Appendix S

Economic Impact Assessment

KENTBRUCK GREEN POWER HUB

Kentbruck Green Power Hub

Economic Impact Assessment Report

Neoen

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Executive Summary

Neoen has commissioned Aurecon to prepare an economic impact assessment to address a number of scoping requirements of the Kentbruck Green Power Hub (KGPH) Environmental Effects Statement. The KGPH consists of a wind farm and associated transmission line located in the Glenelg Shire, Victoria. It is anticipated to deliver more than 2,000 gigawatt-hours (GWh) of renewable electricity to the National Electricity Market (NEM). The project will be constructed over two years with an estimated capital cost of $1.2 billion. The Project would be mostly located in an actively managed and harvested pine plantation in southwest Victoria, between Portland and Nelson, in the Glenelg LGA.

Aurecon's economic impact assessment considered three scenarios: high, medium, and low.[1] For each scenario, Aurecon forecast economic output and labour market impacts for the Glenelg Local Government Area (LGA),[2] the Great South Coast Region,[3] and the state of Victoria. In addition, the composition of the workforce has been modelled under two options considered by Umwelt,[4] who undertook the Social Impact Assessment for Neoen, which is summarised in the table below.

Table 1 Workforce Composition Modelling Options

Option Number	Local Construction Workforce	Non-local Construction Workforce
1	25%	75%
2	50%	50%

The relative composition of local and non-local construction workers has a material impact on the level of economic activity generated in the chosen area. The KGPH is expected to have significant economic, social, and environmental benefits at a local, regional, and state level stemming from both the construction and operational phases of the Project. The KGPH will create direct, indirect, and induced employment during its construction and operation.

At an LGA level, KGPH is estimated to provide $158.8 m of economic activity to the Glenelg Shire during construction through direct, indirect and induced employment (medium scenario, 25% local employment). This contribution increases to $161 m when the workforce is composed of 50% local construction workers. The Gross Regional Product of Glenelg Shire is estimated to be $951 m,[5] so KGPH would make a significant contribution to the economic activity in the area as it represents 17% of existing economic activity (medium scenario, 50% local employment).

Figure 1 illustrates the modelled economic impact under the medium scenario with 50% local employment.

[1] For a description on how these scenarios are defined, please refer to Section 3 Economic Impact Assessment Methodology
[2] Appendix D provides the map for the Glenelg Local Government Area.
[3] Appendix E provides the map or the Great South Coast Region.
[4] Accommodation Management Plan, Kentbruck Green Power Hub, Umwelt
[5] https://www.rdv.vic.gov.au/information-portal/regional-snapshot?geographyNames=Glenelg+%28S%29%2CVictoria&geographyType=

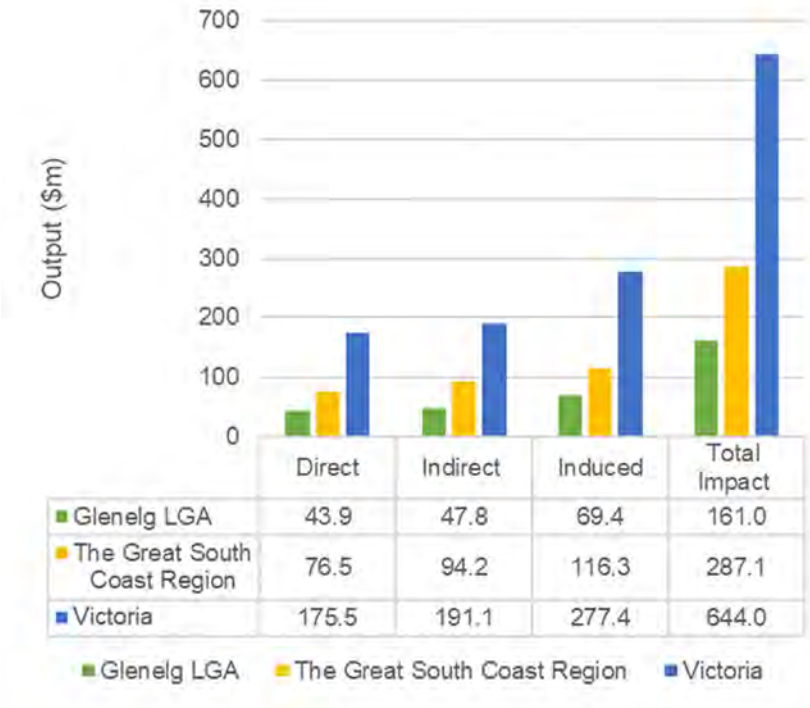


Figure 1 Economic Impact from Construction, Medium Scenario, 50% Local Employment

1 Background and Context

1.1 Project Overview

In this Section we provide an overview of the Project.

1.1.1 The Kentbruck Green Power Hub

Neoen is proposing a renewable energy development known as the Kentbruck Green Power Hub, comprising a wind energy facility (wind farm) with associated infrastructure. The Project would be mostly located in an actively managed and harvested pine plantation in southwest Victoria, between Portland and Nelson, in the Glenelg LGA.

The KGPH is anticipated to deliver more than 2,000 gigawatt-hours (GWh) of renewable electricity to the National Electricity Market (NEM) and is expected to consist of two main components:

- **A wind farm** of up to 600 MW comprising 105 wind turbines and associated permanent and temporary infrastructure.
- **The Preferred Transmission Line Option (1B)** is a new **275 kilovolt (kV) underground transmission line**, which would connect the Project to the existing AusNet electricity transmission network. The transmission line would extend from the eastern boundary of the wind farm site to the existing 275/500 kV Heywood Terminal Station and would be up to 26.6 km in length.

The estimated environmental and social benefits from the Kentbruck project are summarised in Table 2 below.

Table 2 Environmental and Social Benefits Stemming from the Kentbruck Green Power Hub

Benefit category	Key drivers of benefits	Estimated benefits
Environmental benefits	Annual renewable energy production (MWh)	2,000,000
	Tonnes of CO_2 being displaced per annum	1,968,000
	Equivalent homes powered (no.)	411,000
	Equivalent cars removed from the road (no.)	766,000
Benefits to apprentices	Estimated lifetime benefit per placement ($000)	500
	Number of apprentice positions (no.)	52
	Total benefit of apprenticeship placements ($m)	26

1.2 Transmission Line Options Assessment

The Economic Impact Assessment is based on the Preferred Option (1B). The three transmission line alternatives which were considered are described as follows:

Option 1A: The underground transmission line would extend east from the main wind farm substation and traverse Cobboboonee National Park and Forest Park beneath an existing road. From there, the transmission line would transition to an overhead line as it travels through freehold land to reach Heywood Terminal Station.

Option 2A: The overhead transmission line would extend southeast from the main wind farm substation and traverse several freehold rural landholdings used primarily for grazing. This option would require development and construction of a new terminal station adjacent to the existing Heywood-Portland 500 kV line north of Portland.

Option 2B: The underground transmission line would extend southeast from the main wind farm substation and traverse several freehold rural landholdings used primarily for grazing. This option would require development and construction of a new terminal station adjacent to the existing Heywood-Portland 500 kV line north of Portland.

1.2.1 Parameters for Multi-criteria Assessment to Determine Preferred Option

To identify a preferred route for connecting the proposed Kentbruck Green Power Hub wind farm to the electricity grid, an assessment of feasible route and configuration options for the transmission line was undertaken.

Several economic, engineering, design, environment, heritage and social criteria were considered in the assessment of transmission line options

A transmission line option was considered 'feasible' if it is geographically practical, the technical design and constructability are achievable, it is economically viable, and existing environmental and social values have been appropriately considered. For the economic assessment, the difference in capital cost for all options was reviewed. The construction cost included overall cost, transmission line cost, terminal station cost and interface works costs.

The preferred option is a constructable and cost-effective design solution that utilises an existing infrastructure corridor (Boiler Swamp Road), providing opportunities to minimise potential impacts relating to social and cultural considerations, visual amenity, existing land uses and the environment.

Table 3 CAPEX Costs for Each Transmission Line Option

Option 1A	Option 1B	Option 2A	Option 2B
$118M	$141M	$100M	$188M

Source: Neoen

Option 1B is the preferred option despite not being the least cost option - Options 1A and 2A scored favourably for the criterion relating to capital cost (as overhead transmission lines are considerably less costly than underground lines to construct).[6] One of Neoen's project objectives is to deliver a constructable and cost-effective connection for the wind farm. However, this needs to be balanced with Neoen's other, sometimes competing objectives, including selecting an option that avoids and minimises potential environmental and social impacts. The higher capital cost for Option 1B compared to Option 1A and Option 2A is mostly due to constructing the whole alignment below ground, which is more expensive than traditional above ground construction. Undergrounding Option 1B is preferred even with a higher capital cost because it avoids building an overhead line that presents a collision risk and would introduce potential visual amenity impacts.

For further details refer to the Transmission Line Option Assessment report (Transmission Line Options Assessment, Appendix A of the EES).[7]

1.3 Site Description

In this Section we provide an overview of the Project's site.

1.3.1 Region

The Glenelg LGA is located approximately 360 km west of the Melbourne city centre and consists of several towns including Portland, Casterton, Heywood, Dartmoor, Nelson, Cape Bridgewater and surrounding communities. The Glenelg LGA, along with municipalities of Corangamite, Moyne, Southern Grampians and Warrnambool, are within the Great South Coast Region, which is known for its agriculture, tourism and energy production industries (Great South Coast Group, 2021).

6 The scores for capital cost are derived from Neoen's capital cost estimations for each option
7 Kentbruck Green Power Hub Guidance to specialists on assessing the transmission line options

1.3.2 Project Area

The Project will extend along the southern coast of the Glenelg LGA, between the city of Portland and township of Nelson. The Project Area is predominantly (85%) located within substantially modified areas used for commercial forestry, specifically active management and harvesting of radiata pine. The remaining 14% of land in the Project Area is freehold, primarily used for grazing (with less than 0.4% of the Project Area covering reserve). Tenure of land within and surrounding the Project Area is shown in Figure 2. Figure 3 shows the transmission line route to Heywood.

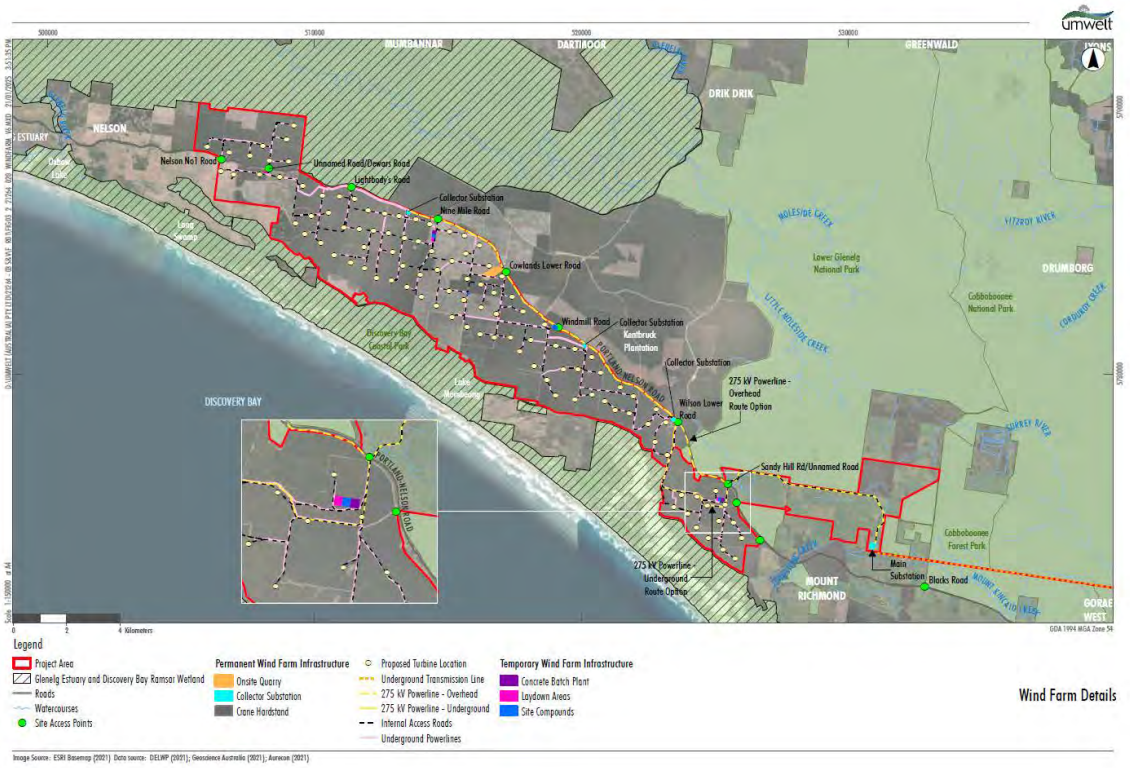


Figure 2 Site Context, Source: Umwelt

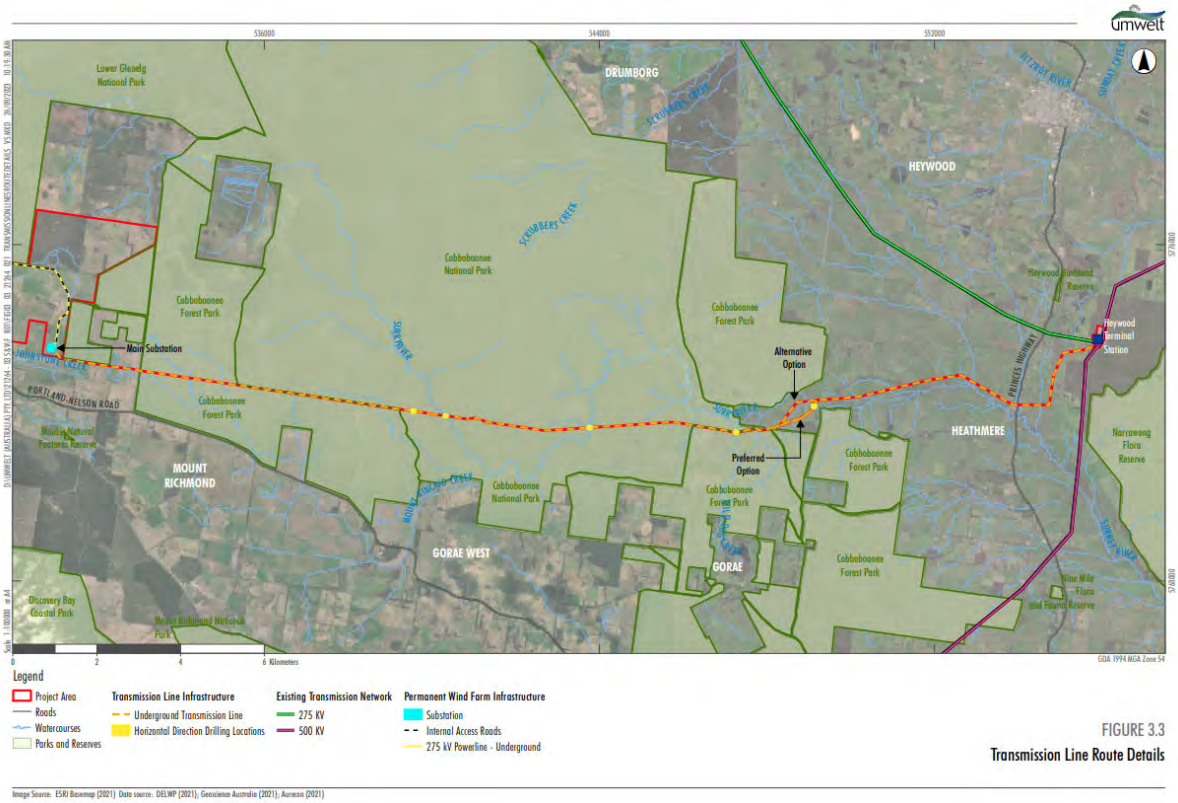


Figure 3 Transmission Line Route Details: Umwelt

1.4 Scope of Analysis

The KGPH is subject to an Environment Effects Statement (EES). As required by the Ministerial Guidelines for Assessment of Environmental Effects, the scope of an EES is a set of matters to be investigated in relation to the Project. These matters are considered by the Minister and relevant agencies and inform the 'scoping requirements' which are issued for each project by the Minister.

Under Section 4.5 of the Scoping Requirements (2020): land use and socio-economic, the objective of assessing land use and infrastructure effects of the Project is "to avoid and minimise adverse effects on land use, social fabric of the community, local infrastructure, aviation safety, and to neighbouring landowners during construction, operation and decommissioning of the project" (Scoping Requirement 2020, p. 15).

The economic analysis conducted by Aurecon aims to address the following:

- **Existing environment:** Describe the project area and its environs in terms of land use (existing and proposed), residences, zoning and overlays and public infrastructure that support current and strategic patterns of economic and social activity (Section 2: Baseline assessment).
- **Key issues:** Identify any significant disruption to existing and/or proposed land uses, with associated economic and social effects. Review potential adverse economic and social effects (Section 3 and 4: Economic Impact Assessment Methodology and Assessment).
- **Likely effects:** Identify potential economic effects of the project, considering direct, indirect and other economic impacts on employment and local and regional economy (Section 4: Economic Impact Assessment).
- **Mitigation measures:** Outline measures to minimise potential adverse effects of the project and enhance benefits to the community and local businesses (Section 5: Environmental Effects Statement).

Figure 4 below indicates the project boundary together with the range of land features. The scope of the Assessment of Environmental Effects was confined to this boundary.

Figure 4 Project Locality, Source Umwelt

2 Baseline Assessment

2.1 Scope of Baseline Assessment

A baseline assessment of relevant catchment areas surrounding the Kentbruck Green Power Hub (KGPH) was conducted to understand the:

- Current economic land uses that may be negatively impacted by the construction and operation of the KGPH.
- Potential for the construction and operation of the KGPH to provide economic opportunities for residents and businesses that are located within the relevant Victorian catchment areas.

The baseline assessment consisted of three geographic catchments (i) the project area; (ii) the Glenelg Shire Local Government Area (Appendix D); and (iii) the Great South Coast Region (Appendix E).

The geographic catchment of the Glenelg Local Government Area (LGA) was chosen as the economic assessment area because the entire project area is located within the LGA. The Great South Coast Region was the next logical economic assessment area as it is the broader region which would benefit from the provision of labour and services arising from the Project. The Great South Coast Region comprises of the Glenelg LGA and the surrounding LGAs of Corangamite, Moyne, Southern Grampians and Warrnambool.

2.2 Project Area

Land use in the region surrounding the Project Area is characterised by freehold agricultural land generally used for livestock grazing, and a significant proportion of national parks, state forests, and conservation areas. The Project Area is predominantly (85%) located within areas used for commercial forestry (active management and harvesting of radiata pine). Freehold land used for grazing accounts for the remaining 14.2% of land in the Project Area. The transmission line route traverses freehold land (11 km) and National/Forest Park (15 km). Table 4 below outlines the property breakdown of land effected by the Project.

Table 4 Project Area of the Kentbruck Green Power Hub

Project area component	Area (ha)	Number of land parcels	Number of landowners	% of area is freehold (plantation)	% of area is freehold (non-plantation)	% of area is public land
Wind farm site	8,318	89	9	85.7	14.2	0.05
Transmission line corridor	21	33	15	0	51.7	48.3
Heywood Terminal station	11	1	1	0	0	100
Project Area	**8,350**	**121***	**22***	**85.4**	**14.3**	**0.3**

*Several of the same land parcels and landowners occur within both the wind farm site and transmission line corridor. The total number of land parcels and landowners in the Project Area is therefore not the numeric sum of each component of the Project Area.

Source: Umwelt, Environmental Effects Statement Chapter 3

2.2.1 Glenelg Shire Local Government Area

The number and structure of businesses and occupations currently located within the Glenelg Shire (population 20,016) suggest that the Local Government Area (LGA) is well placed to service the needs of the Power Hub. This includes more than 3,000 construction-related workers (i.e., technicians and trades workers, machinery operators and drivers, and labourers) and close to 160 (employing) construction and transport businesses.

Business Structure

The purpose of analysing the current business structure of the Glenelg Shire is to understand the local service requirements for KGPH that could be met from local businesses. The diverse mix of industries identified in the LGA are more likely to provide business service offerings that are suitable to the KGPH.

A tangible benefit of the KGPH is the extent to which local businesses can participate in its construction and operation through direct and indirect project contracts. ABS Business Count data for 2022 indicates that the LGA has several businesses in industries which could be well placed to service aspects of the project. In particular, the Glenelg Shire LGA includes close to 100 (employing) construction businesses and a further 50 (employing) businesses associated with transport, postal and warehousing services. These two sectors account for 150 (employing) businesses or close to 20 % of all businesses located in the LGA.

Table 5 Business Structure, Glenelg Shire, June 2022[8]

Industry	Non employing	1-19 Employees	20-199 Employees	200+ Employees	Total
	no.	no.	no.	no.	no.
Agriculture, Forestry and Fishing	573	242	9	0	824
Mining	0	0	0	0	0
Manufacturing	34	27	3	0	64
Electricity, Gas, Water and Waste Services	3	6	0	0	9
Construction	111	102	3	0	216
Wholesale Trade	19	19	0	0	38
Retail Trade	39	68	3	0	110
Accommodation and Food Services	22	74	5	0	101
Transport, Postal and Warehousing	62	44	6	0	112
Information Media and Telecommunications	3	3	0	0	6
Financial and Insurance Services	11	9	0	0	20
Rental, Hiring and Real Estate Services	128	10	0	0	138
Professional, Scientific and Technical Services	47	30	3	0	92
Administrative and Support Services	29	15	3	0	47
Public Administration and Safety	0	0	0	0	0
Education and Training	3	0	3	0	6
Health Care and Social Assistance	23	19	3	0	46
Arts and Recreation Services	9	7	0	0	16
Other Services	53	44	3 0	0	100
Currently Unknown	0	0	0	0	0
Total	1,182	723	36	0	1,941

[8] Source: Australian Bureau of Statistics, Counts of Australian Businesses, including Entries and Exits, June 2022

Labour Force

Occupation Structure

The data for this section has been obtained from Remplan, an independent data-provider who specialise in area-specific demographic data.[9]

More than 3,000 people (or one-third of the labour force) who work within the LGA are occupied in activities generally associated with the types of skills required for the construction of a windfarm (i.e., technicians and trades workers, machinery operators and drivers, and labourers). The primary occupation of workers within the LGA highlights the strong worker base available to support the KGPH (Table 6).

Table 6 Occupation Structure, Glenelg Shire, 2021

Occupation	Employees	
	Jobs	%
Managers	1,471	17.2%
Professionals	1,244	14.6%
Technicians and Trades Workers	1,246	14.6%
Community and Personal Service Workers	1,076	12.6%
Clerical and Administrative Workers	664	7.8%
Sales Workers	660	7.7%
Machinery Operators and Drivers	949	11.1%
Labourers	1,161	13.6%
Not stated - Inadequately described	60	0.7%
Total	**8,531**	**100%**

Source: Remplan (Accessed 2023)

Unemployment Rate

The Glenelg Shire LGA currently has an unemployment rate of 2.4%,[10] which is below the Victorian and Australian unemployment rates of 3.7% (December 2022). The LGA currently includes approximately 250 persons who are unemployed (Table 7).

Unemployed labour resources provide additional capacity for the LGA to support the Project. In this regard, the construction of the KGPH will provide new short-term employment opportunities for the region's labour force participants, with ongoing employment also supported once the facility is operational.

Table 7 Unemployment Rate, Glenelg Shire, December 2022

Period	Glenelg Shire			Regional VIC	Victoria	Australia
	Unemployed people	Labour force	Unemployment rate %	Unemployment rate %		
Dec-22	253	10,444	2.4	3.0	3.7	3.7
Dec-21	572	10,435	5.5	3.7	5.0	5.1
Dec-20	423	10,624	4.0	4.7	6.4	6.5
Dec-19	445	10,752	4.1	3.9	4.7	5.2
Dec-18	505	10,353	4.9	4.9	5.0	5.3
Dec-17	515	10,728	4.8	5.3	6.0	5.6

Source: economy.id (Accessed 2023)

[9] For more information, please look at this website for information on Remplan: https://www.remplan.com.au/why-remplan/
[10] According to the Australian Bureau of Statistics, unemployment is defined as "…all those of working age who were not in employment, carried out activities to seek employment during a specified recent period and were currently available to take employment given a job opportunity."

Underemployment Rate

The underemployment rate is an indicator for measuring spare capacity in the labour market. Underemployment is defined as someone who is currently employed but would like (and is available) to work additional hours.

The rate is used to assess the aggregate labour market, however it is not relevant in analysing project-specific economic impacts. The jobs created from this project are measured in terms of Full-Time Equivalent (FTE), [11]and so having components of underemployment (i.e. fractional FTE) has not been captured.

2.2.2 Great South Coast Region

The number and structure of businesses and occupations currently located within the Great South Coast Region suggest that the region is well placed to service the needs of the KGPH, including more than 15,000 construction-related workers (i.e., technicians and trades workers, machinery operators and drivers, and labourers) and close to 1,163 (employing) construction and transport businesses.

Business Structure

The purpose of analysing the current business structure of the Great South Coast Region is to verify that the capacity to service the added needs from the KGPH could be met. If it was identified that the region lacked economic diversity, and only a few industries were present, then it would be unlikely that the community could service the added resource requirements from the KGPH workforce demands. In addition, having diversity means that the economic activity is more likely to stay in the area, as people will not need to travel outside of the region to access other business service offerings.

ABS Business Count data for 2022 indicates a strong presence in the Region, as outlined in Table 8. In particular, the Region includes close to 658 (employing) construction businesses and a further 227 (employing) businesses associated with transport, postal and warehousing service, with these two sectors contributing 885 (employing) businesses or close to 20 % of all employing businesses located in the Region. These business industries would help support the added requirements of the KGPH, due to the nature of work they are familiar with.

Table 8 Business Structure, Great South Coast Region

Industry	Non employing	1-19 Employees	20-199 Employees	200+ Employees	Total
	no.	no.	no.	no.	no.
Agriculture, Forestry and Fishing	2,911	1,617	49	0	4,577
Mining	10	10	0	0	20
Manufacturing	187	163	18	0	368
Electricity, Gas, Water and Waste Services	9	16	3	0	28
Construction	875	643	15	0	1,533
Wholesale Trade	132	107	8	0	247
Retail Trade	221	361	31	0	613
Accommodation and Food Services	148	400	44	0	592
Transport, Postal and Warehousing	288	206	21	0	515
Information Media and Telecommunications	17	8	3	0	28
Financial and Insurance Services	120	72	3	0	195
Rental, Hiring and Real Estate Services	909	89	3	0	1,001
Professional, Scientific and Technical Services	326	215	9	0	550

[11] More information on how this has been defined and captured by the model can be found in section 4.4

Industry	Non employing	1-19 Employees	20-199 Employees	200+ Employees	Total
	no.	no.	no.	no.	no.
Administrative and Support Services	154	111	13	3	281
Public Administration and Safety	3	9	6	0	18
Education and Training	41	48	10	0	99
Health Care and Social Assistance	274	190	13	0	477
Arts and Recreation Services	81	55	0	0	136
Other Services	246	246	6	0	498
Currently Unknown	11	6	0	0	17
Total	6,963	4,572	255	3	11,793

Source: Australian Bureau of Statistics, Counts of Australian Businesses, including Entries and Exits, 2022

Labour Force

Occupation Structure

Over 16,000 people or one-third of the region's labour force work within occupations with the skills required for the construction of a windfarm (i.e., technicians and trades workers, machinery operators and drivers, and labourers), highlighting the strong labour base available to support the Project (Table 9).

Table 9 Occupation Structure, Great South Coast Region, 2021

Occupation	Employees	
	Jobs	%
Managers	9,475	19.1%
Professionals	8,223	16.5%
Technicians and Trades Workers	6,611	13.3%
Community and Personal Service Workers	6,074	12.2%
Clerical and Administrative Workers	4,759	9.6%
Sales Workers	4,238	8.5%
Machinery Operators and Drivers	3,233	6.5%
Labourers	6,822	13.7%
Not stated - Inadequately described	291	0.6%
Total	**49,727**	**100%**

Source: Remplan (Accessed 2023)

Unemployment Rate

The Great South Coast Region ('*the Region*') currently has an average unemployment rate of approximately 1.7% across its LGAs, which is below the Victorian and Australian unemployment rates of 3.6% and 3.5% respectively (December 2022). The Region currently includes close to 1,000 people who are unemployed (Table 10).

Unemployed labour resources provide additional capacity for the Region to support the Project provided there is a skills match and ability to work. In this regard, construction of the KGPH provides new short-term employment opportunities for the region's labour force participants, with ongoing employment also supported once the facility is operational.

The following table outlines the unemployment rate for the different LGA's which make up the Great South Coast Region.[12]

Table 10 Unemployment Rate, Great South Coast Region, 2022

	Glenelg		Southern Grampians		Moyne		Corangamite		Warrnambool	
	Rate %	Number	Rate %	Number	Rate %	Number	Rate %	Number	Rate %	Number
Dec-22	2.4	253	1.9	168	1.2	117	1.4	121	1.6	321

Source: Small Area Labour Markets (SALM), December Quarter 2022

Regional Services Capacity

The ability of the Region to accommodate non-local workers (i.e., those who are not resident in the Region or not living within a daily commutable distance) is a key consideration for the extent to which the Region can leverage the economic opportunities from the construction of the KGPH. In addition, private accommodation is often used to support construction worker needs through the leasing of holiday homes and investment properties, either privately or through real estate agents.

South Australian Border

The South Australian border is approximately 5 km west of Nelson (or the western edge of the project boundary) with the large regional centre of Mount Gambier approximately 40 km from the Project Area, within the state of South Australia. Mount Gambier services several surrounding communities and districts given its central location between Adelaide and Melbourne and is the centre of a large transport industry.

2.3 Baseline Assessment Conclusion

A baseline assessment of relevant catchment area surrounding KGPH was conducted to understand the current economic land uses that are negatively impacted by the construction and operation of KGPH. The assessment also seeks to understand the potential for the construction and operation of KGPH to provide economic opportunities for residents and businesses that are located within and nearby the project area.

The findings from baseline assessment suggest that the areas of Glenelg Shire and the Great South Coast Region have the sufficient types of businesses and labour force to realise the economic benefits from construction and operation of the KGPH. Ensuring as much economic benefit as possible remains within the region and the state of Victoria.

[12] https://www.rdv.vic.gov.au/regional-partnerships/great-south-coast#:~:text=Our%20region%20in%20south%2Dwest,coastline%20and%20stunning%20natural%20scenery.

3 Economic Impact Assessment Methodology

3.1 Overview of Outputs

This section describes the methodology used to model the various types of economic impacts under the three scenarios (High, Medium, and Low), as well as under the two workforce composition options (25% and 50% local construction workforce).

Input-output modelling was undertaken to estimate the aggregate economic impact of the proposed government expenditure. This impact was estimated at the local government area (LGA), region, and state level. The economic impact was estimated by applying economic multipliers as published by the Australian Bureau of Statistics to capture both direct and indirect economic benefits. Table 11 below summarises the framework for economic outputs conducted by this report. Each of these data points will be segregated into economic impact from the construction of the wind farm, as well as the continued maintenance of the wind farm (operations).

Table 11 Framework for Economic Output Results

Economic Scenario	Option 1 (25% Local Construction Workers)			Option 2 (50% local construction workers)		
High	LGA	Region	State	LGA	Region	State
Medium	LGA	Region	State	LGA	Region	State
Low	LGA	Region	State	LGA	Region	State

3.2 Direct, Indirect, Induced, and Total Economic Impacts

Direct, Indirect, Induced, and Total impact assessments are defined below.

Table 12 Definition of Economic Impact Types

Type of Economic Impact	Description
Direct	Follows immediate expenditure, such as construction contracts for a major project, and salaries to workers.
Indirect	Indirect impacts are derived from the proportion of direct expenditure spent on other business work, such as subcontractors or consultants. Economic multipliers supplied by the ABS are used here. Please refer to Appendix C for further information.
Induced	Increases in household spending due to an increase in direct and indirect expenditure. For example, a worker has income from direct expenditure that he/she can used at the local businesses such as retail and hospitality. The local retail and hospitality are not an indirect business affiliation with the wind farm but receives economic benefit in the way of induced economic expenditure.
Total	The sum of direct, indirect, and induced economic impact.

3.3 Definition of High, Medium, and Low Economic Scenarios

The high scenario is applied to economic outputs at the State, Region, and LGA level.

Table 13 Definition of Economics Scenarios

	Description of Methodology
High	Taken as the total economic impact (direct, indirect, and induced), with no adjustments to raw figures. Appendix C provides a detailed overview of the calculation methodology.
Medium	Calculated as the mid-point between the High and Low case
Low	Assumes that there is a drop in GDP of 10%, and scales back Indirect, Induced, and total impact accordingly. Direct will not be influenced as it is assumed the expenditure will happen whether or not the GDP will decline, whereas economic multipliers are impacted when there

4 Economic Impact Assessment

4.1 Economic Framework

The KGPH will have income, output and employment benefits for the Glenelg LGA (Appendix D) as well as the State more broadly, in addition to helping reduce carbon emissions associated with traditional energy generation:

- **Economic activity**: The capital and operational phases of the KGPH will help directly generate economic activity and income within the Glenelg LGA and VIC economies more broadly. The initial output produced will lead to indirect and induced effects:
  - E.g., The construction and operational phase of KGPH may require indirect economic activity such as the production of goods and services such as accommodation, engineering, freight services, construction materials and equipment, local labour, technical contractors, earthworks services, fencing and landscaping. The purchase of these goods and services will generate additional income for members of the regional and state economies, leading to further consumption and output (known as 'induced activity').
- **Electricity production:** The KGPH is expected to produce renewable energy that will provide value to the electricity supply chain and communities more broadly.
- **Employment and labour income:** The capital and operational phases of the KGPH will help directly generate employment within the Glenelg region and Victorian economies more broadly. The initial employment generated will lead to secondary or indirect employment effects.
- **Towers[13]:** Neoen indicated that, based on previous procurement processes, the majority of the towers (wind towers) are likely to be manufactured overseas, with the potential for some local procurement including a business located in Portland. There is potential to utilise a hybrid steel and concrete tower design. However, no Victorian suppliers could be identified to provide the castings required for a hybrid tower.
- **Foundations and transmission lines:** Neoen indicated that, based on previous procurement processes, the majority of the foundations and transmission lines will be developed locally including the production of cement and steel.

The (direct, indirect and induced) economic output, electricity production and employment that will stem from KGPH in the future is inherently uncertain. To produce robust forecasts of employment, output, and income benefits from the KGPH, 'ex-post' reviews of current Neoen renewable energy projects were undertaken, with key findings then being used to validate potential outcomes for the KGPH. As the economic forecasts detailed below have been benchmarked against actual outcomes for comparable renewable energy facilities across Australia, they are believed to be more reliable than traditional forecasting techniques.

[13] Excludes turbine and rotors

4.2 Key Assumptions

The construction activity associated with the KGPH could have significant economic impacts at a local, regional, and state level depending on the location of contractors procured by Neoen to develop the towers, turbines and foundations required for the windfarm. Neoen will undertake a competitive tender process for the construction of the windfarm, provided all necessary environmental and financial approvals are received. Hence, the identity and location of businesses that will ultimately be involved in the construction of the KGPH is currently unknown. The model has assumed a 24-month construction period. In order to maintain the optimal asset condition of the windfarm, maintenance costs have been estimated in the model to run for 30 years, which is consistent with Neoen's assumption.

In the absence of detailed procurement information, Aurecon consulted with Neoen to develop a set of assumptions regarding the expected location of businesses and people involved in the construction process for the KGPH based on previous tender processes for relevant Neoen windfarms:

- **Turbines:** Neoen is currently unaware of any domestic producer of wind turbine generators and blades that could be sourced for the KGPH. In the absence of any known domestic procurement options, it has been assumed that the wind turbine generators and blades would be manufactured overseas.
- **Installers:** Neoen indicated that they expected the installers required for the KGPH infrastructure will be sourced from a range of geographic locations (including locally, interstate, and overseas) depending on the technical requirements of the role. Installation of wind turbine generators and blades will require specialised knowledge that is likely to be provided by the overseas manufacturer.
- **Project managers:** Most foreign producers of wind turbine engines and blades are reported to have offices in Melbourne and are expected to utilise staff from these offices to help with project management functions.

The following table below outlines the estimates of the location of wind turbine manufacturers and construction workers that will be required to develop the KGPH by value.

Table 14 Employment Impacts from Construction and Operational Phases of the KGPH

	Glenelg Shire	Great South Coast Region	Victoria	Interstate	Overseas	Total
Location of wind turbine manufacturers	5%	5%	5%	5%	80%	**100%**
Location of wind turbine tower manufacturers	20%	10%	5%	5%	60%	**100%**
Location of transmission line content	30%	30%	30%	5%	5%	**100%**
Location of tower foundation suppliers	30%	30%	30%	5%	5%	**100%**
Location of construction workers	30%	30%	30%	5%	5%	**100%**

Note: 'Wind turbine manufacturers' include producers of wind generators, nacelles and blades. 'Location of the construction workers' refers to permanent residential location

It is also assumed that the import of materials and equipment used for the project will require local labour, such as staff at receiving ports. Such analysis is beyond the scope of this report, but it should be noted that with overseas employment comes opportunities for local employment, albeit more of an indirect component.

4.3 Economic Activity from the Construction and Operation of KGPH

4.3.1 Overview of Economic Output Calculations

Section 3 explained that the outputs to this economic impact assessment are produced in four main areas:

1) The direct economic impact
2) The indirect impact from the multiplying effect of economic expenditure
3) Induced benefits from expenditure into adjacent and unrelated industries
4) Total expenditure, being the sum of the preceding three values.

These four outputs are presented in Section 4.3.3 and Section 4.3.4 for economic activity from construction and operations, respectively.

4.3.2 Expenditure Assumptions

Inputs for the model, including capital and operating expenditures, were provided to Aurecon by Neoen. The figures used in the model are summarised below.

- Total project expenditure occurring in Victoria: $180m
- Total project expenditure estimate: $1,200m

4.3.3 Construction Phase

Figures 5 to 10 illustrate the economic impact of the KGPH across Victoria, the Glenelg LGA, and Greater South Coast Region from construction activity. Side-by-side comparisons have been made between 25% and 50% local construction employment across the three levels. In addition, the low, medium, and high case scenarios have been shown below. Additional analysis is provided below.

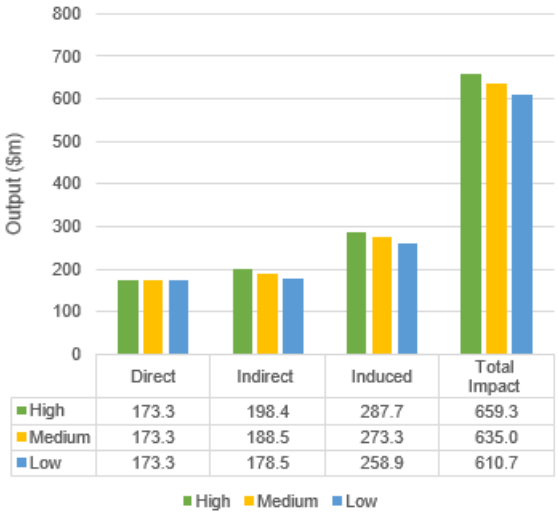


Figure 5 Construction Activity, Victoria (Option 1: 25% Local Employment)

Figure 6 Construction Activity, Victoria (Option 2: 50% Local Employment)

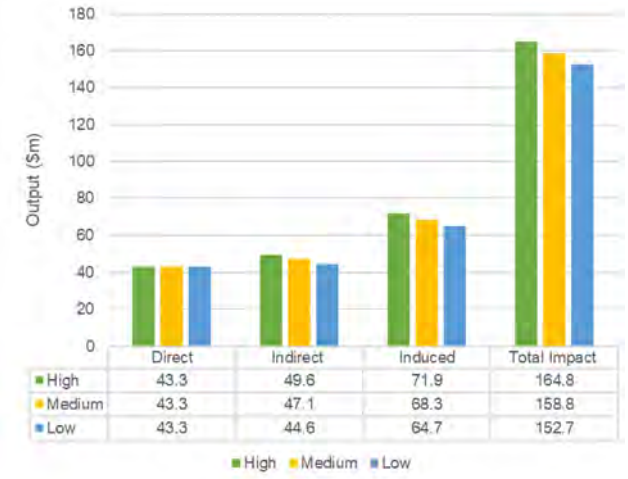


Figure 7 Construction Activity, LGA (Option 1: 25% Local Employment)

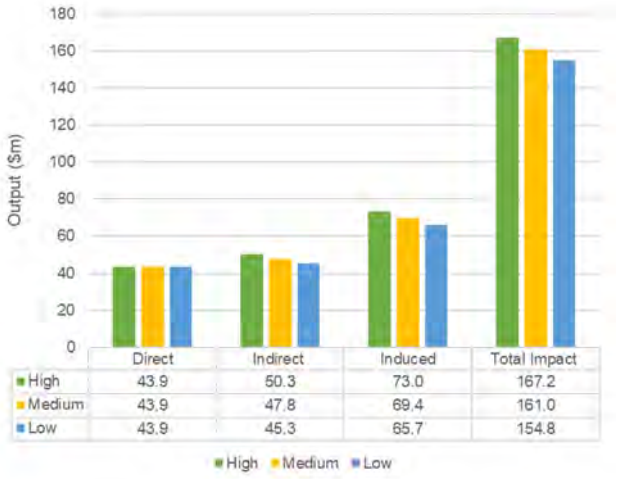


Figure 8 Construction Activity, LGA (Option 2: 50% Local Employment)

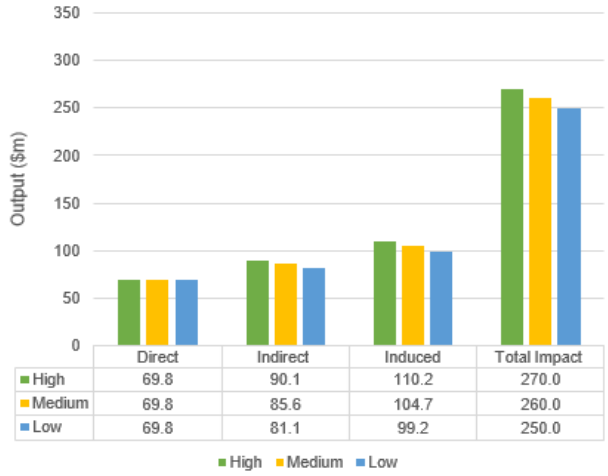


Figure 9 Construction Activity, Greater South Coast Region (Option 1: 25% Local Employment)

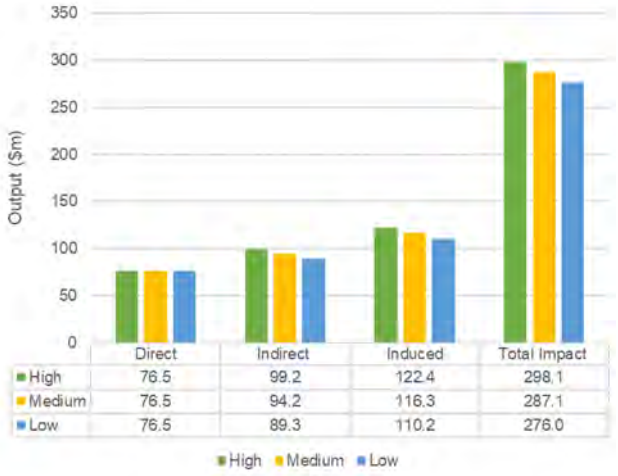


Figure 10 Construction Activity, Greater South Coast Region (Option 2: 50% Local Employment)

Key findings from the above analysis:

- Indirect benefits are higher than direct due to the multiplier effect of economic expenditure.
- The option with a higher proportion of local employment will lead to higher overall economic activity within the region. This is option 2, which assumed 50% local employment, contrasted with option 1 which assumes 25%. For instance, a Victorian worker will spend most of his/her wages in Victoria, while a South Australian worker will spend a portion of their income outside of Victoria.
- The percentage difference from direct to indirect economic impact is higher for the region than to the LGA. This is because it is assumed that the majority of the economic benefit for the LGA will be realised, economically speaking, through first round expenditures.[14] This is a function related to the size and complexity of the economic region in question.

4.3.4 Operation Phase

The operation of the KGPH will also help to support businesses in the Glenelg LGA and across the State more broadly. Figures 11-16, similarly to above, show the economic activity by a State, Regional, and LGA level. The economic activity in this case is generated by the work required to maintain the optimal condition of the windfarm over its useful life. High, medium, and low case scenarios are shown below. Modelling varying compositions of the local workforce (25% and 50%) only affected the economic activity from construction activity. Hence, the figures below show no change between 25% and 50% employment options

[14] First round expenditures are the initial investments injected into the economy. In the case for KGPH, the first round would be the capital expenditure directly used for construction workers.

under the same level (state, region, LGA) because 100% of local workforce will be utilised in the operational phase.

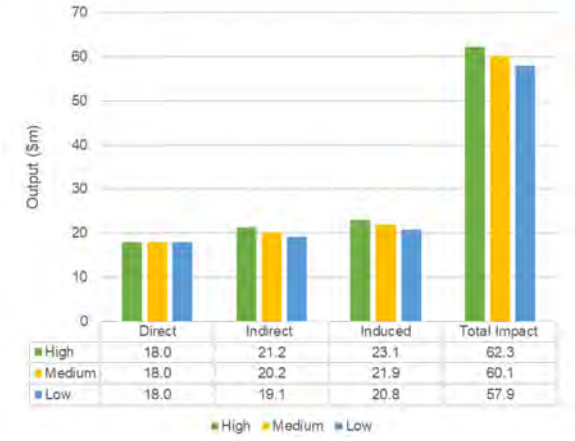


Figure 11 Operations Activity, Victoria (Option 1: 25% Local Employment)

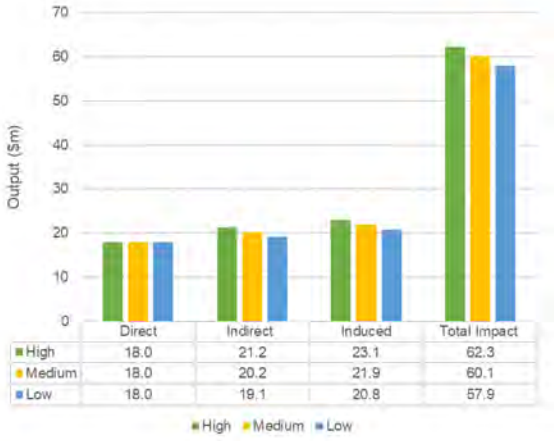


Figure 12 Operations Activity, Victoria (Option 2: 50% Local Employment)

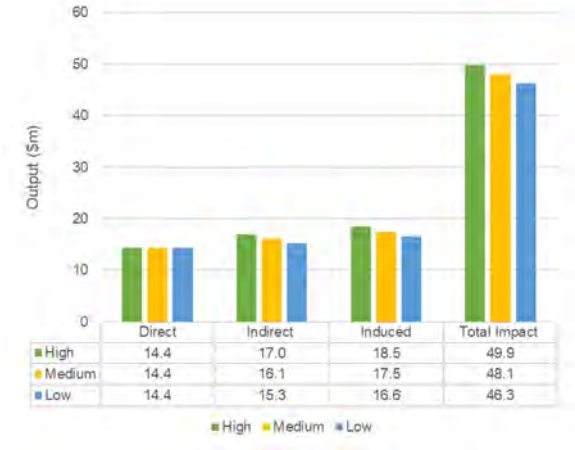


Figure 13 Operations Activity, LGA (Option 1: 25% Local Employment)

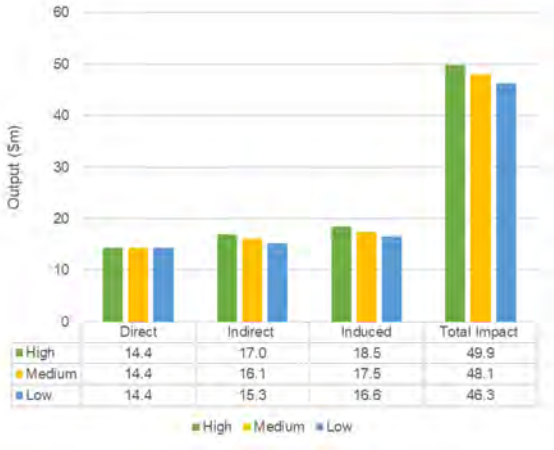


Figure 14 Operations Activity, LGA (Option 2: 50% Local Employment)

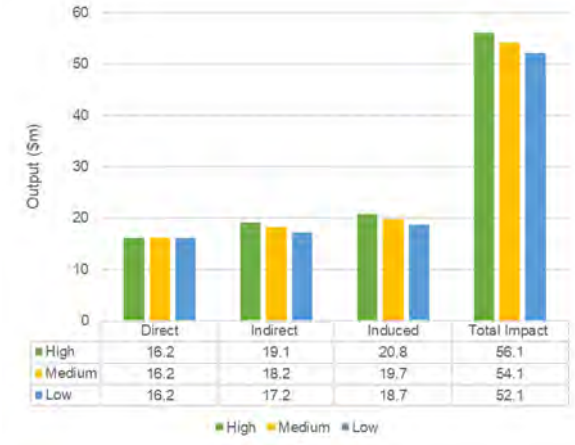


Figure 15 Operations Activity, Region (Option 1: 25% Local Employment)

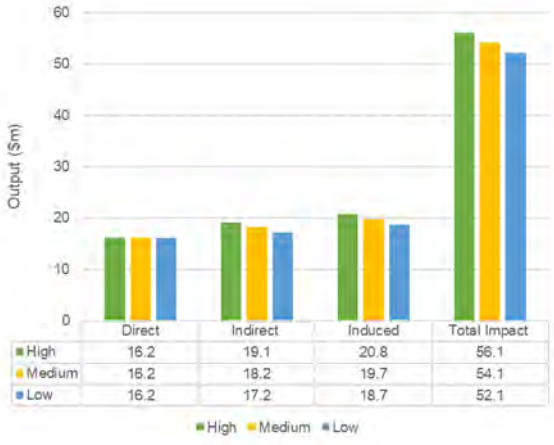


Figure 16 Operations Activity, Region (Option 2: 50% Local Employment)

Key findings from the above analysis:

- There is no material difference between modelling under 25% local employment and 50% local employment for the operations phase of the KGPH. This is because it is assumed 100% local workers will be used to maintain the upkeep associated with the wind farm. Using a non-local workforce for completing maintenance work for 20+ years would eventually result in the worker becoming a local resident, and hence his/her economic activity would contribute to the state of Victoria only.

4.4 Employment and Labour Impacts from the Construction and Operation of KGPH

4.4.1 Construction Phase

Neoen estimates that 350 employees (headcount) will be required to construct the KGPH. Employees will be made up of domestic and international contractors that work on a varying basis: casual, part-time or full-time.

Aurecon estimates that close to 253 FTE workers will be required from across the State during the two-year construction period. Of the direct number of FTE staff employed to construct the wind farm, 52 of these employees are expected to be apprentices and trainees.

Aurecon's literature review of benefits of apprenticeship and trainee placements (Appendix B) found strong and consistent evidence that the provision of such opportunities during the construction phase of the KGPH will provide a benefit to the individuals involved by increasing their probability of employment,[15] and their expected hourly weekly wage rate in subsequent years.[16] Based on the number of apprenticeship and trainee positions expected during the construction phase of KGPH, and the average improved future employment outcomes identified from the literature review, the overall benefit of the placements to the individuals involved is expected to be in the order of $500,000.[17]

Figures 17-22 show the number of Full Time Equivalent (FTE) jobs that will be required to carry out the construction phase of the KGPH. The figures show the employment requirements under low, medium, and high scenarios. The composition of local and non-local workforce (25% vs. 50%) are compared at the state, regional, and LGA level. At the LGA level, between 445 and 487 FTEs will be required from Glenelg LGA to complete the two-year construction phase of the project, while at the State level between 1778 and 1948 for the 25% Local Employment Option.

[15] The probability of employment for the individual in a given year subsequent to the completion of the apprenticeship is expected to be higher than what would have been the case if an apprenticeship position was not available.
[16] The average weekly wage for the individual in a given year subsequent to the completion of the apprenticeship is expected to be higher than what would have been the case if an apprenticeship position was not available.
[17] The added $500,000 is additional economic activity generated from having higher wages (induced consumption) over their life. Since the hourly rate is higher for skills required to build wind farms, the economic benefit is greater (see Appendix B)

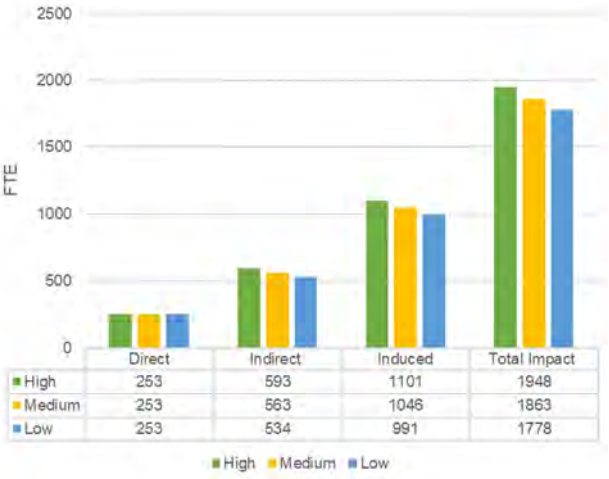


Figure 17 FTE From Construction Activity, Victoria (Option 1: 25% Local Employment)

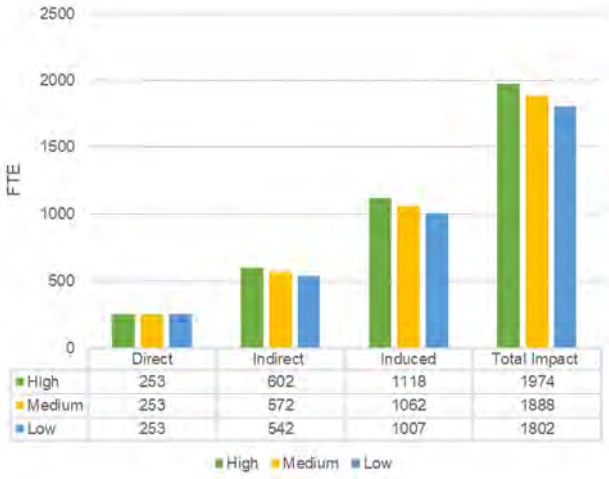


Figure 18 FTE From Construction Activity, Victoria (Option 2: 50% Local Employment)

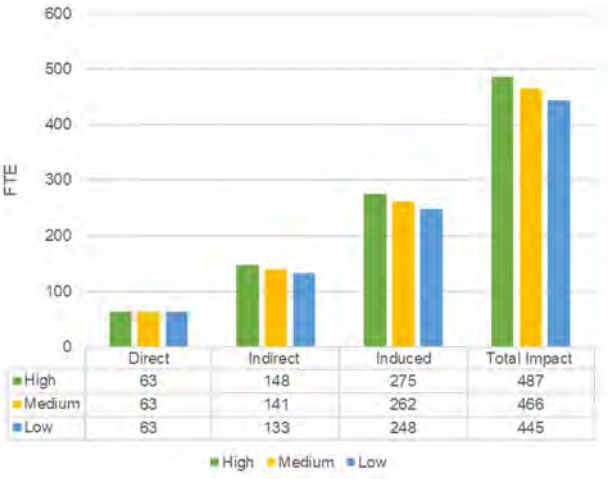


Figure 19 FTE From Construction Activity, LGA (Option 1: 25% Local Employment)

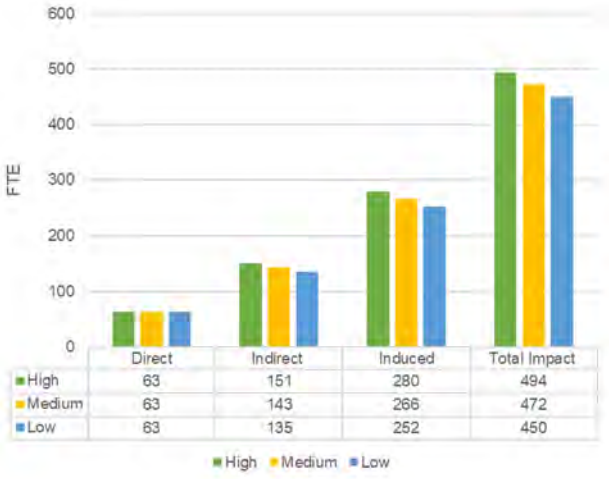


Figure 20 FTE From Construction Activity, LGA (Option 2: 50% Local Employment)

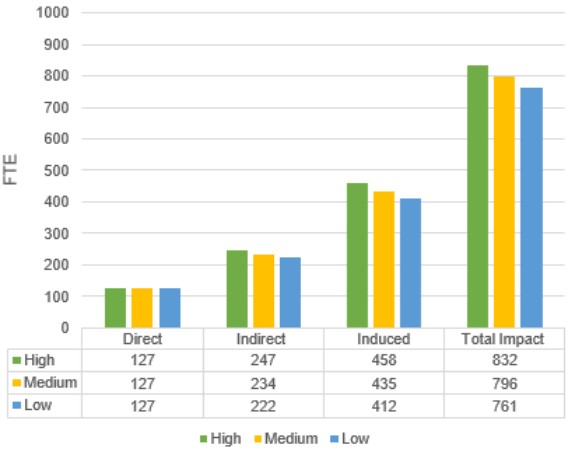


Figure 21 FTE From Construction Activity, Region (Option 1: 25% Local Employment)

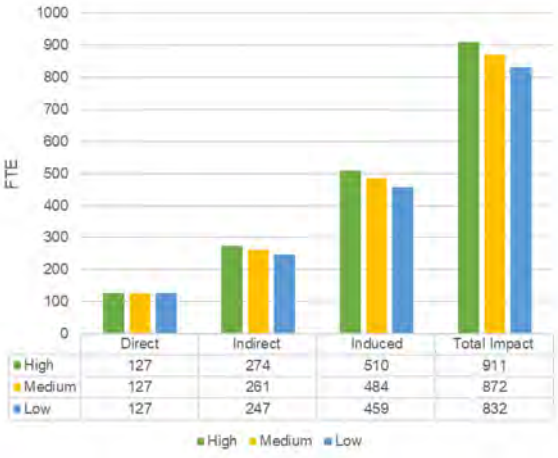


Figure 22 FTE From Construction Activity, Region (Option 2: 50% Local Employment)

Key findings from the analysis above:

- Between 445 and 487 FTE jobs will be required from the Glenelg LGA to carry out construction activity related to the windfarm under a 25% local employment option.

- A higher increase in FTE requirements is experienced in the Region, when compared to the LGA, when moving from 25% local employment option to 50%. This is because the multiplier effect compounds over larger population sizes.
- As expected, most FTE are required from the Victorian state, as jobs that require technical skills are in low supply in the Glenelg LGA.

4.4.2 Operation Phase

The operation of the facility will also help to support employment at local, regional and state levels. Figures 23-28 summarise the level of FTE workers required to carry out continued maintenance of the windfarm, under the high, medium, and low case scenarios. Sensitivities around the composition of local and non-local workforce is also shown, being a 25% and 50% local employment options.

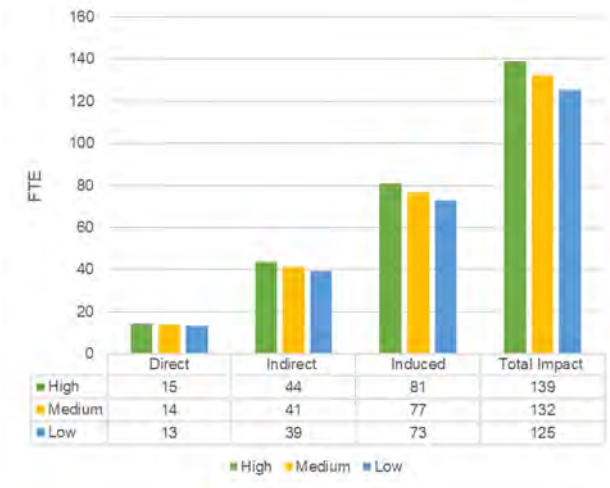


Figure 23 FTE From Operations, Victoria (Option 1: 25% Local Employment)

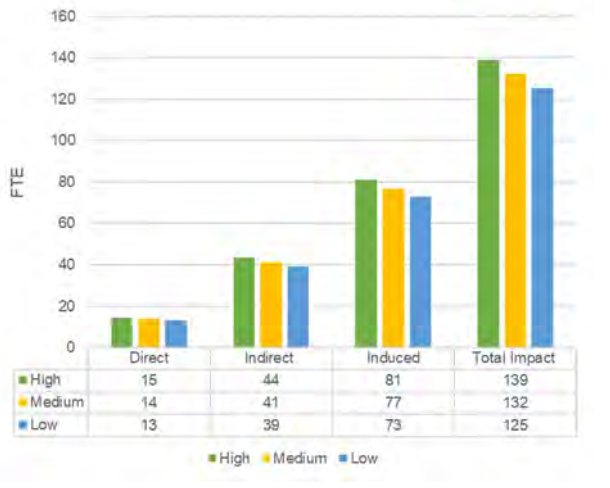


Figure 24 FTE From Operations, Victoria (Option 2: 50% Local Employment)

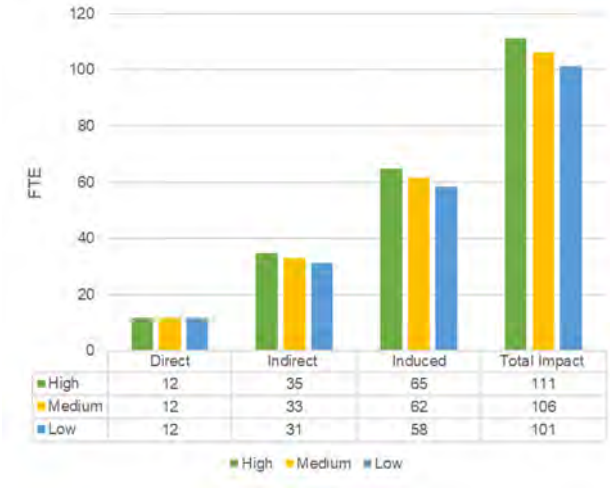


Figure 25 FTE From Operations, LGA (Option 1: 25% Local Employment)

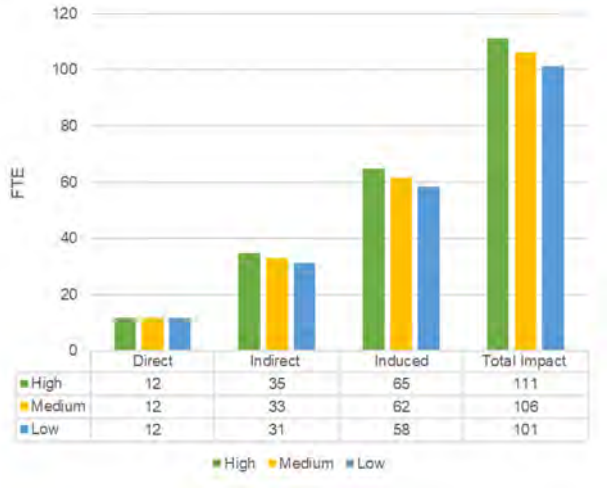


Figure 26 FTE From Operations, LGA (Option 2: 50% Local Employment)

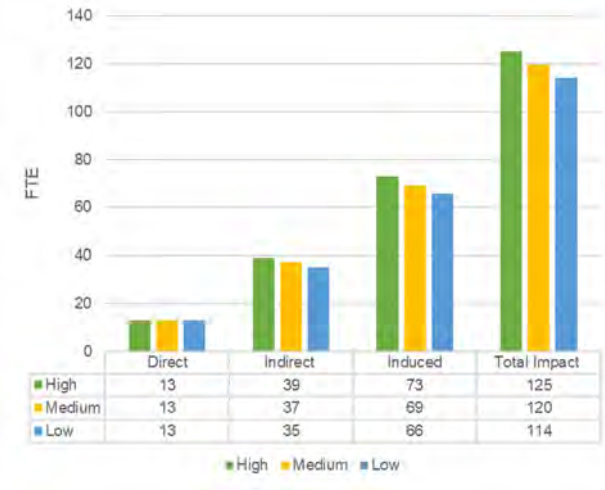


Figure 27 FTE From Operations, Region (Option 1: 25% Local Employment)

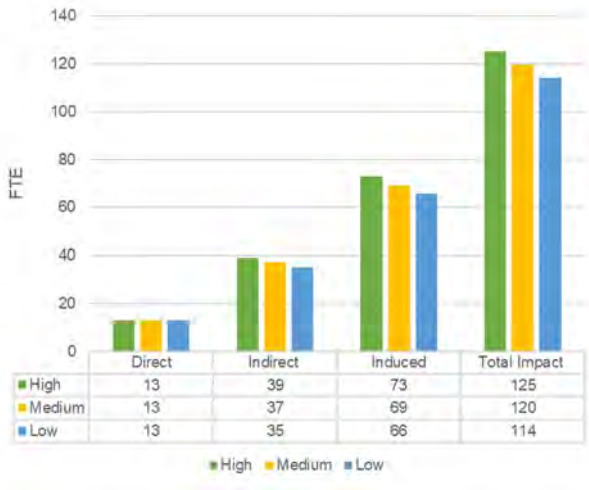


Figure 28 FTE From Operations, Region (Option 2: 50% Local Employment)

Key findings from the analysis above:

- The FTE requirements under the operation phase do not change when considering 25% and 50% local employment options as 100% as local workforce will be utilised under the operational phase.
- For the operations phase of the project, between 114 and 125 FTE workers will be required from the Region, while between 101 and 111 will be required from the Glenelg LGA.
- From the wider Victorian state, between 125 and 139 workers will be required to perform routine maintenance work on the wind farm.

Under the medium scenario, total employment across the State is expected to lead to as much as 3.8 million person-hours during the construction phase and a total wage bill of $152 million. During the operational phase, total employment across the State (under the medium scenario) is expected to lead to 307,000 Person-hours per annum and a total wage bill of $12 million per annum (Table 15 and Table 16 on the following page).

Note: the economic model assumes that the number of apprentices will remain constant under both 25% and 50% local employment. The number of person-hours and the wage bill does change, however, because these values encapsulate economic multiples and proportion of workforce contained locally.

Table 15 Economic Benefits Realised through FTE (Option 1, 25% Local)

Project phase	Regional impacts	Apprentices (no.)	Person-hours ('000)			Wage Bill ($m)		
			High	Medium	Low	High	Medium	Low
Construction	Total activity (LGA)	35	1,102	1,047	992	44	42	40
	Total activity (Region)	52	1,833	1,742	1650	73	70	66
	Total activity (Vic)	52	3,667	3,483	3,300	147	139	132
Operation (per annum)	Total activity (LGA)	-	259	246	233	10	10	9
	Total activity (Region)	-	291	277	262	12	11	10
	Total activity (Vic)	-	323	307	291	13	12	12

Table 16 Economic Benefits Realised through FTE (Option 2, 50% Local Employment)

Project phase	Regional impacts	Apprentices (no.)	Person-hours ('000)			Wage Bill ($m)		
			High	Medium	Low	High	Medium	Low
Construction	Total activity (LGA)	35	1,115	1,059	1,004	45	42	40
	Total activity (Region)	52	1,996	1,896	1,796	80	76	72
	Total activity (Vic)	52	3,992	3,792	3,592	160	152	144
Operation (per annum)	Total activity (LGA)	-	259	246	233	10	10	9
	Total activity (Region)	-	291	277	262	12	11	10
	Total activity (Vic)	-	323	307	291	13	12	12

4.5 Other Economic Impact Considerations

4.5.1 Commercial Forestry

As outlined in the 'Baseline assessment' section above, the proposed project area is predominantly (85%) located within substantially modified areas used for commercial forestry (active management and harvesting of radiata pine).

Neoen has an agreement with Green Forest Triangle Products (GFTP) to limit timber clearing to approximately 350 hectares during the construction of the wind farm. A compensation scheme has also been developed whereby GFTP is compensated for (i) loss of tree crop; (ii) disruption impacts; and (iii) ongoing loss of the commercial value of land.[18]

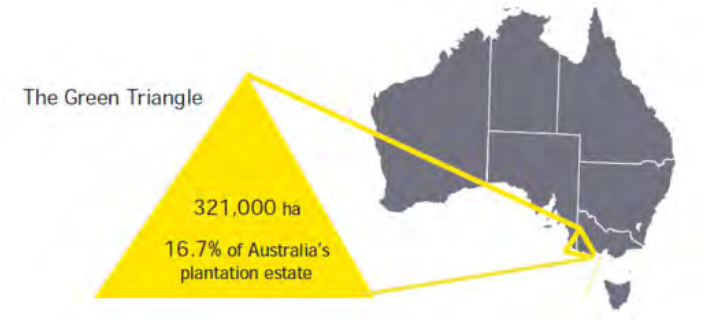
While GFTP will be compensated for economic losses associated with the tree clearing required for the construction of the KGPH, it is also important to consider the potential employment and income impacts on the local timber processing industry due to the reduction in plantation area. One simple metric to gauge the potential impact of the tree clearing on the local timber processing industry is to measure the land area being cleared as a proportion or share of the total plantation area in the local region. The proposed clearing area represents close to 2%% of the net plantation area of GFTP and close to 0.1%% of the total plantation area located within the Green Triangle [19]

In addition, consultation with GTFP indicated that:

- The plantation clearing involves a common soft-wood variety that is primarily used to develop timber structures and frames for residential houses.
- Changes in other drivers of production such as productivity from the genetic improvement in forest tree species and/or innovation in fertilisers will have far greater consequences for tree production than the loss of 350 hectares of land.
- There is the intention to explore opportunities to re-plant trees within the project area (and potentially surrounding the project area) once the construction phase has been completed.

In summary, the economic impact of the construction of KGPH on the Green Forest Triangle Products (GTFP) and the local timber processing industry will be low due to:

- Proposed compensation scheme
- Relative size of the plantation and the variety of trees being cleared
- Opportunities to re-plant trees within the project boundary after the construction phase is complete.]



Source: EY, Capturing the full benefits of plantation forestry in the Green Triangle, 2020

Figure 29 Location of the Green Triangle

[18] Net of the salvage value of the tree crop that is located within the project boundary
[19] The Green Triangle includes some plantation areas in South Australia

4.5.2 Grazing Land

The remaining 14%% of land in the Project Area is freehold land primarily used for grazing. It is also assumed that the economic impact of the construction of KGPH on landowners and the local farming and meat process industries will be marginal based on the:

- Compensation schemes that are in place for the landowners
- Relatively small amount of grazing land that will be acquired relative to the supply of land in the local region
- Ability for cattle to be re-located on existing or neighbouring properties during construction and operation of KGPH.

4.5.3 Land Traversed by the Transmission Line

The new transmission line would be up to 26.6 km in length and entirely underground. The 275 kV transmission line will connect to the existing AusNet electricity transmission network and would extend from the eastern boundary of the wind farm site to the existing 275/500 kV Heywood Terminal Station. Given that the anticipated transmission line will be entirely underground there will be limited disruption to current land uses. It is assumed however that only marginal economic impacts will result from temporary or permanent land acquisition for the transmission line over the medium-to-long term once compensation arrangements have been accounted for.

4.5.4 Tourism

Tourism and Eco-Tourism in the Region

The Great South Coast region's key industries include agriculture, tourism, and energy production (Social Impact Assessment Report, Appendix R of the EES). Specifically, tourism sees over one million visitors per year enter the broader region. Key tourism attractions include hiking the Great Southwest Walk, camping, fishing, whale watching, visiting local towns, horse riding, wineries and distilleries, and swimming at any of the various beaches and rivers. There are several tourism operators within the region, such as Glenelg Cruises[20] and AusWalk.[21] For further information, the Social Impact Assessment report (Appendix R of the EES) should be read in parallel with the Economic Impact Assessment report. It should be noted that not all tourist operators are necessarily located within the LGA, but the local contributions are captured by the aggregate nature with which Economic Impact Assessment models are built.

Furthermore, information regarding visitation numbers to specific National and State Parks is not available as Parks Victoria only provides estimates on total visitation to all its parks in its portfolio. To estimate the impact on tourism caused by KGPH, Aurecon utilised data such as business data on Industries directly or indirectly associated with tourism activites.

[20] https://www.glenelgrivercruises.com.au/
[21] https://auswalk.com.au/?comp_id=3497

Table 17 Tourism Sector, Great South Coast Region

Tourism businesses (2019)		Annual tourism output ($m) in real $2022			Annual tourism employment (no.)		
Business size	**Business no.**	**Industry sector**	**2020**	**2022**	**Industry sector**	**2020**	**2022**
Non-employment	435	Accommodation & Food Services	297.4	215.5	Accommodation & Food Services	1,72	1,773
1-4	436	Transport, Postal & Warehousing	61.4	29.1	Transport, Postal & Warehousing	467	94
5-9	303	Retail Trade	61.2	45.9	Retail Trade	188	380
20+	57	Other	185.5	132.9	Other	506	323
Total	**1,231**	**Total**	**605.7**	**423.5**	**Total**	**2,88**	**2,570**

Source: Remplan (Accessed 2023), Local Government Area Profiles | Tourism Research Australia

Annual output attributable to tourism across all industry sectors declined by 30%% between 2020 and 2022. This reflects the adverse impacts of COVID-19 pandemic on the tourism sector, a trend observed across Australia. Tourism generated jobs across industry sectors fell by 11 %, with tourism attributed jobs in the Transport, Postal & Warehousing industry recording the largest fall.

Eco-Tourism in the LGA

The following figure shows the extent of eco-tourism in the Glenelg Shire, which ranges from popular camping sites along the Glenelg River, to hiking the Great Southwestern Walk, and swimming in the various beaches along the Discovery Bay Coastal Park.

Figure 29 Eco-Tourism in the Glenelg Shire

Great Ocean Walk Tour operators

The following table provides a list of current tour operators that have operations near the proposed wind farm development.

Table 18 Licensed Tour Operators in the Glenelg Shire

Business Name	Description
Auswalk Walking Holidays	Auswalk Walking Holidays offers both group-guided and self-guided walking holidays across Australia, with multiple operations located within Victoria and the iconic Great Ocean Walking locations.
Bang Fitness Adventures	Since 2013, Bang Fitness Adventures have been providing boutique trekking experiences on the Great Ocean Walk, with expert local knowledge and experience. They operate in several iconic walking hot-spots across Australia, including in the Great Ocean Road and Great Southwest Track.
Bindaree Outdoor Education	Bindaree Outdoor Education run custom designed programs across several locations across Victoria and specifically in the National Parks of Victoria.
Hedonistic Hiking	Hedonistic Hiking offers all-inclusive small group guided hiking tours.
Hike 2 Camp	Hike 2 Camp offers a unique experience on the Great Ocean Walk.
Holistic Hikes	Holistic Hikes offer an all-inclusive hiking tour designed to educate and empower. Holistic Hikes operate within Victoria across a variety of hikes within the Great Ocean Walk.
Life's An Adventure	Life's An Adventure operate across Australia; particularly in Tasmania and Victoria.

Business Name	Description
Ride With Us	Ride with Us is a transport operator located within the Glenelg Shire. The business help with bag drop-offs to the various camp sites along the Great Southwest.
Tour De Trails	Tour de Trails offers bespoke guided trail running tours throughout the Great Walks of Victoria.
Walk 91	Tourist operator based in the Great Ocean Road.
Total	**10**

Township Services Capacity

The ability of Glenelg Shire to accommodate non-local workers (i.e., those who are not residents in the LGA or not living within a daily commutable distance) is a key factor that will determine the extent to which the LGA can leverage economic opportunities from the KGPH.

Table 19 below outlines the scale and scope of the tourism sector within the LGA including, but not limited to, accommodation and transport services.

Glenelg Shire has several commercial accommodations, transport and retail services that can help to absorb the additional demand from workers that require short-term accommodation and hospitality services during construction.

In addition, private accommodation is often used to support construction worker needs through the leasing of holiday homes and investment properties, either privately or through real estate agents.

Current capacity of council services such as waste management are in line with the current size and economic activity of Glenelg Shire. It is expected that they cannot accommodate the additional waste to be generated during the construction and operation phase of KGPH. Neoen will make contributions to mitigate the negative impact of the additional waste generated.

Table 19 Tourism Sector, Glenelg Shire

Tourism businesses (2019)		Annual tourism output ($m) in real $2022			Annual tourism employment (no.)		
Business size	**Business**	**Industry sector**	**2020**	**2022**	**Industry sector**	**2020**	**2022**
Non-employment	80	Accommodation & Food Services	53.2	32.1	Accommodation & Food Services	312	263
1-4	88	Transport, Postal &	11.1	3.6	Transport, Postal & Warehousing	73	11
5-9	51	Retail Trade	9.2	6.4	Retail Trade	32	53
20+	6	Other	29.5	23.3	Other	68	59
Total	**226**	**Total**	**103.**	**65.4**	**Total**	**485**	**386**

Source: Remplan (Accessed 2023), Local Government Area Profiles; Tourism Research Australia

The tourism industry had immense set-backs due to the COVID-19 pandemic, which has been unprecedented, this led to tourism related output across all sectors decreasing by 39% while tourism generated jobs declined by 20%% across all sectors between 2020 and 2022, as shown inTable 20. It is anticipated that tourism industry activity will rebound to pre-COVID-19 levels in the coming years.

Table 21 shows tourism value in the Glenelg LGA declined by 32% between 2019-20 and 2021-22. The lower tourism value in 2021-22 can be attributed to the adverse effects of COVID-19 pandemic on the

[22] Transport, Postal & Warehousing are an industry sector that is estimated to support the tourism sector indirectly. For example, the increase in supply of food to restaurants requires transportation companies.

tourism sector across Australia. Economic output of the tourism industry is expected to rebound in the coming years.

Table 20 Tourism Economic Activity in Glenelg Shire 2019-20 and 2021-22

Glenelg Shire – Value of Tourism and Hospitality	Value added 2019-20 ($m) In $2022	Value added 2021-22 ($m) In $2022
Direct	27.35	18.60
Indirect	37.07	25.21
Total	64.42	43.81

Source: economy.id (Accessed 2023)

Table 21 provides an approximation of the level of economic activity calculated at the township level. This is calculated by applying a volume weighting factor of population against the total Glenelg shire economic value.

Table 21 Tourism Economic Activity by Township (approximate)

Town	Population[23]	2019-20 Approximate Tourism Value (by Population)[24] ('000) In $2022	2021-22 Approximate Tourism Value (by Population)[25] ('000) In $2022
Portland	10,016	$32,018	$21,775
Heywood	1,815	$5,802	$3,946
Casterton	1,673	$5,348	$3,637
Nelson	191	$588	$415
Other	6,457	$20,641	$14,037
Glenelg	**20,152**	**$64,420**	**$43,810**

Source: Census data (2021) and economy.id

Tourism Impact Assessment Summary

There is significant tourism activity in the Glenelg LGA, with approximately 380,000 tourists visiting annually.[26] The area reported approximately $44 m in tourism value added in 2022. Nelson, for instance, receives a lot of repeated visitors for its natural wonder, including the Glenelg River and Discovery Park.

There may be some economic impacts on the tourism industry in the area surrounding KGPH. There is potential for resources typically used to service tourists (e.g., accommodation, hospitality) being diverted to servicing the needs of workers during the construction phase of the project. The Workforce Management Plan (Accommodation Strategy) produced by Umwelt for the KGPH provides further detail regarding the impact. Specifically, Section 4 outlines a series of accommodation management strategies that could be deployed to manage the added demand from the KGPH workforce. In addition, Section 3.4.7.8 of the Social Impact Assessment (Appendix R of the EES), outlines a market overview for the accommodation in the region.

With the appropriate worker accommodation strategy being implemented by Neoen, the adverse impacts on the tourism industry can be mitigated. Mitigations including providing worker accommodation in the nearby town of Mount Gambier, which has a higher capacity to service the needs of workers during the construction phase of KGPH.

In addition to this, Neoen are in the early stages of establishing a Community Benefit Fund. The fund, which will be approximately $150,000 per year, will be aimed at selected local initiatives, such as tourism, but will also involve investments into the Gunditjmara community, renewable energy education programs in schools,

[23] 2021 Census Figures
[24] 2021-2022 Tourism data available on Economy.Id
[25] 2019-2020 Tourism data available on Economy.Id
[26] Social Impact Assessment, Produced by Umwelt, Written for Neoen Kentbruck Green Power Hub

as well as various other effected stakeholders. As identified through consultations with the local community, Neoen identified potential tourism related funding opportunities including:

- Partnerships with local tourism providers in order to promote green energy as a tourist attraction
- Support for eco-tourism ventures, specifically for the township of Nelson
- Support for broader environmental tourism initiatives in the Local Government Area.

The estimated economic activity in Glenelg Shire from the operation of KGPH is estimated to be $30.5 million (see Figure 13), (direct and indirect only) under the medium scenario with 25% local employment.

Broader Tourism Operators

The Glenelg Shire is large by comparison to the proposed project site location, as indicated by Figure 30. Having analysed the tourism economic data within this LGA, adequate consideration of how the site might impact tourist businesses has been performed. It is assumed that businesses outside of this LGA have a low probability of being negatively influenced by the project location. The geographic size of the Glenelg Shire LGA means there is a low probability of businesses located outside the LGA having significant operations within Glenelg Shire.

As has been mentioned previously, the proposed land site will be situated on plantation land, which means that no tourism businesses have operations on the site. In light of this, businesses outside of the Glenelg LGA have a low probability of being adversely impacted by the KGPH project.

Figure 30 Glenelg LGA Shire Overlayed with the Proposed KGPH Location

4.5.5 Traffic

During the construction phase of KGPH, there is expected to be an increase in the level of vehicular traffic on the roads surrounding the KGPH project area. The increased level of traffic can increase travel times due to congestion or diversions due to construction related road closures. The travel time increase can have negative economic impacts on activities such as freight transport or tourism.

Neoen has the appropriate traffic management strategies in place to mitigate the effects of construction vehicle traffic. Strategies included routing of construction vehicles to reduce traffic impact, scheduling oversize load movements during night and communication with residents and road users about upcoming road closures.

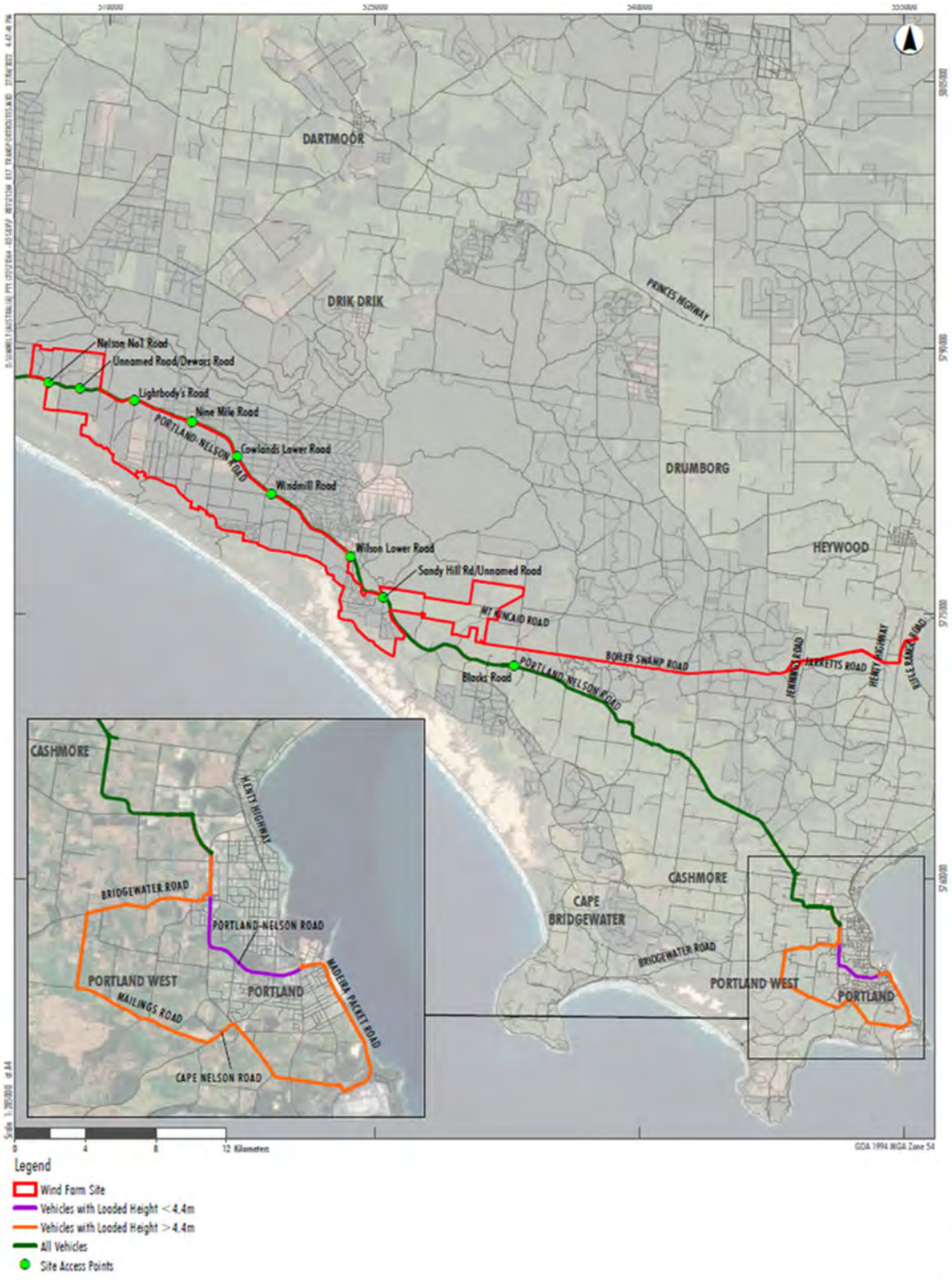


Figure 31 Potential Transport Routes During the Construction Phase of KGPH, Source: Umwelt

Umwelt has provided potential transport routes for KGPH vehicles, with Portland-Nelson Road (C192) being identified as one of the primary roads that KGPH vehicles will travel on (Transport Impact Assessment, Appendix P of the EES). There are concerns that the increased construction vehicle traffic will overwhelm the capacity of the road network causing congestion and negative economic impact. Traffic volume data available for Portland-Nelson Road (C192)[27] shows approximately 600 vehicles a day use Portland-Nelson Road. Similar nearby C-Class roads to C192 have traffic volumes that are significantly higher, suggesting that C192 has a higher traffic capacity than currently being utilised. As a result, it is expected that the increased traffic volume during the construction and operation phase of KGPH will not have a significant negative economic impact.

[27] https://discover.data.vic.gov.au/dataset/traffic-volume

Furthermore Neoen has identified road assets that will required to be upgraded in order to support the expected traffic impacts created by the KGPH project. Neoen will make contributions towards the construction and maintenance of road assets impacted by the project. Thereby reducing the negative impacts of caused by the project. Further details on Traffic Impacts can be found in Transport Impact Assessment Appendix P of the EES.

4.5.6 Carbon Emissions

The KGPH is forecast to produce 2,000 GWh of clean energy per annum, which is sufficient to power 461,000 homes across the State. The production of renewable energy at KGPH is expected to have a number of environmental benefits and help to reduce wholesale spot prices:

- The increased volume of clean energy produced by KGPH is forecast to lead to close to 1,968,000 tonnes of CO2 being displaced per annum.
- The production of renewable energy at KGPH could reduce wholesale spot prices.
- Aurecon's literature review on the impact of renewable energy production on wholesale spot prices in Australian and International markets (Appendix A of the Economic Impact Assessment) found strong evidence that additional renewable energy generation will help to reduce wholesale spot prices.

4.5.7 Procurement of Materials and Services for KGPH

Materials and services that would normally be directed towards servicing the needs of residents and businesses nearby the KGPH project area might be diverted towards the construction of KGPH, which could have a negative economic impact.

It is expected that the diversion of materials and services towards KGPH is unlikely, therefore the negative economic impact is unlikely to materialise. Due to the specialised nature the materials and services needed for the construction KGPH, it is highly unlikely to impact the residential and commercial construction activity in the project area.

There is potential for the positive economic impact from the construction of KGPH to be unrealised by local residents and business due to materials and services procurement practices overlooking local suppliers. Neoen aims to address this by having strong procurement policies in place that prioritise the use of local labour and businesses where it is appropriate. These policies will ensure as much positive economic impact as possible can be realised by the local residents.

4.5.8 The Economic Impact of COVID-19

Consultations with local business and service providers, which are outlined in the Social Impact Assessment Report (Appendix R of the EES), have described how COVID-19 impacted the economic activity within the region.

Accessibility to skilled workers due to the closure of state and international boarders led to staffing issues in many hospitality, construction, and tourism industries (SIA report). As previously outlined, tourism forms a major part of the economic activity within the region, with approximately 380,000 tourists visiting annually (SIA). There was a significant decline in tourism during the COVID-19 pandemic, with a negative economic flow on effects to local accommodation providers, hospitality services and retail vendors.

5 Environment Effects Statement

5.1 Summary of Impacts and Response to Scoping Requirements

The Kentbruck Green Power Hub has been referred to the Minister for Planning who has deemed a need for an Environmental Effects Statement to be developed. Table 22 and Table 23 specifies the existing environmental and the summary findings potential effects on existing environmental assets in terms of magnitude, extent, and duration have been addressed in the tables below. Mitigation strategies have been created for each corresponding issue in order to reduce the likelihood of the project having adverse effects on the local environment.

Table 22 Response to Environmental Effects Statement Scoping Requirements – Existing Environment

Existing Environment	Summary Findings	Relevant Section
Describe the project area and its environs in terms of land use (existing and proposed), residences, zoning and overlays and public infrastructure that support current and strategic patterns of economic and social activity.	▪ The KGPH is proposed to be located with the Glenelg Shire and Great South Coast Region of Victoria. ▪ The number and structure of businesses and occupations currently located within the Glenelg Shire and Great South Coast Region suggest that a good foundation exists for the catchments to service the needs of the Power Hub, including a relatively large number of construction-related workers (i.e., technicians and trades workers, machinery operators and drivers, and labourers) and construction and transport businesses.	Glenelg Shire map - Appendix D Great South Coast Region map - Appendix E Section 2.2.1 and Section 2.2.2
Describe the source and predicted volumes of construction materials for wind turbines and associated infrastructure.	▪ Construction materials will be source from a combination of local and overseas suppliers.	Section 4.2
Characterise tourism usage of the project area and its surroundings, including national parks and reserves	▪ Glenelg Shire has identified significant opportunities for renewable energy in the area and is outlined in their Glenelg Strategic Futures Plan 2009.. ▪ In addition, Glenelg Shire and Great South Coast Region have several commercial accommodation, transport and retail services that can help to absorb the additional demand from workers that require short-term accommodation and hospitality services during construction.	Section 4.5

Table 23 Response to Environmental Effects Statement Scoping Requirements – Key Issues and Mitigation

Key Issues	Mitigation	Relevant Section
Significant disruption to existing and/or proposed land uses, with associated economic and social effects. Potential adverse economic and social effects.	▪ The proposed project boundary sits largely within the Green Triangle Forest Products Plantation. Neoen have a limit of around 350 hectares of trees that can be cut down during the construction of the wind farm trees are expected to be replanted. ▪ During the construction amd operation phase, some grazing land will be unavailable due to project needs. However, overall impact on grazing is minimal as livestock can be relocated and only 14% of the project area is utilised for grazing ▪ Neoen will consult with directly affected landholders to ensure impacts associated with the construction phase are minimised and/or that compensation reflects and takes into account the specific impacts on each landholder. ▪ With mitigations in place, it is assumed that the economic impact of the construction of KGPH on Green Triangle Forest Products, grazing and the local timber processing industry will be marginal based on the: - Proposed compensation scheme, The plantation will be compensated per hectare depending on the age of the trees cleared - Relative size of the plantation and the variety of trees being cleared. - The opportunities to re-plant trees within the project boundary after the construction phase is complete. - Landowners will be compensated for the loss of grazing area. **Impact: Loss of trees and grazing land** **Duration: Construction period** **Magnitude: Net-zero, since plantation would be compensated for the loss of the trees**	Section 4.5.1 Section 4.5.2

Key Issues	Mitigation	Relevant Section
Describe proposed measures to mitigate, offset or manage social, land use and economic outcomes for communities living within the project area and its environs as well as proposed measures to enhance beneficial outcomes.	▪ Several measures will be put in place to manage/mitigate/offset some of the adverse economic impacts the project will have. Measures such as preferential employment to local residents, preferential procurement with local businesses and the Community Benefit Fund. The Fund will make an annual contribution to the local community via a grants program. ▪ A Community Benefit Fund is to be established and administered by Neoen to support local community projects. A $150,000 annual contribution for the life of the KGPH will be made to support sporting & community groups. Neoen is seeking community input to how best utilise the contribution. **Impact: Social and economic** **Duration: Construction and operation period** **Magnitude: Low, due to employment opportunities and Community Benefit Fund.**	Section 4.5.4

Key Issues	Mitigation	Relevant Section
Construction Phase: Identify potential economic effects of the project, considering direct and indirect consequences on employment and local and regional economy.	The requirements for the wind farm are unlikely to impact the supply of local construction goods and services. This is because the majority of construction related works in Glenelg are for local building construction, not heavy engineering construction. Skills are not transferrable from local construction and heavy engineering construction. Therefore, it is appropriate to assume that overlap in materials and labour requirements will be inconsequential to the construction of the project. Australia does not have a mature wind turbine manufacturing industry that can supply the materials (wind turbine blades and generators). As a result, wind turbine equipment will need to be sourced from oversea suppliers. Associated infrastructure such as transmission lines can be sourced from Australian suppliers. The construction of the KGPH will help to support businesses in the Glenelg LGA and across the State more broadly. In particular, the construction of the KGPH is expected to lead, for 50% local employment, to total economic output growth ranging between: - $154.8 million and $167.2 million for the Glenelg LGA (including direct, indirect and induced output), - $276.0 million and $298.1 million for the Great South Coast Region, and - $619.4 million and $668.7 million for the State of Victoria more broadly. Neoen estimates that 350 employees will be required to construct the KGPH. Employees will be made up of domestic and international contractors that work on a casual basis, part-time or full-time. Aurecon estimates that close to 253 FTE workers will be required from across the State during the two-year construction period. Employ local residents preferentially where they have the required skills and experience and demonstrate a cultural fit with the organisation. Employ local residents preferentially where they have the required skills and experience and demonstrate a cultural fit with the organisation. **Impact: Strain on local businesses to meet increased demand for goods and services.** **Duration: Construction phase** **Magnitude: Low, due to marginal overlap in project requirements and service availability. Early provision of information to the Glenelg Shire and relevant State Government agencies regarding employment and population level changes to facilitate early community infrastructure provision responses. Include a code of conduct for construction workers, with regard to behaviour in Contractor Induction Program.**	Section 4.2, Section 4.3.3, Section 4.4 and Section 4.5.7

Key Issues	Mitigation	Relevant Section
Operation Phase: Identify potential economic effects of the project, considering direct and indirect consequences on employment and local and regional economy.	The operation of the facility will also help to support businesses in the Glenelg LGA and across the State more broadly. In particular, the operation of the KGPH is expected to range between: ▪ $46.3 million and $49.9 million for the Glenelg LGA (including direct, indirect and induced output), ▪ $52.1 million and $56.1 million for the Great South Coast Region, and ▪ $57.9 million and $62.3 million for the State of Victoria more broadly. **Impact: Strain on local businesses to meet increased demand for goods and services.** **Duration: Operation phase** **Magnitude: Low, due to marginal overlap in project requirements and service availability. Also purchase local non-labour inputs to production preferentially where local producers can be cost and quality competitive.**	Section 4.3.4
Identify potential impact on tourism and tourist attractions within the project area and surrounding natural reserves.	The provision of tourism services and activities will not be physically impacted by the project. The wider economic benefits of KGPH will outweigh the negative impacts from reduced visual amenity and tourism activity. **Impact: Visual amenity** **Duration: Operation Phase** **Magnitude: Low**	Section 4.5.4

5.2 Duration and Extent of Economic Impacts

In this Section we summarise the duration and extent of economic impacts across the construction and operation phase.

5.2.1 Construction Phase

The economic impact associated with the construction phase have an approximate *duration* of 24-months, which corresponds to the modelled construction period. The *extent* of these economic impacts in terms of nominal economic benefit on a LGA, regional, and state Government basis are detailed in Section 4.3.3

Another important metric of economic impact relates to the number of full-time equivalent (FTE) jobs that are required to carry out the 24-month construction period. These are also detailed in Section 4.4.1.

5.2.2 Operation Phase

The economic impacts associated with the operational phase have been projected to extend for 30 years after construction, aligning with Neoen's maintenance expectations for optimal wind farm asset conditions. Expenditure on the wind farm each year during the maintenance period results in economic stimulus through the multiplier effect (direct, indirect, and induced), creating economic activity and jobs. The operation phase will assist in generating increased job opportunities within the local community, as the maintenance and operation of the wind turbines require a skilled workforce. This not only helps reduce unemployment but also bolsters the local economy by providing steady employment. The cleared land, including tree removal, provides an opportunity for strategic repurposing to address visual amenity and tourism concerns, promoting aesthetics and tourism. Despite acknowledging potential visual impact during the operational phase, particularly in proximity to high-tourism zones like Discovery Bay Coastal Park, the project expects broader economic benefits to outweigh these concerns. Strategic repurposing, supported by the Community Benefit Fund, aims to mitigate visual impacts and enhance the local tourism landscape.

Economic impact and modelled labour requirements are discussed in detail in Sections 4.3.4 and 4.4.2, respectively.

6 Future Opportunities

6.1 Potential Opportunities with Portland Aluminium Smelter

Neoen and the Portland Aluminium Smelter has entered a Memorandum of Understanding (MOU) to cooperate and explore opportunities between KGPH and the Smelter.

6.1.1 Quantitative Benefits

The Portland Aluminium Smelter is located nearby and is one of the largest electricity consumers in Victoria. The Portland Smelter already sources 33% of its electricity from renewable sources.[28] With the Portland Smelter setting a target to source 100% of its energy from renewable sources by 2024,[29] a Power Purchase Agreement between Neoen and Portland Smelter to supply the remaining 67% of electricity from KGPH may be feasible. It is assumed that the Portland Smelter requires approximately 6,000GWh in total of energy per year and KGPH is estimated to produce 2,000GWh per year. There is potential for Neoen to sell 100% of their KGPH electricity production to the Portland Smelter through a Power Purchase Agreement. This assumption does not consider the technical aspects such as variations in supply due to wind conditions.

Renewable electricity has the potential to reduce Portland Aluminium Smelter's operating costs.[30] In addition, Green Aluminium (produced with 100% renewable energy) commands a small premium on commodity markets.[31] This reduction in operating costs and market premium has been estimated to be $29.37 million per year in additional income or value to the state for each year the power purchase agreement is in place.[32]

6.1.2 Qualitative Benefits

Some of the qualitative economic impacts of supplying Portland Aluminium Smelter include:

Emissions reductions: As Australia and most countries seek to reduce CO2 emissions, demand for greener aluminium is expected to grow. This transition is also important in achieving and working towards Victoria's Net Zero by 2050 Emissions Reduction Target. The development of KGPH has the potential to supply Portland Aluminium Smelter with a source of renewable energy that will help transition the operation to a more sustainable future.

Local Employment: Portland Aluminium Smelter is central to the local economy, and is the largest employer in the region, with approximately 470 direct employees and 160 contractors. Many employees live in the local Portland community.[33]

The Victorian Government has provided several financial support packages, including $150 million in 2021 to secure jobs and its electricity supply with Alinta, AGL and Origin Energy.[34] The support from the Government highlights the importance of the Smelter to the local economy and job security of the region.

Having a secure source of electricity is integral to the smelter's operations and ensuring long-term viability for both operations and local employment.

Broader contribution to economy: On a state basis, the smelter injected approximately AU$60 million into the Victorian community through direct salaries, wages and benefits and AU$100 million in supply contracts.[35]

[28] https://www.afr.com/companies/manufacturing/alumina-reports-green-shoots-for-green-aluminium-price-premia-20210223-p5754o
[29] Alcoa 2021 annual report
[30] The reduction in operating cost does not consider the specific operations of the Portland Aluminium Smelter. Estimated reduction in operation costs sourced from https://reneweconomy.com.au/green-aluminium-already-cost-competitive-and-huge-opportunity-for-australia/
[31] https://reneweconomy.com.au/green-aluminium-already-cost-competitive-and-huge-opportunity-for-australia/
[32] The Alcoa Australia Portland Smelter is a Joint Venture, this figure does not consider the multiple overseas partners and the proportion of income that will remain in Victoria.
[33] https://www.alcoa.com/australia/en/pdf/smelting-portland-aluminum-smelter-fact-sheet.pdf
[34] https://www.abc.net.au/news/2021-03-19/portland-aluminium-smelter-deal-state-federal-governments/13261804
[35] https://www.alcoa.com/australia/en/pdf/smelting-portland-aluminum-smelter-fact-sheet.pdf

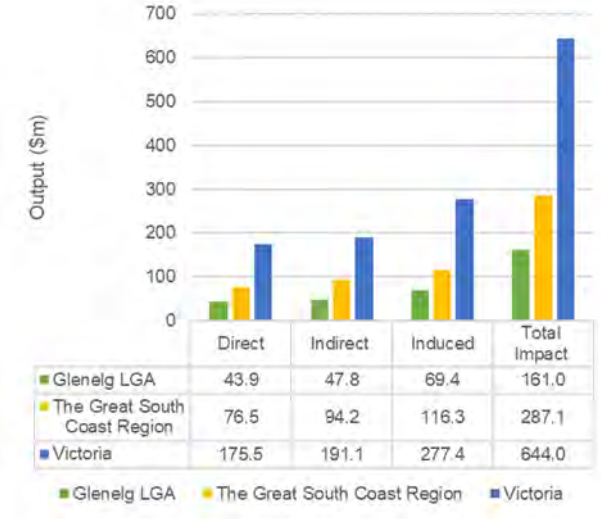
The smelter also produces approximately 19% of Australia's total aluminium production, with the main export market being Asia.[36] It is important that Victoria continues to generate export-earning dollars through manufacturing, as it is a significant contributor to the state's economy. Having a renewable energy supply to the smelter provides Alcoa with the competitive advantage of being able to produce and supply green aluminium to existing and emerging markets.

[36] https://www.alcoa.com/australia/en/pdf/smelting-portland-aluminum-smelter-fact-sheet.pdf

7 Conclusion

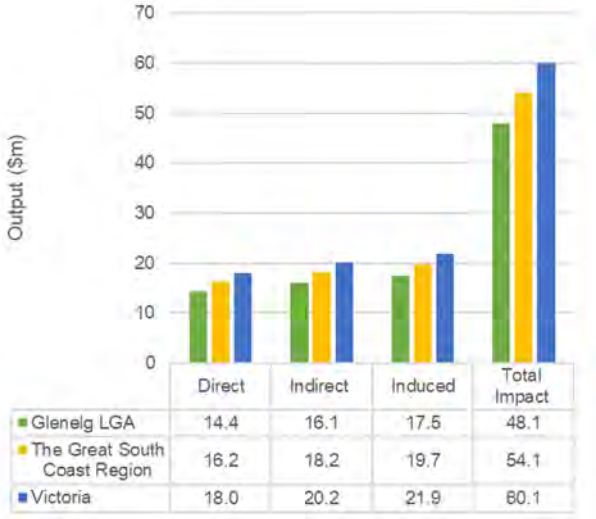
The KGPH is expected to have significant economic, social and environmental benefits at a local, regional and state level stemming from both the construction and operational phases of the Project. The economic benefits that KGPH will create are Direct, Indirect and Induced employment and net-positive economic activity.

As result, the Kentbruck Green Power Hub is expected to provide a net positive economic impact at the local, regional and state level, see Figure 32, Figure 33, Figure 34 and Figure 35.



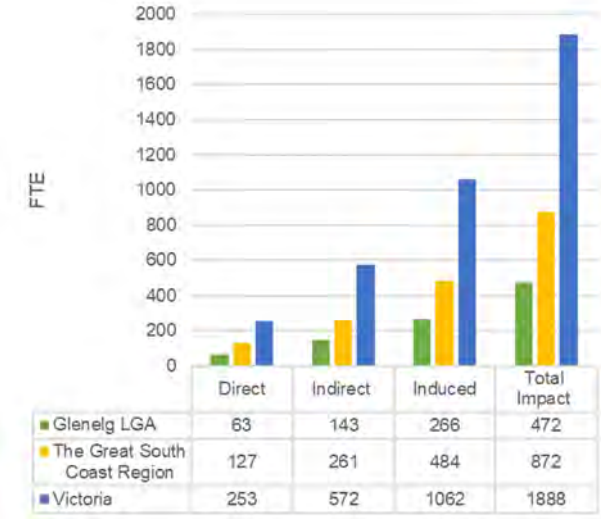
	Direct	Indirect	Induced	Total Impact
Glenelg LGA	43.9	47.8	69.4	161.0
The Great South Coast Region	76.5	94.2	116.3	287.1
Victoria	175.5	191.1	277.4	644.0

Figure 32 Economic Impact from Construction, Medium Scenario, 50% Local Employment



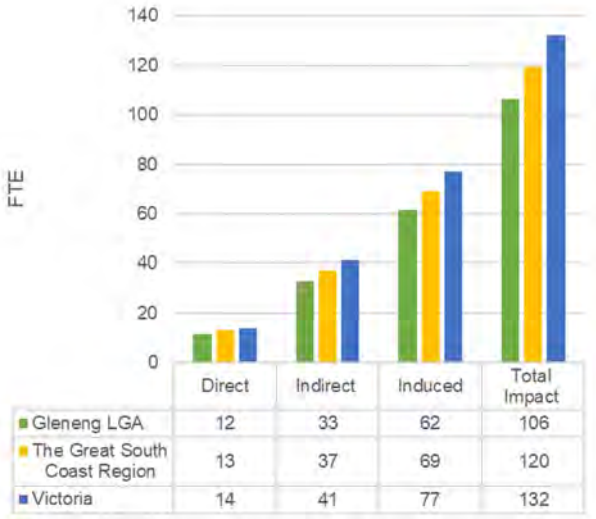
	Direct	Indirect	Induced	Total Impact
Glenelg LGA	14.4	16.1	17.5	48.1
The Great South Coast Region	16.2	18.2	19.7	54.1
Victoria	18.0	20.2	21.9	60.1

Figure 33 Economic Impact from Operations, Medium Scenario, 50% Local Employment



	Direct	Indirect	Induced	Total Impact
Glenelg LGA	63	143	266	472
The Great South Coast Region	127	261	484	872
Victoria	253	572	1062	1888

Figure 34 FTE Impact from Construction, Medium Scenario, 50% Local Employment



	Direct	Indirect	Induced	Total Impact
Gleneng LGA	12	33	62	106
The Great South Coast Region	13	37	69	120
Victoria	14	41	77	132

Figure 35 FTE Impact from Operations, Medium Scenario, 50% Local Employment

The requirement of wind farm is unlikely to impact the supply of local construction goods and services, mainly because majority of construction related works in Glenelg are for local building construction, not heavy engineering construction, given that the Australia turbine industry is still not mature.

During the operation phase, visual amenity is likely to be negatively impacted, however the wider economic benefits of KGPH will outweigh the negative impacts from reduced visual amenity and tourism activity.

Moreover, it is crucial to highlight the positive economic outcomes anticipated through the project will foster overall economic growth.

Appendix A: The Impact of Kentbruck Green Power Hub on Wholesale Spot Prices

The impact of renewable electricity generation on wholesale electricity prices is an empirical question that requires the review of academic studies that utilise complex econometric models to untangle and isolate the various factors that can affect wholesale electricity prices. A detailed international literature review has thus been conducted across a number of countries that have seen an increasing share of renewable energy production and that have similar institutional arrangements to the National Electricity Market (NEM) in Australia.[37]

International Literature Review

The literature review performed covered a number of academic studies on the impact of variable renewable energy (VRE) production on wholesale electricity prices in electricity markets in Germany, Spain, Denmark, the Netherlands, Ireland, Israel, the UK, Austria, Italy and in the US wholesale markets.

All but one of these studies concluded that renewable electricity generation led to wholesale price reductions of varying size.

In Australia, two studies (the most recent using data to June 2013) suggested renewables had reduced prices in the National Electricity Market. Furthermore, those studies that did examine the net impact of renewables (i.e. the extent to which wholesale price reductions were offset by the charge for renewables subsidies), tended to conclude that the benefit of price reductions was more than offset by the recovery of subsidies from residential customers.

Table 24 Literature Review of the Impact of Variable Renewable Energy on Wholesale Electricity Prices

Study	Region	Time Period	Average VRE penetration (% of demand)	Decrease in average wholesale price from average VRE (AUD)
United States				
Woo et al. 2011	ERCOT	2007-2010	Wind: 5.1%	Wind: $2.5/MWh (ERCOT North) $6.4/MWh (ERCOT West)
Woo et al. 2013	Pacific NW (Mid-C)	2006-2012	N/A	Wind: $3.9/MWh
Woo et al. 2014	CAISO (SP15)	2010-2012	Wind: 3.4% Solar: 0.6%	Wind: $9.5/MWh Solar: $1.3/MWh
Woo et al. 2016	CAISO (SP15)	2012-2015	Wind: 4.3% Solar: 2.6%	Wind: $9.9/MWh Solar: $2.7/MWh
Gill and Jin 2013	PJM	2010	Wind: 1.3%	Wind: $5.3/MWh
Wiser et al. 2016[a]	Various regions	2013	RPS energy: 0%-16% depending on the region	RPS energy: $0 to $5.9/MWh depending on the region
Jenkins 2017[b]	PJM	2008-2015	N/A	Wind: $1.2-3.1/MWh
Haratyk 2017[b]	Midwest Mid-Atlantic	2008-2015 2008-2015	N/A	Wind: $5.7/MWh Wind: $0MWh
Australia				
Mountain et al. 2018	South Australia	2018	N/A	Wind: $28/MWh Solar: $10/MWh
Forrest and MacGill 2013	South Australia Victoria	2009-2011 2009-2011	Wind: 29% Wind: 1.9%	Wind: $8.05/MWh Wind: $2.73/MWh
Cladius et al. 2014[a]	Australia	2011-2012 2012-2013	Wind: 4.3% Wind: 4.6%	Wind: $2.30/MWh Wind: $3.29/MWh

[37] That is, electricity production from centrally dispatched generators in interconnected electricity markets.

Europe				
Würzburg et al. (2013)	Europe	2010-2012	N/A	Non hydro: $0.7/MWh-$2.1/MWh

Notes: a - Price effect is estimated impact of RPS energy relative to price without RPS energy in 2013 before making adjustments due to the decay effect discussed by the authors. b - Decrease in average wholesale prices is based on change in wind energy from 2008-2016 (Jenkins 2017) or 2008-2015 (Haratyk, 2017), rather than the decrease from average wind reported in other rows

Application of Literature Review to the KGPH

The KGPH is earmarked to be located approximately within the Glenelg Shire in Victoria.

None of the studies included in our literature review focused on the unique features of the Victorian market. As a result, the findings of comprehensive study of the South Australian market are examined below in order to gauge the potential implications of KGPH on the Victorian Market.

Renewable energy production in Victoria has the potential to:

- Displace relatively expensive gas production compared to other countries, and in turn
- Lead to relatively large reductions in wholesale electricity prices.

The Victoria Energy Policy Centre within Victoria University recently estimated the various drivers of change to the average New South Wales spot price recorded in 2018 via a complex econometric model including gas prices, wind generation, solar generation, and demand.[38]

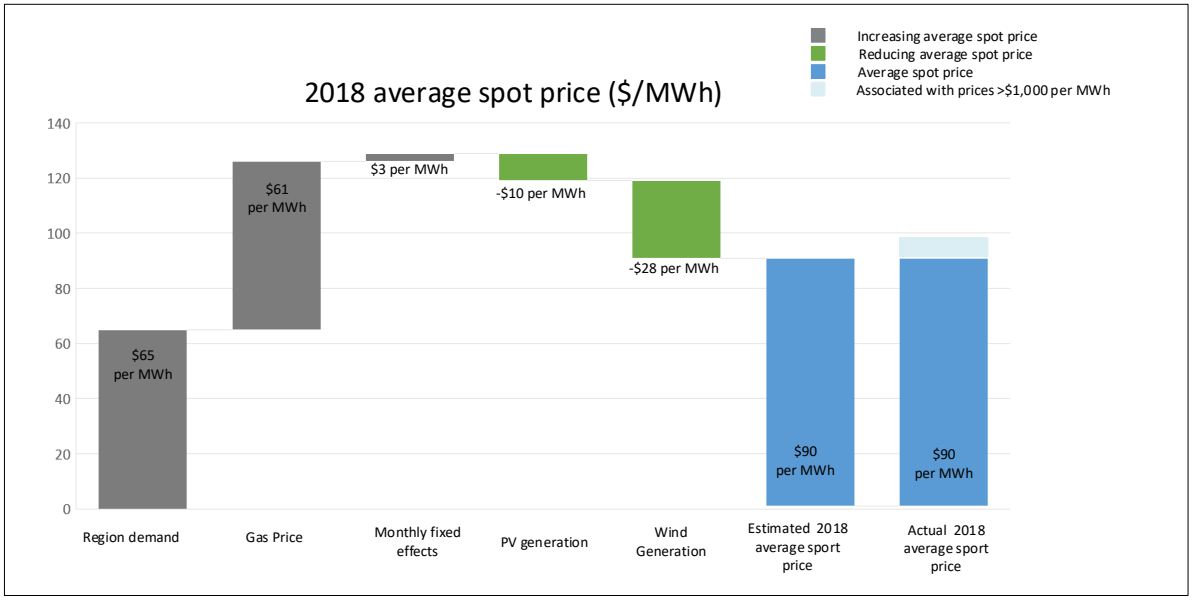
Consistent with the broader international literature review outlined above, the analysis conducted by Victoria University demonstrated that renewable energy production helped to reduce the average spot price per MWh in 2018.

The same study by Victoria University identified.

- Solar generation, which accounted for 1,110 GWh in South Australia in 2018, contributed to a reduction of $10/MWh (Figure 36).

The relatively large impact that renewable energy was estimated to have had on wholesale prices in South Australia during 2018 compared to the results presented in other international studies reflects:

- The relatively high level of renewable energy generation in the State; and
- The relatively expensive gas production that was displaced by renewable energy in 2018.



[38] Victoria University, *Does renewable electricity generation reduce electricity prices?* 2018

Figure 36 Decomposition of the average spot price in South Australia during 2018

In terms of the net impact of renewable energy production (i.e. the extent to which wholesale price reductions were offset by the charge for renewables subsidies), the reduction in the average spot price of $38/MWh in 2018 was estimated to have been associated with a subsidy of $11/MWh.[39]

The net impact of renewable energy production was therefore estimated to have been $27/MWh.

[39] From 2013 to 2018, the Small-Scale Technology Percentage has averaged 12.6% and Renewable Power Percentage has averaged 12.9%. Assuming an average price of Small-Scale Technology Certificates of $40 and Large-Scale Technology Certificates of $45, this implies the average cost of renewable subsidies over this period has been $11/MWh.

Appendix B: Benefits from the Hiring of Apprentices

Overview

The construction of Kentbruck Green Power Hub is expected to result in the hiring of a number of trainees and apprentices. Aurecon has undertaken a high-level literature review to determine the benefits of Neoen providing apprenticeships and trainee positions during the construction phase of the Kentbruck Green Power Hub.

The table below outlines the studies that were examined and their key findings. The key findings from the literature review showed that there is an overall consensus that apprenticeships bring value to enterprises, individuals and society. While it is difficult to accurately capture and quantify the variety of costs and benefits associated with apprenticeship training, case studies from countries with established apprenticeships programs such as the UK, Switzerland, Germany and also Australia show that apprenticeships bring many monetary and non-monetary benefits on both a macro and micro economic perspective, but that the amount varies between sectors and also for men and women.

Apprenticeships are generally linked to higher chances of finding employment and higher wage premiums compared to unskilled workers, though apprentices may need to accept lower incomes at the beginning or during the training period as compared to unskilled workers. The earnings gap becomes positive soon after completion of training and if lifetime earnings are taken into account, the returns are considerable. The median hourly wage for a technician/trades workers is $33.50 compared to labourers with $26.20 (ABS Data, Aug 2020).

For firms and enterprises an upfront investment is often required, which might be a deterrent to providing apprenticeship places. How quickly firms reap benefits from training apprentices depends on the sector, company size, the wages being paid and the level of government support. In the long term, benefits to firms and enterprises include higher productivity and quality of work, gaining a pipeline of skilled workers and associated savings in recruitment if apprentices stay at the firm beyond their training period. Additional non-monetary benefits such as positive work attitudes, reduced turnover, knowledge transfer to other employees and lower injury rates are also evident.

The benefits of apprenticeships to society include lower unemployment (particularly youth unemployment), higher productivity, better quality work, increases in tax revenue and lower social expenditure such as unemployment benefits. The returns on investment are generally high with net present value (NPV) estimates for the UK of £16 to £21 per pound of government funding (McIntosh, 2007) and £21:1 (Cebr, 2014).

Key Assumptions Applied to the Socio-economic Assessment

For the purpose of this study, we have assumed that provision of apprenticeships and trainee positions during the construction phase of the Kentbruck Green Power Hub will provide a benefit to the individual recipients by:

- Increasing the probability of employment in subsequent years by 5% (Fok et al, 2009)
  - i.e., the probability of employment for the individual in a given year subsequent to the completion of the apprenticeship is expected to be 5% higher than what would have been the case if an apprenticeship position was not available.
- Increasing the hourly weekly wage rate by $180 in subsequent years, (Fok et al, 2009)
  - i.e., the average weekly wage for the individual in a given year subsequent to the completion of the apprenticeship is expected to be $180 more than what would have been the case if an apprenticeship position was not available.

Table 25 Key Findings from Literature Review to Investigate Benefits from Apprenticeships

Name of study	Author	Date	Key findings	Comments
Wage Transitions of Apprentices	Yin King Fok; Yi-Ping Tseng (University of Melbourne)	2009	▪ Apprentices have higher employment rates and lower unemployment rates compared to non-participants. ▪ Self-employment rate of apprentices exceeds that of non-participants soon after completion of training. ▪ Apprentices start with lower earnings but the earnings gap becomes positive (higher for apprentices) three years after training commencement. ▪ Weekly earnings gap after completion of training lower between apprentices and trainees than between apprentices and the non-training group. ▪ Positive returns to apprenticeships, which are considerable if life-time earnings are taken into account.	Study compares labour market outcomes for apprentices to individuals who entered a traineeship program and those who had not entered either of the programs. Observation period is up to 6 years after training commenced.
Estimating economic benefits from apprenticeships – Technical paper	Department for Business, Innovation and Skills (UK); Skills Funding Agency; National Apprenticeship Service	2012	▪ Possession of apprenticeship associated with higher wages compared to individuals with Level 2 qualifications (General Certificate of Secondary Education (GCSE) equivalent). ▪ Large variations in wage premiums between male and female, and by sector with apprenticeships in 'energy and water' having some of the highest premiums. ▪ Overall economic benefits include higher productivity due to	Analysis based on data from UK Labour Force Surveys from 2004-09. Insufficient data/evidence to quantify the value of spillover effects of apprenticeships.

Name of study	Author	Date	Key findings	Comments
			skills gained by individuals with apprenticeships, higher lifetime employment and spillover effects on productivity. ▪ Spillover effects include knowledge transfer to other employees, increased profits and positive signalling associated with successful completion of apprenticeship. ▪ Benefits from apprenticeship will occur for the rest of an individual's working life. ▪ Cost to the economy consists of cost of provision (public funding and fees paid by employer) and indirect cost of foregone output while learning. ▪ Cost-benefit analysis (CBA) indicates that economic return to apprenticeships has a cost-benefit ratio (CBR) of 4.3:1 to 5.3:1.	
A Cost-Benefit Analysis of Apprenticeships and Other Vocational Qualifications	Steven McIntosh (University of Sheffield)	2007	▪ 16-18% wage returns in 2004/05 for individuals with modern apprenticeships compared to those with Level 2 qualifications (year 10 equivalent). ▪ Demand for modern apprenticeship places exceeds supply, so employers may be able to choose the best applicants.	Analysis based on data from UK Labour Force Surveys from 2004-05. Report focuses on government funded apprenticeships ('modern apprenticeships'). Sectors considered are construction, engineering, business administration, retail and customer service, and hospitality.

Name of study	Author	Date	Key findings	Comments
			▪ Estimated wage returns for individuals with apprenticeships are rising (period under investigation: 1996-2005). ▪ Significant variation in wage return between sectors. 32% wage return in construction compared with no observed wage return in the retail sector. ▪ Wage returns to apprenticeships considerably higher than for other vocational qualifications. ▪ Apprenticeships and other vocational qualifications are positively linked to the probability of an individual being in employment. ▪ Positive economic return to apprenticeships and vocational qualifications in general. Net present values (NPVs) for modern apprenticeships of £16 to £17 per pound of state funding. ▪ Wide variation in CBA per sector, but clear positive benefits for the five sectors considered.	
Apprenticeship training in England – a cost effective model for firms?	Prof. Dr. Stefan C. Wolter; Eva Joho	2018	▪ Chances for firms to break even at the end of apprenticeship training period highest for three-year programs assuming that the apprentices are younger than 19 years, because minimum wages	The paper investigates whether an average English firm could expect a net benefit when training apprentices in a similar manner to Swiss firms. The study uses data from Switzerland to simulate the costs and benefits for English firms that would train

Name of study	Author	Date	Key findings	Comments
			increase substantially afterwards. ▪ Apprentices that start at an early age, even at very low pay, tend to generate the highest private rates of return, compared to apprentices that start at a later age. ▪ Big firms tend to have the highest net benefits, whereas micro-companies (<10 employees) may face net costs in scenarios where average firm can expect net benefits. ▪ In most occupations, at least one or two simulated scenarios produce net benefits. However, cooks, retail cashiers, and waiters produce simulation outcomes that show difficulties for firms to break even. ▪ In all occupations except for waiters, the savings in hiring costs have the potential to cover the net costs, provided firms are able to retain their apprentices after training. ▪ Incorporating potential benefits to the firms after the training has ended would make the training models viable in most cases and for most occupations.	apprentices in one of ten different occupations.
Economic impact of apprenticeships	Centre for Economics and Business Research (Cebr)	2014	▪ Recent renaissance in apprenticeships, as government has expanded the scale of the apprenticeship programme partly in	The principal data source used was the UK Department for Business, Innovation and Skills (BIS) further education data library.

Name of study	Author	Date	Key findings	Comments
			response to high youth unemployment. ▪ Apprenticeships linked to higher chance of finding employment ("employment premiums") and higher wage once employed ("wage premiums") than similar groups without apprenticeships. ▪ There is a net gain to the employer while apprentices train, and a higher output once employed. ▪ Economic impact of apprenticeships is already large ($82 billion per year) and is likely to continue to rise to reach $245 billion by 2050. [40] ▪ Economic return estimated at $49 for each $1 of public spending (2010 data), in line with Feb 2012 paper published by Department for Business, Innovation and Skills. [41] ▪ Apprenticeship starts are most concentrated in health and social care. Most apprentices train in service industries, some in manufacturing and a smaller number in construction.	
Do apprenticeships	Chiara Cavaglia; sandra McNally;	2018	▪ Results suggest positive earnings	Data obtained from National Pupil Database (NPD), the Individualised Learner Record (ILR), and the Higher

[40] Original economic impact values were presented in UK pounds and have been converted into AUD values using the average financial year (30 June) exchange rate for the cite year (2014). Original values were "£34 billion per year and is likely to continue to rise to reach £101 billion by 2050."

[41] Original economic return values were presented in UK pounds and have been converted into AUD values using the average financial year (30 June) exchange rate for the data reference year (2010). Original values were "£21 for each £1 of public spending."

Name of study	Author	Date	Key findings	Comments
pay? Evidence for England	Guglielmo Ventura		differential on average (at least up to age 28). ▪ Large variability in the estimated earnings differential between sectors and between men and women. ▪ Higher hrs of work by men seem to be important driver of this difference, though this does not account for gender pay gap amongst those educated to a more advanced level. ▪ Very high concentration of men in sectors where the return to an apprenticeship is high (such as Engineering) whereas women specialise in areas where the returns to having an apprenticeship are much lower such as Child Development. ▪ Exposure to information about apprenticeships will influence the probability of starting an apprenticeship between the age of 16 and 22.	Education Statistics Agency (HENSW).
The future of Australian apprenticeships	Margo Couldrey; Phil Loveder	2017	▪ Apprenticeship model is highly relevant in today's modern economy, but the system, including funding and regulatory arrangements, is complex, inconsistent and confusing. ▪ Without apprenticeships, there were concerns that skill shortages in key occupations could occur, particularly for	Paper is a summary of key findings from 'The future of Australian apprenticeships' stakeholder forum that was held on 25 Oct 2016 in Canberra.

Name of study	Author	Date	Key findings	Comments
			small and medium enterprises. ▪ Investigate and consider international models which extend the apprenticeship model to new industries and higher qualification levels, including degrees. ▪ Concept of apprenticeships, is often poorly perceived - challenge for the whole of the VET sector to change this view. ▪ Need to increase understanding of what works and what doesn't, and then apply the learnings throughout the life cycle of an apprenticeship.	
Measuring the costs and benefits of apprenticeship training	International Labour Office	2019	▪ Non-monetary benefits for enterprises include reduced turnover, improved recruitment, gaining pipeline of skilled workers, lower injury rates and improved employee engagement. ▪ Benefits to individuals include better school-to-work transitions, shorter unemployment between training and getting a first job and higher wage premiums. ▪ Better soft skills as well as a positive work attitude make apprenticeship graduates often more attractive to hire. ▪ Benefits to society include low youth unemployment, better-	The paper highlights that there are challenges to obtaining evidence-based data to measure costs and benefits of apprenticeships and particularly long-term benefits are difficult to quantify accurately.

Name of study	Author	Date	Key findings	Comments
			quality work, increases in tax revenue and lower social insurance expenditure. ▪ How quickly net benefits are generated depends on company size, sector, duration of training, the extent to which apprentices are engaged in real work/production processes and whether apprenticeships are subsidized.	

Appendix C: Approach to the Socio-economic Assessment

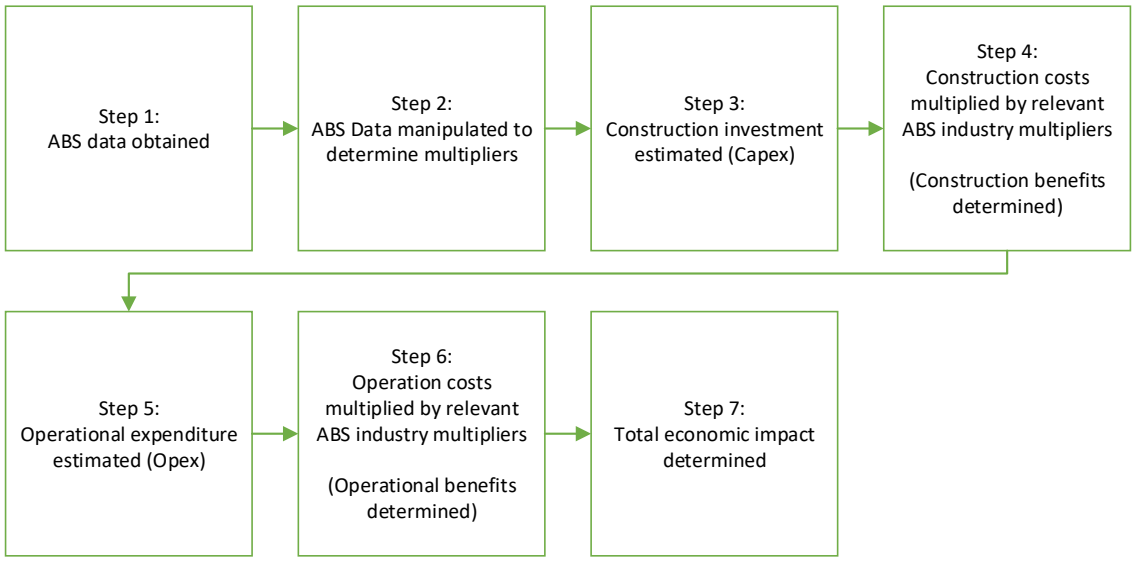
Input-Output Modelling

Input Output Modelling is defined as a top-down approach to estimating economic impacts of expenditure. An Input Output Model estimates jobs and income predictions through the inherent interdependencies between industries (multiplier effect). The Input Output multipliers capture:

- Direct (initial) benefits
- Indirect benefits (supply chain)
- Induced benefits (consumption)
- Total benefits (sum of direct, indirect, and induced benefits)

The process undertaken for the economic assessment is outlined in Figure 37 below:

Figure 37 The end-to-end process undertaken to conduct input-output modelling



Step 1: ABS data obtained

- Input output multipliers were underpinned by the latest input-output tables produced by the Australian Bureau of Statistics:
  - 5209.0.55.001 - Australian National Accounts: Input-Output Tables, 2018-19

Step 2: ABS Data manipulated to determine multipliers

- The latest input-output table for Victoria was combined with labour force data to generate estimates of economic multipliers consistent with the methodology outlined by the Australian Bureau of Statistics.

Step 3: Construction investment estimated

- The economic assessment relied on capital construction costs (Capex) provided by Neoen and the expected share of labour and equipment sourced from Victoria.

Step 4: Construction multiplied by relevant ABS industry multipliers

- Assumed relevant ABS industries and percentage of total investment cost:
  - Non-Residential Construction – 5%
  - Professional, Scientific and Technical Services – 5%
  - Heavy and Civil Engineering Construction – 80%

- Road Transport – 5%

- The multipliers outlined in the table below were used to estimate the indirect economic activity that will stem from the construction of the Green Hub.

Step 5: Applied Assumptions Around State contribution to workforce

Table 26 Modelling Workforce Composition: Scenario 1 and 2

Constructing Industry	Proportion of Works	Proportion of Workforce from Victoria
Scenario 1		
Non-Residential Building Construction	5%	**25%**[42]
Professional, Scientific and Technical Services	5%	100%
Heavy and Civil Engineering Construction	85%	100%
Road Transport	5%	100%
Scenario 2		
Non-Residential Building Construction	5%	**50%**[43]
Professional, Scientific and Technical Services	5%	100%
Heavy and Civil Engineering Construction	85%	100%
Road Transport	5%	100%

Step 6: Operational expenditure estimated

- Operational expenditure estimates provided by Neoen.
- Where actual data was not available, other Neoen sites with similar operations are an appropriate proxy.

Step 7: Operation costs multiplied by relevant ABS industry multipliers

- Assumed relevant ABS industries and percentage of total investment cost:
  - Electricity Generation – 40%
  - Electricity Transmission, Distribution, On Selling and electricity Market Operations – 40%
  - Insurance and Superannuation Funds – 20%
- The multipliers outlined in the table below were used to estimate the indirect economic activity that will stem from the operation of the Green Hub.

[42] These values are taken from the Accommodation Strategy Report, Average of Scenarios 1 and 2, table 3.2 and 3.3
[43] These values are taken from the Accommodation Strategy Report, Average of Scenarios 1 and 2, table 3.2 and 3.3

Step 8: Total economic impact determined

- The total economic impact of the construction and operational phases of the Green Hub were estimated for Victoria and Glenelg Region.

Step 8a: Total economic impact determined by region

- The Glenelg LGA was assumed to capture close to 60% of the labour and outputs required to support the construction of the KGPH and 90% of the operational phase. The proportion of activity that was assumed to be retained in Glenelg LGA was based on a comparison of the scale of Type 1 and Type 2 multipliers provided for Victoria and Glenelg LGA.

Step 8b: Total economic impact determined by direct, indirect and induced activity

- The indirect and induced output and employment was estimated based on Type 1 and Type 2 multipliers provided by the Australian Bureau of Statistics.

State Calculations

Direct Economic Impact

$$Direct_{State} = E \times \sum(w_i \times F_i)$$

- E is the initial expenditure by the state
- w_i is the ith proportion a specific constructing industry has within the total proportion of works
- F_i is the workforce proportion from local state sources

Total Economic Impact

$$Total_{State} = E \times \sum M2_i \times (w_i \times F_i)$$

- Where $M2_i$ is the Type 2A multiplier for the ith constructing industry activity, an output of the I/O model.

Indirect Economic Impact

$$Indirect_{State} = (Total_{state} - IA) \times PI$$

$$IA = Initial\ Impact_{State} = E \times \sum M1_i \times (w_i \times F_i)$$

- Where $M1_i$ is the Type 1A multiplier for the ith constructing industry activity, an output of the I/O model.
- PI = proportion of first round, second round, and third round effects that are attributed to induced impact, assumed to be between 50% and 65%.

Induced Economic Impact

$$Induced_{state} = Total_{State} - Direct_{State} - Indirect_{State}$$

LGA/Region

The methodology for calculating the LGA and Region are similar, however, a different constant of proportionality is applied to scale the size difference between LGA and Regions.

Direct Economic Impact

$$Direct_{LGA} = Direct_{State} \times PD_{LGA}$$
$$Direct_{Region} = Direct_{State} \times PD_{Region}$$

- Where PD_{LGA} and PD_{Region} are the proportion of direct state costs attributed to the LGA and Region, respectively. This value is assumed to be 25% and 50% in the model.

LGA Calculations

$$Direct_{LGA} = \sum(w_i \times F_i) \times W_{LGA.State}$$

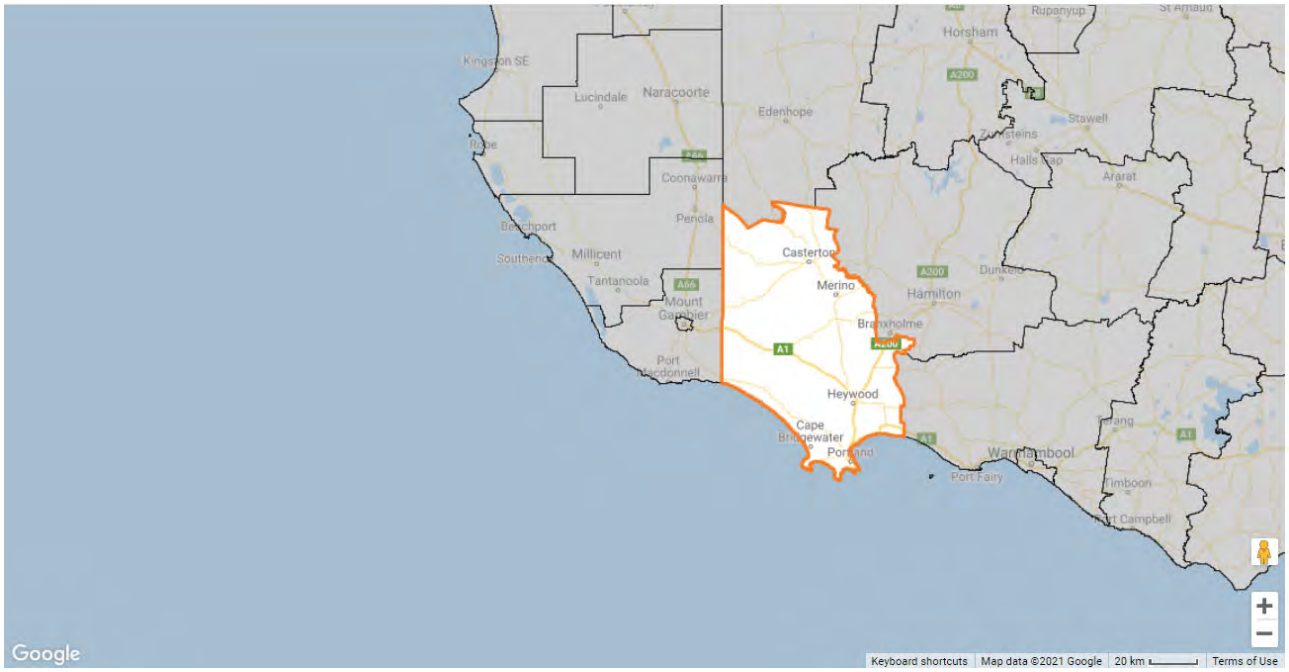
Where

- $W_{LGA.State}$ is the LGA share of state output, assumed to be 25% for construction, and 80% for operations.

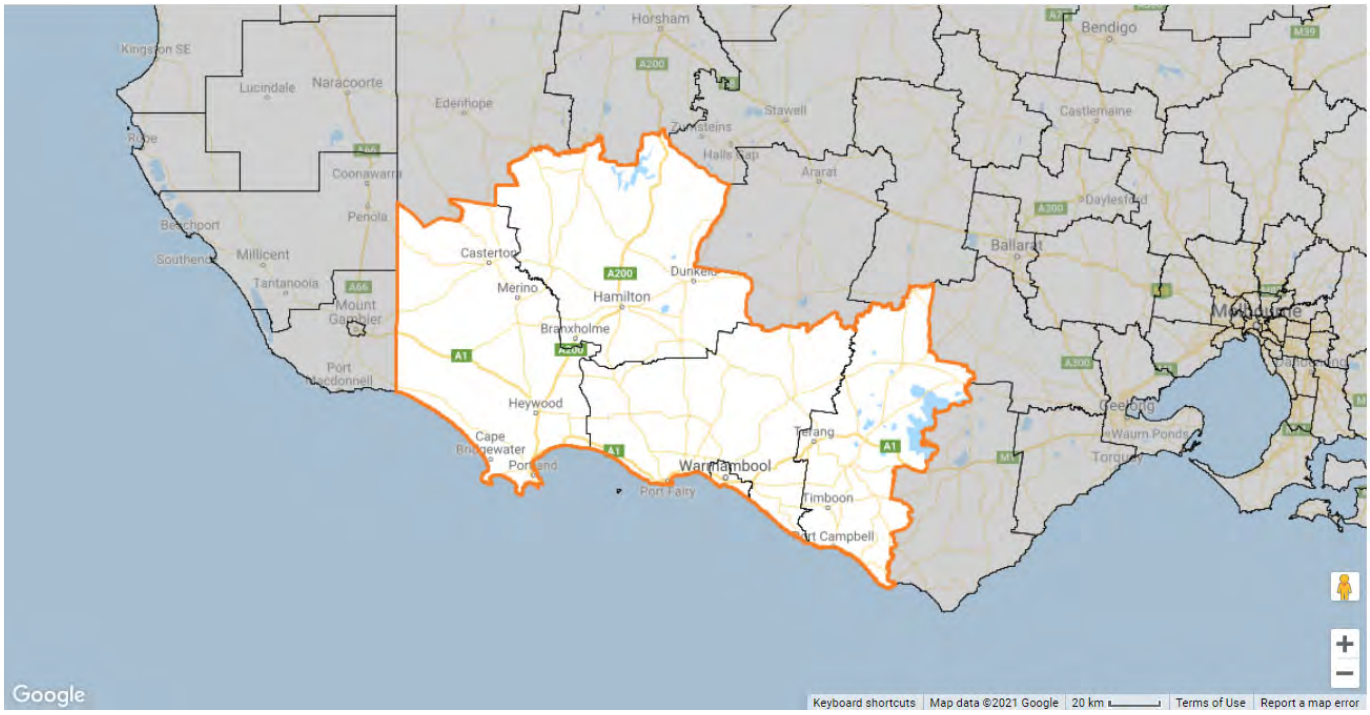
Step 8c: Total economic impact determined by high, medium and low scenarios

- The high scenario was defined based on the Victoria Type 1 and Type 2 multipliers provided by the Australian Bureau of Statistics for 2018-19.
- The low scenario was defined based the 10% low growth economic output from the Reserve Bank of Australia.
- The medium scenario was defined based on the average of key outputs and metrics from the high and low scenarios.

Appendix D: Map of Glenelg Shire



Appendix E: Map of Great South Coast Region



Appendix F: Community Funding Initiatives

Neighbour Benefit Sharing

The Neighbour Benefit Sharing program provides neighbours within close proximity of the windfarm an annual payment throughout the operations phase of the project. The payment is based on how close the residence is to the wind farm, and how many wind farms are within that area. The following graphic (Figure 38) highlights the proposed scheme.

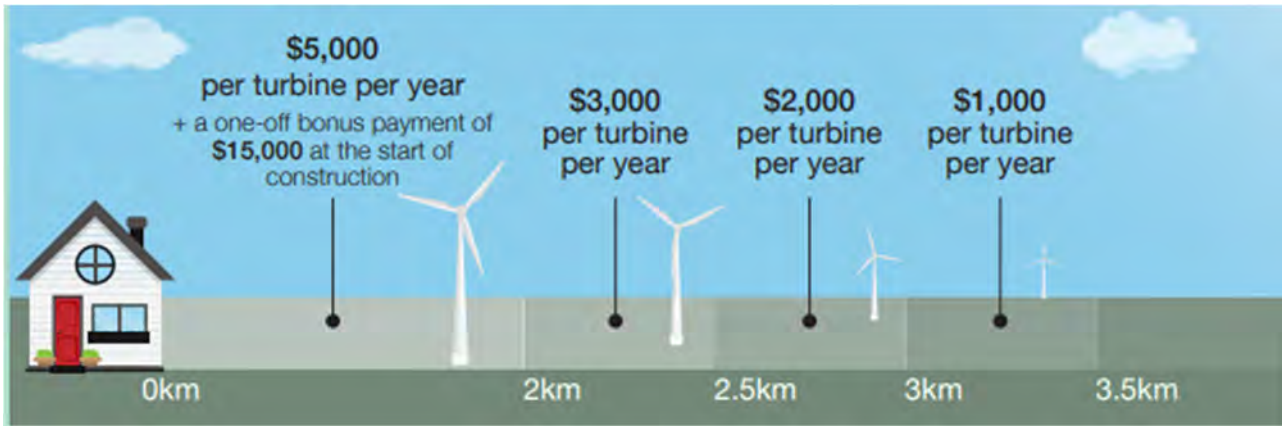


Figure 38 Neighbour Benefit Sharing

An example of how the payments is made is shown below (Figure 39).

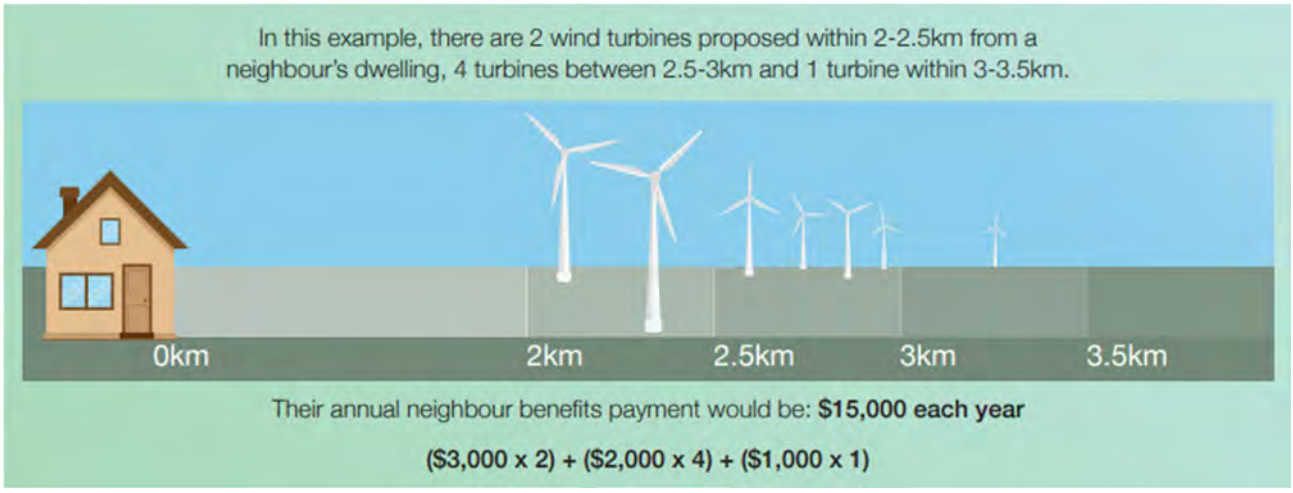


Figure 39 Example payment of Neighbour Benefit Sharing

The final amount will depend on the wind turbine layout, which is still to be determined following the approval of the Development Application. The payments will begin to be made once the project is operating, or at the execution of the Neighbour Deed (whichever is later).

Community Benefit Fund

The Community Benefit Fund is an initiative established by Neoen to allocate funds to local community projects such as sports, clubs, tourism, and heritage via a yearly grants process.[44] The following has been taken from the Social Impact Assessment report (Appendix R of the EES):

"It is understood that Neoen is currently in the early stages of planning a community fund for the Kentbruck GPH Project to provide a minimum $150,000 annually for the life of the Project to selected local initiatives or projects. Neoen is already considering options to have a component of the Project's community fund dedicated to the priorities of the Gunditjmara community, another component for direct neighbours to the

[44] https://kentbruckgreenpowerhub.com.au/local-benefits/

Project, and a third component focussed on community education of renewable energy in partnership with local schools."

For further information on this fund, it is recommended to read section 6.3 of the Social Impact Assessment report.

Ecology Fund

Neoen is in the process of developing an Ecology Fund that aims to fund ecological initiatives in the KGPH project area. The scope of the fund is not yet fully defined, it is expected to be in operation by the time KGPH begins construction.

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