Transport for Wales

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE

Restoring Your Railways

Issue P01

wsp

Transport for Wales

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE

Restoring Your Railway

REPORT (P01) CONFIDENTIAL

PROJECT NO. 70094560

OUR REF. NO. 70094560-WSP-RPT-00001 P01

DATE: OCTOBER 2022

WSP

4th Floor
6 Devonshire Square
London
EC2M 4YE

Fax:

WSP.com

QUALITY CONTROL

Issue/revision	First issue			
Remarks	First issue			
Date	04/10/2022			
Prepared by	OD, GA			
Signature				
Checked by	IM, AM			
Signature				
Authorised by	CW			
Signature				
Project number	70094560			
Report number	P01			
File reference	70094560-WSP-XX-RP-Z-001-S4			

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022

CONTENTS

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022

TABLES

FIGURES

EXECUTIVE SUMMARY

Transport for Wales, on behalf of the Welsh Government, are considering the re-opening of the Amlwch to Gaerwen railway through the Restoring your Railway fund, in view of existing transport issues and future needs for connections between Anglesey and North Wales.

This study reviews the case for change in accordance with the principles of the Welsh Transport Appraisal Guidance (WelTAG) 2017 process.
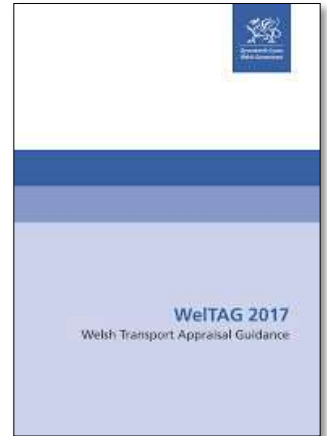
This report describes the Strategic Outline Case for the reopening of the Amlwch to Gaerwen railway. It identifies the current issues for the corridor in Anglesey and reviews how these could be addressed by transport solutions. The former route has been compared with an alternative rail alignment, and bus interventions.

It recommends a short list of options to be progressed to WelTAG Stage Two. A separate summary report has been prepared for submission to the RYR panel in September 2022.

The financial, commercial and management cases are preliminary at this stage and provide an overview of how the scheme could be delivered.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022

1
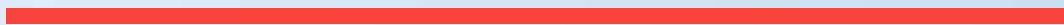
INTRODUCTION

INTRODUCTION

1.1 BACKGROUND

Restoring Your Railway Fund

In January 2020, the UK government pledged £500 million for the Restoring Your Railway Programme to deliver its manifesto commitment and start reopening lines and stations[1], as part of the levelling-up agenda.

The Department for Transport (DfT) invited MPs, local councils and community groups across England and Wales to propose how they could use funding to reinstate axed local services and restore closed stations.

The focus now is on realising the benefits of those schemes to regenerate local economies and improve access to jobs, homes and education.

Funding is split into 3 categories to support projects at different stages of development. The categories are:

- **The Ideas Fund –** funding for early-stage ideas to explore options to restore lost rail services and rail connections to communities
- **Advanced Proposals –** support for lines and stations already being considered for restoration and for those identified as having further potential via the Ideas Fund application and assessment process
- **New Stations Fund –** proposals for new stations and the restoration of old station sites.

A scheme to reopen the Gaerwen to Amlwch railway to passenger services has received funding through the third round of the Ideas Fund, as one of 13 successful bids (from a total of 89 applications). A map of the schemes progressing is shown in **Figure 1** below.

---

[1] https://www.gov.uk/government/collections/restoring-your-railway-fund

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 1 of 95

Figure 1 – Geographic Spread of RYR Schemes

Source: RYR Fund Programme Update 2022 (DfT)

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 2 of 95
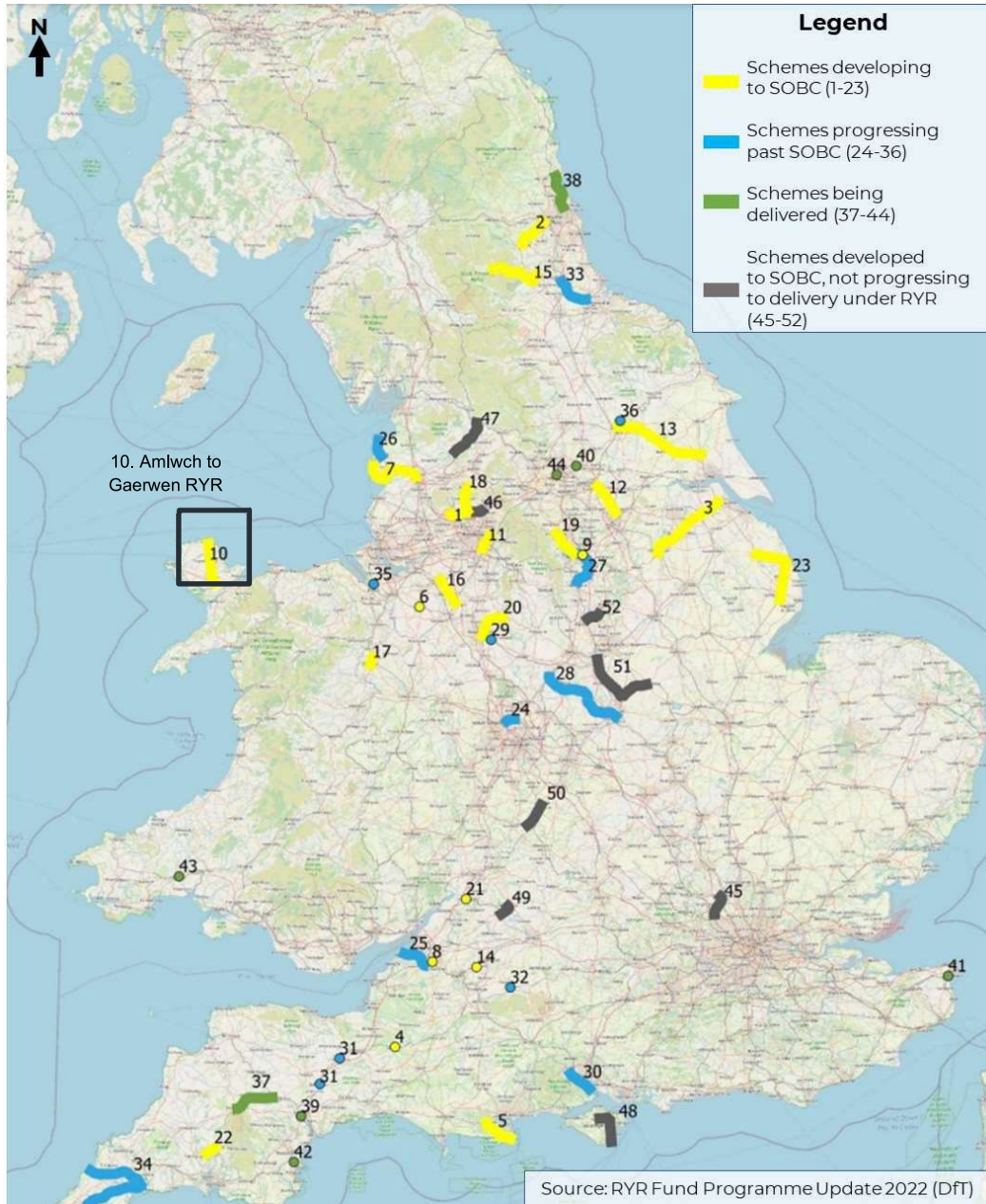
Lein Amlwch

The Amlwch to Gaerwen line, formerly known as the Amlwch Central Line, extends 17.5 miles from a junction on the North Wales Mainline at Gaerwen, through Llangefni and the centre of Anglesey to Amlwch.

The route ran from Gaerwen to Llangefni in 1864, with an extension to Llanerchymedd in 1866 before reaching Amlwch in 1867.

Figure 2 – Historic Amlwch to Gaerwen Line[2]

The line was served by both freight and passenger trains and made it easier for local mine owners to get their produce to markets in the South of England. Following the closure of the mines in 1871, the line's freight revenue predominantly came from local farmers and fertilizer firms. Up to six passenger services per day ran each way over the full line, with others operating as far as Llangefni in the 1896 timetable (**Figure 3**)[3].

Figure 3 – Amlwch Branch Timetable, 1896

Passenger services increased over time but stopped in 1964 following the rationalisation of the railways, however freight services continued to the Associated Ethyl Company (OCTEL) Factory into the 1990s.

---

[2] http://amlwchhistory.co.uk/railway/
[3] London and North Western Railway - London and North Western Railway Timetables, December 1896, Public Domain, https://commons.wikimedia.org/w/index.php?curid=4619209

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 3 of 95

In 2007, the Anglesey Central Railway (ACR) Ltd was formed, a non-profit organisation made up of members in support of re-opening of the line. Over the years they have cleared vegetation and enabled the rail line to remain in-situ, pushing for the line to once again be open to passenger services[4].

Figure 4 – Vegetation cleared by ACR Ltd, 2021

1.2 PURPOSE OF THIS REPORT

This report presents the Stage One: Strategic Outline Case (SOC) of the WelTAG process and functions as a supporting document for the RYR application to DfT.

This study has been carried out in accordance with WelTAG 2017 Welsh Transport Appraisal Guidance[5] and investigates the transport needs in the context of The Wales Transport Strategy 2021[6] and the Well-being and Future Generations Act[7].

The WelTAG Stage One: SOC explores the context of transport and wider socio-economic issues on Anglesey and presents a range of possible solutions to help establish which might go forward as a 'short list' of options for more detailed consideration through the WelTAG stages. It explores the reopening of the Amlwch to Gaerwen railway and alternative options to ensure that the most suitable and beneficial solution is reached.

---

[4] https://www.leinamlwch.co.uk/en/history/
[5] WelTAG 2017 Welsh Transport Appraisal Guidance
[6] Llwybr Newydd: the Wales Transport Strategy 2021, Welsh Government
[7] Well-being of Future Generations (Wales) Act 2015

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 4 of 95

1.3 REPORT STRUCTURE & STUDY APPROACH

This report follows the Five Case Model used by the Welsh Government and is structured as follows:

- Chapter 1 – this **introduction** covering the background, report purpose, report structure and study approach
- Chapter 2 – the **strategic case** identifying the strategic policy fit, the case for change and options for intervention
- Chapter 3 – the **transport case** evaluating the options
- Chapter 4 – the **financial case** describing their affordability
- Chapter 5 – the **commercial case** outlining procurement methods
- Chapter 6 – the **management case** describing how the scheme would be delivered
- Chapter 7 – **summary** and **next steps**.

This report follows the principle of proportionate appraisal. It presents a qualitative appraisal, providing stakeholders and decision makers with high level information and understanding of the problems and potential options available.

This is in line with the level of development in the WelTAG guidance (2017), which states that *"during Stage One the strategic case will be almost fully developed as this sets out the need for change. The transport case will provide an initial assessment of the expected impacts of each of a long list of options for tackling the issue under consideration. At this Stage the assessment will be based predominately on currently available evidence. The delivery, commercial, and financial cases will be of a preliminary nature but must consider all the key issues which would affect the selection of options taken forward for further investigation."*

The desired outcomes of this report are presented in **Table 1** below, as guided by TfW and the DfT.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 5 of 95

Table 1 – SOC Guidance

	Desired Outcomes / Research Questions
Transport for Wales	Are there any transport options, or other solutions that can address the issues identified?
	Select a short list of options to be taken forward to Stage Two, based on their ability to solve the problem, their fit with local, regional and/ or national objectives, their positive impacts across all aspects of well-being, their deliverability and potential to drive long lasting change.
	Agree the impacts, across all aspects of well-being (including social, environmental, cultural and economic well-being), to be considered during Stage Two including the methods to be used to provide additional evidence where required.
	Identify any legislative requirements that are relevant to the study and need to be met during Stage Two.
	Document the decisions of the Stage One Review Group, and the basis for these decisions.
Restoring Your Railways (DfT guidance)	What is the transport problem and case for intervention?
	What are the options? Is rail the preferred solution?
	How does each option perform in delivering benefits?
	Does the scheme align with local and national policy?
	How does the scheme contribute to the overall strength of the UK economy, including Levelling Up?
	Does the scheme reconnect local communities through improving access to key services, employment or education?
	Does the scheme improve GDP or productivity through job creation, new businesses or improved tourism opportunities?
	Does the scheme unlock access to new housing developments?

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 6 of 95

1.4 STUDY AREA

The study area considered in this SOC is the area between Amlwch, Llangefni and Bangor, the populations served by the historic rail route. This is shown in **Figure 5**.

Figure 5 – Study Area
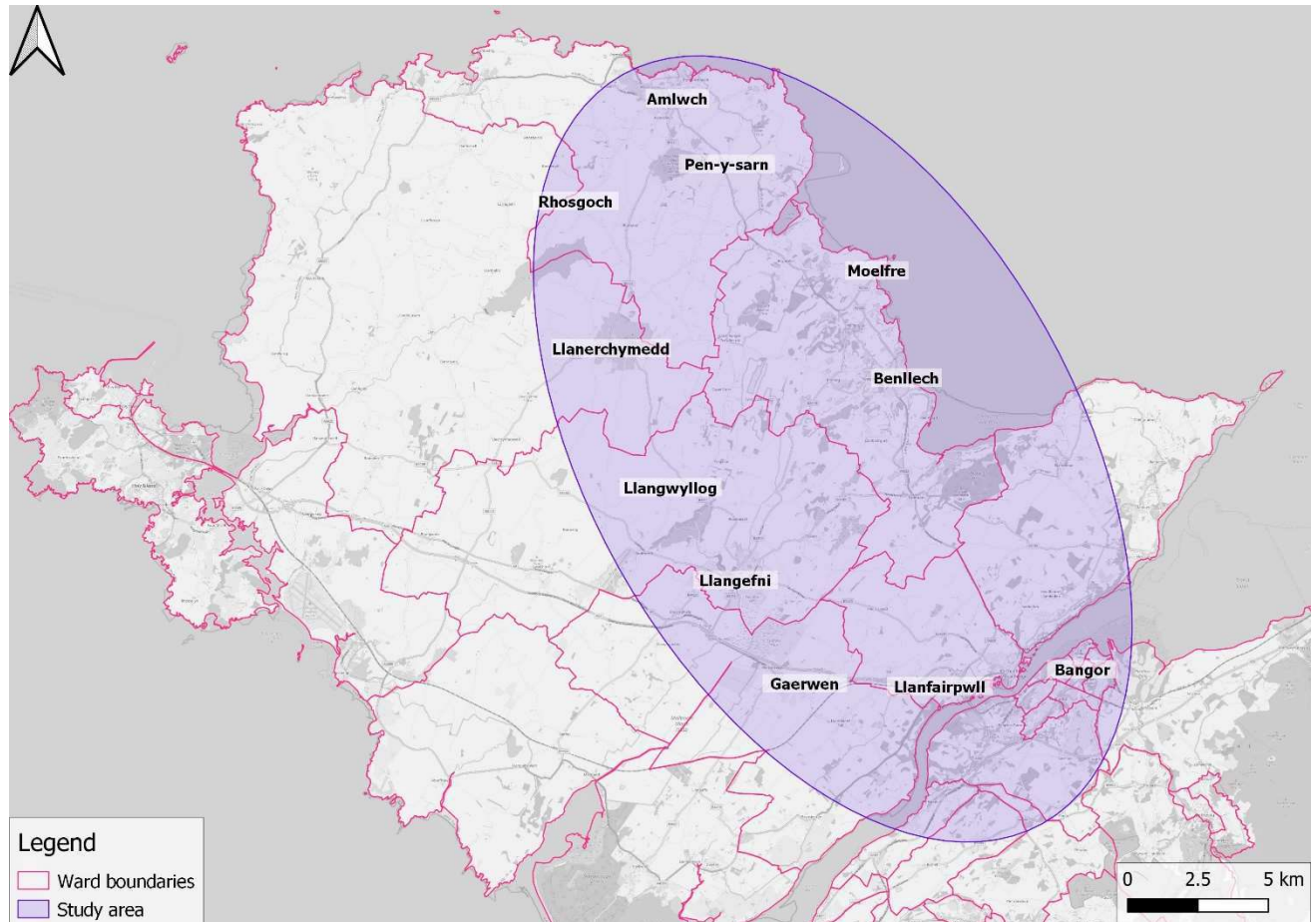
Key locations within the study area include those identified in **Figure 5** with their populations listed in **Table 2**. The largest populations on the Isle of Anglesey (within the study area) are Llangefni, Amlwch, Llanfairpwll and Benllech, all of which are significantly smaller than Bangor, located on the mainland in the county of Gwynedd.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 7 of 95

Table 2 – Population

Local Authority	Location	Population (2011 Census)[8]
Isle of Anglesey	Amlwch	3,789
	Pen-y-sarn	595
	Rhosgoch	1
	Moelfre	710
	Benllech	2,236
	Llanerchymedd	1,133
	Llangwyllog	367
	Llangefni	5,116
	Gaerwen	1,551
	Llanfairpwll	3,107
Isle of Anglesey Total		**69,751**
Gwynedd	Bangor	16,358
Gwynedd Total		**121,874**

---

[8] Census 2011 data was used as the 2021 Census release is not yet disaggregated beyond local authority

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 8 of 95

2

STRATEGIC CASE

wsp

STRATEGIC CASE

2.1 INTRODUCTION

The Strategic Case sets out the context and evidence for identifying transport interventions in the study area. It sets out the reasons why an intervention is required through the identification of the problems and opportunities of the study area, the objectives for intervention, and the long-list of options intended to address them.

2.2 CASE FOR CHANGE

The following section builds the evidence to justify change. It outlines the aims of the wider policy context, existing infrastructure provision and analyses various forms of traffic data impacting the scheme. This analysis identifies the current condition of the study route which will inform the objectives, contained in **Section 2.4**, and the long list of options, listed in **Section 2.5**.

The case for change is built based on our assessment of:

- **Policy Context**
  - o Sets out the socio-economic and transport policy context.
- **Social & Cultural Context**
  - o Includes deprivation, access to services and employment, tourism, and language.
- **Economic Context**
  - o Provides an economic summary including GVA per head, active business count, total jobs, patterns of employment and key employment sites.
- **Environment**
  - o Sets out the climate change and carbon emissions context and the environmental designations.
- **Travel demand**
  - o Presents the number of people within 20-, 40- and 60-minutes access of the key stations and interchanges within the scheme area.
- **Rail**
  - o Considers current and historical infrastructure, planned schemes, existing services and rail patronage, journey time reliability, resilience, safety, and existing station facilities.
- **Bus**
  - o Considers existing demand and capacity, connecting services, current infrastructure and journey times, community transport and ticket integration.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 10 of 95

2.2.1 POLICY CONTEXT

This section identifies the policies, aims and objectives directly relatable to the enhancement of connectivity across North Wales. This responds to one of the research questions set out in the RYR guidance:

Does the scheme align with local and national policy?

The following policy documents and directives are considered at a national (United Kingdom, Wales), regional (North Wales), and local (Anglesey & Gwynedd) level:

Table 3 – Policy Context

Published by	Scale	Title
Welsh Government	National (Wales)	Llwybr Newydd: the Wales Transport Strategy
		Future Generations Act
		Labour / Plaid Cymru Deal
		Railways for Wales Case for Devolution
		Healthier Wales
		Net Zero Wales
		Taking Wales Forward; 2016-2021
		Prosperity for All: The National Strategy
		Prosperity for All: The Economic Action Plan
	Regional	Moving North Wales Forward
Transport for Wales	National (Wales)	TfW Business Plan
		How we're developing Metro
Department for Transport	National (UK)	Decarbonising Transport: A Better, Greener Britain
HM Government	National (UK)	Levelling Up the United Kingdom
		Net Zero Strategy: Build Back Greener
Gwynedd Council	Local	Well-being Statement
Anglesey Council	Local	Plan 2017-2022
	Local	North Anglesey Economic Regeneration Plan
	Local	Destination Anglesey Management Plan

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 11 of 95

NATIONAL (WALES)

Llwybr Newydd: the Wales Transport Strategy, Welsh Government

The short-term priorities of the strategy are summarised below:

- **Priority 1:** Bring services to people in order to reduce the need to travel by planning ahead for better physical and digital connectivity, more local services, more home and remote working and more active travel, so that fewer people need to use their cars on a daily basis.
- **Priority 2:** Allow people and goods to move easily from door to door by accessible, sustainable and efficient transport services and infrastructure, actively aiming to achieve a shift away from private car use to more sustainable transport modes for the majority of journeys.
- **Priority 3:** Encourage people to make the change to more sustainable transport by making sustainable transport more attractive and more affordable, and by adopting innovations that make it easier to use.

The Welsh Government will invest in low-carbon, accessible, efficient and sustainable transport services and infrastructure that enable more people to walk, cycle and use public transport, and low-emissions vehicles. Infrastructure will be future-proofed to adapt to climate change and facilitate more sustainable transport choices. The Strategy also outlines its aspirations for the provision of transport services, and importantly, notes a commitment to extending the *"geographical reach of public transport into every community, especially in rural Wales"*.

Where new transport infrastructure is needed, the Sustainable Transport Hierarchy, shown in **Figure 6** will be used to guide decisions.

Figure 6 – Sustainable Transport Hierarchy

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 12 of 95
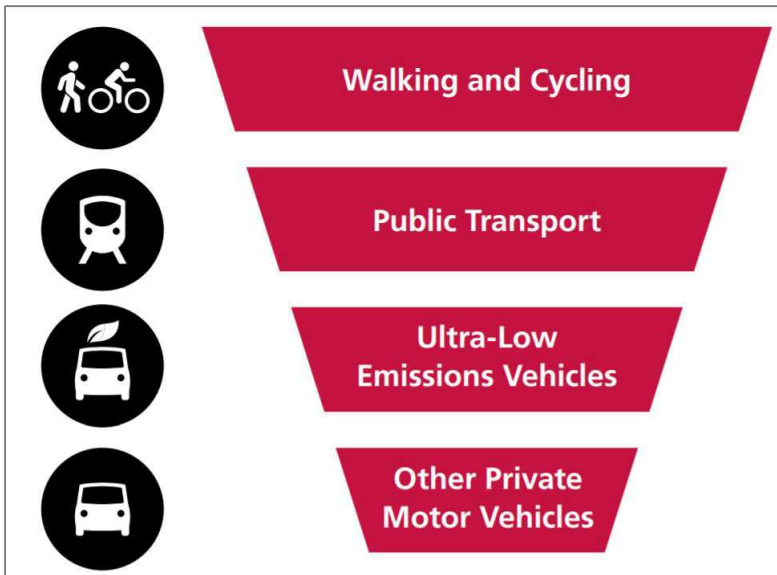
Llwybr Newydd: the Wales Transport Strategy sets out 8 mini-plans to help achieve the aforementioned ambitions. Of most direct relevance to this WelTAG are the following mini plans:

- **Rail:** We want to achieve the efficient and accessible passenger and freight rail services that people and businesses in Wales need, in order to better support our wider well-being ambitions.
- **Bus services:** A stable and coherent network of bus services that are fully integrated with other modes of public transport, that are reliable, affordable, flexible, easy to use, low-carbon and that encourage more people to use the bus rather than their cars.
- **Roads, streets and parking:** We will ensure that our roads and streets are safe, well-maintained and managed for all road users, and also support sustainable transport options including active travel and more public transport.

Welsh Government will also seek to set standards in a number of areas, for example:

- So that passengers know what they can expect from bus services in Wales.
- Providers follow quality standards (such as Welsh Language Standards).
- To seek various quality improvements, such as reliability and punctuality of services.
- Changes to the way transport is delivered and maintained, such as by pursuing a stronger voice in rail investment decisions that affect Wales.
- For the full devolution of rail services and infrastructure in Wales and a fair funding settlement.

In terms of delivering the vision for rail, Welsh Government has the ambitions that in 5-years' time:

- Trains and stations are accessible; services are more affordable and everyone feels welcome using rail services;
- Community rail partnerships are helping to engage more people and communities with rail;
- Former railway lines and other redundant transport infrastructure are safeguarded for the future or for re-use or as cycle paths, footpaths or footways;
- Rail traction in Wales moved to low emissions and eventually to zero emissions;
- There are more rail services and passenger numbers have increased, making services more viable for all;
- New and existing rail stations are hubs for economic investment and growth;
- Digital innovations make rail travel easier, including integrated ticketing and better real-time information for passengers;
- Historic rail attractions make a significant contribution to the wider visitor economy of Wales; and
- More people take the train instead of using their cars, journeys to and from stations are made by more sustainable modes and more goods have been moved onto rail, so avoiding environmentally sensitive lorry miles.

There are again further ambitions, to improve the quality of provision and to deliver schemes in a responsible manner, in accordance with other policy goals, for example:

- Rail travel is safe and secure for all users.
- Welsh speakers can confidently use train services in the language of their choice.
- We have maintained biodiversity and enhanced ecosystem resilience in the day-to-day management of the rail soft estate and in future rail improvements.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 13 of 95

- Historic environment assets have been protected and sustained in rail improvements and developments.

Wales Future Generations Act (WFGA), Welsh Government

The WFGA is structured around seven well-being goals:

- **A prosperous Wales** which is innovative, productive and low carbon, using resources efficiently and proportionately (including acting on climate change);
- **A resilient Wales** which maintains and enhances a biodiverse natural environment with the resilience and capacity to adapt to change (for example, climate change);
- **A healthier Wales** where peoples physical and mental well-being is maximised, and future health benefits are understood;
- **A more equal Wales** that enables people to fulfil their potential no matter what their background or circumstance;
- **A Wales of cohesive communities** which promotes attractive, viable, safe and well-connected communities;
- **A Wales of vibrant culture and thriving Welsh language** that promotes and protects the culture and heritage of Wales including the Welsh language; and
- **A globally responsible Wales**, which when doing anything takes account of the economic, social, environmental and cultural well-being of Wales and how this could be improved, to make a positive contribution towards global well-being.

Labour / Plaid Cymru Deal (2021), Welsh Government

As part of the Labour / Plaid Cymru co-operation agreement in 2021, a number of objectives were set out for Transport for Wales (TfW) to explore the development of transport links between North and South Wales. This included how to protect potential travel corridors on the west coast of Wales.

It also stated that TfW would continue to press ahead with Metro developments, to improve connectivity and encourage people to switch to public transport, and that the Welsh Government would work with local authorities in North West Wales to develop plans for an integrated transport system.

Railway for Wales: Case for Devolution (2019), Welsh Government

The Railway for Wales: Case for Devolution sets out that a fair devolution settlement for Wales, which would allow the Welsh Government to fund an ambitious strategic programme (including the re-opening of railway lines, upgrade of the South and North Wales Mainlines, new routes, and new stations across the network) over the next 10 years. This would support the level of services required to meet objectives for communities, the economy, and the environment.

The document also recognises the need for multi-modal connectivity to be improved with enhanced interoperability between bus, rail and walking / cycling.

The Case for Devolution specially references the development of further opportunities to improve connectivity on the nation's other key corridors – especially the western corridor from Ynys Môn (Anglesey) to Aberystwyth, Carmarthen and Swansea Bay. This may include upgraded lines,

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 14 of 95

reopened lines and new lines– as well as integration with bus services. Therefore, the solution will not necessarily be partly or fully rail based.

These corridors are shown in **Figure 7**.

Figure 7 – Railway for Wales Case for Devolution – Strategic Corridor Developments
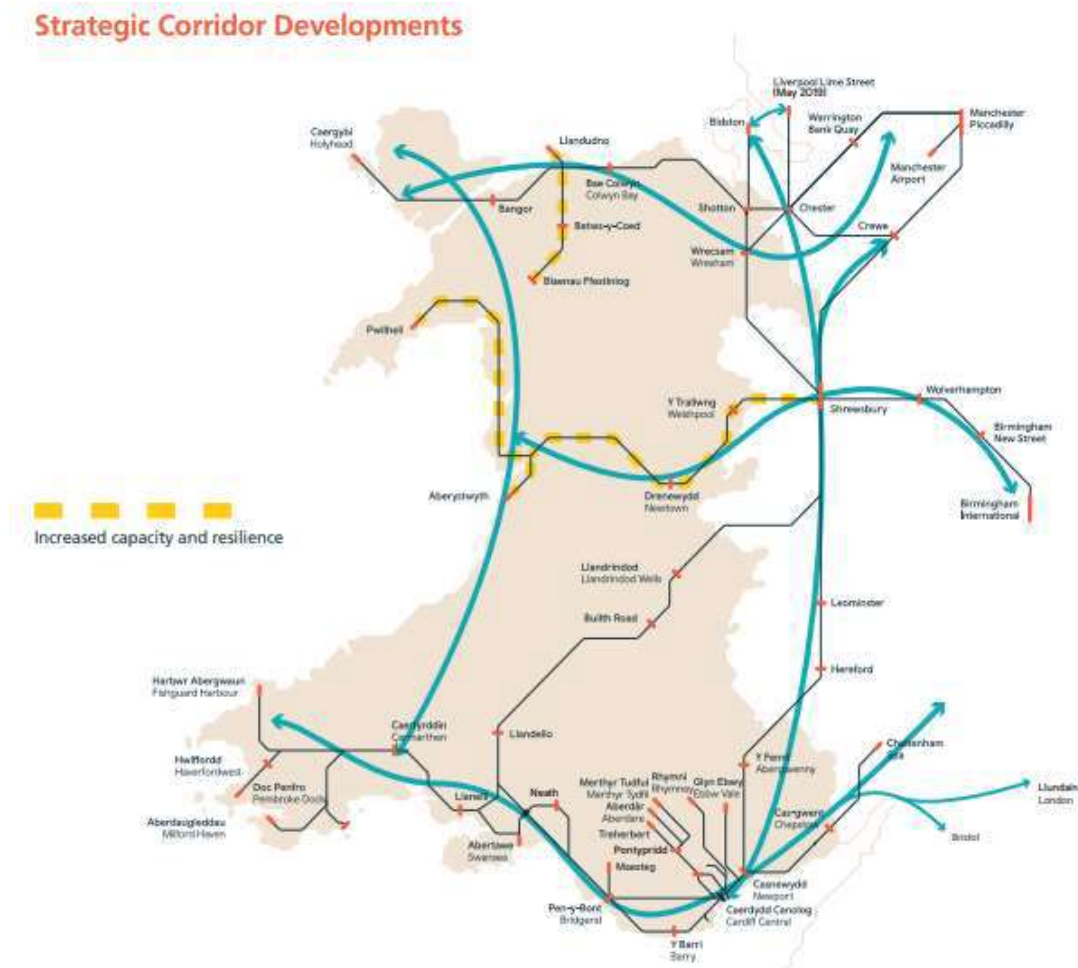
Net Zero Wales, Welsh Government

The Environment (Wales) Act 2016 requires the Welsh Government to reduce emissions of greenhouse gases in Wales to net zero for the year 2050, with a system of interim emissions targets and carbon budgets.

Net Zero Wales sets out a strategy for meeting the Welsh Government's Net Zero / Carbon Neutral ambitions, formalising Welsh Government's commitment to tackling climate change. Transport is Welsh Government's third largest emissions sector. For transport, the approach will be allied with meeting other requirements (i.e. Clean Air Plan, City and growth deals with decarbonisation at the core, delivering the measures set out within *Llwybr Newydd: the Wales Transport Strategy 2021*).

Net Zero Wales Carbon Budget 2 (2021-25) sets out 123 policies and proposals, alongside commitments. The key policies are shown in **Table 4** below.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 15 of 95

As much progress must be made in the next 10 years as has been made in the last 30 years if Wales is to reach its Net Zero Year.

Table 4 – Key Policies from Net Zero Wales Carbon Budget

Key Relevant Policy	Detail
Policy 32	To increase trip mode share of public transport from a current estimated proportion of 5% to 7% by 2030 and 13% by 2040
Policy 37	Relates to a number of targets around progress towards a zero emission bus fleet. For example, for the whole TrawsCymru bus fleet to be zero tailpipe emission by 2026
Policy 39	Relates to decarbonisation of the railway network.

Net Zero Wales states that the number of rail passenger journeys has increased steadily in recent years and stood at 21.6 million in 2019. Whilst the number of journeys by bus declined by 22% between 2008 (129.8 million) and 2019 (101.2 million), there had been a modest increase towards the end of this period (2.2% rise from 2016 to 2019). This indicates the relative trends in popularity of rail compared to bus in recent years in attracting passengers.

It should however be noted that as a whole bus carried more passengers than rail. This is expected to be as a result of the flexibility and increased reach of bus services when compared to rail.

Healthier Wales: our Plan for Health and Social Care, Welsh Government

The vision for the Healthier Wales policy is:

"Our vision is that everyone in Wales should have longer healthier and happier lives, able to remain active and independent, in their own homes, for as long as possible."

Part of the vision is also that: *"When people need support, care or treatment, they will be able to access a range of services which are made seamless and delivered as close to home as possible"*.

The plan sets out a long-term future vision of a whole system approach to health and social care which is focussed on health and wellbeing and on preventing illness.

This includes ensuring that access to services and facilities is available and that people do not suffer from loneliness and isolation as a result of lack of connectivity.

Taking Wales Forward 2016 – 2021, Welsh Government

Taking Wales Forward is the Welsh Government's programme for government in the Fifth Assembly. It was first published in June 2021 and an updated published in December 2021 to encompass the Labour / Plaid Cymru co-operation agreement previously outlined.

It states that:

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 16 of 95

"We will continue to invest in infrastructure to boost the economy and communities of Wales and to connect all parts of Wales."

The transport priorities to achieve this are:

- Create a South Wales Metro and advance the development of a North Wales Metro system.
- Develop a new, not-for-profit, rail franchise and deliver a more effective network of bus services once powers have been devolved.
- Ensure seamless ticketing arrangements and improved marketing as part of the new travel arrangements for Wales.
- Ensure better access to active travel for all.

Prosperity for All: The National Strategy, Welsh Government

The national strategy sets out the following objectives:

- Create an integrated public transport network, covering the rail and bus networks, which is safe, reliable, affordable, and low carbon.
- Continue to develop the North Wales Metro and deliver transport improvements that complement it.

The wellbeing objectives set out in the national strategy also promote the delivery of modern and connected infrastructure to ensure that communities are brought together and that these can prosper through improved access to various facilities and amenities as well as economic centres.

Prosperity for All: The Economic Action Plan, Welsh Government

The economic action plan seeks to build a connected infrastructure that supports growth and investment. It recognises that the transport network (roads, railways, ports, airports, energy infrastructure and digital networks) form the arteries that enable the economy to function.

The economic action plan sets out the proposal for Transport for Wales to, in coalition with other stakeholders, take increasing ownership of the public transport network with the focus of meeting the needs of passengers through the provision of a safe, reliable, affordable and low carbon network.

Transport for Wales

Transport for Wales (TfW) was set up by Welsh Government in 2016 to oversee public transport in Wales. Over time, it has taken on a wider remit and increased its role in the delivery of services.

During the Coronavirus pandemic, in February 2021, Transport for Wales group was created as a wholly owned not-for-profit company by the Welsh Government.

As part of the TfW group - Transport for Wales Rail (Ltd) was set up to take over the running of the Wales and Borders rail network from KeolisAmey.

In December 2020, TfW also took responsibility for managing the Welsh Government's Active Travel Fund to improve walking and cycling routes.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 17 of 95

The following sections summarise TfW's strategic objectives and aspirations for the North Wales Metro. Whilst these do not have policy standing, they are expected to reflect the goals and priorities of the Welsh Government, given TfWs role in supporting scheme development and in transport service delivery.

TfW Business Plan

There are several strategic objectives that TfW will seek to achieve over the next five- years. These are set out as follows:

- **Improved customer services:** develop a common customer service ethos across transport services in Wales and its borders focused on the needs of people, involving communities and business to deliver safe, reliable, affordable and low carbon transport.
- **Fully integrated:** focus on continually improving integration between different modes of transport. Integration requires reliable information provision, simplified ticketing and joined-up services where interchange takes place, as well as thought-through and, wherever possible, co-located services e.g., bus and rail stations located together.
- **Reinvesting in transport:** as a not-for-profit company wholly owned by the Welsh Government, ensure that any surplus from their operations is reinvested in transport services and infrastructure for the benefit of customers - building on the Welsh Government's commitment that the transport network in Wales will be increasingly directly owned or operated by Transport for Wales.
- **Ensuring we serve all of Wales effectively:** maximise understanding of local and regional needs across Wales for the benefit of current and future transport users. The immediate plans to achieve this include a North Wales Business Unit and the establishment of their headquarters with key partners at Pontypridd.
- **Developing skills sustainably:** the success of Transport for Wales relies upon the development of skills for delivery of services and infrastructure. Procure infrastructure and services that lead to even greater local and regional benefits. Work with SMEs and larger organisations in an alliancing approach to maximise direct value for money through efficient and effective delivery, as well as wider sustainable economic benefits.
- **Connecting communities:** the approach to many of the objectives will underpin the aim to ensure communities are properly connected. Beyond transport links, the focus on regeneration and placemaking opportunities to support sustainable growth and the commitment to the Welsh language will support this objective.
- **Transport modelling, land-use planning:** establish an evidence-based approach to support decision-making associated with infrastructure investment. Support the Welsh Government by working to ensure opportunities to maximise the amount of residential, business and leisure space within walking distance of public transport and to improve connectivity and increase transport's contribution towards the lowering of carbon footprints are fully understood.
- **Environment/Carbon:** deliver on the Welsh Government's policy by decarbonising the transport networks and improving the air quality of the communities they serve, seeking to prevent the associated negative impact on health.
- **Playing our part in Prosperity for All:** The Economic Action Plan: In addition to the objectives detailed above which support Prosperity for All, work with the Welsh Government to maximise the benefit of the commitment to a long term (five-year) programme of transport

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 18 of 95

capital funding to deliver projects in the most efficient and effective way whilst maximising the public sector's considerable purchasing power.

TfW state that:

'We are ready to grow to meet the above challenges and to take on further responsibilities in supporting the Welsh Government's commitment that, wherever an acceptable business case can be made, current supply arrangements will be consolidated into Transport for Wales.'

TfW How we're developing Metro, Promotional Brochure (2021)

As part of the development of the Metro proposals TfW have published a document as to how the metro concept will be achieved and the key objectives in relation to it. Rail and bus services will be play a key part in encouraging modal shift with customers able to expect a modern service that offers:

- Quicker journeys
- More capacity
- More frequent services
- More reliable services
- More accessible services
- More affordable travel
- Integrated travel options (train, bus, walking and cycling)
- Greener services

The three metro networks being developed in Wales are set out as follows:

- North Wales Metro
- South Wales Metro
- Swansea Bay and West Wales Metro

The South Wales Mainline Programme is also in development (which complements the South Wales Metro, and Swansea Bay and West Wales Metro networks) and the Metro Central programme is underway to enhance Cardiff Central station.

North Wales Metro

The key priorities for the TfW North Wales metro that are directly relatable to the Amlwch to Gaerwen RYR proposals are summarised as follows:

- Potential new stations and interchange/station upgrades, including Deeside Industrial Park, Bangor, Shotton, Greenfield, Broughton, Wrexham South and Wrexham North.
- Bus route and network design improvements and rail integration at key hubs across North Wales.
- Exploring rail innovation that can support new and/or reopened lines such as Amlwch.

The potential for additional connections between Amlwch, Gaerwen and Bangor, with new stations at Gaerwen and Amlwch is identified as part of the long-term strategy for the metro proposals.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 19 of 95

Figure 8 – North Wales Metro

NATIONAL (UK)

Levelling Up the UK, HM Government

The Levelling Up policy document recognises that opportunity is not spread equally across the UK, and that geographic inequality prevails. Levelling Up is a mission to challenge and change that unfairness, producing sustained rises in living standards and wellbeing.

As part of Levelling Up, Local Authorities are categorised into levels of prioritisation based on, measuring places' need for investment with consideration to the need for economic recovery and growth and the need for regeneration. Category 1 is the highest level of prioritisation for investment and category 3 the lowest. The Isle of Anglesey falls into category 2 while Gwynedd sits in category 1.

A series of missions and focus areas are set out within the Levelling Up agenda (**Table 5**). These missions cover boosting productivity, spreading opportunities and public services and restoring a sense of community. The scheme improves access to public transport and transport connectivity thus improving access to key employment and education opportunities, aligning with the Levelling Up focus areas of boosting productivity and opportunities to education. This scheme also directly helps achieve the Levelling Up mission of:

"By 2030, local public transport connectivity across the country will be significantly closer to the standards of London, with improved services, simpler fares and integrated ticketing".

Additionally, by increasing rural connectivity the scheme aligns with improving a sense of community and pride of place as connectivity between communities is improved. By aligning with a number of the Levelling Up focus areas and missions the scheme, as such, aids in improving the relevant local authority's category level of prioritisation.

This policy also ties in with the social and economic case for change, identified further below.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
CONFIDENTIAL | WSP
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
October 2022
Transport for Wales
Page 20 of 95

Table 5 – Levelling Up Ambitious Missions

LUF 12 Ambitious Missions	
Boost productivity, pay, jobs and living standards by growing the private sector, especially in those places where they are lagging	
Living standards	By 2030, pay, employment and productivity will have risen in every area of the UK, with each containing a globally competitive city, and the gap between the top performing and other areas closing.
Research & Development	By 2030, domestic public investment in R&D outside the Greater South East will increase by at least 40%, and over the Spending Review period by at least one third. This additional government funding will seek to leverage at least twice as much private sector investment over the long term to stimulate innovation and productivity growth.
Transport Infrastructure	By 2030, local public transport connectivity across the country will be significantly closer to the standards of London, with improved services, simpler fares and integrated ticketing.
Digital Connectivity	By 2030, the UK will have nationwide gigabit-capable broadband and 4G coverage, with 5G coverage for the majority of the population.
Spread opportunities and improve public services, especially in those places where they are weakest.	
Education	By 2030, the number of primary school children achieving the expected standard in reading, writing and maths will have significantly increased. In England, this will mean 90% of children will achieve the expected standard, and the percentage of children meeting the expected standard in the worst performing areas will have increased by over a third.
Skills	By 2030, the number of people successfully completing high-quality skills training will have significantly increased in every area of the UK. In England, this will lead to 200,000 more people successfully completing high-quality skills training annually, driven by 80,000 more people completing courses in the lowest skilled areas.
Health	By 2030, the gap in Healthy Life Expectancy (HLE) between local areas where it is highest and lowest will have narrowed, and by 2035 HLE will rise by five years.
Well-being	By 2030, well-being will have improved in every area of the UK, with the gap between top performing and other areas closing.
Restore a sense of community, local pride and belonging, especially in those places where they have been lost.	
Pride in place	By 2030, pride in place, such as people's satisfaction with their town centre and engagement in local culture and community, will have risen in every area of the UK, with the gap between top performing and other areas closing.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 21 of 95

Housing	By 2030, renters will have a secure path to ownership with the number of first-time buyers increasing in all areas; and the government's ambition is for the number of non-decent rented homes to have fallen by 50%, with the biggest improvements in the lowest performing areas
Crime	By 2030, homicide, serious violence and neighbourhood crime will have fallen, focused on the worst affected areas.
Empower local leaders and communities, especially in those places lacking local agency	
Local Leadership	By 2030, every part of England that wants one will have a devolution deal with powers at or approaching the highest level of devolution and a simplified, long-term funding settlement.

Net Zero Strategy: Build Back Greener, HM Government

The Net Zero Strategy confirmed the steps that the UK called for at COP26, the global climate change conference held in Glasgow in November 2021. This included a ten-point plan to reach net zero by 2050 across key industries and sectors.

Decarbonising Transport: A Better, Greener Britain, Department for Transport

The Transport Decarbonisation Plan sets out how the Government will work with Local Government and other key stakeholders to reduce transport emissions across all modes and achieve net zero by 2050.

The Plan sets out five strategic priorities to decarbonise the transport system:

1.   Accelerating modal shift to public and active transport;

2.   Decarbonising road transport;

3.   Decarbonising how we get our goods;

4.   Place-based solutions; and

5.   UK as a hub for green transport, technology, and innovation.

This project will deliver against Priority 1 by making public transport more attractive therefore increasing uptake. The scheme will contribute towards providing a cohesive and integrated public transport network, designed for the needs of passengers; this will empower users to make sustainable end-to-end journeys and enable inclusive mobility, all while reducing the propensity to drive and thereby reducing emissions from private vehicle trips.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 22 of 95

Moving North Wales Forward: Our Vision for North Wales and the North East Wales Metro, Welsh Government

The Moving North Wales Forward Strategy Report sets out 5 priority areas for the transport system to improve. The priority areas are:

- **Sustainable:** encouraging the use of sustainable fuels and materials, reducing emissions and improving air quality, and being responsive to technological advances

- **Connected:** national and international connections, including to key centres, services, and onward travel

- **Equitable & Adaptable:** accessible to all, meeting the needs of rural and urban Wales, high quality and affordable

- **Resilient:** safe, efficient and stable network, responsive to climate change, reduced and reliable journey times

- **Integrated:** integrated transport services, including multi-modal ticketing, and reliable travel information communication for all modes.

In addition, the report outlines the existing schemes in the development pipeline. The rail and integrated transport schemes are shown with the description of the rail network further below.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 23 of 95

LOCAL

The Local Authorities of Wales have all produced their own well-being goals which extend from the Well-being of Future Generations Act. **Figure 9** below presents the local well-being goals of each authority with which the study corridor interacts.

Figure 9 – Local Well-being Goals

> **Gwynedd**
>
> Communities which thrive and are prosperous in the long term, prioritising:
> - The Welsh language
> - Homes for local people
> - The effect of poverty on the well-being of our communities
> - The effect of climate change on the well-being of our communities
>
> Healthy and independent residents with a good quality of life, prioritising:
> - Health and care of adults
> - The welfare and achievement of children and young people

> **Isle of Anglesey**
>
> Ensure that the people of Anglesey can thrive and realise their long term potential.
>
> Support vulnerable adults and families to keep them safe, healthy and as independent as possible.
>
> Work in partnership with our communities to ensure that they can cope effectively with change and developments whilst protecting our natural environment.

Each of the authorities refer to varying degrees the importance of protecting the environment and reducing carbon footprint, signifying an overarching aspiration to reduce dependency on the private car. In addition, many of these well-being goals refer to being connected and having access to educational and employment opportunities that can help the Welsh economy grow.

The Amlwch and Gwynedd Joint Local Development Plan has been developed with the following strategic objectives relevant to the development of improved transport connectivity across North Wales:

- Theme 1: Support and create safe, healthy, distinctive and vibrant communities

- Theme 2: Sustainable Living including high standards in terms of accessibility.

- Theme 3: Support growth and regeneration that will transform the local economy under the umbrella of Anglesey Energy Island Programme and other strategies and plans, building on those elements of its unique economic profile that are identified as being of regional and national significance (including supporting Amlwch and Llangefni Town Centres).

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE   CONFIDENTIAL | WSP
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01   October 2022
Transport for Wales   Page 24 of 95

Primary development affecting the study area is the development of the Wylfa Nuclear Power Station. This is subject to its own policy within the LDP (SO9) and includes both the decommissioning and construction of a new nuclear power station.

To support the development of the regional economy and housing markets between Amlwch and Bangor there are a number of proposals set out in the LDP for both the creation of new and the retainment of employment and residential areas.

A list of proposals within or directly affecting the study area, as contained within the LDP, are set out in **Table 6** below:

Table 6 – LDP Proposals

Category	Location	Site Ref	Site	Size
Safeguarded Employment	Llangefni	C9	Bryn Cefni Industrial Estate Llangefni	59.5 ha
	Amlwch	C25	Former Shell Land	19.3 ha
	Amlwch	C26	Llwyn Onn Industrial Estate	15 ha
	Gaerwen	C30	Gaerwen Industrial Estate	39.5 ha
Allocated Employment	Llangefni	C32	Land to the north of Lledwigan Farm	20.6 ha
	Llangefni	C33	Land in the Creamery	4.9 ha
	Gaerwen	C34	Gaerwen Industrial Estate	20.3 ha
	Gaerwen	C35	Menai Science Park	7.6 ha
Reserve Employment	Gaerwen	C(wg)38	Extension to Gaerwen Industrial Estate	20 ha
	Rhosgoch	C(wg)39	Former site of Shell	82.2 ha
Housing Allocations (Sub-regional and urban service centres)	Amlwch	T5	Land near Maes Mona	50 dwellings
	Amlwch	T6	Land near Lon Bach	73 dwellings
	Amlwch	T7	Land at Madyn Farm	152 dwellings
	Amlwch	T8	Land near Rheinwas Field	40 dwellings
	Amlwch	T9	Land at Tan-y-Bryn	58 dwellings
	Llangefni	T17	Land near Ty Hen	154 dwellings
	Llangefni	T18	Former Ysgol y Bont	41 dwellings
	Llangefni	T19	Ty'n Coed	144 dwellings
	Llangefni	T20	Land near Ysgol y Graig	38 dwellings

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 25 of 95

	Llangefni	T21	Land near Bro Tudur	59 dwellings
	Llangefni	T22	Land near Coleg Menai	49 dwellings
Housing Allocations (local service centres)	Benllech	T32	Adjoining Wendon Café	12 dwellings
	Cemaes	T34	Land to rear of Holyhead Road	60 dwellings
	Llanfair Pwllgwyngwll	T35	Land near Bryn Eira	30 dwellings
	Llanfair Pwllgwyngwll	T36	Land near Penmynydd Road	10 dwellings
	Menai Bridge	T37	Ty Mawr	20 dwellings
	Menai Bridge	T38	Tyddyn Mostyn	40 dwellings
	Menai Bridge	T39	Land near Lon Gamfa	14 dwellings
Housing Allocations (Service Vllages)	Llannerch-y-medd	T56	Land near Tyn y Ffynnon	17 dwellings
Windfall	Amlwch	N/A	N/A	142 dwellings
	Llangefni	N/A	N/A	176 dwellings
	Cemaes	N/A	N/A	18 dwellings
	Llanfair Pwllgwyngwll	N/A	N/A	35 dwellings
	Menai Bridge	N/A	N/A	20 dwellings
	Llannerch-y-medd	N/A	N/A	22 dwellings

North Anglesey Economic Regeneration Plan[9]

Isle of Anglesey County Council have published an Economic Regeneration Plan for North Anglesey. The priority themes of this plan are shown in **Figure 10**:

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 26 of 95

Figure 10 – Priority Themes
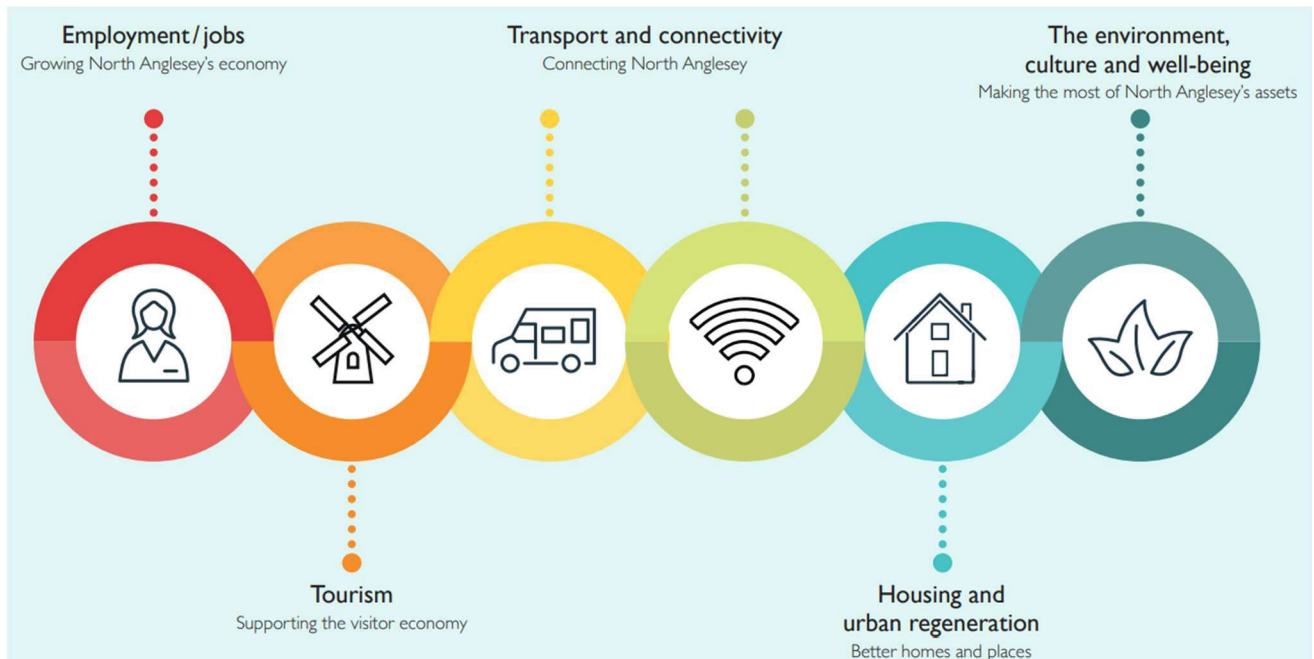
Included in the priority themes is transport and connectivity, which details the historic railway line that lies unused. The plan states an intention to promote public transport provision as well as improvements to cycle routes and footpaths, to ensure that residents in North Anglesey are connected to the core services particularly in Bangor, Llangefni, and Holyhead. Furthermore, the plan notes the important role that transport connectivity has to play in supporting the visitor economy.

Destination Anglesey Management Plan[10]

The Destination Anglesey Management Plan sets out a comprehensive analysis of the state of tourism on the Isle of Anglesey, highlighting the offer. The aim of the Plan is to promote and develop the Isle of Anglesey as a place to visit, live, work and invest; an island that cares for its natural assets and welcomes visitors.

A key component of this plan is the reference made between how transport infrastructure can simultaneously support the visitor economy alongside local people, as a "cross-cutting service". Therefore, creating reliable transport hubs is a key priority.

Policy Summary

The general principles of the policies are the promotion of sustainable means of travel over single-occupancy car use in the development of future infrastructure and improvement schemes, which aligns with the Sustainable Transport Hierarchy as set out in Llwybr Newydd: The Wales Transport Strategy.

---

[10] https://www.anglesey.gov.wales/documents/Docs-en/Business/Destination-Anglesey/Destination-Anglesey-Management-Plan-2016-2020.pdf

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 27 of 95

The policies also look at the continued delivery of growth and prosperity within a national, regional and local context. These policies have been taken into account during the process of objective formulation to ensure alignment.

The Labour / Plaid Deal and the TfW policies make specific reference to the development of improved transport connections between North and South Wales along the western coast. The case for devolution also sets out the ambition for the development of a rail corridor to provide improved North – South connections.

The establishment of objectives, identification of interventions and appraisal carried out within the WelTAG Stage One study are compared with the key objectives set out in the major policy documents (Llwybr Newydd: the Wales Transport Strategy, and the Well-being of Future Generations Act).

Overall, the policy context within which this scheme has been developed represents an opportunity: the proposed public transport corridor is well-placed to respond to the aspirations and ambitions of policy at a local, regional, and national level.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 28 of 95

2.2.2 SOCIAL & CULTURAL CONTEXT

Population Structure

The 2021 Census release demonstrates that there has been a significant rise in the aging population on both the Isle of Anglesey, particularly in the ages between 70 and 79, and within Gwynedd, particularly in the ages between 70 to 74, and over 90. This is generally imitative of the wider trend across Wales, which recorded more than one in five people (21.6%) to be aged 65 or older - a higher percentage than ever before.

There has been a fall in population that are of working age within both the Isle of Anglesey and Gwynedd, a 7.9% and 6.8% decrease respectively. This loss occurs due to natural aging and out-migration. A breakdown of population change is presented in **Figure 11** below.

Figure 11 – Population Change (%) by Age Group, 2011 to 2021
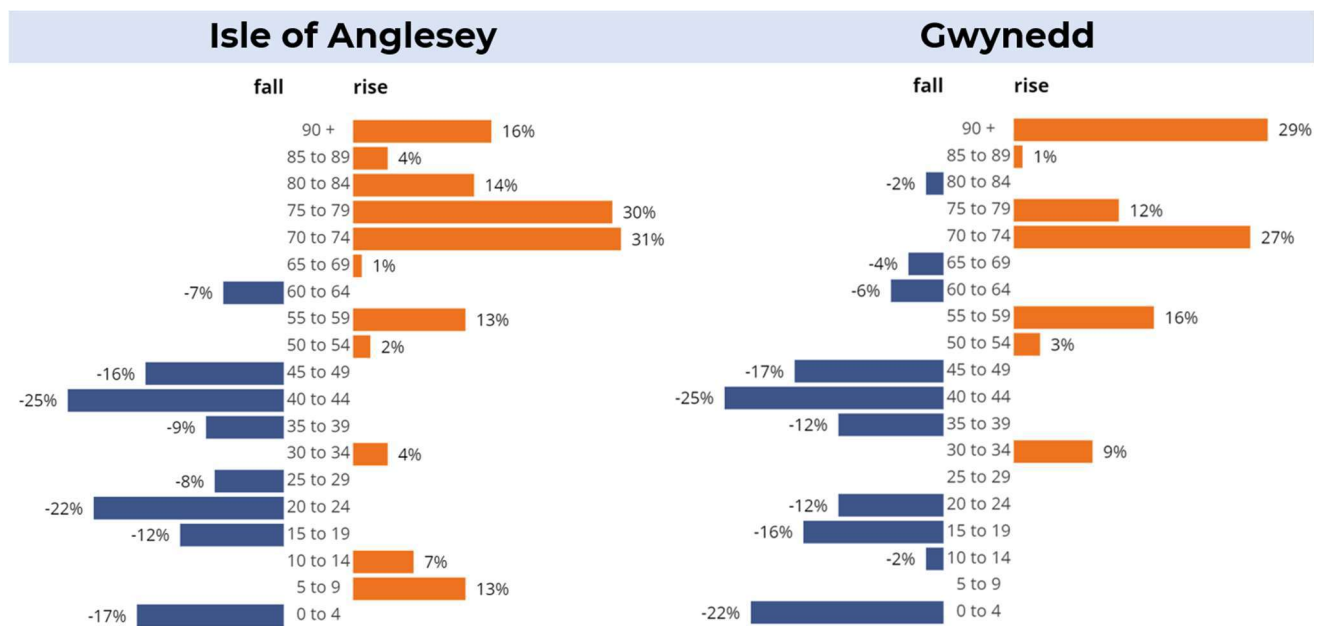
2021 Census data is not yet disaggregated further than by local authority, however the pattern of population change experienced in Anglesey and Gwynedd suggests a need to consider:

▪   What role can transport play in reducing out-migration of young talent; and

▪   How the aging population can be supported through transport infrastructure.

Deprivation

The Welsh Index of Multiple Deprivation (WIMD) provides a measure of relative deprivation for small areas of Wales. Deprivation is measured by the following indicators: income, employment, health, education, access to services, community safety, physical environment, and housing.

The WIMD ranks each Lower Super Output Area (LSOA) in Wales from 1 (most deprived) to 1,909 (least deprived). This is reported in corresponding colour quintiles from dark blue (most deprived) to

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 29 of 95

light blue (least deprived). The most recent WIMD report was published in 2019, providing an up-to-date review of access to opportunities and resources across Wales.

The study corridor has low levels of overall deprivation, which is in keeping with Wales as a whole (**Figure 12**).

Figure 12 – WIMD Overall Deprivation
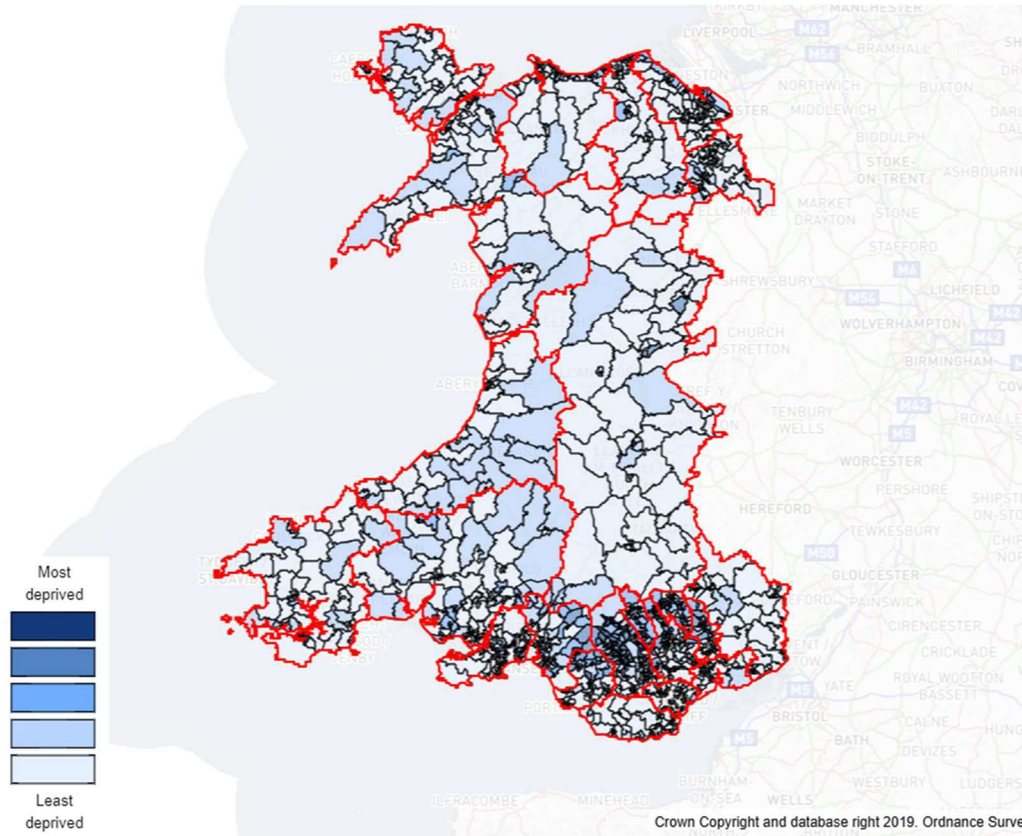
WIMD offers an overall analysis of deprivation however it is important to consider the factors in isolation too.

Access to Services

Access to Services is one of the factors assessed by WIMD. The purpose of this is to capture deprivation as a result of a household's inability to access a range of services considered necessary for day-to-day living, both physically and online. Indicators include the average of public and private travel times to food shops, GP surgeries, schools, post offices, public libraries, pharmacies, petrol stations (private transport only), and sports facilities. The domain also includes a new digital indicator of the percentage of unavailability of broadband at 30Mb/s.

Much of the study corridor experiences access to services deprivation, as shown in **Figure 13**. This is representative of Wales as a whole.

Within the corridor, Amlwch Port is in the 30-50% most deprived wards, while Amlwch Rural experineces higher levels of deprivation in terms of access to services, sitting in 10-20% most

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 30 of 95

deprived. Llanfihangel Ysgeifiog, the LSOA in which Gaerwen sits, falls within the 20-30% most deprived and Bangor in the 30-50% most deprived. Llangefni sits within three LSOAs; Cefni and Cygnar present lower levels of deprivation falling into the category of 50% least deprived, whereas Tudur lies within the other end of the spectrum in the 10-20% most deprived.

This presents an opportunity to improve access to services through the provision of a connected public transport network, aligning with the aim of the Restoring Your Railway Fund.

Figure 13 – WIMD Access to Services Deprivation
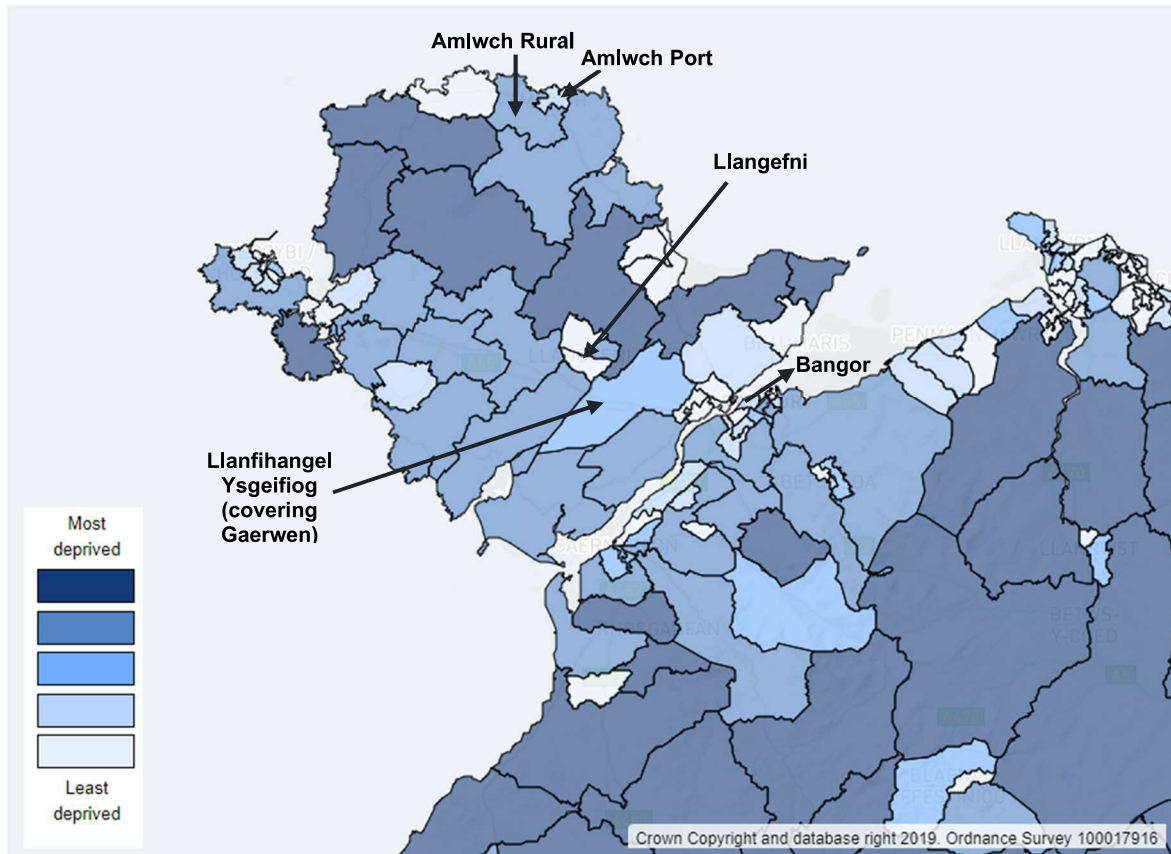
Trip Purpose

Journeys to Work

Figure 14 shows the method of travel to work used by commuters across the corridor based on data from the 2011 Census. Methods of commuting for the entire population of Wales are also shown for comparison.

The graph shows private vehicles as the predominantly preferred mode of transport for commuting across the regions within the corridor, which is in line with Wales overall. However, Bangor shows travel by foot as the most popular method of travel for work, followed closely by private vehicle.

Brynteg experiences the highest proportion of commuting by private car (90%), followed by Llanfihangel Ysgeifiog (the LSOA covering Gaerwen) (89%), both of which are higher than the Wales average.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 31 of 95

![WSP logo]

Bangor has the highest portion of commuting by cycling, walking, and bus and the lowest portion of commuting by private vehicle (42%). Llanfihangel Ysgeifiog presents the lowest portion of travel by train (0.3%), bus (3%), foot (7%) and other, with each category lower than the Wales average.

Bangor and Moelfre both present the highest portion of commuting by train at 3%, 1% higher than the Wales average. Llangefni, a key point within the study corridor also presents a similar trend with car presenting the highest proportion of modal share (79%) followed by walking (16%) and train being the lowest (<1%).

It is important to note that travelling by train within the corridor is the mode with lowest portion of people and is lower than Wales as a whole for majority of the corridor (Bangor and Moelfre being the exception). This suggests that rail accessibility is restricted in these areas along the corridor.

Figure 14 – Journey to Work Modal Share
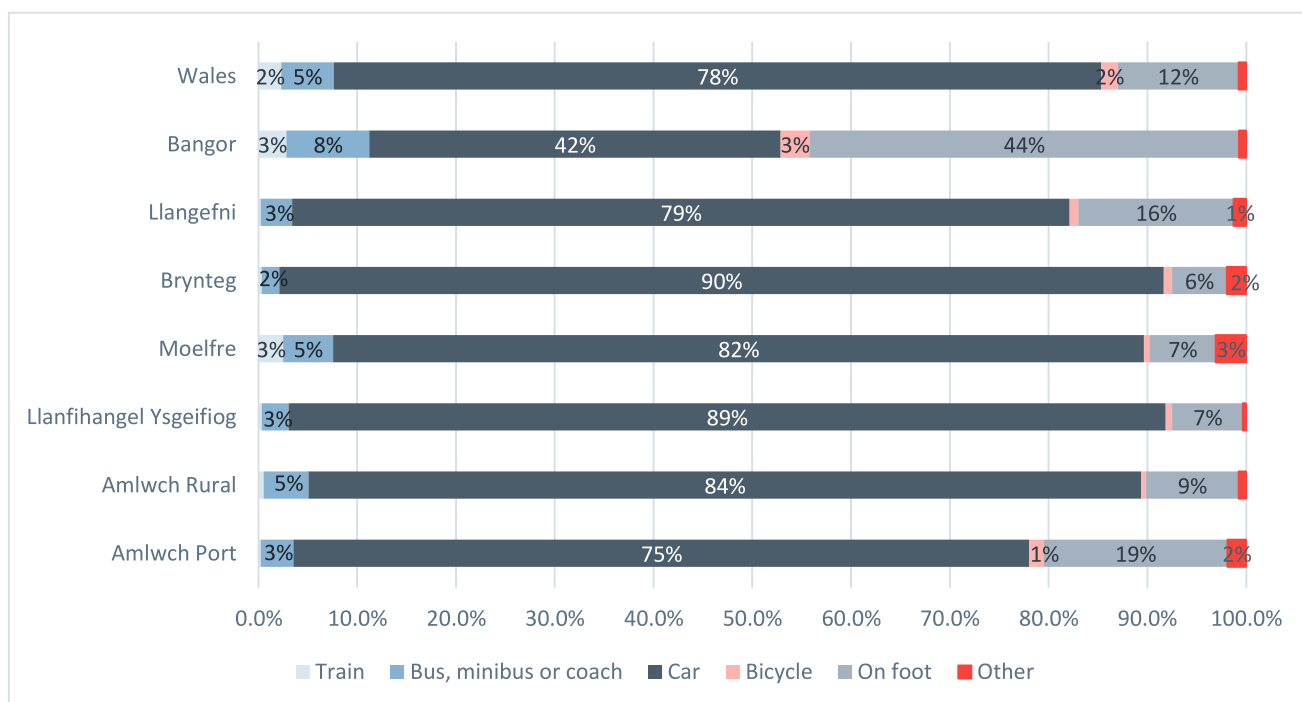
Note: values under 1% omitted from the graph for legibility

Journeys to Education

The National Transport Survey found that 15% of trips made in Gwynedd and the Isle of Anglesey were for educational purposes (in the base year of 2011). The dominant mode of travel utilised for these trips is the private car, representing 55% of trips for the purpose of education, with the majority being passengers.

This is followed by walking, at 30.4%. Bus is used for 12.5% of education-based trips, whilst rail is utilised for only 1% of education-based trips across Gwynedd and Anglesey. This highlights a key area of opportunity, whereby an improved public transport corridor could improve access to opportunities whilst also reducing reliance on the private car.

A major educational site is Bangor University, which has around 10,000 students enrolled. It is currently accessible by train (Bangor Train Station is only a 12-minute walk away) and bus (served by 20 bus routes).

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 32 of 95

Physical Activity

Levels of physical activity are influenced by the physical and social environment. Physical activity significantly contributes to increased well-being and general health levels, leading to the reduction of risk to many chronic health conditions. The benefits of increasing physical activity levels have also been shown to deliver cost savings for health and social care services. Low physical activity levels are associated with negative health impacts.

The provision and use of public transport encourages more physical activity when compared to private vehicles. This is because the use of public transport tends to include walking to and from rail stations/bus stops[11]. As such, it is important to consider physical activity within the study area as this could be improved indirectly through the proposals of this SOC.

Figure 15 below illustrates that the population within the Isle of Anglesey (which constitutes a large portion of the corridor) is typically slightly more physically active compared to the Wales average and to Gwynedd. 55% of the population in the Isle of Anglesey are active for more than 150 minutes per week.

Figure 15 – Level of Physical Activity
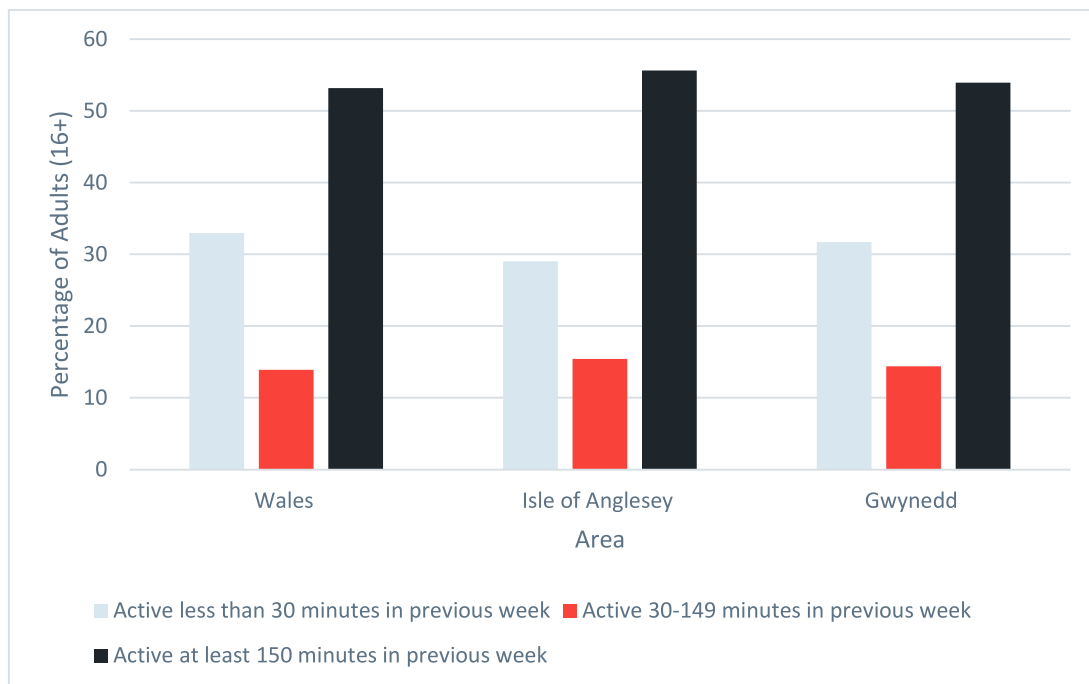
WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 33 of 95

Culture & The Welsh Language

The Welsh Transport Strategy has a policy entitled *"Good for culture and the Welsh language"* and stipulates an aspiration for the transport system to be one that supports the Welsh language, enables more people to use sustainable transport to get to arts, sports and cultural activities, and protects and enhances the historic environment.

The Visitor Economy in Wales supports jobs for 9.5% of the total workforce, and 6% of total GVA[12]. The majority of the income from tourism comes from domestic visits, and Welsh Government highlight the risks associated with over-reliance on the domestic market and have an aspiration to increase spend from international tourism to match that of other regions within the UK.

North Wales was recognised by the Lonely Planet Guide as one of the world's top regions to visit in 2017, due to its landscapes, heritage, sports and cultural facilities. Tourism annual spend for North Wales exceeds £1.2 billion, of which £659 million is from domestic overnight visitors, £98 million from international visitors, and £481 million from tourism day visits[13].

The Isle of Anglesey and Bangor are prime tourism locations within North Wales. Access to these attractions by public transport is particularly important given the context of the Wales on Rails initiative: promoting tourism by using public transport throughout Wales, encouraging safe, sustainable and scenic adventures[14].

Natural Environment

Much of the Anglesey coastline (220 square miles) has been declared as an Area of Outstanding Natural Beauty (AONB).

Bangor is situated in close proximity to Snowdonia National Park, providing a good base for visitors to explore the vast countryside[15].

Heritage

With regard to heritage, there is much to explore on Anglesey and in Bangor. In Anglesey this includes the Amlwch Copper Mine, Barclodiad Y Gawres ancient burial mound, and Beaumaris Castle. Bangor, an ancient town, hosts a range of notable historic buildings including St. Deiniol a 12th century cathedral and Penrhyn Castle. Connecting the two areas is the Thomas Telford Suspension Bridge.

Welsh Language

The Welsh language and culture play an important role in the social, cultural and economic life of the residents and visitors. **Figure 16** shows the distribution of Welsh speakers across Wales.

---

[12] Welcome to Wales: Priorities for the Visitor Economy (2020-2025)
[13] Moving North Wales Forward, Welsh Government (2017)
[14] https://walesonrails.co.uk/
[15] http://www.visitoruk.com/Bangor/

Figure 16 – Welsh Language [16]
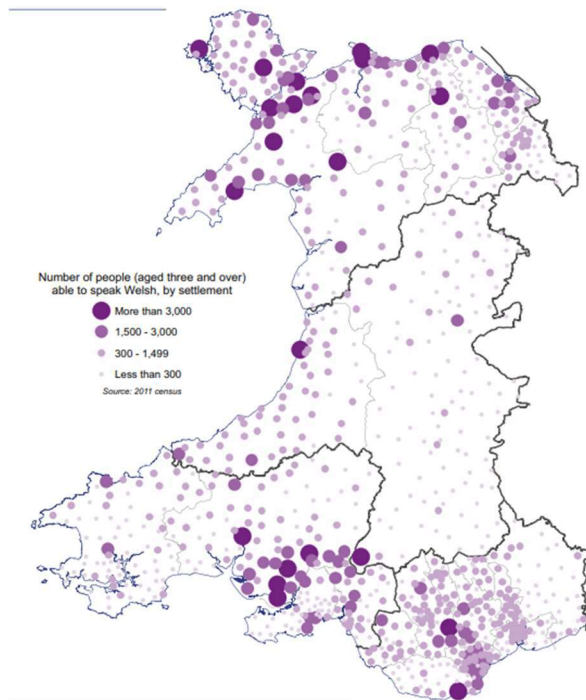
Table 7 highlights the Welsh language abilities across the study corridor, Llangefni experiences the highest level of fluent Welsh speakers (66%), followed by Llanfihangel Ysgeifiog. Bangor presents the lowest level with only 16% of the population fluent in Welsh and 76% presenting no skills in Welsh.

Table 7 – Welsh Language Abilities

	Amlwch Port	Amlwch Rural	Moelfre	Brynteg (covering Benllech)	Llanfihangel Ysgeifiog (covering Gaerwen)	Llangefni [17]	Bangor
No skills in Welsh	24%	37%	39%	42%	18%	13%	76%
Can speak, read, and write in Welsh	49%	43%	42%	39%	62%	66%	16%
Other	27%	21%	18%	18%	20%	21%	8%

---

[16] Update to Future Wales – The National Plan 2040
[17] Average taken of the 3 LSOAs covering Llangefni (Cefni, Cygnar and Tudur)

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 35 of 95

The Well-being of Future Generations of Wales (2015) Act has a well-being goal of '*A Wales of vibrant culture and thriving Welsh language*', with one million Welsh speakers by 2050. This well-being goal will be achieved through '*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*'.

Improving transport access allows people to travel to places to learn Welsh and thus aid achieving this goal.

Challenges & Opportunities

- There is an aging population across the study area. This creates an opportunity to reduce outward migration through improved transport provision, and simultaneously to ensure that as people age, they are well-served by public transport.
- Llwybr Newydd: the Welsh Transport Strategy highlights the significant role that transport has to play in supporting culture and Welsh language across North Wales. This has been substantiated by an interrogation into the visitor economy, which contributes £1.2 billion in annual spend in North Wales. This key component of the regional economy can be supported by improving access by public transport to some of the region's most attractive visitor locations.
- Access to sports and leisure by sustainable transport is identified as a key goal in the Welsh Transport Strategy. As well as increasing the international support of the visitor economy which is currently predominantly supported by domestic trips. Improving the public transport access to key visitor locations and attractions is key in addressing these goals.
- Commuting to places of employment and education is dominated by private vehicle use, with rail experiencing the lowest numbers. This presents a key opportunity to reduce reliance on private vehicles and enhancing access to education and employment opportunities by improving the public transport network.
- Access to services deprivation is high along the corridor, improved public transport access and connectivity can support in reducing the deprivation levels associated with accessing key services.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 36 of 95

2.2.3 ECONOMIC CONTEXT

Economic Summary

An economic summary for Anglesey and Gwynedd, compared to Wales overall is shown in **Table 8** below. This data indicates that economic activity within Gwynedd is higher than Anglesey, but both authorities lag behind the average for Wales in terms of gross weekly pay per person and GVA per person. In turn, Wales lags behind the UK averages.

Table 8 – Economic Summary for Anglesey, Gwynedd, Wales and the UK

Economic Summary	Isle of Anglesey	Gwynedd	Wales	UK
Population (2020) [2]	70,400	125,200	3,169,600	67,081,234
Population Density (people per sq/km) (mid-2020) [3]	98.9	49.4	152.9	276
Average Gross Weekly Pay Per Person (2021) [1]	£549.50	£562.00	£562.80	£610.70
Gross Value-Added Total (million) (2020) [1]	£1,048	£2,327	£66,591	£1,938,252
Gross Value Added per head (2020) [1]	£14,878	£18,591	£21,010	£28,894
Active Business Count – Local Units (2021) [2]	3,155	6,480	129,295	2,765,150
Total Employee Jobs (2020) [3]	20,000	50,000	1,259,000	30,300,000

1 – StatsWales (https://statswales.gov.wales/Catalogue)

2 – nomis (www.nomisweb.co.uk)

3 – ONS (https://www.ons.gov.uk)

Gross Value Added (GVA) estimates the total contribution to the economy from an area and is very similar to Gross Domestic Product (GDP). Gwynedd presented with the higher total GVA of the two counties in 2020 at £2,3217m and the Isle of Anglesey £1,048, which were approximately 3.5% and 1.6%, respectively, of the total Wales GVA. Per head, the GVA across the study corridor is significantly lower than the Wales average and the UK.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 37 of 95

Anglesey consistently lags behind in economic productivity when compared to the North Wales region and Wales as a whole, as shown in **Figure 17**[18].

Figure 17 – GVA per head 1998 - 2020
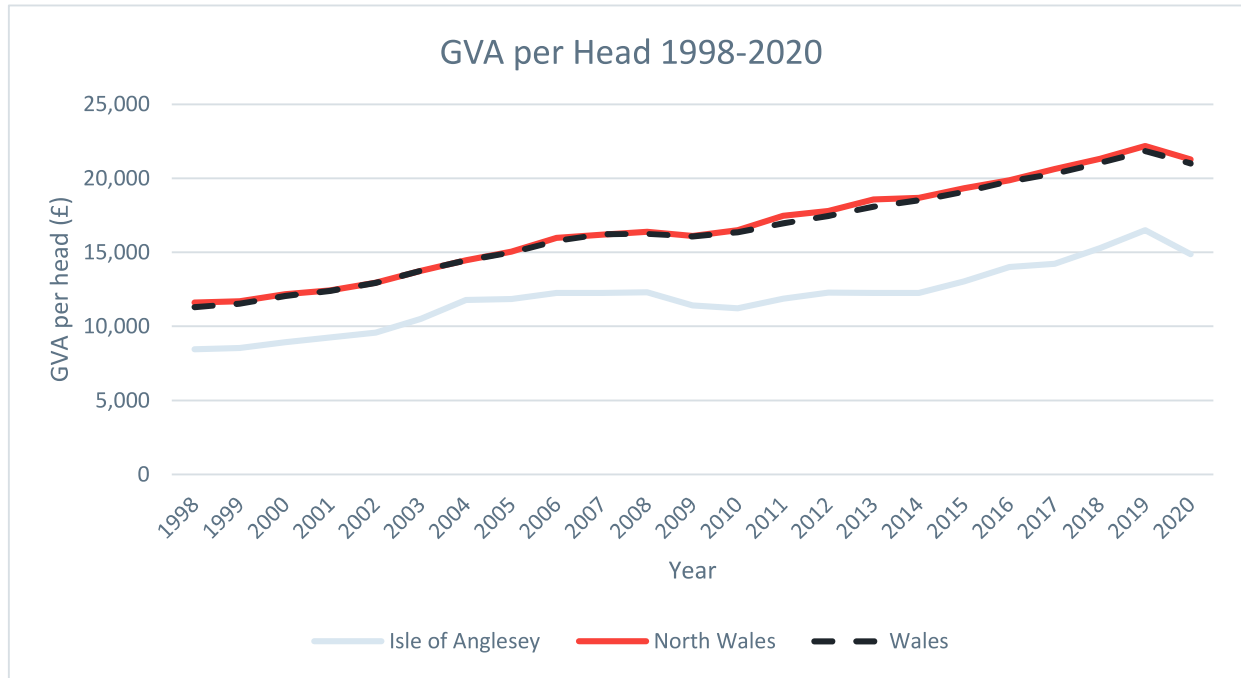
Two spatial factors helping to explain lower GDP and wages in Wales have been identified and accepted by a number of studies into the Welsh economy:

▪ The absence of a major agglomeration – North Wales does not have a significant urban centre, and the population is largely distributed across the coast in a number of smaller settlements with populations of less than 30,000,

▪ Wales' relative peripherality – Controlling for other factors, a 10% increase in the minimum travel time to Greater Manchester / Merseyside (or London), leads to a 0.6% reduction in firm productivity. This is particularly pertinent in relation to the study area, which has limited existing public transport infrastructure.[19]

Employment

In 2021 there were approximately 6,480 active businesses within Gwynedd, approximately 5% of the Wales total and the Isle of Anglesey represented 2.4%. The total number of employee jobs in Gwynedd was approximately 50,000 in 2020, 3.4% of the Wales total, whereas the Isle of Anglesey had approximately 20,000 total employee numbers, 1.4% of the Wales average.

Table 9 lists the total number of jobs by industry within the representative counties.

---

[18] https://statswales.gov.wales/
[19] The Rail Network in Wales: the Case for Investment., Professor Mark Barry., 2018.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 38 of 95

Table 9 – Total Employment by Sector

Number of jobs by industry	Isle of Anglesey	Gwynedd	Wales
Production	140	305	7,625
Construction	365	735	15,230
Motor Trades	95	155	4,040
Wholesale	70	115	3,510
Retail	185	455	9,345
Transport & Storage	100	155	6,570
Accommodation and Food Services	310	730	10,170
Information and Communication	90	185	5,310
Finance and Insurance	15	30	1,520
Property	60	135	3,605
Professional, Scientific, and Technical	250	425	13,705
Business Administration and support services	185	375	10,320
Education	35	80	1,540
Health	105	175	4,580
Arts, Entertainment, recreation and other services	150	325	7,375

Source: STATSWALES 2020

Both the Isle of Anglesey and Gwynedd are reported to have construction as the largest employer, which is in keeping with Wales as a whole. Accommodation and food services employ the second largest number of people in both counties. This varies from Wales as a whole, where professional, scientific, and technical industry jobs are the second greatest in terms of job numbers.

Finance and insurance is the smallest employment sector in the Isle of Anglesey, Gwynedd and across Wales as a whole, in terms of job numbers.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 39 of 95

North Wales Economy

The North Wales Growth Deal – Overarching Business Plan 2020-25 has been developed to deliver long-lasting positive investment and change that will sustain economic and employment growth for the foreseeable future and provides background information to the North Wales Economic Ambition Board's Growth Vision for the Economy of North Wales in 2016.

This Overarching Business Plan (OBP) is the basis on which Partners are entering into the North Wales Growth Deal (hereafter referred to as the Growth Deal). The OBP provides an overview of the deal including the programmes and projects to be delivered. It sets out what the Growth Deal will deliver in terms of outputs and benefits for the region, the financial contributions of each partner and the governance and performance management arrangements to ensure the Growth Deal is delivered.

Despite there being a number of opportunities provided by the Growth Plan, North Wales continues to lag behind the rest of the UK in a number of areas which are outlined below:

Low and Lagging Productivity: Addressing this disparity is an important priority for the Growth Deal. There remains a persistent and widening productivity gap on the UK. GVA per person in the Isle of Anglesey and Gwynedd (the relevant counties in North Wales) averages 39% below the UK average at £17,925 per annum. If London and the South-East are removed, this gap is reduced but remains at 26%[20].

Low Paying Jobs: A portion of the productivity gap is accounted for by the sectoral structure of the North Wales economy, with some areas particularly reliant on relatively low paid sectors including retail (10% in Gwynedd and 9% in the Isle of Anglesey) and hospitality (17% in Gwynedd and 14% in the Isle of Anglesey). At the same time, there are areas of strength, with 14% (Gwynedd) and 16% (the Isle of Anglesey) of people employed in high value sectors, defined as information and communication; and professional, scientific, and technical activities.

Ageing Labour Market: There is an ageing population in the region and a net outward migration of talent from the region. Whilst the population of North Wales is expected to increase to 722,317 by 2039, the share of the population aged 65 or above is expected to increase from 23.6% to 29.8%. This means a smaller share of working age people, which may place pressures on the supply of skills.

Lack of Modern Workspaces: Recent research has identified a lack of modern industrial and employment space across the region. Whilst there are business parks located along the study corridor with land available for development, planning restrictions and plot sizes together with the lack of development funding and property values that are lower than build costs, has meant these have seen limited new development since 2008. A recent review by Jones Lang LaSalle (JLL) for the Welsh Government found that there was relatively weak and fragmented network of readily developable strategic sites, capable of supporting both local business growth and inward investment. A separate research report prepared for the Welsh Government and completed in March 2020 (by the company SQW) confirms the conclusions of the JLL report.

Slowing Digital Connectivity: With the emergence of commercially available fibre optic technology towards the end of the 20th century, the widening of the 'digital divide' now has the potential to

---

[20] Office for National Statistics, 2019

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 40 of 95

increase exponentially. For example, in terms of ultrafast broadband (>100Mbps), only 4.9% premises in Denbighshire benefit from this, compared to 49% premises in North West England. All four counties in North West Wales rank in the bottom 25% of UK areas for Superfast (>30Mbps) broadband coverage.

Uncertainty after the Pandemic: Covid-19 has had an immense economic impact on North Wales as in other parts of the UK and globally. The Economic Ambition Board works closely with the six local authorities, UK and Welsh Governments and private sector representatives to coordinate the regional response to economic recovery. The longer-term effects of Covid-19 on the regional economy at this stage is still unknown.

Key Employment Sites

The following are large employers within North Wales, presenting key employment opportunities across the study corridor.

Bangor University, situated in the county of Gwynedd, provides over 2000 jobs, with approximately 650 of them teaching jobs. Alongside this, the University hosts 12,000 students per year, offering 300 undergraduate and 100 postgraduate courses.

Ysbyty Gwynedd is the North West Wales NHS Trust's largest hospital, located in Bangor, off the A55. The Trust provides a range of health services and is responsible for 2 acute hospitals, 9 community hospitals, 2 mental health hospitals and 3 bed support units. The area served covers the counties of Gwynedd, Anglesey and parts of Conwy. The Trust is one of North Wales's largest employers, employing over 5000 staff members.

Wylfa, a decommissioned nuclear power station is located west of Cemaes Bay on the Isle of Anglesey, between Amlwch and Holyhead.

A second plant named Wylfa Newydd has been proposed, however Hitachi, the proposed operators of the plant, pulled out in 2019 / 20 as a result of costs involved in the development.

Subsequently, in March 2022, partly due to socio-political factors and partly due to continued efforts to reduce in fossil fuel reliance, the development of a new nuclear power station in this location is being re-assessed.

The power station, if delivered, would offer the UK's energy supply greater resilience against geopolitical events whilst also acting as a potential key employment site. During the construction period, it is estimated that Wylfa could employ around 8,000 to 10,000 construction workers. After opening, it is forecast that Wylfa could employ a workforce of around 850.

Associated with Wylfa there are several complimentary developments, including a Park and Ride scheme in order to reduce private car travel by construction workers; logistics centres; and temporary accommodation. As such, it could offer a significant boost to the economy of the Isle of Anglesey and North Wales as a whole.

Challenges & Opportunities

▪ An increase in journey times results in reduced productivity, contributing to the GVA per head across the study area being significantly lower than the Wales average.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 41 of 95

- The majority of people seek employment in the area they live, potentially suggesting a lack of connectivity to wider employment opportunities.

- Travel demand for commuting between the Isle of Anglesey and Gwynedd is high, with Anglesey presenting the largest proportion of out-commuters (with these commuting to Gwynedd).

- The key employment sites are located at the corridor terminals (North Anglesey and Bangor) highlighting the importance of connectivity between these locations and the towns in between.

2.2.4 ENVIRONMENT

Climate Emergency and Carbon Emissions

Wales accounts for around 10% of UK emissions, but climate change is a devolved issue. Emissions from Wales have fallen 31% since 1990, compared to 41% for the UK as a whole[21].

The Transport Sector Emissions Pathway Report (Welsh Government) identified the following emissions split across transport modes in Wales (**Figure 18**), whereby cars represented 55% (3.58 $MtCO_2e$) of transport sector emissions.

Figure 18 – Wales Transport Sector Emissions in 2019
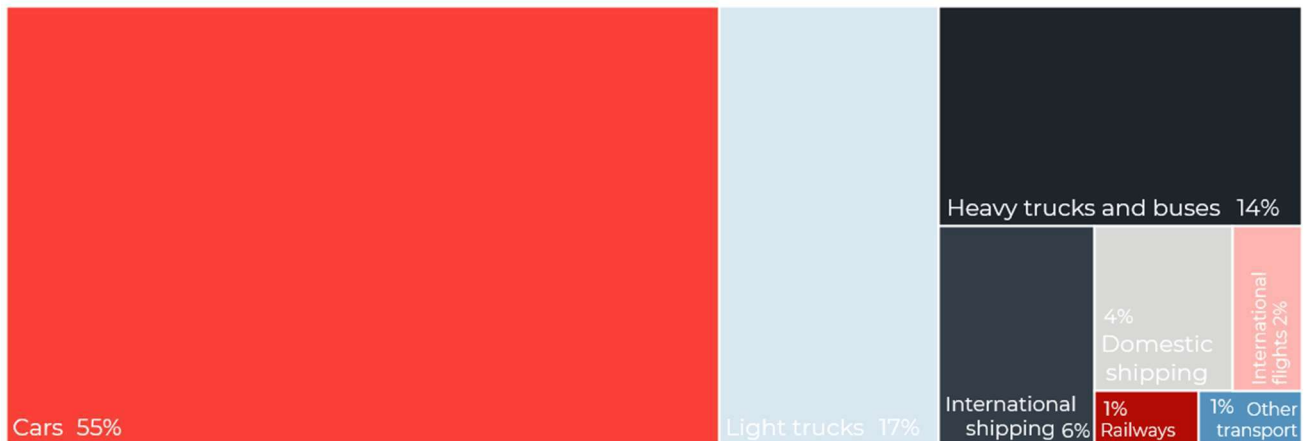
At 6.6 $MtCO_2e$, transport accounted for 17% of Welsh emissions in 2019. Transport is the third largest greenhouse gas emitting sector in Wales, following the power and industry sectors. Practically all transport emissions (99%) are emissions of carbon dioxide[22].

Within the Isle of Anglesey and Gwynedd, transport emissions contribute to 34% and 39% of total emissions respectively; this is higher than the UK average of 27% highlighting the need to decarbonise the transport network and encourage modal shift.

An analysis of total emissions by local authority showed that the Isle of Anglesey emitted 4.8 tonnes of CO2 emissions (tCO_2e) annually per resident in 2020, and Gwynedd emitted 4.0 tCO_2e per

---

[21] https://www.theccc.org.uk/2020/12/17/net-zero-wales-by-2050-wales-faces-a-decisive-decade-to-get-on-track-to-an-emissions-free-future/
[22] https://gov.wales/sites/default/files/publications/2021-10/net-zero-wales-carbon-budget-2-2021-25.pdf

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 42 of 95

resident. This is below the average for Wales as a whole (6.6 tonnes per resident) but still presents an opportunity to contribute to reduced carbon emissions.

Locally, North Wales will experience climate change as sea level rise, increased frequency of storms, flooding, temperature extremes, and increased pests and diseases impacting on the agricultural sector.

Welsh Government pledges that transport sector emissions will reduce by 43% from baseline levels by the year 2030 through:

- behavioural change measures (modal shift to more sustainable travel);

- increasing uptake of electric vehicles; and

- reducing emissions from road and rail transport through vehicle and fuel efficiency measures.

Resilience

Network Rail undertook a study concerning the key risks associated with railways in the context of the climate emergency and associated extreme weather conditions.[23]

Extreme weather events have affected the Conwy Valley Line (particularly in 2019 and 2020), the railway line at Dawlish in 2014, and additionally there have been increased occurrences of temporary speed restrictions due to the impact of heat on railway infrastructure. Devastating weather events like heavy rainfall, flooding and heatwaves are set to become more extreme and frequent in the future, alongside rising sea levels. Weather-related delay minutes cost between £200-300m each year, in addition to the cost of repairing infrastructure.

The aim of this study was to facilitate broader awareness and discussions with rail industry, funders and specifiers as well as other key stakeholders and influencers in shoreline and habitat planning policy.

Environmental Constraints

Figure 19 is an excerpt from the Anglesey and Gwynedd Local Development Plan (adopted 2017), and presents the environmental designations present within the study area. Much of the coastline between Amlwch and Bangor is designated as an Area of Outstanding Natural Beauty, and a Special Area of Conservation. Encouraging access to these unique ecosystems and striking environments is a key component of the visitor economy's growth aspirations, however this access must be sustainable, and not detrimentally impact the very locations it intends to serve.

---

[23] https://www.networkrail.co.uk/wp-content/uploads/2020/07/Understanding-the-impact-of-the-Shoreline-Management-Plans-on-the-railway-across-Wales-Borders-Interim-Findings.pdf

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 43 of 95

Figure 19 – Environmental Constraints Map
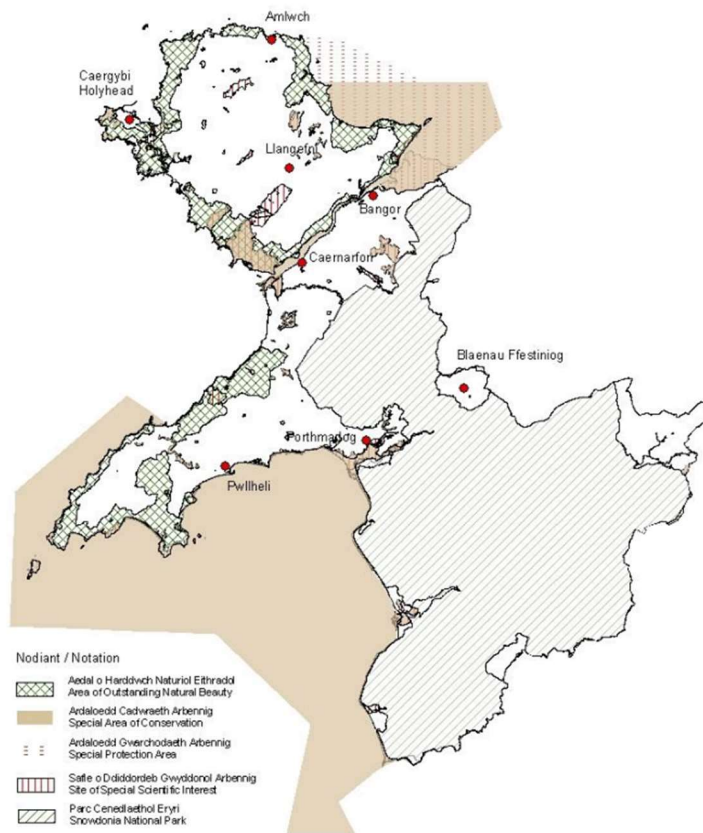
Challenges & Opportunities

- It is critical that Wales works to reduce its carbon emissions in order to meet its Net Zero targets (Net Zero by 2050) and contribute to the UK overall Net Zero target. The lower rate of emissions reduction experienced in Wales can be attributed to the power and industry sectors which are the highest emitters.
- Transport is the third highest emitting sector, and therefore this proposal for a public transport corridor between Amlwch and Gaerwen would contribute to achieving Net Zero targets through encouraging modal shift and reduced reliance on the private car, which currently dominates Welsh travel.
- There are a number of environmentally sensitive environments within the study area, which coincide with some of the most attractive visitor locations. Sustainable access to these is prudent to ensure adequate protection of these designations and the continued enjoyment of the natural environment.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 44 of 95

2.2.5 TRAVEL DEMAND

Commuting

Table 10 presents the commuting patterns across North Wales. This data demonstrates that people tend to seek employment within the same local authority within which they live, as highlighted by the green shading, which is darkest when the columns and rows correspond to the same local authority.

The Isle of Anglesey has the highest out-commuting number to another local authority: Gwynedd. This highlights the demand for accessible public transport connectivity between the two, which would complement the existing bus and rail infrastructure on Anglesey.

Table 10 – Usual Residence by Place of Work

Usual Residence	Place of Work[24]					
	Conwy	Denbighshire	Flintshire	Gwynedd	Isle of Anglesey	Wrexham
Conwy	27,307	5,407	1,048	2,373	417	349
Denbighshire	3,332	21,409	3,353	322	46	1,423
Flintshire	790	2,879	37,036	121	39	4,568
Gwynedd	1,520	544	194	33,538	2,011	128
Isle of Anglesey	761	157	58	6,616	14,939	37
Wrexham	269	1,322	4,242	59	21	37,698

DataShine has also been utilised to determine commuting patterns and journeys of higher demand.

A significant number of people commute to Bangor (Gwynedd 001) to reach their usual place of work. These journeys are shown in **Figure 20**.

The most prominent commuting journey from Llangefni (Isle of Anglesey 006) is to Granadda (Gwynedd 002), whereby 239 people make this journey. 134 people commute from Llangefni to Bangor (Gwynedd 001). Commutes from Llangefni are also shown in **Figure 20**.

Looking at commuting journeys from Amlwch, there is existing demand for public transport connectivity to Llangefni, with 381 commuters completing this journey daily.

Improving public transport across these locations in North Wales creates an opportunity to lead demand and encourage the shift to sustainable modes away from the private car.

---

[24] WU03UK - Location of usual residence and place of work by method of travel to work (Census, 2011)

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 45 of 95

Figure 20 – DataShine Commute Analysis

Commutes to Bangor (2011 Census)

Commutes from Llangefni (2011 Census)

Commutes from Amlwch (2011 Census)

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 46 of 95
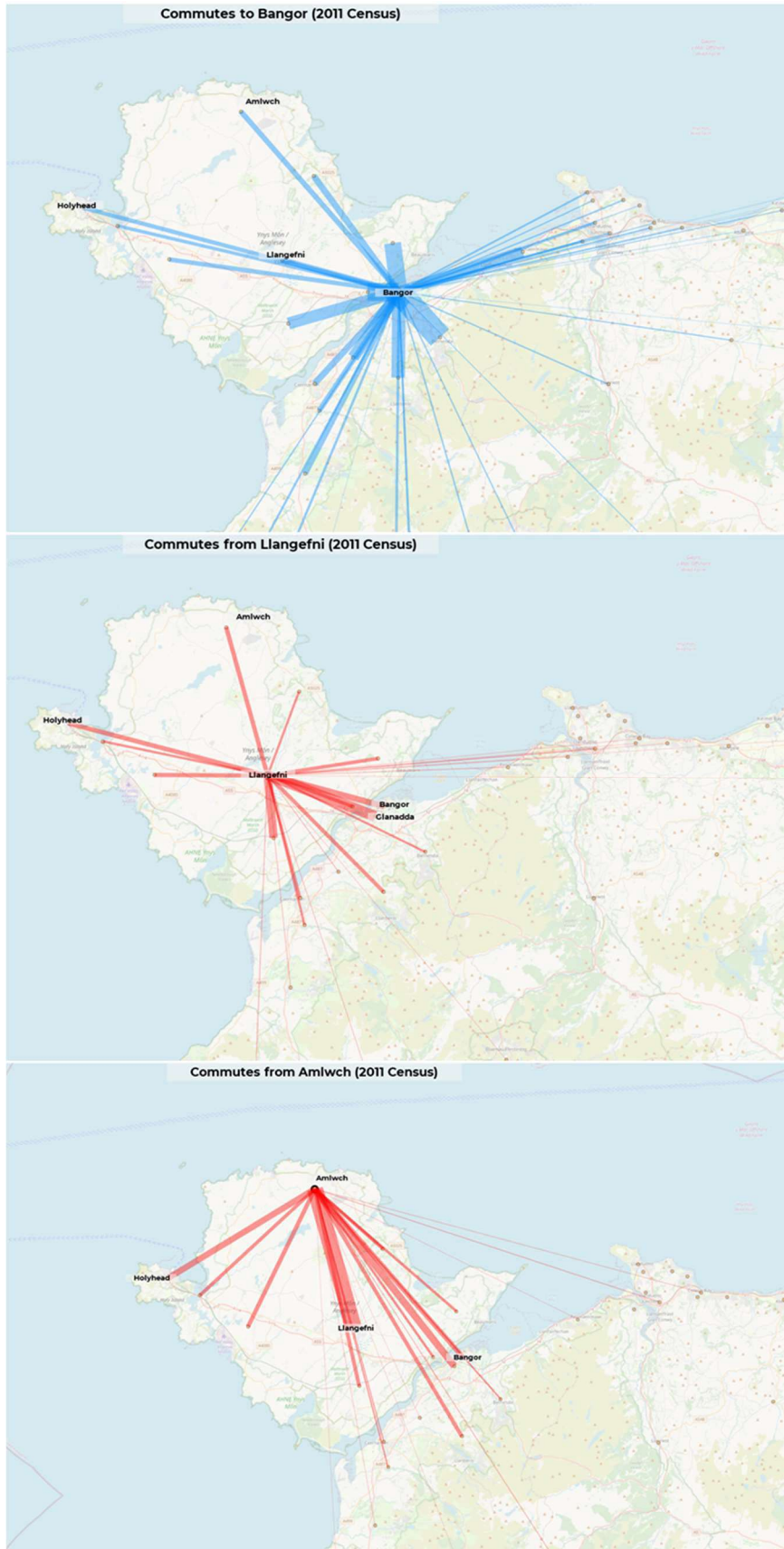
Catchment

Table 11 below presents the number of people within 20-, 40- and 60-minutes access (utilising public, private, and active modes of travel) of the key stations and interchanges within the scheme area and is an average of catchment in the AM and inter-peak hours. This data has been derived from PODARIS software, using spatial analysis tools.

Bangor has the highest catchment, accessible to 21,233 people within 20 minutes travel time. Beyond this significant catchment, the public transport network fails to as adequately serve other locations within the study area. Amlwch, Benllech and Gaerwen are all accessible to less than 500 people within 20 minutes. This presents an opportunity as if the key interchanges were better connected to alternative modes, sustainable transport would become a more realistic option for many.

Table 11 – Catchment

	Catchment (Total People)		
	20 mins	**40 mins**	**60 mins**
Amlwch	410	3,387	34,787
Llangefni	1,063	3,003	7,866
Benllech	329	2,127	57,338
Llanfairpwllgwyngyll	2,148	30,911	71,055
Gaerwen	300	1,331	4,522
Bangor	21,233	96,687	197,242

Challenges & Opportunities

▪ Amlwch and Gaerwen each have catchments of below 500 within 20 minutes, meaning that the public transport network is not easily accessible or that there is a minimal catchment area within the immediate vicinity of the interchanges.

▪ Bangor has a significant catchment that suggests opportunity to provide further rail connections to bolster its status as a key interchange in North Wales.

▪ Llanfairpwllgwyngyll and Llangefni have 20-minute catchments of above 2,000 and above 1,000 respectively, suggesting that new public transport infrastructure would support sustainable connectivity to employment, education, and leisure opportunities for many.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 47 of 95

2.2.6 RAIL

Current Infrastructure

Figure 21 shows the North Wales Mainline (not electrified) which extends from Holyhead through the south of Anglesey, crosses the Britannia Bridge to Bangor and continues along the North Wales coast to Chester and Crewe.

There are smaller stations on Anglesey at Valley, Rhosneigr, Ty Croes, Bodorgan and Llanfairpwll. There are therefore no services to Amlwch, Llangefni and other locations within the study area, apart from at Llanfairpwll and Bangor.

Figure 21 – Current Rail Infrastructure
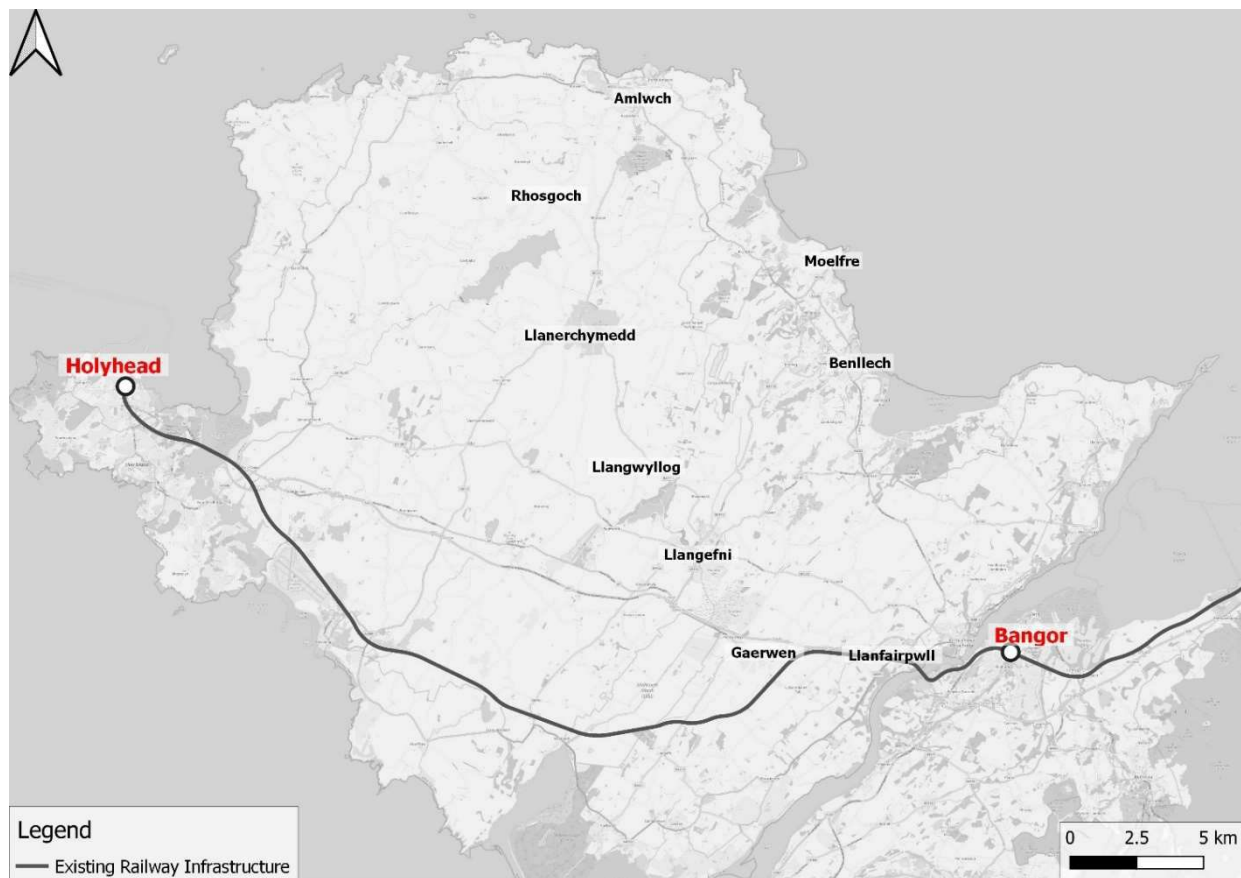
Former Railways

The former railways on Anglesey are shown in **Figure 22**. In addition to the North Wales Mainline in use today, there were two branch lines on Anglesey: the Anglesey Central Railway to Amlwch and a further spur to Red Wharf Bay.

The Anglesey Central Railway closed to passenger services in the 1960s as part of the rail rationalisation and freight services continued until the 1990s. The corridor remains and has been leased from Network Rail to Anglesey Central Railway Ltd.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 48 of 95

Figure 22 – Historic Rail Routes[25]
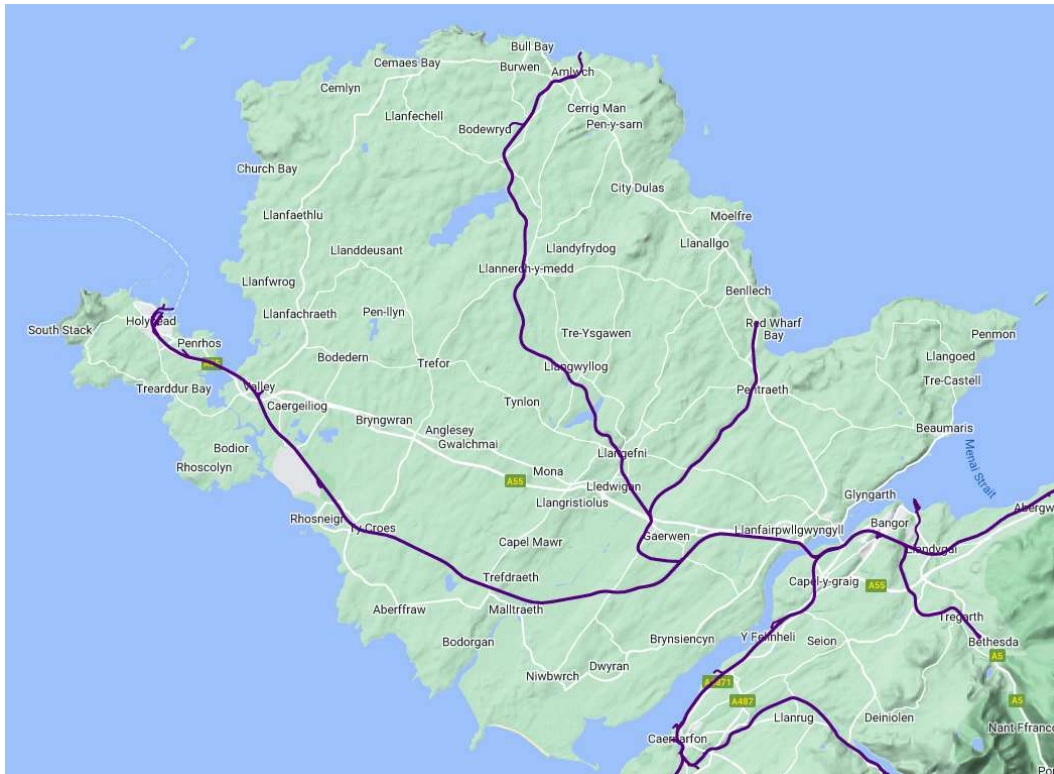
Services

As there is no rail service from Amlwch, a journey by public transport to other destinations would be by bus as described further below.

Existing Demand / Capacity

Rail patronage within the study area has been generally stagnant with a slight declining trend in both Anglesey and Gwynedd, until the impact of the COVID-19 pandemic. Patronage trends for Anglesey and Gwynedd are presented in **Figure 23** and **Figure 24**.

---

[25] railmaponline.com

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 49 of 95

Figure 23 – Rail Patronage Trend - Isle of Anglesey
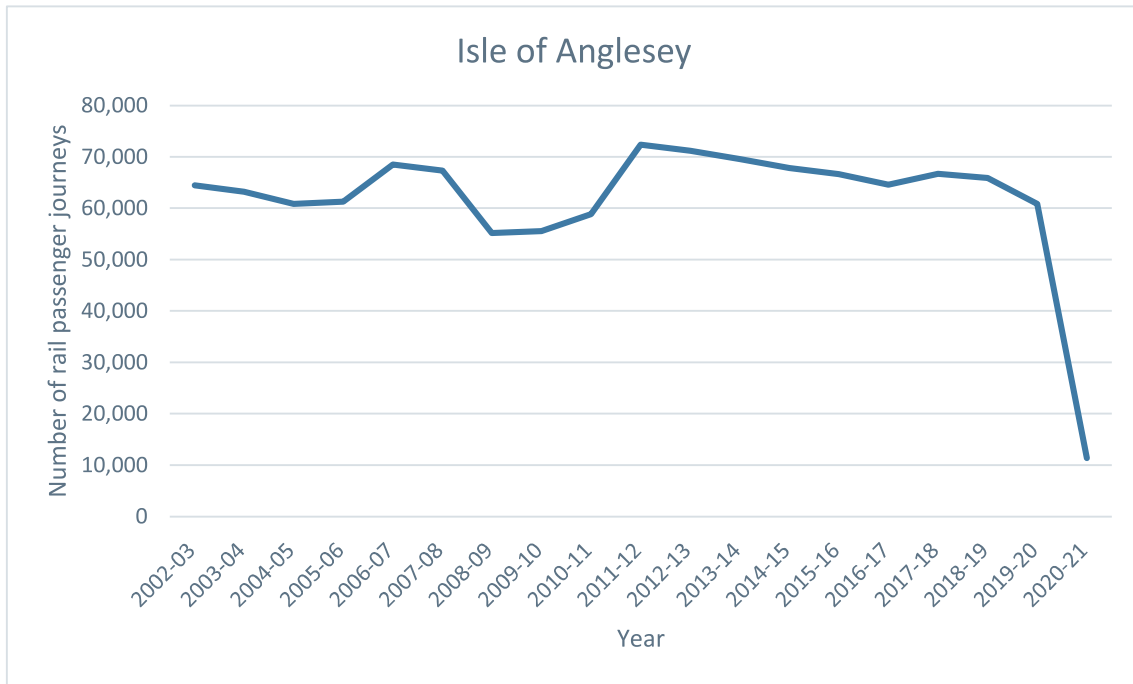
Figure 24 – Rail Patronage Trend - Gwynedd
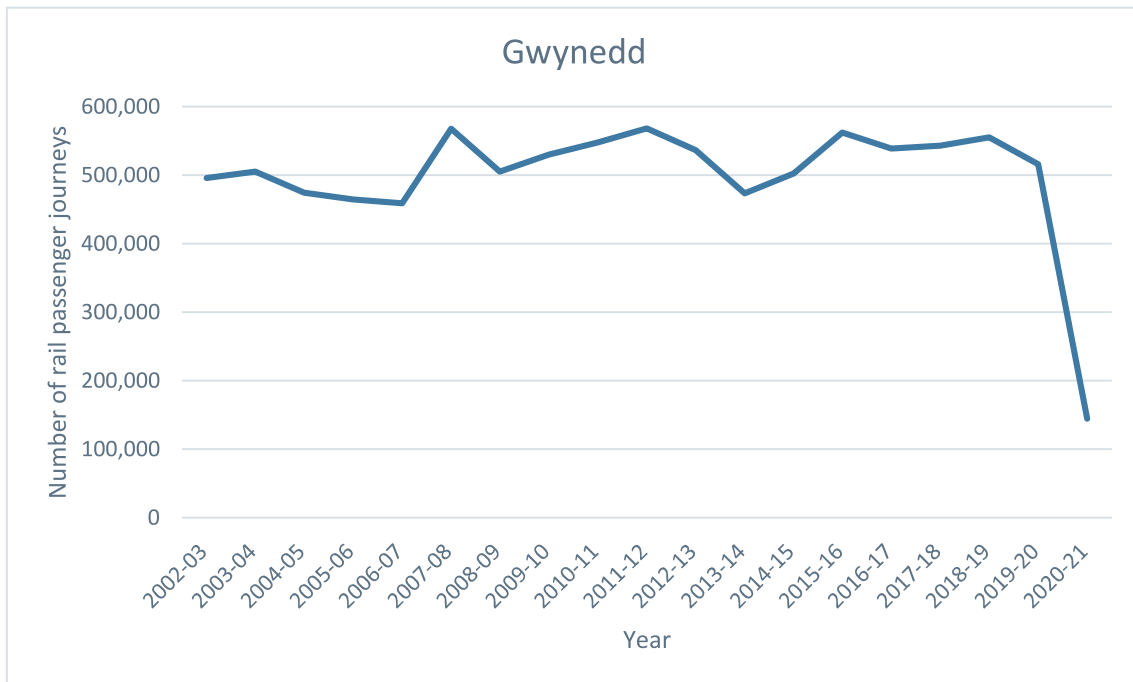
This trend aligns with a general declining in regional patronage from 2011 onwards, shown in **Figure 25**, however this differs strongly from the national trend which was increasing prior to the impact of the pandemic, as shown in **Figure 26**.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 50 of 95

This is arguably representative of the lack of rail infrastructure within the study area and highlights an opportunity to bring the North Wales region up to the national standard through provision of additional rail connectivity.

Figure 25 – Rail Patronage Trend - North Wales Region
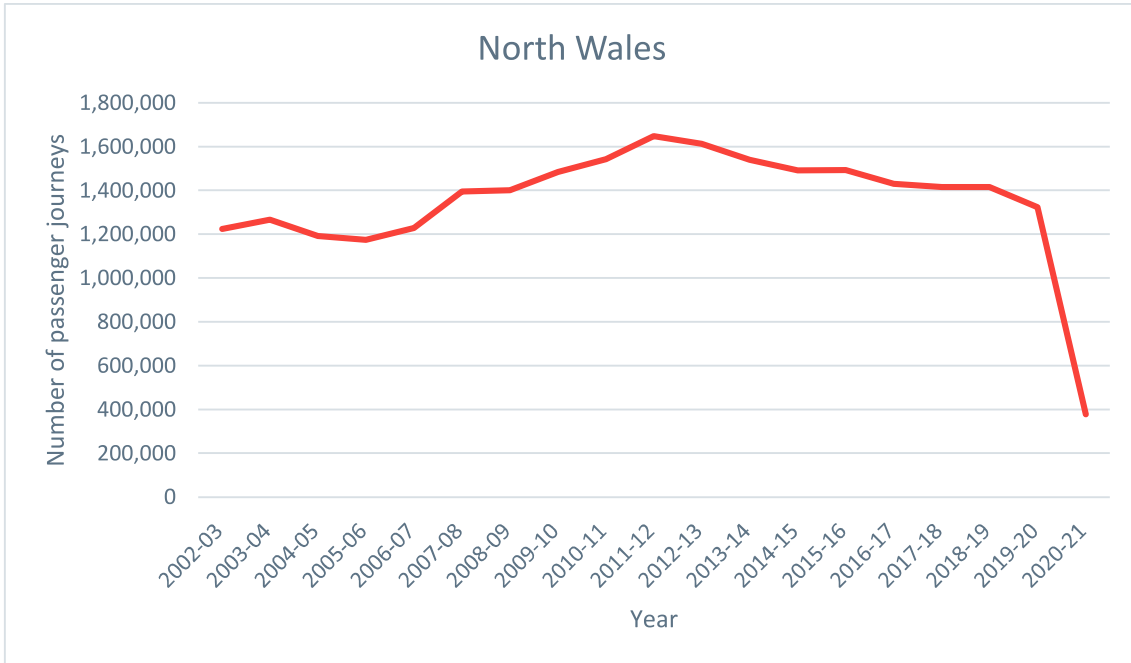
Figure 26 – Rail Patronage Trend - Wales
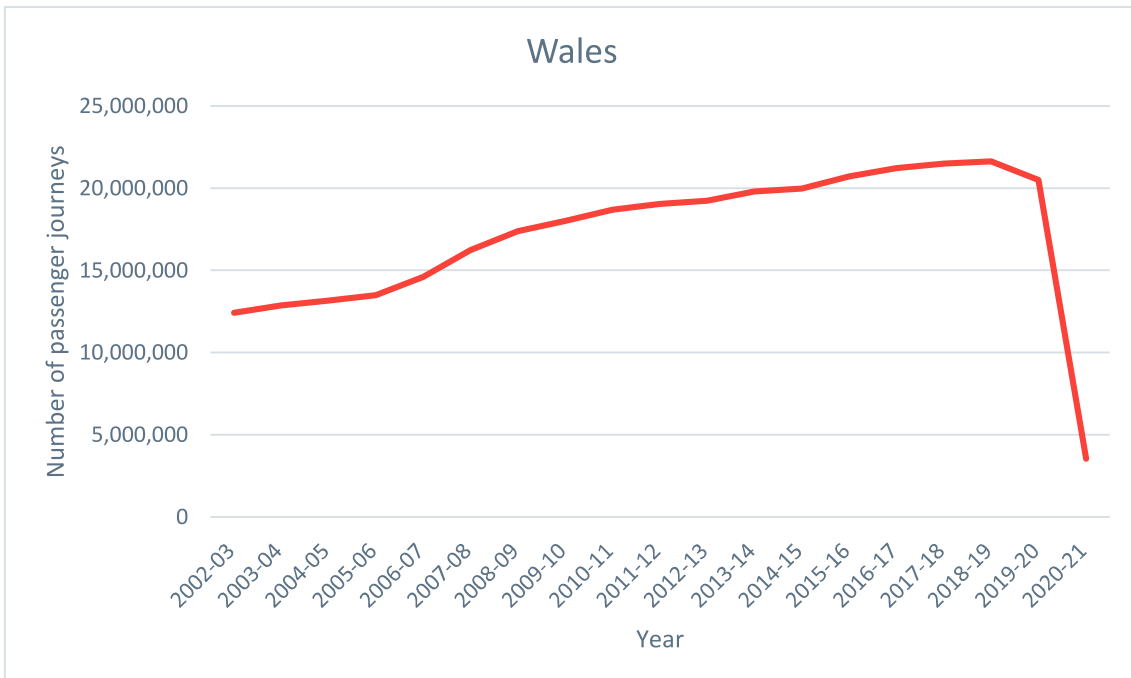
Bangor station experienced an overall increase in number of entries and exits between 2004 and 2019, before experiencing the pandemic-induced decline. This suggests that there is existing demand for connectivity to and from Bangor station.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 51 of 95

Figure 27 – Bangor Train Station Entries & Exits
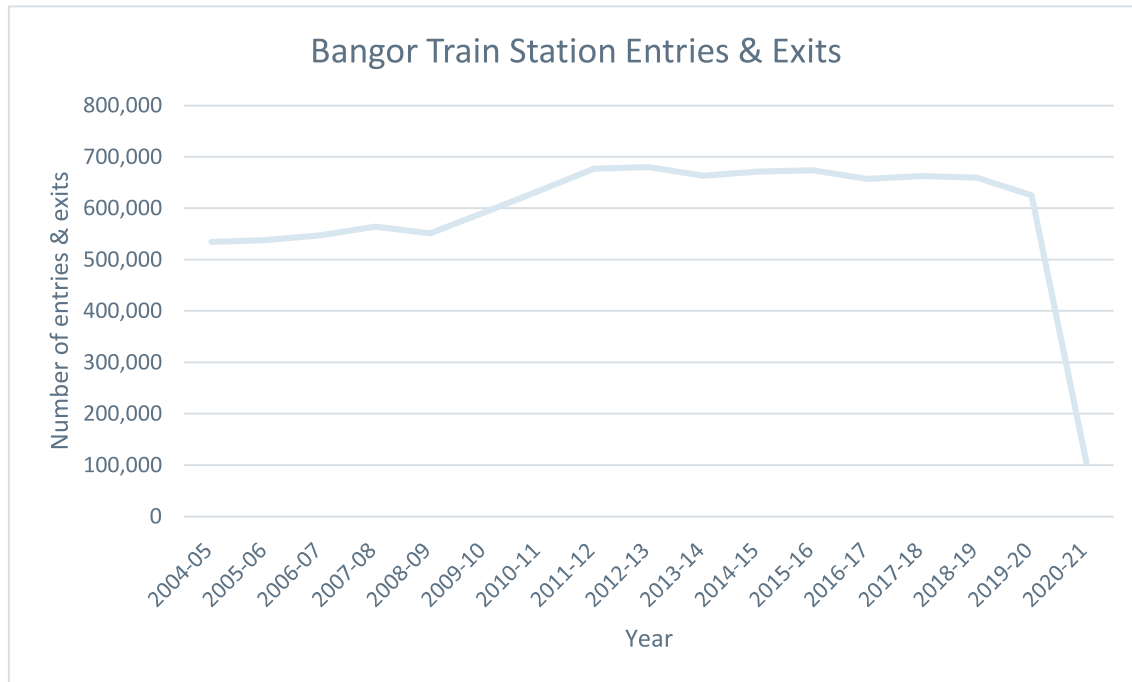
Overall, rail travel in Wales decreased by 82.7% in the 2020-21 period when compared to the previous year. The global pandemic had a significant impact on rail patronage, as a result of the travel restrictions and stay at home measures put in place. Therefore, there is an opportunity to emerge from the pandemic to support a return to previous levels of patronage or above. The provision of new or upgrading services as part of this scheme could contribute to attracting people back to rail.

Journey Time / Reliability

Welsh Government performed an analysis of punctuality as a measure of train reliability against planned timetable. The results are shown in **Table 12** below:

Table 12 – Rail Reliability

Arrival within:	2016-17	2017-18	2018-19	2019-20	2020-21
1 min (%)	61.2	63.4	62.8	65.0	80.0
3 mins (%)	81.8	82.9	82.0	81.7	91.5
15 mins (%)	98.4	98.4	98.3	98.0	98.8
Significantly late (%)	3.0	3.1	3.1	4.3	2.6
Cancelled (%)	1.7	1.8	2.1	2.3	2.4
Trips planned (number)	328,145	329,834	329,944	338,262	218,328

In 2020-21, there was significantly increased reliability of services with 80% of trains arriving within 1 minute of their scheduled time. However, simultaneously, this period saw a decrease in the number of planned services, providing 119,934 less services than the previous year, likely in relation to the

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 52 of 95

pandemic. Prior to this, the number of services planned was increasing, further demonstrating existing demand for rail services.

Resilience & Safety

Rail incident numbers are relatively volatile and there is no discernible long-term trend that can be ascertained from the Rail Safety and Standards Board (RSSB) data. There were 20 recorded incidents in 2021 comprising of 11 obstructions, 7 fires and 2 missile incidents. Obstructions include service disruptions due to weather events, such as flooding, landslides, and high winds. Obstructions are the most common type of recorded incident across Wales.

Table 13 below presents the rail incident numbers across Wales.

Table 13 – Rail Incidents Across Wales

	2017	2018	2019	2020	2021
Collisions	0	0	0	0	0
Derailments	0	1	0	0	0
Fires	3	5	3	1	7
Missiles	3	3	4	2	2
Obstructions	16	28	31	14	11
Total	26	33	33	18	20

Overall, safety incidents are not common on the Welsh rail network, suggesting that safety is not a major barrier to uptake of this mode.

In 2019, Network Rail produced a Wales Route Weather Resilience and Climate Change Adaptation Plan, demonstrating an awareness of the requirement to gain a detailed understanding of the vulnerability of rail assets to weather events and potential impacts from climate change[26]. The report outlines the various sub-programmes in place to make Welsh rail assets more resilient, thereby reducing costs and improving passenger experience.

Station Facilities

Table 14 below presents the facilities available at Bangor station, which has facilities that support those living with mobility impairments. It is critical to ensure that any new station facilities to be opened as part of the scheme would offer the same or improved standard of accessibility facilities to ensure equal access to the potential rail corridor for all. Furthermore, the provision of adequate cycle

---

[26] https://www.networkrail.co.uk/wp-content/uploads/2019/05/Wales-Route-WRCCA-Plan.pdf

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 53 of 95

parking should also be a component of any future scheme in the study area to ensure ease of multi-modal interchanging, in particular supporting active travel for first and last miles.

Table 14 – Station Facilities

Facilities	Bangor Station
Cycling	26
Car park	86
Bus	Interchange
Taxi	Yes
Impaired mobility set down / pick up points	Yes
Ticketing	Yes
Waiting Rooms	Yes
Toilets	Yes
Step free access (A)-Step free access to all platforms and whole station environment.	Yes (A)

Network Improvements

Rail and integrated transport schemes currently in development are primarily located around Chester, Wrexham, Deeside and the Halton Chord. These developments prioritise cross-border connectivity and are shown in **Figure 28**.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales
CONFIDENTIAL | WSP
October 2022
Page 54 of 95

Figure 28 – Rail and Integrated Transport Schemes under Development
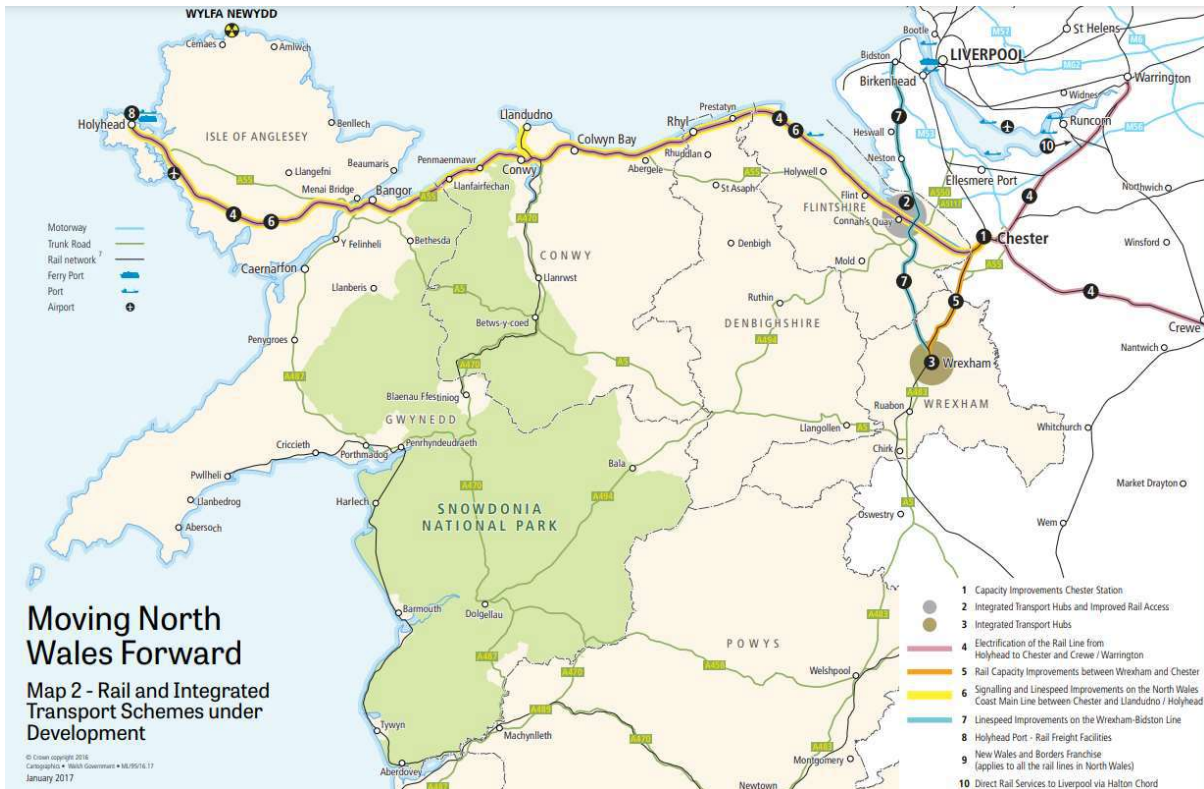
In addition, the North Wales Metro Programme will transform rail, bus and active travel services across North Wales. It will make it easier and faster to travel across North Wales and build better connections with the Northwest of England. This will help create more opportunities for our communities and support inward investment for the area.

The Programme will also improve connectivity between North Wales and key destinations within the UK, with links to HS2 and Northern Powerhouse Rail, helping to meet the decarbonisation agenda of both the Welsh and UK Governments and their commitments to be carbon neutral by 2050.

Development of the North Wales metro proposals includes the:

- Delivery of a new hourly service between Liverpool and Llandudno and extend the current Llandudno to Manchester Airport service to include Bangor.
- Improving stations, making it easier to change between rail and bus services.

Challenges & Opportunities

- Existing rail provision on Anglesey is extremely sparse, and there are no direct rail services between Amlwch and Bangor.
- The former Anglesey Central Railway corridor presents an opportunity to re-provide services to locations such as Llangefni and Amlwch.
- Bangor railway station experienced an overall increase in entries and exits between 2004 and 2019, before decline resulting from the Covid-19 pandemic. This demonstrates that there is growing demand for connections to and from Bangor station.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales
CONFIDENTIAL | WSP
October 2022
Page 55 of 95

- Across Wales, patronage had been increasing prior to the pandemic. At a local and regional level, patronage had been declining from 2011, a trend that is bolstered by the lack of rail infrastructure on the Isle of Anglesey.
- Bangor railway Station has provisions for multi-modal interchange, and provisions for users with accessibility needs, creating an opportunity to connect to this well set out station thereby supporting sustainable connectivity for all users.

2.2.7 BUS

Existing Demand / Capacity

The number of journeys undertaken on local bus services in Wales has stabilised in recent years, following a period of long-term decline in bus usage[27]. During 2018/19, more than three in every four public transport journeys in Wales were made by bus, highlighting the importance of the bus network in connecting the population to services, amenities and opportunities[28].

In July 2017, the Welsh Government introduced free weekend travel across the TrawsCymru longer distance bus network, with a subsequent increase in weekend patronage. This growth was sustained, as between July 2018 and December 2018, an additional 81,336 passengers travelled on TrawsCymru services, which represented an increase of 32% at weekends, compared to the equivalent period in July to December 2017.

In 2017/18 the TrawsCymru network carried 1.751 million passengers, which is a 45% (792,872) increase on the previous year. Of these, the T1 service carried 61,598 (3.5%) and the T2 service carried 44,496 (2.5%) passengers during the 2018 / 19 financial year.

It should however be noted that due to the COVID-19 pandemic the weekend free travel scheme has been suspended across the TrawsCymru network. It is unclear as to the impact the withdrawal of the free travel scheme has had on passenger numbers compared to the overall impact of the pandemic.

The bus passenger trends in Wales as a whole are shown in **Figure 29** which illustrates a significant reduction in passenger numbers in 2020.

---

[27] https://gov.wales/public-service-vehicles-buses-and-taxis-april-2019-march-2020-html

[28] https://gov.wales/sites/default/files/consultations/2020-11/supporting-information-transport-data-and-trends.pdf

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 56 of 95

Figure 29 – Passenger journeys on local bus services (DfT)
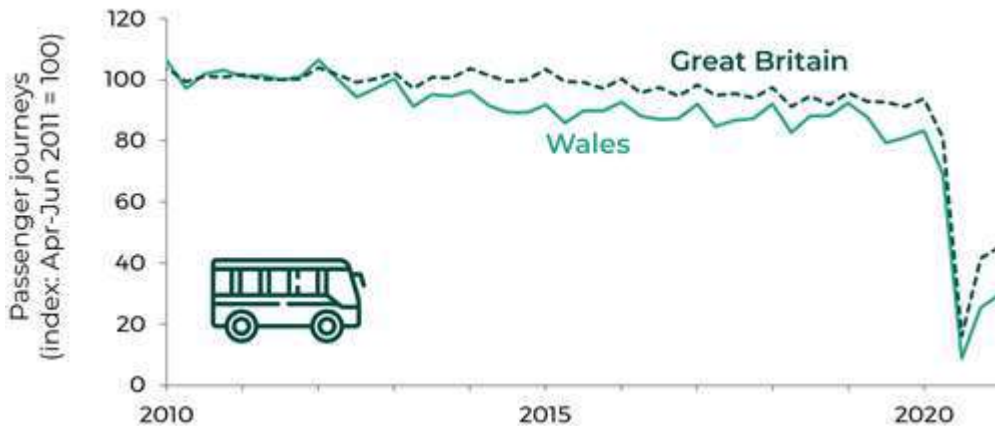
This graph also shows a steady decline of around 14% between 2010 and 2019 prior to the impact of the pandemic. This demonstrates that even before the pandemic there was a trend of reducing numbers of people utilising local bus services.

Bus Services

There are numerous bus routes on Anglesey including those running between Holyhead and Bangor, Holyhead and Amlwch, and Bangor and Amlwch. There is also a network of inland services centred on Llangefni.

The direct service between Amlwch and Bangor is the route number 62 which takes approximately 1 hour. The details of this service are shown in **Table 15**.

Table 15 – Bus Service between Amlwch and Bangor (62)

Origin	Destination	Journey Time	Frequency	No. Stops
Amlwch	Bangor	60 mins	3 per hour in peak 2 per hour interpeak	22
Bangor	Amlwch	60 mins	2 per hour	23

However, to travel between Amlwch and Bangor by car takes almost half the amount of time as the bus and is a similar price (**Table 16**) and is therefore a much more attractive modal choice for this journey.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 57 of 95

Table 16 – Bus and Car Comparison

Journey	Bus Journey Time (Route 62)	Bus Cost	Car Journey Time	Car Cost
Amlwch - Bangor	60 mins	£3.90	35 mins	£4.13[29]

Table 17 – Time of Journey Variability

Time of Journey	Bus Journey Time (62)	Car Journey Time (Typical)
8am	55 mins	30 – 45 mins
10am	1 hour, 4 mins	35 – 45 mins
1pm	1 hour, 3 mins	35 – 45 mins
5pm	1 hour, 3 mins	30 – 45 mins

The bus service between Amlwch and Llangefni is the number 32. This service is relatively infrequent, as shown in **Table 18**.

Table 18 – Bus Service between Amlwch and Llangefni (32)

Origin	Destination	Journey Time	Frequency	No. Stops
Amlwch	Llangefni	40 mins	<1 every 3 hours	13
Llangefni	Amlwch	47 mins	<1 every 3 hours	15

Table 19 – Bus and Car Comparison

Journey	Bus Journey Time (32)	Bus Cost	Car Journey Time	Car Cost
Amlwch - Llangefni	38 mins	£3.00	23 mins	£2.70[30]

---

[29] 19.63 miles at £1.85 per litre and 40 miles per gallon.
[30] 12.86 miles at £1.85 per litre and 40 miles per gallon.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 58 of 95

Table 20 – Time of Journey Variability

Time of Journey	Bus Journey Time (32)	Car Journey Time (Typical)
8am	32 mins	20 – 24 mins
10am	40 mins	22 – 26 mins
1pm	38 mins	22 – 26 mins
5pm	30 mins	22 – 24 mins

Infrastructure

The key bus service from Amlwch to Bangor departs from the Recreation Grounds stop, shown in **Figure 30** below. There is no seating provision at this stop, nor any welfare provision. This makes the stop less accessible to people living with disability or mobility impairments, and those travelling with small children. There are also no virtual information boards and a lack of service information.

Figure 30 – Amlwch – Recreation Grounds Bus Stop (departure to Bangor)

Bangor Bus Station, although is located in central Bangor and therefore public amenities are available in the vicinity, also lacks welfare facilities, adequate seating, and live information boards.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 59 of 95

Figure 31 – Bangor Bus Station

All key bus stops explored lack any facilities for cycle storage, therefore limiting the potential for multi-modal interchange. It is understood that a study was carried out in 2018 to investigate the potential for the accommodation of bicycles on the bus network.

Community Transport

Community transport operators act as a public transport 'safety net', providing links to bus and train, or door-to-door transport when needed, for individual and occasional needs. Although the proposal relates to strategic connectivity, it is important to consider the accessibility of services to all. There are many operators of community transport, as set out below, which will assist in ensuring that the benefits of the proposals can be realised by all members of the community.

- Benllech Good Turn Scheme - supports older people in maintaining their independence by providing transport to essential services.
- Barbara Bus - provides vehicles adapted for wheelchair users – allowing users who cannot use public transport, private cars or conventional taxis and cannot transfer from wheelchair to car freedom to travel.
- Red Cross - offers transport from hospitals to home, with 24hr availability across Wales.
- The Royal Voluntary service - provide transport for journeys where mobility issues can make trips difficult as well as for those in rural areas where public transport is limited. Mon Community Transport - covers the whole of Anglesey, providing travel to essential services such for those unable to use public transport.
- Car Linc Mon -a service in Anglesey for those in rural areas where public transport is limited or for those who are unable to use public transport.
- Canolfan Beaumaris - provide a minibus bus service for residents of the Seiriol Ward area.
- Fflecsi - a scheme operated by Transport for Wales in partnership with local bus operators and councils, replacing a number of scheduled bus services. The bus service has fixed start and end destinations but can adjust its route to pick up and drop off passengers anywhere

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 60 of 95

within that Fflecsi zone. Rather than passengers waiting at a bus stop for a bus to turn up, they can book a journey in advance using the Fflecsi app, website or over the phone. Passengers are given a pick-up point near their location and an arrival time for the bus.

Challenges & Opportunities

- Key bus stops on the existing routes between Amlwch and Bangor, are lacking in welfare facilities, seating provision, information boards, and cycle parking facilities, creating accessibility and multi-modal challenges.

- Wales has seen a steady decline in bus patronage of around 14% between 2010 and 2019 prior to the impact of the pandemic.

- WG are considering a new approach to buses: to be driven by public need rather than market forces as is currently the case. By better serving the public needs, WG hope this will break the reliance on the private car.

- Bus service frequency is variable across the study area, however, is notably poor between Gaerwen and Bangor, with less than one service per hour, including at peak times.

- To complete the journey between Amlwch and Bangor takes almost twice as long by bus than by car, with only a marginal saving on cost, making bus an unattractive alternative for this route.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 61 of 95

2.2.8 CASE FOR CHANGE SUMMARY

Following a review of the baseline information, a number of key issues and opportunities were identified, this responds to the first research question from the RYR guidance:

What is the transport problem and case for intervention?

These are summarised in **Table 21** below with the reference number correlating to the key issues set out in the objectives assessment included in **Appendix C.**

The issues below represent the case for change within the study area.

Table 21 – Challenges and Opportunities

Key Issues	Further Detail	Reference No.
Rail	Existing rail provision on Anglesey is extremely sparse, and there are no direct rail services between locations such as Amlwch and Llangefni to Bangor.	1
	Bangor railway station experienced an overall increase in entries and exits between 2004 and 2019, before decline resulting from the Covid-19 pandemic. This demonstrates that there is growing demand for connections to and from Bangor station.	2
	Across Wales, patronage had been increasing prior to the pandemic. At a local and regional level, patronage had been declining from 2011, a trend that is bolstered by the lack of rail infrastructure on the Isle of Anglesey.	3
	Bangor railway station has provisions for multi-modal interchange, and provisions for users with accessibility needs, creating an opportunity to connect to this well set out station thereby supporting sustainable connectivity for all users.	4
Bus	Key bus stops on the existing routes between Amlwch and Bangor, are lacking in welfare facilities, seating provision, information boards, and cycle parking facilities, creating accessibility and multi-modal challenges	5
	Wales has seen a steady decline in bus patronage of around 14% between 2010 and 2019 prior to the impact of the pandemic	6
	WG are considering a new approach to buses: to be driven by public need rather than market forces as is currently the case. By better serving the public needs, WG hope this will break the reliance on the private car.	7

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 62 of 95

	Bus service frequency is variable across the study area, however, is notably poor between Gaerwen and Bangor, with less than one service per hour, including at peak times.	8
	To complete the journey between Amlwch and Bangor takes almost twice as long by bus than by car, with only a marginal saving on cost, making bus an unattractive alternative for this route.	9
Economy	GVA per head across the study area is significantly lower than the Wales Average.	10
	The majority of people seek employment in the area they live, potentially suggesting a lack of connectivity to wider employment opportunities.	11
	Travel demand for commuting between the Isle of Anglesey and Gwynedd is high, with Anglesey presenting the largest proportion of out-commuters (with these commuting to Gwynedd).	12
	The key employment sites are located at the corridor terminals (North Anglesey and Bangor) highlighting the importance of connectivity between these areas and the wider corridor.	13
Social & Cultural	There is an aging population across the study area. This creates an opportunity to reduce outward migration through improved transport provision, and simultaneously to ensure that as people age, they are well-served by public transport.	14
	Transport has a key role to play in supporting culture and Welsh language across North Wales: the visitor economy in North Wales contributes £1.2 billion in annual spend. This sector can be supported by improving access by public transport to some of the region's most attractive visitor locations.	15
	Improving the public transport access to key visitor locations and attractions is key in addressing the goals of the Welsh Transport Strategy.	16
	Commuting to places of employment and education is dominated by private vehicle use, with rail experiencing the lowest numbers.	17
	Access to services deprivation is high along the corridor, improved public transport access and connectivity can support	18

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 63 of 95

	in reducing the deprivation levels associated with accessing key services.	
Travel Demand	Amlwch and Gaerwen each have catchments of below 500 within 20 minutes, meaning that the public transport network is not easily accessible across the study area or the catchment area within the immediate vicinity of the interchanges is minimal.	19
	Bangor has a significant catchment that suggests opportunity to provide further rail connections to bolster its status as a key interchange in North Wales.	20
	Llanfairpwllgwyngyll and Llangefni have 20-minute catchments of above 2,000 and above 1,000 respectively, suggesting that new public transport infrastructure would support sustainable connectivity to employment, education, and leisure opportunities for many.	21
Environment	Transport is the third highest emitting sector within Wales	22
	Wales has committed to a Net Zero carbon target year of 2050	23
	There are a number of environmentally sensitive environments within the study area, which coincide with some of the most attractive visitor locations. Sustainable access to these is prudent to ensure adequate protection of these designations and the continued enjoyment of the natural environment.	24

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 64 of 95

2.3 OPPORTUNITY COST (DO NOTHING)

The do-nothing situation is where no action or interventions are taken and is the baseline against which all other options are compared. In this scenario, activities to maintain the existing situation (such as maintenance) would continue but no additional interventions would be taken.

Table 22 lists how the issues and problems identified above will continue, and potentially worsen in the do-nothing scenario.

Table 22 – Likely situation if no action or interventions are taken

Key Issues	Likely Situation
Rail	Rail provision in the study area will remain sparse, and patronage in the region will continue to decline. This will fail to support the vision of the North Wales Metro proposals.
Bus	Existing falling patronage will continue, and modal shift is not appropriately supported or facilitated. This will lead to a spiral of decline in bus services, worsening problems of social isolation and access to services deprivation.
Economy	GVA per head will remain lower across North Wales than the national average. Connectivity to key employment sites within the study area will remain constrained by the lack of attractive, direct public transport infrastructure.
Social & Cultural	The private car will continue to dominate journeys to work and to education. Access to services deprivation levels will remain high, and social exclusion will be exacerbated.
Travel Demand	Public transport catchment will remain the same if no new infrastructure is provided, contributing to social isolation, and constraining access to services, education and employment opportunities.
Environment	Transport will remain a high emitting sector, and the necessary behavioural changes to achieve modal shift and a reduction in carbon emissions will fail to be fulfilled. Environmentally sensitive locations that are vulnerable to the impacts of climate change might be under threat.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 65 of 95

2.4 OBJECTIVES FOR INTERVENTION

The objectives for intervention have been derived through a logic mapping process, as recommended by the DfT. The Logic Map is presented in **Appendix A**. This process starts by highlighting the context, considering the impact and change that potential intervention is intended to achieve.

The objectives that result from this process are outlined below in **Table 23**.

Table 23 – List of Objectives

Ref.	Objective
Objective 1	Improve journey times by public transport between population centres and key employment opportunities, thereby supporting socio-economic growth in North Wales.
Objective 2	Reduce carbon impacts and greenhouse gas emissions from transport, thereby adapting to the impact of climate change.
Objective 3	Better connect local communities by public transport across North Wales to core public services including educational opportunities.
Objective 4	Create an integrated sustainable transport network that is safe, reliable and affordable, providing a realistic alternative to the private car.
Objective 5	Support the visitor economy in North Wales by improving public transport accessibility to key destinations.
Objective 6	Support delivery of the North Wales Metro proposals.

The objectives, and how they relate to the strategic priorities of the Welsh Government, including that of the Wales Transport Strategy and Well-being of Future Generations (Wales) Act are shown in **Appendix C**.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 66 of 95

2.5 LONG LIST OF OPTIONS

A long list of options has been developed to identify the range of interventions available to address the issues and problems identified in the case for change, and meet the objectives for intervention.

These options include the use of the former Amlwch to Gaerwen alignment, Rail Option 1, calling at the former station locations, and an alternative rail route, Rail Option 2 via the towns along the coast. Bus options which mirror these rail routes have also been considered to assess how a bus option would compare to rail.

Recognising that new rail infrastructure has a high capital cost, a series of smaller rail schemes are also included in the long list, which could be incrementally staged to form a full route between Gaerwen and Amlwch.

Active travel options have therefore not been included within the long list (although active travel modes could be considered alongside any of the options at a later stage).

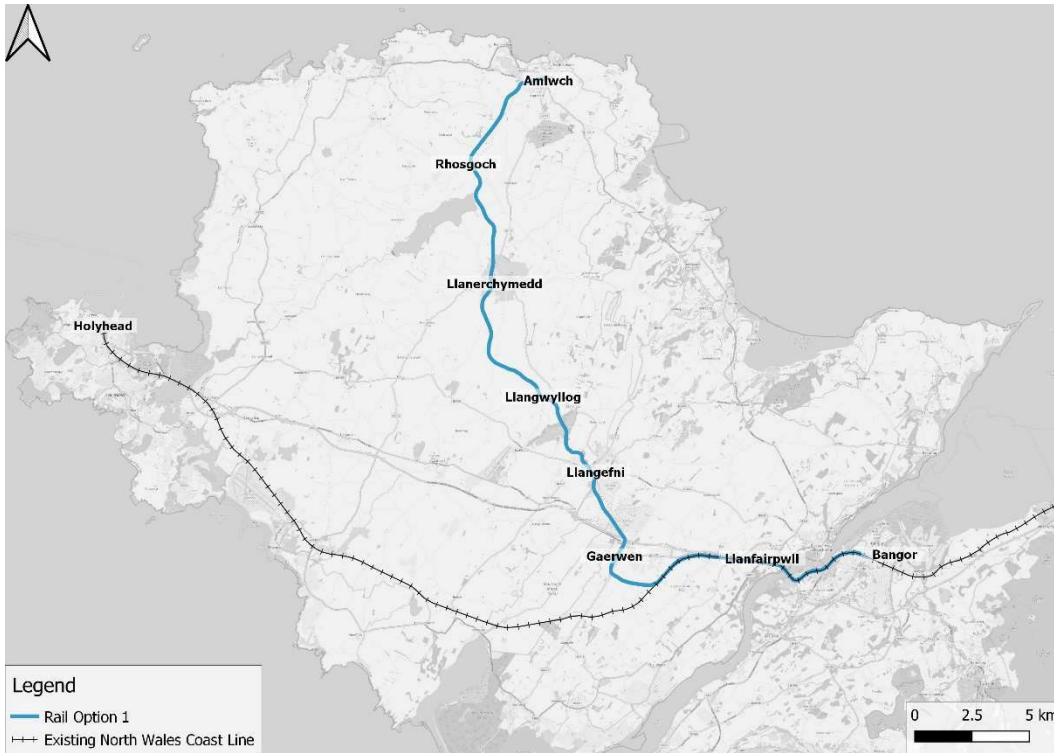**Table 24** lists the long-list of options with further detail regarding the options, rolling stock assumptions and service frequencies found in **Appendix D.** This chapter responds to two of the research questions set out in the RYR guidance:

▪   *What are the options? Is rail the preferred solution?*

▪   *How does each option perform in delivering benefits? (further explored in the Transport Case).*
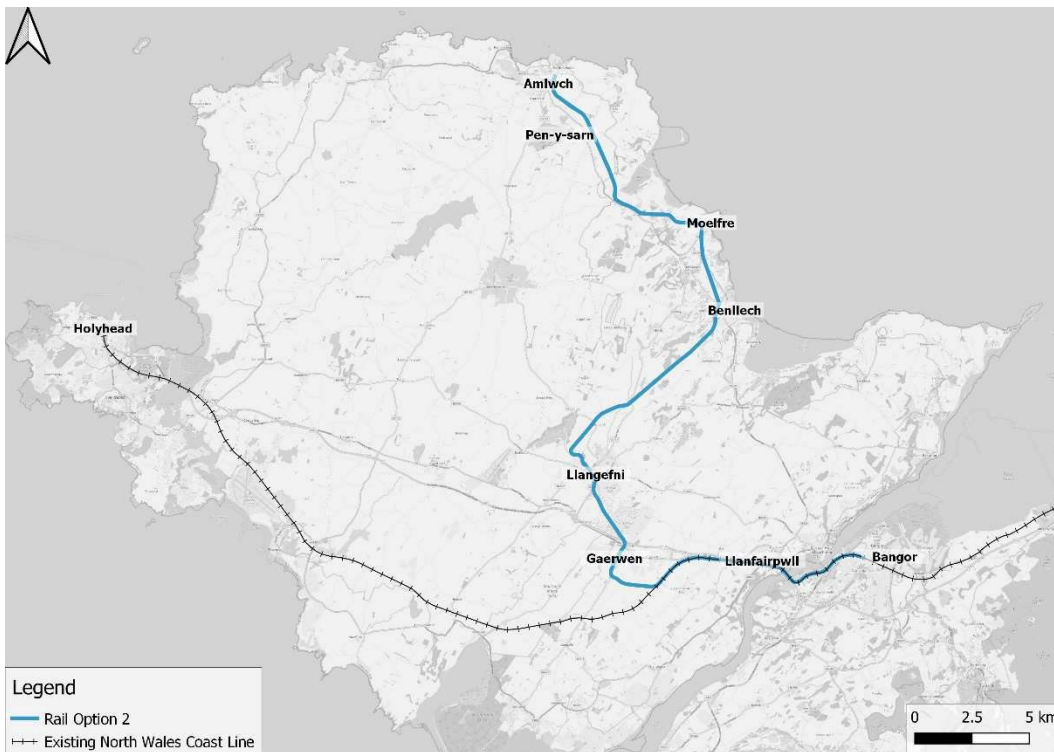
Table 24 – Long List of Options

Ref	Option	Description	Figure
Full Route Options			
1a (i)	Rail Option 1 (Heavy Rail)	Reinstatement of the former alignment between Amlwch and Gaerwen, connecting into the North Wales Mainline to serve Bangor.	Figure 32
1a (ii)	Rail Option 1 (Light Rail)	Reinstatement of the former alignment between Amlwch and Gaerwen, connecting into the North Wales Mainline to serve Bangor.	Figure 32
1b	Bus Option 1	An inland bus route from Amlwch to Bangor via Llangefni, broadly following Rail Option 1.	Figure 34
2a (i)	Rail Option 2 (Heavy Rail)	A new heavy rail alignment between Amlwch and Gaerwen via a coastal route, connecting into the North Wales Mainline to serve Bangor.	Figure 33
2a (ii)	Rail Option 2 (Light Rail)	A new light rail alignment between Amlwch and Gaerwen via a coastal route, connecting into the North Wales Mainline to serve Bangor.	Figure 33
2b	Bus Option 2	A coastal bus route from Amlwch to Bangor via Llangefni, broadly following Rail Option 2.	Figure 35
Incremental Rail Options			
3a	Spur to Llangefni	A 7km spur from the North Wales Mainline ending at Llangefni, along the former alignment.	Figure 32
3b	Extension to Llangwyllog / Llanerch-y-medd / Rhosgoch	A spur from the North Wales Mainline along the former alignment, ending at Llangwyllog / Llanerch-y-medd / Rhosgoch	Figure 32
3c	Extension to Benllech / Moelfre / Pen-y-sarn	A spur from the North Wales Mainline along the new coastal (Rail Option 2) alignment, ending at Benllech / Moelfre / Pen-y-sarn	Figure 33
Incremental Bus Options			
4a	Service to Llangefni	A bus route from Bangor to Llangefni broadly following Option 3a	Figure 34
4b	Service to Llangwyllog / Llanerch-y-medd / Rhosgoch	An inland bus route from Bangor, via Llangefni ending at Llangwyllog / Llanerch-y-medd / Rhosgoch broadly following Option 3b	Figure 34
4c	Service to Benllech / Moelfre / Pen-y-sarn	An incremental coastal bus route ending at Benllech / Moelfre.	Figure 35

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 68 of 95

Figure 32 – Rail Option 1: Reinstatement of the Anglesey Central Railway

Figure 33 – Rail Option 2: An Alternative Coastal Route

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 69 of 95

Figure 34 - Bus Option 1: Inland Route
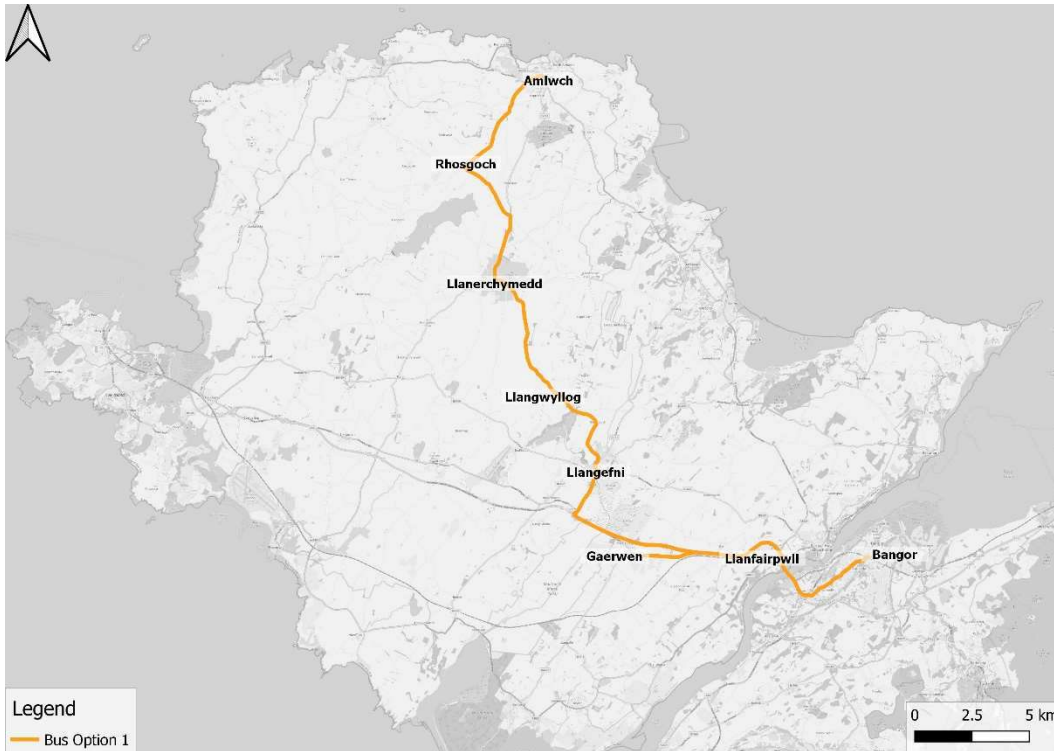
Figure 35 - Bus Option 2: Coastal Route

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 70 of 95
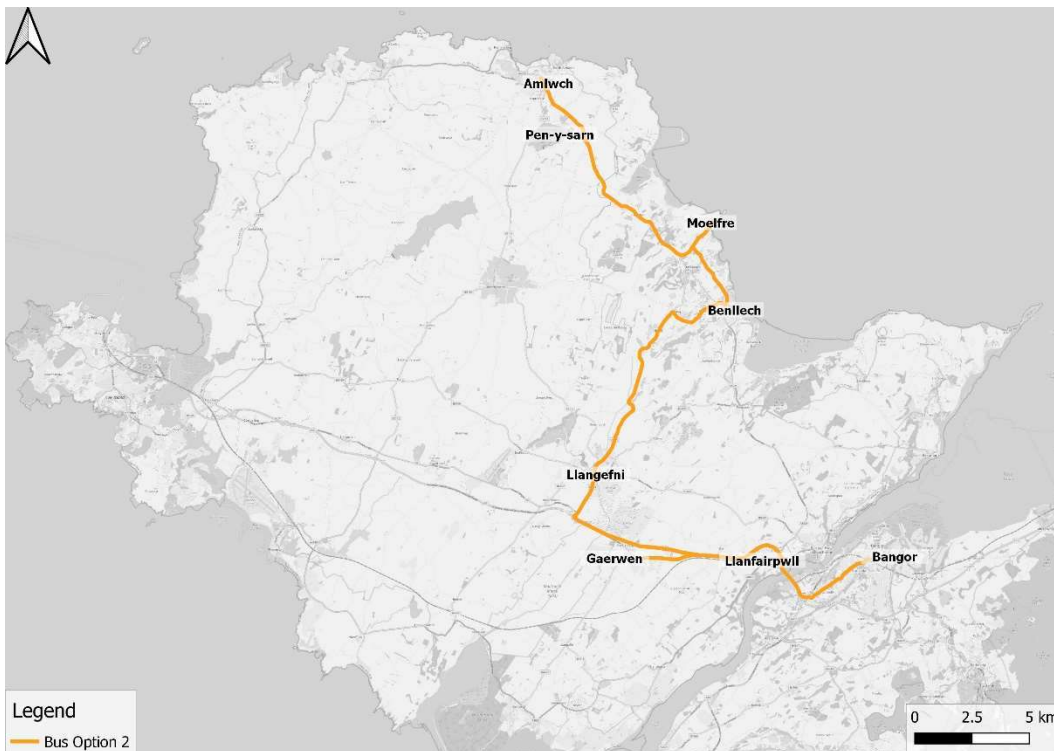
2.6 STAKEHOLDER ENGAGEMENT

Transport for Wales have had regular engagement with key stakeholders during the development of this business case as shown in **Table 25**. Further engagement will be held as the project progresses.

Table 25 – Stakeholder Engagement

Stakeholder	Role / Engagement	Views
MP for Ynys Môn, Virginia Crosbie	Sponsoring MP	Supportive
Welsh Government	Proposal co-funder	Supportive
Network Rail	Periodic updates and input into timetable assumptions	No objection
Lein Amlwch (Anglesey Central Railway Ltd)	Update meeting held July 2022	Supportive - keen to see services operating on the line
Sustrans	None held	Ambitions to use the corridor as a cycle route

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 71 of 95

3

TRANSPORT CASE

wsp

TRANSPORT CASE

3.1 OVERVIEW

The previous chapter set out the Strategic Case which provided the overall context for the study, the need for intervention and potential options. This section presents the Transport Case, which determines how well each option in the Long List performs against the assessment criteria, leading to the development of a short list of options.

3.2 OPTION ASSESSMENT CRITERIA

The option assessment criteria are classified as:

- Scheme objectives
- WelTAG impacts
- Critical Success Factors

The assessment against these criteria requires both quantitative as well as qualitative analyses.

All options have been scored using a seven-point scale, as recommended in the Welsh Transport Appraisal Guidance[31] (WelTAG):

- Large beneficial (+++)
- Moderate beneficial (++)
- Slight beneficial (+)
- Neutral (0)
- Slight adverse (-)
- Moderate adverse (- -)
- Large adverse (- - -)

3.2.1 SCHEME OBJECTIVES

The scheme objectives, as defined in the Strategic Case, are:
1. Improve journey times by public transport between population centres and key employment opportunities, thereby supporting socioeconomic growth in North Wales.
2. Reduce carbon impacts and greenhouse gas emissions from transport, thereby adapting to the impact of climate change.
3. Better connect local communities by public transport between Amlwch and Bangor to core public services including educational opportunities.
4. Create an integrated sustainable transport network that is safe, reliable and affordable, providing a realistic alternative to the private car.
5. Support the visitor economy in North Wales by improving public transport accessibility to key destinations.
6. Support delivery of the North Wales Metro proposals.

The assessment has been carried out based on how well the option supports each of the scheme objectives.

---

[31] https://gov.wales/sites/default/files/publications/2017-12/welsh-transport-appraisal-guidance.pdf

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 73 of 95

3.2.2 WELTAG IMPACTS

The Welsh TAG describes the Transport Case as the equivalent of the 'Economic Case' (Option Appraisal) in HM Treasury's Green Book. The WelTAG recommends considering the social, cultural, environmental and economic impacts of each option.

Based on the WelTAG recommendation and the DfT TAG, the assessment criteria have been defined as below:

Table 26 – WelTAG Criteria

WelTAG Recommended Criteria	Impacts relevant to the scheme
Social and Cultural	Safety Access to transport services Personal affordability
Environmental	• Biodiversity • Landscape and townscape • Noise • Local air quality • Historic environment • Carbon and other greenhouse gas (GHG) emissions • Resilience and adaption in terms of climate change
Economic	• Journey time • Journey time reliability • Resilience

3.2.3 CRITICAL SUCCESS FACTORS

The HM Treasury Guide to Developing the Project Business Case[32] 2018 defines critical success factors as the attributes essential for successful delivery of the project, against which the initial assessment of the options for the delivery of the project will be appraised, alongside the spending objectives.

The Guide provides a starting point for identifying and agreeing the critical success factors based on the Five Case Model. Those have been tailored to the scheme arrive at the following assessment criteria:

---

[32] [Guide to developing the Project Business Case (publishing.service.gov.uk)](publishing.service.gov.uk)

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 74 of 95

Table 27 – HMT Critical Success Factors

Relevant HM Treasury Recommended Key CSFs	Description
Potential Value for Money	How well the option optimises public value (social, economic and environmental), in terms of the potential costs, benefits and risks.
Supplier capacity and capability	How well the option: • matches the ability of potential suppliers to deliver the required services, and • is likely to be attractive to the supply side.
Potential affordability	How well the option: • can be funded from available sources of finance, and • aligns with sourcing constraints.

3.3 OPTIONS APPRAISAL

The appraisal outcomes for each option are summarised within the concise Appraisal Summary Table (AST), presented in **Figure 36**. The appraisal process has been used to identify the leading options and establish option packages to be taken forward for further appraisal at WelTAG Stage Two. Full ASTs for each option, which provide a detailed description behind the score awarded to each study objective, each of the appraisal areas, and the commentary against the 'wider considerations' namely acceptability, feasibility, deliverability and risk, can be found in **Appendix B.**

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 75 of 95

Figure 36 – Appraisal Summary Table

	Criteria	Option 1			Option 2			Option 3			Option 4		
		a (inland) - heavy rail	a (inland) - light rail	b (inland) - bus	a (coastal) - heavy rail	a (coastal) - light rail	b (coastal) - bus	a (spur) - rail	b (incremental inland) - rail	c (incremental coastal) - rail	a (spur) - bus	b (incremental inland) - bus	c (incremental coastal) - bus
Objectives	Improve journey times by public transport between population centres and key employment opportunities, thereby supporting socioeconomic growth in North Wales.	++	++	+	++	++	+	++	++	+++	0	+	++
	Reduce carbon impacts and greenhouse gas emissions from transport, thereby adapting to the impact of climate change.	++	++	+	++	++	+	++	++	++	+	+	+
	Better connect local communities by public transport between Amlwch and Bangor to core public services including educational opportunities	++	++	+	++	++	+	++	++	++	+	+	+
	Create an integrated sustainable transport network that is safe, reliable and affordable, providing a realistic alternative to the private car.	++	++	+	++	++	+	++	++	++	+	+	+
	Support the visitor economy in North Wales by improving public transport accessibility to key destinations.	++	++	++	+++	+++	+++	+	+++	+++	+	++	+++
	Support delivery of the North Wales Metro proposals.	+++	+++	+	+	+	+	++	++	+	+	+	+
WelTAG Impacts	Social & Cultural	++	++	+	++	++	+	++	++	++	+	+	+
	Environmental	-	-	0	-	-	0	0	-	-	0	0	0
	Economic	++	++	+	++	++	+	++	++	++	+	+	+
Critical Success Factors	Potential Value for Money	+	+	0	+	+	0	++	+	+	0	0	+
	Supplier Capacity and Capability	++	+	++	++	+	++	++	++	++	++	++	++
	Potential Affordability	--	-	++	---	--	++	-	-	---	++	++	++

Scoring	
Large Beneficial	+++
Moderate Beneficial	++
Slight Beneficial	+
Neutral	0
Slight Adverse	-
Moderate Adverse	--
Large Adverse	---

3.4 APPRAISAL SUMMARY

The appraisal of the options has shown overall to have a beneficial impact against the economic and social impact areas and the study objectives. In terms of the environmental impact, the options have beneficial impacts during operation due to additional trips by public transport, however, have a neutral to adverse impact during construction.

Value for Money (VfM) at this SOC stage considers the well-being of the public, which comprises of economic, social and environmental impacts of the option. All options have a neutral to slightly beneficial impact in terms of VfM, which is an average of all the three impacts. Note that a benefit to cost (BCR) appraisal has not been undertaken at this SOC stage.

All options would provide public transport journey time improvements, in part driven by service frequency improvements. The rail options would provide greater savings than bus options, with the shorter inland route slightly faster than the coastal route.

Similar to journey time improvement, the rail options significantly improve access by public transport to Llangefni, meaning that there will be improved access to key education and healthcare facilities. The accessibility improvement to Bangor is relatively minor. Both inland and coastal rail route options are expected to result in around 125-135% more people being able to reach Llangefni within 60 minutes from their homes. In the same context, the impact of bus options is expected to be around 32-35% increase in the number of people.

The demand estimates indicate that significantly greater patronage would be achieved by the coastal route than via the inland route. The coastal rail routes would increase the demand from around 3-4% of the market to around 16-18% of the market. At the same time, the inland rail routes would increase the demand from around 2-3% to approximately 8-14% of the market. The patronage expected to be achieved by bus options are relatively lower, which is around 1-6% of the market in the with-scheme scenario.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 76 of 95

In terms of environmental impacts, the rail options are expected to create a negative impact due to construction of rail infrastructure. Construction of a new inland or coastal rail line would result in a negative impact on landscape / townscape, biodiversity, historic environment, and noise, and potentially on air quality. A positive impact in terms of carbon savings, proportional to the modal shift away from private car, is anticipated. Construction along the former corridor would have fewer environmental impacts than the coastal route and would avoid potential resilience issues and risks associated with proximity to the coast and a mining and quarrying activities.

In terms of feasibility, bus options are assumed to use existing infrastructure and so could potentially be delivered sooner and at lower cost than rail-based options.

3.5 SHORT LIST OF OPTIONS

At this stage there is not a clear preferred option as there will be a trade-off between demand and costs. The rail options typically perform better than the bus options as they bring greater connectivity benefits and achieve a higher potential modal shift.

The coastal route would cost significantly more to construct than reusing the former alignment but the demand analysis indicates that it would also have higher patronage and revenue.

Further analysis of the demand is required at the next stage using the North Wales Transport Model to validate these findings as a simplified model has been used in this analysis.

The incremental options display a significantly lower level of demand and should be considered as interim stages for the full scheme.

Both heavy and light rail options should be considered as there is significant opportunity for cost savings to be achieved through a light rail solution.
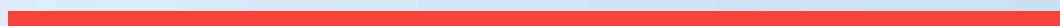
The short list of options is presented in **Table 28**.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 77 of 95

Table 28 – Short List of Options

Ref	Option	Description	Figure
1a (i)	Rail Option 1 (Heavy Rail)	Reinstatement of the former alignment between Amlwch and Gaerwen, connecting into the North Wales Mainline to serve Bangor.	Figure 32
1a (ii)	Rail Option 1 (Light Rail)	Reinstatement of the former alignment between Amlwch and Gaerwen, connecting into the North Wales Mainline to serve Bangor.	Figure 32
1b	Bus Option 1	An inland bus route from Amlwch to Bangor via Llangefni, broadly following Rail Option 1.	Figure 34
2a (i)	Rail Option 2 (Heavy Rail)	A new heavy rail alignment between Amlwch and Gaerwen via a coastal route, connecting into the North Wales Mainline to serve Bangor.	Figure 33
2a (ii)	Rail Option 2 (Light Rail)	A new light rail alignment between Amlwch and Gaerwen via a coastal route, connecting into the North Wales Mainline to serve Bangor.	Figure 33
2b	Bus Option 2	A coastal bus route from Amlwch to Bangor via Llangefni, broadly following Rail Option 2.	Figure 35

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 78 of 95

4

FINANCIAL CASE

FINANCIAL CASE

4.1 OVERVIEW

The WelTAG guidance states that the financial case *'presents information on whether a route is affordable in the first place and long-term financial viability. It covers both capital and annual revenue requirements over the life cycle of the project and the implications of these for the balance sheet, income and expenditure accounts of public sector organisations.'*

4.2 CAPITAL AND OPERATIONAL COSTS

Capital, or investment, costs are defined in TAG Unit A1.21 and the main components are construction, land and property, preparation and administration and maintenance costs. At this stage, capital costs of each option are based on the level of design available for each option. A more detailed, overall appraisal of the Financial Case, including scheme costs will be undertaken during WelTAG Stages Two and Three for the options being taken forward.

The capital costs for rail routes have been calculated based on the following assumptions:

- Preliminaries set at 15% of direct construction costs;
- Overheads and Profit set at 6% of direct construction costs;
- Design Fees set at 10% of direct construction costs;
- Project Management costs set at 15% of direct construction costs;
- Optimism Bias set at 56% of direct construction costs;
- Existing track/infrastructure on redundant corridors proposed to be re-instated is not re-usable and will be recovered and disposed of and replaced with new track;
- Existing formation and ballast on redundant corridors proposed to be re-instated is at an acceptable grade and stability/bearing capacity only requiring de-vegetation, cleaning, trimming and regulating/topping up with new track ballast, including sand blanket and bottom ballast;
- Cost estimates allow for crossings on new alignments to be by existing features (carriageways) diverted via new overbridges to provide grade separated crossings for major roads;
- Crossings, bridges, viaducts and tunnels will have the capacity for an additional track;
- At grade crossings include for reinstatement of level crossings for heavy rail options and traffic control for light rail options;
- Existing boundary fences will be retained and repaired as necessary;
- Ground conditions are considered to be normal, clean inert subsoils with no contamination;
- New alignments allow for cut fill volumes to be balanced with no removal off site;
- No allowance for local authority Road Closure costs;
- New track to be bi-directional by single track with passing loops;
- No remedial works to existing track incorporated in the scheme route;
- Linespeed, capacity and electrification works to existing lines excluded;
- Land costs excluded; and
- Base date: Q3 2022.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 80 of 95

This WelTAG report represents the Stage One: Strategic Outline Case, thus the details to inform the Financial Case are of a preliminary nature at this stage. Illustrative capital and operational expenditure forecasts are illustrated in **Table 29** for the full route options and the spur to Llangefni.

Table 29 – Capital and Operational Cost Estimates

Ref	Option	Capex (£m)	Vehicle and Station Opex (£m pa)		
			0.5 tph	1 tph	2 tph
Full Route Options					
1a (i)	Rail Option 1 (Heavy Rail)	144.3	1.7	3.1	5.8
1a (ii)	Rail Option 1 (Light Rail)	93.1	1.4	2.5	4.7
1b	Bus Option 1	-	0.3	0.6	1.2
2a (i)	Rail Option 2 (Heavy Rail)	531.6	1.8	3.3	6.4
2a (ii)	Rail Option 2 (Light Rail)	202.9	1.5	2.7	5.2
2b	Bus Option 2	-	0.3	0.7	1.4
Incremental Options (to Llangefni)					
3a	Spur to Llangefni (Heavy / Light)	34.2 / 22.5	0.7 / 0.6	1.3 / 1.1	2.6 / 2.1
4a	Service to Llangefni		0.1	0.3	0.5

Table 29 shows that the rail options require significant capital expenditure, whereas no capital costs are included for the bus options as they rely on existing highway infrastructure (bus stop improvement costs have not been estimated but would be comparatively small).

The option 1 inland rail alignment along the former corridor has a lower estimated cost than a new option 2 coastal route, which requires significant civil infrastructure works. The light rail equivalents in both cases have lower capital costs due to fewer civil works, and this difference is more pronounced for the option 2 alignment.

Operational costs for the rail options are higher than the bus options, and are higher for the coastal routes due to the additional distance travelled.

The incremental options have both lower capital and operational costs due to requiring less infrastructure and a lower operational mileage.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 81 of 95

4.3 REVENUE

The forecast number of trips for each option has been calculated based on the existing travel data extracted from the TfW North Wales Regional Transport Model. Catchment areas around stations and journey time improvements have been used to estimate the proportion of trips which would use each mode/route over a 16h period. This is a simplified model which has been used for the analysis of these options which is considered to be sufficient to provide an indication of likely demand. Mid-point estimates of trips for different service frequencies are shown in **Table 30**.

Table 30 – Forecast Trips & Revenue

Ref	Option	Forecast Trips per Day (16h)			Revenue pa (£m)		
		0.5 tph	1 tph	2 tph	0.5 tph	1 tph	2 tph
Full Route Options							
1a (i)	Rail Option 1 (Heavy Rail)	652	1,002	1,280	1.2	1.8	2.1
1a (ii)	Rail Option 1 (Light Rail)						
1b	Bus Option 1	254	277	300	0.4	0.4	0.5
2a (i)	Rail Option 2 (Heavy Rail)	1,118	1,692	2,108	2.0	3.0	3.6
2a (ii)	Rail Option 2 (Light Rail)						
2b	Bus Option 2	473	508	542	0.7	0.8	0.8
Incremental Rail Options							
3a	Spur to Llangefni	113	195	271	0.2	0.3	0.3
3b	Extension to Llangwyllog / Llanerch-y-medd / Rhosgoch	148 / 250 / 288	250 / 404 / 456	358 / 550 /611	0.2 / 0.4 / 0.5	0.3 / 0.6 / 0.7	0.4 / 0.8 / 0.9
3c	Extension to Benllech / Moelfre / Pen-y-sarn	483 / 604 / 733	811 / 965 / 1, 143	1,032 / 1,208 / 1,418	0.8 / 1.0 / 1.3	1.3 / 1.6 / 2.0	1.6 / 1.9 / 2.4
Incremental Bus Options							
4a	Service to Llangefni	46	52	58	0.1	0.1	0.1
4b	Service to Llangwyllog / Llanerch-y-medd / Rhosgoch	68 / 113 / 126	77 / 125 / 139	86 / 137 / 152	0.1 / 0.1 / 0.2	0.1 / 0.2 / 0.2	0.1 / 0.2 / 0.2
4c	Service to Benllech / Moelfre / Pen-y-sarn	181 / 242 / 295	198 / 263 / 320	214 / 282 / 342	0.3 / 0.4 / 0.5	0.3 / 0.4 / 0.5	0.3 / 0.4 / 0.5

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 82 of 95

Revenues have been estimated from the forecast number of trips over the 16h period, using an average cost per km rate calculated from a sample of existing short, medium and long-distance fares. This is a simplified model which does not consider concessionary rates or discounts but provides an indication of likely revenues. Mid-point estimates of the forecast revenue for each option has been calculated and is shown in **Table 30**.

Comparing the data in **Table 29** and **Table 30** shows that in most cases the revenue forecasts are not sufficient to cover the operational expenditure, and therefore would require an ongoing subsidy to cover the deficit. With certain combinations (i.e. the light rail options and infrequent services), the figures indicate that the forecast revenues and operating costs could be comparable, however the modelling applied at this stage is a simplified model and should be validated using the North Wales Transport Model at the next stage.

4.4 PROPOSED FUNDING STREAMS

It is expected that funding from a variety of sources would need to be explored with Welsh Government and Transport for Wales and Local Transport Funds. The revenue implications to maintain and upgrade the route overtime, together with more detailed appraisal of the funding steams will be explored and defined at a later WelTAG stage.

4.5 VALUE FOR MONEY AND AFFORDABILITY

Establishing Value for Money (VFM) is about finding the best way to use public resources to deliver policy objectives. All the long list options are expected to bring about benefits that will contribute to resolving the social, economic and transport related issues and challenges that have been outlined in the Strategic Case to a lesser or greater degree, dependent on the scale of the intervention.
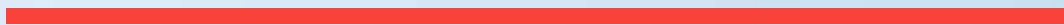
A BCR has not been calculated at this stage, however the cost estimates show that the rail options come with the highest capital and operational costs but are expected to deliver the highest benefits.

Incremental rail options provide the opportunity to stage the delivery of a full route with lower costs of implementation and operation.

A bus option is assumed to use existing infrastructure and therefore would have lower upfront infrastructure costs but are likely to deliver lower benefits than rail options.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales
CONFIDENTIAL | WSP
October 2022
Page 83 of 95

5

COMMERCIAL CASE

COMMERCIAL CASE

5.1 OVERVIEW

The Commercial Case, once complete, considers whether it will prove possible to procure the identified scheme and continue to support the venture during its lifecycle. It will address aspects such as potential funding and income streams, procurement methods, private and / or public-sector supplier opportunities, payment mechanisms, risk allocation, contract length and where applicable, human resources issues.

5.2 OUTPUT BASED SPECIFICATION

The options considered in this business case are outlined in the Strategic Case and Appendix D.

5.3 PROCUREMENT ROUTES

The procurement options for the a new rail service are outlined below

Procurement of Rail Infrastructure

There are three elements to the procurement of rail infrastructure to be considered; design procurement, delivery of the construction works, and the end state maintenance and management of the infrastructure.

Design Procurement

The market for rail design is mature and competitive. It is likely that TfW will be able to run a competitive tender process to select a design organisation which meets their requirements. As some elements of the design may be novel (for example there is only one tram-train currently operating in the United Kingdom) it would be prudent to build in time to the design programme where technological and organisational interfaces exist. It is estimated that a design programme from the current feasibility stage to detailed design would take 18 to 24 months.

Construction Works Procurement

The market for rail construction is mature and competitive and there are three broad mechanisms to procure the new infrastructure required to deliver the proposed services. The procurement timeframe is estimated at between 6-8 months from issuing expressions of interest to contract award.

- The first is through the existing method of working with Network Rail. This method would be best suited to those locations where a heavy rail only solution has been proposed, and the infrastructure is an extension of the existing heavy rail network;
- The second is through the approach which has been used for the Core Valley Lines/South Wales Metro with a separate infrastructure manager delivering a combination of light and heavy rail works, and also operating and maintaining the infrastructure once constructed; and
- The third is through the procurement of a specialist contractor with experience of constructing rail infrastructure. Depending on the end state for maintenance and operation of the infrastructure this method may increase complexity with additional interfaces between stakeholders.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 85 of 95

Infrastructure Manager Procurement

Once constructed, an infrastructure manager will be appointed. It is assumed that for reasons of operational simplicity this will either be Network Rail (or its successors) for existing Network Rail heavy rail infrastructure, or Amey Infrastructure Wales (AIW) (or its successors) for non-Network Rail infrastructure. The procurement timeframe is estimated at between 6-8 months.

Procurement of works via Network Rail

Where enhancements or extensions to the existing heavy rail network are proposed then delivery via Network Rail would entail fewer organisational interfaces and involve the end user and infrastructure manager in the delivery of the works. Unlike the Core Valley Lines, operating parts of a line, or small extents of new lines is likely to be inefficient and impractical through the use of a separate infrastructure manager.

While this approach would minimise these issues, it would also require TfW to make use of Network Rail standards, processes and procedures. Where TfW aspire to introduce novel or innovative works this would be more difficult to deliver if this did not align with Network Rail's standard approach to delivering projects. Network Rail is also not the manager for any light rail infrastructure, so were this required it would necessitate bespoke arrangements.

A publication by the Welsh Affairs Committee on rail infrastructure in Wales[33] (2020) detailed the challenges of "not being able to contract with Network Rail properly" for enhancement works; leading to cost increases and dilution of benefits. The use of emerging cost contracts by Network Rail have been described providing "no cost certainty for the Welsh Government and pass all of the financial risks of the project to (them). This compromises the Welsh Government's ability to actively manage risks and costs for the project"[34].

For this reason, discrete enhancements with a well-defined scope are likely to be suitable for delivery using this mechanism.

Procurement of works via a different infrastructure manager

The Core Valley Lines/South Wales Metro ownership was transferred from Network Rail to Transport for Wales in March 2020, and they are operated and maintained on its behalf by AIW. For new routes which would be wholly operated by TfW, this model may provide a suitable option for delivery.

Where interface with the mainline rail network is limited (e.g., the services would not be extensions of existing services, or the networks were operationally and physically separate) this method may also provide cost and delivery efficiencies. One benefit of this procurement approach is the ability to better manage the risks and costs of the project, although it is recommended that for such a potentially large programme of investment that TfW conduct market testing and consider how work is programmed to ensure the supply chain has sufficient capacity to deliver.

---

[33] The case for upgrading rail infrastructure in Wales. Welsh Affairs Committee, 2021
https://publications.parliament.uk/pa/cm5802/cmselect/cmwelaf/438/43806.htm#_idTextAnchor016
[34] Written response by the Welsh Government to the report of the Economy, Infrastructure and Skills Committee entitled "On the right track The Rail Franchise and South Wales Metro", https://senedd.wales/laid%20documents/gen-ld11194/gen-ld11194-e.pdf

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 86 of 95

Procurement of the works via a contractor

An alternative option of procurement of the works is through the use of a delivery contractor. There are numerous contractors who specialise in the delivery of rail infrastructure, and the market is competitive and mature.

This method would increase the number of commercial, operational and technical interfaces and may increase cost and programme.

Procurement of rolling stock

Previous proposals for new routes and services relied on the cascade of rolling stock across the network, generally with diesel rolling stock being replaced by electric traction on newly electrified railways. Diesel rolling stock would then be transferred to unelectrified lines, replacing older rolling stock.

With the publication of the Traction Decarbonisation Network Strategy, and the requirement for light rail and/or on-street running for some portions of the routes cascading rolling stock is unlikely to meet the needs of TfW. It is likely that a follow-on order of the existing tram-train rolling stock configured internally for longer distance operation would provide a preferred procurement solution. This would also provide the benefits of a homogenous fleet, reducing overall maintenance costs, as well as avoiding type-approval requirements for new rolling stock.

An assessment of different rolling stock options available is included within the Rail Long List report at Appendix D.

Procurement of rail services

Since February 2021, services have been operated by TfW Rail. This is a nationalised operator which took over from Keolis-Amey Wales. The reason for this change was a fall in passenger numbers as a result of the COVID-19 pandemic, and the associated fall in revenue from ticket sales – impacting the viability of the existing contract.

Depending on the timescales for delivery, future rail services could either be delivered directly through TfW Rail or could be contracted out to another operator through the use of a concession or management contract. Taking into account the requirement to make changes in line with the national timetable changes (usually in May and December), plus the need to undertake track access consultations where there is an interface with the existing rail network, the procurement timescale for rail services could take up to 18 months. Where the services are entirely separate it may be possible to complete procurement in 6-8 months.

Prior to choosing an approach, it is recommended that a review of the benefits and disbenefits of operating a vertically integrated railway (with both track and train operated by the same organisation) are reviewed based on experience from the Core Valley Lines. It should also be noted that vertical integration would only be possible on newly constructed infrastructure.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 87 of 95

6

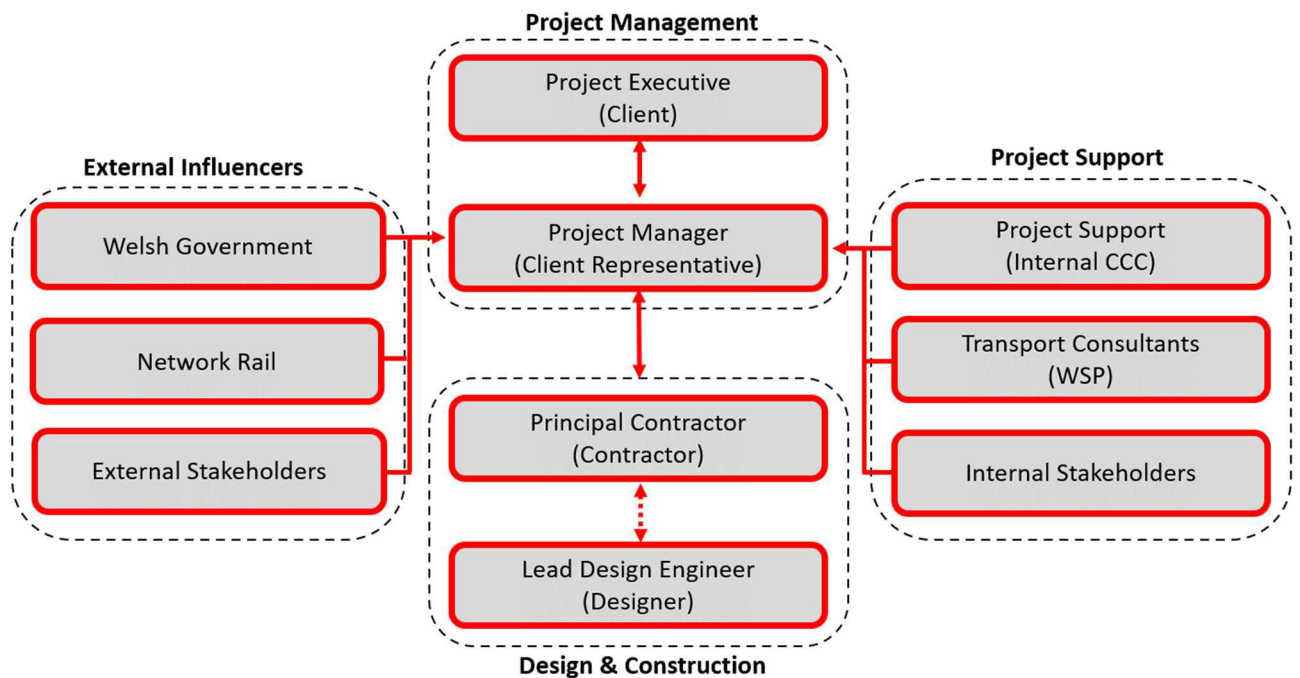# MANAGEMENT CASE

MANAGEMENT CASE

6.1 OVERVIEW

The Management Case covers the delivery arrangements for the project and proposed management during its lifetime. The WelTAG guidance states that in the Stage One report the Management Case needs to *'set out which organisation and groups within that organisation will sit on the Review Group that meets at the end of each WelTAG stage'*.

6.2 PROJECT PLANNING – GOVERNANCE & STRUCTURE

TfW, working on behalf of Welsh Government has led the development of this SOC and will continue in this role for the development phase. Should delivery funding be secured, the project would be taken forward under the TfW North Wales Metro Programme which is delivering rail, bus and active travel improvements across North Wales.

An example of a governance structure for the project management and delivery of this project is illustrated in **Figure 37,** alongside an example summary of key governance roles and responsibilities outlined in **Table 31**.

Figure 37 – Example Project Governance

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 89 of 95

Table 31 – Project Roles and Responsibilities

Role	Key Areas of Responsibility	Progress Review
Tier 1 – Project Executive • Project Director/ Lead	• High Level Strategy • Strategic Decision Making • Management of corrective mitigating actions • Client (CDM)	• Review of key issues and decisions as raised and reported by Project Management Team • Weekly updates via internal team meetings and briefings
Tier 2 – Project Management & Design • Project Manager and Lead Designer	• Project Management • Design • Procurement • Issue and risk mitigation and elevation to Tier 1 • Delivery of project plan and scheme delivery on time and on budget • Stakeholder engagement • Delivery • Main point of contact for all external and internal stakeholders • Designer (CDM) • Client Representative (CDM)	• Progress meetings • Preparation and submission of highlight reports • Separate internal meetings to solve ad-hoc issues
Tier 3 – Project Support • Project Support • Internal Departments • Consultants (WSP)	• Project support • Stakeholder engagement • Expert advice and guidance • Technical Information • Data gathering and analysis • Administration • Finance recording	• Progress meetings • Technical Notes • Impact Assessments • Project Documents

Key Project Parties & Roles

The key project parties and roles for the project are shown below:

- **Transport for Wales:** Government body overseeing public transport in Wales, managing the study on behalf of WG and procuring WSP via their consultancy framework.
- **Network Rail:** Infrastructure manager for the rail network
- **WSP:** Project Consultant, delivering the study.

Review Group

The WelTAG Review Group consists of the following organisations and people:

- Welsh Government; and
- Transport for Wales.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 90 of 95

The Review Group met weekly during the development of WelTAG Stage 1 to consider the development of options, the approach to appraisal and the output of the study. It is expected that during WelTAG Stage 2 that the Review Group would widen to include representatives from Welsh Government, Gwynedd and Ynys Mon local authorities and other third-party organisations as required.

6.3 COMMUNICATION & STAKEHOLDER MANAGEMENT

6.3.1 OVERVIEW OF APPROACH TO STAKEHOLDER MANAGEMENT

Stakeholder engagement has been planned, communicated and agreed with the Project Board from the outset of the study. It was agreed that during Stage 1 engagement would be wholly internal within TfW and the Project Board. No external engagement has been completed.

6.3.2 FUTURE STAKEHOLDER ENGAGAMENT

It is expected that during WelTAG Stage 2 further wider stakeholder engagement will be delivered. This would be delivered through a mix of formal stakeholder workshops and ongoing liaison at key stages throughout the study to collate data, discuss potential impacts and ensure buy-in to study objectives, approach and outcomes.

Stakeholders at this stage are expected to include but not limited to:

- Welsh Government;
- Transport for Wales;
- Network Rail;
- Local authorities;
- Trunk Road Agents;
- Bus operators;
- CADW;
- Natural Resources Wales;
- Public Utilities;
- General public (possible public consultation); and
- MSs and MPs.

6.4 INDICATIVE PROGRAMME AND DELIVERY APPROACH

6.4.1 RAIL

Planning Permission

While it may be possible to deliver limited elements of the scheme through Permitted Development under the General Permitted Development Order 1995, express Planning Permission will likely be required for significant areas of the scheme noting the potential need for works outside of existing 'operational' railway land and the high potential for the scheme to be considered Environmental Impact Assessment (EIA) development.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 91 of 95

Planning permission for the scheme would likely need to be obtained through the Development of National Significance (DNS) process in Wales. The construction of a railway is considered a DNS as set out in regulation 3(1)(f) of the National Significance (Specified Criteria and Prescribed Secondary Consents) (Wales) Regulations 2016 only if the railway (when constructed):

- *Is wholly or partly in Wales (subject to paragraph (2));*
- *Is part of network operated by an approved operator, and*
- *Includes a stretch of track that is a continuous length of more than two kilometres.*

As the aggregate of rail construction is greater than 2km, and would be delivered wholly within Wales, the DNS process is assumed as the route to obtain planning permission for the majority of the scheme. The decision on an application for a DNS is considered by ministers within the Welsh Government as opposed to the relevant local authority for an application for planning permission under the Town and Country Planning Act 1990.

Transport and Works Act Order

An order made under the Transport & Works Act 1992 is a typical way of authorising a new railway in Wales. A Transport and Works Act Order (TWAO) will likely be needed to be secure powers to construct, operate and maintain the railway elements of the scheme. Notable powers that can be sought as part of a TWAO are compulsory acquisition of land or rights in land both temporarily and permanently and the provision of statutory authority, which means that the works enjoy the status of a statutory undertaking.

The proposed land corridors would require compulsory acquisition for delivery of the scheme. While the proposed corridors currently identified are broad, as design development continues and the precise requirements become more defined, TfW should carefully manage how the project is communicated. In particular, prior to identifying specific parcels of land, it is recommended that legal and planning advice is sought to minimise risk and potential liabilities.

Amongst other considerations, it highlights the risk that a poorly managed approach to compulsory purchase can pose to a scheme. Where the requirement for compulsory acquisition is poorly defined, or the detriment to those with an interest in the land is not resolved adequately then this could increase the length of the programme, lead to higher land and related costs, and cause reputational damage to the relevant organisations.

Although when granted a TWAO itself does not grant planning permission, deemed planning permission can usually be requested as part of the TWAO under Section 16 of the TWA 1992. There are however currently no precedents for a TWAO application in Wales where the proposed works would trigger the need for planning permission to be obtained through the DNS process as highlighted above.

The options would be with a TWAO including a request for deemed planning permission or TWAO and DNS in a process that supports a single decision. TfW are advised to undertake further discussions with Welsh Government officials to be able to offer a definitive opinion on which route to pursue due to this lack of precedent.

Indicative timescales are shown in **Table 32**.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 92 of 95

Table 32 – Programme for Delivery

Milestone	Dates / Approximate Durations
Submission of SOC	September 2022
WelTAG Stage Two - OBC	12 months
WelTAG Stage Three - FBC	12 months
Construction Phase	3 – 4 years
Services Operational	~ 6 years

6.5 RISK MANAGEMENT STRATEGY

A risk register has been developed to capture risks identified at this stage of the project, which will be reviewed, updated and managed by the project team as the scheme develops. The key risks at this stage are:

Technical risks:
   o   Timetabling or capacity works on the existing mainline (i.e. crossover / additional platform at Bangor) may be required to operate a 1 tph service with the December 2022 timetable – to be reviewed further at OBC stage
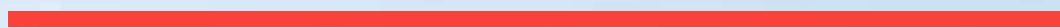
Funding risks:
   o   DfT approval required to proceed post-SOC stage
   o   Ongoing subsidy funding will be required

6.6 MONITORING AND EVALUATION PLAN

A Monitoring and Evaluation Plan will be produced at the Outline Business Case stage once a preferred strategy has been identified. This will include an evaluation of the appropriate monitoring and evaluation activities to assess whether the scheme outputs and outcomes have been achieved.

WELTAG STAGE ONE: STRATEGIC OUTLINE CASE
Project No.: 70094560 | Our Ref No.: 70094560-WSP-RPT-00001 P01
Transport for Wales

CONFIDENTIAL | WSP
October 2022
Page 93 of 95

7

SUMMARY & NEXT STEPS

SUMMARY & NEXT STEPS

7.1 SUMMARY REPORT & NEXT STEPS

A separate summary report has been prepared for submission to the DfT Restoring Your Railway panel. A decision on the next steps following its submission SOC will be taken by the RYR Panel, comprising representatives from DfT, HM Treasury and MHCLG.

APPENDICES

4th Floor
6 Devonshire Square
London
EC2M 4YE

wsp.com