1.1.2 This PEIR presents:
- a description of the Proposed Development;
 - the likely significant environmental effects of its construction, operation and decommissioning, based on the preliminary environmental information available at the time of writing;
 - measures to avoid or reduce such effects; and
 - alternative sites, technologies and layouts considered.
- 1.1.3 The PEIR is provided to support consultees in developing an informed view of the likely significant environmental effects of the Proposed Development.
- 1.1.4 The location of the Proposed Development is shown in Figure 1.1: Site Location Plan (PEIR Volume 2). The Proposed Development and its surroundings are described in Chapter 3: The Site and Surrounding Area (PEIR Volume 1). A description of the Proposed Development is provided in Chapter 4: Proposed Development (PEIR Volume 1).
- 1.1.5 It should be noted that the development of the design of the Proposed Development is ongoing, environmental information is still being assembled and potential effects assessed. The information contained within this PEIR should be regarded as a preliminary account of the principal environmental issues identified to date. The PEIR details a number of uncertainties and assumptions and the design of the Proposed Development may be subject to change as the environmental assessment work progresses and is finalised.
- 1.1.6 This PEIR does not constitute a draft Environmental Statement (ES). Assessments reported within this PEIR chapter are considered a reasonable 'worst case' as a precautionary approach. Assumptions have been made where design or construction information is incomplete. Gaps in information that are identified within the PEIR will be considered and

addressed as part of the assessment during the production of the ES.

- 1.1.7 Where provisional likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed, and the design and mitigation are further developed.
- 1.1.8 The design may also be subject to change as a result of consultation responses which will in turn inform the ongoing environmental assessment process. The results of the environmental assessment process will be reported within the ES which will be submitted to the Planning Inspectorate (PINS) as part of the Development Consent Order (DCO) application.
- 1.1.9 This PEIR presents the findings of the environmental assessments to date for the Proposed Development to inform the statutory consultation process for the proposed DCO application, in accordance with the Planning Act 2008 (the Act) (Ref 1).

1.2 The Applicant

- 1.2.1 The Applicant is wholly owned by Alfanar Energy Limited (Alfanar). Alfanar is part of a global project development, manufacturing, and engineering group headquartered in Saudi Arabia. Alfanar has developed significant in-house feedstock-to-Sustainable Aviation Fuel (SAF) expertise. This experience will be utilised to construct and operate the Proposed Development.

1.3 Overview of the Proposed Development

- 1.3.1 The Applicant is planning to submit an application for a DCO to construct, operate and decommission the Proposed Development on land at Seal Sands Road, Seal Sands, Middlesbrough, TS2 1UB. The Proposed Development is anticipated to be the UK's first commercial-scale second generation SAF production facility to be constructed.
- 1.3.2 The location and extent of the Proposed Development can be seen on Figure 1.1 and Figure 1.2, respectively (PEIR Volume 2). The elements of the Proposed Development are described in Chapter 4: The Proposed Development (PEIR Volume 1).
- 1.3.3 The Proposed Development supersedes a previous development that was being considered under a different DCO application progressed on the former Lighthouse Green Fuels Limited site off Huntsman Drive in Seal Sands, TS2 1TT (PINS ref. EN010150). Statutory consultation on that application took place between 16 May 2024 and 20 June 2024. That application is no longer being progressed due to a switch in feedstock from primarily waste feedstock to sustainably sourced biomass, and a new

requirement for a biomass fuelled combined heat and power (CHP) plant within the Proposed Development. This change necessitates an increase in the site area required to deliver the second generation SAF project and requires a site that benefits from direct access to the tidal River Tees for feedstock delivery. Future use of other waste derived feedstock for SAF production remains under consideration but does not form part of the Proposed Development.

1.4 The Development Consent Process

- 1.4.1 A request for a direction under Section 35 of the Planning Act 2008 (the Act) was sent to the SoS for Energy Security and Net Zero on 12 August 2025, to formally request that the project elements (the Specified Elements) of the Proposed Development should be treated as development for which development consent under the Act is required.
- 1.4.2 The Proposed Development is anticipated to be the UK's first commercial scale second generation SAF production facility to be constructed and would comprise the following key Specified Elements:
- Feedstock reception and storage;
 - Feedstock pre-treatment facility;
 - SAF Production Facility (producing SAF and renewable naphtha); and
 - Product processing, storage and export pipelines.
- 1.4.3 To support the SAF production facilities, the following ancillary or associated operations are required which are to be included in the DCO as associated development:
- Marine Transport Infrastructure (Quay) for construction and operational purposes (feedstock import); and
 - Installation of pipelines for utilities (such as water, natural gas, industrial gases) and product export to 3rd party facilities.
- 1.4.4 Electricity and steam are required for the Proposed Development. To minimise the carbon intensity of the produced SAF, the electricity and steam should be delivered by low carbon sources. Therefore, it is proposed that these will primarily be supplied through a biomass-fired CHP plant within the Proposed Development. It is proposed that this CHP plant will have an electrical output capacity of up to approximately 200MWe, with additional steam production, and therefore is an NSIP in its own right, as it surpasses the 50MW threshold for generating stations defined in Section 15 of the Act. This activity is also included in the DCO application given its direct relationship to the main development.
- 1.4.5 The SoS issued a direction on 08 September 2025 which confirmed that the Specified Elements, together with any matters/development associated

with them, are to be treated as development for which development consent is required. This is subject to the condition that the Specified Elements form part of the Proposed Development which includes a generating station that is an NSIP.

1.4.6 Consent is therefore required from the SoS by way of a DCO. A DCO has the effect of granting consent for a development in addition to a range of other consents and authorisations, as well as removing the need for some other consents, such as planning permission.

1.4.7 An application for development consent for the Proposed Development will be submitted to the PINS acting on behalf of the SoS. Subject to the Application being accepted, which will be decided within a period of 28 days from receipt, PINS will then examine it and make a recommendation to the SoS, who will then decide whether to grant a DCO.

1.5 **Environmental Impact Assessment and the Purpose of the PEIR**

The EIA Scoping Process

1.5.1 The Applicant has notified the SoS in writing under Regulation 8(1)(b) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the EIA Regulations) (Ref 2) that it intends to provide an ES in respect of the Proposed Development. The Proposed Development is therefore 'Environmental Impact Assessment (EIA) development' for the purposes of the EIA Regulations and an ES will form part of the Proposed Application.

1.5.2 The purpose of the EIA Scoping process is to determine which topics should be included in the EIA, and the level of detail to which they should be assessed. An EIA Scoping Report and a request for an EIA Scoping Opinion pursuant to Regulation 10 of the EIA Regulations was submitted to PINS on 01 October 2025.

1.5.3 The EIA Scoping Report (Appendix 1A, PEIR Volume 3) was developed with reference to standard guidance and best practice. It was informed by the EIA team's experience of working on a number of similar projects. The EIA Scoping Report set out:

- details of the Proposed Development;
- a summary of alternatives considered;
- a summary of existing and future baseline conditions;
- an outline of the likely significant environmental effects of the Proposed Development;
- a description of the matters to be scoped in and out of the EIA;

- proposed assessment methods; and
- the proposed structure of the ES.

1.5.4 PINS Scoping Opinion was received on 11 November 2025 and is presented within Appendix 1B (PEIR Volume 3). The matters raised have been reviewed and are being taken into consideration in the relevant technical assessments. Further details on the EIA Scoping Opinion are set out in Chapter 2: Assessment Methodology (PEIR Volume 1).

The PEIR

1.5.5 Following the completion of an EIA Scoping Report and publication of SoS's Scoping Opinion, the EIA for a DCO is reported in two stages:

- Stage 1: a PEIR is prepared to inform consultation with the public and other stakeholders about the Proposed Development, based on the preliminary environmental information available at the time of consultation; and
- Stage 2: an ES is prepared to accompany the Application.

1.5.6 This document is the PEIR, which has been prepared to satisfy the requirements of Regulation 12(2) of the EIA Regulations. In accordance with Regulation 12(2)(b), the PEIR presents, *“the information referred to in Regulation 14(2) which [...] is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development).”*

1.5.7 Regulation 14(2) describes the requirements of an ES. Table 1-1 identifies where the information defined by Regulation 14(2) can be found within this PEIR.

Table 1-1: Location of Information required by Regulation 14(2) within this PEIR.

Specified Information	Location within PEIR
a) a description of the proposed development comprising information on the site, design, size and other relevant features of the development.	Volume 1 Chapter 3: Description of the Site and Surrounding area, Chapter 4: Proposed Development, Chapter 5: Construction Programme and Management, Chapter 6: Alternatives and design evolution, and finally supporting figures and appendices to these chapters in Volume 2 and Volume 3.
b) a description of the likely significant effects of the proposed development on the environment.	Volume 1 Chapters 8 to 21, 'Likely Impacts and Effects of the Proposed Development' sections.
c) 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.	Volume 1 Chapter 4: Proposed Development and Chapters 8 to 21, in the 'Development Design and Impact Avoidance' and 'Mitigation and Enhancement Measures' sections.
d) 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.	Volume 1 Chapter 6: Alternatives and Design Evolution.
e) a non-technical summary of the information referred to in subparagraphs (a) to (d).	Volume 4 Non-Technical Summary (NTS).
f) 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.	Baseline conditions relevant to each assessment are described in Volume 1 Chapters 8 to 21, 'Baseline Conditions' sections. Assessment methods are described in Volume 1 Chapter 2: Assessment Methodology and Chapters 8 to 21, in the 'Assessment Methodology and Significance Criteria' sections Any limitations and/or difficulties with the assessments are described in Volume 1 Chapters 8 to 22, 'Limitations or Assumptions' sections.

- 1.5.8 PINS Advice Note Seven: *Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements* (Ref 3) states:

“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.”

- 1.5.9 This PEIR presents preliminary findings of the environmental assessments undertaken to date to enable consultees to understand the likely environmental effects of the Proposed Development. This is intended to allow consultees the opportunity to provide informed comments on the Proposed Development, the assessment process and the preliminary findings prior to the finalisation of the DCO application and the ES. The Applicant is seeking the views of consultees on the information contained within this PEIR, and there is opportunity within the process up to submission of the DCO application for both the EIA and the project design to have regard to comments received.
- 1.5.10 It should be noted that this PEIR does not constitute a full ES but rather presents the findings of the EIA process to date (December 2025). The information presented describes the current extent of the environmental assessment work undertaken based upon the information available. It is considered that the PEIR presents sufficient preliminary environmental information to enable consultees to develop an informed view of the Proposed Development.
- 1.5.11 Following statutory consultation on preliminary environmental information, this PEIR will be developed into a final ES taking into consideration comments raised during the consultation. The ES will be submitted as part of the DCO application.

1.6 Structure of this PEIR

- 1.6.1 The structure of this PEIR reflects the proposed format of the ES and covers the assessment topics agreed through the EIA Scoping process.
- 1.6.2 Volume 1 of the PEIR is structured into the following chapters:
- Chapters 1 and 2 – an introduction to the PEIR and EIA approach;
 - Chapters 3 to 6 – a description of the Proposed Development together with information on construction timescales and alternatives;
 - Chapter 7 – a summary of planning and energy policy of relevance to the Proposed Development;

- Chapters 8 to 21 – preliminary assessments of the likely significant effects of the Proposed Development in relation to the environmental topics scoped into the EIA;
- Chapter 22 – preliminary assessment of potential inter-relationships between the topics covered in Chapters 8 to 22 (combined effects), and between the Proposed Development and other planned developments in the surrounding area (cumulative effects); and
- Chapter 23 – a summary of the preliminary assessment of likely significant environmental effects.

1.6.3 Volumes 2 and 3 of the PEIR comprise the figures and technical appendices that accompany each chapter of Volume 1 respectively.

1.6.4 Volume 4 is a separate document which has been prepared to provide an NTS of this PEIR.

1.7 Consultation

1.7.1 Consultation is integral to the preparation of DCO applications and to the EIA process. The views of consultation bodies and the local community serve to focus the environmental studies and to identify specific issues that require further investigation, as well as to inform aspects of the design of the Proposed Development. Consultation is an on-going process and the publication of this PEIR forms an important part of that process.

1.7.2 The Act currently requires applicants for development consent to undertake formal (statutory) pre-application consultation on their proposals. There are a number of requirements as to how this consultation must be undertaken that are set out in the Act and related regulations, including:

- Section 42 requires the applicant to consult with ‘prescribed persons,’ which includes certain consultation bodies such as the Environment Agency, Marine Management Organisation and Natural England, relevant statutory undertakers, relevant local authorities, those with an interest in the land, as well as those who may be affected by the development;
- Section 47 requires the applicant to consult with the local community on the development. Prior to this, the applicant must agree a Statement of Community Consultation (SoCC) with the relevant local authorities. The SoCC must set out the proposed community consultation and, once agreed with the relevant local authorities, a SoCC notice must be published in local newspapers circulating within the vicinity of the land in question. The consultation must then be undertaken in accordance with the final SoCC;
- Section 48 places a duty on the applicant to publicise the proposed application in the ‘prescribed manner’ in a national newspaper, The London Gazette, local newspapers circulating within the vicinity of the land and certain marine publications; and

- Section 49 places a duty on the applicant to take account of any relevant responses received to the consultation and publicity that is required by Sections 42, 47 and 48.

- 1.7.3 The Applicant informally consulted the local authorities in which the Proposed Development sits, namely Stockton-on-Tees and Redcar and Cleveland Borough Councils, and PINS prior to the submission of the EIA Scoping Report.
- 1.7.4 The Applicant is undertaking a formal Section 42 and Section 47 consultation, and issuing Section 48 notices, which will commence at the same time as the publication of this PEIR.
- 1.7.5 The issues that are raised through consultation and how these have been considered and addressed within the design evolution of the Proposed Development and the EIA will be set out in the ES.
- 1.7.6 The pre-application consultation undertaken by the Applicant will be documented within a Consultation Report that will form part of the DCO application. This will include a separate section on EIA related consultation as recommended within PINS Advice Note: Advice on the Consultation Report (Ref 4).
- 1.7.7 The Government is proposing fundamental changes to the current obligations for pre-application consultation for DCO proposals. The Applicant may decide to change its approach depending on how matters develop between now and the submission of the application. At present, the Applicant is complying with the current legal requirements relating to consultation. All commitments connected to consultation should be read with the caveats in this paragraph in mind.

1.8 Competent Expert

- 1.8.1 In accordance with the EIA Regulations, Regulation 14 paragraph 4, a Statement of Competence will be included within the ES, outlining the relevant expertise or qualifications of the experts who undertook the EIA.
- 1.8.2 Competent experts have prepared this PEIR and will prepare the ES. The Applicant has engaged Arup to lead the EIA, along with expert ecological survey support from the Teesside based Industry Nature Conservation Association (INCA). Arup holds the Institute of Sustainability and Environmental Professionals (ISEP) EIA Quality Mark.
- 1.8.3 The aspect-specific chapters of this PEIR (Chapters 6-22, PEIR Volume 1) and their corresponding appendices have been prepared by competent aspect authors, as summarised in

- 1.8.4 Table 1-2. The credentials of each aspect expert and lead authors are detailed in PEIR Appendix 1.1 (PEIR Volume 3).

Table 1-2: Competent Authors (Arup unless stated)

Chapter	Author	Qualification	Professional Qualification / Memberships
Chapter 1: Introduction	Ian Campbell	PhD, Engineering Geology	Chartered Geologist (CGeol) Fellow of The Geological Society (FGS)
Chapter 2: Assessment Methodology	Ian Campbell	MSc, Environmental Science, Measurement and Modelling	
Chapter 3: Description of Site and Surrounding Area	Ian Campbell	BSc (Hons) Geology and Chemistry	
Chapter 4: Proposed Development	Ian Campbell		
Chapter 5: Construction Programme and Management	Ian Campbell		
Chapter 6: Alternatives and Design Evolution	Ian Campbell		
Chapter 7: Planning and Energy Policy	Colin Turnbull, DWD	MSc, Town Planning BSc (Hons), Architecture, Planning, Building and Environmental Studies	Member of the Royal Town Planning Institute (MRTPI)
Chapter 8: Air Quality	Helen Watson	MSc, Pollution Monitoring and Control BSc, Environmental Biogeoscience	-
Chapter 9: Noise and Vibration	Chris Wong	MSc, Environmental Engineering & Design BEng, Civil Engineering Diploma, Institute of Acoustics	Associated Member of the Institute of Acoustics
Chapter 10: Terrestrial Ecology	Kate Prior	MSc, Geography BSc (Hons), Geography University Certificate in Biological Recording and Species Identification	Member of the Institute of Ecology and Environmental Management (MIEEM)
Chapter 11: Freshwater and Marine Ecology	Fernanda Hargreaves	MSc, Energy Planning BSc, Oceanographer	-
Chapter 12: Water Environment and Flood Risk	Matt Ross	MSc, Hydrology and Climate Change BA (Hons), Geography with Music	Chartered Member of the Chartered Institution of Water and Environmental Management (CIWEM).

Chapter	Author	Qualification	Professional Qualification / Memberships
			Member of the British Society of Geomorphology. CIWEM Flood and Coastal Erosion Risk Management Specialist Panel. CIWEM Tyne and Humber Branch Committee Member Guest Lecturer at Newcastle University.
Chapter 13: Landscape and Visual Amenity	Daniela Beckford	Diplom-Ingenieur (Dipl.-Ing.) Landscape Architecture (University of Applied Sciences Erfurt, Germany) Professional accreditation as Landscape Gardener (Apprenticeship at the Council of Erfurt, Germany).	Chartered Member of the Landscape Institute (CMLI).
Chapter 14: Greenhouse Gases	George Vergoulas	MSc, Environmental Management & technology BSc, Environmental Science	Chartered Environmentalist (CEnv) Institution of Environmental Science (IES).
Chapter 15: Climate Change Resilience	Katherine Maxwell	PhD, Sustainable Urban Development MSc, Environmental Sustainability BSc, Geography	-
Chapter 16: Materials and Waste	Bob Hudson	MSc, Sustainable Development. Post-Graduate Certificate, Sustainable Waste Management BA (Hons), Tourism and Environment	Chartered Environmentalist (CEnv) Chartered Waste Manager, Chartered Institute of Wastes Management (MCIWM).
Chapter 17: Socio-economics (note, with inputs from Human Health)	Amy Carroll / Jenny Dunwoody	MSc, Economics & Public Policy MA Economics Environmental Economics	Institute of Economic Development. Society of Professional Economists.
Chapter 18: Traffic and Transport	Laura O'Toole	MEng (Hons), Civil Engineering	Chartered Member of the Chartered Institute of

Chapter	Author	Qualification	Professional Qualification / Memberships
			Logistics and Transport (CMCILT) Member of the Chartered Institute of Highways and Transportation (MCIHT).
Chapter 19: Major Accidents and Disasters	Vicky Coy	MSc, Hydrogeology & Groundwater Resources. BSc Geophysics. Project Management Professional (PMP)	Chartered Geologist (CGeol) Project Management Institute
Chapter 20: Marine Navigation	Sam Anderson-Brown, NASH Maritime	BSc, European History	-
Chapter 21: Geology and Soils	Jenny Lightfoot	MSc Hydrogeology BSc Geological Sciences	Chartered Geologist (CGeol) Chartered Scientist (CSci) Fellow of The Geological Society (FGS) Specialist in Land Condition (SiLC)
Chapter 22: Cumulative and Combined Effects	Ian Campbell	PhD, Engineering Geology MSc, Environmental Science, Measurement and Modelling	Chartered Geologist (CGeol) Fellow of The Geological Society (FGS)
Chapter 23: Summary of Significant Effects	Ian Campbell	BSc (Hons), Geology and Chemistry	

References

- Ref 1 UK Government (2008) Planning Act 2008. Available online:
<https://www.legislation.gov.uk/ukpga/2008/29/contents>
- Ref 2 HM Government (2017) Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017 No. 572). Available online:
<https://www.legislation.gov.uk/uksi/2017/572/contents/made>
- Ref 3 Planning Inspectorate (2020) Planning Inspectorate Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statement. Available online:
<https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-an>
- Ref 4 Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on the Consultation Report. Available online:
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