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A487 New Dyfi Bridge

Sustainable Development Report

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Executive Summary

The proposed A487 New Dyfi Bridge Scheme (referred to as the ‘Scheme’) seeks to address transport, flooding and safety issues associated with the Pont-ar-Ddyfi (‘Dyfi Bridge’) transport infrastructure and would involve providing a new A487 trunk road and crossing of the River Dyfi to the north of Machynlleth.

The Well-being of Future Generations Act 2015¹ places a duty on public bodies in Wales to carry out sustainable development. This Sustainable Development Report considers how the proposed Scheme has been developed and designed taking into account the Welsh Government’s sustainable development principle and in the context of the national well-being goals and local well-being objectives.

Taking into account the Future Generations Framework, examples are provided to demonstrate how the Welsh Government and its project team have worked in a collaborative and integrated way, involving key stakeholders to identify a long-term solution that prevents the existing problems from getting worse. This report also considers the relevant communities, culture, economy and environment and summarises the wide range of opportunities and benefits of the Scheme, having regard to the potential impacts and proposed mitigation.

Evidence demonstrates that the Scheme would generate opportunities to improve the economic prosperity of Machynlleth and the wider region, as well as to help create a healthier, well connected and more cohesive community. Relevant assessments consider the environmental constraints and effects, identifying impacts on the natural environment, historical environment and on human health; with appropriate mitigation and enhancement measures proposed. The Scheme is also expected to result in a marginal reduction of user carbon emissions when compared to projected emissions without the Scheme. The approach to construction would use resources efficiently and would provide employment opportunities, including commitments to employ local workers with training of local people.

Whilst acknowledging the potential impacts of the Scheme, these are balanced with opportunities which align well with the national well-being goals and the relevant local well-being objectives, whilst the project team has and continues to work in a sustainable way.

Overall the Scheme is expected to help the Welsh Government and other relevant public bodies contribute to improving the economy, society, culture and the environment – working in accordance with the sustainable development principle and seeking to deliver a sustainable development.

¹ Welsh Government (2015) ‘Well-being of Future Generations (Wales) Act 2015’ Available: <https://futuregenerations.wales/wp-content/uploads/2017/01/WFGAct-English.pdf>

1 Introduction

1.1 Approach and Purpose of the Report

The Welsh Ministers have a well-being duty to practice sustainable development as required by the Well-being of Future Generations (Wales) Act 2015 (the ‘Act’). The Act requires public bodies in Wales to ensure that when making their decisions they take into account the impact they could have on people living their lives in Wales in the future. The Act defines seven ‘well-being’ goals covering all aspects of sustainable development (see Figure 1).

This report considers how the Welsh Government’s proposed A487 New Dyfi Bridge Scheme (the ‘Scheme’) has taken into account sustainable development as part of the Scheme development work and how it would align to the sustainable development principle, in accordance with Welsh Government’s well-being duty.

The Future Generations Framework² has been created by the Office of the Future Generations Commissioner for Wales to support the public sector and others in Wales to deliver projects and infrastructure fit for the future. This report takes into account that Framework and its guidance, reflecting its ‘framework for thinking’ when developing and designing projects.

As such, this report:

- Outlines the relevant legislation, guidance and duties relevant to sustainable development;
- Considers the relevant economic, social, cultural and environmental context of the study area;
- Considers how the ways of working have influenced the Scheme’s development and design, providing examples where appropriate;
- Sets out how the well-being goals have been incorporated into the scheme development to date, how they are aligned, and moving forward considers the processes that will be used to help ensure the goals are achieved should the scheme progress to construction; and
- Takes into account the Welsh Government’s well-being objectives and other relevant local well-being objectives, considering how the Scheme could help public bodies achieve them.

² Future Generations Commissioner for Wales (2018)
<https://futuregenerations.wales/documents/future-generations-framework/>

1.1 Structure

The report is therefore structured as follows:

Chapter 2 The legislative and policy context of sustainable development in Wales;

Chapter 3 An overview of the Scheme and its context;

Chapter 4 How the sustainable development principle has informed decision making during the development of the Scheme;

Chapter 5 How the Scheme aligns to the well-being goals;

Chapter 6 How the Scheme aligns to the relevant well-being objectives; and

Chapter 7 Conclusion

2 Sustainable Development in Wales

2.1 Background to Welsh Sustainable Development Policy

The Welsh Government adopted its first sustainable development scheme, *“Learning to Live Differently”* in 2000 (National Assembly for Wales, 2000³).

Subsequently, the Government of Wales Act 2006⁴ set a legal duty on Welsh ministers to *“make a scheme (“the sustainable development scheme”) setting out how they propose to promote sustainable development”*.

This was published as *“One Wales: One Planet - The Sustainable Development Scheme of the Welsh Assembly Government”* (Welsh Assembly Government, 2009⁵), which set out the Government’s vision of a sustainable Wales and confirmed sustainable development as the central organising principle of the Welsh Assembly Government (now referred to as the Welsh Government).

In *“One Wales: One Planet”*, sustainable development is defined as *“enhancing the economic, social and environmental well-being of people and communities, achieving a better quality of life for our own and future generations”*, and the *“Vision of a Sustainable Wales”* is “one where Wales: -

- Lives within its environmental limits, using only its fair share of the earth’s resources so that our ecological footprint is reduced to the global average availability of resources, and we are resilient to the impacts of climate change;
- Has healthy, biologically diverse and productive ecosystems that are managed sustainably;
- Has a resilient and sustainable economy that is able to develop whilst stabilising, then reducing, its use of natural resources and reducing its contribution to climate change;
- Has communities which are safe, sustainable and attractive places for people to live and work, where people have access to services, and enjoy good health;
- Is a fair, just and bilingual nation, in which citizens of all ages and backgrounds are empowered to determine their own lives, shape their communities and achieve their full potential”.

³ National Assembly for Wales (2000) ‘Learning to Live Differently’. Available: http://webarchive.nationalarchives.gov.uk/20080107224105tf_/http://new.wales.gov.uk/topics/sustainabledevelopment/publications/startlivedifferently/?lang=en

⁴ UK Government (2006) ‘Government of Wales Act 2006’. Available: http://www.legislation.gov.uk/ukpga/2006/32/pdfs/ukpga_20060032_en.pdf

⁵ Welsh Assembly Government (2009) ‘One Wales: One Planet - The Sustainable Development Scheme of the Welsh Assembly Government’. Available: <http://www.wales.nhs.uk/sitesplus/documents/829/One%20Wales-%20One%20Planet%20%282009%29.pdf>

As stated in *“A Sustainable Wales, Better Choices for a Better Future – Consultation on proposals for a Sustainable Development Bill”* (Welsh Government, 2012⁶) *“whilst there has been clear progress in embedding sustainable development since devolution [through the delivery of the principles set out in “One Wales, One Planet”], the independent effectiveness reviews, international best practice and learning and development since devolution highlight that improvements can be made”*.

The Well-Being of Future Generations Act 2015⁷, details of which are explained below, has been introduced to strengthen the sustainable development framework in Wales, alongside the Planning (Wales) Act 2015⁸ (which aims to *“improve the existing planning process to ensure the right development is located in the right place”*), and the Environment (Wales) Bill⁹, which aims to put *“in place a modern statutory process to plan and manage [Wales’] natural resources in a joined and sustainable way”* (Welsh Government, 2015).

2.2 Well-being of Future Generations (Wales) Act 2015

In order to strengthen the sustainable development framework in Wales, a pilot National Conversation was launched in February 2014, to define the *“Wales We Want”*, led by a Commissioner for Sustainable Futures. The Wales We Want Report (Welsh Government and Sustain Wales, 2015¹⁰), sets out seven foundations for the well-being of future generations. This resulted in the enactment of the Well-Being of Future Generations (Wales) Act 2015, in May 2015, which requires *“public bodies to do things in pursuit of the economic, social, environmental and cultural well-being of Wales in a way that accords with the sustainable development principle”*.

The Act requires the Welsh Government to carry out sustainable development. Section 2 of the Act defines this as:

“Sustainable development means the process of improving the economic, social, environmental and cultural well-being of Wales by taking action, in accordance with the sustainable development principle, aimed at achieving the well-being goals.”

⁶ Welsh Government (2012) ‘White Paper - A Sustainable Wales Better Choices for the Future. Consultation on proposals for a Sustainable Development Bill’. Available: <http://gov.wales/docs/desh/consultation/121203asusdevwhitepaperen.pdf>

⁷ National Assembly for Wales (2015) ‘Well-being of Future Generations (Wales) Act’. Available: http://www.legislation.gov.uk/anaw/2015/2/pdfs/anaw_20150002_en.pdf

⁸ National Assembly for Wales (2015) ‘Planning (Wales) Act 2015’ Available: <http://www.legislation.gov.uk/anaw/2015/4/contents/enacted>

⁹ National Assembly for Wales (2015) ‘Environment (Wales) Bill’ Available: <http://www.assembly.wales/Research%20Documents/15-030-Environment/15-030.pdf>

¹⁰ Welsh Government and Sustain Wales (2015) ‘The Wales We Want Report – A Report on Behalf of Future Generations’. Available: <https://www.thewaleswewant.co.uk/sites/default/files/The%20Wales%20We%20Want%20Report%20ENG.pdf>

Therefore, sustainable development is a way of doing things rather than an end in itself.

The Act defines seven ‘well-being’ goals, as set out below and in figure 1:

1. A prosperous Wales

An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work.

2. A resilient Wales

A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).

3. A healthier Wales

A society in which people’s physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.

4. A more equal Wales

A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio-economic background and circumstances).

5. A Wales of cohesive communities

Attractive, viable, safe and well-connected communities.

6. A Wales of vibrant culture and thriving Welsh language

A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts and sports and recreation.

7. A globally responsible Wales

A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being

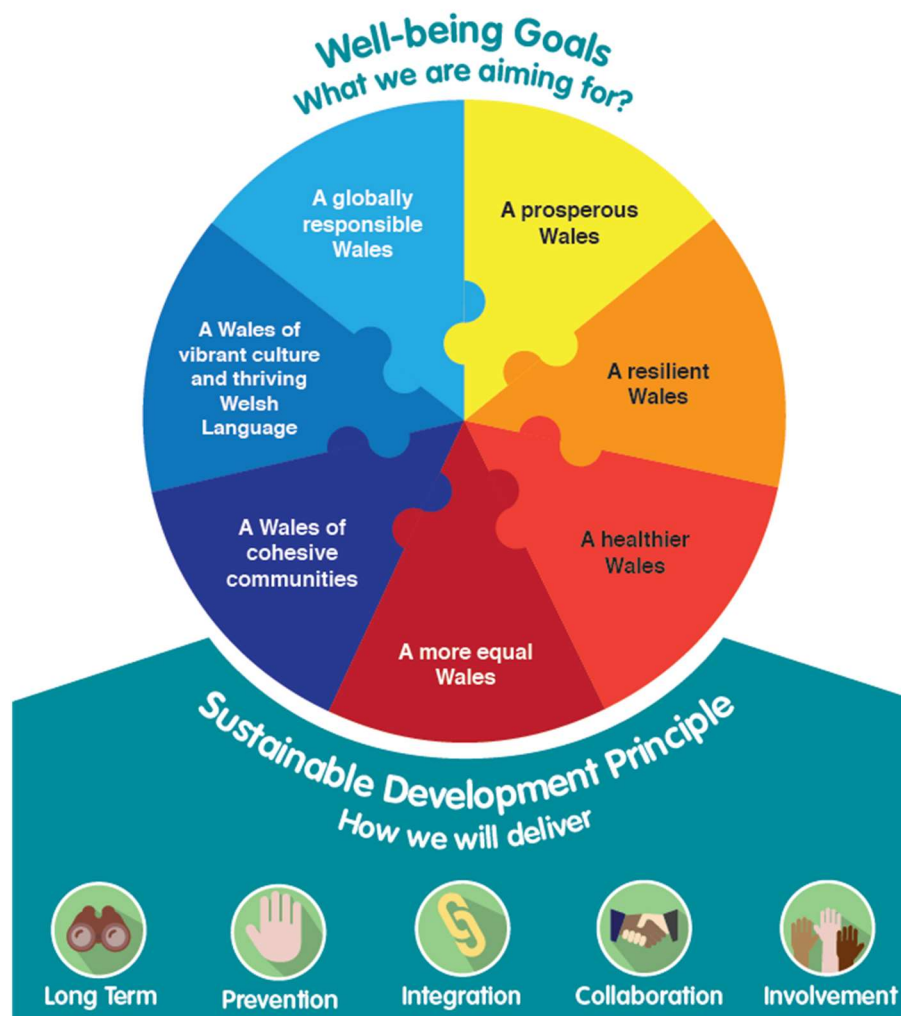
The Act does not define what contribution to the well-being goals public bodies should make. This is for the public body to determine. The Act requires public bodies in Wales to work towards achieving these well-being goals, in order for actions to align to the sustainable development principle.

The Act outlines five ways of working that will help public bodies deliver the well-being goals:

1. Looking to the **long term** so that we do not compromise the ability of future generations to meet their own needs;
2. Taking an **integrated** approach so that public bodies look at all the well-being goals in deciding on their well-being objectives;
3. **Involving** a diversity of the population in the decisions that affect them;
4. Working with others in a **collaborative** way to find shared sustainable solutions; and
5. Understanding the root causes of issues to **prevent** them from occurring.

Together, the seven well-being goals and five ways of working provided by the Act are designed to support and deliver a public service that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Figure 1 The Well-being Goals and Ways of Working



2.3 Taking Wales Forward: 2016-2021

Taking Wales Forward¹¹ is the latest Programme for Government and it sets the Welsh Government's programme to drive improvement in the Welsh economy and public services, delivering a Wales which is:

1. Prosperous and secure;
2. Healthy and active;
3. Ambitious and learning; and
4. United and connected.

The duties on Welsh Ministers under section 3(2)(a) and 7 of the Well-being of Future Generations (Wales) Act 2015 requires well-being objectives to be developed and published, to help maximise the contribution of the Welsh Government (and other public bodies under the same duty) to the seven well-being goals outlined in the Act.

In Taking Wales Forward, The Welsh Government presented fourteen Well-being Objectives that were designed to reflect the key priorities for improvement in the Welsh economy, society, environment and culture. These objectives were developed to form the foundation of the above four cross-cutting strategies, helping ensure there is an effective alignment between the well-being goals, the government's programme, the strategies and delivery.

2.4 Prosperity for All: The National Strategy 2017

The National Strategy¹² takes the key commitments set out in 'Taking Wales Forward' places them in a long-term context, setting out how they fit with the work of the wider Welsh public service to lay the foundations for achieving prosperity for all and enhancing the well-being of the people of Wales. The National Strategy states that the Government will continue to invest in communities and intelligently plan infrastructure investment in a co-ordinated way.

2.5 Prosperity for All: Economic Action Plan 2017

Prosperity for All: Economic Action Plan¹³, published after the National Strategy document in 2017, sets out how the Welsh Government intends to pool resources, expertise and knowledge to strengthen the economic foundations and future proof the Welsh economy.

Under the 'deliver modern and connected infrastructure' objective, the Welsh Government aims to build a connected infrastructure to support growth and investment.

¹¹ Welsh Government (2016) 'Taking Wales Forward 2016-2021'

¹² Welsh Government (2017) Prosperity for All: The National Strategy

¹³ Welsh Government (2017) Prosperity for All: Economic Action Plan

Through this new infrastructure, including roads, the Government will enable the provision of modern sites and premises to allow businesses growth as well as attracting investment opportunities.

The Action Plan sets out there are four key reasons why the Welsh Government is doing this:

- It is an important driver of productivity and growth. This is supported by evidence demonstrating how better-connected people, businesses and places are generally more productive and successful in delivering growth.
- It is vital to inclusion and well-being. The quality of infrastructure underpins cohesive and connected communities, enabling people to access services they need to stay healthy, to learn and engage with others.
- It is essential to place building, maximising the economic impacts of place, acting as a catalyst for regeneration. Places with good infrastructure are capable of supporting a range of economic activities and are attractive places to live, learn, work and invest.
- It supports the economies of scale and network effects associated with agglomeration – quality infrastructure enables people to be closer to jobs and make business to business contact easier, supporting the transfer of ideas, diffusion of innovation and the better matching of skills to jobs, which all have a significant influence on productivity and growth.

Key to this is the Welsh Government's commitment to maximise the efficiency of the existing transport network by addressing bottlenecks and pinch points; and connecting people and communities by ensuring new transport infrastructure is planned alongside other infrastructure including homes, employment land and public services. The strategic approach to development will include the provision of better, more integrated, and reduced carbon public transport and walking and cycling.

2.6 The Well-being Statement, 2017

The Welsh Government's Well-being Statement¹⁴ was published alongside Prosperity for All in September 2017. The Statement published the latest Well-being objectives (updating those originally published in Talking Wales Forward). It is the intention of the Welsh Government that the Well-being Statement should be read alongside 'Prosperity for All' given that the latter establishes the rationale for the Well-being Objectives. This is illustrated in Figure 2 below.

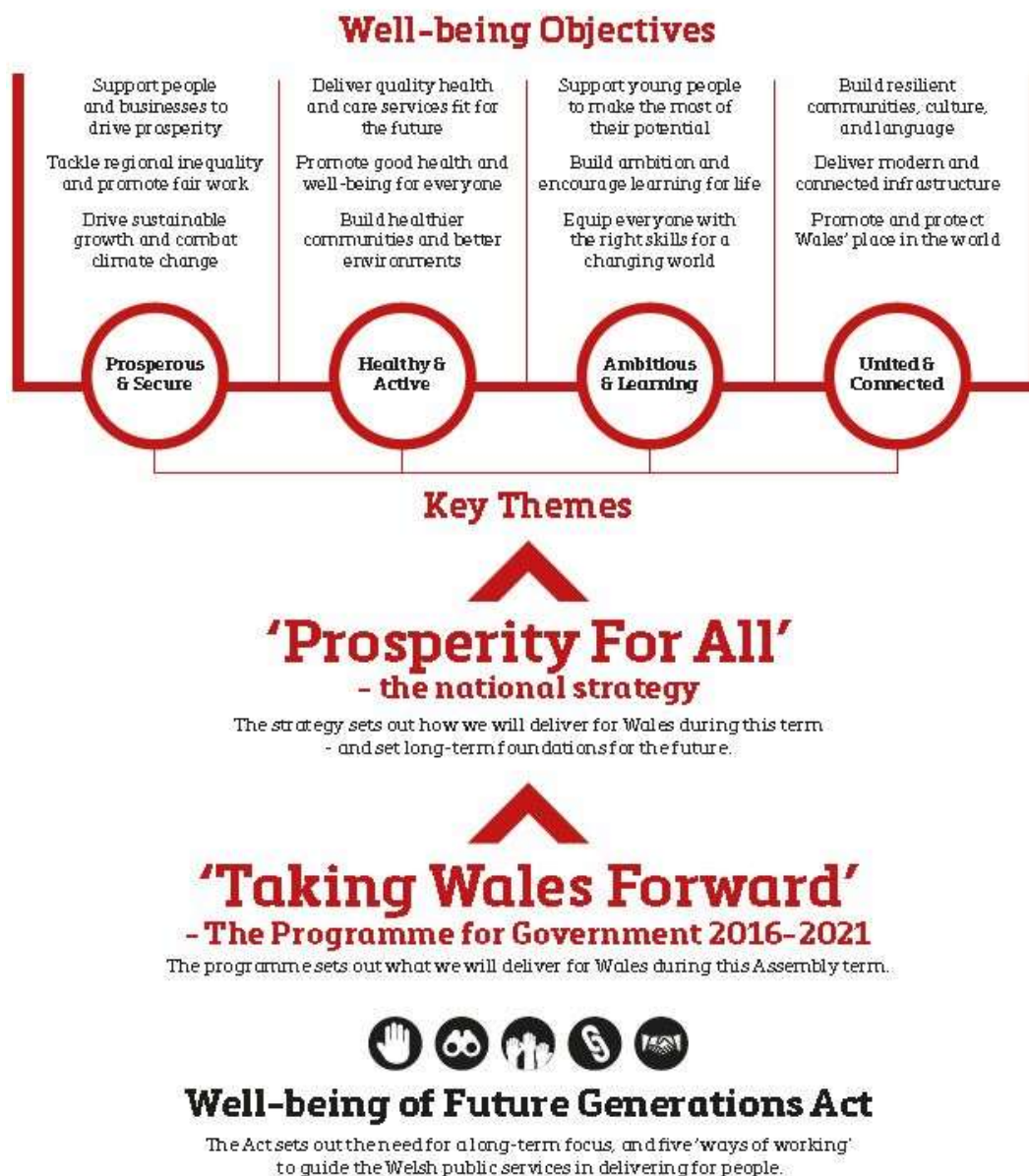
The twelve Well-being objectives of the Welsh Government are as follows:

1. Support people and businesses to drive prosperity;
2. Tackle regional inequality to promote fair work;
3. Drive sustainable growth and combat climate change;
4. Deliver quality health and care services fit for the future;

¹⁴ Welsh Government (2017) Well-being Statement

5. Promote good health and well-being for everyone;
6. Build healthier communities and better environments;
7. Support Young People to make the most of their potential;
8. Build ambition and encourage learning for life;
9. Equip everyone with the right skills for a changing world;
10. Build resilient communities, culture and language;
11. Deliver modern and connected infrastructure;
12. Promote and protect Wales' place in the world.

Figure 2 Evolution of the Welsh Government's Well-being Objectives



Although not all of the objectives are relevant to the development of transport infrastructure, all have been considered in the development of this Scheme, which is discussed further later in this report.

2.7 Local Well-being Plans

The duty to publish well-being objectives extends to all listed public bodies.

The Act establishes statutory Public Service Boards (PSBs), which are required to publish a Well-being Plan setting out well-being objectives and the steps it intends to take to meet them.

Under the Act, PSB members must include, but are not limited to, the local authority, the local health board, the Fire and Rescue Authority and Natural Resources Wales.

It should be noted that all individual public bodies (e.g. the local authority) can choose to publish their own well-being objectives as well as subscribing to those published by the PSB.

The Scheme and its route interfaces with multiple local authority areas, including Powys County Council (“Powys”), Snowdonia National Park Authority (“Snowdonia”) and Gwynedd Council (“Gwynedd”). The relevant local planning authority in which the Scheme is primarily located is Powys. Natural Resources Wales (NRW) is the regulatory authority in Wales for a wide range of environmental legislation.

As such, the PSBs / public bodies of relevance to this report are considered to be the Powys Public Service Board, Gwynedd and Anglesey Public Service Board, Snowdonia National Park Authority and NRW. Their local well-being objectives have been considered to help ensure the Scheme has taken into account the pertinent issues across the study area. They are described in turn below.

2.7.1 Powys Public Service Board

The Powys Well-being Plan was published by Powys Public Services Board in 2018. It established four Well-being objectives for the county which are as follows:

1. People in Powys will experience a stable and thriving economy;
2. People in Powys will enjoy a sustainable and productive environment;
3. People in Powys will be healthy, socially motivated and responsible;
4. People in Powys will be connected by strong communities and a vibrant culture.

The Plan states that the above four objectives will inform the work of the board and will feature in the organisational plans developed by each individual organisation. The Plan is considered to be a crucial part in aligning the future priorities of each public body in the County.

2.7.2 Snowdonia National Park Authority

Snowdonia National Park Authority have published five well-being objectives within their 2017/18 Corporate Plan, which are as follows:

1. The public and our stakeholders have a good understanding of the special qualities of Snowdonia as defined in the Snowdonia National Park Management Plan, are aware of the opportunities available for their enjoyment and understand the contribution that the Authority makes in such matters;
2. Review the National Park Management Plan engaging with our partners in its preparation and empowering our partners in its implementation. This will ensure that the National Park purposes will be delivered through a diverse and prospering economy adapted to the challenges of climate change and founded on natural resources – its landscape qualities, opportunities for learning and enjoyment, culture and natural heritage;
3. The National Park is recognised as an area which contributes to people's physical and mental wellbeing;
4. By empowering our communities, partners and volunteers there is greater understanding and ownership of what makes Snowdonia National Park special;
5. The Authority continues to deliver on its priorities providing a service for all within the reduced resources available.

The Corporate Plan describes sustainable development as being “*ingrained into the ethos of the Authority*” and explains that in seeking to achieve their vision, the authority will be working in alignment with the national well-being goals.

2.7.3 Gwynedd & Anglesey Public Service Board

Gwynedd and Anglesey have formed a partnership approach to the establishment of their PSB, and their two well-being objectives are set out within in their jointly published 2018 Well-being Plan as follows:

1. Communities which thrive and are prosperous in the long term;
2. Healthy and independent residents with a good quality of life.

In the development of the above objectives it was also found that a key priority for the region was to improve transport links to enable access to services and facilities.

2.7.4 Natural Resources Wales

NRW has a published seven wellbeing objectives in its Wellbeing Statement (2017), which also form part of its Corporate Plan to 2022. They are:

1. Champion the Welsh environment and the sustainable management of Wales' natural resources;
2. Ensure land and water in Wales is managed sustainably and in an integrated way;
3. Improve the resilience and quality of our ecosystems
4. Reduce the risk to people and communities from environmental hazards like flooding and pollution;
5. Help people live healthier and more fulfilled lives;
6. Promote successful and responsible business, using natural resources without damaging them; and
7. Develop Natural Resources Wales into an excellent organisation, delivering first-class customer service.

NRW's Wellbeing Statement explains how its well-being objectives contribute to the well-being goals for Wales, how it will allocate its resources to them, and how it will keep them under review.

3 The Scheme

3.1 Site Location

The existing A487 Fishguard to Bangor trunk road is the principal strategic route along the west coast of Wales. The A487 running north of Machynlleth is a single carriageway road with a shared footway and cycleway on its western side (between Machynlleth and the River Dyfi).

The A487 road crosses the River Dyfi around 500m north of Machynlleth at a single carriageway, five arch 19th century stone bridge, known as Pont-ar-Ddyfi. Machynlleth which is defined as town centre and principal location for larger scale public services, housing, employment and retail growth according to the Powys Local Development Plan¹⁵.

Pont-ar-Ddyfi is the first upstream crossing of the River Dyfi, with the next crossing approximately 8km east at Jubilee Bridge, at Grofft Farm. The bridge is a strategic asset, important to connectivity in northern Powys being close to the borders with Gwynedd and Ceredigion. Pont-ar-Ddyfi is on the southern boundary of Snowdonia National Park, passing through the predominately rural landscape of the Dyfi Valley. The bridge is directly south of the A487/A493 T-junction (with the A493 forming the minor arm of this junction).

The bridge also lies within the United Nations Educational, Scientific and Cultural Organisation (UNESCO) Dyfi Biosphere Reserve, an area of terrestrial and coastal/marine ecosystems which is internationally recognised within the framework of UNESCO's Man and the Biosphere Programme.

There are a number of archaeological features in the area, including Pont-ar-Ddyfi itself, which is a scheduled monument (ref. No. SAM Mg002) and is Grade II* listed.

3.2 Problems

Existing problems relate to capacity, resilience, safety and sustainable development. The problems are expected to worsen in the future.

Pont-ar-Ddyfi is narrow, without footways, has substandard height parapets and has substandard visibility due to poor geometry on the junction on the northern side. The carriageway width across the bridge varies between 5.61m and 5.57m, whilst the carriageway widths on the northern and southern approaches to the bridge vary between 6.98m and 6.15m. This does not meet minimum width requirements for a single carriageway trunk road (7.3m).

The poor geometry results in continual damage to the parapets and spandrel walls. The narrow approach to the bridge from both Corris and Aberdovey exacerbates the problem. The narrow nature of the bridge causes a hazardous situation for both motorised and non-motorised users alike.

¹⁵ Powys County Council (2018) [Powys Local Development Plan](#)

Continued use of Pont-ar-Ddyfi is significantly affected by two issues:

1. Repeated flooding of the A487 south of the bridge and high flood water at the bridge itself, causing safety risks; and
2. Ongoing deterioration of the existing masonry, some of which is due to vehicular damage and ageing, which necessitates ongoing repair and strengthening works to keep the bridge in operation.

In the last thirty years, increased traffic and the continuing deterioration of the masonry structure has necessitated structural strengthening and repairs to keep the bridge operational.

The River Dyfi frequently floods, severing the local communities either side of the river. Local drainage improvements have been carried out over the last forty years but the fundamental problem of flooding remains.

Traffic avoiding the bridge, due to an accident at the junction, on the bridge or flooding must follow a 10 mile diversion via the B4404, however HGVs must travel 20 miles to Cross Foxes to re-join the A487. The number of days that the route is severed due to flooding is likely to increase in the future as a consequence of climate change, therefore also increasing the need for necessary diversions.

There are significant costs to the economy associated with the regular closure of this strategic route due to the delays and increased journey times (and associated vehicle costs) experienced by users.

1.2 Addressing the problems

Since 1996 several studies have been undertaken to consider online and off-line improvements and traffic management measures, to try to address the identified problems.

A Feasibility Study and a Technical Assessment Report were commissioned in 1996. Since then a Welsh Transport Appraisal Guidance¹⁶ (WelTAG) planning study for the A487 New Dyfi Bridge was carried out in 2011/2012, followed by a WelTAG Stage 1 and Stage 2 appraisals in 2016 to consider the different options in terms of feasibility, deliverability, risks and appraisal against sustainability criteria.

In June 2015 Alun Griffiths (Contractors) Ltd. with Arup were appointed by the Welsh Government to consider options with the view to developing a preferred solution, known as the A487 New Dyfi Bridge Scheme, to assist with the statutory procedures and proceed to detailed design and construction under an Early Contractor Involvement (ECI) contract.

¹⁶ Welsh Assembly Government (2008) 'Welsh Transport Planning and Appraisal – WelTAG'. Available: <http://gov.wales/docs/det/policy/140923-weltag-guidance-en.pdf>

In July 2015, the Welsh Government's National Transport Finance Plan 2015¹⁷ set out a timetable of delivery, estimated expenditures and sources of funding for the Welsh Government's key transport projects to support their economic and social priorities. The Plan lists A487 Dyfi Bridge (R23) under "New Road Infrastructure – Schemes to be Constructed" with a delivery period of 2015 – 2020.

The Plan was updated in 2017¹⁸ and the project is listed as Intervention R23, explaining that Draft Orders, an Environmental Statement and Associated Reports were published in August/September 2017.

1.3 Proposed Solution

A detailed description of the proposed Scheme is provided in Chapter 2 of the Environmental Statement (Volume 1). In summary:

- a) It would involve providing a new A487 trunk road and crossing of the River Dyfi to the north of Machynlleth. The new road would be 1.2km in length, single carriageway (one lane in each direction).
- b) It would commence immediately north of the existing Cambrian Line rail bridge and rise up on an embankment to a new junction with the existing A487. The new A487 would continue to rise before passing onto a 725m long viaduct and bridge structure over the River Dyfi and its floodplain.
- c) It would allow non-motorised users to travel safely along the viaduct by using a 2.5m wide cycle/footway which would continue the length of the viaduct and bridge on the western side. The existing Pont-ar-Ddyfi would be restricted to non-motorised users, and permitted vehicles during times of flood only.
- d) After crossing the floodplain the viaduct would reach its highest point above ground level (9m) at the proposed new Dyfi Bridge, located approximately 480m upstream of the existing Pont-ar-Ddyfi. The new stretch of A487 would then tie back in with the existing highway at a new junction with the existing A487, which would be re-numbered as the A493.
- e) Traffic Calming by means of raised build-outs into the carriageway would be introduced on the A493 just north of Pont-ar-Ddyfi, helping to create safe traffic movements, improved residential access, and safe NMU crossing point.
- f) Protective flood bunds would be provided to reduce flooding alongside the Dyfi Eco-park and at the Railway Bridge on the northern edge of Machynlleth.
- g) Mitigation measures including a flood protection barrier, improved highways drainage and pumped drainage would also be included to provide flood protection and improve the situation, in respect of flooding, for the houses adjoining the A493, just north of Pont-ar-Ddyfi.

¹⁷ Welsh Government (2015) 'National Transport Finance Plan 2015'. Available: <http://gov.wales/docs/det/policy/150722-ntfp15-en.pdf>

¹⁸ <https://beta.gov.wales/sites/default/files/publications/2017-12/national-transport-finance-plan-2017-update.pdf>

3.3 Scheme Context

The context of the study area relevant to the Scheme is provided in this section of this report, which has been organised around the key themes identified in the Well-being Act's description of sustainable development; economic well-being, social well-being, cultural well-being and environmental well-being.

The data and information presented below focuses on the key issues and opportunities for each of the relevant PSBs / local bodies. Given the focus on the Scheme and delivering sustainable development, this focuses on key economic, social, cultural and environmental issues rather providing an exhaustive list of demographic information. To assist and in order to reflect the key priorities identified locally, a review of the relevant Well-being Plans and/or Well-being Assessments has informed this section of this report¹⁹.

Within this section there is also the consideration of issues and opportunities specific to Machynlleth, which is the community that the development will most affect.

3.3.1 Economic Well-being

Powys

According to the Powys Well-being Plan (2018)²⁰, the county has an unemployment rate significantly below the Wales average (0.99% compared to a 2.1% national average). Despite this, the average full time weekly wage in Powys is £35.00 below the Wales figure at £470.00 per week.

Powys' economy centres on small businesses with 93% of business across the county employing a workforce of less than 10 employees.

This could serve as explanation for the high percentage of outflow commuting in the County. The most popular destinations for commuters are across the border into England with the highest number of outflow commuters travelling to Shropshire and Herefordshire to access employment²¹. The most popular mode of transport for commuting is driving a private car or van. 85% of commuters in Powys opt for this mode of travel compared to just 2% choosing to travel by train.²²

¹⁹ The Gwynedd and Anglesey joint local authority occupies a large and varied area and as such the well-being data has specifically considered the assessment for Tywyn, the local area within which Dyfi Bridge is located, when practicable. Snowdonia National Park does not have a published Well-being Plan, or Well-being Assessment and as such data unless otherwise noted has been compiled from their relevant 'State of the Park' Report, see http://www.snowdonia.gov.wales/_data/assets/pdf_file/0006/659391/Snowdonia-State-of-the-Park-Report.pdf

²⁰ Powys PSB (2018) 'Towards 2040: The Powys Well-being Plan'

²¹ ONS, Census WU03UK - Location of usual residence and place of work by method of travel to work

²² ONS, Census WU03UK - Location of usual residence and place of work by method of travel to work

In terms of employment sectors, tourism is a key economic sector in Powys' generating £720 million per annum for the county's economy. According to the Local Development Plan (LDP) Agriculture is the primary production industry in the County²³. The LDP further states that the majority of the agricultural sector is made up of small family-run farms which may serve to explain the aforementioned statistics regarding small businesses.

Powys is also developing a strong renewable energy sector, particularly in solar energy generation, which makes up 60% of the renewable energy projects in the County²⁴.

Gwynedd

As in Powys, tourism generates a significant income for Gwynedd's overall economy. It is estimated that tourism generates almost £1 billion for the County economy and supports 15,000 jobs²⁵.

Low salaries are prevalent across the County which on average has the second lowest average weekly wage in Wales (£410). Jobs tend to be within small businesses and it has been found that almost 80% of businesses within Gwynedd do not employ more than one person²⁶.

According to the Gwynedd & Anglesey Well-being Assessment, the specific ward area of Tywyn (where the Scheme is located) has the lowest mean weekly wage in the UK at £293 per week. The median household income is £20,000 per annum.

The majority (25%) of those in work in the area are employed in the Agriculture and Forestry sector followed by hospitality and food services which employs 17% of the workforce. 44% of the population of Tywyn are economically inactive although this figure could be influenced by the fact that 'the population of Tywyn is significantly older than that of Gwynedd and Wales as a whole'²⁷.

Despite the prevalence of small businesses, Gwynedd has a higher number of inflow commuters than outflow commuters. According to census data whilst 11,257 people on average commute in to Gwynedd for work only 7,366 people commute out of Gwynedd to other local authority areas. Of those commuting in to Gwynedd highest inflow of commuters comes from the Isle of Anglesey followed by Conwy and 82% of these commuter journeys are done by private car or van²⁸. Although less people commute out of Gwynedd for work, evidence suggests that many people still travel long distances to access employment whether that is across local authority borders or within the County itself. It has been reported that 33% of the working population in Gwynedd travel more than 6 miles to get to work²⁹.

²³ Powys County Council (2018) Powys Local Development Plan, page 11

²⁴ Powys PSB (2016) 'Well Being Assessment 2016: Environment Key Findings'

²⁵ Gwynedd County Council (2018) Gwynedd Council Plan 2018-2023

²⁶ Gwynedd County Council (2018) Gwynedd Council Plan 2018-2023

²⁷ Gwynedd and Anglesey PSB (2016) Well-being Assessment, Tywyn Information Pack, page 2

²⁸ ONS, Census WU03UK - Location of usual residence and place of work by method of travel to work.

²⁹ Snowdonia National Park Authority (2018) Consultation Document 2018

Snowdonia National Park

The median weekly wage in Snowdonia National Park as a whole matches the above referenced figure for Tywyn at £293 per week. In the National Park however the average household income is higher at a figure of £26,863 per annum³⁰.

Snowdonia is comprised of rural areas with larger towns being located across the National Park border in Gwynedd and Powys. This perhaps serves as explanation for the high proportion of self-employed workers which comprise almost a fifth of the workforce, this is double the national average.

This also perhaps contributes to the fact that over the last three decades, Snowdonia National Park Authority report a large increase in personal travel, car ownership and distances travelled by those who live in the National Park, which is exacerbated by the loss of rural services such as post offices. The reliance on private car as a means of travel is largely unsurprising given the scarcity and infrequency of public transport. The majority of places within the national park including Dolgellau and Y Bala do not have train services and even the most well-served bus routes only operate at one service per half an hour³¹.

The environment plays a vital role in the National Park's economy with 38% of local jobs linked to the environment. Tourism has been increasing in recent years which supports 6930 FTE jobs within the national park and generates £446 million of expenditure into the local economy³².

3.3.2 Social

Powys

There are no cities located in Powys and as such the historic market towns (including Machynlleth) serve as the primary centres for housing, retailing and commercial activities which also serve the multitude of rural settlements. Powys has the lowest population density of all counties in England and Wales³³ and according to the Local Development Plan (LDP) the majority (59%) of Powys' population live in villages, hamlets and rural areas outside of town locations³⁴. This means that the population is often reliant on travel to access goods and services.

Powys generally has an aging population which is rising at a higher rate than the Wales national average. It is anticipated that by 2026, 31.3% of the population will be aged over sixty-five³⁵. The Well-being Plan highlights that as the elderly population increases so-to will demand for suitable accommodation.

³⁰ Snowdonia National Park Authority, State of the Park Report

³¹ Snowdonia National Park Authority (2017) LDP Background Paper 17: Transport and Networks

³² Snowdonia National Park Authority (2016) LDP, Background Paper 16 (Tourism)

³³ Powys Local Development Plan, page 13

³⁴ Snowdonia National Park Authority (2011) Eryri Local Development Plan 2007-2022

³⁵ Welsh Government (2011) Based Population Projections

The aging population raises questions with regards to healthcare and ensuring adequate healthcare provision to be able to cope with increasing demand. Powys has no general hospital; this therefore increases demand for travel outside of the County. To access the local community hospital (Bro Ddyfi) rural communities situated to the north of Machynlleth would rely on Dyfi Bridge to access this service.

People in Powys have a strong sense of community, perhaps because of the fact people tend to live in smaller rural communities, 80% of people surveyed as part of the Well-being Assessment felt that they were part of their community (8% higher than the Wales average). On average people also reported a significantly higher level of emotional well-being compared to the rest of Wales.

Gwynedd

Across Gwynedd, the majority of key settlements are located along the coast with inland areas predominantly comprising villages and small towns. Just under half (44%) of Gwynedd's total population live in areas defined as 'villages, hamlets and isolated dwellings' outside the main towns³⁶.

As with Powys (see above) Gwynedd as a whole is experiencing an aging population. It is anticipated that by 2036 there will have been a 60% increase in the number of people over the age of 80 living in Gwynedd but compared to an increase of only 2% in those aged 16-64³⁷.

In terms of well-being Gwynedd is generally considered to be a safe place to live by its residents, for example 81% of the population consider it safe for children to play outside. Given the high number of elderly residents however, Gwynedd is one of the counties with the highest risk of loneliness across Wales.

Snowdonia National Park

Owing to its rural landscape, Snowdonia National Park has a low population density. There are only two towns within the boundary of the National Park Authority with populations of over 1,500 people; Dolgellau and Y Bala³⁸.

Snowdonia is experiencing an outward migration of population ages 16-25 and as such is characterised by a largely aging demographic. As in Powys and Gwynedd this places increasing demand on ensuring suitable accommodation, access to healthcare and public services to serve this population.

³⁶ Based on Wales Rural Observatory Data (2012)

³⁷ Well-being Assessment Gwynedd and Mon, Tywyn Information Pack, page 2

³⁸ Eryri Local Development Plan, 2011

3.3.3 Cultural Well-being

Powys

A large sector of Powys' economy is centred on tourism. This is due to the heritage of the area and the recreational activities associated with this which are on offer.

According to the Local Development Plan Powys boasts 13% of Wales' listed buildings and 22% of Wales' Scheduled Ancient Monuments which form an integral part of the cultural heritage of the County³⁹.

In addition to the cultural opportunities afforded to residents by virtue of its history, Powys also has a large network of community facilities, serving a large population across a large area of Wales, this includes for example eighteen libraries and four theatres.⁴⁰ Despite this, given the vast land area Powys occupies the population does have to travel significant distances to access these services. For example, people living in Machynlleth have to travel approximately 27 miles (43km) to go to the nearest theatre (The Hafren, Newtown) and approximately 20 miles (32km) to the nearest council run museum (Llanidloes Museum, Llanidloes)⁴¹.

The 'Wales Way'⁴² is a new network of three national routes through Wales, encouraging recreation, leisure and tourism opportunities. In particular, the Coastal Way travels the west coast around Cardigan Bay, a 180-mile (290km) "road-trip between the sea and mountains". It passes through Machynlleth and uses the A489 and Dyfi Bridge. It relies on good levels of access by road.

In terms of Welsh language, 18.6% of the population speak Welsh. This is most prevalent in the north west and south west of the County however the numbers of Welsh speakers in these areas has been declining in recent years.⁴³

Specifically, Machynlleth is an important feature in Powys' cultural offering. As explained by Visit Mid Wales⁴⁴:

"The historic town of Machynlleth sits at the mouth of the Dyfi estuary in an area of outstanding natural beauty and diversity. In order to celebrate and protect this unique environment it has recently been made one of only two UNESCO Biosphere Reserve sites in the UK. The Centre for Alternative Technology has been hugely proactive in promoting ecological technology and lobbying for environmental policy both in the UK and internationally. The centre itself is extremely popular amongst visitors both as an inspiring educational resource and as a recreational day out.

³⁹ Powys County Council (2018) Powys Local Development Plan

⁴⁰ Powys PSB (2018) Towards 2040: The Powys Well-being Plan

⁴¹ Approximate distances taken from Google Maps.

⁴² <https://www.thewalesway.com/>

⁴³ Powys County Council (2018) Powys Local Development Plan

⁴⁴ <http://www.visitmidwales.co.uk/Machynlleth-Machynlleth/details/?dms=3&venue=1024804>

As well as the Centre for Alternative Technology there are a host of other attractions on offer in Machynlleth including King Arthur's Labyrinth, Corris Mine Explorers. The Museum of Modern Art Wales houses a superb permanent collection and its Tabernacle buildings provide a venue for numerous festivals, including the Machynlleth Comedy Festival.

The weekly market and biannual fair are still hugely popular despite dating back to a Royal Charter issued in 1291, whilst the Talyllyn Railway and Vale of Rheidol Railway offer an alternative way to enjoy the local landscape. The town itself is full of independent shops offering local crafts, organic foods and plenty of places to stop for a paned (cuppa). The town has enjoyed a distinguished history. Its claims to being the ancient capital of Wales are based upon Owain Glyndwr's short lived government of 1404, which was housed in the Parliament buildings that are still open to the public today.

This historic town boasts a number of interesting buildings in addition to Owain Glyndwr's Parliament building. Royal House which stands on the main through road is a great example of a medieval house.

In the 19th century, the daughter of a prominent local landowner married Viscount Seaham, the second son of the third Marquess of Londonderry and they made their home in Plas Machynlleth. On the death of his father, Viscount Seaham became Earl Vane. The grand clock tower which stands in the centre of Machynlleth on the site of the old Town Hall was erected by the townspeople to celebrate the coming of age of Charles Stewart Vane-Tempest, Viscount Castlereagh, the eldest son of Earl Vane and his wife. The foundation stone was laid on 15 July 1874. Another of their sons, Lord Herbert Vane-Tempest was the last member of the family to live at the Plas. He was killed in the Abermule train collision on the Cambrian Railways, and after his death, Plas Machynlleth was firstly used as a military facility during the Second World war then given to the townspeople.

It has also played an important role in the history of music. Led Zeppelin's Robert Plant has owned property here since he was a boy and penned the iconic 'Stairway to Heaven' as well as many more songs in Bron-Yr-Aur cottage just outside Machynlleth.

Machynlleth's rich political history and contemporary ecological and alternative subculture make it an attractive visitor destination in its own right, making its accessibility an important factor in helping attract and retain the visitor economy.”

Gwynedd

In a similar way to Powys, much of Gwynedd's tourism industry is centred around its cultural heritage and natural landscape (which is considered further, later in this report).

Gwynedd also benefits in this way from its proximity to Snowdonia National Park.

As noted in the Joint Local Development Plan, particular settlements such as Porthmadog and Blaenau Ffestiniog are particularly noted for their cultural offering⁴⁵.

All three national routes that comprise the 'Wales Way' pass through Gwynedd expanding the county's cultural offering to visitors and residents. Again, the route relies on good levels of access by road⁴⁶.

The Gwynedd Well-being Assessment indicates that the population take part in cultural and leisure activities available across the area with half of the county's population saying they visited historical places within the survey year and 62% stated they had attended an arts event.

The use of the Welsh language remains prevalent across Gwynedd with 60% of people stating that they speak Welsh every day, this compares to a Wales average of 11%. This usage is despite the fact that compared to 1981 statistical data the overall numbers of Welsh speakers in Gwynedd has fallen from 76%. In the Tywyn area, 48% of the population can speak Welsh.

Snowdonia National Park

Much of the cultural and leisure opportunities within Snowdonia National Park are associated with the natural landscape.

According to the State of the Park report there is 2,742.6 km of Public Rights of Way across the park. Two of the primary cultural/leisure opportunities within the park, as identified in the report are walking and mountain biking.

Snowdonia National Park is an integral part of the 'Wales Way'. 'The Cambrian Way' is one of the three routes that crosses almost the entirety of the national park from north to south. It relies on good road access.

8.9% of Wales' scheduled ancient monuments are located within the National Park boundary, with a large number of listed buildings.

Welsh language figures in Snowdonia National Park remain high compared to the Welsh language, however similarly to other areas of North Wales the numbers have been in decline. Between 2001 and 2011 there was a reported 3.5% decrease in the number of Welsh speakers in Snowdonia National Park, slightly larger than the overall decline in Wales of 2%.

⁴⁵ Gwynedd Council (2017) Anglesey and Gwynedd Joint Local Development Plan 2011-2026

⁴⁶ The Wales Way: <https://www.thewalesway.com/>

3.3.4 Environmental Well-being

Powys

Given its location between the boundaries of two national parks (Brecon Beacons to the south and Snowdonia to the north) Powys has a rich natural environment.

As noted in the Local Development Plan, a large amount of this environment is both ‘internationally and nationally recognised and includes Sites of Special Scientific Interest, Special Areas of Conservation, Special Protected Areas, RAMSAR site and National Nature Reserves’⁴⁷.

In fact, the Powys Well-being Plan confirms that there are eighty Sites of Special Scientific Interest (SSSI) across the County and 15% of the area of Powys is covered in Woodland.

This natural environment, as noted above, plays an important role in the economy, due to the tourism opportunities it creates, and society due to the recreational benefits of the natural environment.

Air Quality in Powys is generally good, it has only one designated Air Quality Management Area (AQMA) situated in Newtown although there are some issues with high ammonia concentrations as a result of agricultural operations.⁴⁸

Powys is also nationally renowned for its dark skies owing to very low levels of light pollution⁴⁹.

Powys has experienced difficulties in ensuring a high-water quality particularly due to the impact of disused mines contaminating underground water flow. According to NRW data several of Powys’ water sources are currently contaminated⁵⁰.

In recent years renewable energy projects have been prevalent across Powys. As a result, Powys has the highest percentage of low carbon energy generation in Wales at 12.9%⁵¹.

⁴⁷ Powys County Council (2018) Powys LDP, page 80

⁴⁸ Powys County Council (2018) Powys LDP

⁴⁹ Tranquil Areas Wales Map, 2009

⁵⁰ Powys PSB (2017) Powys Well-Being Assessment, Key Environmental Findings

⁵¹ Powys PSB (2017) Powys Well-Being Assessment, Key Environmental Findings

Gwynedd

Similar to Powys, Gwynedd is known for its natural landscape with a large area to the west of the County forming the Llyn Peninsula Area of Outstanding Natural Beauty.

In the Tywyn area specifically there is one designated SSSI, the Craig y Deryn Cliffs.

The Area around the River Dyfi is also specifically mentioned within the Well-being Plan Information Pack as being in important site for habitats including uplands, woodlands, farmland, mud flats, blanket bog, salt-marshes and sand dunes.

There are no designated Air Quality Management Areas in Gwynedd, however it is noted that Gwynedd does have problems with air pollution due to the high level of dependence on private car usage⁵² (79% of total households own at least one car⁵³). This perhaps serves as one explanation as to why per capita carbon emissions in Gwynedd are higher than the Welsh average.

The impact of Climate Change is already being felt in Gwynedd. Due to rising sea levels the overall Flood Risk is also increasing in the area⁵⁴.

Snowdonia National Park

Given its National Park status, Snowdonia includes a number of international and national designations including the following:

- 2 RAMSAR sites
- 5 Special Areas of Conservation
- 4 Special Protection Areas
- 21 National Nature Reserves
- 47 Regionally Important Geodiversity Sites
- 107 Sites of Special Scientific Interest

According to the State of the Park Report Air Quality in Snowdonia is generally of a high standard. Since 1990 there has been a decline in all seven pollutants related to air quality, although similarly to Powys, rates of ammonia have been slowest to decline due to agriculture operations.

Snowdonia National Park also has an internationally awarded Dark Skies Reserve Designation given to areas where the quality of the night sky is considered to be outstanding and considerable efforts have been made to reduce overall levels of light pollution.

⁵² North Wales Combined Authority (2017) [Air Quality Progress Report](#)

⁵³ Well-being Assessment Gwynedd and Mon, Tywyn Information Pack

⁵⁴ Well-being Assessment Gwynedd and Mon, Tywyn Information Pack

3.4 Summary

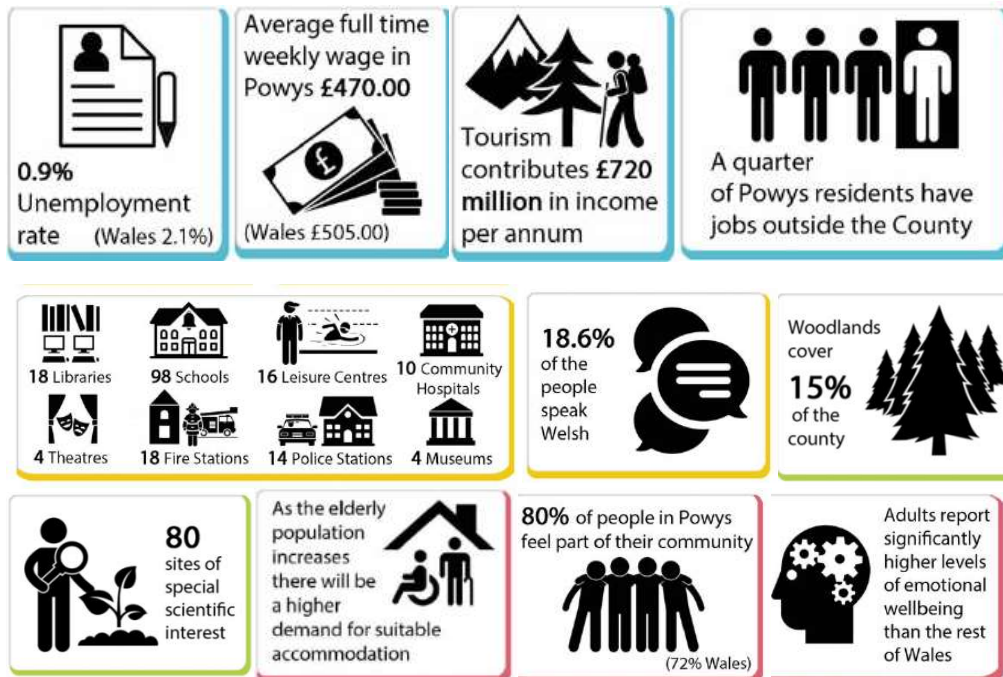
An analysis of the context of the Scheme and its study area is important in helping ensure that the development and design of the Scheme takes into account the well-being objectives and needs of the economy, society, culture and environment in which it will be delivered and serve.

Through the data presented in this section of this report, a number of shared themes and trends throughout each of the local areas have been identified, which helps build up a good understanding of the local issues and opportunities. In summary:

- a) It is evident that the natural environment and built heritage of the study area is critical to its economy.
- b) Tourism is a major source of income to the area which is steadily increasing.
- c) The majority of local jobs are derived from the area's environment either in the tourist industry or within the agriculture and forestry sectors.
- d) The study area generally has a low unemployment rate; however, this is coupled with a low average weekly wage. This could be explained by the fact that employment is often generated from small, family owned businesses rather than large corporate companies.
- e) There is a widespread need to consider the implications of an aging population as citizens grow older and in-flow migration remains low.
- f) A large proportion of people live in rural areas however the majority of services are situated within the main town centres.
- g) This could serve as explanation for the high proportion of private car usage in the study area and the number of out flow commuters.
- h) Whilst the number of Welsh speakers across the three local authorities remains high when compared to the Welsh average the numbers do appear to be falling.
- i) There is a high quality natural environment that is recognised on a national and international level and should be protected.

A series of infographics helps illustrate these issues, sourced from the Powys Well-being Plan, Gwynedd & Anglesey Well-being Assessment and Snowdonia State of the Park Report respectively:

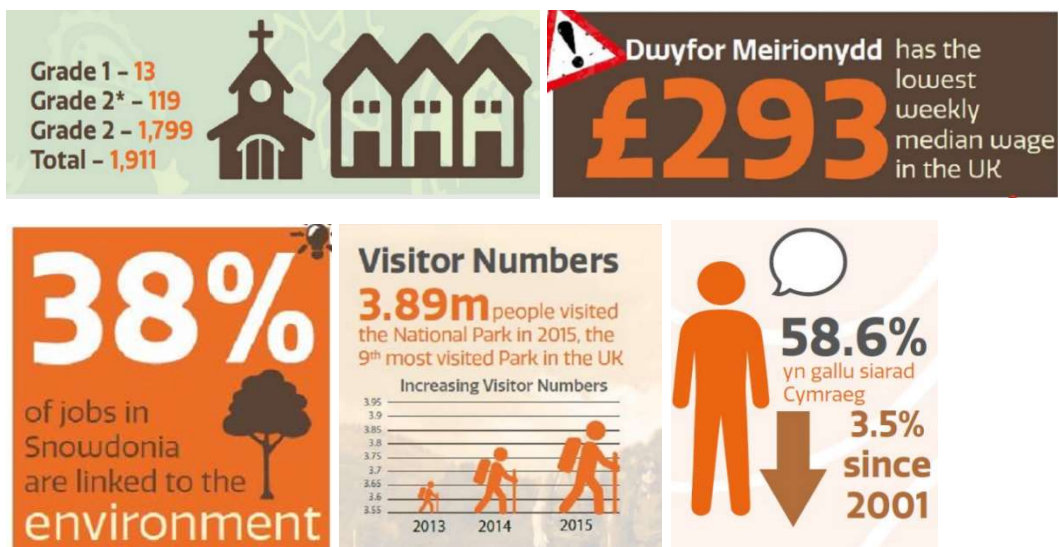
Powys



Gwynedd



Snowdonia



4 The Scheme and the Sustainable Development Principle

This section considers how the Scheme has applied the sustainable development principle, and summarises:

- a) How Scheme objectives have been identified and developed to help shape the consideration of options;
- b) The decision-making process undertaken to identify the Scheme as the preferred solution;
- c) How the Scheme has developed and been designed; and
- d) How the Scheme would be taken forward in the future in order to achieve sustainable development.

4.1 Scheme Objectives

A WelTAG Planning Stage Report was published in April 2012 and considered transport options aiming to resolve the identified problems in the area. Eight Transport Planning Objectives (TPOs) were identified for the Scheme as a framework for appraisal and associated decision making:

- 1) To improve the reliability of crossing the River Dyfi for people, freight and emergency vehicles on the A487 strategic corridor;
- 2) To improve the efficiency and reliability of accessibility to key services including employment opportunities, healthcare and education;
- 3) To maintain the role of Machynlleth as a vibrant and sustainable local centre;
- 4) To preserve the long-term integrity of Dyfi Bridge;
- 5) To reduce the number and severity of collisions and casualties on the A487 in the study area;
- 6) To ensure that flood risk to third parties is not increased;
- 7) To minimise the impact of transport improvements on the landscape, biodiversity, water resources and heritage; and
- 8) To increase the opportunity for efficient, safe and reliable travel by walking and cycling on the A487 corridor within the study area.

The development of the objectives has been an iterative process, informed by participation (with **involvement** and **collaboration**). They seek to address a long-term problem both now and in the future (thinking **long term**). The objectives seek to provide benefits to road users and non-motorised users. Understanding of the cause and effect of problems and then developing objectives aiming to address one or more of the identified problems is clearly linked to taking an integrated approach (showing **integration**). The objectives also seek to enhance connectivity and safety, whilst minimising any adverse impacts such as on the environment (**prevention**). Overall the approach has shown the Welsh Government and its project team working in a sustainable way.

4.2 Early Contractor Involvement

The core guidance on the Act in respect of collaboration advises on how the arrangements put in place with other organisations, particularly in the private sector, could encourage public bodies, including the Welsh Government, to contribute to the well-being goals and take account of the five ways of working.

The Welsh Government decided to follow an Early Contractor Involvement (ECI) method to procure and progress the proposed Scheme. The tender documents for the Scheme set out the requirements of the Contractor to give consideration to sustainability throughout the project:

- a) The Welsh Government asks the Contractor to record the consideration given to sustainability through all stages of works. Throughout the duration of Key Stage 3, 4, and 6 the contractor maintains a register of consideration of sustainability in optioneering, design and construction methods.
- b) The Welsh Government asks the Contractor to register the scheme with CEEQUAL. They shall undertake all work necessary to support a CEEQUAL submission including liaison, consultation, meetings and submission of preparation etc. and shall submit for a Whole Project Award (to promote, record and recognise improvements in sustainability and environmental performance).
- c) The Welsh Government adopts informal partnering with the Contractor, including Partnering Workshops. The objective of Partnering Workshops is to develop an integrated team. This involves interactive planning sessions focussing on scheme specific issues rather than generic team building sessions.
- d) The partnering arrangement is structured to draw on the strengths of each party's organisation by identifying and achieving mutual goals to ensure an effective and efficient operation of the contract. Lessons learned workshops are held at the end of each Key Stage to assist collaboration.
- e) The Welsh Government requires the use of a web based project management system for the sharing and management of information within the project. This provides improved communications between the organisations in the team.
- f) The Contractor must comply with the Welsh Language Scheme and official guidance. All non-technical material made available to the public shall be in Welsh and English, preferably within the same document. This shall include, but is not limited to, material and plans displayed at public exhibitions, questionnaires, newsletters, draft orders and plans, as well as published Scheme documents.
- g) The Welsh Government requires the Contractor to appoint a Public Liaison Officer, responsible for liaison with the public and stakeholders, and to prepare a Communications Plan to assist involvement and collaboration.

Upon receiving a response that the Welsh Government considered sufficiently satisfied its requirements as set out above, it awarded Alun Griffiths Ltd the ECI contract for the Scheme in June 2015.

The project team includes Arup as Designer and Environmental Consultant. The Welsh Government's Team include CH2M as Employer's Agent and Corderoy as commercial adviser.

The early involvement of the contractor at the design stage enables the design and construction methods to be developed in a **collaborative** manner that addresses environmental, economic and social impacts in a comprehensive and **integrated** way, better considering issues in the **long term** in order to help reduce risks.

4.3 Scheme alternatives and preferred way forward

A series of strategy level and scheme specific appraisal and technical reports have informed the identification, sifting and selection of options for providing strategic capacity and resilience improvements as part of the proposed A487 New Dyfi Bridge Scheme.

The A487 trunk Road at Dyfi Bridge has been the subject of a number of studies into the operation and serviceability of the existing route and alternative crossing points that may be suitable to cross the Afon Dyfi floodplain.

A Feasibility Study and a Technical Assessment Report (2002) was commissioned by Powys County Council to evaluate online improvements to Pont-ar-Ddyfi. At that time, a preferred offline improvement was identified involving crossing the River Dyfi around 200m upstream of the existing bridge on a skew bridge and re-connecting to the A487.

A Stage 2 Technical Appraisal Report with an accompanying Environmental Assessment (2002) was also commissioned by Powys County Council. That report recommended an offline multi-span viaduct across the floodplain.

Since its introduction in 2008, the Welsh Government uses the WelTAG process for the appraisal of transport planning proposals. It involves consideration of potential options against identified transport planning objectives, in addition to the 'Welsh Impact Areas' criteria of the economy, the environment and society. As stated in the WelTAG guidance, these high-level Strategic Welsh Impact Areas correspond to the three pillars of sustainable development.

The Welsh Government has a statutory duty to promote sustainable development and is therefore committed to making decisions which are consistent with this aim. Therefore, the WelTAG approach embeds consideration of sustainability into decision making on transport proposals, in line with the Welsh Government's sustainable development principle.

A Dyfi Bridge WelTAG Planning Stage Appraisal was undertaken in 2011 to identify the problems, objectives and consider a wide range of options, as later sifted and subject to further consideration in a WelTAG Stage 1 Appraisal (2016).³⁴ different alternatives were considered including options involving traffic management, a Machynlleth bypass, a second bridge, improvements to alternative routes and a tunnel.

Following stakeholder consultation as part of the WelTAG Planning Stage undertaken in 2011, four option packages were recommended to be taken forward for further appraisal at WelTAG Stage 1, involving new crossings of the River Dyfi, as well as works to the existing Dyfi Bridge in addition to flood mitigation measures:

- a) New crossing 200-500m upstream of the existing Dyfi Bridge;
- b) New crossing 200-500m downstream of the existing Dyfi Bridge;
- c) Widening & strengthening of the existing Dyfi Bridge, plus flood mitigation and raising of the A487; and
- d) Widening & strengthening of the existing Dyfi Bridge, plus flood mitigation.

The WelTAG Stage 1 Scheme Appraisal (November 2016) considered five options based on the four possible packages identified in 2011:

- 1) New crossing 200m upstream;
- 2) New crossing 500m upstream;
- 3) New crossing 200-500m downstream;
- 4) Widening and strengthening, flood mitigation and raising of A487; and
- 5) Widening and strengthening plus flood mitigation.

Appraisal resulted in four options being discarded in light of engineering challenges and likely adverse environmental impacts. Only Option 2, for a bridge 500m upstream was recommended for further appraisal. It scored the highest in appraisal against the Welsh Impact Areas, linked to the three pillars of sustainability (the economy, society and environment). Option 2 was selected as the Welsh Government's preferred option to address the problems and achieve the objectives.

WelTAG Stage 2 Appraisal (2016) further considers the economic, social and environmental impacts of the preferred option, as well as its likely acceptability, feasibility, deliverability and risks. As detailed further in Chapter 5 of this Sustainable Development Report, the appraisal has demonstrated that the Scheme should be progressed.

An **integrated** approach to working has been displayed throughout the studies outlined above; where the information collected, evidence gathered and lessons learned from previous stages informed the development of the scheme. In parallel, the Contractor and Consultants take into account the requirements of the relevant legislation, policy and guidance, and considering results of **involvement** from stakeholders to inform design development and help take sustainable practices forward.

The preferred A487 New Dyfi Bridge Scheme emerged as the favoured **long term** solution to **prevent** and address the existing and forecast future problems and consequently is being taken forward subject to the statutory process.

4.4 Engagement

The project has been developed through involvement, collaboration and integration with a wide range of stakeholders. Local issues and needs are better understood as a result, helping shape design development and to assist **involvement, collaboration and integration**.

4.4.1 Public Liaison Officer

A Public Liaison Officer (PLO) was appointed at the project's inception to form part of the project team. Their role, along with the Project Engineer, is to maintain regular contact with the Key Stakeholders affected by the Scheme, to keep them informed on progress as the Scheme develops and help to address any concerns they may have throughout the project lifecycle. The PLO plays a critical part in ensuring that all those with an interest in the project are **involved** in its progression from inception to operation.

4.4.2 Environmental Liaison Group

An Environmental Liaison Group (ELG) has been set up, bringing together representatives from Cadw, Snowdonia National Park Authority, Powys County Council, Gwynedd Council, Natural Resources Wales (NRW) and the North and Mid-Wales Trunk Road Agency in a **collaborative** manner in order to consider issues in an **integrated** way.

The ELG has met to consider and inform the outline design (Key Stage 3). If the Scheme satisfies the statutory process and progresses to construction, ELG meetings will continue on a regular basis during the pre-construction and construction (Key Stage 6) of the Scheme to help ensure environmental issues are properly taken into account during works. Following completion of the Scheme, the ELG would generally meet on an annual basis during the three-year post construction environmental aftercare and monitoring period.

In addition to the ELG meetings, there have also been focused meetings with Natural Resources Wales (NRW), for example to discuss and try to resolve specific flooding and hydrogeomorphological related issues.

4.4.3 Public Information Exhibition

A public information exhibition was held to inform the public about the Scheme, offering the opportunity to ask questions and provide local knowledge to assist the project team. Meetings have also been held with landowners and local residents whose properties or private accesses would be directly affected by the Scheme. Presentations have also been made to Machynlleth Town Council, Bruncug and Arthog Community Councils, and to a group meeting of members from Tywyn and Aberdyfi Town Councils to obtain their views and address their concerns wherever possible. Meetings have also been held with both Powys County Council and Gwynedd Council to discuss the proposals. This has helped **involve** those groups of people that would be most affected by the Scheme.

4.4.4 Technical Consultees

Consultations have also been undertaken with Network Rail, Arriva Trains Wales and utilities companies regarding diversions and protection of infrastructure, to help **prevent** or mitigate any adverse impacts of the Scheme.

4.4.5 Design Commission for Wales

In the spirit of **collaboration**, a design review was held with the Design Commission for Wales (DCfW) and their recommendations have been considered and incorporated in the design where considered appropriate.

4.4.6 Addressing Problems & Identifying Solutions

Engagement at an early stage has provided an opportunity for stakeholders and the public to raise any significant issues and influence the design.

As a result of engaging with the abovementioned groups various problems have been identified, addressed and solutions proposed to help ensure that the Scheme reflects the needs and issues of the local communities it is intended to serve. This is demonstrated further in Table 1 below.

Table 1 Summary of Engagement

Problem Identified by Stakeholders	Solution Proposed
Existing flooding under the Cambrian railway bridge.	The area surrounding the Cambrian railway bridge originally fell outside the scope of the Scheme however following public feedback the decision was made to extend the Scheme south to incorporate this area of the A487 trunk road. The flooding in this area will be addressed by providing an emergency pumping station which will work in times of high river water levels to drain this section of trunk road to ensure it can remain open.
Several residential properties within the Scheme area being prone to regular flooding.	The Scheme scope has also been extended to include flood improvement works to the section of A492 north of Pont-ar-Ddyfi. This will include improvements to the existing river retaining wall and provision of an emergency pump station to reduce the risk of flooding to the residential properties and the A493 road.

Problem Identified by Stakeholders	Solution Proposed
The original Scheme proposed to close Pont-ar-Ddyfi to all traffic (and make it just usable for non-motorised users). Access over the bridge was identified as being critical to local farmers as a means of access to move livestock out of field enclosures (to the south of the river) during flood events.	Removable bollards will be included at either end of the bridge to provide emergency access for farmers to remove livestock.
Concerns related to the potential for excessive speeds on the A493 due to the proposed removal of the A487/A493 junction and safe access/egress from Dyfi Cottages.	In collaboration with Gwynedd Council, it is proposed to incorporate a raised pavement along the front of the cottages to simultaneously provide safer access for residents whilst narrowing the carriageway to allow for one-way traffic calming.
The speed limit at Friddgate	The project team undertook an additional road safety audit and collaborated with North Wales Police to introduce a 50mph speed limit at this area of the Scheme, and through consultation with a local landowner additional land purchase has been agreed to widen the verge thereby improving visibility.

4.5 Public Local Inquiry

Depending on the nature and number of any objections and comments received to the consultation on the published draft Orders, a Public Inquiry may be held before an independent Inspector, who is responsible for the day to day running of the Inquiry.

Discussions and negotiations are held with those who have responded to the consultation to see whether agreement can be reached on any outstanding issues, which could help avoid an Inquiry.

All of the objections raised during consultation on the Scheme have received a written response. In addition to this, where appropriate, members of the project team have met with objectors to discuss concerns in more detail.

At the time of writing, it is hoped that the positive approach taken in accordance with the five ways of working (as described above) would lead to the avoidance of the need for a Public Local Inquiry with all matters resolved.

If required, a Public Local Inquiry would be held and an independent Inspector would listen to, examine and consider objections, representations and comments which have been submitted by interested parties.

Should an Inquiry proceed, the Welsh Ministers will take into consideration an Inspector's recommendations, including any representations, before deciding whether or not to proceed with the Scheme, with or without modifications. This Sustainable Development Report will form part of the evidence put before the Welsh Ministers.

If the Welsh Ministers decide to proceed with the Scheme, the Orders would be made and subject to funding it would be progressed to the construction stage.

4.6 Construction and Post-Construction Maintenance

Should the Scheme complete the statutory process and proceed to construction, during the Construction and Post-Construction Maintenance stages, final designs and methods of working would be developed by the contractor working with relevant stakeholders, which would allow for the construction to start and be carried out in line with the Environmental Statement and any subsequent commitments.

The Environmental Statement has identified the potentially significant effects associated with the construction of the Scheme and set out strategies as to how these can be avoided, reduced or remedied.

A Construction Environmental Management Plan (CEMP) has been produced to help ensure environmental compliance and best practice during the construction and post-construction aftercare period.

The CEMP provides the framework for recording environmental risks, commitments and other environmental constraints and clearly identifies the structures and processes that will be used to manage and control these aspects.

The CEMP also seeks to ensure compliance with relevant environmental legislation, government policy objectives and scheme specific environmental objectives.

It also provides the mechanism for monitoring, reviewing and auditing environmental performance and compliance.

It is intended that construction would start in late 2019 (should an Inquiry be avoided) and would take approximately 25 months to complete.

All reasonable steps would be taken to help ensure the principles of sustainable development continue to be adopted during works, such as:

- a) To minimise the environmental impacts and limit works within the floodplain, the main spans would be constructed using a push launch method, whereby the bridge deck is constructed in the south and gradually pushed out over the piers. This innovation is a clear benefit of ECI helping the Scheme design development.
- b) Environmental issues including surface water runoff, noise, dust, animal protection and site waste would be controlled and managed through a CEMP and specific site related method statements.

- c) Traffic management would include implementing single way traffic at all times as speed restrictions and prioritising the north and south junctions to provide a clear diversion. This would aim to minimise disruption to local communities and users of the existing route.
- d) Acknowledging the Snowdonia National Park's Dark Skies Reserve status and constraints imposed by protected species, night work will be kept to a minimum as will security and construction task lighting.
- e) No properties would be demolished to enable construction of the Scheme.

In the longer term and during the post-construction stage, the Contractor would carry out environmental monitoring, aftercare and management in accordance with the agreed Environmental, Landscape and Ecology, Monitoring, Aftercare and Management Plans.

These Plans will help ensure the sustainable implementation of the scheme by minimising adverse impacts upon the environment and promoting measures to enhance biodiversity.

At the end of the 3 year aftercare period the Contractor shall produce a Handover Environmental Management Plan (HEMP), to incorporate the Environmental Monitoring Reports, and the Environmental Management Plans.

Work would continue to help ensure that the Scheme delivers the objectives of the Scheme and the commitments made. This would involve working with key stakeholders on how to take maintenance forward and manage the results of ongoing monitoring.

4.7 Operation

Should the Scheme complete the statutory process and proceed to construction, after the completion of the post construction maintenance period the non-trunk road section of the Scheme would be passed to the local authorities, who would be responsible for the day to day management and operation of the road.

The North and Mid-Wales Trunk Road Agency would perform this role for the trunk road.

The Scheme would then be managed in line with the relevant legislation, policies and agreements used to ensure that the road is safe and meets the functions for which it was designed.

In the longer term, the management of the road would be influenced by information about the road at the time of handover, passed over from the construction team to the local authorities and Trunk Road Agent; and the relevant Welsh Government well-being objectives and indicators in place at the time.

4.8 CEEQUAL

Sustainability has been adopted wholeheartedly by the project team and for the full project lifecycle. One way the project team measures the sustainability of the scheme, including its material use and efficiency, is via CEEQUAL accreditation, an award scheme designed to promote, record and recognise improvements in sustainability and environmental performance in civil engineering projects.

The Dyfi Bridge Scheme will be subject to a Whole Project Award with the target of achieving an 'Excellent' rating.

The CEEQUAL assessment will seek to confirm that there is evidence that the Client and Designer have actively adopted the principles of sustainable development in the planning and development of the project.

4.9 Summary

This section has provided a description of how the Scheme and its objectives have been developed, as well as how the Scheme is being progressed and managed.

Although the majority of the development work was done before the Well-being of Future Generations Act was enacted, the information provided shows how:

- a) The five ways of working involved in the sustainable development principle have been adopted, including how the strategic and scheme objectives were developed in a collaborative and integrated way.
- b) Involvement and collaborative practices has engaged stakeholders and the public to inform the way the Scheme has been progressed and designed and informed associated decision making.
- c) Scheme development, especially design, has taken into account longer term issues to address the problems, providing sustainability benefits where possible, whilst preventing adverse impacts on the environment. Examples are provided of how an iterative and integrated approach to design enabled this to happen.

Overall, information has been provided on how the Scheme has been developed and would be taken forward taking into consideration the sustainable development principle. The table below serves to demonstrate how the project team has adhered to the five ways of working in accordance with the sustainable development principle.

Way of Working	Evidence
1. Long Term	<ul style="list-style-type: none"> • The scheme would ensure the long term viability of Dyfi Bridge; • Plans will be put in place for monitoring and aftercare should the Scheme progress to construction; • The Scheme would make Dyfi Bridge more resilient to the long term impacts of climate change; • The Scheme would enhance accessibility for the population of Machynlleth to education, training, employment and leisure; opportunities providing indirect long term benefits such as upskilling.
2. Integration	<ul style="list-style-type: none"> • Establishment of working groups such as an ELG facilitated an integrated approach to both identifying problems and developing solutions; • The ECI process developed an integrated project team from the Scheme outset; • The Well-being objectives of 5 no. public bodies have been considered in the Scheme's development and each has been involved in Scheme development.
3. Involvement	<ul style="list-style-type: none"> • The appointment of a Public Liaison Officer specifically to engage with key stakeholders, ensuring their views are taken into consideration; • Public Information Exhibition designed to inform the public about the Scheme, garner local knowledge and understand community issues; • The involvement of key stakeholders and the local community has influenced the design and scope of the Scheme as evidenced by the incorporation of the Cambrian railway bridge into the proposed solution.
4. Collaboration	<ul style="list-style-type: none"> • ECI facilitated a collaborative approach to the design and construction methodology between Welsh Government and the Contractor; • Design reviews with bodies such as the DCfW and a plethora of technical consultees such as Network Rail and North Wales Police; • The establishment of an ELG to bring together key organisations to inform the development of the Scheme.
5. Prevention	<ul style="list-style-type: none"> • The Scheme has been developed with stakeholders such as NRW to prevent adverse environmental impacts; • The design has been developed to integrate the Scheme into the local landscape to prevent adverse impact; • Compliance with necessary procedures such as protected species licences and sensitive vegetation clearance; • The core purpose of the Scheme is to prevent the severance issues associated with flooding events.

5 The Scheme and the Well-being Goals

The Well-being of Future Generations (WBFG) Act 2015 has been enacted, which, as explained in Chapter 2 of this report, requires:

“public bodies to do things in pursuit of the economic, social, environmental and cultural well-being of Wales in a way that accords with the sustainable development principle”.

To demonstrate how the Scheme aligns with the Well-being Goals of the 2015 Act, the following sections explore how the Scheme has been developed, designed and would be constructed to meet these objectives following the principles defined by the well-being goals.

5.1 A Prosperous Wales

The first Well-Being Goal is;

“A Prosperous Wales - an innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work”.

This goal encapsulates a number of aspects of sustainability, which have been divided in the sections below.

5.1.1 Innovative, productive and low carbon society

The Scheme has been developed with the aim of providing a more efficient transport network which can accommodate current and future traffic volumes and which is resilient to the effects of flooding and climate change.

A WelTAG Stage 2 report has been prepared that includes results of Economic Assessment, setting out the calculated economic impacts with and without the Scheme. As a result of high investment costs, the Scheme would offer poor value for money, although it would address the identified problems and achieve the objectives. It would provide wider economic benefits by improving accessibility and journey time reliability.

The Scheme would improve the resilience of the network, improving access to employment opportunities, and would reduce the risks of incidents and delays. The Scheme by improving connectivity, journey time reliability and resilience of the highway network would also in turn provide benefits to the economy. These factors are an important determinant of business location, and could help to attract businesses to the area.

A Carbon Report (Appendix 11.1 of the Environmental Statement) has been produced, providing an indicative carbon footprint associated with the construction of the Scheme.

It shows that opportunities for carbon reduction were considered where possible and will be taken into account further during the next design stages. In addition, guidance on carbon accounting and reduction is being taken into account by the project team at the outline design stage, so that consideration and innovation continues throughout design development work. As a result of the Scheme, it is anticipated that there would be a reduction in CO₂ emissions of just under 10 million tonnes as a result of benefits to road users.

5.1.2 Recognising the limits of the global environment, using resources efficiently and proportionately (including acting on climate change)

The Scheme has been developed to minimise or offset potential effects on the environment and provide enhancement opportunities where feasible and appropriate. The topic chapters of the Environmental Statement set out the potential impacts on people and the environment and measures to minimise these effects, and consider where opportunities arise to have a positive or beneficial effect. In particular, Section 2.3 of the Environmental Statement sets out how the environment has shaped the Scheme design.

The Scheme has taken into account the likely effects and proposes mitigation measures to avoid, reduce or offset potentially negative impacts and enhance where practicable positive impacts upon the environment.

Throughout the design evolution of the scheme, opportunities have been considered to minimise the use of resources and creation of waste. Section 11 of the Environmental Statement states that materials would be imported from established local suppliers where possible, whilst it is proposed that all materials arising from construction would be re-used on site in accordance with the waste hierarchy defined within the Waste Framework Directive⁵⁵. If removal of materials from site is required, the location for the disposal of these materials is likely to include a combination of local recycling facilities and disposal at an inert or non-hazardous landfill site.

As well as overall resource use, specific consideration has been given to the carbon emissions associated with the Scheme. Measures to reduce carbon emissions have been incorporated into the scheme.

A Carbon Report (Appendix 11.1 of the Environmental Statement) has been produced to inform the design development, setting out how carbon can be reduced, for example through making the most of in-situ materials and through selecting reused or higher recycled content materials offering lower carbon intensities.

The Contractor is obliged to actively manage and reduce the carbon footprint where possible, as set out in the ECI Contract.

⁵⁵ European Parliament (2008) 'Directive 2008/98/EC on waste and repealing certain Directives – Waste Framework Directive'. Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0098&from=EN>

Should the Scheme progress to construction, work carried out would accord with a Carbon Management Plan based on industry best practice, a Site Waste Management Plan and a Materials Management Plan to reduce the waste and emissions footprint of the construction stage based on the evidence collected as construction proceeds.

Steps would also be taken to minimise the number and distance of vehicle movements on public roads for the transport of materials. The Contractor would also seek to minimise disruption to stakeholders and the travelling public, including working to a Communications and Engagement Plan, with the involvement of the public through collaboration with a Public Liaison Officer.

Further consideration to minimising the impact on the environment is considered below under the section on ‘A Resilient Wales’.

5.1.3 Developing a skilled and well-educated population

The Scheme is being progressed in order to address the identified problems, including network resilience. The Scheme would improve accessibility to key services including employment opportunities and education facilities. This would help encourage people to access education and develop skills qualifications.

The construction phase of the Scheme would provide employment opportunities in the construction sector and local commercial opportunities. The Welsh Government is committed to ensuring as many construction jobs as possible would be filled by local workers.

The Contractor, Alun Griffiths is a local company, and the largest construction employer in North/ Mid-Wales with existing offices and depots in Machynlleth and Porthmadog. Alun Griffiths are committed to supporting the local area and delivering economic benefits to Machynlleth, Newtown and the wider region.

Alun Griffiths has established a Griffiths/ Powys County Council/ CITB Skills Academy initiative, based in Newtown. This Academy will develop construction skills in Machynlleth and the surrounding area. It will also facilitate training opportunities and work placements during Key Stage 6 (KS6)

The Alun Griffiths Delivery Team will target and achieve following practical benefits for the local area.

- 90% of labour spend retained in Wales;
- Three local long-term unemployed people, one graduate and two apprentices recruited, trained and kept employed; and
- 200 local students engaged through school visits to Ysgol Bro Hyddgen.

5.1.4 An economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work

WelTAG Stage 2 Appraisal explains how the scheme would help to support local businesses by reducing bridge closures and diversions, which can threaten the viability of local businesses, and will enhance freight business by providing direct access between Ceredigion and Gwynedd and the Llyn Peninsula.

Transport is also an important determinant of business location. This is particularly the case in rural areas where travel times can be significant and therefore issues of business transport costs and accessibility for commuters are of particular importance. By improving access to Machynlleth from key settlements north of the River Dyfi, the proposed new Dyfi Bridge will positively alter perceptions of the area as a business location.

Benefits to the local economy would occur during the construction period as well, both through the employment opportunities as discussed above, and the benefits of spend in the local economy from construction workers. The project team has also expressed a commitment to local procurement policies where possible and appropriate, with opportunities considered on a case by case basis.

Tourism is critical to the regional economy as evidenced in Section 3.3 of this report. In Machynlleth, accommodation and food services activities represent the third largest employment sector in the town accounting for 11% of jobs, showing the importance of tourism not just on a regional level but also within smaller local economies. The A487 and in particular Dyfi Bridge plays an important role for local tourism, facilitating access between Machynlleth and national attractions such as Snowdonia National Park.

The Scheme would improve connectivity and network resilience, providing benefits to the local economy and culture (including Welsh language) through tourism.

5.2 A Resilient Wales

The second Well-Being Goal is:

“A Resilient Wales - a nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change)”.

This goal encapsulates a number of aspects of sustainability which have been split out in the sections below.

5.2.1 Maintains and enhances a biodiverse natural environment

The Scheme and study area is located approximately 4.6km north east of a number of designated sites – Pen Llŷn a'r Sarnau Special Area of Conservation (SAC), the Cors Fochno & Dyfi RAMSAR site, the Dyfi Estuary Special Protection Area (SPA) and the Dyfi Site of Special Scientific Interest (SSSI). The Meirionnydd Oakwoods and Bat Sites SAC is located 15km from the study area. The study area is within the Dyfi Biosphere Reserve, set up by the UNESCO to promote solutions for reconciling biodiversity conservation with the sustainable use of the area.

In the absence of mitigation measures the construction of the Scheme has been predicted to give rise to significant ecological impacts on the habitat features of the Pen Llŷn a'r Sarnau SAC, water bodies, the bat populations, otters, badgers and a species of ladybird. However, working collaboratively with environmental bodies and the contractor, the design team has identified and included construction mitigation measures including compliance with protected species licences, method statements to avoid or reduce impacts on protected species and habitats, pollution prevention and sensitive vegetation clearance, which reduce adverse impacts to levels that are not significant.

For example, the operation of the Scheme is predicted to have potential impacts on water quality, horseshoe bats and badgers. Mitigation measures including petrol interceptors, landscape planting and the introduction of a mammal underpass are proposed to reduce any impacts to levels that are not significant.

5.2.2 Healthy functioning ecosystems that support social, economic and ecological resilience

One of the eight Scheme objectives is “to minimise the impact of transport improvements on the landscape, biodiversity, water resources and heritage and where possible facilitate improvement of water quality in line with requirements of the Water Framework Directive⁵⁶.” The aims have been considered during design development and associated decision making.

The proposed ecological mitigation measures have been developed to prevent or minimise the impact on the existing ecosystems within and in close proximity to the Scheme.

In addition, the design team has focused on integrating the Scheme into the local landscape, respecting and enhancing its character and quality. This is of particular importance when considering the existing linkages between the natural environment and the regional economy, social well-being and the region's cultural offering as outlined in section 3.3.

⁵⁶ European Parliament (2000) 'Directive 2000/60/EC establishing a framework for the Community action in the field of water policy – Water Framework Directive'. Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060>

The proposals also aim to bring significant benefits to the local community from a reduction in flood frequency from the River Dyfi.

The proposed development would provide protection for approximately 10 properties up to the 1 in 100 year plus climate change event.

5.2.3 The capacity to adapt to change (for example climate change)

The Scheme has been developed to ensure that it is resilient to future changes in the climate, particularly in relation to future risks of flooding that are likely to increase in the future as a consequence of climate change.

Continued use of the existing bridge is significantly affected by repeated flooding of the A487 just south of the bridge and dangerously high flood water at the bridge itself. The River Dyfi frequently floods, which severs local communities either side of the river, even after previous local drainage improvements. The Scheme itself is located in Zone C2 of the floodplain of the River Dyfi, meaning it is an area of floodplain without significant flood defence infrastructure.

During construction there would be a slight change in flood storage volume on the floodplain due to earthworks and piling activities. During construction the Scheme would have a slight adverse impact on the pollution of groundwater. The impacts will be temporary and would not have a long term effect on the water environment. Works would be undertaken in accordance with all current pollution and prevention measures to mitigate any risk of accidental impact to the water environment. The potential effects from flood risk during construction activities is considered to be negligible. Mitigation measures would include best practice measures and implementation of the CEMP.

A drainage strategy has been developed to manage the proposed Scheme's surface water runoff. To mitigate the slight increased chance of a spillage event it is proposed to incorporate an isolation device prior to each outfall and a petrol interceptor for one of the outfalls. This will help remove contaminants and provides a means by which spillages can be isolated.

Flood modelling has been undertaken for the whole Scheme and demonstrates that, for the south of the Scheme, there would be a beneficial effect on flood risk at the Dyfi Eco Park and southern properties due to the design and implementation of the flood embankment.

However to the north of the scheme, agricultural fields surrounding the proposed viaduct structure, and some properties will have an increased risk of flooding. Mitigation is proposed to provide drainage along the road adjacent to the properties which will reduce the frequency of flooding.

The Scheme's overall impact on the wider floodplain will result in a slight beneficial impact, taking into account the Scheme would provide a safe solution to the identified problems at Pont-ar-Ddyfi.

The use of materials as part of the construction phase will be in accordance with industry standards and the Contractor will take into account lifecycle costs, maintenance costs and durability.

The traffic modelling takes into account demand and technology changes (for example forecast percentage of vehicles powered by electricity) in accordance with DMRB.

5.3 A Healthier Wales

The third Well-Being Goal is *“A Healthier Wales - a society in which people’s physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood”*.

This goal encapsulates a number of aspects of sustainability which have been split out in the sections below.

5.3.1 People’s physical and mental well-being is maximised

Noise annoyance is defined by the World Health Organisation as ‘a feeling of displeasure evoked by noise’. Noise nuisance from transport sources can adversely affect the quality of living of local communities. The introduction of transport proposals may generate additional noise, both during construction and system operation.

Noise surveys were undertaken to supplement the traffic noise predictions and to provide baseline data for the construction noise assessment.

Noise decreases where the Scheme is realigned away from housing near the existing Pont-ar-Ddyfi. There are isolated increases at a small number of properties, but these have been assessed as not significant effects. There would be small reductions in the number of people annoyed due to noise.

Exhaust emissions from transport sources disperse in the air, affecting its quality. A deterioration in local air quality can cause damage to human health and to the urban environment.

It is anticipated that the scheme would improve the air quality in the surrounding area, with 12 of the 15 properties within the study area predicted to experience an improvement of NO₂ concentrations.

The construction effects have been assessed and concluded that, with appropriate good practice and mitigation measures, there is likely to be no significant effect from the construction and dust-generating activities on site.

There are few community facilities and infrastructure north of the bridge, as outlined in the scheme context, across the study area rural communities are generally dependent on facilities and services in main town centres, in this case Machynlleth. Improved accessibility as a result of the Scheme would provide opportunities for improvements in access to healthcare and people’s physical and mental well-being accordingly.

Following construction of the replacement bridge, the existing bridge would facilitate improved conditions for cycle and footpath movements across the River Dyfi. The proposed new viaduct as part of the Scheme would also include pedestrian and cyclist provision. Increased access for non-motorised users is directly linked to healthier lifestyles.

Any potential detrimental impacts upon health during the construction of the proposed scheme would be mitigated by measures set out in the CEMP. This includes dust, site waste, water and materials management, and should negate any potential negative effects upon health.

As described below in the section considering how the scheme encourages people to participate in the arts, and sports and recreation, the improved accessibility as part of the scheme would help provide opportunities for improvements in people's physical and mental well-being.

5.3.2 Choices and behaviours that benefit future health

One of the Scheme objectives is to increase the opportunity for efficient, safe and reliable travel by walking and cycling on the A487 corridor within the study area.

There are potential positive and negative impacts on people's lives and property that need to be considered.

The Scheme would have a slight adverse effect on a number of Public Rights of Way and cyclepaths along the south bank of the River Dyfi and along the A487 at the Scheme's northern and southern end during construction. Temporary diversions and crossing places would be provided during the construction phase to provide appropriate provision.

The transport benefits of the Scheme, i.e. shorter journey times, improved reliability and enhanced network resilience are predicted to lead to greater opportunities for personal choice in the future, in terms of access to employment and recreational opportunities as well as greater opportunity for personal time and improved work-life balance.

As evidenced in Section 3.3 of this report, the study area has a range of cultural and recreational activities including, theatres, museums and the Snowdonia National Park, however these activities are dispersed across a wide area and as such car travel is normally essential. The improvements for non-motorised users as described above would also provide health and well-being benefits linked to physical activity and recreation.

A Health Impact Assessment (HIA) will be undertaken by the project team to assess the potential health effects of the Scheme, including the effects on people's physical and mental well-being. The HIA will confirm whether there will be any negative effects upon health in the short, medium or long term, and if so, it will set out measures to help mitigate any predicted adverse impacts.

5.4 A More Equal Wales

The fourth Well-Being Goal is “*A More Equal Wales - a society that enables people to fulfil their potential no matter what their background or circumstances (including their socio economic background and circumstances)*”.

5.4.1 A society that enables people to fulfil their potential no matter what their background or circumstances

A contributor to social inclusion or exclusion, is the situation faced by many people whose choices are limited by a range of barriers, a key one of which is a lack of suitable transport. With the Scheme, there would be no clear adverse outcomes disproportionately affecting areas of high or low multiple deprivation. The Scheme would improve accessibility to all groups of people, providing a vital link across the River Dyfi, therefore supporting the movement of people and goods for employment, services and shopping.

The Scheme would not result in any demolition of private properties. However, there would be localised flood protection measures implemented at the properties at the northern end of the existing bridge.

5.5 A Wales of Cohesive Communities

The fifth Well-Being Goal is “*A Wales of Cohesive Communities - Attractive, viable, safe and well-connected communities*”.

5.5.1 Attractive, viable, safe and well-connected communities

Pont-ar-Ddyfi plays an important social role for communities in the Dyfi Valley to the north of Machynlleth by providing a vital link across the River Dyfi for access to employment, services and shopping. This is crucial when one considers that the majority of people in the study area live in rural areas outside of the main town centres.

Addressing the severance problems encountered by communities during flooding events would provide significant benefits to local communities. Furthermore, the proposals would improve network resilience and journey time reliability, benefiting those with access to a car as well as users of public transport. The proposals will also benefit business, freight movements and the emergency services.

The proposals could provide an alternative route over the River Dyfi for cyclists and pedestrians, offering links to the Wales Coast Path and National Cycle Network Route 8. These links are likely to be popular with visitors and tourists and therefore support the development of ‘green tourism’ in the local area too.

5.6 A Wales of Vibrant Culture and Thriving Welsh Language

The sixth Well-Being Goal is “*A Wales of Vibrant Culture and Thriving Welsh Language - a society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts and sports and recreation*”.

This goal encapsulates a number of aspects of sustainability which have been split out in the sections below.

5.6.1 Promotes and protects culture, heritage and the Welsh language

Welsh Government’s policy on the Welsh language “A living language: a language for living” (Welsh Government, 2012⁵⁷) identifies the community as one of 5 strategic areas and states:

“The language renewal task must go hand in hand with the work of improving social infrastructure of these areas to help ensure that better employment opportunities and more affordable housing become available, so that people can remain in their communities”.

The Scheme will enhance journey time reliability and network resilience, to benefit the movement of people and goods. Economic and social benefits are likely to be experienced most in the Machynlleth area and its local surroundings.

The Scheme would provide improved connectivity for local communities, the wider region, and provide transport conditions more favourable to businesses. The Scheme would improve accessibility to employment opportunities as well as create local jobs during construction.

The existing Pont-ar-Ddyfi will provide for non-motorised users, which is expected to create links popular with visitors and tourists and therefore support ‘green tourism’ in the local area.

To promote and protect the Welsh language, the communication strategies for the Scheme have been developed in accordance with the duties of the Welsh Government, including publication of information to stakeholders provided in both Welsh and English and engagement opportunities provided to Welsh speakers.

A Welsh speaking public liaison officer has also been appointed to help enable all groups of people to engage in the project as well as raise any concerns or questions about the proposals and the likely impacts.

A bi-lingual approach is particularly important in this area due to the high proportion of Welsh speakers, including over half of the population of Gwynedd on a daily basis.

⁵⁷ Welsh Government (2012) ‘A living language: a language for living – Welsh Language Strategy 2012-17’. Available: <http://gov.wales/docs/dcells/publications/122902wls201217en.pdf>

In order for the Scheme to truly involve all groups in the development process the use of the Welsh language is a necessity at all stages of the Scheme and as such this has been considered appropriately by the project team.

In accordance with the Welsh Language Act⁵⁸, during construction and operation, all new signage would be bilingual.

5.6.2 Encourage people to participate in the arts, and sports and recreation

The proposed improvements in journey times, reliability and resilience would make it easier and more attractive for people to visit arts, sporting venues and recreation facilities in Machylleth and surrounding area.

In a local context, a 2016 Non-Motorised User (NMU) Context Report and Stage 1 Audit for the Scheme identifies and considers the potential impacts on public rights of way (PROW) network, including promoted walking and cycling routes.

It is clear from the Context Report that there are several existing promoted NMU routes in the vicinity of the site, with a number of existing cycle routes and walking routes identified and promoted by local authorities and Sustrans. However, there are barriers to movements that present major safety issues for NMU routes. The most critical conflict point for NMUs are where they come into contact with vehicles or there is insufficient footway provision or poor/no crossing.

These conflict points can be managed by the provision of appropriate crossings and routes that avoid the conflict or manage the level of risk. The proposed Scheme has taken into account the Scheme objectives and the needs of non-motorised users, for example:

- a) Safe, accessible and direct crossing facilities with clear wayfinding would be provided at the both ends of the new bridge to cater for the cyclists and pedestrians using this part of the network, including the National Cycle Network routes.
- b) NMU access along the A487 road, National Cycle Network Route 8, A493 road and B4404 road would be maintained throughout the construction period. During periods of closure, reasonable safe, accessible, well way marked diversion routes would be provided.
- c) NMU access along footpaths along the southern side of the River Dyfi would be maintained throughout the construction period. During periods of closure, reasonable safe, accessible, well way marked diversion routes would be provided.
- d) During times of flooding, suitable, safe and convenient routes across the River Dyfi would be provided.

⁵⁸ UK Parliament (1993) 'Welsh Language Act'. Available: <http://www.legislation.gov.uk/ukpga/1993/38/contents>

The Scheme is expected to have a beneficial impact upon tourism. This includes tourism by road with the Scheme forming part of the ‘Wales’ way and as a result of improved walking/cycling accessibility. The Scheme would introduce safe opportunities for walking and cycling along the Wales Coastal Path and National Cycle Network Route 8, which cross the River Dyfi in the vicinity of the Scheme.

5.7 A Globally Responsible Wales

The seventh and final Well-Being Goal is “*A Globally Responsible Wales - a nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being*”.

5.7.1 When doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether such a thing may make a positive contribution to global well-being

One of the new responsibilities the Act provides is to help Wales become more globally responsible. This is important in the context of the new United Nations Sustainable Development Goals⁵⁹ and the emphasis on national and sub-national action.

The ‘Transforming our World: The 2030 agenda for sustainable development’⁶⁰, that was agreed at the UN Summit in September 2015 sets out 17 goals and 169 targets for action for people, planet, prosperity, peace and partnership.

The Welsh Government and public bodies subject to the well-being duty operate within a UK, EU and international context, and therefore have a direct and indirect role in supporting and contributing to international obligations.

It recognises that in an inter-connected world what we do in Wales can have positive and adverse impacts outside of Wales.

The Welsh Government’s Shared Purpose Shared Future Core Guidance on the Act explains that:

To provide clarity on the key matters that public bodies should take account of it is suggested that bodies may wish to focus their attention on two areas;

- Decarbonisation – This means reducing energy demand, increasing energy efficiency and the use of clean energy. Opportunities include sources deriving from the assets and infrastructure of public bodies. Support is available through Resource Efficient Wales on using Resources (energy, materials and water) more efficiently.

⁵⁹ United Nations (2015) ‘Sustainable Development Goals’. Available: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

⁶⁰ United Nations (2015) ‘Transforming our world: the 2030 Agenda for Sustainable Development’ Available: http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

- Sustainable consumption and production – Through the procurement of products and services. This means looking at the way in which you procure goods and services to reduce global impact, whilst also increasing the local benefits. This includes areas such as waste, food, and the sustainable management of natural resources.

Every construction project involves some capital expenditure of carbon but the well-being of the people of Wales requires that development takes place, in accordance with sustainable principles, to provide the infrastructure, services and facilities needed for society, business and industry.

It is important to acknowledge that the proposed Scheme fits within the wider context of Welsh Government policy to reduce carbon. There is a need to achieve a trajectory of overall emissions reduction, as established for the UK by the Climate Change Act 2008⁶¹ and most recently for Wales by the Environment (Wales) Act 2016.

Neither Act requires specific projects to be subject to these targets but the Welsh Government has taken reasonable steps to help ensure that the Scheme minimises its construction and user carbon impacts. The Explanatory Memorandum for the Environment (Wales) Act 2016 explains (para 162) that the intended effect of the legislation includes flexibility, so that slower transition in one area can be balanced by more rapid progress elsewhere, for example the impact of vehicle electrification.

The Climate Change Strategy for Wales 2010 put in place a 3% target from 2011 in annual emissions and sets targets by sector, including transport, but did not suggest that individual projects should be subject to this target, recognising that the response to climate change requires a cross-cutting approach across all sectors.

The Carbon Report (Appendix 11.1 of the Environmental Statement) for the Scheme highlights opportunities for carbon reduction which have been considered and will inform the next design stages. There would also be improved operational carbon benefits of the scheme.

The setting of Scheme objectives and the proposals for managing flood risk and drainage design has also taken into account climate change and its likely effects on the local environment.

⁶¹ UK Government (2008) 'Climate Change Act' Available:
<http://www.legislation.gov.uk/ukpga/2008/27/contents>

5.8 Summary

This section has provided a description of how the Scheme has been developed and would be constructed to meet scheme objectives following the principles defined by the well-being goals. The table below sets out a summary of the alignment of the A487 New Dyfi Bridge Scheme with the goals.

Well-being goal	Alignment with the A487 New Dyfi Bridge Scheme
A prosperous Wales	<p>Wider economic benefits by improving accessibility and journey time reliability.</p> <p>Improving access to employment opportunities.</p> <p>Reduction in CO₂ emissions of just under 10 million tonnes.</p> <p>Materials imported from local suppliers and re-used and recycled where possible.</p> <p>The construction phase of the Scheme would provide employment opportunities in the construction sector and local commercial opportunities.</p> <p>Improving perceptions of the area as a business location.</p> <p>Spend in the local economy from construction workers.</p>
A resilient Wales	<p>Collaborative working has led to the identification and inclusion of construction mitigation measures against ecological impacts.</p> <p>The design team has focused on integrating the Scheme into the local landscape, respecting and enhancing its character and quality.</p> <p>Mitigation measures against climate change and flooding would include a drainage strategy, best practice measures and implementation of the CEMP.</p>
A healthier Wales	<p>There would be small reductions in the number of people annoyed due to noise.</p> <p>Improved accessibility as a result of the Scheme would provide opportunities for improvements in access to healthcare and community facilities.</p> <p>The existing bridge would facilitate improved conditions for cycle and footpath movements across the River Dyfi.</p> <p>A Health Impact Assessment (HIA) will be undertaken by the project team to assess the potential health effects of the Scheme.</p>
A more equal Wales	<p>The Scheme would improve accessibility to all groups of people, providing a vital link across the River Dyfi, therefore supporting the movement of people and goods for employment, services and shopping.</p>

Well-being goal	Alignment with the A487 New Dyfi Bridge Scheme
A Wales of cohesive communities	<p>Addressing the severance problems encountered by communities during flooding events would provide significant benefits to local communities.</p> <p>The scheme would improve network resilience and journey time reliability, benefiting those with access to a car as well as users of public transport.</p> <p>The proposals could provide an alternative route over the River Dyfi for cyclists and pedestrians.</p>
A Wales of vibrant culture and thriving Welsh Language	<p>The Scheme would provide improved connectivity for local communities, the wider region, and provide transport conditions more favourable to businesses.</p> <p>To promote and protect the Welsh language, the communication strategies for the Scheme have been developed in accordance with the duties of the Welsh Government.</p> <p>A Welsh speaking public liaison officer has also been appointed to help enable all groups of people to engage in the project.</p>
A globally responsible Wales	<p>The proposed Scheme fits within the wider context of Welsh Government policy to reduce carbon.</p> <p>The setting of Scheme objectives and the proposals for managing flood risk and drainage design has taken into account climate change and its likely effects on the local environment.</p>

Overall, the Scheme has been proposed by the Welsh Government in order to address the identified problems and achieve the objectives. As explained in Chapter 3 of this report, the existing bridge is a single carriageway bridge on the A487 Fishguard to Bangor trunk road, which is the principal strategic north-south route along the west coast of Wales. It is a key north-south route, being the first upstream crossing of the Afon Dyfi, with the next crossing approximately 8km east at Jubilee Bridge, Grofft Farm. The A487 is a vital connection into Machynlleth and any closure of the bridge has an impact on the economic performance of the local rural and visitor economy, as it is the vital link for access to employment, culture, services and shopping.

The predicted transport benefits of the Scheme include shorter journey times, improved reliability and enhanced network resilience, which would improve transport connections to markets, communities and facilities, offering associated social and economic benefits.

It would also serve to prevent flooding and transport related problems.

The Scheme aligns with the Welsh Government's strategy for addressing the problems associated with the A487 Dyfi Bridge, and forms part of its aspirations for a long term, sustainable and integrated transport network.

6 The Scheme and the Welsh Government Well-being Objectives

As outlined in Section 2.3 of this report, the Welsh Government has identified and published twelve well-being objectives, which form the foundation of the four cross-cutting strategies that are the drivers of its Programme for Government, Taking Wales Forward, seeking to deliver a Wales which is prosperous and secure, healthy and active, ambitious and learning, united and connected.

The Well-being objectives seek to enable the Welsh Government to maximise the progress that can be made in its programme for government, and in achieving the national well-being goals, reflecting their interconnected nature in working in accordance with the sustainable development principle. Therefore, each well-being objective aims to address one or more of the well-being goals, and one or more of the four cross cutting strategies identified in Taking Wales Forward that help the Welsh Government work in a sustainable way.

Should the A487 New Dyfi Bridge Scheme demonstrate that it would contribute to achieving a Welsh Government well-being objective, it would therefore be the case that it would inevitably address one or more of the well-being goals, and support one or more of the four cross cutting strategies identified in Taking Wales Forward. It is also considered that fulfilling a Welsh Government well-being objective would contribute to achieving the well-being objectives of the relevant local public bodies as set out in section 2.4.

The remainder of this section considers how the Scheme would contribute towards each of the twelve well-being objectives of the Welsh Government, taking into account the well-being goals and the four cross-cutting strategies that the well-being objectives seek to support, as well as the well-being objectives of each local public body.

6.1 Support people and businesses to drive prosperity

The A487 New Dyfi Bridge Scheme would address the capacity and resilience problems on the network, improving journey reliability and improving journey times at times of incidents and delays, which currently require significant diversions for traffic. Improved journey time reliability and network resilience would improve accessibility to employment opportunities, which is particularly important, given the large numbers of commuters in Powys, whilst the construction phase of the Scheme would also offer opportunities for local recruitment and training.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A Wales of vibrant culture and thriving Welsh language
- A globally responsible Wales
- A more equal Wales
- A resilient Wales

The Strategies that this Well-Being Objective would support are:

- Prosperous and Secure
- Ambitious and Learning
- United and Connected

The local Well-being Objectives that would be supported are:

- People in Powys will experience a stable and thriving economy (Powys PSB)
- Communities which thrive and are prosperous in the long term (Gwynedd and Anglesey PSB)

6.2 Tackle Regional Inequality & Promote Fair Work

There are significant costs to the economy associated with the regular closure of the strategic A487 route due to the delays and increased journey times (and associated vehicle costs) experienced by users.

The A487 New Dyfi Bridge Scheme would address the capacity and resilience problems on the network, improving journey reliability and improving journey times at times of incidents and delays, which currently require significant diversions for traffic.

Improved journey time reliability and network resilience would improve accessibility to key services, facilities and other opportunities for learning and development.

The Scheme would also improve accessibility to employment opportunities, whilst the construction phase of the Scheme would also offer opportunities for local recruitment and training.

Furthermore, by improving the transport connections in the area, businesses are more likely to be attracted to locate there, with the potential to create larger scale employment and associated wider economic benefits.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A globally responsible Wales
- A healthier Wales
- A more equal Wales
- A Wales of cohesive communities
- A resilient Wales

The Strategies that this Well-Being Objective would support are:

- Prosperous and Secure
- Ambitious and Learning
- United and Connected

The local well-being objectives which would be supported are:

- People in Powys will enjoy a sustainable and productive environment (Powys PSB)
- People in Powys will experience a stable and thriving economy (Powys PSB)
- Healthy and independent residents with a good quality of life (Gwynedd and Anglesey PSB)
- Promote successful and responsible business, using natural resources without damaging them (NRW)
- Communities which thrive and are prosperous in the long term (Gwynedd & Anglesey PSB)
- The National Park purposes will be delivered through a diverse and prospering economy adapted to the challenges of climate change (Snowdonia National Park Authority)

6.3 Drive Sustainable Growth and Combat Climate Change

The A487 New Dyfi Bridge Scheme has been developed with the aim of providing a more efficient transport network which can accommodate current and future traffic volumes and which is resilient to the effects of flooding and climate change. The Scheme would prevent ongoing flooding of key transport infrastructure, taking into account the climate change.

As well as overall resource use, specific consideration has been given to the carbon emissions associated with the Scheme. Measures to reduce carbon emissions have been incorporated into the scheme. As a result of the Scheme, it is anticipated that there would be a reduction in CO₂ emissions of just under 10 million tonnes as a result of benefits to road users. The carbon emissions associated with the construction stage of the scheme is 12,116 tCO₂e. This equates to approximately 0.02% of the total annual Welsh carbon emissions for 2 years.

Pont-ar-Ddyfi is on the southern boundary of Snowdonia National Park and lies within the UNESCO Dyfi Biosphere Reserve, an area of terrestrial and coastal/marine ecosystems. Working collaboratively with environmental bodies and the contractor, the design team has identified and included construction mitigation measures as part of the Scheme, including compliance with protected species licences, method statements to avoid or reduce impacts on protected species and habitats, pollution prevention and sensitive vegetation clearance, which reduce adverse impacts to levels that are not significant.

For example, the operation of the Scheme is predicted to have potential impacts on water quality, horseshoe bats and badgers. Mitigation measures including petrol interceptors, landscape planting and the introduction of a mammal underpass are proposed to reduce any impacts to levels that are not significant.

Furthermore, throughout the design evolution of the Scheme, opportunities have been considered to minimise the use of resources and creation of waste.

Materials would be imported from established local suppliers where possible, whilst it is proposed that all materials arising from construction would be re-used on site. If removal of materials from site is required, the location for the disposal of these materials is likely to include a combination of local recycling facilities and disposal at an inert or non-hazardous landfill site.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A globally responsible Wales
- A healthier Wales
- A more equal Wales
- A Wales of cohesive communities
- A resilient Wales

The Strategies that this Well-Being Objective would support are:

- Prosperous and Secure
- Ambitious and Learning
- United and Connected
- Healthy and Active

The local well-being objectives which would be supported are:

- People in Powys will enjoy a sustainable and productive environment (Powys PSB)
- Healthy and independent residents with a good quality of life (Gwynedd and Anglesey PSB)
- Ensure land and water in Wales is managed sustainably and in an integrated way (NRW)
- Reduce risk to people and communities from environmental hazards like flooding and pollution (NRW)
- Champion the Welsh environment and the sustainable management of Wales' natural resources (NRW)
- The National Park purposes will be delivered through a diverse and prospering economy adapted to the challenges of climate change and founded on natural resources (Snowdonia National Park Authority)

6.4 Deliver Quality Health and Care Services Fit for the Future

The A487 New Dyfi Bridge Scheme itself aims to help improve the capability of the highway infrastructure to adapt to longer term change such as climate change, in addressing the existing and predicted flooding problems at Pont-ar-Ddyfi, as well as the associated transport related problems. In addressing the problems, the Scheme would improve connectivity between people and critical health and care services. This is crucial given the isolated rural communities within the Scheme area and the reliance on access to Machynlleth as a key town centre.

The Well-being Goals that this Well-Being Objective would support are:

- A Wales of cohesive communities
- A resilient Wales
- A globally responsible Wales
- A healthier Wales
- A more equal Wales

The Strategies that this Well-Being Objective would support are:

- Healthy and Active
- Ambitious and Learning
- United and Connected

The local well-being objectives which would be supported are:

- People in Powys will be healthy, socially motivated and responsible (Powys PSB)
- Healthy and independent residents with a good quality of life (Gwynedd and Anglesey PSB)
- Help people live healthier and more fulfilled lives (NRW)

6.5 Promote Good Health & Well-being for Everyone

Improved journey time reliability and network resilience as a result of the A487 New Dyfi Bridge Scheme would improve accessibility to health services and other opportunities for learning, development and leisure.

Reducing the need for significant diversions and addressing the traffic congestion problems, the proposals would help reduce driver stress.

Furthermore, the Scheme would introduce safe opportunities for walking and cycling along the Wales Coastal Path and National Cycle Network Route 8, which cross the River Dyfi in the vicinity of the Scheme and would improve access to areas for recreation and outdoor pursuits such as those within the National Park. This would help encourage recreational activities and contribute to physical fitness, health and well-being.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A resilient Wales
- A healthier Wales
- A more equal Wales
- A Wales of cohesive communities

The Strategies that this Well-Being Objective would support are:

- Prosperous and Secure
- Healthy and Active

The local well-being objectives which would be supported are:

- People in Powys will be healthy, socially motivated and responsible (Powys PSB)
- The National Park is recognised as an area which contributes to people's physical and mental well-being (Snowdonia NPA)
- Healthy and independent residents with a good quality of life (Gwynedd and Anglesey)
- Help people live healthier and more fulfilled lives (NRW)

6.6 Build healthier communities and better environments

Pont-ar-Ddyfi plays an important social role for communities in the Dyfi Valley to the north of Machynlleth by providing a vital and safe link across the River Dyfi for access to employment, services and shopping.

The A487 New Dyfi Bridge Scheme would provide economic and social benefits through addressing the identified transport related problems and improving connectivity. This applies not only to local residents but also tourists to the area whose visits are of significant importance to the regional economy.

The proposals would also provide a safe alternative route over the River Dyfi for cyclists and pedestrians, offering links to the Wales Coast Path, and National Cycle Network Route 8, which could in turn indirectly improve health and well-being.

Increased accessibility with increased journey time reliability would support the movement of people and goods.

Addressing and preventing the severance problems encountered by communities during flooding events would provide significant benefits the locality.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A Wales of vibrant culture and thriving Welsh language
- A healthier Wales
- A more equal Wales
- A Wales of cohesive communities
- A resilient Wales

The Strategies that this Well-Being Objective would support are:

- Prosperous and Secure
- Healthy and Active
- Ambitious and Learning
- United and Connected

The local Well-being Objectives which this would support are:

- People in Powys will be connected by strong communities and vibrant culture (Powys PSB)
- People in Powys will enjoy a sustainable and productive environment (Powys PSB)
- Communities which thrive and are prosperous in the long term (Gwynedd and Anglesey PSB)
- Healthy and independent residents with a good quality of life (Gwynedd & Anglesey)
- Help people live healthier and more fulfilled lives (NRW)

6.7 Support Young People to make the most of their potential

The A487 New Dyfi Bridge Scheme would address the capacity and resilience problems on the network, improving journey reliability and improving journey times at times of incidents and delays, which currently require significant diversions for traffic.

Improved journey time reliability and network resilience would also improve accessibility to education services and other opportunities for learning and development as well as recreational activities associated with boosting well-being and mental health such as walking on the Wales Coast Path and hiking in Snowdonia National Park.

Additionally, this would help parents to better plan their journeys to work and other destinations, which in turn would help parents spend more time with their children at home or enjoying other activities outside of the car.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A resilient Wales
- A healthier Wales
- A more equal Wales
- A Wales of cohesive communities
- A Wales of vibrant culture and thriving Welsh language

The Strategies that this Well-Being Objective would support are:

- Prosperous and Secure
- Healthy and Active
- Ambitious and Learning
- United and Connected

The Local Well-being Objectives which this would support are:

- People in Powys will be healthy, socially motivated and responsible (Powys PSB)
- People in Powys will enjoy a sustainable and productive environment (Powys PSB)
- Healthy and independent residents with a good quality of life (Gwynedd & Anglesey PSB)
- Help people live healthier and more fulfilled lives (NRW)
- The National Park is recognised as an area which contributes to people's physical and mental wellbeing (Snowdonia National Park Authority)

6.8 Build Ambition and Encourage Learning for Life

The A487 New Dyfi Bridge Scheme would address the capacity and resilience problems on the network, improving journey reliability and improving journey times at times of incidents and delays, which currently require significant diversions for traffic.

Improved journey time reliability and network resilience would improve accessibility to education services and other opportunities for learning and development.

The construction phase of the Scheme would also offer opportunities for local recruitment and training.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A resilient Wales
- A healthier Wales
- A more equal Wales
- A Wales of cohesive communities
- A Wales of vibrant culture and thriving Welsh language

The Strategies that this Well-Being Objective would support are:

- Prosperous and Secure
- Ambitious and Learning

The local Well-being Objectives which would be supported are:

- People in Powys will be healthy, socially motivated and responsible (Powys PSB)
- Communities which thrive and are prosperous in the long term (Gwynedd and Anglesey)
- Help people live healthier and more fulfilled lives (NRW)

6.9 Equip everyone with the Right skills for a changing world

During construction, the Scheme would provide opportunities to develop local skills and training and efforts would be made to encourage local recruitment.

The purpose of the Scheme is to modernise the existing infrastructure and improve the resilience of Pont-ar-Ddyfi for the long term. This would serve to ensure that existing education and employment opportunities are made more accessible through improved journey time reliability and network resilience.

Additionally, an improvement in the transport connections in the has the potential to encourage businesses to relocate or set up in the area attracting wider employment opportunities and the resultant economic benefits, securing the long term future of the area in constantly changing circumstances.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A resilient Wales
- A healthier Wales
- A more equal Wales

The Strategies that this Well-Being Objective would support are:

- Prosperous and Secure
- Ambitious and Learning

The local Well-being Objectives which would be supported are:

- People in Powys will enjoy a sustainable and productive environment (Powys PSB)
- Communities which thrive and are prosperous in the long term (Gwynedd and Anglesey)
- Help people live healthier and more fulfilled lives (NRW)

6.10 Build resilient communities, culture and language

Pont-ar-Ddyfi is on the southern boundary of Snowdonia National Park, passing through the predominately rural landscape of the Dyfi Valley. The bridge also lies within the United Nations Educational, Scientific and Cultural Organisation (UNESCO) Dyfi Biosphere Reserve, an area of terrestrial and coastal/marine ecosystems which is internationally recognised within the framework of UNESCO's Man and the Biosphere Programme.

The A487 New Dyfi Bridge Scheme would protect the cultural asset of the Pont-ar-Ddyfi, whilst the Scheme would respect the local environment and heritage features.

The proposals would also provide an alternative route over the River Dyfi for cyclists and pedestrians, offering links to the Wales Coast Path and National Cycle Network Route 8 and Snowdonia National Park.

These links are likely to be popular with visitors and tourists and therefore support the development of 'green tourism' in the local area too. This is of particular importance considering the increasing visitor numbers at the national park as evidenced in section 3.3.

The social and economic benefits of the Scheme through addressing the identified problems would benefit the Machynlleth area, which has a strong tourist, Welsh language and cultural offer as demonstrated earlier in this report.

In terms of language more specifically, in order to promote and protect the Welsh language, the communication strategies for the Scheme have been developed in accordance with the duties of the Welsh Government, including publication of information to stakeholders provided in both Welsh and English and engagement opportunities provided to Welsh speakers. In accordance with the Welsh Language Act, all new signage would be bilingual. A Welsh speaking public liaison officer has also been appointed to help enable all groups of people to engage in the project as well as raise any concerns or questions about the proposals and the likely impacts. This was particularly important to ensure full engagement in the Scheme given the high proportion of the population in the study area who are Welsh speakers.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A Wales of vibrant culture and thriving Welsh language
- A globally responsible Wales
- A more equal Wales
- A Wales of cohesive communities

The Strategies that this Well-Being Objective would support are:

- Prosperous and Secure
- Ambitious and Learning
- United and Connected

The local Well-being Objectives which would be supported are:

- People in Powys will be connected by strong communities and a vibrant culture (Powys PSB)
- Communities which thrive and are prosperous in the long term (Gwynedd and Anglesey PSB)
- Champion the Welsh environment and the sustainable management of Wales' resources (NRW)

6.11 Deliver Modern and Connected Infrastructure

The River Dyfi frequently floods, severing the local communities either side of the river. Local drainage improvements have been carried out over the last forty years but the fundamental problem of flooding remains.

The Scheme would provide protective flood bunds to reduce flooding alongside the Dyfi Eco-park and at the Railway Bridge on the northern edge of Machynlleth.

Mitigation measures would also be included to help ensure the situation for the houses adjoining Pont-ar-Ddyfi was not worsened by the proposals but provide benefits to properties even when taking into account climate change.

The Pont-ar-Ddyfi itself, which is a Scheduled Monument (ref. No. SAM Mg002) and is Grade II* listed. In the last thirty years, increased traffic and the continuing deterioration of the masonry structure has necessitated structural strengthening and repairs to keep the bridge operational as such there is a need to modernise the existing infrastructure in a way which does not detrimentally impact the conservation of the bridge in order to secure its long-term future.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A globally responsible Wales
- A healthier Wales
- A more equal Wales
- A Wales of cohesive communities
- A resilient Wales
- A Wales of vibrant culture and thriving Welsh language

The Strategies that this Well-Being Objective would support are:

- United and Connected

The local Well-being objectives which would be supported are:

- People in Powys will enjoy a sustainable and productive environment (Powys PSB)
- Communities which thrive and are prosperous in the long term (Gwynedd and Anglesey PSB)
- Reduce the risk to people and communities from environmental hazards like flooding and pollution (NRW)

6.12 Promote and protect Wales' place in the world

The A487 New Dyfi Bridge Scheme in addressing the identified transport and environmental problems, would provide a long-term solution that takes into account climate change, and better connects people to their communities, places of work, facilities and services. The Scheme would also enhance opportunities to expand key industries particularly tourism, ensuring that the natural and built heritage of north Wales remains accessible to visitors from both within Wales and further afield.

The Well-being Goals that this Well-Being Objective would support are:

- A prosperous Wales
- A resilient Wales
- A globally responsible Wales
- A Wales of vibrant culture and thriving Welsh language
- A Wales of cohesive communities

The Strategies that this Well-Being Objective would support are:

- Prosperous and Secure
- United and Connected

The local Well-being objectives which would be supported are:

- People in Powys will enjoy a sustainable and productive environment (Powys PSB)
- Powys will experience a stable and thriving economy (Powys PSB)
- Communities which thrive and prosper in the long term (Gwynedd and Anglesey)
- Promote successful and responsible business, using natural resources without damaging them (NRW)

Sustainable Development Matrix

This table serves to demonstrate how the Scheme would seek to contribute to the national well-being goals and local well-being objectives in an integrated way.

Well-being Goal	Welsh Government Well-being Objectives	Local Well-being Objectives	Scheme Alignment	Ways of Working
<ul style="list-style-type: none">A Prosperous Wales	<ul style="list-style-type: none">Support People and Businesses to Drive Prosperity;Tackle Regional Inequality and Promote Fair Work;Drive Sustainable Growth and Combat Climate Change;Promote good health and well-being for everyone;Build Healthier Communities and better environments;Support Young People to make the most of their potential;Build Ambition and Encourage Learning for Life;Equip everyone with the Right skills for a changing world;Build resilient communities, culture and language;Deliver Modern and Connected Infrastructure;Promote and protect Wales’ place in the world.	<ul style="list-style-type: none">People in Powys will experience a stable and thriving economy (Powys PSB);People in Powys will enjoy a sustainable and productive environment (Powys PSB);Communities which thrive and are prosperous in the long term (Gwynedd & Anglesey PSB);Promote successful and responsible business using natural resources without damaging them (NRW).	<ul style="list-style-type: none">Wider economic benefits by improving accessibility and journey time reliability;Improving access to employment opportunities;Reduction in CO₂ emissions of just under 10 million tonnes;Materials imported from local suppliers and re-used and recycled where possible;The construction phase of the Scheme would provide employment opportunities in the construction sector and local commercial opportunities;Improving perceptions of the area as a business location;Spend in the local economy from construction workers.	<ul style="list-style-type: none">Long TermPreventionInvolvement

Well-being Goal	Welsh Government Well-being Objectives	Local Well-being Objectives	Scheme Alignment	Ways of Working
<ul style="list-style-type: none">A resilient Wales	<ul style="list-style-type: none">Support people and businesses to drive prosperity;Tackle Regional Inequality & Promote Fair Work;Drive Sustainable Growth and Combat Climate Change;Deliver Quality Health and Care Services Fit for the Future;Promote Good Health & Well-being for Everyone;Build healthier communities and better environments;Support Young People to make the most of their potential;Build Ambition and Encourage Learning for Life;Equip everyone with the Right skills for a changing world;Deliver Modern and Connected Infrastructure;Promote and protect Wales’ place in the world.	<ul style="list-style-type: none">People in Powys will enjoy a sustainable and productive environment (Powys PSB);Communities which thrive and are prosperous in the long term (Gwynedd & Anglesey PSB);Ensure land and water in Wales is managed sustainably and in an integrated way (NRW);Improve the resilience and quality of our ecosystems (NRW);Reduce the risk to people and communities from environmental hazards like flooding and pollution (NRW).	<ul style="list-style-type: none">Collaborative working has led to the identification and inclusion of construction mitigation measures against ecological impacts;The design team has focused on integrating the Scheme into the local landscape, respecting and enhancing its character and quality;Mitigation measures against climate change and flooding would include a drainage strategy, best practice measures and implementation of the CEMP.	<ul style="list-style-type: none">Long TermCollaborationIntegrationPrevention

Well-being Goal	Welsh Government Well-being Objectives	Local Well-being Objectives	Scheme Alignment	Ways of Working
<ul style="list-style-type: none">• A healthier Wales	<ul style="list-style-type: none">• Tackle Regional Inequality & Promote Fair Work;• Drive Sustainable Growth and Combat Climate Change;• Deliver Quality Health and Care Services Fit for the Future;• Promote Good Health & Well-being for Everyone;• Build healthier communities and better environments;• Support Young People to make the most of their potential;• Build Ambition and Encourage Learning for Life;• Equip everyone with the Right skills for a changing world;• Deliver Modern and Connected Infrastructure.	<ul style="list-style-type: none">• People in Powys will be healthy, socially motivated and responsible (Powys PSB);• Healthy and Independent residents with a good quality of life (Gwynedd & Anglesey);• Reduce the risk to people and communities from environmental hazards like flooding and pollution (NRW);• Champion the Welsh environment and the sustainable management of Wales’ natural resources (NRW);• Help people live healthier and more fulfilled lives (NRW).	<ul style="list-style-type: none">• There would be small reductions in the number of people annoyed due to noise;• Improved accessibility as a result of the Scheme would provide opportunities for improvements in access to healthcare and community facilities;• The existing bridge would facilitate improved conditions for cycle and footpath movements across the River Dyfi;• A Health Impact Assessment (HIA) will be undertaken by the project team to assess the potential health effects of the Scheme.	<ul style="list-style-type: none">• Long term• Prevention• Integration

Well-being Goal	Welsh Government Well-being Objectives	Local Well-being Objectives	Scheme Alignment	Ways of Working
<ul style="list-style-type: none">A more equal Wales	<ul style="list-style-type: none">Support people and businesses to drive prosperity;Tackle Regional Inequality & Promote Fair Work;Drive Sustainable Growth and Combat Climate Change;Deliver Quality Health and Care Services Fit for the Future;Promote Good Health & Well-being for Everyone;Build healthier communities and better environments;Support Young People to make the most of their potential;Build Ambition and Encourage Learning for Life;Equip everyone with the Right skills for a changing world;Build resilient communities, culture and language;Deliver Modern and Connected Infrastructure.	<ul style="list-style-type: none">People in Powys will enjoy a sustainable and productive environment (Powys PSB);Communities which thrive and are prosperous in the long term (Gwynedd & Anglesey PSB).	<ul style="list-style-type: none">The Scheme would improve accessibility to all groups of people, providing a vital link across the River Dyfi, therefore supporting the movement of people and goods for employment, services and shopping.	<ul style="list-style-type: none">Long term

Well-being Goal	Welsh Government Well-being Objectives	Local Well-being Objectives	Scheme Alignment	Ways of Working
<ul style="list-style-type: none"> • A Wales of cohesive communities 	<ul style="list-style-type: none"> • Tackle Regional Inequality & Promote Fair Work; • Drive Sustainable Growth and Combat Climate Change; • Deliver Quality Health and Care Services Fit for the Future; • Promote Good Health & Well-being for Everyone; • Build healthier communities and better environments; • Support Young People to make the most of their potential; • Build resilient communities, culture and language; • Deliver Modern and Connected Infrastructure; • Promote and protect Wales' place in the world. 	<ul style="list-style-type: none"> • People in Powys will be connected by strong communities and a vibrant culture (Powys PSB); • Communities which thrive and are prosperous in the long term (Gwynedd & Anglesey PSB); • Reduce the risk to people and communities from environmental hazards like flooding and pollution (NRW). 	<ul style="list-style-type: none"> • Addressing the severance problems encountered by communities during flooding events would provide significant benefits to local communities. • The scheme would improve network resilience and journey time reliability, benefiting those with access to a car as well as users of public transport. • The proposals could provide an alternative route over the River Dyfi for cyclists and pedestrians. 	<ul style="list-style-type: none"> • Long Term • Integration • Involvement
<ul style="list-style-type: none"> • A Wales of vibrant culture and thriving Welsh Language 	<ul style="list-style-type: none"> • Support people and businesses to drive prosperity; • Build healthier communities and better environments; • Support Young People to make the most of their potential; • Build Ambition and Encourage Learning for Life; • Build resilient communities, culture and language; • Deliver Modern and Connected Infrastructure; • Promote and protect Wales' place in the world. 	<ul style="list-style-type: none"> • People in Powys will be connected by strong communities and a vibrant culture (Powys PSB); • Communities which thrive and are prosperous in the long term (Gwynedd & Anglesey PSB); • Champion the Welsh environment and the sustainable management of Wales' natural resources (NRW). 	<ul style="list-style-type: none"> • The Scheme would provide improved connectivity for local communities, the wider region, and provide transport conditions more favourable to businesses. • To promote and protect the Welsh language, the communication strategies for the Scheme have been developed in accordance with the duties of the Welsh Government. • A Welsh speaking public liaison officer has also been appointed to help enable all groups of people to engage in the project. 	<ul style="list-style-type: none"> • Long term • Collaboration • Involvement

Well-being Goal	Welsh Government Well-being Objectives	Local Well-being Objectives	Scheme Alignment	Ways of Working
<ul style="list-style-type: none">• A globally responsible Wales	<ul style="list-style-type: none">• Support people and businesses to drive prosperity;• Tackle Regional Inequality & Promote Fair Work;• Drive Sustainable Growth and Combat Climate Change;• Deliver Quality Health and Care Services Fit for the Future;• Build resilient communities, culture and language;• Deliver Modern and Connected Infrastructure;• Promote and protect Wales’ place in the world.	<ul style="list-style-type: none">• People in Powys will be healthy, socially motivated and responsible (Powys PSB);• Promote successful and responsible business, using natural resources without damaging them (NRW);• Ensure land and water in Wales is managed sustainably and in an integrated way (NRW);• Reduce the risk to people and communities from environmental hazards like flooding and pollution (NRW).	<ul style="list-style-type: none">• The proposed Scheme fits within the wider context of Welsh Government policy to reduce carbon.• The setting of Scheme objectives and the proposals for managing flood risk and drainage design has taken into account climate change and its likely effects on the local environment.	<ul style="list-style-type: none">• Integration• Long Term• Involvement• Prevention

7 Conclusion

This report summarises the consideration given to the principles of sustainable development, the ways of working and the Well-being Goals of the Well-being of Future Generations Act 2015. It also takes into account the Welsh Government's Well-being Objectives that have been published alongside its Programme for Government, Taking Wales Forward, which set out four cross-cutting strategies to drive improvement in the Welsh economy and public services, delivering a Wales which is prosperous and secure, healthy and active, ambitious and learning, united and connected. Furthermore, the local well-being objectives of other public bodies have been considered as also advocated in the Future Generations Framework.

To help better understand the local issues and opportunities, Section 3 of this report shows how the Scheme has been informed by the Well-being Plans, Well-being Assessments and other information supplied by the PSBs and local bodies. In addition to desk based research, this has provided a useful context from which the project team has been able to design and develop the Scheme with local people and local issues at the forefront of decision making.

Section 4 of this report shows how involvement, integration and collaboration with stakeholders has informed the development of Scheme objectives, design and decisions on the progress of the Scheme. Commitments are also given as to how the Scheme will be taken forward in the future to achieve sustainable development.

Chapter 5 shows how, for all seven of the Well-being Goals, work already done, or in preparation, will support the achievement of those goals.

Chapter 6 shows how, for the Welsh Government's Well-being Objectives, work already done, or in preparation, will contribute towards the achievement of those objectives relevant to the Scheme. In doing so, it is further demonstrated how the Scheme would contribute to helping the Welsh Government deliver a Wales which is prosperous and secure, healthy and active, ambitious and learning, united and connected. Consideration has also been paid to the Well-being objectives of relevant public bodies associated with the scheme including the Powys Public Service Board, Gwynedd and Anglesey Public Service Board, the Snowdonia National Park Authority and Natural Resources Wales. In doing this, it has been demonstrated how the Scheme would contribute to these organisations and local authority areas fulfilling their statutory duties under the Well-being of Future Generations Act 2015.

In summary, this report demonstrates that despite the Scheme offering poor value for money in light of its costs outweighing transport user benefits, it would address existing barriers to the movement of people and goods during frequent incidents of delay during accidents and flooding events, providing a strong need for the Scheme and wider benefits to be realised.

It would assist in increasing opportunities for economic growth in the wider area by improving the connectivity and reliability of the road network, and improve the social and environmental conditions within the Machynlleth area.

It would increase accessibility and resilience for visitors to the local area, as well as local people wishing to access community and cultural facilities and services.

It would prevent continued environmental harm to a cultural asset and prevent ongoing flooding problems.

Mitigation for environmental impacts has been developed and where practicable enhancement provided to ensure ecosystem resilience in the longer term.

Overall, this report demonstrates how the Scheme has been developed and designed to provide a longer term and sustainable solution to the identified problems, offering economic, social, environmental and cultural improvements, as well as preventing the problems getting worse. It also proposes to prevent negative effects where practicable through mitigation measures and best practice approaches to construction.

The Scheme has been developed and designed in accordance with the sustainable development principle and it would deliver a sustainable development.