BiGGAR Economics

Socio-Economic Impact Assessment of Shepherds' Rig Wind Farm

A Report to Boralex
April 2026

BiGGAR Economics

Contents

1. Executive Summary

This report presents an assessment of the potential socio-economic benefits of the proposed Shepherds' Rig Wind Farm and the approach taken to maximise these benefits.

As part of Boralex's ambition to deliver against net-zero targets set by the Scottish and UK Government, SETT Wind Development (the 'Applicant') is proposing to vary the consented Shepherds' Rig Wind Farm (the 'Proposed Varied Development'), located approximately 5 km east of Carsphairn in Dumfries and Galloway. It is expected that the Proposed Varied Development would be comprised of 11 turbines with a total installed capacity of up to 77 MW and a 50 MW Battery Energy Storage System (BESS).

The Proposed Varied Development is anticipated to generate two strands of impact, both through its construction, operation and maintenance, and wider socio-economic benefits.

1.1 Economic Impacts

During the development and construction phase, the total economic benefits expected to be generated (including direct, indirect and induced impacts) are estimated to be:

- £8.8 million Gross Value Added (GVA) and 100 years of employment in Dumfries and Galloway; and
- £37.5 million GVA and 430 years of employment in Scotland.

The annual expenditure for the operation and maintenance of the Proposed Varied Development could deliver up to (including direct, indirect and induced impacts):

- £1.2 million GVA and <10 jobs in Dumfries and Galloway;
- £2.9 million GVA and 20 jobs in Scotland.

The Proposed Varied Development will also support the delivery of local services through the annual payment of at least £1.6 million in non-domestic rates, anticipated to accumulate to around £65.1 million across its 40-year operational lifespan.

These benefits are greater than those associated with the Consented Development, for which the development and construction phase is estimated to generate:

- £7.5 million Gross Value Added (GVA) and 90 years of employment in Dumfries and Galloway; and
- £31.6 million GVA and 360 years of employment in Scotland.

The Proposed Varied Development is also expected to generate operational and maintenance impacts for an additional 10 years and contribute at least double the contribution to non-domestic rates.

1.2 Wider Socio-Economic Benefits

Alongside these economic benefits, the Proposed Varied Development is also expected to deliver a range of benefits to host communities. In consideration of National Planning Framework 4 (NPF4)[1] and the requirement for energy projects to maximise net economic benefits and in line with the Scottish Renewables Guidance[2], the Applicant has also committed to several initiatives under each of the following themes: **Supply Chain**, **Skills Development**, **Community Empowerment** and **Environmental Protection and Enhancement**.

Supply Chain

To maximise the local benefits of contracts associated with the Proposed Varied Development, the Applicant has committed to **raising awareness** of upcoming contracts to allow sufficient time for local suppliers to prepare and compete in the tendering process, **creating a register of local contractors**, and **actively encouraging Tier 1 suppliers to use and hire local businesses** in alignment with the Applicant's 'Responsible Procurement Charter'.

The Applicant has also committed to **monitoring information on direct local expenditure and employment** throughout the Proposed Varied Development's lifetime and **collaborating with Dumfries & Galloway Chamber of Commerce** to explore local capabilities on a more generalised basis.

[1] Scottish Government (2023), National Planning Framework 4.

[2] Scottish Renewables (2025) *Maximising Net Socio-Economic Benefit of Renewable Energy Guidance and Reporting Framework: Guidance for developers to comply with NPF4 Policy 11(c).* [online] Scottish Renewables. Available at: https://www.scottishrenewables.com/assets/000/004/592/2025.03.18_Maximising_Net_Socio-Economic_Benefit_Reporting_Framework_original.pdf?1742308718 [Accessed 16 Mar 2026].

Skills Development

To support skills development, the Applicant has committed to **providing three scholarships of £3,000 per year** for students from households within Dumfries and Galloway to support Science Technology Engineering and Mathematics (STEM) subjects and construction skills.

The Applicant has also committed to **delivering in-classroom sessions** and **facilitating site walkarounds for local primary schools** to inspire the future workforce and encourage pupils to pursue careers within renewable energy.

Community Empowerment

The Applicant has committed to **building relationships** with local people and stakeholders with the purpose of aligning benefits with community needs and aspirations. The Applicant has committed to **distributing community benefit funds** to those living in host communities to **support affordable energy solutions**, including the installation of solar panels or other kinds of generation assets, to ensure communities benefit from locally produced energy. The remainder of the community benefit fund is intended to provide a reliable funding stream to **support a range of social, environmental, and economic projects**.

Environmental Protection and Enhancement

The Applicant has committed to enhancing the use of land on the site by implementing several biodiversity enhancement measures, enabling recreational access to the site through the **development of paths**, **improved signage**, **and mapping**. The Applicant has also committed to **minimising disruption to transport links** and **maintaining the integrity of the roads** throughout construction.

These combined economic, fiscal, and community-focused initiatives demonstrate the Proposed Varied Development's potential to create lasting value at both a local and regional level.

1.3 Tourism and Recreation

Whilst tourism and recreation is often raised as a potential concern with onshore energy developments, socio-economic assessments of wind farms have found no significant effects in terms of the EIA regulations. Given these findings, in general there is no reason to expect significant effects from a similar development in relation to tourism and recreation.

For the Proposed Varied Development specifically, an assessment of tourism and recreation assets within 15km - including accommodation providers, visitor

attractions, and recreation trails - concluded that no significant adverse impacts are expected. This evidence provides reassurance that the Proposed Varied Development can coexist successfully with the local tourism economy.

2. Introduction

BiGGAR Economics was commissioned to assess the potential economic impact associated with the Proposed Varied Development and the potential benefits to the local communities.

2.1 Background

The Applicant is proposing to vary the consented Shepherds' Rig Wind Farm (the 'Proposed Varied Development'), located approximately 5 km east of Carsphairn in Dumfries and Galloway. The proposed variations include:

- removal of six turbines and associated crane hard standings;
- increase in the maximum blade tip height of the remaining 11 turbines to 220 m;
- increase in size of associated crane hardstandings to accommodate the larger turbines;
- relocation of four turbines beyond the micrositing allowance of the consented Shepherds' Rig Wind Farm, and relocate a further four turbines to new locations but within the same pattern of development as the consented Shepherds' Rig Wind Farm;
- amendments to part of the track layout to reflect turbine removal and relocation (as outlined above);
- change to the number and location of required watercourse crossings to accommodate the amended track layout;
- increase in size and capacity of the associated Battery Energy Storage System (BESS) from 6 MW to 50 MW;
- relocation of the temporary construction compound sightly beyond micrositing allowance;
- removal of the permanent anemometer mast; and
- increase the period of consent from 30 to 40 years.

The Proposed Varied Development would therefore be comprised of 11 turbines with a total installed capacity of up to 77 MW and a 50 MW BESS.

The objectives of this study include:

- quantifying the potential economic impacts of the Proposed Varied Development;
- assessing the potential for any effects on the local economy, such as changes to tourism activity as a result of the Proposed Varied Development;
- outlining the potential benefit for the local community and contribution to the wellbeing; and

- assessing the alignment with the NPF4 Policy 11(c) requirements.

2.2 Report Structure

The report is structured as follows:

- **Section 3** places the development in the context of national and regional economic strategies;
- **Section 4** provides a socio-economic context;
- **Section 5** considers the maximisation of local economic benefits;
- **Section 6** describes the assessment methodology used;
- **Section 7** considers the economic impact of the Proposed Varied Development;
- **Section 8** compares the economic impact of the Proposed Varied Development with the economic impact of the Consented Development.
- **Section 9** sets tourism in the area in context and considers the relationship between the Proposed Varied Development and the local tourism economy; and
- **Section 10** contains a conclusion.

3. Strategic and Policy Context

The Proposed Varied Development contributes to several national, regional and local strategies.

3.1 Policy Context: Maximising Benefits

3.1.1 National Planning Framework 4

NPF4[3] is Scotland's national spatial strategy, setting out the principles to be applied to planning decisions, regional priorities and national developments.

As part of Policy 11a of NPF4, "development proposals for all forms of renewable technologies will be supported". This is subject to the test outlined in Policy 11c, that:

> **"Development proposals will only be supported where they maximise net economic impact, including local and community socio economic benefits such as employment, associated business and supply chain opportunities."**

Whilst there is currently no definition of what the maximisation of net economic impact means, best practice is being established, and the leading trade association representing Scotland's renewable energy industry, Scottish Renewables, published guidance in 2025[4] to support developers with this.

3.1.2 Maximising Net Socio-Economic Benefit of Renewable Energy Guidance

Scottish Renewables guidance identifies four main ways in which projects are likely to generate local economic benefits:

- by developing the onshore wind **supply chain**;
- by developing the **skills** needed to deliver the 2030 deployment target;
- by **empowering communities** through effective design and management of community benefit funds and ownership arrangements; and

[3] Scottish Government (2023), National Planning Framework 4.

[4] Scottish Renewables (2025) *Maximising Net Socio-Economic Benefit of Renewable Energy Guidance and Reporting Framework: Guidance for developers to comply with NPF4 Policy 11c.* [online] Scottish Renewables. Available at: https://www.scottishrenewables.com/assets/000/004/592/2025.03.18_Maximising_Net_Socio-Economic_Benefit_Reporting_Framework_original.pdf?1742308718 [Accessed 16 Jul 2025].

- by protecting and enhancing the **environment** through proactive land management.

These themes are based on the commitments in the Scottish onshore wind sector deal and therefore provide a good indication of the kind of benefits the Government may have been thinking about when developing Policy 11c.

However, the Guidance also makes it clear that it is not possible to specify a general standard that can be applied to all projects and that every project should therefore be assessed on its own merits. To do this, the guidance suggests it is important to consider not just ***what*** developers propose to do but ***how*** they plan to do it and the context within which this takes place.

To help developers do this, the guidance identifies six principles that can be used to make a judgement on whether a project has been developed in a way that is consistent with the objective of maximising net economic impact. These are:

- **Place-based:** every project and every community is slightly different, so packages of benefits that are tailored around the needs and capacity of the community in question are likely to generate greater benefits than a standardised approach.
- **Innovative:** many of the benefits that have been realised by renewables to date have happened because of innovation at the project level. To maintain this culture of continuous improvement developers must continue to innovate.
- **Collaborative:** many of the benefits of renewable energy developments are not directly within the gift of developers. They will require input and support of others in the public, private and third sector to realise, making a collaborative approach essential.
- **Transparent:** effective collaboration requires the parties involved to trust each other and an open and transparent approach is crucial for establishing this trust.
- **Flexible:** a lot can change between project inception and completion, and these changes can make a big difference to the benefits ultimately realised. A flexible approach that responds positively to such changes is therefore important.
- **Deliverable:** providing communities with realistic expectations about what can be delivered during the construction and operation phase of a project will help achieve trust with relevant stakeholders.

The Applicant's contribution to these themes is outlined in Section 5.

3.2 National Strategic Context

3.2.1 Scotland's National Performance Framework

The National Performance Framework[5] sits at the top of the policy hierarchy in Scotland, with all other policies and strategies designed to meet its purpose and outcomes. The purpose of the National Performance Framework is:

> **"To focus on creating a more successful country with opportunities for all of Scotland to flourish through increased wellbeing, and sustainable and inclusive economic growth."**

The National Performance Framework explicitly includes 'increased wellbeing' as part of its purpose and combines measurements of how well Scotland is doing in economic terms with a broader range of well-being measures. The Framework is designed to give a more rounded view of economic performance and progress towards achieving sustainable and inclusive economic growth, and wider wellbeing across Scotland.

The National Performance Framework sets out 11 outcomes, underpinned by 81 indicators, that combine to give a better picture of how the country is progressing towards these goals. As well as Gross Domestic Product (GDP) and employment measures, the Framework's outcomes reflect the desired fabric of communities and culture, education, the environment, health and well-being and measures to help tackle poverty. It is these indicators on which the Scottish Government focuses its activities and spending to help meet the national outcomes.

The 11 national outcomes are that people:

- **children and young people**: grow up loved, safe and respected so that they realise their full potential;
- **communities**: live in communities that are inclusive, empowered, resilient and safe;
- **culture**: are creative and their vibrant and diverse cultures are expressed and enjoyed widely;
- **economy**: have a globally competitive, entrepreneurial, inclusive and sustainable economy;
- **education**: are well educated, skilled and able to contribute to society;
- **environment**: value, enjoy, protect and enhance their environment;
- **fair work and business**: have thriving and innovative businesses, with quality jobs and fair work for everyone;

[5] Scottish Government (2023), Scotland's National Performance Framework.

- **health**: are healthy and active;
- **human rights**: respect, protect and fulfil human rights and live free from discrimination;
- **international**: are open, connected and make a positive contribution internationally; and
- **poverty**: tackle poverty by sharing opportunities, wealth and power more equally.

The Proposed Varied Development could contribute to the achievement of the national outcomes set out in the National Performance Framework. Investment in renewable energy can increase productivity in the economy by creating jobs in the local area, contributing to inclusive growth. It also supports sustainability and the transition to Net Zero, by increasing the generation of renewable energy.

3.2.2 Programme for Government 2025-26: Building the Best Future for Scotland

Published in May 2025, the Programme for Government[6] sets out the Scottish Government's commitments with the purpose of improving people's lives by focusing on the following four priorities:

- eradicating child poverty;
- growing the economy;
- tackling the climate emergency; and
- ensuring high quality and sustainable public services.

The programme outlines key initiatives under each of the four priorities, several with relevance to the Proposed Varied Development. In particular, the Scottish Government highlights the economic opportunities associated with the path to Net Zero, and the importance of creating the right enabling environment to support businesses which generate jobs and wealth for communities.

3.2.3 Green Industrial Strategy

The Green Industrial Strategy[7], published by the Scottish Government in September 2024, aims to help Scotland realise the economic benefits of the global transition to Net Zero. The strategy highlights Scotland's strengths and opportunities during the transition and outlines six key enabling actions that the Scottish Government and partners will take to foster a positive environment for investment and growth. These include:

- supporting investment, ensuring an investment-friendly ecosystem;
- investing in strong research and development foundations;
- supporting the development of a skilled workforce;
- helping supply chain businesses to seize opportunities;
- delivering an agile planning and consenting system; and
- delivering required housing and enabling infrastructure.

[6] Scottish Government (2025), Programme for Government 2025-26: Building the Best Future for Scotland.
[7] Scottish Government (2024), Green Industrial Strategy.

The strategy provides a clear direction and focus, highlighting the importance of prioritising resources and investment. The strategy also emphasises the need for coordinated policies to create the right environment for working collaboratively to maximise economic benefit from the opportunities created by the transition to Net Zero.

As the largest contributor to Scotland's renewable electricity generation, maximising the wind economy, and projects such as the Proposed Varied Development, are key components of this strategy.

3.2.4 Scotland's National Strategy for Economic Transformation

In March 2022, the Scottish Government published the National Strategy for Economic Transformation[8], which sets out its ambition for Scotland's economy over the next decade. The Scottish Government's vision is to create a wellbeing economy where society thrives across economic, social and environmental dimensions, which deliver prosperity for all Scotland's people and places. Of particular importance is the ambition to be greener, with a just transition to net zero.

To deliver its vision and address the economy's challenges, five programmes of action have been identified (with a sixth priority of creating a culture of delivery), including:

- establishing Scotland as a world-class entrepreneurial nation;
- strengthening Scotland's position in new markets and industries, generating new, well-paid jobs from a just transition to net zero;
- making Scotland's businesses, industries, regions, communities and public services more productive and innovative;
- ensuring that people have the skills they need to meet the demands of the economy, and that employers invest in their skilled employees; and
- reorienting the economy towards wellbeing and fair work.

The strategy notes that Scotland has substantial energy potential and that it has developed a growing green industrial base. This provides a strong foundation for securing new market opportunities arising from the transition to Net Zero and will need continuing investment and support. Renewable energy also has a role to play in supporting productive businesses and regions across Scotland.

3.2.5 Onshore Wind Sector Deal

The Onshore Wind Sector Deal[9], published in September 2023, outlines the commitment from the Scottish Government and the onshore wind sector to reach 20 GW of onshore wind by 2030, ensuring maximisation of benefits to Scotland. The Deal highlights the increased potential of onshore wind for a low-carbon and prosperous future, the creation of high-quality job opportunities, and the empowerment of local communities in Scotland.

[8] Scottish Government (2022), Scotland's National Strategy for Economic Transformation.
[9] Scottish Government (2023), Onshore Wind Sector Deal.

The document emphasises the collaborative, sector and government action required to support the development of onshore wind in each of the following:

- **supply chain, skills and the circular economy**: support the enhancement of the current skills and training provision to meet the needs of the wind industry;
- **community**: onshore wind will continue to collaborate with local communities, offering impactful community benefits;
- **land use and environment**: onshore wind projects will enhance biodiversity and optimise land use and environmental benefits;
- **planning**: reduce the time it takes to determine applications for onshore wind projects by increasing skills and resources;
- **legislative and regulatory**: develop evidence to support a strategic approach to delivering investment and transporting wind turbine components, and improve network connections;
- **technical**: enable cooperative coexistence between onshore wind and safe aviation operations; and
- **implementation and governance**: key milestones to be delivered by agreed dates.

Taking these into consideration, the Deal sheds light on the importance of onshore wind in accelerating the transition to Net Zero, driving economic growth, creating better job opportunities, and benefitting communities in Scotland. The Proposed Varied Development would directly contribute to these commitments by increasing onshore wind generating capacity in Dumfries and Galloway and Scotland.

3.2.6 Tourism Strategy: Scotland's Outlook 2030

Following on from the Tourism Scotland 2020 (TS2020) strategy[10], a collaborative network of industry experts created Scotland's Outlook 2030, a strategy document which is focused on creating a world-leading tourism sector in Scotland that is sustainable in the long term. The strategy is focused on four key priorities:

- people;
- places;
- businesses; and
- experiences.

The strategy recognises the effects on tourism from climate change, technological advancements, Brexit and changing consumer behaviour, and highlights the need for collaboration between government, communities, and the public and private sectors[11].

There are six conditions that the strategy has highlighted as being crucial for success:

[10] Scottish Tourism Alliance (2012), Tourism Scotland 2020.
[11] Scottish Tourism Alliance (2020), Scotland's Outlook 2030.

- using technological advancements and information to understand changes and trends in tourist behaviours;
- ensuring policies are in place that support the vision;
- enabling investment opportunities in Scotland's tourism market;
- improving transport and digital infrastructure;
- greater collaboration between businesses in the industry; and
- positioning Scotland as a great place to live and visit.

A main commitment of the strategy is to address the effects of energy demand associated with tourism and make the sector commit fully to Scotland's ambition of becoming a net-zero society by 2045. In consideration of this strategy document, the effects of the Proposed Varied Development on the local tourism economy are assessed in Section 8.

3.3 Regional Policy Context

3.3.1 South of Scotland Regional Economic Strategy

The South of Scotland Regional Economic Strategy[12], published in 2021 by the South of Scotland Regional Economic Partnership, is a ten-year strategy outlining the opportunities for the region to foster sustainable economic growth.

Its central vision is to ensure the South of Scotland is 'Green, Fair, and Flourishing' by 2031.

"We will be a region of opportunity and innovation – where natural capital drives green growth, ambition and quality of life rivals the best in the UK, communities are empowered and cultural identity is cherished, enabling those here to thrive and attracting a new generation to live, work, visit, learn and invest in the South of Scotland."

The Strategy aims to achieve this vision through six key themes:

- **Skilled and ambitious people**: enabling access to skills, training and employment, and attracting and retaining a diversity of skills;
- **Innovative and enterprising**: developing business networks and knowledge-sharing, and supporting research and innovation;

[12] South of Scotland Regional Economic Partnership (2021) Regional Economic Strategy. [online] Available at: https://www.southofscotlandrep.com/delivery-strategies/regional-economic-strategy

- **Rewarding and fair work**: growing and diversifying the economy, attracting investment, and improving productivity;
- **Cultural and creative excellence**: investing in visitor economic infrastructure and boosting cultural assets;
- **Green and sustainable economy**: capitalising on natural capital opportunities and net zero opportunities, supporting community wealth building, and growing regional supply chains; and
- **Thriving and distinct communities**: empowering local communities and revitalising towns.

The Proposed Varied Development provides an opportunity to create local jobs, stimulate regional supply chains, and generate benefits to both communities and the environment.

3.3.2 Dumfries and Galloway Council Plan 2023 – 2028

The Dumfries and Galloway Council Plan[13] sets out the Council's overarching vision of becoming "a successful region, with a growing economy, based on fairness, opportunity and quality public services, where all citizens prosper" and several strategic outcomes under the following themes:

- Economy;
- Travel, Connectivity and Infrastructure;
- Education and Learning; and
- Health and Wellbeing.

The Plan recognises the socio-economic challenges facing the region, including a declining and ageing population, and identifies key opportunity areas to foster sustainable economic growth. In particular, the Council commits to promoting the development of renewable energy, with a focus on empowering communities.

3.4 Summary of Strategic and Policy Context

The Proposed Varied Development is expected to support the delivery of several national and regional strategic policy documents. Through its generation of renewable energy, the Proposed Varied Development will contribute to the decarbonisation of the UK and Scottish economies and towards net-zero ambitions.

At a regional level, the Proposed Varied Development will create high-quality employment opportunities, further diversifying the region's economic base and generating spend in the local economy through wage expenditure. The Proposed Varied Development will also support businesses within the local supply chain, building more sustainable and resilient communities through the diversification of income streams.

[13] Dumfries and Galloway Council (2023), Dumfries and Galloway Council Plan 2023 – 2028. [online] Available at: https://www.dumfriesandgalloway.gov.uk/sites/default/files/2025-08/DGC-Plan.pdf

Required by NPF4 Policy 11(c), the Applicant must take steps to maximise the benefits of the Proposed Varied Development, helping to address regional and local priorities, including enhancing recreational assets and local infrastructure, and attracting and retaining the working-age population.

4. Socio-Economic Context

This section outlines the socio-economic context of the Proposed Varied Development, including population structure, economic activity, skills, and relative deprivation.

4.1 Study Areas

The aim of the socio-economic baseline is to set the Proposed Varied Development and its potential for economic benefits within existing socio-economic conditions. This section considers the socio-economic structure of three study areas:

- Local Area (defined as the electoral wards of Castle Douglas and Crocketford, Dee and Glenkens, and Mid and Upper Nithsdale);
- Dumfries and Galloway; and
- Scotland.

4.2 Demographics

4.2.1 Population Estimates

Table 4-1 presents the current population structure for the Local Area, Dumfries and Galloway, and Scotland as a whole. The data for the local authority and national levels relates to 2024, whilst the latest population estimates at the electoral ward level are for 2021.

The Local Area is made up of 29,670 people, which represents 20.3% of the total population of Dumfries and Galloway (145,860), and 0.5% of the total population of Scotland (5,546,900).

The structure of the Local Area's population is skewed to an older demographic than that of Dumfries and Galloway and Scotland more generally. The proportion of the working age population in the Local Area is 56.7%, slightly below that across Dumfries and Galloway (57.2%), and 6.6 percentage points below that of the national average (63.3%).

The proportion of those over the age of 65 in the Local Area (28.6%) is also greater than that of Dumfries and Galloway (28.0%), and the average across Scotland (20.5%).

Table 4-1 Population Estimates (2024)

	Local Area	Dumfries and Galloway	Scotland
Total	**29,670**	**145,860**	**5,546,900**
Aged 0 - 15	14.7%	14.8%	16.2%
Aged 16 – 64	56.7%	57.2%	63.3%
Aged 65 and over	28.6%	28.0%	20.5%

Source: National Records of Scotland (NRS) (2025), Mid-2024 population estimates; ONS (2025) Population estimates – local authority based by single year of age; NRS (2022) Electoral Ward population estimates by sex and single year of age, mid-2021.

4.2.2 Population Change

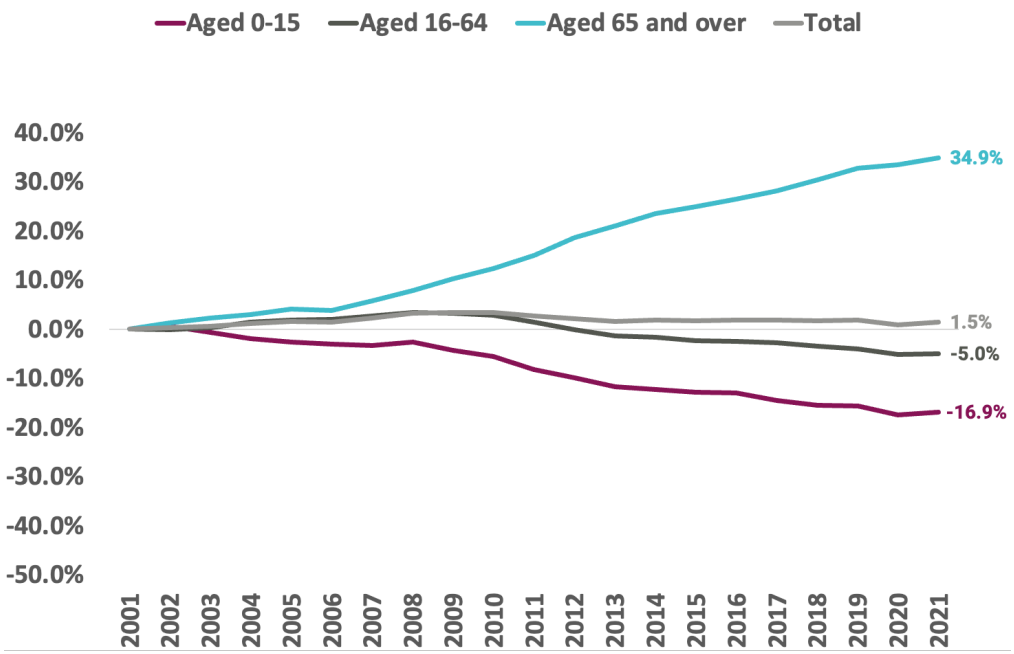
Headline population figures of the Local Area have remained relatively stable since 2001, peaking in 2010 and slowly declining since. However, whilst the headline population figure has remained relatively constant there have been fundamental changes in the age of the people living in the Local Study Area.

Since 2001 the population of the Local Area has risen by 1.5%, from 29,240 to 29,670 (an increase of approximately 430 people). However, the population has become substantially older with the number of people aged 65 and over increasing by 34.9%, while the number of younger people (aged 0- 15) has declined by 16.9% and the number of working age people by 5.0% as seen in Figure 4-1.

This ageing demographic trend creates challenges for the Local Area, as the older population tend to have greater need of social support services like health care, whilst the revenues needed to pay for these services are generated by the tax contributions of working people.

By providing long-term, high-quality work opportunities, the Proposed Varied Development could help mitigate these population trends by attracting young working families to the area. In turn, this would help to strengthen local social infrastructure, making the area more attractive to families and helping to create a reinforcing cycle, contributing to countering the trends experienced in the Local Area and increasing the number of young people.

Figure 4-1: Population Change of Local Area, rebased to 2001



Source: NRS (2022), Electoral Ward Population Estimates, Scotland: mid-2001 to mid-2021.

4.2.3 Population Projections

National Records of Scotland provide population projections at the local authority and Scottish geographic levels. While information is not available at the electoral ward level, current population estimates and future trends at the local authority level can be used to form a view of more localised trends.

Over the period between 2024 and 2047, the population of Dumfries and Galloway is expected to decrease by 6.5%, from 145,860 to 136,370. This trend is contrasting with projections for Scotland as a whole, expected to experience a population increase of 4.3% from 5,546,900 to 5,782,680.

Over this period, the proportion of the working age population in Dumfries and Galloway is expected to decrease over this period, with this share of the population expected to fall by 4.8 percentage points by 2047, equivalent to the overall reduction of 11,970 people. This reduction is more pronounced than the projections for Scotland as a whole, where the proportion of the working age population is projected to fall by 2.4 percentage points over the same period.

Simultaneously, the share of the population aged 65 and over is projected to increase by 6.9 percentage points in Dumfries and Galloway, equivalent to more than 6,750 additional individuals within this demographic. Scotland is predicted to follow a similar but less marked trend, with the share of the population aged 65 and over expected to rise from 20.5% to 25.0%.

Without an increase in availability, opportunity and training for well-paid jobs in Dumfries and Galloway, the problems of a declining working age population are expected to remain a challenge with people emigrating to other areas with more opportunities.

Table 4-2 Population Projections (2024 to 2047)

	Dumfries and Galloway		Scotland	
	2024	2047	2024	2047
Total	**145,860**	**136,370**	**5,546,900**	**5,782,680**
Aged 0 - 15	14.8%	12.7%	16.2%	14.0%
Aged 16 – 64	57.2%	52.4%	63.3%	60.9%
Aged 65 and over	28.0%	34.9%	20.5%	25.0%

Source: NRS (2024), Mid-2023 Population Estimates. NRS (2020), Population Projections for Scottish Areas (2018-based).

4.3 Economic Activity

Between July 2024 and June 2025, the unemployment rate in Dumfries and Galloway was 2.8%, which is lower than the average for Scotland (3.7%). Additionally, Dumfries and Galloway had a higher rate of economic activity (80.9%) compared to Scotland as a whole (76.9%).

Despite these levels of economic activity, Table 4-3 shows that the median annual gross wage for residents (full and part-time) in Dumfries and Galloway is £29,649, which is lower than the Scottish average of £33,061.

Table 4-3 Labour Market Indicators (2025)

	Dumfries and Galloway	Scotland
Economic Activity Rate	80.9%	76.9%
Unemployment Rate (%)	2.8%	3.7%
Median Annual Gross Income (All Residents)	£29,649	£33,061

Source: ONS (2025) Nomis model-based estimates of unemployment and annual population survey - Data for Jul 2024-Jun 2025 and the annual survey of hours and earnings - resident analysis data for 2025.

4.4 Employment Structure

As shown in Table 4-4, in 2024 the highest proportion of employment in the Local Area was in manufacturing, accounting for 15.1% of total employment in the area.

Employment in this sector was significantly overrepresented compared to Dumfries and Galloway (9.2%) and Scotland as a whole (6.9%).

Of those working in the Local Area, 6.8% were employed in the construction industry, compared to 6.1% in Dumfries and Galloway and the Scottish average of 5.9%. This sector is one of the primary areas of opportunity for contracts associated with the construction phase of the Proposed Varied Development, suggesting that the Local Area is well-placed to benefit from the associated contracts.

Table 4-4 Employment Structure (2024)

	Local Area	Dumfries and Galloway	Scotland
Manufacturing	15.1%	9.2%	6.9%
Wholesale and retail trade	13.7%	13.7%	12.5%
Education	13.2%	6.9%	8.3%
Accommodation and food service activities	12.7%	9.2%	8.1%
Human health and social work activities	12.5%	18.3%	16.2%
Construction	6.8%	6.1%	5.9%
Professional, scientific and technical activities	6.4%	4.6%	7.2%
Transportation and storage	3.7%	3.8%	4.1%
Arts, entertainment and recreation	3.3%	2.7%	3.0%
Agriculture, forestry and fishing	2.6%	12.2%	3.1%
Real estate activities	2.4%	1.5%	1.6%
Administrative and support service activities	2.3%	3.8%	6.4%
Other service activities	1.8%	1.5%	1.9%
Public administration and defence;	1.6%	3.8%	6.5%
Information and communication	1.2%	0.8%	2.7%
Electricity, gas, steam and air conditioning supply	0.4%	0.4%	0.8%

Financial and insurance activities	0.2%	0.6%	3.4%
Water supply activities	0.1%	0.8%	0.7%
Total	**10,605**	**65,475**	**2,640,000**

Source: ONS (2025), Business Register and Employment Survey 2024.

4.5 Education

People of working age in Dumfries and Galloway have lower levels of attainment at more advanced qualifications levels than those across Scotland. Across Dumfries and Galloway, 43.6% of the population have achieved at least a Regulated Qualifications Framework (RQF) level four (RQF4), which is equivalent to the first year of a bachelor's degree program. However, the proportion of people who have achieved no educational qualifications in Dumfries and Galloway (3.8%) is lower than across Scotland (8.2%).

Table 4-5 Education Levels (2024)

	Dumfries and Galloway	Scotland
% with RQF4+ - aged 16-64	43.6%	53.7%
% with RQF3+ - aged 16-64	69.6%	71.9%
% with RQF2+ - aged 16-64	90.1%	87.1%
% with RQF1+ - aged 16-64	91.4%	88.2%
% with other qualifications - aged 16-64	4.8%	3.5%
% with no qualifications (RQF) - aged 16-64	3.8%	8.2%

Source: ONS (2025), annual population survey – data for Jan 2024 to Dec 2024.

4.6 Scottish Index of Multiple Deprivation

The Scottish Index of Multiple Deprivation (SIMD) is a relative measure of deprivation which ranks small areas across seven dimensions: income, employment, education, health, access to services, crime and housing. These areas can be ranked based on which quintile (fifth of the distribution) they belong to, with a small area in the first quintile being in the 20% most deprived areas in Scotland.

There are 40 small areas in the Local Area, none of which are in the least deprived quintile. A large proportion of the small areas are concentrated within the middle of the distribution, with 60% being in the third quintile and 25% in the fourth. The remaining 16% of small areas are split evenly across the second and most deprived quintiles.

Dumfries and Galloway is made up of 201 small areas, of which 9% are in the most deprived quintile, and 8% are in the least deprived quintile. Most of the small areas in Dumfries and Galloway are clustered in the middle of the distribution, with 38% being in the third quintile, and 20% in the fourth. The remaining 24% are within the second quintile.

Larger shares of small areas in the least deprived quintiles in the Local Area indicate higher levels of education and more favourable economic conditions. This is a positive factor for the Proposed Varied Development, as it suggests that the Local Area has a stronger foundation in terms of skilled workers and financial resources. As a result, the Local Area is more likely to have the necessary infrastructure and services to support the development of the Proposed Varied Development.

While the Local Area experiences lower levels of deprivation compared to Scotland overall, there are still neighbourhoods falling within the most deprived quintile across the Dumfries and Galloway region. The Proposed Varied Development therefore provides an opportunity to contribute to more inclusive and equitable growth across the wider region.

Figure 4-2 Scottish Index of Multiple Deprivation

Source: Scottish Government (2020), Scottish Index of Multiple Deprivation 2020.

4.7 Fuel Poverty

Fuel poverty in the UK is defined as a household spending a large portion of their income on fuel to maintain a reasonable temperature in their home. The most common definition is that a household is fuel poor if they spend more than 10% of their income on fuel to heat their home to a satisfactory standard.

In Dumfries and Galloway, 29% of households (approximately 20,000) experience fuel poverty, compared to 25% across Scotland. The region also has a higher rate of extreme fuel poverty, where household energy bills amount to at least 20% of income. In Dumfries and Galloway, 15% of households (around 11,000) live in extreme fuel poverty, while the Scottish average is 12%.

Residents over 65 are frequently affected by fuel poverty. This demographic often lives on fixed incomes, spends more time at home, and resides in older housing stock, which can contribute to higher energy costs.

Table 4-6 Fuel Poverty

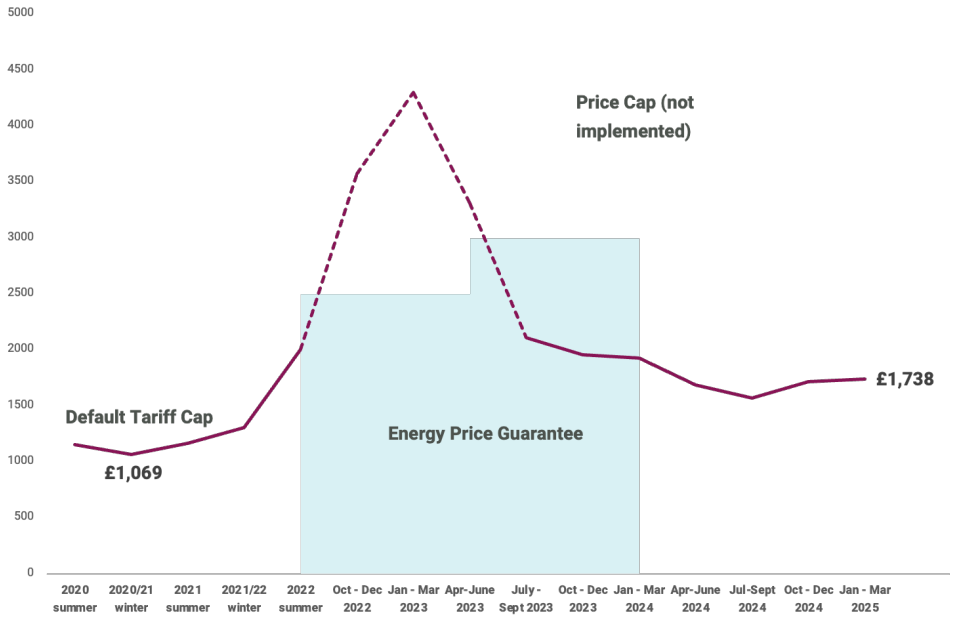
	Dumfries and Galloway	Scotland
Fuel Poverty	29%	25%
Extreme Fuel Poverty	15%	12%

Source: Scottish Government (2021), Scottish House Condition Survey: Local Authority Analysis 2019.

It is likely, given the rise in energy prices beginning in 2022, that there has been a further increase in the number of households that are in fuel poverty. Figure 4-3 shows the alterations to the default tariff cap for direct debit customers in Great Britain. The price caps of £2,500 and £3,000 (equal to the Energy Price Guarantees) were more than double the price compared to summer 2020. Despite reduction in the price cap to around £1,738[14] between January and March 2025, annual bills for typical energy consumption remain at least 33% higher than in winter 2021/22.

[14] House of Commons Library (2024), Gas and electricity prices during the 'energy crisis' and beyond.

Figure 4-3: Annual Energy Price Cap (£), 2019 - 2025



Source: Ofgem (2024), Retail market indicators - Breakdown of the default tariff price cap (GBP £, direct debit).

The Scottish Government published scenario modelling[15] of national fuel poverty rates under each Energy Price Guarantee. It was estimated that from October 2022 approximately 860,000 Scottish households (35%) are fuel poor, equivalent to a 10-percentage-point increase from the latest available data in 2019 (Table 4-6). This is expected to increase to 39% (980,000 households) after the rise in the Energy Price Guarantee to £3,000 in April 2023. These significant increases in the fuel poverty rates will also be reflected in Dumfries and Galloway.

Renewable energy projects in Dumfries and Galloway, like the Proposed Varied Development, have the potential to help addressing fuel poverty by reducing energy bills and bills volatility. These projects aim to provide more stable energy and potentially lower costs for residents. The impact of such projects may become more significant as demographic projections indicate that the proportion of the population aged 65 and over in Dumfries and Galloway is expected to increase at a higher rate than in Scotland overall.

4.8 Summary of Socio-Economic Context

Between 2024 and 2047, the population of Dumfries and Galloway is expected to decline, with the proportion of the population aged over 65 expected to increase alongside a declining working-age population. This suggests that there is a lack of opportunities for workers in the area, which leads to outward migration. The median annual gross income of full-time workers is lower than the Scottish average. The Proposed Varied Development could contribute to addressing these challenges and

[15] Scottish Government (2023), Cost of Living (Tenant Protection) (Scotland) Act 2022: first report to the Scottish Parliament.

offsetting population trends by creating a vibrant onshore wind sector in the area, which could favour the retention of young people through high-skilled and high paying jobs.

At a local level, the construction sector, which is likely to benefit from contracts associated with the Proposed Varied Development, accounts for an above-average share of employment compared to Dumfries and Galloway, and Scotland as a whole.

Fuel poverty affects 29% of households in Dumfries and Galloway, compared to 25% across Scotland. Additionally, 15% of households in the region experience extreme fuel poverty, versus 12% in Scotland as a whole. The Proposed Varied Development has the potential to impact these figures by contributing to affordable energy solutions, including the installation of solar panels or other kinds of generation assets, to ensure communities benefit from locally produced energy (discussed in greater detail in Section 5.3.2).

In summary, the Proposed Varied Development could contribute to addressing the localised and regional socio-economic challenges by influencing key factors such as workforce retention, skilled worker attraction, and energy affordability.

5. Maximising Local Economic Benefits

This section considers how the Applicant aims to maximise the local economic benefits generated by the Proposed Varied Development.

In alignment with NPF4 and Scottish Renewables guidance, the assessment of whether the Proposed Varied Development will maximise these benefits has been based on the Applicant's commitments across **supply chain development**, **skills development**, the **empowerment of communities** and balancing the development with **environmental protection and enhancement**.

The Applicant's commitments relating to each theme have been outlined below.

5.1 Supply Chain

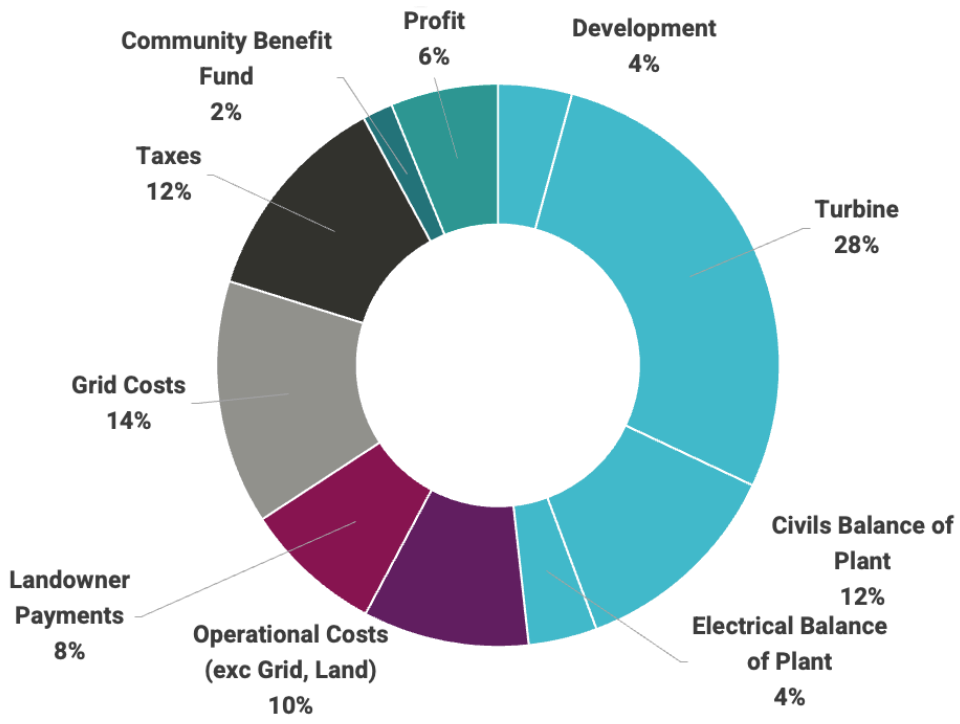
5.1.1 Maximising Benefits Through the Supply Chain

Most of the value associated with onshore wind developments is associated with the goods and services needed to develop, construct and operate it. The more investment that can be secured by local businesses, the greater the local economic impact of the project will be. While it is not always possible to obtain specialised capital equipment locally, securing less specialised goods and services from local firms can make a big difference, stimulate economic activity and supporting jobs.

The distribution of the income of a typical onshore wind farm in Scotland is shown in Figure 5-1. This income distribution illustrates that the majority of the value of an onshore wind farm is captured within various elements of the supply chain.

Areas that Scotland can supply the majority of the work (such as development, the electrical and civil balance of plant and operational activities) account for at least 30% of the value of an onshore wind farm and therefore, maximising the supply chain opportunities from any project is crucial to maximising the net economic benefits.

Figure 5-1 Distribution of Revenue of a Typical Onshore Wind Farm in Scotland



Source: BiGGAR Economics Analysis

Maximising the local content of a project also benefits developers. Not only does locally sourced content cost less to transport, but local suppliers may also be able to resolve issues faster than national businesses with corporate decision-making processes, helping avoid costly delays and minimise overheads.

A high proportion of local content is therefore in the mutual best interest of developers and local people.

There are steps developers can take during the procurement process to make it easier for local businesses to bid for and secure contracts. However, the scale of local content will ultimately depend on the capacity of the local supply chain to exploit these opportunities. Experience elsewhere shows that collaborative effort between industry and public agencies can help develop this capacity. This can help shift the long-term regional economic prospects, creating a positive legacy for the future.

5.1.2 The Applicant's Actions and Commitments (Supply Chain)

The Applicant has committed to several progressive procurement practices to support local businesses in retaining a greater proportion of supply chain expenditure to maximise the potential benefits of the Proposed Varied Development locally.

Allowing sufficient preparation for local suppliers is an important factor in enabling these businesses to compete against larger firms in the tendering process for contracts. The Applicant has therefore committed to circulating information regarding available opportunities for local business to raise awareness of upcoming contracts. This strategy will ensure that local suppliers are made aware of opportunities sufficiently in advance and are supported in understanding their capacity to deliver against the requirements of potential contracts, enabling them to invest to prepare and compete with larger suppliers.

This will be further supplemented by the Applicant's register of local contractors, which allows contractors to register interest in bidding for contract tendering opportunities, and thereafter be notified when these opportunities become available. This database allows the Applicant to reach out to local contractors and support local procurement for the Proposed Varied Development and future projects. The Applicant has also committed to hosting a minimum of one 'Meet the Buyer' event per project and exploring opportunities to collaborate with Dumfries & Galloway Chamber of Commerce to explore local capabilities on a more generalised basis.

The Applicant is actively working to prioritise local employment in Dumfries and Galloway wherever possible.

These commitments illustrate the Applicant's goal of prioritising local employment wherever possible to maximise local economic impact, and the Applicant's intention to do so particularly for long-term roles associated with the operations and maintenance phase.

Once contracts are awarded, many of the procurement decisions are made by the Tier 1 contractors, leaving developers with little control over where Tier 1 suppliers procure their resources from, and therefore, where this expenditure is retained. Therefore, to encourage a greater proportion of this content to be secured locally, the Applicant has committed to integrating a tender question for all Tier 1 contractors regarding their approach to local expenditure and the procurement of supplies, using this information as part of the criteria which they use to assess bids. As a result, Tier 1 contractors are actively encouraged to use and hire local businesses in alignment with the Applicant's 'Responsible Procurement Charter'.

The Applicant has committed to actively encourage suppliers to use and hire local businesses, in alignment with their 'Responsible Procurement Charter'.

The Applicant has also committed to collaborating with Tier 1 suppliers to gather information on direct local expenditure and employment, and approximate indirect local spend, to monitor local economic benefit throughout the Proposed Varied Development's lifetime, and creating a blueprint for future projects, highlighting resources which can and should be secured locally.

These commitments made by the Applicant during the procurement process make it easier for local businesses to bid for and secure contracts, maximising the local content associated with the Proposed Varied Development. This expenditure supports economic activity within the local economy and supports employment opportunities for local people, both of which are an important part of the Applicant maximising benefits for the local communities.

5.2 Skills Development

5.2.1 Maximising Benefits Through Skills Development

Stable employment is a major determinant of personal wellbeing, offering people social interaction, purpose, and the opportunity to do work they find fulfilling. Similarly, gaining new qualifications and participating in work-based training also has a powerful effect on wellbeing, equipping people with the skills they need to pursue meaningful work and take control of their future. Onshore wind projects can provide all of these benefits, but it is not just local people who gain.

Employing local people also provides significant benefits for developers. When workers live nearby, travel expenses are lower, which helps reduce project budgets. Moreover, workers who do not need to commute long distances or stay away from home are likely to be more satisfied with their job and experience less stress, which typically enhances performance. Local workers are also more likely to be personally invested in the success of their area, making them highly motivated and perhaps more prepared to 'go the extra mile'. Finally, local employees often possess valuable local knowledge, which may make it easier for them to manage site-specific challenges more effectively than remotely based personnel.

Whilst developers can raise awareness of employment opportunities amongst the local labour force, there must be a sufficient pool of local labour with the skills needed to undertake available roles. Where a sufficient pool does not exist, developers may take a longer-term approach by focusing on developing the next generation of workers instead. Cultivating a local talent pipeline can help secure a role for the local area in the long-term development of the sector, while generating a legacy for the project.

5.2.2 The Applicant's Actions and Commitments (Skills Development)

The Applicant recognises the importance of building relationships with local communities and inspiring the next generation to choose a career path within the renewables industry. To support this, the Applicant has committed to providing three scholarships of £3,000 per year for students from households within Dumfries and Galloway to support STEM subjects and construction skills.

The Applicant is providing three scholarships for students from households in Dumfries and Galloway, to support STEM and construction skills.

The Applicant has also committed to building relationships with local primary schools, delivering in-classroom sessions and facilitating an annual site visit for students. Engaging with schools in this way, with the hope of inspiring the future workforce, can play an important role in encouraging pupils to pursue a career within renewable energy and support the delivery of the scale of projects required to meet Government targets and move towards a more sustainable future.

These commitments made by the Applicant, and the collaboration between industry and education providers, can facilitate the identification of regional skill gaps and cultivate a local talent pipeline within Dumfries and Galloway. This will support the local workforce to maximise the number of contracts secured locally in association with the Proposed Varied Development, as well as securing a role for the local area in the long-term development of the sector and the pipeline of the projects planned for Dumfries and Galloway.

5.3 Community Empowerment

5.3.1 Maximising Benefits Through Community Empowerment

For many people, the most obvious and important way in which renewable energy developments can generate benefits for local communities is through Community Benefit Funds (CBF), voluntary arrangements that typically provide a fixed sum related to the scale of the development.

Over the last 20 years, as experience of delivering projects and understanding of community priorities has grown, a plethora of mechanisms for delivering community benefit have evolved. These include:

- provisions for shared equity arrangements with host communities;
- support for housing and social infrastructure in host communities;
- funding to support operational and/or staff costs of community anchor organisations;
- financial support for specific local roles (e.g. nature wardens or rangers);
- financial support for local people to undertake professional training and development;
- local electricity discounts and other direct financial benefits for residents; and
- the provision of recreational infrastructure (paths and tracks) during the construction phase.

There is good evidence that, when used wisely, community benefit funds can generate substantial and lasting benefits for host communities. Research

undertaken by BiGGAR Economics[16], for example, found that two large wind farms in the Scottish Highlands generated between £3.56 and £5.12 in wellbeing benefits for the local area and around £4.18 in economic value for every £1.00 of funding that was awarded. The same study also estimated that over 14 years, the two funds helped build stocks of human, economic and social capital valued at around £15 million that will help sustain these benefits in the future.

Evidence from Scotland shows community benefit funds can generate substantial and lasting social value and build the foundations of future prosperity.

Developers often use community benefit funds as a way of signalling their intention of becoming a 'good neighbour' and building goodwill with host communities. This is important because when local people believe their community is likely to benefit from a project, they are more likely to support it, which can significantly streamline the planning process. Furthermore, a positive track record in one area can create a favourable disposition towards developers' future proposals in other regions.

Effective community empowerment can therefore simultaneously enhance local outcomes while also helping de-risk the development process.

5.3.2 The Applicant's Actions and Commitments (Community Empowerment)

Alongside the revenue from non-domestic rates and the economic impact generated through construction, and operations and maintenance contracts, the Applicant has committed to offering a community benefit fund of at least the recommended value, expected to be published later this year by the Scottish Government[17].

The Applicant is keen to ensure that part of this funding supports affordable energy solutions, ensuring neighbouring communities benefit directly from locally produced energy. These solutions could include the installation of solar panels, or other kinds of generation assets, with the intention of expanding to a larger geography over time.

The remainder of funding can be used to provide a reliable funding stream for local communities providing long-term economic support and enabling local communities to invest in a range of social, environmental, and economic projects.

The Applicant has also committed to fostering long-term harmonious relationships with local communities, to understand local aspirations and needs, to optimise the

[16] BiGGAR Economics (2025), Impact Assessment of SSE Renewables Achany and RWE Rosehall Wind Farms Community Benefit Funds, commissioned by SSE Renewables, RWE and Foundation Scotland.
[17] Scottish Government (2026), Refreshing the Good Practice Principles for Community Benefits from Onshore Renewable Energy – a Working Paper.

strategic use of the CBF. In doing so, the Applicant has committed to empowering local communities to maximise the benefits of this funding.

These commitments provide local communities with the funds to enable local communities to benefit from locally produced energy and empower local communities to tailor the use of these funds to best meet the strategic needs of the local and regional area.

5.4 Environmental Protection and Enhancement

5.4.1 Maximising Benefits Through Environmental Protection and Enhancement

Robust land management protocols bring sites into more active use, providing immediate and long-term benefits for communities and developers alike. Sites selected for wind farm development are often unused or, if they are used, it is most often for some relatively low-value agricultural activity, such as hill farming or field sports. Crucially, this type of activity can generally resume once the wind farm is constructed and commissioned. This means the development of a wind farm usually represents an opportunity to bring sites into active, or more active, use, introducing the need for robust land management protocols.

Regardless of the focus of these protocols - whether enhanced access or improved environmental protection - active land management is likely to create direct employment opportunities for local people.

The wider benefits associated with enhanced land management will vary depending on the environmental sensitivity of the site. In some locations, site infrastructure, such as access tracks, can be designed for dual use, creating opportunities to enhance recreational access and generating immediate and tangible benefits for local communities. On more environmentally sensitive sites, this approach may not be appropriate, necessitating a longer-term focus on environmental protection. While this may not generate immediate benefits in the same way as enhanced access, the long-term societal benefits can be significant.

Effective land management can also provide material benefits for developers. Establishing a reputation for responsible stewardship helps build trust with public agencies responsible for environmental regulation, which can contribute to a smoother planning process. Furthermore, developers with a track record of efficient delivery are likely to be more attractive partners for landowners, which may make negotiating land agreements for future sites easier. This can help reduce the risk of costly and time-consuming delays, thereby de-risking the entire project. Crucially, the additional investment required to realise these benefits is often negligible.

5.4.2 The Applicant's Actions and Commitments (Environmental Protection and Enhancement)

The Applicant is committed to enhancing the use of land surrounding the Proposed Varied Development and contributing towards enhancing recreational access and to the natural environment.

To enhance recreational access to the site, the Applicant has committed to enhancing access to the natural landscape surrounding the Proposed Varied Development by developing public access paths, alongside improved signage and mapping. This will bring the site into more active use, enabling local residents to use the site for walks, runs, and cycling, all of which support health and wellbeing.

To minimise disruption and preserve the integrity of local transport routes, the Applicant has committed to ensuring that the roads are maintained to a high standard throughout the construction phase.

To enhance the natural environment, the Applicant has also committed to several biodiversity enhancements across the Proposed Varied Development site, including forest to bog restoration and riparian native planting.

These commitments aim to bring the site into more active use, by enhancing recreational access and boosting biodiversity across the site, as well as maintaining local transport routes throughout the construction phase of the Proposed Varied Development.

6. Assessment Methodology

This section describes the methodology used to assess the economic impact from the Proposed Varied Development.

6.1 Economic Impact Methodology

6.1.1 Modelling the Economic Impact of Onshore Wind Farm Developments

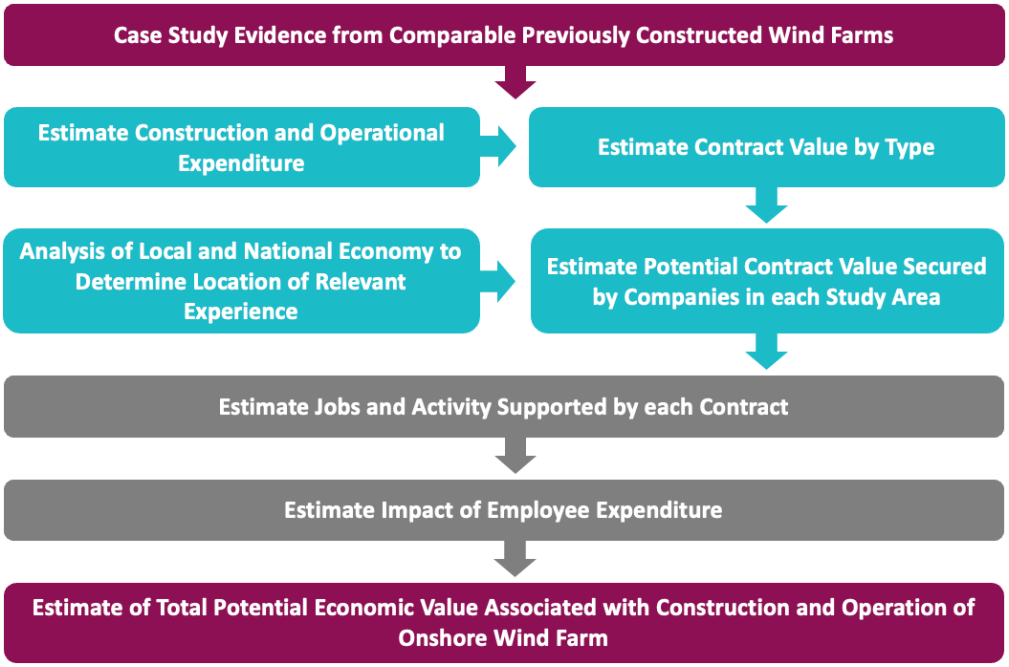
The approach followed in estimating the economic impact from onshore wind developments is based on industry best practice and was used in a study undertaken in 2015 by BiGGAR Economics on behalf of RenewableUK[18], on the construction and operational costs from numerous onshore wind farm projects across the UK. The methodology has now been used to assess the economic impact associated with numerous onshore wind developments across Scotland.

To begin estimating the economic activity supported by the Proposed Varied Development, it is first necessary to calculate the expenditure during the development, construction, operation and maintenance phases. The total expenditure figure is then divided into its main components using calculated assumptions regarding the share that could be expected by main and sub-contractors. This provides an estimate for each main component that could be secured in each study area. There are four key stages of the economic modelling, which are illustrated in Figure 6-1 below:

- estimation of the capital and operational expenditure;
- estimation of the value of component contracts that make up total expenditure;
- assessment of the capacity of businesses in the study area to perform and complete component contracts; and
- estimation of economic impact from resultant figures.

[18] RenewableUK (2015), Onshore Wind: Economic Impacts in 2014.

Figure 6-1 Approach to Economic Impact



Source: BiGGAR Economics

6.1.2 Measure of Economic Impact

The economic impacts are reported with respect to the following measures:

- **Gross Value Added (GVA)**: a commonly used measure of economic output, GVA captures the contribution made by an organisation to national economic activity. This is usually estimated as the difference between an organisation's turnover and its non-staff operational expenditure; and
- **Employment**: this is expressed as years of employment for temporary contracts and as annual jobs for operations and maintenance contracts. Years of employment are used to report the short-term employment that is supported by the construction and development of the wind farm. As an example, a job that lasts for 18 months would support 1.5 years of employment.

6.1.3 Sources of Economic Impact

The assessment will consider the following sources of economic impact:

- **Direct Impacts**: the economic value generated through the contracts associated with the Proposed Varied Development;
- **Indirect Impacts**: the impact from the spending of contractors within their supply chains; and
- **Induced Impacts**: the impact from the spending of those workers carrying out contracts for the Proposed Varied Development, on behalf of its contractors.

6.1.4 Study Areas

The assessment of economic impacts considered the following study areas:

- Dumfries and Galloway; and
- Scotland.

7. Economic Impact

This section estimates the economic impact of the construction and operation of the Proposed Varied Development.

7.1 Development and Construction

The assessment of the economic impact arising from the development and construction of the Proposed Varied Development utilises the extensive work that BiGGAR Economics has carried out in the onshore wind sector. This includes an evaluation of existing wind farm developments carried out in 2015 by BiGGAR Economics on behalf of RenewableUK. The analysis has been updated over time, drawing on evaluations of individual wind farm developments and on experience with developers working across Scotland. This body of research and experience provides evidence to estimate costs per MW based on a development's number of turbines and its capacity.

The Proposed Varied Development is expected to have 11 turbines with a total installed capacity of up to 77 MW and a 50 MW BESS. It was estimated that the total development and construction expenditure would be £154.8 million in 2025 prices. The expenditure was split according to the following component contracts:

- development and planning;
- turbine;
- balance of plant;
- grid connection; and
- battery storage.

The greatest expenditure component was associated with turbines, equivalent to £77.7 million, or 50% of total development and construction spend. The following largest expenditure was associated with the BESS, amounting to £33.6 million (22% of total expenditure). It was estimated that the balance of plant would account for 20% of the total expenditure, and both the development and planning and grid connection would each account for 4%.

Table 7-1 Development and Construction by Contract Type

	% CAPEX	Value (£m)
Development and Planning	4%	6.3
Turbines	50%	77.7
Balance of Plant	20%	30.8
Grid Connection	4%	6.4
BESS	22%	33.6
Total	**100%**	**154.8**

Source: BiGGAR Economics Analysis of case study evidence from comparable previously constructed wind farms. Note: Totals may not sum due to rounding.

In assessing the economic impacts arising from the development and construction of the Proposed Varied Development, it was necessary to make assumptions on the ability of businesses within each study area to carry out contracts.

Based on the evidence from similar developments within Dumfries and Galloway, it was estimated that approximately 32% of the Proposed Varied Development's contracts will be carried out by Scottish businesses, with a value of £49.1 million. It was estimated that spending on businesses based in Dumfries and Galloway would be approximately £14.8 million, equivalent to 10% of total development and construction expenditure.

The greatest opportunity for Scottish businesses is expected to be in contracts associated with the balance of plant, which would be worth up to £28.1 million. Balance of plant contracts are also likely to be the largest opportunity for businesses in Dumfries and Galloway, worth up to £7.8 million.

Table 7-2 Development and Construction Expenditure by Study Area

	Dumfries and Galloway		Scotland	
	%	£m	%	£m
Development and Planning	52%	3.2	75%	4.7
Turbines	2%	1.6	10%	7.4
Balance of Plant	25%	7.8	91%	28.1
Grid Connection	20%	1.3	77%	4.9
BESS	3%	0.9	12%	3.9
Total	**10%**	**14.8**	**32%**	**49.1**

Source: BiGGAR Economics Analysis. Note: Totals may not sum due to rounding.

Having estimated the size of the contracts that could benefit each of the study areas, it was possible to estimate the GVA and short-term employment that these are likely

to support. This was done by splitting each contract category into its component contracts and assigning each to an industrial sector, based on its Standard Industrial Classification (SIC)[19] code. Direct GVA was then estimated by applying the relevant turnover per GVA from the UK Annual Business Survey (ABS) [20].

It was estimated that the development and construction of the Proposed Varied Development is likely to generate £6.5 million direct GVA in Dumfries and Galloway and £21.5 million direct GVA in Scotland.

Table 7-3 Development and Construction, Direct GVA by Study Area (£m)

	Dumfries and Galloway	Scotland
Development and Planning	1.6	2.5
Turbines	0.9	3.7
Balance of Plant	3.1	11.5
Grid Connection	0.5	1.8
BESS	0.4	2.0
Total	**6.5**	**21.5**

Source: BiGGAR Economics Analysis. Note: Totals may not sum due to rounding.

Similarly, it was feasible to estimate the number of direct jobs supported by spending in construction and development contracts. This was achieved by dividing the expenditure in each contract by the turnover per job ratio for the relevant sector. It was estimated that the development and construction of the Proposed Varied Development will generate 80 direct years of employment in Dumfries and Galloway and 260 direct years of employment in Scotland.

Table 7-4 Development and Construction, Direct Employment by Study Area, and Contract Type (Years of Employment)

	Dumfries and Galloway	Scotland
Development and Planning	20	30
Turbines	20	60
Balance of Plant	30	130
Grid Connection	<10	20
BESS	<10	20
Total	**80**	**260**

Source: BiGGAR Economics Analysis. Note: Totals may not sum due to rounding.

[19] Office for National Statistics (2009), Standard Industrial Classification of industrial Activities (SIC 2007).

[20] Office for National Statistics (2020), Annual Business Survey 2018 - Revised.

Expenditure in development and construction contracts is also expected to generate 'knock-on' effects across the economy. Specifically, it will be associated with further rounds of expenditure along the supply chain and with the spending of the wages and salaries of those involved in the development and construction of the Proposed Varied Development. These are referred to as 'indirect' and 'induced' impacts.

To estimate indirect and induced impacts, it was necessary to apply the relevant Type 1 and Type 2 GVA and employment multipliers from the Scottish Government Input-Output Tables[21] to direct GVA and direct employment. Since the multipliers refer to sectoral interactions occurring at the level of the Scottish economy, it was necessary to adjust them when considering impacts taking place in Dumfries and Galloway.

By combining the direct, indirect, and induced impacts it was estimated that the development and construction of the Proposed Varied Development will generate:

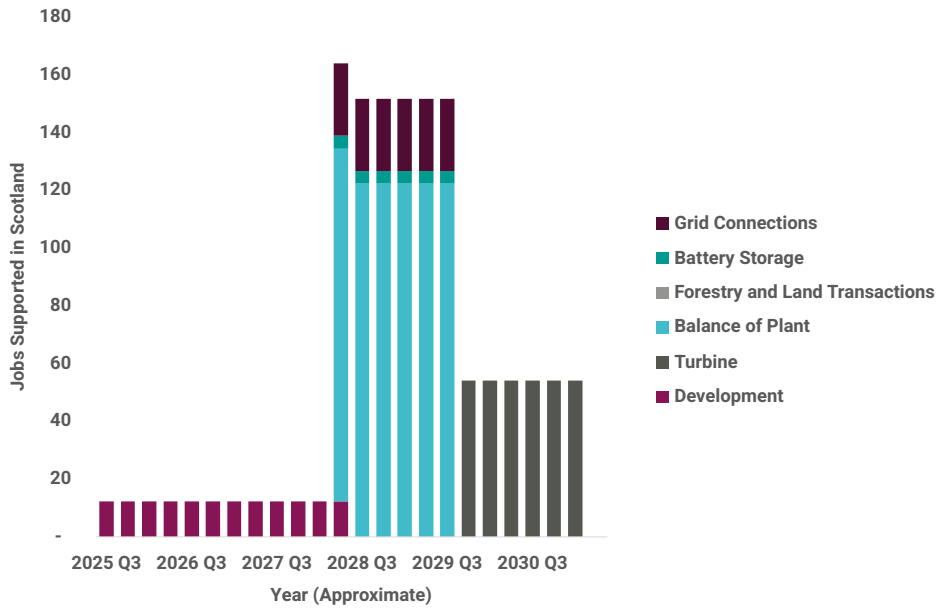
- £8.8 million GVA and 100 years of employment in Dumfries and Galloway; and
- £37.5 million GVA and 430 years of employment in Scotland.

The estimated figures show that the Proposed Varied Development would contribute to the provision of high-quality local employment opportunities during the Development and Construction phase and help maximise the value of local expenditure. These are in line with the requirements of the NPF4 Policy 11(c).

The employment impacts in Scotland will peak during the construction phase, in particular, during the initial balance of plant works. It is estimated that during this phase up to 160 jobs will be supported across the Scottish economy.

[21] Scottish Government (2020), Supply, Use and Input-Output Tables.

Figure 7-1 Employment Impacts in Scotland over Time



Source: BiGGAR Economics Analysis

7.2 Operation and Maintenance

The initial stage in determining the economic impact stemming from the operations and maintenance of the Proposed Varied Development involved assessing the annual total expenditure necessary for its operation. Based on the Proposed Varied Development's capacity, it was estimated that the annual cost of operations and maintenance (OPEX) is likely to amount to approximately £4.9 million.

It was further assumed that businesses in Dumfries and Galloway could benefit from a total £1.9 million in operations and maintenance contracts (39% of OPEX) annually, and that annual expenditure on Scottish contractors could be up to £3.8 million (77% of OPEX).

Table 7-5 Operations and Maintenance Expenditure by Study Area

	Dumfries and Galloway		Scotland	
	%	£m	%	£m
Operations and Maintenance - Wind Element	45%	1.7	88%	3.3
Operations and Maintenance - BESS Element	19%	0.2	40%	0.4
Total Operations and Maintenance	39%	1.9	77%	3.8

Source: BiGGAR Economics Analysis. Note: Totals may not sum due to rounding.

The total turnover generated in each study area was then divided by the turnover per GVA and turnover per job ratios of the sectors expected to carry out operations and maintenance contracts.

In this way, it was estimated that the Proposed Varied Development is likely to generate £0.9 million direct GVA and <10 direct jobs in Dumfries and Galloway, and £1.6 million direct GVA and 10 direct jobs across Scotland.

As with the development and construction of the Proposed Varied Development, it was necessary to estimate the indirect and induced impacts associated with operations and maintenance contracts. This was done by applying the relevant Type 1 and Type 2 GVA and employment multipliers.

By combining the direct, indirect, and induced impacts it was estimated that the operations and maintenance of the Proposed Varied Development will generate:

- £1.2 million GVA and <10 jobs in Dumfries and Galloway; and
- £2.9 million GVA and 20 jobs in Scotland.

Similarly to the Development and Construction phase, the estimated figures show that the Proposed Varied Development would contribute to the provision of high-quality local employment opportunities and help maximise the value of local expenditure throughout its operational lifetime. These are in line with the requirements of the NPF4 Policy 11c.

7.3 Non-Domestic Rates

The Proposed Varied Development is expected to generate a stream of revenue to Dumfries and Galloway through the annual payment of non-domestic rates. The Proposed Varied Development would be liable for non-domestic rates, the payment of which would contribute directly to public sector finances and infrastructure investments supporting the requirements of the NPF4 Policy 11c.

To estimate the economic impact generated by non-domestic rates, it was first necessary to consider the rateable value of the development and apply the appropriate poundage rate. This was done by applying guidance developed by the Scottish Assessors Association[22] to information about the performance of the Proposed Varied Development.

Using this approach, it was projected that over its operational period, the Proposed Varied Development is expected to make an annual contribution of approximately £1.6 million to public finances. Across its 40-year operational lifespan, this contribution towards non-domestic rates is anticipated to accumulate to around £65.1 million.

[22] Scottish Assessors Association (2023). Practice Note 2: Valuation of Onshore Wind Turbines

8. Comparison to Consented Development

This section compares the potential economic benefits of the Proposed Varied Development to those estimated to be generated by the Consented Development.

Based on the approach taken to estimate the impact for the Proposed Varied Development (outlined in Section 6), an updated economic impact assessment was carried out for the Consented Development.

These estimates are based on the Consented Development being comprised of 17 turbines with a total installed capacity of up to 70.2 MW and a 6 MW BESS.

8.1 Development and Construction: Consented Development

It was estimated that the total expenditure associated with the Consented Development was £114.5 million (compared to £154.8 million associated with the Proposed Varied Development). This expenditure was also more heavily concentrated across turbines and balance of plant, given that the BESS element only accounts for 4% of total expenditure (compared to 22% in the Proposed Varied Development).

Table 8-1 Development and Construction by Contract Type

	% CAPEX	Value (£m)
Development and Planning	5%	5.7
Turbines	62%	70.8
Balance of Plant	25%	28.1
Grid Connection	5%	5.8
BESS	4%	4.0
Total	**100%**	**114.5**

Source: BiGGAR Economics Analysis of case study evidence from comparable previously constructed wind farms. Note: Totals may not sum due to rounding.

Based on the same assumptions outlined in Table 7-2, it was estimated that Scotland would benefit from £41.7 million of this expenditure, of which £12.8 million would be retained within Dumfries and Galloway.

Based on this level of expenditure, it was estimated that the development and construction of the Consented Development would generate £5.6 million direct GVA in Dumfries and Galloway and £18.0 million direct GVA in Scotland.

Table 8-2 Development and Construction, Direct GVA by Study Area (£m)

	Dumfries and Galloway	Scotland
Development and Planning	1.5	2.3
Turbines	0.8	3.4
Balance of Plant	2.8	10.5
Grid Connection	0.5	1.7
BESS	0.1	0.2
Total	**5.6**	**18.0**

Source: BiGGAR Economics Analysis. Note: Totals may not sum due to rounding.

Similarly, it was feasible to estimate the number of direct jobs supported by spending in construction and development contracts. It was estimated that the development and construction of the Consented Development would generate 70 direct years of employment in Dumfries and Galloway and 220 direct years of employment in Scotland.

Table 8-3 Development and Construction, Direct Employment by Study Area, and Contract Type (Years of Employment)

	Dumfries and Galloway	Scotland
Development and Planning	20	30
Turbines	20	50
Balance of Plant	30	120
Grid Connection	10	20
BESS	<10	<10
Total	**70**	**220**

Source: BiGGAR Economics Analysis. Note: Totals may not sum due to rounding.

By combining the direct, indirect, and induced impacts it was estimated that the development and construction of the Proposed Varied Development will generate:

- £7.5 million GVA and 90 years of employment in Dumfries and Galloway; and
- £31.6 million GVA and 360 years of employment in Scotland.

The estimated figures show that the Proposed Varied Development would contribute to greater benefits than the Consented Development, contributing to the provision of high-quality local employment opportunities, in line with the requirements of the NPF4 Policy 11(c).

8.2 Operation and Maintenance: Consented Development

Based on the Consented Development's capacity, it was estimated that the annual cost of operations and maintenance (OPEX) is likely to amount to approximately £4.2 million.

Based on the assumptions outlined in Table 7-5, it was estimated that that businesses in Dumfries and Galloway could benefit from a total £2.0 million in operations and maintenance contracts annually, and that annual expenditure on Scottish contractors could be up to £3.6 million.

In this way, it was estimated that the Consented Development is likely to generate £1.0 million direct GVA and <10 direct jobs in Dumfries and Galloway, and £1.6 million direct GVA and 10 direct jobs across Scotland.

By combining the direct, indirect, and induced impacts it was estimated that the operations and maintenance of the Proposed Varied Development will generate:

- £1.3 million GVA and <10 jobs in Dumfries and Galloway; and
- £2.9 million GVA and 20 jobs in Scotland.

Whilst the impact generated by the Consented Development is expected to provide benefits of a similar scale to those estimated for the Proposed Varied Development on an annual basis, the cumulative economic impact of the Proposed Varied Development is expected to be greater given the extended lifetime of the Proposed Varied Development.

8.3 Non-Domestic Rates

The Consented Development was also expected to generate a stream of revenue to Dumfries and Galloway through the annual payment of non-domestic rates. Using the same approach used for the Proposed Varied Development, it was projected that over its operational period, the Consented Development is expected to make an annual contribution of approximately £0.9 million to public finances. Across its 30-year operational lifespan, this contribution towards non-domestic rates is anticipated to accumulate to around £28.5 million, less than half of the level expenditure associated with the Proposed Varied Development over a 40-year period.

8.4 Comparison Summary

8.4.1 Construction and Development

During the construction and development phase, the Proposed Varied Development is expected to generate an additional £5.9 million in GVA to the Scottish economy compared to the Consented Development. Of this, £1.3 million is expected to benefit the Dumfries and Galloway supply chain and local businesses.

Table 8-4 Development and Construction Impact: Comparison

	Dumfries and Galloway	Scotland
GVA (£m)		
Proposed Varied Development	8.8	37.5
Consented Development	7.5	31.6
Employment (Years of Employment)		
Proposed Varied Development	100	430
Consented Development	90	360

Source: BiGGAR Economics Analysis.

8.4.2 Operations and Maintenance

Whilst the Proposed Varied Development is expected to generate an annual operation and maintenance impact consistent with that of the Consented Development, its extended operational lifetime ensures that these benefits are realised for an additional 10 years.

Table 8-5 Annual Operations and Maintenance Impact: Comparison

	Dumfries and Galloway	Scotland
GVA (£m)		
Proposed Varied Development	1.2	2.9
Consented Development	1.3	2.9
Employment		
Proposed Varied Development	<10	20
Consented Development	<10	20

Source: BiGGAR Economics Analysis.

9. Tourism and Recreation Assessment

This section sets out the tourism context in Dumfries and Galloway and considers the impact of the Proposed Varied Development on tourism and recreation.

9.1 Local Tourism Context

9.1.1 Sustainable Tourism and GVA Employment

In its 2015 economic strategy[23] the Scottish Government identified six sectors as growth sectors, that is, economic sectors where Scotland had a comparative advantage. Sustainable tourism was one of the sectors identified.

In 2023, around 7,000 people were employed in sustainable tourism in Dumfries and Galloway, equivalent to approximately 3% of the total employment in the sector across Scotland (245,000). It was estimated that the sector generated £65.7 million GVA in Dumfries and Galloway and over £4.9 billion GVA across Scotland.

Table 9-1 Sustainable Tourism: Employment and GVA (2023)

	Dumfries and Galloway	Scotland
GVA (£m)	65.7	4,944.8
Employment	7,000	245,000

Source: Scottish Government (2024), Growth Sector Database.

9.1.2 Visitors

On an annual basis, Dumfries and Galloway is estimated to welcome 520,000 domestic overnight visitors, spending a total of £108 million (with each visitor spending on average £207 in the Dumfries and Galloway economy).

Each year approximately 35,000 international visitors are expected to visit the region, accounting for less than 1% of the total international visitors visiting Scotland on an annual basis. These visitors are estimated to spend approximately £23 million in the Dumfries and Galloway region, equating to an average of £657 per visitor.

[23] Scottish Government (2015), Scotland's Economic Strategy.

Table 9-2 Visits and Visitor Spending

	Dumfries and Galloway	Scotland
		Visitor Numbers (million)
Domestic Overnight Visitors	0.5	10.6
International Overnight Visitors	<0.1	4.4
		Spend (£ million)
Domestic Overnight Visitors	108.0	3,300.0
International Overnight Visitors	23.0	4,000.0

Source: International Passenger Survey (2024). Great Britain Tourism Survey (2024).

9.1.3 Regional Attractions

The most visited attractions in Dumfries and Galloway are shown in Table 9-3.

Of these attractions, none are located within 15 km of the Proposed Varied Development. The closest attraction, Galloway Forest Park, is located 20 km away and is Britain's largest forest park, home to dramatic ancient woodland, local wildlife and scenery. It is suitable for a range of recreational activities including walking, cycling, fishing and driving.

Table 9-3 Top 10 Attractions in Dumfries and Galloway

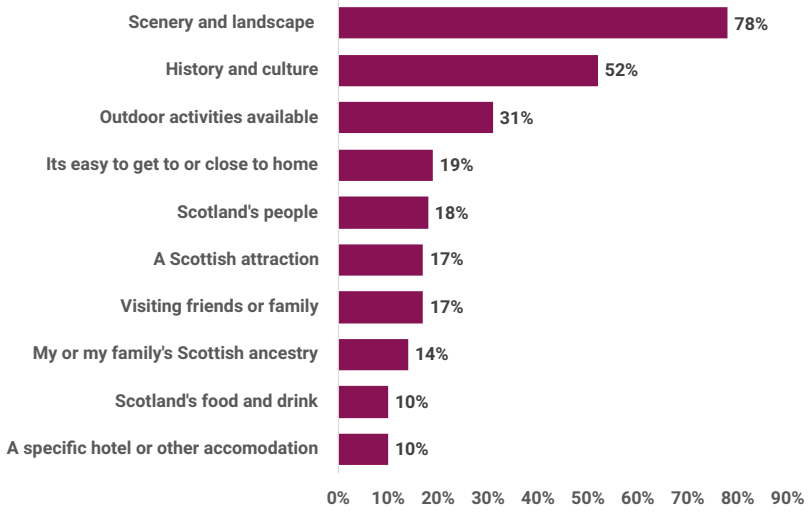
Attraction	Distance to Site (km)
Galloway Forest Park	20 km
Grey Mare's Tail	23 km
Threave Garden	34 km
Forest of Ae	36 km
Mabie Forest	40 km
Dalbeattie Forest	42 km
Caerlaverock Castle	50 km
Logan Botanic Garden	73 km
Devil's Porridge Museum	81 km
Gretna Green Famous Blacksmiths Shop	90 km

Source: Visit Scotland (2021), Insight Department: Dumfries and Galloway Factsheet 2019 and BiGGAR Economics analysis.

9.1.4 Key Drivers of Tourism

Figure 9-1 outlines the top ten reasons Dumfries and Galloway visitors chose to visit Scotland. The most popular motivation was scenery and landscape, with 78% of visitors reporting that this was the key driver for their choice. Following this, more than half of the sample reported that history and culture was the key driver for visiting Scotland, and almost a third reporting outdoor activities (31%).

Figure 9-1 Motivations to Visit Dumfries and Galloway



Source: Visit Scotland (2024), Scotland Visitor Survey 2023 – Dumfries and Galloway Factsheet.

9.1.5 Local Visitor Attractions

Using VisitScotland and Google Maps, several key visitor attractions within a 15 km radius of the Proposed Varied Development were identified. These attractions, and their distance from the site, are included in Table 9-4.

These attractions offer a variety of activities, including country sports, golfing and fishing, all of which are important drivers of the local tourism economy. The attractions identified are largely clustered along the A713 road and within settlements such as St John's Town of Dalry (11 km from the Proposed Varied Development) and New Galloway (15 km).

Table 9-4 Local Visitor Attractions

Attraction	Description	Distance to Site (km)
Leeming + Paterson Photography	Studio hosting photography workshops by Morag Paterson and Ted Leeming, overlooking the Galloway Hills.	5
Carsphairn Heritage Centre	Local centre which houses an annual exhibition focusing on local history.	5
Benbrack Arch	Stone arch on Benbrack Hill, part of the Striding Arches.	6
Holm of Daltallochan Stone Circle	Stone circle located in low-lying meadow.	6
Knockengorroch Festival Site	A site hosting the annual Knockengorroch Festival in May.	7
Striding Arches	Sandstone arches located on the hilltops near Cairnhead, designed by landscape artist Andy Goldsworthy.	8
Colt Hill Arch	Stone arch on Colt Hill, part of the Striding Arches.	8
Forrest Estate Country Sports Activity Centre	Country sports school providing access to activities such as clay pigeon shooting and fishing.	8
Bail Hill Arch	Stone arch on Bail Hill, part of the Striding Arches.	9
Alburaq Arabians	Equestrian centre.	10
White Cairn Corriedoo	12-feet high cairn in the Corriedoo Forest.	11
Mossroddich Trout Loch	5 acre rainbow and brown trout loch.	11
Dalry Bowling Green	Local bowling green located in Dalry.	11
Rosies falls	Waterfall and swimming spot.	12
Bucks Linn waterfall	Waterfall and swimming spot.	13
The Catstrand Arts & Visitor Centre	Multi-use community and arts centre, hosting a range of events including theatre, music, comedy and exhibitions.	15
New Galloway Golf Club	9-hole golf course.	15

Source: VisitScotland (2024), Google Maps.

9.1.6 Local Accommodation Providers

Local accommodation providers were identified in the area surrounding the Proposed Varied Development, identified through online research on the VisitScotland portal, Booking.com, and Google Maps.

As shown in Table 9-5, of the 51 accommodation providers within 15km of the Proposed Varied Development, 39 of them are self-catering (76%), 7 are either holiday parks, camping sites, or glamping pods, 2 are B&Bs, and the remaining 3 are hotels.

Table 9-5 Local Accommodation Providers

	Number of Accommodation Providers				
Distance from Site	**Self-Catering**	**Holiday Parks / Camp Sites / Glamping**	**B&Bs**	**Hotels**	**Total**
0-5 km	12	3	0	0	15
5-10 km	5	0	0	0	5
10-15 km	22	4	2	3	31
Total	**39**	**7**	**2**	**3**	**51**

Source: VisitScotland (2026). Booking.com (2026) and Google Maps.

9.1.7 Recreational Trails and Core Paths

With outdoor activities being a key driver of the local tourism activity, walking and hiking in the region is popular. Several established trails popular among walkers within 15 km of the Proposed Varied Development were identified on Walkhighlands (2026) These are shown in Table 9-6 alongside a brief description.

Table 9-6 Recreational Trails

Name	Description	Distance to Site (km)
Southern Upland Way 4: St John's Town of Dalry to Sanquhar	A 41.5 km section of the coast-to-coast route, the Southern Upland Way. Much of this section is across moorland.	2
Dundeugh Forest, near Dalry	A 7 km circuit around Dundeugh Forest.	2
Cairnsmore of Carsphairn	An 11.5 km summit providing excellent views.	3
Striding Arches, near Moniaive	A 9.5 km walk through the forest, visiting the Striding Arches.	6
Corserine and the Rhinns of Kells, Forrest Lodge	16 km rugged hillwalk, summiting the Corbett Corserine.	9
Southern Upland Way 3: Bargrennan to St John's Town of Dalry	A 41.4 km section of the coast-to-coast route, the Southern Upland Way. This third stage of the route is through forests, farmland, moorlands, and open hillside.	10
Blackcraig Hill	A craggy hill climb, usually climbed from Blackcraig in Glen Afton.	11
Watson Bird Walk, St John's Town of Dalry	A 5 km route, first following the Water of Ken before summitting Mulloch Hill.	11
Craiglea Trail and Loch Doon Castle	The 3.5 km trail along the shores of Loch Doon, visiting Loch Doon Castle.	13

Source: https://www.walkhighlands.co.uk/

There are also 180 core paths identified within 15 km of the Proposed Varied Development.

9.2 Evidence on Wind Farms and Tourism

Over time, a series of works have considered the relationship between wind farm developments and tourism activity.

A study of potential effects of wind farms on tourism was undertaken in 2008 by the Moffat Centre at Glasgow Caledonian University[24]. The study found that although there may be minor effects on tourism providers and a small number of visitors may not visit Scotland in the future, the overall effect on tourism expenditure and employment would be very limited.

Since this study, wind farms have become a more common feature in Scotland and any negative effects on the tourism economy as a result of their existence would now be apparent.

In 2021, BiGGAR Economics produced a report analysing the relationship between the construction of onshore wind farms and tourism employment at the national, regional and local level[25]. Nationally, the report found that, while Scotland had experienced a significant increase in onshore wind energy (with the number of turbines increasing from 1,082 in 2009 to 3,772 in 2019) whilst employment in tourism-related sectors had increased by 20%. At the local authority level, those which had seen the largest increase on onshore wind energy also experienced increases in tourism employment equal to, or greater than other areas across Scotland.

The report included case studies of 44 onshore wind farms constructed between 2009 and 2019. This included an updated analysis of 28 wind farms included in a previous report[26] constructed prior to 2015, and 16 additional wind farms constructed between 2015 and 2019. The study reported on changes in tourism-related employment in the small areas within 15 km of each wind farm. Of the 28 wind farms previously analysed, the surrounding local areas of 18 experienced an increase in tourism employment above the Scottish average in the years following the construction. Of the 16 local areas surrounding the additional 16 onshore wind farms, 11 experienced increases in tourism employment which outperformed the Scottish average. These results suggested that tourism employment in local areas across Scotland changed independently of wind farms located in the area.

The report concluded that, there was no pattern or evidence suggesting that the development of onshore wind farms in Scotland had any negative effects on the tourism economies of the country as a whole, local authority areas or the immediate areas surrounding wind farms.

These conclusions are not a surprising, given that:

- there are high levels of public support for renewable energy; [27]
- as wind farms are well-established in Scotland, tourists might already expect to see wind farms when visiting Scotland, especially rural Scotland;

[24] Moffat Centre (2008), The Economic Impact of Wind Farms on Scottish Tourism.

[25] BiGGAR Economics (2021), Wind Farms & Tourism Trends in Scotland: Evidence from 44 Wind Farms

[26] BiGGAR Economics (2017), Wind Farms and Tourism Trends in Scotland

[27] BEIS (2022). Public Attitudes Tracker: Energy Infrastructure and Energy Sources. Winter 2021, UK.

- the factors that determine the success of the tourism sector do not include the presence or otherwise of an onshore wind farm; and
- issues that influence tourism include the ability and willingness to travel, economic performance (and so whether tourists have disposable income available for leisure trips), exchange rates, the quality of the overall tourism product, the effectiveness of destination marketing and the quality and value for money of the services offered by tourism businesses.

9.3 Impact on Recreation and Tourism

The research considered in the previous section points to the lack of a relationship between the tourism economy and wind farm developments. Given the importance of the tourism economy in Dumfries and Galloway, it seems appropriate to consider whether the Proposed Varied Development will have any impact on it. The focus in this report is on a high-level account of the key motivations leading visitors to spend time at the attractions identified earlier.

Consideration of the tourism economy in this context is based on spending of visitors and the employment supported by the sector. For a change in spending to take place it is necessary that, as a result of a renewable energy development, visitors change their behaviour. This may result, for instance, in deciding not to visit the area, not recommending the area or not visiting again. The changed behaviour, in turn, affects visitors' spending.

As recorded in visitors' surveys, visitors tend to spend time in an area for a range of reasons. These may include scenery and landscape; history and culture; and outdoor activities (Figure 9-1). Views are just one of these factors and are more likely to be an important reason when it comes to the choice of recreational walks and outdoor nature-based attractions. Even in those cases, however, they may be one among a host of factors influencing visitor choices.

The extent to which a given attraction is susceptible to change in its surroundings varies based on:

- its relative importance for the local tourism economy;
- its users; and
- the reasons behind the attraction's appeal (its views, its heritage value, its historical value, its value in relation to local folklore, etc.).

The extent to which a renewable energy development may impact a tourism asset is expected to depend on factors, including:

- distance from the renewable energy development, as a proxy for how visible the renewable energy development is; and
- the interaction between the development and the assets' features.

Overall, existing evidence suggests that at wind farm sites across Scotland there have not been any negative impacts on tourism activity. Wind farms are well established within Scotland and no significant impacts on the tourism economy have been identified. This is not a surprising finding given the evidence in Section 9.2.

9.4 Assessment of Effects: Tourism and Recreation Receptors

This section assesses the potential for the Proposed Varied Development to have a significant effect on tourism and recreation. The methodology for this is a two-stage process.

First, the assessment reviews the findings of the other relevant technical chapters to identify any primary significant effects. These are the direct environmental effects of the Proposed Varied Development, such as changes to the landscape or an increase in traffic. The chapters reviewed for this were:

- Chapter 4 Landscape and Visual Amenity;
- Chapter 5 Cultural Heritage and Archaeology;
- Chapter 9 Traffic and Transport; and
- Chapter 10 Noise and Vibration.

Where a primary significant effect is identified, this assessment then considers whether that effect is likely to result in a secondary significant effect on tourism and recreation. This is a change in visitor behaviour or the viability of a tourism business. The significance of this secondary effect is determined based on the sensitivity of the tourism asset and the magnitude of the potential change.

9.4.1 Local Visitor Attractions

As detailed in the baseline assessment, there are 17 local visitor attractions within 15km of the Proposed Varied Development (Section 9.1.5). A review of the relevant technical chapters identified no significant primary effects; consequently, there is no plausible pathway for secondary significant effects on these tourist attractions.

9.4.2 Local Accommodation Providers

As detailed in the baseline assessment, there are 51 local accommodation providers within 15km of the Proposed Varied Development (Section 9.1.6). A review of the relevant technical chapters identified no significant primary effects; consequently, there is no plausible pathway for secondary significant effects on these accommodation providers.

9.4.3 Recreational Trails and Core Paths

As detailed in the baseline assessment, there are 9 recreational trails and 180 core paths within 15km of the Proposed Varied Development (Section 9.1.7). A review of the relevant technical chapters identified no significant primary effects; consequently, there is no plausible pathway for secondary significant effects on these receptors.

9.5 Tourism and Recreation Assessment Summary

The tourism and recreation sector is an important component of the Dumfries and Galloway economy. This assessment has considered the potential for the Proposed Varied Development to affect the region's visitor economy, drawing on a robust baseline of local assets and extensive national evidence.

National research confirms that the expansion of energy infrastructure in Scotland has occurred alongside continued growth in the tourism sector. Studies examining onshore wind projects found no consistent pattern of adverse impacts on local tourism employment or business performance. This demonstrates that visitor motivations are complex and predominantly activity-based, meaning the presence of onshore renewable energy developments is rarely a determining factor in destination choice or visitor behaviour.

The assessment of receptors within the 15km study area identified no significant primary environmental effects (such as significant noise or visual obstruction of key assets). Consequently, there is no plausible pathway for secondary economic effects on the tourism sector.

The Proposed Varied Development is not expected to result in significant adverse effects on tourism or recreation. The tourism economy of Dumfries and Galloway will continue to benefit from its established attractions and accommodation offer, without material disruption arising from the Proposed Varied Development.

10. Conclusion

The Proposed Varied Development will deliver clear economic benefits for Dumfries and Galloway and Scotland.

The Proposed Varied Development, comprised of 11 turbines with a total installed capacity of up to 77 MW and a 50 MW BESS, is anticipated to deliver significant and lasting socio-economic benefits to both Dumfries and Galloway, and Scotland as a whole.

The expected economic benefits include:

- **Development and construction phase:** £8.8 million GVA and 100 years of employment in Dumfries and Galloway; and £37.5 million GVA and 430 years of employment in Scotland.
- **Operations and maintenance:** £1.2 million GVA and <10 jobs in Dumfries and Galloway; and £2.9 million GVA and 20 jobs in Scotland.
- **Public finance:** annual non-domestic rates of at least £1.6 million per year, equivalent to £65.1 million over a 40-year operational lifetime.

These benefits are greater than those associated with the Consented Development. During the construction and development phase the Proposed Varied Development is expected to generate an additional £5.9 million in GVA to the Scottish economy, of which £1.3 million is expected to benefit the Dumfries and Galloway supply chain and local businesses.

The Proposed Varied Development is also expected to generate annual operational and maintenance impacts for an additional 10 years compared to the Consented Development and contribute at least double the contribution to non-domestic rates.

Beyond these core GVA and employment figures, the Proposed Varied Development will deliver substantial wider benefits. This will include annual community benefit funding, support affordable energy solutions to local households, and providing three scholarships for students from households in Dumfries and Galloway to support STEM subjects and construction skills.

The Applicant has also committed to creating a register of local contractors and actively encouraging Tier 1 suppliers to use and hire local businesses, with the purpose of maximising the value of contracts retained locally. The local economic and employment benefit to Dumfries and Galloway will thereafter be monitored throughout the Proposed Varied Development's lifetime.

Several environmental enhancement measures have also been proposed as part of the design process of the Proposed Varied Development, including creating a path

network accessible to residents and visitors across the site, biodiversity enhancement measures, and maintaining the integrity of local transport links.

No significant adverse effects on tourism and recreation were identified, concluding that the Proposed Varied Development can coexist successfully with the local tourism economy.

These combined economic, fiscal, and community-focused initiatives demonstrate the Proposed Varied Development's potential to create significant and lasting value at both a local, national and UK level.

BiGGAR Economics

BiGGAR Economics, Shandwick House,
67 Shandwick Place, Edinburgh, Scotland EH2 4SD

info@biggareconomics.co.uk

biggareconomics.co.uk

We are a Living Wage Employer

CYBER ESSENTIALS CERTIFIED

Proudly employee owned.