



Supporting Statement CROMARTY HYDROGEN PROJECT

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ScottishPower Energy Retail Limited and Storegga Hydrogen Limited Cromarty Hydrogen Project: Supporting Statement 663356



EXECUTIVE SUMMARY

ScottishPower Energy Retail Limited (SPERL) UK and Storegga Hydrogen Limited ('Storegga') have appointed RSK to prepare this Supporting Statement as part of the application documents to accompany the planning application for the erection of a hydrogen production and storage facility (Class 5 - General Industry), road haul tanker loading facility, underground electricity connection, import substation, improvements to existing access road, site offices, parking, gatehouse and perimeter fencing, temporary construction and laydown area, and ancillary development (hereafter the 'Proposed Development') at land to the east of the Beinn Tharsuinn Windfarm (National Grid Reference (NGR) NH 64225 81469) for which planning permission is sought under Section 32 of the Town and Country Planning (Scotland) Act 1997.

The Supporting Statement presents an overview of the Proposed Development and its benefits. It outlines the need case for this development as recognised under national and regional strategies and justification for why Cromarty, and this site in particular, are suited to the Proposed Development. This Statement should be read in conjunction with the other application documents that consider the potential impacts of the Proposed Development, compliance with national and local energy and planning policy, the siting and design evolution process, and the pre-application consultation activities that were undertaken. In addition to this EAR, the application documents also comprise the following reports:

- Environmental Appraisal Report (EAR);
- Planning Statement;
- Pre-application Consultation (PAC) Report;
- Design and Access Statement (DAS); and
- Transport Statement.

The Proposed Development would make a valuable and near-term contribution to help Scotland and the UK attain Net Zero, security of supply and related socio-economic objectives, making use of renewable energy that could otherwise be curtailed.

The existing renewable energy capacity creates an excellent opportunity for 'green' hydrogen production in a decentralised location. Decentralised production offers strong synergies and 'win-win' potential to address overlapping challenges around maximising Scotland's renewable energy potential and reducing possible curtailment that might arise due to electricity grid network constraints, creating new revenue and diversification opportunities for renewables operators, and accelerating the decarbonisation of energy intensive activities and sectors.

The use cases show there is a strong market for hydrogen integration and local offtake sources identified complement decentralised production in this location. The Cromarty Firth Area is already actively promoting hydrogen production through the Cromarty Hydrogen Project and the Inverness and Cromarty Firth Green Freeport. There are several opportunities for growing Scotland's hydrogen market domestically and internationally in the long-term given the major port infrastructure within the Green Freeport; however, decentralised production utilising curtailed renewable energy can act as an enabler to support future scale up of production within this 'cluster' area.

It is considered that the Proposed Development is in a location where core site requirements around land, power and water can be fulfilled and where it can utilise potentially constrained renewable energy.



The Proposed Development would help achieve international, national and regional policy objectives, including climate change targets and economic growth. By displacing natural gas, currently used by the end users, approximately 13,002 tonnes of CO2e will be abated every year (99.3% reduction compared with natural gas).. Cromarty Hydrogen Project will also make the following vital contributions to the economy:

1. Whisky is the second largest carbon emitter in Scotland, after energy and fuel production. Scottish Government's 2045 Net Zero plan can only be met through decarbonisation enablers such as the Cromarty Hydrogen Project, this project will enable local distilleries to meet their decarbonisation objectives in a cost-effective way.

2. Will support just green energy transition and reduce the wider issue of young people moving elsewhere for employment.

3. Businesses under pressure to decarbonise are less likely to relocate elsewhere, when locally supplied with hydrogen. Alignment with national strategies utilising constrained onshore and offshore wind to deploy >1 GW of hydrogen production. Cromarty Hydrogen is confirmed as a Regional Hydrogen Energy Hub in the Scottish Government's Hydrogen Action Plan as a key part of its hydrogen capacity ambitions and also within the Scottish Government's Offshore Wind to Hydrogen Opportunity Assessment.

4. Community regeneration. By 2043, the Highland and Moray region is projected to lose >10% of working-age population, 21,200 people. The Highlands has Scotland's second highest level of fuel poverty. To support community renewal, the hydrogen economy brings new skills, building on existing strengths of the region and high-wage roles.

In summary, the Proposed Development has been designed to meet a specific market demand, contribute to the emerging hydrogen sector and do so with the least environmental impact possible.

The proposed development is not anticipated to result in any unacceptable environmental impacts and is considered to be in compliance with the Development Plan. The proposed development will have positive environmental and socio-economic impacts while gaining support from other material considerations, such as the Scottish Government's Hydrogen Policy Statement.



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1 INTRODUCTION

1.1 Introduction

- 1.1.1 ScottishPower Energy Retail Limited ('SPERL') (hereafter 'the Applicant') is leading a joint development with Storegga Hydrogen Limited ('Storegga') for the erection of a hydrogen production and storage facility (Class 5 General Industry), road haul tanker loading facility, underground electricity connection, import substation, improvements to existing access road, site offices, parking, gatehouse and perimeter fencing, temporary construction and laydown area, and ancillary development (hereafter the 'Proposed Development') at land to the east of the Beinn Tharsuinn Windfarm (NGR NH 64225 81469), for which planning permission is sought under Section 32 of the Town and Country Planning (Scotland) Act 1997 ('the Act'). The location of the Proposed Development is shown on **Figure 1** and the application boundary on **Figure 2**.
- 1.1.2 The intention is for the Proposed Development to be powered by 100% renewable power provided by ScottishPower Renewables from the co-located Beinn Tharsuinn Windfarm and through power purchase agreements with off-site renewable generation within ScottishPower Renewables UK portfolio.
- 1.1.3 SPERL and Storegga have appointed RSK to prepare this Supporting Statement to accompany the planning application. In addition to this Supporting Statement, the application documents comprise the following reports:
 - Environmental Appraisal Report (EAR);
 - It has been demonstrated within the EAR there will be no substantial adverse impacts as a result of the Proposed Development. Where necessary, mitigation measures and enhancements form an integral part of the proposals to ensure that the environment is suitably protected.
 - Planning Statement;
 - The Proposed Development would contribute to meeting Scotland and the UK's legally binding greenhouse gas (GHG) emissions reductions targets, contribute to the economy, and demonstrably promote Scotland's ambition to become a leading nation in hydrogen production and is in accordance with the Development Plan and relevant material considerations.
 - Pre-application Consultation (PAC) Report;
 - The consultation process itself was designed to ensure that the maximum number of local stakeholders know about the project, can find out all required information promptly, provide comments and receive an adequate response.
 - Design and Access Statement (DAS);
 - The siting, layout and design of the Proposed Development have been refined and finalised and have taken potential environmental effects into consideration in order to seek to mitigate by design predicted adverse effects as far as reasonably practicable. The resultant proposal balances the environmental and technical constraints, whilst producing an economically viable project overall.
 - Transport Statement.



- Consideration of the likely increase in traffic flows during the construction and operational periods of the hydrogen production facility shows that this development would have a negligible impact on the local road network. A number of traffic management measures are available to mitigate the impact of construction traffic during the 18-month construction period, which will be adequately secured through a Construction Traffic Management Plan.
- 1.1.4 The Supporting Statement presents an overview of the Proposed Development and its benefits. It outlines the need case for this development as recognised under national and regional strategies and justification for why Cromarty, and this site in particular, are suited to the Proposed Development. This Statement should be read in conjunction with the other application documents that consider the potential impacts of the Proposed Development, compliance with national and local energy and planning policy, the siting and design evolution process, and the pre-application consultation activities that were undertaken.

1.2 The Applicant

- 1.2.1 ScottishPower is part of Iberdrola, a world leader in clean energy with an installed capacity of over 28,000 Mega watts (MW) and the leading wind energy producer worldwide. Iberdrola is a global leader in tackling climate change, with a commitment to reaching carbon neutrality by 2050. As part of the energy transition to zero carbon, ScottishPower, of which SPERL is a part, is developing a network of hydrogen production facilities utilising renewable energy to create hydrogen for a range of industrial and transportation uses.
- 1.2.2 Storegga Hydrogen Limited is part of the Storegga Group. Storegga is an independent, UK-based decarbonisation development business. It develops early-stage carbon capture and storage and hydrogen projects in the UK and internationally to contribute to achieving Net Zero targets. The company employs approximately 80 people in the UK, US, and Singapore, with its head office in London.
- 1.2.3 Storegga is a private company backed by GIC, Mitsui & Co. Ltd., M&G Investments, Macquarie Group and Snam.

1.3 **Project background**

1.3.1 The Applicant first appointed RSK to undertake initial site feasibility studies in Autumn 2021, including desk based assessments and field investigation. The Applicant attended a pre-application consultation advice meeting with The Highland Council (THC) in June 2022 and subsequently submitted a Proposal of Application Notice (PoAN) in September 2022. Three public events were held within the local community in September and November 2022, including a presentation at a community council meeting. Throughout, the siting and design of the Proposed Development has evolved to take into consideration improved understanding of the environmental baseline and comments received through pre-application consultation with statutory consultees and the local community An EIA Screening Request was submitted under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, an EIA Screening Request was submitted in December 2022 and a negative EIA Screening Opinion was received in January 2023, confirming that a full EIA is not required. An indicative site layout (Figure



3) has been prepared and forms the basis of the planning application, including all appraisals of impacts and policy issues.

1.4 Terminology

Table 1.1 lists the key terminology used throughout the Supporting Statement.

Table 1.1: Terminology

Terminology	Definition / Explanation	
the Applicant	ScottishPower Energy Retail Limited	
Proposed Development	Used to refer to the proposed hydrogen production facility.	
the application site	refers to everything within the application red line boundary.	
site access	Comprises the existing junction with the B9176 Struie road, approximately 2 km to the east, and Beinn Tharsuinn Windfarm access track up to the main site area (Figure 4)	
main site area	The area where the hydrogen production facility will be sited (Figure 4)	
cable route corridor	The area comprising the existing access track plus a 10-15m buffer, running between the main site area and the existing Beinn Tharsuinn Wind Farm substation (Figure 4)	



2 PLANNING AND CONSENTING FRAMEWORK

2.1 Introduction

2.1.1 This section presents a high-level overview of the regulatory landscape for developing new hydrogen infrastructure in Scotland. There are three main regulatory regimes to consider: planning, pollution prevention and control permits, and health and safety. This application is for consent under the planning regime. Permits, licenses and consents under the other regimes will be sought separately.

2.2 Planning consent

- 2.2.1 Planning permission under the Act is required from the Highland Council to construct and operate the Proposed Development. The planning requirements are defined by a hierarchy of development:
 - National Development (developments which are described within the National Planning Framework (NPF));
 - Major Development (developments which are prescribed as major development within The Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009); and
 - Local Development (all other development, subject to the requirements of the Act, which does not fall within either the National or Major categories).
- 2.2.2 The Proposed Development is classed as a major development under The Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009. The Proposed Development is not directly specified but the best fit is considered to be:

Business & General Industry, Storage and Distribution (Construction of a building, structure or other erection for use for any of the following purposes –

- (a) as an office;
- (b) for research and development of products or processes;
- (c) for any industrial process; or
- (d) for use for storage or as a distribution centre)
- 2.2.3 As the area of the application site ('the site') would exceed 2 hectares (ha), including the access track and temporary construction areas it falls under the major development classification. This consenting route was agreed in consultation with THC.
- 2.2.4 As a major application the following additional requirements have been complied with:
 - PoAN to be submitted a minimum of 12 weeks prior to planning submission¹;
 - Pre-Application Consultation (PAC), with a PAC Report to be submitted as part of the planning application²; and

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¹ This can be viewed using the planning reference 22/04169/PAN on the Highland Council planning portal: <u>https://wam.highland.gov.uk/wam/applicationDetails.do?keyVal=RI7E4WIH0HZ00&activeTab=summary</u>

² A separate PAC Report has been provided as part of the application documents.



- Design and Access Statement (DAS) to be submitted as part of the planning application³.
- 2.2.5 The Proposed Development met the threshold for screening under the EIA Regulations. In this case, a screening opinion was sought from THC as the relevant planning authority, and THC made a determination that an EIA was not required. While EIA is not required, an Environmental Appraisal Report has been prepared to consider potential impacts the Proposed Development might have on the local environment. A separate statement has been prepared to detail transport considerations arising from traffic movements associated with construction and operation of the Proposed Development.
- 2.2.6 Sections 25 and 37(2) of the Act require applications for planning permission to be determined in accordance with the Development Plan unless material considerations indicate otherwise. The Planning Statement provided as part of the application outlines the relevant policy and legislation context and provides an appraisal of the Proposed Development against all material planning considerations.

2.3 **Pollution prevention and control permits**

- 2.3.1 The Pollution Prevention and Control permitting regime regulates a range of activities and processes that present relatively significant environmental effects and impacts. These activities and processes, including hydrogen production, are regulated by the Pollution Prevention and Control (Scotland) Regulations 2012.
- 2.3.2 These Regulations provide an integrated approach to permitting. This ensures that emissions to environmental media (including air, surface water, groundwater, sewer, land and emissions of noise and odour) together with resource efficiency (including raw materials, energy and sustainable approaches to waste management and environmental management) are considered together when determining the conditions to be included in the permit that regulates these operations.
- 2.3.3 Operators undertaking activities regulated by the Pollution Prevention and Control Regulations are required to have a permit to operate in advance of activities commencing, and these activities are required to be undertaken in accordance with the conditions included therein.
- 2.3.4 Similar considerations apply to certain activities associated with the water environment which are regulated by the Water Environment (Controlled Activities) (Scotland) Regulations 2011. Operators undertaking certain controlled activities in the water environment may require a licence under the 2011 Regulations.
- 2.3.5 Depending on the nature of the regulated activities undertaken, an operator will be required to submit the relevant permit or licence application to the Scottish Environment Protection Agency (SEPA). Thereafter, the regulator will determine the relevant application(s) as to whether to grant or refuse a permit under the Pollution Prevention and Control Regulations (the conditions included in the permit will also require compliance with best available techniques that form the basis for permitting of certain

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³ A separate DAS has been provided as part of the application documents.



Pollution and Prevention Control activities) and a licence under Controlled Activities Regulations for the activities described.

2.3.6 The relevant permissions will be applied for in due course.

2.4 Health and safety

- 2.4.1 The control of major accident hazards involving dangerous substances, to prevent major accidents and limit the consequences of such accidents, is primarily managed through the Control of Major Accident Hazards Regulations 2015 and The Town and Country Planning (Hazardous Substances) (Scotland) Regulations 2015.
- 2.4.2 The Town and Country Planning (Hazardous Substances) (Scotland) Regulations 2015 complement, but do not override or duplicate, the requirements of the Health and Safety at Work etc Act 1974. Even after all reasonably practicable measures have been taken to ensure compliance with the requirements of the Health and Safety at Work etc Act 1974, there can remain a residual risk of an accident which cannot entirely be eliminated. The hazardous substances consent controls (and related requirements regarding planning permission) ensure that this residual risk to persons in the surrounding area and to the environment is properly addressed. Under the hazardous substances consent controls the storage of hydrogen are to be stored to ensure the risks to humans and the environment are taken into account.
- 2.4.3 A hazardous substances consent application will be submitted, if required, separately to this planning application.
- 2.4.4 Hydrogen is a 'named substance' under the Control of Major Accident Hazard (COMAH) Regulations 2015. Storage of hydrogen is a COMAH activity if more than 5 tonnes of hydrogen are stored at any time. These Regulations deal with on-site safety measures, requirements for the preparation of on-site safety management systems and emergency plans and the inspection of sites. In Scotland the COMAH Regulations are enforced by a competent authority comprising the Health and Safety Executive (HSE) and the Scottish Environment Protection Agency acting jointly. The Proposed Development would require to be constructed and operated in accordance with the regulations. This includes a requirement to demonstrate an inherently safe design and to show that appropriate design safety principles have been adopted and embedded throughout the planning and design stages.
- 2.4.5 In addition, there is legislation covering the design and installation of hydrogen development, such as:
 - Equipment and Protective Systems intended for Use in Potentially Explosive Atmospheres Regulations 2016 applies to any equipment (electrical or non-electrical) or protective system designed, manufactured or sold for use in a potentially explosive atmosphere.
 - Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002
 provides the minimum requirements for improving the health and safety protection of workers potentially at risk from explosive atmospheres.
 - The Pressure Systems Safety Regulations 2000 This concerns actions for the prevention of injury arising from failure of a pressurised store of energy or component parts.
 - The Electromagnetic Compatibility Regulations 2016 Applies to commercially available equipment, or combinations of equipment made into a single unit,



intended for an end user and liable to generate electromagnetic disturbance, or the performance of which is liable to be affected by such disturbance.

- The Supply of Machinery (Safety) Regulations 2008 Applies to machinery, interchangeable equipment, safety components, lifting accessories, chains, ropes and webbing, removable mechanical transmission devices and partly completed machinery. This would not apply to the fuel cell installation itself, but may apply to associated equipment required for operating the installation, e.g. a hoist for lifting gas cylinders.
- 2.4.6 There is also legislation covering building regulations (The Building (Scotland) Regulations 2004) and fire regulations (Fire (Scotland) Act 2005) that will be adhered to.
- 2.4.7 The transportation of hydrogen in tube trailers would be compliant with the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009, which apply to the carriage of dangerous goods, including hydrogen, by road and rail and places general duties on everyone with a role in transporting the goods.



3 NEED FOR THE DEVELOPMENT

3.1 Introduction

3.1.1 This section outlines the need for this development as recognised under national and regional strategy documents and justification for why Cromarty, and this site in particular, are suited to the Proposed Development. A separate appraisal of the proposed development against relevant national and local energy and planning policy is included in the Planning Statement. A detailed account of the siting and design evolution process, culminating in the final solution that conforms with key design principles and the overarching design objective is provided in the DAS.

3.2 Positive contribution to international, national and regional objectives

Climate change targets

- 3.2.1 The Scottish and UK legislative and policy framework on climate change is shaped by international climate change legislation. These incorporate binding targets in the reduction of greenhouse gas emissions and in the generation of energy from renewable sources.
- 3.2.2 The COP21 United Nations Paris Agreement 2015 aimed to strengthen the global response to the threat of climate change by keeping the increase in global temperature to well below 2 °C above preindustrial levels and to pursue efforts to limit the temperature increase to 1.5 °C. In 2018 the Intergovernmental Panel on Climate Change (IPCC) published a special report that found pathways limiting global warming to 1.5 °C with no or limited overshoot would require rapid and far-reaching transitions in energy.
- 3.2.3 The COP26 Glasgow Pact 2021 stressed the urgency of enhancing ambition and action in relation to climate mitigation. It called upon parties to accelerate the development, deployment and dissemination of technologies, and the adoption of policies, to transition towards low-emission energy systems.
- 3.2.4 The Climate Change (Scotland) Act 2009 requires that "The Scottish Ministers must ensure that the net Scottish emissions account for the net-zero emissions target year is at least 100% lower than the baseline (the target is known as the "net-zero emissions target")." The target year is 2045 and the Act also sets out challenging interim targets. It requires that:

"The Scottish Ministers must ensure that the net Scottish emissions account for the year-

(a) 2020 is at least 48.5% lower than the baseline,

(b) 2030 is at least 75% lower than the baseline, and

(c) 2040 is at least 90% lower than the baseline."



- 3.2.5 It is important to note that these targets are minimum targets, they are not maximums or aspirations. The targets legally bind the Scottish Ministers and have largely been legislated to set the framework for Scotland's response to the Climate Emergency.
- 3.2.6 In recent years United Kingdom (UK) and Scottish Government policies have focused increasingly on concerns about climate change. Each tier of Government has developed targets, policies and actions to achieve targets to deal with the climate crisis. The need to switch to low-carbon energy supplies such as hydrogen fuel is recognised as a key pathway to decarbonising the energy system, particularly in industries that are hard to electrify, in several policy documents, such as:
 - British Energy Security Strategy (2022);
 - UK Government Powering Up Britain Energy Security Plan (2023);
 - The Scottish Government's 'Programme for Government' (2022);
 - The Draft Energy Strategy and Just Transition Plan (January 2023);
 - The Scottish Energy Strategy (2017);
 - Energy White Paper (2020);
 - The Sixth Carbon Budget: The UK's Path to Net Zero (2020);
 - UK Hydrogen Strategy (2021);
 - Update to the Climate Change Plan 2018-2032 (2020); and
 - Scottish Government's Response to Scotland's Climate Assembly: Recommendations for Action (2021).
- 3.2.7 A more detailed explanation of the numerous energy and climate change advisory reports and energy policies which are material considerations for this application is included within the Planning Statement.
- 3.2.8 The Sixth Carbon Budget: The UK's Path to Net Zero highlights the key role of planning in ensuring emissions reductions take place. Increased support for the role of the planning system in more radically reducing greenhouse gas emissions has also come across as a central theme in consultee responses to the Scottish Government's Call for Ideas on the next National Planning Framework, which resulted in National Planning Framework 4 (NPF4). NPF4 includes support in principle for developments related to low-carbon fuel. Detailed reference to the renewable energy policy framework is provided in the Planning Statement.
- 3.2.9 These points are reinforced in THC's Net Zero Strategy (5 October 2023), in which THC adopt the same climate emissions reduction target to become Net Zero by 2045 and also adopt targets of a 75% reduction by 2030 and a 90% reduction by 2040. The THC New Zero Strategy notes *"local authorities have a range of powers and responsibilities linked to planning and development, which will contribute to the transition to Net Zero and create a climate-ready Highland."*

Local energy systems

- 3.2.10 There is also policy support for the linking of local energy supply with local energy demand and creating regional hydrogen hubs where supply chain capacity and export potential can be maximised, which is outlined in the following documents:
 - Scottish Government's Local Energy Policy Statement 2021;
 - Scottish Government's Hydrogen Action Plan (2022); and
 - Highland Indicative Regional Spatial Strategy to 2050 (2020).



Economic growth

- 3.2.11 The growth of Net Zero industries such as hydrogen production also has the potential for substantial socio-economic benefits for local and national economies. This is recognised in the following policy documents:
 - THC Net Zero Strategy (2023);
 - Caithness and Sutherland Local Development Plan (CaSPlan) (2018);
 - Scottish Government's Hydrogen Policy Statement (2020);
 - UK Government's Build Back Better: our plan for growth (2021);
 - Scottish Energy Strategy Position Statement (SESPS) (2021); and
 - Highland's Hydrogen Economy & Update on Opportunity Cromarty Firth's Greenport Bid (2021).
- 3.2.12 Policy 11 of NPF4 requires socio-economic benefits to be maximised (although this policy relates to renewable energy generation it is considered a relevant consideration for the Proposed Development), rather than just taken into account. Policy 67 of the Highland-wide Local Development Plan also states the Council will consider "any positive or negative effects [the proposed development] is likely to have on the local and national economy".

Summary

3.2.13 As detailed further in the sections below, the Proposed Development relates to the production of hydrogen fuel from renewable energy sources to help decarbonise local industry and comes as a direct response to national planning and energy policy objectives. The proposed development would make a contribution to the attainment of policy objectives at international, national and regional levels.

3.3 Cromarty hydrogen project solution

- 3.3.1 Hydrogen presents a significant growth opportunity across all regions of the UK, supporting decarbonisation and improving energy security, while system balancing renewable power generation. It is also considered likely to contribute notably to the decarbonisation of energy intensive industries considered the most difficult to decarbonise. The Scottish Government has set out an ambition to produce 5GW of clean hydrogen in Scotland by 2030 and at least 25 Giga Watts (GW) by 2040 as part of the nation's desire to reach Net Zero greenhouse gas emissions by 2045.
- 3.3.2 Allied to this, Scotland has over 13 GW of renewable energy generation installed, with plans for a stretch target of an additional 12 GW of onshore wind by 2030 and ScotWind Round 1 and INTOG targeting an additional 35 GW of offshore wind by 2035. In principle, Scotland's annual electricity consumption matches annual renewable energy production,



and so it is clear that additional installed capacity up to and beyond 2030 will be a significant enabler in terms of deployment of hydrogen production.

Project overview

- 3.3.3 The Proposed Development has a predicted capacity for supply up to 6,480 kg of hydrogen per day.
- 3.3.4 This Proposed Development would form part of the North of Scotland Hydrogen Programme recognised in the Scottish Government's Hydrogen Action Plan. The North of Scotland Hydrogen Programme is a strategic programme in line with the Scottish Government's (and THC's) resolve to achieve Net Zero GHG emissions by 2045 and the UK Government ambition by 2050. The programme is aimed at developing hydrogen production hubs across the North of Scotland to supply hydrogen, initially to meet industrial and heavy goods vehicle (HGV) transport demand in the near term and then expand to cater to additional hydrogen demands in the future.
- 3.3.5 The Cromarty Hydrogen Project is the first project in the Programme and originated from a collaboration between the Port of Cromarty Firth, ScottishPower, Glenmorangie, Whyte & Mackay and Diageo and the project originator, Storegga, during the feasibility stage. This project is looking to develop a hydrogen production hub in the Cromarty Firth region and revolves around the local distilleries forming the baseload demand for early phases of the project, which would enable them to decarbonise in line with their own ambitions and sector targets.



Figure 3.1: North of Scotland Hydrogen Programme Masterplan infographic

Why green hydrogen?

3.3.6 Green hydrogen gets its name because the process to create the hydrogen is powered by green sources like solar or wind power. These renewable sources power an



electrolyser which separates water into hydrogen and oxygen gases and then the hydrogen can be used, distributed or stored.

- 3.3.7 The development partners are committed to helping the UK decarbonise and reach its Net Zero targets. While electrification offers the majority of the solution, there are still some parts of the economy that are hard to electrify, and that's where green hydrogen comes in. Green hydrogen is incredibly versatile and can be used to support a variety of industries such as steel works, distilleries, heavy-duty transport and businesses using high temperature processes.
- 3.3.8 To reach the climate change targets, it is necessary to start developing and delivering green hydrogen now to the places where electrification cannot reach.



Figure 3.2: Green hydrogen production process

Why Cromarty Regional Energy Hub?

- 3.3.9 Enabling hydrogen production is only part of the challenge. The other key challenge, and key economic driver is the demand for hydrogen from the market. With respect to the Proposed Development, Inverness and Cromarty Firth, in 2023, won its bid to become one of Scotland's first green freeports. A new initiative aimed at creating designated areas in ports that will promote sustainable economic growth, create new jobs, and support the transition to a low-carbon economy. These freeports will operate within a set of guidelines and incentives that are designed to encourage renewable energy projects, including green hydrogen production. The Inverness and Cromarty Firth bid was supported by distillers Diageo, Glenmorangie and Whyte & Mackay, who also form part of the Opportunity Cromarty Firth Partnership, as part of the plans to fuel-switch local distilleries to hydrogen.
- 3.3.10 The development partners undertook a Cromarty Hydrogen Project Feasibility Study in conjunction with the Opportunity Cromarty Firth Partnership. Cromarty Hydrogen seeks to deliver a green hydrogen hub in the Cromarty Firth Area for circa 200 MW (38,000 tonnes) per year of hydrogen demand from industrial and transport applications. Across Scotland, over 500 GWh (15,010 tonnes) per year of potential hydrogen demand has been identified for industrial use according to a report published by Element Energy on behalf of Scottish Enterprise (2023). The Cromarty Hydrogen Project is being developed with support from the Scottish Government. The Proposed Development is the cornerstone of the Cromarty Regional Energy Hub. The Hydrogen Action Plan's approach to defining Regional Hydrogen Energy Hubs suggests that regional co-location of projects is initially needed (i.e. where hydrogen production and usage are situated in close proximity). The Regional Energy Hub in the Cromarty Firth Area is advantageous for multiple reasons. Production can be coupled with multiple end-uses and it is in an area



where the grid network cannot absorb all wind generation. Proposed works to improve grid capacity are not likely to be completed in time to meet the Scottish Governments Climate Change and hydrogen production 2030 targets.

Why distilleries and transport?

- In the context of the focus on co-located projects, Cromarty Hydrogen identified several 3.3.11 distilling sites in the region suitable for the offtake of hydrogen. The Hydrogen for Scottish Distilleries report for Scottish Enterprise (Ricardo, 2023) outlines the need for the Proposed Development in order to help local distilleries decarbonise. The Scotch Whisky Association (SWA) has committed to reaching Net Zero emissions from its operations by 2040. Green hydrogen is one potential solution for industrial decarbonisation, particularly in processes that require high temperatures and are difficult and costly to electrify. Distilleries form a significant portion of Scotland's industry and face many challenges to decarbonise. Heating is responsible for the majority of a distillery's energy demand and carbon emissions. To achieve Net Zero targets, a combination of energy efficiency measures and switching to sustainable fuels is required. The 'Scotch Whisky Pathway to Net Zero' report produced by Ricardo for the SWA in 2020 modelled seven scenarios to explore the Net Zero gap and identify viable pathways to 2045. Three of the seven modelled pathways included the use of hydrogen. Moreover, these same pathways were the only ones of the seven that presented a route to achieving Net Zero, thus exemplifying the pivotal role hydrogen will play in the decarbonisation of the distilling industry. Ricardo's summarised "Balanced Pathway" to Net Zero envisages a circa 20% decarbonisation contribution from hydrogen.
- 3.3.12 Significant interest has already been shown by Scottish distilleries to adopt hydrogen, particularly those involved in the Cromarty Hydrogen Project, where decarbonisation of distillery processes through electrification is limited in the short term due to the limitations of the existing grid capacity (see Section 3.5 below for more detail regarding the requirement for decentralised production in this area). As stated in the recent study conducted by Element Energy on behalf of Scottish Enterprise titled "Hydrogen Demand in Scotland Industrial Applications", after fossil fuel refining and the chemical/pharmaceutical sector, distilleries were identified as the third largest potential demand source for hydrogen in industry. A 'hierarchy of use cases' for hydrogen is contained within the Scottish Hydrogen Action Plan, where distilleries rank in the second highest category.
- 3.3.13 The Scottish Government has identified supporting low-carbon transport options as a means to achieving their ambitious climate change targets. Hydrogen has a role to play in decarbonising parts of the transport sector, particularly where electrification cannot serve operational requirements. Ricardo completed a Hydrogen Demand in Scotland Study for Scottish Enterprise (2023) that reviewed the potential use cases for hydrogen in transport and the potential demand of hydrogen. The potential demand of hydrogen in the transport sector for this report was informed by the Transport Scotland study entitled "Zero Emission for Transport Report: National Demand Forecasts for Electricity and Hydrogen". It was found that for a medium hydrogen uptake the total demand was estimated at 12.5 Terra Watts (TW) hours/year by 2045. This figure is equivalent to around 2.3 GW of electrolyser capacity, so while domestic transport cannot be expected to fulfil demand for the 45 GW of installed hydrogen fuel capacity envisioned the Scottish



Government's Hydrogen Action Plan, transport will be a key enabler in the short-term and an important customer in the long term.

Why decentralised production?

- The Proposed Development is considered decentralised production, which means 3.3.14 production of green hydrogen that is co-located to the generation of renewable energy as the source for electrolysis. Utilising power from Beinn Tharsuinn Wind Farm in the first instance will provide an initial low cost source of energy (sourcing electricity is typically the largest component of hydrogen production costs), which will be supplemented by green energy supplied through the existing grid connection as required, to feed hydrogen production. De-centralised production creates opportunities for hydrogen production at a dispersed and relatively small scale to support local decarbonisation and/or to take advantage of specific instances where there are high levels of renewable energy that cannot be exported to the grid due to constraint. It can be an early action and enabler in developing capacity, knowledge and confidence in Scotland's hydrogen economy by providing 'scale-up' projects that demonstrate deliverability and utility of hydrogen. In fact, RenewablesUK (2023) report 'Surveying the UK's Green Hydrogen Supply Chain Capability' stated that in order to create a strong hydrogen market, the UK must build reference plants to demonstrate the feasibility of hydrogen production
- 3.3.15 A De-centralised Green Hydrogen Production Site Identification and Opportunities Study was conducted for Scottish Enterprise, South of Scotland Enterprise & Highlands & Islands Enterprise, which conducted an analysis of constrained renewable energy generation locations to create a 'shortlist' of sites that could be suitable for decentralised hydrogen production. A cluster, where there are groupings of shortlisted sites and/or where there is known grid constraint (as indicated by SPEN / SSEN Heat Maps) have been defined, was identified in Cromarty and Ross-Shire.

Why the Proposed Development?

3.3.16 The siting, layout and design of the Proposed Development have been refined and finalised and have taken potential environmental effects into consideration in order to seek to mitigate by design predicted adverse effects as far as reasonably practicable. The resultant proposal balances the environmental and technical constraints, whilst producing an economically viable project overall. As a result of the iterative design process, development has been located where effects have been minimised as far as possible and are considered justifiable when considered in the context of its benefits. A detailed account of the site selection and design evolution process is provided in the DAS.

3.4 Summary

3.4.1 In summary, the Proposed Development would make a valuable and near-term contribution to help Scotland and the UK attain Net Zero, security of supply and related socio-economic objectives. The existing renewable energy capacity creates an excellent opportunity for 'green' hydrogen production in a decentralised location. Decentralised production offers strong synergies and 'win-win' potential to address overlapping challenges around maximising Scotland's renewable energy potential and reducing possible curtailment that might arise due to electricity grid network constraints, creating new revenue and diversification opportunities for renewables operators, and accelerating the decarbonisation of energy intensive activities and sectors. Furthermore, the use cases show there is a strong market for hydrogen integration and local offtake sources identified complement decentralised production in this location. The Cromarty Firth Area is already actively promoting hydrogen production through the Cromarty Hydrogen



Project and the Inverness and Cromarty Firth Green Freeport. There are several opportunities for growing Scotland's hydrogen market domestically and internationally in the long-term given the major port infrastructure within the Green Freeport; however, decentralised production utilising curtailed renewable energy can act as an enabler to support future scale up of production within this 'cluster' area. It is considered that the Proposed Development is in a location where core site requirements around land, power and water can be fulfilled and where it can utilise potentially constrained renewable energy.



4 BENEFITS OF THE PROPOSED DEVELOPMENT

4.1 Introduction

4.1.1 As outlined in Section 3, the Proposed Development would help achieve international, national and regional policy objectives, including climate change targets and economic growth. This section details the predicted contribution of the Proposed Development towards the climate change targets and its contribution to the attainment of economic development objectives at local and national levels.

Biodiversity Enhancement

- 4.1.2 Production of a Biodiversity Enhancement Plan (BEP) will be a condition of any approval for the Proposed Development. The BEP will be written in consultation with NatureScot, the Highland Council (THC) and any relevant stakeholders, as required by THC. The BEP will aim to enhance local biodiversity, increase habitat resilience within the wider landscape, and improve connections between nature networks, in line with NPF4. The BEP will be developed post-consent, delivering biodiversity enhancement required by NPF4 (Scottish Government, 2023), and contributing towards the objectives set out within the Scottish Biodiversity Strategy to 2045: Tackling the Nature Emergency in Scotland (Scottish Government, 2023).
- 4.1.3 Furthermore, management prescriptions which will be detailed in the BEP will contribute towards actions, commitments and priority species included within the Highland Nature Biodiversity Action Plan 2021-2026 (HNBAP) (The Highland Environment Forum, 2021), and will be set in accordance with guidance on priority peatland habitats in development management (NatureScot, June 2023).
- 4.1.4 A steering group and review committee (SGRC) would be established prior to the finalisation of the BEP to oversee the implementation of the BEP, monitoring results and recommendations for any amendments to the BEP.
- 4.1.5 It is anticipated the BEP will include a combination of the following measures, with exact prescriptions to be confirmed when the detailed design has been completed:
 - Enhancement of bog habitats;
 - Enhancement of heath habitats; and
 - Native riparian tree planting.
- 4.1.6 The measures detailed in the BEP will ensure a holistic approach to habitat enhancement to complement those enhancement measures being adopted for the adjacent operational Beinn Tharsuinn wind farm and comprise targeting the same ecologically important habitat types (bog and heath), as well as increasing the extent of native tree planting, whilst taking into account the safeguarding of peatland habitats.
- 4.1.7 It is considered that the outline enhancement measures provided as part of the Proposed Development, based on surveys and assessment of the wider area in the vicinity of the application site, demonstrate that biodiversity net gain is feasible. Further details of the



proposed biodiversity enhancement measures are included in Chapter 3: Ecology of the EAR.

Climate change

- 4.1.8 No works are envisaged, once the Proposed Development is operational, which would result in significant release of GHGs. The Climate Change (Scotland) Act 2009, sets ambitious targets for the reduction of GHG emissions in-line with the objectives of the Paris Agreement. The opportunity to provide green energy technology as part of the Proposed Development provides both direct and indirect benefits which can contribute to the Scottish Government's aims towards decarbonisation by 2045 and can positively contribute to the national agenda on climate change.
- 4.1.9 A carbon balance assessment, based on the UK Low Carbon Standard criteria has been conducted to estimate the potential contribution from the Proposed Development towards the Scottish Government's climate change targets. GHG emissions have been quantified in terms of carbon dioxide (CO_2) equivalence, or CO_2e , where equivalence means having the same warming effect ('global warming potential', or GWP) as CO₂, typically measured over 100 years.
- The CO₂e intensity has been calculated using the Hydrogen emissions calculator located 4.1.10 on the gov.uk website⁴. The calculations have assumed that any grid electricity needed for the operation of the project is covered by contractual Power Purchase Agreements (PPAs) with Renewable Energy Guarantees of Origin, and thus have no GHG emissions associated directly with the consumption of this electricity. This is consistent with the approach to operation of the Proposed Development outlined in the application documents.
- 4.1.11 The emissions from the operation of the Proposed Development are estimated at 0.390 gCO₂e/MJ_{LHV}H₂. Any project with emissions lower than 20 gCO₂e/MJ_{LHV}H₂ is classed as low-carbon projects, as determined by the UK Low Carbon Hydrogen Standard (2023). This compares to a carbon intensity of 56.63 gCO₂e/MJ_{LHV}H₂ (from UK Government emissions factors) for the natural gas currently used by potential offtakers.
- 4.1.12 By displacing this natural gas, approximately 13,002 tonnes of CO₂e will be abated every year (99.3% reduction compared with natural gas).
- The assumptions and data sources used as part of the carbon balance assessment are 4.1.13 included in Appendix 1.

Socio-economic

Introduction

The Proposed Development would provide direct, indirect and induced socio-economic 4.1.14 benefits through opportunities for the involvement of suppliers from the Highlands and Islands, and wider Scotland. The range of activities that suppliers can be involved in

ScottishPower Energy Retail Limited and Storegga Hydrogen Limited Cromarty Hydrogen Project: Supporting Statement

⁴ <u>https://www.gov.uk/government/publications/uk-low-carbon-hydrogen-standard-emissions-reporting-and-</u> sustainability-criteria? ga=2.260098895.392353141.1652428459-1269331730.1650876467



include; research and development, design, project management, civil engineering, component fabrication and/or manufacture, installation and maintenance.

Potential benefits

- 4.1.15 The economic benefits that are attributable to the Proposed Development are divided into three components:
 - direct: the employment and other economic outputs that are directly attributable to the delivery of the proposed Development. These include any new jobs that are created to manage and supervise the construction and operational phases of the proposed Development and that are filled by employees of the Applicant or the appointed Contractor (or subcontracted employees);
 - indirect: the employment created in other companies and organisations that provide services/materials to businesses and organisations directly involved in the construction, operation and decommissioning of the Proposed Development (i.e. procurement and supply chain effects); and
 - **induced:** additional jobs and other economic outputs created in the wider economy as a result of the spending of employee incomes on locally produced goods and services (i.e., personal vehicle maintenance, food and drink etc.) and other derived multiplier effects occurring from direct and indirect effects of the proposed development.

Policy context

- 4.1.16 A key contextual consideration is with the increasing number of hydrogen development schemes coming forward and with the national and local policy support outlined above, the commercial viability and job prospects amongst Scottish supply chain firms will improve. Cluster benefits in the industry increase where firms are supported by the spending of other firms within the renewables sector. The net effect is to increase business and employment opportunities within Scotland's renewable energy sector, boosting the performance of local, regional and national economies.
- 4.1.17 In its report Surveying the UK's Green Hydrogen Supply Chain Capability, RenewablesUK identified the potential for economic growth if the UK were to become a leader in the global hydrogen market and made several recommendations for how this potential could be realised. In the short term, the green hydrogen economy will create new jobs, with the potential for up to 7,100 full time jobs by 2029 (excluding exports) across the UK if its 2030 hydrogen capacity requirement it to be met. The Scottish Government has projected that if Scotland becomes an exporter of green energy to Europe this could result in requirement for areen hydrogen production of 126 TWh. a £25bn contribution to GVA and over 300,000 jobs by 2045. This underscores the importance of developing green hydrogen projects and supply chains locally to ensure these jobs are not lost overseas. The report identified plugging the skills gap as a key recommendation to unlocking the supply chain and points to initiatives such as the North Sea Transition Deal and focusing on regional hydrogen hubs as centres for strategic skills development that could help to plug the skills gap. Green hydrogen not only offers economic growth but through this focusing on developing the supply chain it also fosters the potential for human capital development, including specialised skills and high paying jobs. Moreover it creates advancement opportunities for future generations.
- 4.1.18 There is also socio-economic policy and advisory report support for developments of this type:
 - National

ScottishPower Energy Retail Limited and Storegga Hydrogen Limited Cromarty Hydrogen Project: Supporting Statement 663356



- o Scotland's National Strategy for Economic Transformation 2022;
- Climate Change Plan Update (2020);
- Scottish Government's Towards a Robust, Resilient Wellbeing Economy for Scotland: Report of the Advisory Group on Economic Recovery (2020); and
- Draft Energy Strategy and Just Transition Plan (2023).
- Local
 - THC Net Zero Strategy (2023);
 - Action Plan for Economic Development in Highlands (2012); and
 - Highland and Islands 2019 2022 Strategy.
- 4.1.19 Detail of these policy documents are provided in the Planning Statement. In general, the policy position shows support for a green just transition to meet the Net Zero targets and help the recovery from the COVID-19 pandemic, which will support skills development and create better jobs locally.

Assumptions

4.1.20 The number and quality of jobs, based on returns from the vendors for the Engineering Procurement and Construction and Original Equipment Manufacturer roles for the Cromarty Hydrogen Project and project partner experience from other schemes, are summarised below. Salary estimates are informed by the returns and market research; most roles are NVQL4/5, fixed-term contracts, and are expected to bring wage premiums. Insight shared by Iberdrola, ScottishPower's parent company, from established hydrogen projects in Spain, has supported the robustness of estimates; one provides hydrogen to fuel Barcelona's bus fleet, another provides green ammonia for a fertiliser plant in Puertollano. The latter, which initially has 20MW production, is estimated to generate 700 local jobs with a €150m investment. Iberdrola is developing several further hydrogen projects in Spain, providing additional references for the benefits assessment. A project developing Zaragoza's first green hydrogen production plant (Hydrogen Business Model and Net Zero Hydrogen Fund: 2022 Electrolytic Allocation Round 2) requires investment of €36 million in a 10MW electrolyser and could create up to 1,800 jobs during the construction and operational phases, e.g. through service provision, materials and equipment from regional companies.

Jobs – Direct

4.1.21 At the peak of construction, the project is estimated to create 57 direct jobs and 30 indirect jobs. In the operational phase, the plant will be operational 24 hours/day and 7 days/week, with regular deliveries from the site; this equates to 29 Full Time Equivalent (FTE) jobs through 5 shifts of 5 crew, and 10 Heavy Goods Vehicle (HGV) drivers on shift patterns. The first of the operational roles are expected to begin in 2025, allowing time for familiarisation and preparation for Commercial Operation Date. Alongside these there will be administrative posts (operations managers and administrators) at the site. These are based on experience of operating comparable facilities in Spain.

Jobs - Indirect and induced

4.1.22 Indirect jobs will be created in supplying capital equipment for the project during construction but also during operations (such as replacement stacks). These jobs, UK based, are expected to be predominately manufacturing equipment for the Hydrogen Production Facility. Jobs will also be created in the provision of inputs to the process (water, electricity) and services (engineering services for maintenance, repair, and



operations of site equipment and the truck fleet). Roles will also be created downstream in hydrogen technology such as industrial burners and heavy-duty vehicle technologies. Induced additional jobs and economic value would be created through subsequent rounds of direct expenditure in the economy.

Wider benefits

Equality, Diversity and Inclusivity (EDI)

4.1.23 Storegga and ScottishPower apply their EDI approach internally and to projects. Storegga's EDI statistics, include females at 45% of workforce and 25% of Executive Committee. ScottishPower's workforce is 31.2% female, with 33% of Senior Management roles occupied by women. Storegga and ScottishPower seek equivalent behaviours in other parties through influence. Cromarty Hydrogen will support EDI within the Operations and Transporter Teams' recruitment.

Non-domestic rates

4.1.24 The Proposed Development would be liable for non-domestic rates, the payment of which would contribute directly to public sector finances. These non-domestic rates, by providing an additional revenue stream, would support the delivery of local authority services across the Highlands.

Diversification of the local economy

4.1.25 There would be opportunities for those employed during the construction phase to develop skills that would be of benefit to the local economy and local businesses in the longer term. Further, employment generated through the proposed development would contribute to diversifying the local economy and help support the retention in the area of the working age population.

Maximising local content

4.1.26 The applicant is committed to employing good practice measures with regard to maximising local procurement and would adopt established good practice measures. The applicant as part of the ScottishPower Group has a strong track record in the Highlands and would take that experience and local knowledge to promote that expenditure in local goods and services is widely spread and makes a difference to existing businesses. The applicant works with a variety of Tier 1 / Tier 2 contractors who are actively encouraged to develop local supply chains throughout the local area, and work with subcontractors to invest in training and skills development. Additionally, the applicant will consider different methods of engaging with local companies to brief them on the types of contracts being let during the lifetime of the Proposed Development. This would be based on the experience of the applicant's development, construction and operational teams, as well as the Principal Contractors. One method that would be considered is 'Meet the Developer / Contractor Days', which typically involve local companies (especially Small and Medium Enterprises (SMEs)) attending a locally-held event, to meet with representatives of the Applicant and Principal Contractors.

Reversing population decline

4.1.27 The new opportunities generated would help reverse the trend of young people leaving the Highlands region for economic opportunities elsewhere. Longer-term, as the Cromarty region's fossil fuel industry is phased out in favour of the green economy, creating these jobs will ensure a just transition for the Highlands. This is why the creation,



displacement (to the region) and safeguarding, of jobs in Cromarty has a multiplying impact. The counterfactual to investment will see an economic decline driven by depopulation, jeopardising existing local businesses.

Summary - Hydrogen SuperPlace

4.1.28 Cromarty Hydrogen Project's vital contributions to the economy include:

1. Whisky is the second largest carbon emitter in Scotland, after energy and fuel production. Scottish Government's 2045 Net Zero legally binding targets can only be met through decarbonisation enablers such as the Cromarty Hydrogen Project, this project will enable local distilleries to meet their decarbonisation objectives in a cost-effective way.

2. Will support just green energy transition and reduce the wider issue of young people moving elsewhere for employment.

3. Businesses under pressure to decarbonise are less likely to relocate elsewhere, when locally supplied with hydrogen. Alignment with national strategies utilising constrained onshore and offshore wind to deploy >1 GW of hydrogen production. Cromarty Hydrogen is confirmed as a Regional Hydrogen Energy Hub in the Scottish Government's Hydrogen Action Plan as a key part of its hydrogen capacity ambitions and also within the Scottish Government's Offshore Wind to Hydrogen Opportunity Assessment.

4. Community regeneration. By 2043, the Highland and Moray region is projected to lose >10% of working-age population, 21,200 people. The Highlands has Scotland's second highest level of fuel poverty. To support community renewal, the hydrogen economy brings new skills, building on existing strengths of the region and high-wage roles.



5 OVERALL CONCLUSION

- 5.1.1 The Proposed Development has been designed to meet a specific market demand, contribute to the emerging hydrogen sector and do so with the least environmental impact possible.
- 5.1.2 The proposed development is not anticipated to result in any unacceptable environmental impacts and is considered to be in compliance with the Development Plan. The proposed development will have positive environmental and socio-economic impacts while gaining support from other material considerations, such as the Scottish Government's Hydrogen Policy Statement.



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APPENDIX 1: GREENHOUSE GAS EMISSIONS CALCULATIONS

Input values and assumptions

120 Assuming 120 MJ/kg hydrogen 0.390419471 gCO2e/MJLHVH2 for Cromarty project 56.63 gCO2e/MJLHV natural gas emissions 1926.543 Tonnes H produced per year

Calculations

Source

https://www.energy.gov/eere/fuelcells/hydrogen-storage#:~:text=On%20a%20mass%20basis%2C%20hydrogen,44%20MJ%2Fkg%20for%20gasoline. BEIS spreadsheet calculator

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1151288/uk-low-carbon-hydrogen-standard-v2-guidance.pdf BEIS spreadsheet calculator

	Cromarty	Natural gas			
MJ per year	Emissions per year (tCO2e)		Savings (tCO2e)	% saving	% reduction
231,185,160	90	13,092	13,002	0.7%	99.3%



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