Appendix D – GPF Project Background Information

Name of Project	**Green Hydrogen Generation Facility** Thanet Way, Herne Bay (land to the west of Herne Bay Household Waste Recycling Centre) Kent County Council
Growing Places Fund allocation	£3,470,000
Description of what Project delivers	The project involves the construction of the UK's largest zero carbon hydrogen production system. This will be situated in Herne Bay, Kent and will be powered by way of a direct connection to the on-land substation for the existing Vattenfall offshore wind farms. The GPF funding will be used to purchase equipment for hydrogen production facility (electrolysers and compressors), specialised tube trailers for storage and distribution of hydrogen and hydrogen refuelling systems which are installed within the SELEP region. The project will demonstrate the economic and practical viability of generating hydrogen from wind energy to produce hydrogen on a bulk scale to be used in zero emission mobility solutions. The hydrogen generated will be distributed to fuel fleets of hydrogen buses in the South East of England. It is anticipated that the hydrogen supply will eventually expand to serve fleets of trucks, taxis and trains. The provision of the GPF funding will help accelerate the pace of development and will allow construction of a larger system which will be able to support the expected increased level of hydrogen demand in future years.
Need for intervention	The scheme promoter has sufficient funding to develop a hydrogen production and dedicated distribution system. However, the GPF funding has been sought to accelerate the pace of development. Without the GPF funding: • the hydrogen production system installed will be at the scale required to meet only the initial small customer demand for hydrogen. This leads to poor economics and a risk of a system stuck without capacity for expansion. With GPF support, a larger system can be installed which will enable a full demonstration of the renewable hydrogen principles on an economically viable basis and will allow for

	expansion to meet early large-scale markets for hydrogen in the UK. • the ability to support future projects at scale will be constrained. This will impact timescales for producing hydrogen at a cost which is competitive with conventional fossil-based fuel or other “brown” methods for hydrogen generation, as well as the strategy for reaching these levels of production on an economic basis. • the scheme promoter will need to consider alternative options for siting the new hydrogen generation facility.
Project benefits	The project will demonstrate a valid pathway to 100% renewable hydrogen at an affordable price. It will also illustrate how hydrogen can offer a secure market for the output from a wind farm, which in turn can be used to help to stimulate renewable energy deployment and in so doing help the SELEP region meet its renewable energy and carbon reduction commitments. In addition, the project will lead to zero local pollutant emissions from the buses powered by the hydrogen fuel generated. The project will create multiple jobs – both directly and indirectly. Once the hydrogen generation plant is operational, it is expected that 2 managerial positions and 2 admin staff positions will be created for the daily upkeep and operations of onsite activities. Furthermore, as the demand for hydrogen increases, 1 transport manager and up to 8 truck drivers will be employed. An additional 3 sales personnel will be employed on a full-time basis to attend to customer enquiries and for maintenance of stakeholder relationships. Therefore, a total of 16 direct jobs will be created in the short term, following the commissioning of the facility and the scale up to full capacity. Demand growth for hydrogen fuel and zero emission transport modes will provide a huge impetus to businesses involved in the supply chain. This will lead to the creation of a large number of jobs in deployment and support of wind turbines, solar panels, electrolysers, hydrogen refuelling systems, hydrogen fuel cell buses, fuel cell stacks, hydrogen storage tanks and hydrogen trailers. Similarly, engineering, research and business oriented roles will emerge to support innovation in what is anticipated to be a crucial technology for displacing fossil fuels in transport, heat and power generation and wider industrial applications. The project also stimulates new opportunities for learning. This will involve establishing relationships with local universities in order to study and look to optimise the wind hydrogen production process.

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<tr><td>Financial Information</td><td>The capital cost of the project will be met through the following funding sources:

<table><tr><td>Funding sources</td><td>Funding security</td></tr><tr><td>GPF</td><td>Subject to Board decision</td></tr><tr><td>Sponsor Equity and other investment partners</td><td>Ryse Hydrogen Limited – written confirmation of funding commitment provided
Other co-investors have demonstrated interest in participating after initial development and production milestones successfully met</td></tr><tr><td>Asset Finance</td><td>Discussions ongoing – investment is likely to be forthcoming post commissioning and stabilisation of operating performance.</td></tr></table></td></tr>
<tr><td>GPF spend profile</td><td>The full GPF funding allocation will be spent in 2020/21.</td></tr>
<tr><td>Project Timeline</td><td><table><tr><td>Milestone</td><td>Indicative date</td></tr><tr><td>Planning consent secured</td><td>June 2020</td></tr><tr><td>Design finalisation</td><td>September 2019 to May 2020</td></tr><tr><td>Procurement of contractors</td><td>January 2020 to July 2020</td></tr><tr><td>Construction works</td><td>March 2020 to May 2021</td></tr><tr><td>Start of commercial operations</td><td>May 2021</td></tr></table></td></tr>
<tr><td>Repayment schedule</td><td><table><tr><td>2024/25</td><td>2025/26</td><td>Total</td></tr><tr><td>£350,000</td><td>£3,120,000</td><td>£3,470,000</td></tr></table></td></tr>
<tr><td>Outcome of ITE Review</td><td>The project has been assessed as offering high value for money with high certainty of achieving this.

The Business Case analysis provides a proportionate assessment of the scheme costs and benefits and results in a benefit cost ratio of 11.7:1 which represents “very high” value for money. The analysis was robustly carried out on the basis of carbon dioxide reduction impacts, drawing on Green Book guidelines, air quality impacts in line with Green Book and DEFRA guidelines and land value uplift in line with MHCLG Appraisal Guidance.

Reasonable and robust assumptions have been used to populate the scheme appraisal and therefore the scheme delivers high levels of certainty for this value for money categorisation.</td></tr>
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<tr><td>Evidenced compliance with Assurance Framework?</td><td>Yes, the project does meet the requirements of the SELEP Assurance Framework.

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<tr><td>Requirements of the Assurance Framework</td><td>Compliance</td></tr>
<tr><td>A clear rationale for the interventions linked with the strategic objectives identified in the Strategic Economic Plan</td><td>The Business Case identifies the current problems and why the scheme is needed now.
The project objectives align with both national and regional policy, including the SELEP Economic Strategy Statement</td></tr>
<tr><td>Clearly defined outputs and anticipated outcomes, with clear additionality, ensuring that factors such as displacement and deadweight have been taken into account</td><td>The expected project outputs and outcomes are set out in the Business Case and are considered in the Economic Case.
Appropriate assumptions have been made and incorporated into the economic assessment.</td></tr>
<tr><td>Considers deliverability and risks appropriately along with appropriate mitigating action</td><td>A comprehensive risk register has been developed which provides an itemised mitigation.</td></tr>
<tr><td>A Benefit Cost Ratio of at least 2:1 or comply with one of the two Value for Money exemptions</td><td>A BCR of 11.7:1 has been calculated which indicates high value for money.</td></tr>
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<tr><td>Link to Project page on the website and link to prioritisation decision by Strategic Board</td><td>Project page: https://www.southeastlep.com/project/green-hydrogen-generation-facility/

Project Business Case: https://www.southeastlep.com/app/uploads/2019/09/Green-Hydrogen-Generation-GPF.pdf

Prioritisation decision by Strategic Board: https://www.southeastlep.com/meetings/strategic-board-12th-june-2020</td></tr>
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