14. Socioeconomics

Introduction

Background to the Study

14.1 RES commissioned Oxford Economics in the spring of 2022 to undertake a socioeconomic impact report of the proposed Carnbuck Wind Farm, hereinafter referred to as 'the Proposed Development', which is mainly located in Causeway Coast & Glens, and in Mid & East Antrim Borough Council area.

14.2 The Proposed Development consists of 12 three-bladed turbines, with a planned operational lifespan of 35 years. Of the total number of turbines, 11 will be situated in Causeway Coast & Glens and 1 in Mid & East Antrim Borough Council area. The total megawatt (MW) capacity of the Proposed Development will be confirmed pre-construction, however, for the purpose of this assessment 4.2MW capacity turbines have been assumed, based on a turbine model typical of the turbine size being applied for[1]. This would give a total installed capacity of 50.4MW. The Proposed Development will also include 50MW of Battery Energy Storage and it is anticipated that the electricity generated will be exported to the grid.

14.3 This report presents estimates relating to the direct, indirect and induced benefits that could be generated by the construction and operation of the Proposed Development. It also provides a brief discussion on the unquantifiable benefits associated with a development of this type and scale, and the current macroeconomic and socioeconomic environments.

About RES

14.4 RES is the world's largest independent renewable energy company. At the forefront of the industry for nearly 40 years, RES has delivered more than 21GW of renewable energy projects across the globe and supports an operational asset portfolio exceeding 7.5GW worldwide for a large client base. RES employs more than 2,000 people and is active in 10 countries working across onshore and offshore wind, solar, energy storage and transmission and distribution.

14.5 Ever since it was established in the UK in 1981, RES has been a pioneer in renewable energy, developing the UK's second ever wind farm in 1992. A significant portfolio of developed and constructed projects covers onshore and offshore wind, solar and energy storage. RES is responsible for keeping 10% of the UK's renewable energy projects operating and it provides support services—asset management and O&M—to a sizeable portfolio for leading clients in the industry.

[1] Carnbuck's planning application is for a 180m tip height machine with a 138m rotor diameter. There are multiple turbine options within this geometry range with a power output of 4.2MW and above. The example assumed in this assessment is the V136 4.2MW machine offered by Vestas.

14.6 RES has been building wind farms in Ireland since the early 1990s and from their office in Larne, Co. Antrim, they have a team of over 20 working across a range of disciplines. In Northern Ireland, RES has developed and/or constructed twenty-two onshore wind farms equating to over a quarter of Northern Ireland's onshore wind capacity and has a record of using local companies to develop, construct and operate renewable energy projects.

Structure of the Report

14.7 This report is structured as follows:

- Firstly, the estimated quantifiable benefits of the construction and on-going phases of the Proposed Development are presented—concentrating on employment, Gross Value Added (GVA)[2] and wages. An assessment of the potential fiscal and environmental benefits is also included;
- Secondly, an overview of the socioeconomic conditions, both at the regional and local level, is provided; and
- Finally, we set out our overall conclusions in respect to the Proposed Development.

Caveat

14.8 Specific information related to the Proposed Development was provided where possible by RES. The estimated benefits are based on a mix of this information, published data and reasonable assumptions.

14.9 The cost of construction could inflate or deflate depending on movements in variables such as exchange rates, demand for wind turbines and metal prices. As such the information is the best current estimate at the time of writing.

14.10 This economic impact study has been developed to form part of the environmental information to be provided to the decision maker. As such, if and when the time comes that the Proposed Development is granted full planning permission and has been built, the economic environment may look different. The analysis assumes all facilities contained in the Proposed Development are fully developed. We have considered the possibility of displacement during both the construction and operational phases of the Proposed Development. It is our view that given the current and likely future performance of the regional and local economy(s), there is little scope for displacement, therefore we have assumed zero levels of displacement in the modelling—see section 14.25-14.30 for further discussion.

14.11 There is no analysis within the report focusing on how the Proposed Development would impact income distribution and deprivation levels in the area. This is outside of the scope of this piece of work.

[2] Gross Value Added (GVA) measures the value of goods and services produced in an area, industry or sector of an economy and is equal to output minus intermediate consumption.

14.12 The quantifiable impacts calculated by Oxford Economics and outlined in this report come from an Economic Impact Model which uses an input-output framework, standard economic underpinnings, published data and few clearly documented reasonable working assumptions. We are aware of recent publications completed by KPMG on behalf of RenewableNI in 2021, which assess the economic impact on Northern Ireland's onshore wind sector[3]. It has been used to check the number of construction-phase related jobs per megawatt in Northern Ireland, and have found the figures to be similar in scale to those we have estimated. Other reports completed by BiGGAR Economics on behalf of RenewableUK and the Department of Energy and Climate Change (DECC)[4] assess the direct and indirect economic impacts of the commercial onshore wind sector across the UK in the decade to 2020.

14.13 Our modelling does not factor in industry support mechanisms.

Glossary of Definitions

14.14 **Backward linkages:** refer to the channels through which money, materials or information flows between a company and its suppliers, creating a network of economic interdependence. In terms of this study, it refers to the fact that the construction phase of the Proposed Development will require the purchase and use of raw materials from sectors like building materials; steel, architectural services etc., which themselves will create supply-chain jobs in the economy.

14.15 **Full-time equivalents (FTE):** all the modelling completed by Oxford Economics and all the impacts associated with this modelling, assumes that employment is expressed in terms of FTE, which is important given the prevalence of part-time working especially in the construction sector. Accordingly, two part-time workers make up one full-time equivalent worker.

14.16 **Gross value added (GVA):** measures the value of goods and services produced in an area, industry or sector of an economy and is equal to output minus intermediate consumption.

14.17 **Direct impact:** is defined as the economic activity and number of people employed by the wind farm (both in construction and in on-going roles).

14.18 **Indirect impact**: is defined as the economic activity and employment supported in the wind farm's supply-chain, as a result of their purchasing of inputs of goods and services from suppliers.

14.19 **Induced impact**: is defined as economic activity and employment supported by those directly or indirectly employed spending their wage income on goods and services in the wider UK economy.

[3] RenewableNI & KPMG (2021). *Powering A Green Economy*.
[4] BiGGAR Economics, DECC & RenewableUK (2012). *Onshore Wind Direct & Wider Economic Impacts*.

14.20 **Jobs:** any references to the employment benefits from the on-going phase once the Proposed Development becomes operational are expressed in terms of "jobs" per annum. As noted above, these jobs are full-time equivalent in nature.

14.21 **Job years:** any references to the employment benefits from the construction phase of the Proposed Development are expressed in terms of "job years". This is necessary given that construction phase activity normally spans more than a single year. A job year does not necessarily mean one job. Instead, it refers to the amount of activity that is required. So, for example two people could be employed for six months—this would equate to one job year of work. Alternatively, one person could be employed for two years—this would equate to two job years of employment. We do not need to use the term job years when talking about the on-going phase, as these benefits are all expressed in per annum terms as discussed above.

14.22 **Nominal prices:** are those which reflect the current situation and are not adjusted for seasonality or inflation.

14.23 **Real prices (2019 prices):** refer to values that have been adjusted to remove the effects of inflation and are thus measured in terms of the general price level in some base reference year. This measure of prices is more accurate. In this case, 2019 is the base year as it is consistent with the base/reference year used within UK ONS National Accounts: the Blue Book 2021.

Quantifiable Benefits

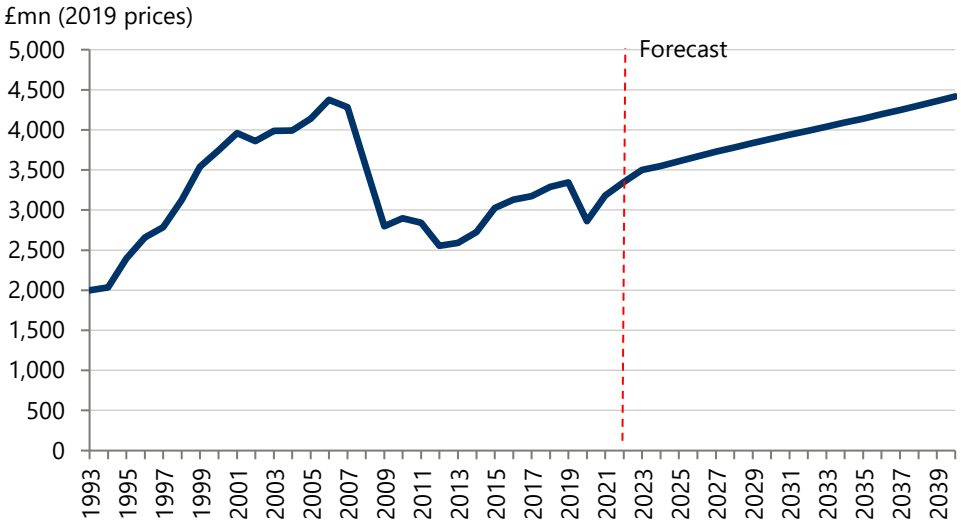
14.24 This section analyses the estimated quantifiable benefits of the construction and operational phase of the Proposed Development—concentrating on employment, GVA and wages, as well as assessing fiscal and further benefits.

14.25 A key assumption behind Oxford Economics' analysis relates to displacement[5]. We have assumed that there will be zero displacement during both the construction and operational phase of the Proposed Development. This assumption is in part based on the analysis below and, while there are agricultural activities currently at the site, we have been informed by RES that farming will be able to continue—see section 14.30 for further discussion.

14.26 The construction sector was impacted significantly by the challenges presented by the coronavirus pandemic. Lockdown measures aimed at curbing the spread of the virus halted much construction activity across Northern Ireland, with the sector operating at approximately 85 percent of its 2019-level of output in 2020. Subsequent restrictions however have been less stringent, allowing the sector to partially recover in 2021. Recovery will continue in 2022, with output levels expected to surpass 2019 records the following year. Figures 14.1 presents the scale of decline and pace of recovery.

[5]Displacement is the degree to which the effects which produce additional economic activity may lead to consequent reductions in activity elsewhere in the economy that would not have occurred if the intervention had not been made.

Figure 14.1: Construction GVA in Northern Ireland, 1993-2040



Source: ONS / Oxford Economics

14.27 Prior to the onset of the coronavirus pandemic, gross weekly (median) wages in Northern Ireland's construction sector experienced strong growth. According to the Annual Survey of Hours and Earnings (ASHE), statistics published by the Northern Ireland Statistics and Research Agency (NISRA), wage growth averaged 2.8 percent a year between 2015 and 2019. Factors including a growing demand for labour in this sector, a limited supply of construction related skills, or a combination of both can explain the sector's overall wage inflation, though the rate of growth slightly lagged the region's economy as a whole (2.9 percent per year). Wage growth in construction reversed in 2020 as Covid-19 restrictions became enforced. Although wages were somewhat protected by Government schemes in 2020, weekly wages in Northern Ireland's construction sector fell by 13.3 percent—compared to a 0.8 percent increase in weekly wages across the region's economy more widely. Provisional estimates show a partial rebound in construction wages in 2021, reaching £485 per week—slightly above the economy-wide equivalent of £469 but still notably below the sector's 2019 level.

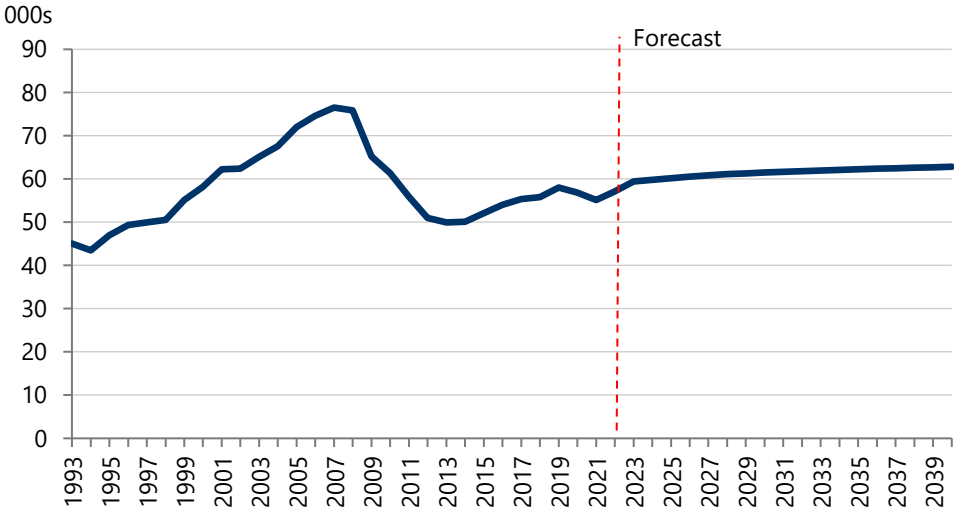
14.28 Despite Government efforts to protect the labour market, employment in Northern Ireland's construction sector also fell throughout the pandemic (see Figure 13.2). We forecast that the number of construction jobs across Northern Ireland will only partially recover in 2022, with levels remaining approximately 2 percent below those recorded in 2019. At the peak of the construction phase the Proposed Development will stimulate an estimated 175-284 construction job years across Northern Ireland (including indirect and induced effects)—see figure 14.5. This amounts to 0.3-0.5 percent of Northern Ireland's construction workforce.

14.29 We therefore conclude that the construction sector in Northern Ireland is likely to have enough spare capacity to accommodate the Proposed Development. As such

we have applied a zero rate of displacement of current or future economic activity on the construction phase impacts.

14.30 The site for the Proposed Development is currently agricultural land, however, the farmers will be able to continue to farm their land during the operation of the wind farm. The total permanent land take of the Proposed Development is 7.36 hectares, which represents just 1% of the 740 hectare site (land under applicant control). As such we do not expect a material impact on farming activity. RES will also compensate farmers financially. Given the above and that the fact that the number of on-going jobs is limited in volume terms and specialised in nature, our estimates for the benefits arising from the operational phase assumes no material displacement of economic or leisure activity.

Figure 14.2: Construction employment in Northern Ireland, 1993-2040



Source: ONS / Oxford Economics

14.31 We are aware of the argument that increased developments of this nature could displace jobs in fossil fuel activity. We would argue that given its size, the Proposed Development would not itself, in isolation, displace any actual activity away from the various fossil fuel power stations in Northern Ireland (Kilroot, Coolkeeragh and Ballylumford[6]).

14.32 While it could be acknowledged that cumulatively and in the long-run there may be displacement from the fossil fuel industry because of the on-going drive for increased renewables as a collective, an initiative set by the UK Government in the first place in which increased renewable energy is promoted to meet the Government's target of net zero carbon emissions by 2050.

[6] According to the Department for Business, Energy & Industrial Strategy (BEIS)'s *Power stations in the United Kingdom* publication, the following power stations were operational at the end of May 2018: Kilroot, Coolkeeragh and Ballylumford.

Economic impact of the Construction Phase

14.33 The benefits associated with the construction phase of the Proposed Development (jobs, wages, GVA and fiscal) are presented as a range. This range results from the implementation of two separate methods of estimating direct construction phase impacts. The first approach uses full-time job year equivalent figures provided by RES, based on previous projects they have carried out.

14.34 The second approach uses the value of investment expected to be realised in Northern Ireland. By assigning this to sectors of the economy we can estimate GVA levels, jobs and wages (using published and / or forecast data).

14.35 We then use an input-output model to estimate the indirect and induced impacts that are likely to flow from a given level of investment / activity. An input-output table provides information on how sectors purchase from one another. It also shows how households spend their income. We use UK input-output tables and adjust them to account for regional characteristics—see technical appendix for further discussion.

Method 1: Job posts approach

14.36 RES has provided job figures based on a nine-turbine project (totalling 18MW) with a construction period of 24-months. We have adjusted the job figures to account for a 12-turbine development, with an 18-month construction phase. This figure is shared across the construction and professional sector[7], based on the expenditure split used in Method 2 (see section 14.40).

14.37 The job figures used for modelling purposes are outlined in the table below.

Figure 14.3: Job years adjusted for the Proposed Development (12 turbines, 18-month construction phase)

	Job Years
Construction	105
Professional services	5
Total	**110**

Source: RES

Method 2: Expenditure approach

14.38 The Proposed Development is estimated to result in a capital spend of approximately £64.9 million (in nominal prices)[8]. This figure is based on

[7] The nature of employment in the construction sector means that the jobs directly sustained by the construction of the Proposed Development are onsite and based in the local area in which the Proposed Development is located. Employment in the professional services sector sustained during the construction phase could, however, be located offsite and/or be remote in nature. This is also the case for employment sustained once the Proposed Development is operational.

[8] As the international geopolitical landscape continues to change so does the level of uncertainty around economic growth and inflation prospects in the UK. The nominal cost of the Proposed Development, provided by RES, is an accurate estimate at the time of writing. While inflation is likely to rise in the short term it has a

information provided by RES and includes the estimated cost of turbines, Balance of Plant (BoP), local and miscellaneous spend, grid connection, other capital expenditure and professional services. Only a portion of this investment however will be realised in Northern Ireland.

14.39 The total construction spend realisable within Northern Ireland is £28.4 million (in nominal prices)[9]. This includes the cost of grid connection, approximately 74 percent of other capital expenditure, and five percent of the estimated £34.2 million turbine cost value through activities such as the use of local haulage and crane companies.

14.40 The regional/total spend split (£29.8 million/£64.9 million) sits between estimates published in reports carried out by BiGGAR Economics on behalf of RenewableUK[10], and BiGGAR Economics on behalf of RenewableNI (formerly NIRIG), IWEA and RenewableUK[Error! Bookmark not defined.]. The split between construction related spend and professional services related spend in Northern Ireland is assumed to be £28.4 million and £1.4 million respectively. For the purposes of our modelling, we have converted all this expenditure information into 2019 real prices, to keep it consistent with our model inputs and national accounts publications.[11]

14.41 For the purposes of this assessment the construction phase of the Proposed Development is estimated to commence in May 2025 and last 18-months, starting operations in November 2026. The analysis therefore assumes a constant spend per month, leading to 44.4 percent of total spend being realised in 2025 and the remaining 55.6 percent in 2026. As such we use Oxford Economics' baseline forecasts for GVA, productivity and wages to estimate the future impacts.

Direct construction phase impacts

14.42 The Proposed Development's 18-month construction phase is estimated to create or sustain between 110-180 direct job years of employment, 105-162 of which are involved with construction related activities and the remaining 5-17 job years account for professional services related activities (Figure 14.4).

14.43 This direct construction phase employment would be likely to create or sustain between £2.9-£4.79 million of additional direct wages in the Northern Ireland

negligible impact on the level of job years required to fulfil the construction and operational phase of the Proposed Development.

[9] For this analysis, the total construction phase spend in Northern Ireland is defined as the cost for turbines, Balance of Plant (BoP), food, fuel, plant hire, road maintenance, grid connection, miscellaneous and 74 percent of 'other capital expenditure'. It does not include cost of professional services.

[10] RenewableUK and BiGGAR Economics (2015). *Onshore Wind: Economic Impacts in 2014*.

[11] The construction phase and operational phase benefits presented within this section, which have been estimated using an Economic Impact Model, are expressed in real/constant prices with 2019 as the base year. This is consistent with the base / reference year within the ONS' National Accounts (the Blue Book 2021) and Oxford Economics' suite of models. This is not to say 2019 data has been used: we have used the latest available data and the relevant forecast year in every case. The construction-spend figures provided by RES have been adjusted accordingly for consistency.

economy. Furthermore, the investment is estimated to directly contribute between £6.53-£10.48 million to regional GVA.

Figure 14.4: Direct benefits from the construction phase

Direct benefits	Job years	Wages (£2019m)	GVA (£2019m)
Construction related	105-162	2.74-4.25	6.33-9.79
Professional services related	5-17	0.16-0.55	0.20-0.69
Total	**110-180**	**2.9-4.79**	**6.53-10.48**

Source: RES / Oxford Economics

Indirect and induced construction phase impacts

14.44 The supply-chain (or indirect) impacts arising from the construction related activity have been estimated using the 2017 UK input-output tables (published by ONS) adjusted to take account of the structure and size of the Northern Ireland economy. In doing so we use academic guidelines like those contained in academic papers such as Flegg, A. T. and Tohmo, T. (2013) "Regional input-output tables and the FLQ formula: A case study of Finland" (Regional Studies, 47 (5). pp. 703-721)[12] .

14.45 Construction activity typically has strong "backward linkages" with sectors such as building materials, architectural services, legal services and insurance. These linkages tend to result in job creation elsewhere in the local economy. This makes investment in construction particularly effective in fuelling economic growth. Typically offering high economic multipliers of 2.59 and 1.41 for the UK and Northern Ireland respectively[13]. This means that for every £1 of direct output by the sector, an additional £1.59 and £0.41 is created in the wider UK or Northern Ireland economy, respectively.

14.46 Indirect GVA impacts in Northern Ireland are therefore estimated to be approximately £1.71-£2.69 million, creating or sustaining an estimated 32-51 job years of employment, with associated wages of £0.83-£1.31 million (Figure 14.5).

Figure 14.5: Total benefits from the construction phase

Total (direct, indirect and induced) benefits	Job years	Wages (£2019m)	GVA (£2019m)
Direct	110-180	2.90-4.79	6.53-10.48
Indirect	32-51	0.83-1.31	1.71-2.69
Induced	33-54	0.81-1.30	1.40-2.26
Total	**175-284**	**4.54-7.4**	**9.63-15.43**

Source: RES / Oxford Economics

[12] While we are aware that Northern Ireland Statistics and Research Agency (NISRA) publish supply and use tables, they do not publish the final input-output tables needed to conduct impact assessments. These would have to be constructed. Furthermore, the supply and use tables published by NISRA are experimental / provisional statistics. See technical annex for further detail.
[13] These figures relate to Oxford Economics' estimates of Type 2 output multipliers for the UK and Northern Ireland. Type 2 multipliers capture direct, indirect and induced effects.

14.47 As both direct and indirect wages generated through the construction phase are spent on goods and services in the wider economy—a further round of benefits will spread through the region. This helps to support activity in sectors like retail and leisure outlets, companies producing consumer goods and a range of service industries. We estimate this induced effect will support wider employment of approximately 33-54 job years alongside £0.81-£1.30 million of wages. Through the numerous rounds of supply-chain and consumer spending, all sectors in the economy will experience some degree of benefit (Figure 14.6).

14.48 It is worth noting that the estimated benefits are at a Northern Ireland level. An exact amount attributable to both the Borough Council areas of Causeway Coast & Glens and Mid & East Antrim is more difficult to identify and outside the scope of this report. Invariably it depends on the location of the companies appointed that enjoy the direct benefits and the location of the suppliers who provide them with the materials. However, speaking qualitatively, RES has informed Oxford Economics that their previous projects have utilised local contractors wherever possible and it remains their intention to use local suppliers and labour for much of the Balance of Plant (BoP) work. It makes sense, not least in terms of the costs and distance argument, to use local firms (e.g. looking at the cost of transporting aggregates). That is, local firms can prove to be more cost efficient given the closer proximity to required capital, personnel and resources. This means that most of the direct and indirect benefits are likely to be realised within Northern Ireland, with Causeway Coast & Glens and Mid & East Antrim enjoying some uplift at the local level.

14.49 The benefits quantified above have been tested for robustness against a recent report compiled by KPMG on behalf of RenewableNI[14] which assesses the economic impact of onshore wind in Northern Ireland. The study finds that there were an estimated 163 job years created or sustained during the construction phase (directly and indirectly) in 2021. This estimate assumes that there is annual construction of onshore wind with a total capacity of 35MW and is equivalent to approximately 4 job years per megawatt—in line with our construction phase impacts.

Figure 14.6: Total sectoral benefits from the construction phase

Total (direct, indirect, and induced) benefits	Job years	Wages (£2019m)	GVA (£2019m)
Agriculture, forestry and fishing	1-1	0.02-0.02	0.02-0.03
Mining and quarrying	1-1	0.02-0.04	0.03-0.04
Manufacturing	7-11	0.17-0.27	0.45-0.71
Electricity, gas, steam and air conditioning supply	0-0	0.00-0.01	0.03-0.04

[14] RenewableNI & KPMG (2021). *Powering A Green Economy*.

Water supply; sewerage, waste management and remediation activities	0-0	0.01-0.01	0.03-0.05
Construction	118-183	3.09-4.78	7.12-11.03
Wholesale and retail trade; repair of motor vehicles and motorcycles	10-16	0.22-0.35	0.48-0.76
Transportation and storage	1-2	0.04-0.06	0.06-0.10
Accommodation and food service activities	5-9	0.11-0.17	0.13-0.21
Information and communication	1-2	0.04-0.07	0.07-0.12
Financial and insurance activities	2-2	0.04-0.06	0.12-0.20
Real estate activities	8-14	0.22-0.36	0.42-0.68
Professional, scientific and technical activities	7-21	0.22-0.66	0.28-0.82
Administrative and support service activities	7-11	0.15-0.24	0.16-0.25
Public administration and defence; compulsory social security	1-1	0.02-0.03	0.03-0.05
Education	2-3	0.05-0.08	0.05-0.09
Human health and social work activities	1-2	0.04-0.07	0.05-0.09
Arts, entertainment and recreation	1-2	0.03-0.05	0.03-0.06
Other service activities	2-4	0.05-0.09	0.06-0.10
Total	**175-284**	**4.54-7.40**	**9.63-15.43**

Source: RES / Oxford Economics

Economic impact of the operational phase

14.50 The starting point for modelling the operational phase of the Proposed Development uses operations and maintenance direct job post figures again provided by RES, based on their extensive experience of operating projects not only in Northern Ireland but across the UK. RES has informed Oxford Economics that the Proposed Development will sustain one direct FTE job a year, in the capacity of an asset manager (Figure 14.7).

14.51 From there, all indirect and induced estimates are produced using the Economic Impact Model.

Direct operational impacts

14.52 Following the 18-month construction phase, the Proposed Development is expected to be operational in November 2026. The operational phase impact estimates have therefore been produced using Oxford Economics' forecasts of GVA, productivity and wages in 2026. Additional earnings/wages have been estimated using Oxford Economics forecasts for average annual earnings per worker from the broad sector 'Electricity, gas and steam' in 2026 (these forecasts are themselves based on published data in the ASHE).

14.53 The total direct wage is estimated to be £0.04 million per year. After applying productivity estimates, the on-going direct employment is expected to generate £0.27 million of GVA a year. Given the 35-year lifetime of the Proposed Development, this equates to 35 direct job years, £1.27 million of direct wages and £9.37 million of direct GVA over the entirety of the operational phase.

Figure 14.7: Direct annual benefits from the operational phase

Direct benefits	Job years	Wages (£2019m)	GVA (£2019m)
Asset manager	1	0.04	0.27

Source: RES / Oxford Economics

Indirect and induced operational impacts

14.54 The electricity industry plays a significant role in enabling other parts of the economy to be more productive. The sector itself is one of the most productive in Northern Ireland, with output per worker significantly above that of the region overall. This reflects both the impact of high levels of investment and improving technology on productivity in the sector.

14.55 Using the adjusted UK input-output tables to identify the supply-chain spending, we estimate that the Proposed Development is likely to create or sustain a further indirect job in the Northern Ireland economy each year, with wages of £0.04 million and GVA of £0.10 million per annum respectively (Figure 14.8).

Figure 14.8: Total annual benefits from operational phase

Total (direct, indirect and induced) benefits	Job years	Wages (£2019m)	GVA (£2019m)
Direct	1	0.04	0.27
Indirect	1	0.04	0.10
Induced	1	0.02	0.03
Total	**3**	**0.09**	**0.40**

Source: RES / Oxford Economics

Increased tax revenues and benefit savings

14.56 As part of this analysis, it is assumed that approximately 36 percent of total wages would be paid to the Treasury through the channels of taxation.[15] This considers not only income tax, but value-added tax through the purchase of goods and services by those in direct, indirect and induced employment.

14.57 During the construction period of the Proposed Development, tax receipts are likely to reach between £1.63-£2.66 million (including direct, indirect and induced wage impacts).

14.58 The operational phase is estimated to generate approximately £0.03 million in additional tax receipts each year of operation (Figure 14.9). Over 35 years this would equate to £1.15 million in additional tax revenue.

[15] Based on ONS' publication: *The effects of taxes and benefits on household incomes, 2019/20*. Statistics from table 9 accessed on March 22nd 2022. Direct tax as a share of gross income is 24.2 percent, and indirect taxes as a share of disposable income is 11.8 percent. Combined this indicates that 36 percent of gross income is paid to the Treasury via taxation.

Figure 14.9: Annual tax revenues arising from the Proposed Development

Tax revenue (over entire construction phase; per annum of on-going phase)	Wages (£2019m)	Tax revenue (£2019m)
Construction phase	4.54-7.40	1.63-2.66
Operational phase	0.09	0.03
Total	**4.63-7.49**	**1.66-2.69**

Source: RES / Oxford Economics

14.59 In addition to tax receipts, employment creation will provide benefit savings. That is, assuming that each additional job attracts someone from the ranks of the unemployed directly or indirectly through the "job chain" effect, the construction or on-going operation of the site. While the Proposed Development may take someone from their current job, they will leave a vacancy and that will have to be filled, and so on and so forth—so eventually, a job will be filled down the line by someone from the ranks of the unemployed, though not necessarily directly. As such, the creation of a new job in the economy will lead to a reduction in unemployment by a similar amount.

14.60 Under the 'new style' Job Seekers Allowance, unemployment benefit varies between £59.20 and £74.70 per week.[16] Using these lower and upper levels, we estimate between £0.54-£1.11 million of savings will be made during the construction phase of the Proposed Development (Figure 14.10).

Figure 14.10: Annual unemployment benefit savings arising from the construction phase

Unemployment benefit savings, £mn (2019 prices)		
	Lower	Upper
Direct	0.34-0.55	0.43-0.70
Indirect	0.10-0.16	0.12-0.20
Induced	0.10-0.17	0.13-0.21
Total	**0.54-0.88**	**0.68-1.11**

Source: RES / Oxford Economics / Citizens Advice

In addition, the on-going benefits are estimated to provide unemployment savings of between £0.32-£0.41 million over the project's lifetime.

[16] Figures taken from Citizen Advice. If individuals are eligible for the new style JSA, they can get a weekly 'personal allowance' of up to £59.20 (18-24 year olds) or £74.70 for those aged 25 and over. Statistics accessed on March 22nd 2022.

Other quantifiable benefits of the Proposed Development

Rates and taxes

14.61 Using data provided by RES, Oxford Economics estimates that the rateable value for wind farms in Northern Ireland is approximately £7,100 per megawatt per year[17]. Given the Proposed Development will have a total capacity of 50.4MW, this means a figure of £0.4 million in rateable value is available to the Government annually, or approximately £12.52 million over the course of the project.

14.62 It should be noted that there is a difference in the rateable value charged on which the above figures are based, and the business rates revenue collected by the Borough Council areas and the Northern Ireland Assembly—allowing for regional and Borough rate poundages. The most recent figures for Causeway Coast & Glens Borough Council indicate (total) non-domestic poundage rates of 54.3p for every £1, of which 27.9p is a regional rate paid to the Northern Ireland Assembly, and 26.4p of which is a Borough rate paid to the local Council[18]. The equivalent figures for Mid & East Antrim Borough Council area are 60.2p, 27.9p and 32.3p respectively.

14.63 Given the Proposed Development is partly located in Causeway Coast & Glens and Mid & East Antrim, we have apportioned the Proposed Development's estimated rateable value across these two Borough Council areas. To do so we consider the share of the Proposed Development's turbines by local area and apply this ratio to the total rateable value. We then apply the Non-Domestic Rate Poundage for both Borough Council areas of Causeway Coast & Glens and Mid & East Antrim to the above rateable values, which would generate combined additional business rates revenue of £0.20 million per annum. Of which £0.18 million would be generated in Causeway Coast & Glens and £0.02 million in Mid & East Antrim. Combining both Borough Council areas we estimate £6.86 million in business rates over the 35-year lifetime of the project. Of the business rates associated with the Proposed Development in Causeway Coast & Glens, 48.6 percent of the totals would be attributable to the Council and 51.4 percent would be realised by the Northern Ireland Assembly. This compares to 53.6 percent and 46.4 percent respectively in Mid & East Antrim Council area.

14.64 All these additional payments referred to in this paragraph will result in increased income to the recipients, who will spend it in the Northern Ireland economy; over and above those already accounted for in the construction and on-going operations phase results.

[17] This estimate is based on information received by RES on two previously built wind farms (Evishagaran and Craiggore). However, this rateable value is subject to change in 2023 with the publication of Reval2023. RES estimate the rateable value of the Proposed Development, accounting for the predicted energy production of the wind farm and its gross receipts, operational costs and asset depreciation in line with the valuation method used by Land and Property Services for the Non-Domestic Revaluation 2020. For the purpose of this report the rateable value for wind farms is expressed in pounds per megawatt .
[18] Borough Council area poundage rates accessed on March 22nd 2022.

14.65 Over the lifetime of the project, rates and taxes will collectively amount to approximately £7.94 million. Due to sensitivity issues this figure excludes land rent contributions.

Energy and environmental benefits

14.66 Northern Ireland is ahead of its renewable energy target, however, it is important to build on this momentum. The region's 2010-2020 Strategic Energy Framework includes a target for 40 percent of its electricity consumption to be generated from renewable sources by 2020.[19] Latest statistics show that while the region has met this target, the share of electricity consumed that has been generated by renewable sources has fallen recently. For the 12-month period October 2020 to September 2021, 42.1 per cent of total electricity consumption in Northern Ireland was generated from renewable sources located in the region. This represents a decrease of 5.5 percentage points on the previous 12-month period (October 2019 to September 2020).[20] The report from the Department for the Economy, shows that more than 80 percent of all renewable electricity generated within the region was by wind energy alone. In light of this progress, the Economy Minister launched 'The Path to Net Zero Energy'—an ambitious plan intended to deliver affordable and clean energy across Northern Ireland for future generations. Supporting this plan is the Northern Ireland Assembly's renewable electricity target of 80% by 2030, as stated in its Climate Bill. Indeed these developments complement policies both nationally and regionally which highlight the need to move away from finite energy sources toward more renewable energy.

14.67 In addition, according to a report published by Northern Ireland's Department for the Economy, namely 'Energy in Northern Ireland 2020'[21], Northern Ireland had the largest percentage increase in the number of enterprises in the energy sector between 2010 to 2019, compared to other regions in the UK. Over this period, the region recorded an increase of 256 percent compared to 123 percent across the UK as a whole.

14.68 The Proposed Development assumes a 50.4MW wind farm consisting of 12 x 4.2 MW turbines. Based on these assumptions the amount of electricity that could be produced by the Proposed Development is estimated at 206.4 GWh per year[22] which

[19] Department for the Economy, Northern Ireland. Web article: *40 per cent electricity consumption from renewable sources by 2020 achieved ahead of schedule*. Accessed on March 22nd 2022.
[20] Department for the Economy, Northern Ireland. *Electricity Consumption and Renewable Generation in Northern Ireland: year ending September 2021*. Accessed on March 22nd 2022.
[21] NISRA and Department for the Economy. *Energy in Northern Ireland, 2020*. Accessed on March 22nd 2022.
[22] This figure has been calculated by multiplying the Proposed Development's indicative capacity (50.4MW) by the number of hours in a year and a load factor. This load factor accounts for wake and electrical losses using typical wind speeds/directions etc., and so provides a realistic prediction of electricity output (rather than using a theoretical maximum level whereby it is assumed that wind blows for 24 hours a day 365 days a year on every wind farm site). For the Proposed Development, RES has provided Oxford Economics with a load factor of 0.47. RES calculates the site-specific load factor considering all known information on wind resource, topography (including terrain and forestry), choice of turbine, and losses expected for the Proposed Development.

is equivalent to the electricity needs of 54,800 homes each year[23], or almost 85 percent of the current housing stock in Causeway Coast & Glens Borough Council area[24].

14.69 The Proposed Development is also estimated to reduce CO_2 emissions by 90,800 tonnes each year[25] when compared against equivalent generation from non-renewable sources, which is equivalent to 57,200 newly registered cars[26]. While our estimate represents a gross reduction in CO_2 emissions, we acknowledge that the construction of wind farms would also produce emissions. Current literature shows that the carbon payback period—the time frame needed for a turbine to offset the carbon emissions generated throughout its life cycle—is relatively short for onshore wind farms. A recent study by the Centre for Sustainable Energy[27], finds that the typical payback period of larger wind turbines (greater than 1MW) is less than a year, and in some cases less than six months.

14.70 Not only does the generation of electricity through wind present environmental benefits but it also produces benefits for consumers. A recent independent study by Baringa Partners titled 'The Wind Dividend'[28] assesses the costs and benefits of wind farms for Northern Ireland consumers over two decades. The report finds that *'the deployment of 1.4GW of wind generation capacity in Northern Ireland between 2000 and 2020 will result in a total net benefit to consumers, over 20 years, of £0.1bn (£135 million to be exact), which equates to a net benefit of about £4 per person per year.'*

Socioeconomic Context

Global challenges persist

14.71 In recent years prior to the onset of the coronavirus pandemic, and subsequent measures implemented to slow the spread of the virus, the global economy recorded consistent levels of annual growth. Economic performance, however, varied significantly between countries. The pandemic led to near-closures for several sectors worldwide but as economies started to reopen and restrictions

[23] The number of homes is calculated by dividing the estimated amount of electricity produced by the Proposed Development, by the UK average domestic household electricity consumption (temperature adjusted). The latter is taken from figures published by the Department of Business, Energy and Industrial Strategy (BEIS).
[24] Oxford Economics' UK Local Area Model contains historical and forecast data on dwelling stocks by local area.
[25] This figure is calculated by applying the estimated amount of electricity generated by the Proposed Development to estimated carbon dioxide emissions from electricity supplied from all non-renewable fuel sources. The latter is taken from BEIS's *Digest of UK Energy Statistics: electricity* – table 5.14. These statistics and report were accessed on March 22nd 2022.
[26] This figure is derived by dividing our estimate of the reduction of CO_2 emissions (90,800 tonnes per year) by the sumproduct of average CO_2 emissions for new cars and the average number of miles covered by cars. The average CO_2 emissions from new cars is sourced from the Department for transport (accessed on March 22nd 2022), while the average miles covered by cars is sourced from the 2016 National Travel Survey (accessed on March 22nd 2022).
[27] *'Common concerns about wind power'*. Centre for Sustainable Energy. Second edition, June 2017.
[28] Baring Partners (2019). *The Wind Dividend. How wind energy pays back to Northern Ireland*.

eased, albeit by varying degrees and pace, economies have begun their road to recovery. The UK economy is estimated to have only partially recovered last year. On an average annual basis, we estimate that real GDP (2019 prices) in the UK increased by 7.5% in 2021, however, this growth was not enough to see levels return to its pre-pandemic record. We forecast continued growth in 2022, which will see GDP surpass its 2019 level in the same year.

14.72 However, risks to global growth remain. The resurgence of Covid, uneven vaccination roll-out programmes and reduced, if not complete removal of, Government economic support measures will weigh on future economic growth globally. Additionally, due to a number of global factors, a worldwide squeeze on energy supplies has pushed energy prices up. And Russia's invasion of Ukraine will mean energy prices are likely to stay higher for longer, pushing up global inflation. This will further weaken growth prospects as household disposable incomes become squeezed and costs continue to rise for businesses. The Russia-Ukraine war has also sparked uncertainty in global markets. This has raised awareness of energy security issues and increased pressure for the UK to become more self-sufficient in producing its own of fuel, and less reliant on energy imports from Russia (and elsewhere). The Proposed Development would therefore help somewhat to achieve this.

Northern Ireland and it's local areas not immune to global events

14.73 The aforementioned global events will continue to impact growth prospects in the UK, its regions and local areas. Indeed, both the Causeway Coast & Glens and Mid & East Antrim Borough Council areas are not immune from these pressures. The following section considers the recent and future labour market performances of the region and the local areas in which the Proposed Development will be located.

14.74 In recent history, Northern Ireland's economy has struggled to create employment opportunities. Between 2010 and 2019, job growth in the region averaged 0.8 percent per year—0.5 percentage points below the equivalent rate for the national average. In absolute terms, this pace of growth translates to approximately 7,400 net additional jobs per year across Northern Ireland. While most sectors in the region created jobs over this period, construction recorded an estimated loss of 3,400 jobs. We estimate that the sector was approximately 5.5 percent smaller in 2019 than in 2010, in employment terms.

14.75 The onset of the Covid-19 pandemic created further, and unprecedented, challenges for the Northern Ireland economy. Multiple lockdowns and social distancing measures implemented by the Government to limit the spread of the virus inevitably led to the near shutdown of some industries, including wholesale & retail trade and accommodation & food services. Indeed, the coronavirus pandemic has somewhat dampened labour market prospects in the short- and near-term; and has slowed the construction sector's recovery as employment fell in 2020 and 2021.

14.76 Local labour market performance has also been impacted, albeit to varying degrees, by wider socioeconomic headwinds. While Causeway Coast & Glens experienced job growth of 0.3 percent per year between 2010 and 2019, in absolute terms it translates to an increase of 1,500 net additional jobs—the smallest uplift of all Council areas in Northern Ireland that created jobs. Elsewhere, Mid East & Antrim Council area saw the number of jobs fall by 0.3 percent per year on average over the same period—making it the joint-weakest performing Council area in Northern Ireland. More importantly, between 2010 and 2019, both Council areas recorded job losses from the construction sector.

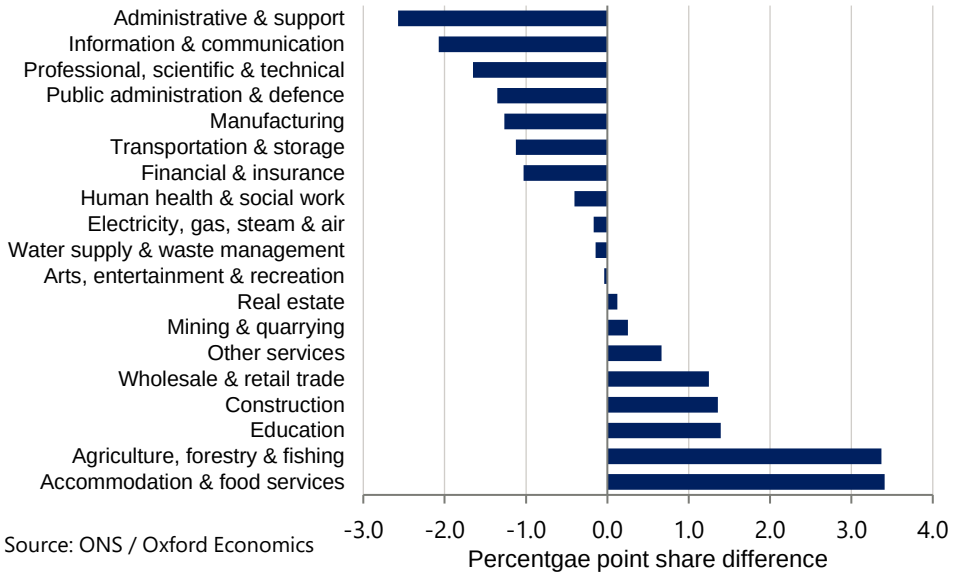
14.77 Brexit has created both short- and long-term uncertainty and challenges. As of 1st January 2021, EU trade agreements no longer applied to the UK. The EU-UK trade deal secured currently prevents tariffs and quotas being imposed, which would have made trade more expensive and time consuming. However, since the UK no longer has to follow EU rules on product standards, new checks have been introduced. In addition, the UK Government has agreed the broad terms of a free-trade deal with other countries including Australia, Japan and Norway. Combined, this could have implications on the UK's competitiveness, adding more pressure to the already declining manufacturing sector; particularly those that are more reliant on exporting. Implications from the Brexit agreement, particularly those pertaining to the Northern Ireland Protocol, and other uncertainty stemming from the Covid-19 pandemic, will continue to weigh on national, regional and local economy near-term prospects.

14.78 There is a need for local investment to support job creation in both Borough Council areas. For the Causeway Coast & Glens and Mid & East Antrim Borough Council areas, we do not expect jobs to recover to pre-pandemic levels in the near-term, despite a recovery both regionally (in 2022) and nationally (in 2023). In fact, looking ahead between 2022 and 2040, we anticipate a decline in employment in both Council areas and Northern Ireland as a whole. We forecast that the number of jobs in both Council areas will remain below levels recorded in 2019 over the forecast period. By 2040, the number of jobs in both Causeway Coast & Glens and Mid & East Antrim Borough Council area are expected to be approximately 15 percent lower than in 2019. Job growth in the construction sector will be muted in both local areas, reflecting challenges faced by the sector including rising costs and supply-chain issues, which are likely to impact confidence levels. While it is the manufacturing sector which will shed the most jobs in Causeway Coast & Glens and Mid & East Antrim, a reflection of wider trends in this sector.

14.79 Employment growth prospects in the Council areas can be, in part, explained by the area's employment structure. For this analysis, we focus on the Causeway Coast & Glens Borough Council area as it will be home to 11 of the 12 turbines of the Proposed Development. The figure below plots the percentage point difference between the share of employment by sector in Causeway Coast & Glens Borough Council area to the average for Northern Ireland. Sectors with a positive value

employ a greater share of employment in the local area than the region as a whole. Conversely, sectors with a negative value employ a smaller share of employment in the local area compared to the regional average.

Figure 14.13: Percentage point share difference of employment, Council area v Northern Ireland, 2019



Source: ONS / Oxford Economics

14.80 Compared to Northern Ireland as a whole, the Causeway Coast & Glens Borough Council area is overrepresented in sectors which have weak employment growth prospects such as agriculture, forestry & fishing and education. Between 2022 and 2040, the local area's education sector will see employment fall by 800 jobs—equivalent to a decline of 0.9 percent per year on average. Furthermore, the local area is largely underrepresented in sectors likely to drive employment growth at the national level such as health & social work, administrative & support services, and professional, scientific & technical activities. As such the Council area's low exposure to growth sectors will limit the scope to replace lost employment. Over the 2022 to 2040 period, the health & social work sector is expected to be the largest contributor to job growth in the local area, providing 200 net additional jobs, closely followed by construction and administrative & support services. Weak labour market performance is also a reflection of a weak demographic outlook: both total and working age population are forecast to fall—a trend reflected across all Council areas in Northern Ireland.

14.81 Analysis of other labour market indicators further support the economic need for new employment opportunities. Latest estimates published by NISRA show that not only was the inactivity rate[29] for those of working age in Causeway Coast & Glens Borough Council area above the regional average in 2019, but it also had among the lowest (working age) employment rates. More specifically, the working age

[29] The economic inactive are people not in employment, unemployed either because they are retired, students and / or are classified as long-term sick. The economic inactivity rate is calculated by dividing the economic inactive for those aged 16 and over by the population for that age group. Labour market definitions can be viewed here: weblink.

economic inactivity rate in the local area stood at 30.5 percent in 2019—the second-highest rate of all Borough Council areas in Northern Ireland, and approximately four percentage points above the Northern Ireland average. Meanwhile, the working age employment rate for the local area stood at 67.6 percent in 2019—the second-lowest rate in the region.

14.82 Furthermore, according to our latest estimates, the unemployment rate (ILO definition) for Causeway Coast & Glens stood at 5.7 percent in 2021—the highest rate of all Borough Council areas in Northern Ireland, and almost two percentage points higher than the region as a whole. And while we expect this rate to ease steadily over the forecast period, settling at 3.4 percent by 2040, it will be the second-highest unemployment rates across Northern Ireland's Borough Council areas.

14.83 Combined, this evidence base highlights the need for new job prospects in the local economy. Indeed, investment into local climate change assets will help to support the jobs recovery within the Council area, but also more widely via multiplier effects. Investment into such projects will also help to strengthen the UK's overall energy networks, helping to achieve the Government's target of net zero emissions by 2050 and reduce the UK's reliance on energy imports—which has become increasingly important against the latest backdrop of Russia's invasion of Ukraine.

Local skill levels among the lowest in Northern Ireland

14.84 Given the Proposed Development will be largely concentrated in Causeway Coast & Glens Borough Council, the following analysis will be based on this local area rather than Mid & East Antrim Borough Council (unless otherwise specified).

14.85 The qualification mix of Causeway Coast & Glens resident working age population is less favourable relative to Northern Ireland as a whole. According to figures published by NISRA, the proportion of the Council area's working age residents (aged between 16 and 64) having attained degree level qualification or above stood at 35.6 percent in 2019—ranking in the middle of all Borough Council areas in Northern Ireland, but below the average for the region (36.7 percent). However, almost one fifth (18.2 percent) of its resident working age population held no qualifications in 2019—the second-highest share out of 11 Borough Council areas in the region.

14.86 Relatively poor skill levels are likely to mean residents invariably do not possess the skills demanded by employers and are therefore more likely be excluded from the labour market. The weak outlook on jobs coupled alongside below average skill levels are likely to contribute to economic inactivity and social exclusion within the local community. The Proposed Development, however, will support a wide range of job creation, making employment opportunities accessible for people with varying skills.

14.87 The local economy faces some key socioeconomic challenges, which have been further exposed by recent developments. The weak employment outlook is likely

to make it more challenging for the local council to address economic need and development. Therefore, investment and development opportunities in the area should be encouraged to promote opportunities and boost economic growth prospects.

Conclusions

14.88 Fruition of the Proposed Development will provide a much-needed boost of activity to both Borough Council areas and the regional economy. Job creation and economic activity will result throughout its construction, with a strong likelihood of local labour involvement. Both the construction and operational phase will generate increased tax and business rates revenue payable to central, regional and local Government.

14.89 Indeed, the Borough Council areas of Causeway Coast & Glens and Mid & East Antrim have both faced a challenging backdrop in recent years; with muted or declining employment opportunities between 2010 and 2019. Labour market conditions, therefore, have not been ideal in the lead up to the coronavirus pandemic. The implementation of subsequent restrictions and lockdowns to slow the spread of the virus, has had a significant impact on local businesses for at least the short term; and has placed upward pressure on local unemployment. As such, investment of this type and scale can provide positive (direct, indirect and induced) benefits across Northern Ireland; helping to provide and support economywide employment opportunities that would not otherwise have existed. It can also bring about catalytic benefits which can in turn attract further investment into Northern Ireland. For example, the knowledge, expertise and skills accumulated can act as a contributing factor to future investments in the area. Other local areas within Northern Ireland may also benefit as a result, helping to reduce the inequality across the region. Funding for such developments is usually project specific and involve a considerable amount of sunk cost. **Therefore, if the Proposed Development does not take place the benefits, including the catalytic impact, are unlikely to be realised elsewhere in the Northern Ireland economy.**

14.90 The Proposed Development is estimated to involve a capital spend of £64.9 million. Of this total, £29.8 million (nominal prices) will be realised within the Northern Ireland economy. The projected 18-month construction phase is estimated to create or sustain 175-284 total (direct, indirect and induced) job years of employment, £4.54-£7.40 million (2019 prices) of wages and £9.63-£15.43 million (2019 prices) of GVA to the Northern Ireland economy.

14.91 The estimated total (direct, indirect and induced) benefits realised in Northern Ireland by the operational phase of the proposed Development includes wages of £3.2 million (2019 prices) and £13.8 million (2019 prices) in GVA over the 35-year operating period.

14.92 We also expect a fiscal injection from the Proposed Development. During the construction, the UK Exchequer is estimated to benefit from increased tax revenue of £1.63-£2.66 million. Over the 35-year operational phase, an estimated £1.15 million revenue will be generated and a further £0.54-£1.11 million in benefit savings during the construction phase.

14.93 Based on rateable values of £7,100 per MW per year, we calculate that the Proposed Development will increase rateable value by £0.4 million each year, or by £12.52 million over the project horizon. From these values business rates are calculated and collected for local Councils and the Northern Ireland Assembly. By applying Causeway Coast & Glens and Mid & East Antrim non-domestic poundage rates, we estimate additional business rates of £0.18 and £0.02 million each year, respectively. Combining both Borough Council areas, we estimate business rates of £6.86 million over the 35-year lifetime of the Proposed Development.

Appendix 1: Technical Annex

UNDERSTANDING ECONOMIC IMPACT ASSESSMENTS

Introduction

Economic impact modelling is a standard tool used to quantify the economic contribution of an investment or series of investments in an economy. As set out earlier in the report, our economic impact analysis estimates the contribution of the Proposed Development through three channels:

- **Direct impact** refers to activity conducted directly during the construction and operation of the Proposed Development.
- **Indirect impact** consists of activity that is supported because of the procurement of goods and services during construction and operations, throughout the economy. It includes not just purchases by occupiers of the Proposed Development, but subsequent rounds of spending throughout the supply chain.
- **Induced impact** reflects activity supported by the spending of wage income by direct and indirect employees.

These three channels form our estimate of the quantifiable economic benefits of the Proposed Development. However, in practice there may be a range of wider economic benefits that occur as other economic agents respond 'dynamically' to the investment and operations of the Proposed Development. While not typically quantifiable, these benefits nevertheless form an important part of the economic benefits of the Proposed Development. These effects can include for instance the Proposed Development acting as a catalyst for further clustering and agglomeration effects, providing employment opportunities for local residents, and unlocking additional growth in particular sectors.

Direct impacts

RES has provided Oxford Economics with the expected capital expenditure for the construction phase and provided estimates of the direct employment the Proposed Development would create once fully operational.

We translate the economic output produced in these sectors to GVA, jobs (using local, regional, or national productivity, where appropriate), and wages. We draw on data from published input-output tables to estimate the direct GVA, and utilise data from Annual Survey of Hours and Earnings (ASHE) to estimate wages. We also use Oxford Economics' forecasts of sectoral productivity at the national, regional and / or local level.

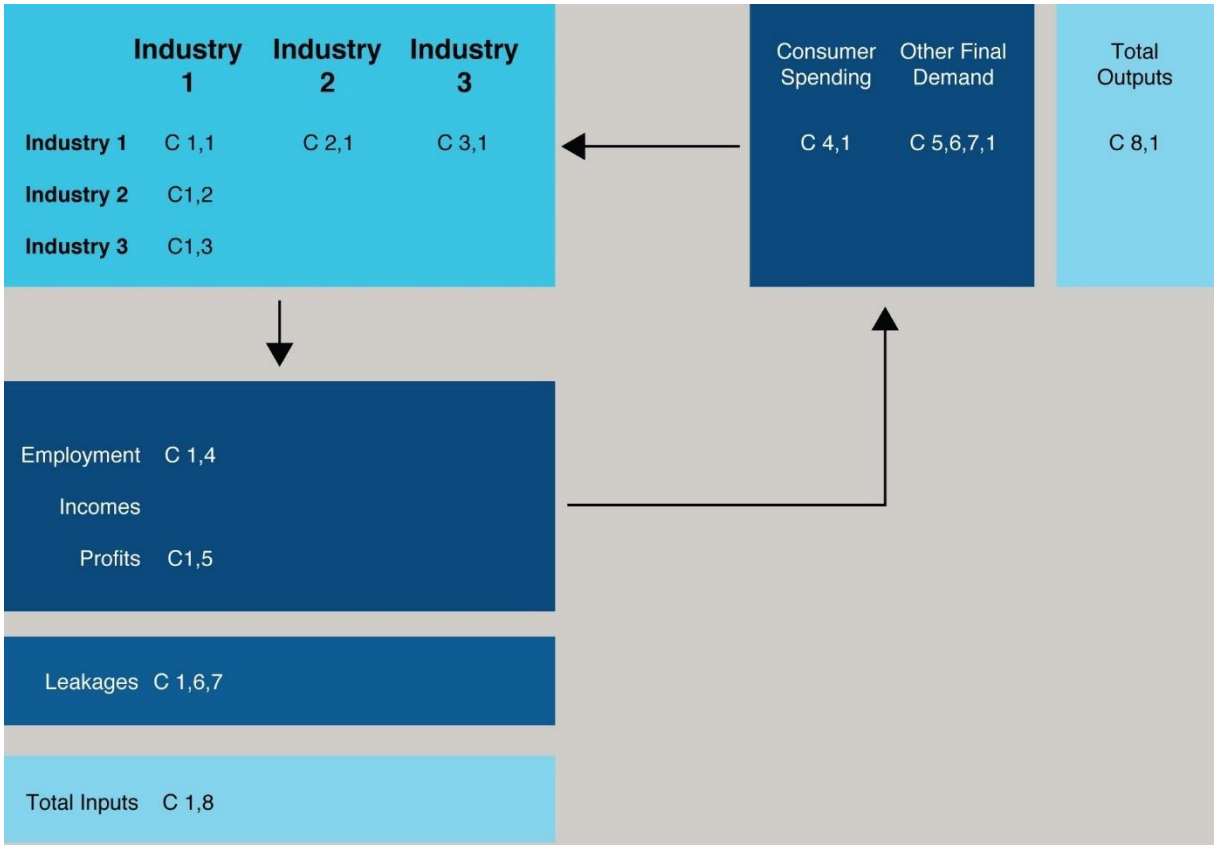
Indirect and induced impacts

Indirect and induced impacts were estimated using an input-output model. An input-output model gives a snapshot of an economy at any point in time. The model shows the major spending flows from: final demand (i.e. consumer spending, government spending, investment, and exports to the rest of the world); intermediate spending patterns (i.e. what each sector buys from every other sector—the supply chain in other words); how much of that spending stays within the economy; and the distribution of income between

employment and other forms such as corporate profits. Figure 14.12 provides an illustrative guide to a stylised input-output model.

While we are aware that Northern Ireland Statistics and Research Agency (NISRA) publish supply and use tables, they do not publish the final input-output tables needed to conduct impact assessments. These would have to be constructed. Furthermore, the supply and use tables published by NISRA are experimental / provisional statistics. As such, in building our impact model we have adopted the latest UK input-output tables published by the Office for National Statistics (ONS).[30] To calculate regional economic impacts, we adjust the national input-output tables to account for the characteristics of the Northern Ireland economy—namely the overall size and degree of specialism within each sector. This reflects academic guidelines set out in papers such as Flegg & Tohmo (2013).[31]

Figure 14.12: A stylised input-output model



Source: Oxford Economics

Displacement

Displacement can be defined as the proportion of impacts generated by the Proposed Development which are offset by reductions in economic activity elsewhere.

In order to consider the potential for displacement in the construction sector, we reviewed the current level and capacity of the sector, and its outlook for growth. Our

[30] ONS, *UK input-output analytical tables—industry by industry*, 2022, accessed 2022.
[31] Flegg, A. T. and Tohmo, T. (2013), *Regional input-output tables and the FLQ formula: A case study of Finland*, Regional Studies (47 (5). pp. 703–721).

analysis indicates that the sector will have capacity to absorb the additional activity arising from the Proposed Development, which is unlikely to result in a significant degree of displacement, when placed into context of the sizeable construction sector. We therefore assume that no displacement occurs within the construction phase.

Similarly, our analysis of recent trends across the Northern Ireland economy indicate that the operational phase is not likely to result in significant displacement effects. The Proposed Development is due to stimulate activity in a sector which has traditionally employed fewer people within the local economy. Displacement is unlikely to occur when considering the scale of the Proposed Development within the sizeable Northern Ireland economy. The existing on-site activity at the Proposed Development site, currently agricultural activity, will be marginally affected in terms of a minimal reduction to the size of land allocated to farming; leading to no overall loss of economic activity. Furthermore, the farmers will also be compensated by RES. We therefore assume no displacement occurs within the operational phase.