

### Introduction

The Green Investment Ratings ('GIR') Team of Green Investment Group Limited ('GIG') has prepared this Green Impact Report (the 'Report') in connection with the Länsterhöjden & Storflötten Wind Farm (the 'Project'). GIG has forecast the Project's avoided: greenhouse gas ('GHG'); emissions to air; and fossil fuels consumption (together, the 'Green Impact') of the Project and is pleased to set out its assessments in this Report. This Report also considers the Project's alignment with the United Nations Sustainable Development Goals.

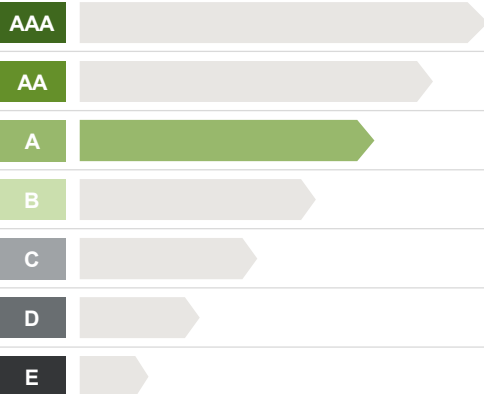
This Report sets out the forecast Green Impact (as defined above) for the whole Project. This assessment was undertaken using data provided to the GIR Team (see Appendix 1).

The Project's GIG Carbon Rating is **A**. Refer to page 2 and the methodology in Appendix 2 for further information on how this is calculated.

Project Information	Länsterhöjden & Storflötten
Technology	Onshore Wind
Country	Sweden
Generation Capacity (MW)	235
Number of turbines	56
Stage	Pre-Construction
Year Project commences operations	2019



### GIG CARBON RATING: A



33 kt CO<sub>2</sub>e / avoided (annual average)

### Green Impact: Forecast

#### GHG emissions avoided (carbon dioxide equivalent)

Remaining lifetime 821 kt CO<sub>2</sub>e

Average annual 33 kt CO<sub>2</sub>e / yr

#### Other emissions to air avoided (oxides of nitrogen)

Remaining lifetime 2,708 t NO<sub>x</sub>

Average annual 108 t NO<sub>x</sub> / yr

#### Fossil fuels consumption avoided (oil equivalent)

Remaining lifetime 316 kt oe

Average annual 13 kt oe

**Important note:** This Report has been prepared by GIG on the basis of, and should be read in conjunction with, the methodology v1.1, assumptions, limitations and other terms set out in Appendices 2, 3 and the Important Notice and Disclaimer, Appendix 4. This is not a due diligence report and should not be relied upon as such. If appropriate, recipients and users of this Report should conduct their own separate environmental, social and governance enquiries and assessments. This Report is provided for information purposes only and does not constitute and shall not be deemed to be in any way an offer or invitation or solicitation of any offer or invitation to sell or purchase shares or invest in any Project. This Report has not been filed, lodged, registered or approved in any jurisdiction and recipients of this document should keep themselves informed of and comply with and observe all applicable legal and regulatory requirements.

### Green Impact Forecast

In this Report we use the term 'Green Impact' to refer to the GHG, emissions to air and fossil fuels consumption avoided by the Project. As defined in Appendix 2. Forecasts are based on data provided to GIR Team and is subject to our assessment of Green Impact Forecast Accuracy (as set out on page 3). The forecasts and Green Impact Forecast Accuracy are subject to the methodology, assumptions, limitations and methods set out in Appendices 2 & 3.

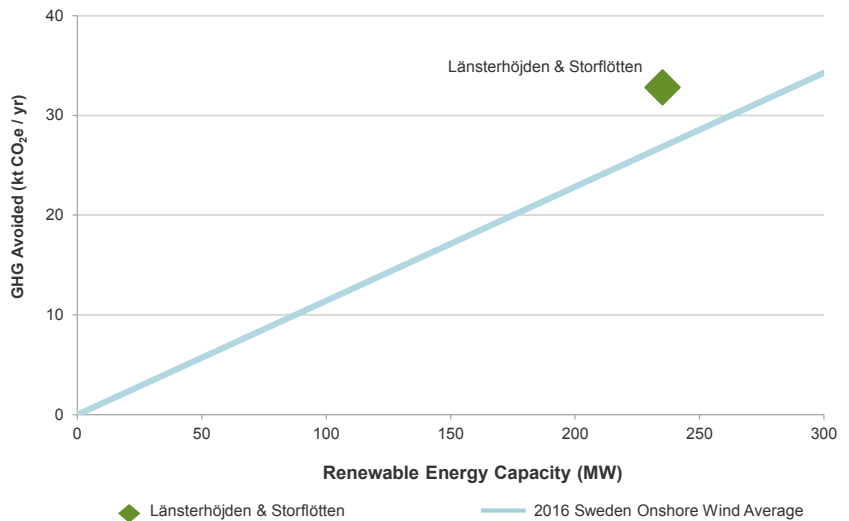
### Greenhouse gas emissions avoided

The Project is forecast to avoid emissions of over 30 kt CO<sub>2</sub>e / yr

The Project is forecast, on a whole project basis, to avoid an average of over 30 kt CO<sub>2</sub>e/yr over its remaining lifetime.

The Project shows higher than average GHG emissions reduction per MW capacity when compared to Sweden's onshore wind average for 2016<sup>1</sup>.

Avoidance of GHG emissions (measures in carbon dioxide equivalent: CO<sub>2</sub>e), both actual and forecast, is derived by comparing the emissions associated with each underlying project to a counterfactual (alternative method of energy generation). In this case the counterfactual is Swedish marginal grid emissions.



#### Greenhouse gas emissions avoided (carbon dioxide equivalent)

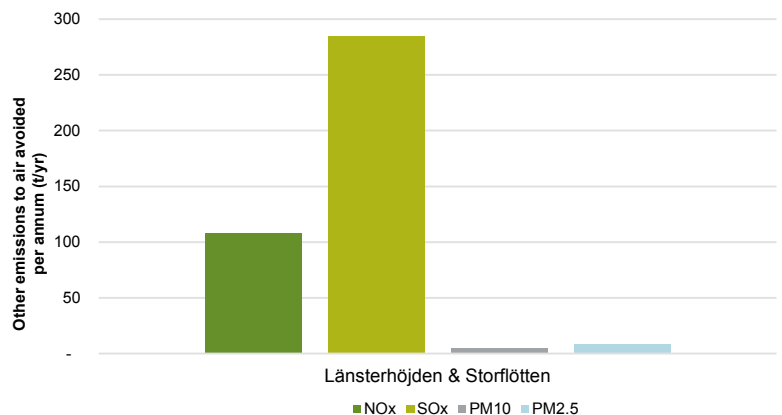
Remaining lifetime	821 kt CO <sub>2</sub> e
Average annual	33 kt CO <sub>2</sub> e / yr

### Other emissions to air avoided

The Project is forecast to avoid emissions of almost 110 t NO<sub>x</sub> / yr

The Project is forecast, on a whole project basis, to result in the avoidance of almost 110 t NO<sub>x</sub>, 290 t SO<sub>x</sub> and 15 t of particulate matter per year.

Other emissions to air avoided is a measure of net air pollutant emissions compared to the counterfactual method of energy generation. Quantified air pollutant emissions include oxides of nitrogen (NO<sub>x</sub>), oxides of sulphur (SO<sub>x</sub>), particulates up to 10 micrometres (µm) in diameter (PM<sub>10</sub>) and particulates up to 2.5 µm in diameter (PM<sub>2.5</sub>).



#### Emissions to air avoided

Average annual nitrogen oxides	108 t NO <sub>x</sub> / yr
Average annual sulphur oxides	285 t SO <sub>x</sub> / yr
Average annual 10µm particulate matter	5 t PM <sub>10</sub> / yr
Average annual 2.5µm particulate matter	8 t PM <sub>2.5</sub> / yr

<sup>1</sup> Derived from Swedish Energy Agency (2018) *Energy in Sweden – Facts and Figures* (<http://www.energimyndigheten.se/en/news/2018/energy-in-sweden---facts-and-figures-2018-available-now>)

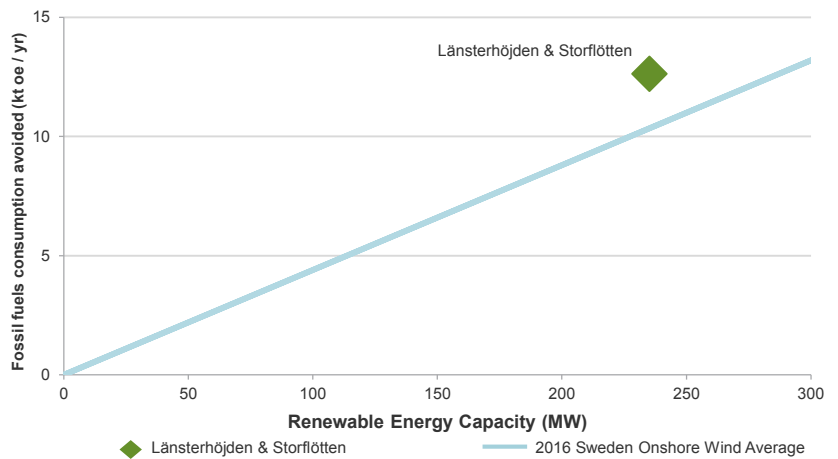
### Fossil fuels consumption avoided

The Project is forecast, on a whole project basis, to avoid an average of almost 15 kt oil equivalent per year.

As with GHG efficiency, fossil fuel consumption avoided is higher than Sweden's onshore wind average for 2016<sup>2</sup>.

Fossil fuels consumption avoided is a measure of the net consumption of coal, oil and gas compared to the counterfactual method of grid-based electricity generation, and is normalised to tonnes of oil equivalent (t oe).

The Project is forecast to avoid emissions of almost 15 kt oil equivalent annually



#### Fossil fuels consumption avoided

Remaining lifetime	316 kt oe
Average annual	13 kt oe / yr

### Green Impact Forecast Accuracy

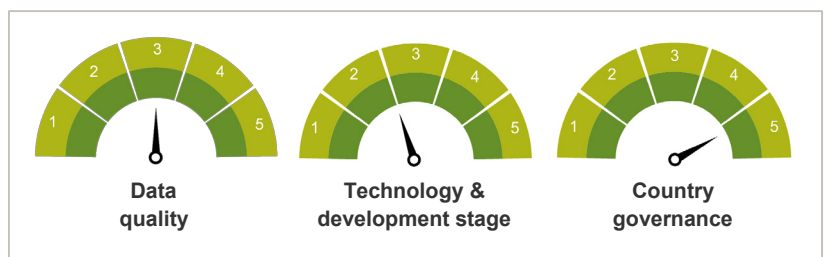
GIG has assessed the weighted average Green Impact Forecast Accuracy for the Project at Level 3 (Good).

Green Impact Forecast Accuracy is GIG's assessment of the level of confidence that can reasonably be placed on the accuracy of any quantified Green Impact Forecast. It is based on information provided to the GIR Team (set out in Appendix 1) and on the methodology referred to in Appendix 2.

We assess Green Impact Forecast Accuracy at levels ranging from Level 1 (Low) to Level 5 (Very High), which represent the combined and weighted average of a series of factors, according to our in-house experience of the sensitivity of each element. See Appendix 2 for further detail.

The data quality and development stage scores are anticipated to increase when the Project becomes operational and actual performance is known. This will then result in an overall increase in Green Impact Forecast Accuracy.

#### Green Impact Forecast Accuracy: Level 3 (Good)



<sup>2</sup> Derived from Swedish Energy Agency (2018) *Energy in Sweden – Facts and Figures* (<http://www.energimyndigheten.se/en/news/2018/energy-in-sweden---facts-and-figures-2018-available-now>)

### Alignment with the Sustainable Development Goals

The United Nations Sustainable Development Goals<sup>1</sup> (SDGs) are a set of 17 goals for sustainable development adopted by the UN in 2015, each with associated targets to be achieved by 2030. The Green Investment Ratings Team has screened the performance of the Project against the SDGs and identified those which are most aligned.

The Project contributes to the following SDGs:



Generation of clean, renewable electricity



Climate finance investment, supporting the development of renewable infrastructure



Renewable electricity generation, resulting in the avoidance of fossil fuels consumption to generate electricity



<sup>1</sup> <http://sustainabledevelopment.un.org/sdgs>

## Appendix 1

### Selected Project input data\*

Project Information*	Länsterhöjden & Storflötten
Technology	Onshore Wind
Country	Sweden
Capacity (MW)	235
Stage	Pre-Construction
Year Project commences operations	2019

\* Project information provided by the Client

## Appendix 2

### Terms and Conditions: Terminology and Methodology

#### Terminology

##### *Green Impact*

The Green Impact metrics covered by this Report are identified in the header and executive summary. “Green Impact” is a collective term referring to the environmental benefits which have been calculated in accordance with GIG’s methodology to be, or to be reasonably likely to be, delivered by the project(s) to which this Report refers. The collective term can include defined metrics such as tonnes carbon dioxide equivalent avoided (t CO<sub>2</sub>e), tonnes oil equivalent avoided (toe), and tonnes (t) of other air pollutant emissions avoided.

##### *Green Impact Forecast Accuracy*

“Green Impact Forecast Accuracy” is an expression of the level of confidence that, in the opinion of GIG, can reasonably be placed on the accuracy of any quantified Green Impact forecast. This assessment of forecast accuracy is described in levels as follows: Level 1 (Low), Level 2 (Moderate), Level 3 (Good), Level 4 (High), and Level 5 (Very High).

##### *Methodology v 1.1*

The Green Impact and Green Impact Forecast Accuracy assessments presented in this Report are based on GIG’s approach to assessing Green Impact using the methodologies set out within its proprietary green investment principles, policies and the associated processes of the Green Investment Handbook<sup>1</sup>. The Green Impact assessment has applied proprietary modelling techniques and comparative data developed and owned by GIG, or by third party owners and made available under licence to GIG.

##### *Green Impact calculation*

GIG’s initial calculation of the Green Impact of each project is produced by comparing relevant information and data derived from that project against relevant counterfactual (or baseline) data for the assumed environmental impacts that would occur if the project did not take place, based on GIG’s proprietary reference sources or provided to GIG by relevant third parties or

obtained from publicly available sources. The resultant estimated Green Impact is then subject to further qualitative evaluation before production of GIG’s formal Green Impact Report.

For grid-connected projects that generate electricity, the counterfactual is assumed to be marginal electricity generated from the local electricity grid, which includes resources consumed to supply grid electricity. GIG’s methodology calculates the net Green Impact of the project by comparing its likely emissions to those of a marginal grid electricity mix, using the methodology set out in the International Financial Institutions (IFI) approach to GHG accounting for renewable energy projects<sup>2</sup> and the IFI approach to GHG accounting for energy efficiency projects<sup>3</sup>.

GIG’s methodology calculates results for likely Green Impact on an annual and lifetime basis. The Green Impact reported is 100% of the Green Impact of the underlying project(s). There is no proportionate allocation of Green Impact to any particular project investment or to particular investors, all of whom may report the same Green Impact from the underlying project(s).

##### *Exclusions*

The counterfactual of marginal grid electricity does not include the total quantifiable lifecycle environmental burdens (e.g. resources consumed during construction, or indirect emissions during operations such as those from associated transport vehicles) associated with energy generation. Therefore, to produce a valid comparison, the calculation of Green Impact for the project(s) assessed in this Report is based solely on the operational phase of the relevant project(s), and does not include a full lifecycle assessment of the project(s) unless specifically stated otherwise. This approach is aligned with the Greenhouse Gas Project Protocol<sup>4</sup>. GIG’s assessment does not include a review of any underlying project’s environmental and/or social, permitting, licencing or other compliance status.

##### *Green Impact Forecast Accuracy*

Green Impact Forecast Accuracy is determined from a number of project parameters that include the project technology, stage of project development, and location of the project, together with GIG’s opinion of the input data quality. These parameters have been assigned values that represent the degree to which they affect the accuracy of the forecast Green Impact, and are used to produce Forecast Accuracy scores for three elements: Data quality, Technology & development stage, and Local governance<sup>5</sup>. The Forecast Accuracy scores for the three elements are weighted according to GIG’s in-house experience of the sensitivity of each element and combined to derive an overall level of Green Impact Forecast Accuracy

##### *Carbon Rating*

Our Carbon Rating is a measure of a project’s lifecycle greenhouse gas emissions compared to the emissions of the counterfactual. Projects with the lowest lifecycle emissions relative to the counterfactual would score the highest ratings from AAA to B. Projects with lifecycle emissions similar to the counterfactual would score a C, and projects with greater emissions would score a D or E. The missions of the counterfactual are derived from the IFI approaches to greenhouse gas accounting – please see above for details. Where we do not have project-specific information on lifecycle emissions, we use the median harmonised values from the US National Renewable Energy Laboratory’s Lifecycle Assessment Harmonization<sup>6</sup>

<sup>1</sup> [www.greeninvestmentbank.com/green-impact](http://www.greeninvestmentbank.com/green-impact)

<sup>2</sup> <http://documents.worldbank.org/curated/en/2015/12/25514886/ifi-approach-ghg-accounting-renewable-energy-projects>

<sup>3</sup> <http://documents.worldbank.org/curated/en/2015/12/25514884/ifi-approach-ghg-accounting-energy-efficiency-projects>

<sup>4</sup> [www.ghgprotocol.org/standards/project-protocol](http://www.ghgprotocol.org/standards/project-protocol)

<sup>5</sup> Local governance scores are determined from datasets of indicators from the World Bank, Transparency International and United Nations University Institute for Environment and Human Security

<sup>6</sup> [www.nrel.gov/analysis/sustain-lcah.html](http://www.nrel.gov/analysis/sustain-lcah.html)

## Appendix 3

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## Appendix 3

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#### Reference data

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GIG calculates Green Impact using reference data obtained from, among others, by the Ecoinvent life cycle inventory datasets for the calculation of environmental impacts. Green Impact is also calculated based on data supplied by the International Energy Agency (IEA), specifically from the 2015 editions of the World Energy Statistics and Balances dataset and the CO2 Emissions from Fuel Combustion dataset.

Any limitations and caveats that are applicable to the Ecoinvent and IEA datasets, as published on their websites, are also applicable to the results presented in this Report.

GIG's method is designed to work with a limited number of key inputs and to be globally applicable, and makes some simplifying assumptions in order to achieve this degree of flexibility.

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