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Transport Planning

VALE OF GLAMORGAN REPLACEMENT LDP

STRATEGIC TRANSPORT ASSESSMENT – STAGE 1

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VALE OF GLAMORGAN COUNCIL

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1. INTRODUCTION

1.1 Context

1.1.1 Link Transport Planning has been commissioned by the Vale of Glamorgan Council (VoGC) to conduct a Strategic Transport Assessment (STA) for the Vale of Glamorgan's (VoG) highway network. This assessment forms a crucial part of the evidence base for the Replacement Local Development Plan 2021 to 2036 (RLDP). The STA is structured into two stages:

- 1) **Stage 1:** This initial stage offers a comprehensive review of the baseline transport conditions in the VoG. It examines the existing transport infrastructure and its current operational state, using various data sources.
- 2) **Stage 2:** The subsequent stage will review the highway impact of the proposed land allocations, outlining the potential opportunities and challenges for the VoG's transport network throughout the RLDP period. It will explore various forecasting scenarios and their implications for the transport system.

1.1.2 The STA is produced in conjunction with the RLDP Preferred Strategy. The key areas of focus in this report are:

- **Transport Policy:** The report will scrutinise transport policies and legislation, ensuring that decisions affecting the VoG's transport system are aligned with current and future government policies.
- **Baseline Highway Operation:** It will review the existing conditions of the highway network within the Vale of Glamorgan. This review is crucial for understanding the current state of transport infrastructure and will be based on diverse data sources.
- **Geospatial Analysis:** A detailed geospatial analysis will be provided, utilising multiple data sources including UK Census Data from 2011 and 2021, the Welsh Index of Multiple Deprivation (WIMD) 2019, and mobile network origin/destination data from Transport for Wales (TfW).
- **Sustainable Transport:** The report will focus on the current state and future development of sustainable transport networks in the region. This includes an assessment of active travel, bus, and rail networks, along with emerging priorities for sustainable transport over the RLDP period.

1.1.3 It is important to note that the South East Wales Transport Model (SEWTM), managed by Transport for Wales, will be a vital tool in the second stage of the STA and is undergoing a major update. This update, scheduled to be completed in January 2024 for the rebased model and April 2024 for the forecasting scenarios, includes an expansion and recalibration of the model.

- 1.1.4 It is designed to more comprehensively cover the region and incorporate new flow data and forecasting scenarios for committed developments and replacement LDP land allocations. Due to the timelines of the VoGC RLDP, existing data sources are being used for Stage 1 of the STA to provide context in terms of constraints and opportunities to inform the emerging Preferred Strategy.

1.2 Outcome

- 1.2.1 The key outcomes of the Stage 1 STA are outlined as follows:

Policy

- The STA will provide a thorough summary of all key policies relevant to the emerging RLDP.
- It will highlight crucial aspects of current transport policy and offer recommendations for land use planning within this context.
- The report will demonstrate how the STA methodology aligns with transport policy and legislation, ensuring that key findings are applied effectively.

Baseline Highway Operation:

- A significant outcome will be the identification and appraisal of all key strategic junctions in the Vale. This will include an assessment of the current network performance, focusing on aspects such as vehicular capacity, delay, and safety.
- The document will underscore key data sources and trends, which will be instrumental in guiding the subsequent stages of the STA.

Geospatial Analysis:

- This component will offer an analytical approach that encompasses demographic information, socioeconomic indicators, and dynamic mobility patterns to create a detailed spatial narrative for the Vale.
- This examination will enhance understanding of how residents in the Vale of Glamorgan move and the factors influencing their mobility choices.

Sustainable Transport:

- The assessment will review the existing sustainable transport network in the Vale of Glamorgan and regional priorities.
- It is focused on identifying constraints and opportunities that will have a direct impact on policy aspirations for a modal shift towards more sustainable transport modes, such as walking, cycling, and public transport.

- This analysis aims to inform the development process of the RLDP, ensuring that sustainable transport is at the forefront of future planning strategies.

1.2.2 Overall, the STA aims to provide a comprehensive, multi-dimensional view of the Vale of Glamorgan's transport context, underpinning future transport planning and policy decisions within the framework of the RLDP.

2. TRANSPORT POLICY

2.1 NATIONAL POLICY

Well-being of Future Generations (Wales) Act 2015

2.1.1 The Well-being of Future Generations (Wales) Act 2015 represents a landmark legislation in the United Kingdom, aiming to make the public bodies in Wales think more about the long-term, work better with people, communities and each other, look to prevent problems, and take a more joined-up approach.

Five Ways of Working

2.1.2 The Act has identified five ways of working that public bodies need to think about to show that they have applied the sustainable development principle. These are:

- 3) **Long-term:** The importance of balancing short-term needs with the need to safeguard the ability to also meet long-term needs.
- 4) **Prevention:** Acting to prevent problems occurring or getting worse may help public bodies meet their objectives.
- 5) **Integration:** Considering how public bodies' well-being objectives may impact upon each of the well-being goals, on their other objectives, or on the objectives of other public bodies.
- 6) **Collaboration:** Acting in collaboration with any other person (or different parts of the body itself) can help public bodies meet their well-being objectives.
- 7) **Involvement:** The importance of involving people with an interest in achieving the well-being goals and ensuring that those people reflect the diversity of the area.

Seven Well-being Goals

2.1.3 The Act also establishes seven well-being goals for Wales. These are:

- 1) **A Prosperous Wales:** A more innovative, productive and low carbon society which recognises the limits of the global environment and uses resources efficiently and proportionately.
- 2) **A Resilient Wales:** A society that maintains and enhances a biodiverse natural environment with healthy functioning ecosystems.
- 3) **A Healthier Wales:** A society where people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.
- 4) **A More Equal Wales:** A society that enables people to fulfil their potential no matter what their background or circumstances.
- 5) **A Wales of Cohesive Communities:** Attractive, viable, safe and well-connected communities.

6) **A Wales of Vibrant Culture and Thriving Welsh Language:** A society that promotes and protects culture, heritage and the Welsh language, and encourages participation in the arts, sports, and recreation.

7) **A Globally Responsible Wales:** A society that, in a globally responsible manner, takes account of all the potential impacts of decisions both locally and globally.

2.1.4 The well-being goals are closely linked to the transportation sector, which has a significant impact on a range of social, environmental, economic and cultural issues.

Active Travel (Wales) Act 2013 and Guidance (2021)

2.1.5 The Active Travel (Wales) Act 2013 was enacted on 4 November 2013, representing a significant commitment by the Welsh Government to make walking and cycling the most natural and normal way of getting about. The Act provides for the creation of Active Travel Maps and places duties on local authorities to continuously improve facilities and routes for pedestrians and cyclists.

2.1.6 To support the Act, the Welsh Government has published an accompanying guidance document (Active Travel Act Guidance – July 2021) to ensure correct procedures and outcomes in respect of scheme implementation. This document also covers best practices for what is expected of new development in terms of high-quality walking and cycling infrastructure.

2.1.7 The Act highlights the requirement for the user hierarchy to be followed when considering transport interventions and the key criteria for high-quality active travel infrastructure. These are provided in Figure 1.

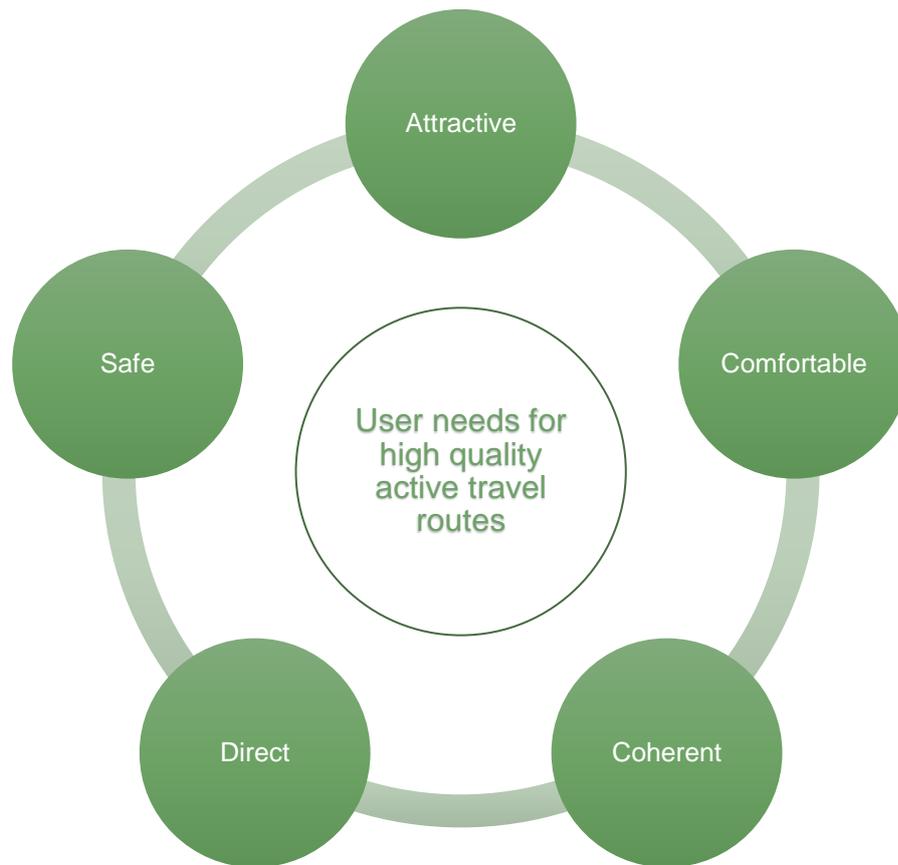


Figure 1: User needs for active travel routes

2.1.8 Under Section 7 of the Act, local authorities are required to enhance the provision for pedestrians and cyclists. This includes the following duties:

- S.7(1) Duty to make continuous improvement to active travel routes and facilities.
- S.7(2) Duty to have regard to guidance on continuous improvement.
- S.9(1) Duty to take reasonable steps to enhance active travel provision while exercising certain functions under the Highways Act 1980.
- S.9(2) Duty to have regard to the needs of walkers and cyclists while exercising certain traffic management functions.
- S.10(1) Duty to exercise functions under this Act in a way that promotes active travel and secures more active travel infrastructure.

2.1.9 The Act makes it clear that consideration of the needs of walking and cycling must be at the forefront of all transport interventions exercised as part of local authority statutory functions.

Llwybr Newydd: The Wales Transport Strategy (2021)¹

Vision

2.1.10 The Welsh Government's Llwybr Newydd - The Wales Transport Strategy 2021 (WTS) presents a comprehensive vision for the future of transportation in Wales.

2.1.11 The overarching vision of the strategy is to establish:

'An accessible, sustainable, and efficient transport system.'

2.1.12 This vision underscores the government's commitment to ensuring that the transport system is not only efficient in its operations but also environmentally friendly and easily accessible to all residents of Wales.

Priorities

2.1.13 The WTS has outlined three headline priorities to guide the nation's transport decisions and initiatives over the next five years. These priorities align with the broader vision of creating an accessible, sustainable, and efficient transport system for Wales.

2.1.14 **Priority 1 - bring services to people in order to reduce the need to travel:** The strategy emphasises the importance of bringing services closer to the people, thereby reducing the need for travel. This approach not only minimises the environmental impact of transportation but also enhances the convenience and accessibility of essential services for the residents of Wales.

2.1.15 To achieve this, Welsh Government seeks to:

- Encourage remote working to avoid long distance commutes. This includes a target of 30% of the workforce to work remotely on a regular basis.
- Build new workplaces and homes close to public transport and to design new developments to be walk and cycle friendly from the outset.
- maximise the use of land close to transport hubs including railway stations and ports, as sites for investment and growth

2.1.16 **Priority 2 - allow people and goods to move easily from door to door by accessible, sustainable and efficient transport services and infrastructure:** The strategy envisions a transport system where both people and goods can move effortlessly from one location to another. This entails the provision of accessible, sustainable, and efficient transport services and infrastructure that facilitate door-to-door movement without any hindrances.

¹ Llwybr Newydd - The Wales Transport Strategy 2021, Welsh Government (2021)

- 2.1.17 To achieve this priority, the Welsh Government will actively seek to shift users from private car to sustainable modes of travel through ongoing investment. Furthermore, it commits to improving the reliability, safety and frequency of public transport services. This includes extending public transport coverage into rural communities.
- 2.1.18 The Welsh Government will also future-proof infrastructure to adapt to climate change by committing to:
- Maintain and manage current transport infrastructure effectively.
 - Prioritise adapting infrastructure to encourage switching transport modes.
 - For new infrastructure, prioritise walking, cycling, public transport, and ultra-low emission vehicles.
 - Ensure inclusive design for accessibility and safety in all projects.
 - Embrace digital innovations for better management, maintenance, and congestion reduction.
- 2.1.19 **Priority 3 - encourage people to make the change to more sustainable transport:** The third priority underscores the importance of encouraging individuals to transition to more sustainable modes of transport. By promoting eco-friendly transportation options, the strategy aims to reduce the carbon footprint of the transport sector and contribute to a greener and more sustainable Wales.
- 2.1.20 To achieve priority 3, the Welsh Government is initiating projects to encourage smart travel choices, reducing congestion and promoting sustainable transport. It aims to enhance the public transport experience by boosting reliability, punctuality, and staff training.
- 2.1.21 The Welsh Government is also transitioning towards shared mobility solutions like car-sharing and bike-sharing. Plans are underway to establish an equitable road-user charging framework in Wales, factoring in the needs of rural residents and economically challenged groups.
- 2.1.22 It is envisaged that road charging revenue will be redirected to upgrade public transport and active travel facilities, introduce cost-saving measures for sustainable travel, and support digital innovations for seamless journey planning.
- 2.1.23 Community engagement will be central, with the goal to tailor transport solutions to local needs. The Welsh Government also aim to reshape the public image of walking, cycling, and public transit through targeted campaigns and education.

Plans

- 2.1.24 The strategy sets out mini-plans as to how individual transport sectors and modes will deliver the priorities in Llwybr Newydd.
- 2.1.25 The Wales Transport Strategy vision for Active Travel is:

‘In line with the Active Travel (Wales) Act we want walking and cycling to become the normal choice for shorter journeys, because active travel is better for our health, our environment and the economy’

2.1.26 To achieve the Active Travel vision, the Welsh Government has identified a number of priorities. Those most applicable to the Strategic Transport Assessment are the commitments to:

- continuously develop a network of local routes for walking and cycling to connect people with the places they travel to for everyday journeys
- refresh the plans for Integrated Active Travel Networks every three years, based on extensive consultation with a particular emphasis on people who do not currently walk or cycle for local trips
- train and develop professionals in best practice active travel design and guidance to ensure high quality infrastructure is put in place
- develop a package of ‘soft’ behaviour change measures, such as aiming to make cycle training available for all and travel planning, to complement ‘hard’ infrastructure investment
- put in place a policy framework that ensures that all new developments, including new school and health facilities, make provision for walking and cycling from the outset
- encourage all schools to have an active travel plan and adopt actions to slow traffic and widen footways around schools
- change the default speed limit from 30mph to 20mph in built-up areas to reduce traffic related injuries and fatalities and make walking and cycling safer and more attractive (implemented in September 2023)
- support safer, better cycle paths and more space for walking and cycling through closing roads for vehicle traffic, more facilities for pedestrians, and support for cycle training and safety schemes for all road users
- manage and evaluate the Active Travel Fund which supports local authorities to develop and deliver active travel schemes, including best-practice sharing and regional collaboration
- work towards ‘Safe Cycling from Village to Town’ giving villages safe cycling access to the nearest town and creating hub-and-spoke active travel corridors connecting market towns and other significant local centres to surrounding villages and outlying developments

2.1.27 The Wales Transport Strategy vision for bus services is:

‘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.’

2.1.28 To achieve the bus vision, Welsh Government has identified a number of priorities. Those most applicable to the Strategic Transport Assessment are the commitments to:

- support quality, affordable, regular, reliable and punctual bus services in partnership with local authorities, the commercial and third sectors
- address congestion hotspots and invest in bus stations and stops to speed up journeys and improve passenger experiences
- extend the reach of bus services in Wales
- deliver innovative, more flexible bus services, in partnership with local authorities, the commercial and third sectors
- progress our new bus legislation that gives the public sector more control over local bus services

2.1.29 The Wales Transport Strategy vision for rail services is:

‘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.’

2.1.30 To achieve the rail vision, Welsh Government has identified a number of priorities. Those most applicable to the Strategic Transport Assessment are the commitments to:

- deliver our public transport Metro systems in all parts of Wales to improve services and better integrate other public transport and active travel with the rail system
- make rail services more attractive and improve customer experiences
- work with the UK Government to develop the rail element as part of the wider solution to congestion on the M4
- work with Network Rail and the UK Government to improve rail infrastructure across Wales, including rolling out rail electrification across Wales, delivering network improvements and extensions, developing new stations and re-opening stations in Wales
- maintain and manage existing infrastructure under the control of Welsh Government, including upgrades to existing stations and improving the resilience of rail infrastructure to flooding and extreme weather

2.1.31 The Wales Transport Strategy vision for roads, streets and parking is:

‘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 public transport.’

2.1.32 To achieve this vision, Welsh Government has identified a number of priorities. Those most applicable to the Strategic Transport Assessment are the commitments to:

- maintain and operate the Strategic Road Network in a way that meets our statutory obligations, minimises adverse environmental impacts, promotes active travel, sustains and creates employment in Wales and reduces the backlog of maintenance
- introduce a new national default speed limit of 20mph in residential areas and tackle pavement parking
- deliver a strategy for fair road-user charging in Wales as part of a broader package of measures to improve travel choices
- upgrade, improve and future-proof our road network, addressing congestion pinch points and investing in schemes that support road safety, journey reliability, resilience, modal shift and electric bike, motorbike and vehicle charging
- develop policies on parking for all vehicle types to drive modal shift to public transport and active travel, taking equality into account for example, ensuring that parking provision for disabled people is maintained in the design of new schemes and road layouts
- enhance the Intelligent Transport System to improve real-time and open-source information for users and developers

Planning Policy Wales – Edition 11 (2021)

2.1.33 Planning Policy Wales – Edition 11 (Welsh Government, 2021) (PPW) provides guidance on various aspects of planning and development in Wales. It covers topics such as placemaking, sustainable development, strategic choices, transportation, housing, and commercial development. The primary aim of the document is to promote well-being, sustainable practices, and the creation of active and social places in Wales.

Strategic and Spatial Choices

2.1.34 In most areas, new development should be located in settlements with relatively good accessibility by non-car modes. Development should embrace the national sustainable placemaking outcomes and offer good active travel connections to the centres of settlements.

2.1.35 Development in the countryside should be located within, and adjoining, settlements where it can best be accommodated in terms of infrastructure, access, habitat, and landscape conservation. New building in the open countryside away from existing settlements or areas allocated for development in development plans must be strictly controlled.

- 2.1.36 When identifying sites in development plans, planning authorities should prioritise the use of suitable and sustainable previously developed land and/or underutilised sites located within existing settlements.
- 2.1.37 An essential component of a sustainable place is where it is located. Development plans will identify areas and sites for new development based on the needs of existing urban and rural areas and future relationships between urban settlements and their rural hinterlands. This is to ensure strong rural and urban communities that are resilient to social, economic change, and climate change impacts.
- 2.1.38 Spatial strategies should support objectives to minimise travel, reduce reliance on private cars, and increase walking, cycling, and public transport use.
- 2.1.39 A balance between housing, community facilities, services, and employment opportunities should be promoted to minimise long-distance commuting. Major travel demand generators, such as housing, employment, retailing, leisure, and community facilities, should be located within existing urban areas or areas easily reached by walking, cycling, and well-served by public transport.
- 2.1.40 Higher densities should be encouraged in urban centres and near major public transport nodes. Development sites highly accessible to non-car modes should be allocated for travel-intensive uses, while sites unlikely to be well-served by walking, cycling, and public transport should not be allocated for development.
- 2.1.41 New settlements should only be proposed where they offer significant advantages over the expansion or regeneration of existing settlements. They need to be self-contained, linked to high-frequency public transport, and include essential social infrastructure.

Active and Social Places

- 2.1.42 This theme is of high importance to the Strategic Transport Assessment as it emphasises the importance of well-designed and strategically located homes that are closely connected to retail and commercial centres at the core of communities. It highlights the need for planning authorities to ensure that both existing and new community residents have easy access to job opportunities and a variety of community facilities such as, recreation, leisure, health, and education.
- 2.1.43 Additionally, the theme aims to design and locate new developments in a manner that reduces the need to travel, cuts down on private car dependency, and promotes sustainable access to jobs, services, and community facilities. This can be achieved by integrating these developments with sustainable transport infrastructure and designing them to prioritise sustainable travel modes over private cars.
- 2.1.44 Paragraph 4.1.4 outlines the importance of integrating land use and transport planning for facilitating cohesive communities:

'Land use and transport planning must be integrated. The planning system must ensure it enables integration:

- *within and between different types of transport;*
- *between transport measures and land use planning;*
- *between transport measures and policies to protect and improve the environment; and*
- *between transport measures and policies for education, health, social inclusion and wealth creation.'*

2.1.45 Paragraph 4.1.5 and 4.1.6 continue to state:

'Development plans provide the main means for achieving integration between land use and transport planning. They must provide an explanation of the authority's transport aims, the way in which the transport policies support the other objectives of the plan, and how the development plan (including its land allocations and policies) will support sustainable transport.'

Planning authorities must set out in their development plan an integrated planning and transport strategy. This should set out how the planning authority will:

- *integrate and co-ordinate sustainable transport and land use planning;*
- *facilitate and promote accessibility for all;*
- *reduce the need to travel;*
- *reduce dependency on private vehicles;*
- *prioritise and support walking, cycling and use of public transport;*
- *support the uptake of Ultra Low Emission Vehicles;*
- *reduce transport related airborne pollution; and*
- *facilitate the provision of transport infrastructure and necessary sustainable transport improvements and development.'*

2.1.46 PPW highlights the Welsh Government commitment to reducing reliance on the private car and supporting modal shift to walking cycling and public transport. It recognised that the planning system is critical to this commitment by ensuring appropriately located and well-designed development to facilitate and encourage sustainable travel.

2.1.47 Paragraph 4.1.11 states that:

'Development proposals must seek to maximise accessibility by walking, cycling and public transport, by prioritising the provision of appropriate on-site infrastructure and, where necessary, mitigating transport impacts through the provision of off-site measures, such as the development of active travel routes, bus priority infrastructure and financial support for public transport services. Importantly, sustainable transport infrastructure and services should be prioritised and put in place from the outset, before people have moved in and travel patterns have been established.'

2.1.48 It is important to note from the above the importance of transport mitigation that focuses on active travel and not motor vehicle capacity.

2.1.49 The sustainable transport hierarchy is integral to Planning Policy Wales. It is intended to be used as a tool to minimise the need to travel, deter car-reliant developments in unsuitable areas, and promote projects that prioritise environmentally-friendly and active transportation.

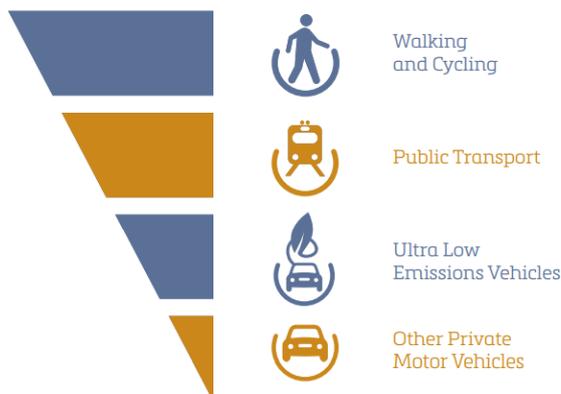


Figure 2: PPW Sustainable Transport Hierarchy

2.1.50 This hierarchy should be central to the creation of development plans, site allocations, and the evaluation of planning applications.

2.1.51 When planning new sites that might lead to significant movement, it is noted that it is crucial to ensure that provisions for walking, cycling, and public transport are integrated from the beginning. This will be critical in the Strategic Transport Assessment when mitigation requirements are considered.

2.1.52 Paragraph 4.1.29 stresses that:

'The planning system has an important role to play in promoting and supporting the delivery of the Active Travel Act and creating the right environments and infrastructure to make it easier for people to walk and cycle, including new and improved routes and related facilities.'

2.1.53 Paragraph 4.1.30 continues to state that:

'...Developing local active travel networks can help to mitigate the impact of new development, by providing an alternative mode of travel to the private car, particularly for shorter journeys. Provision for active travel must be an essential component of development schemes and planning authorities must ensure new developments are designed and integrated with existing settlements and networks, in a way which makes active travel a practical, safe and attractive choice.'

2.1.54 Paragraph 4.1.33 states:

'Development plans must identify and safeguard active travel routes and networks, including those identified in the Active Travel Network Maps required by the Active Travel Act, and support their delivery. As part of the selection of future development sites, priority should be given to sites which can be readily connected to existing active travel routes or future networks. New development should be integrated with active travel networks and contribute to their expansion and improvement, through the inclusion of well-designed routes and facilities as part of the schemes and financial contributions to pay for off-site connections. Planning authorities should also seek to assist in the completion of the national cycle network and key links to and from the network.'

- 2.1.55 With regards to public transport, Planning Policy Wales highlights that new developments should be situated in areas where there is either existing robust access to public transport or the potential to introduce such access. The design, layout, density, and mix of uses in these areas should be structured in a way that actively supports and promotes the use of public transport services.
- 2.1.56 Planning Policy Wales requires planning authorities to steer development towards areas that are most accessible by public transport. Sites with strong public transport connections should be prioritised for functions that necessitate frequent travel, such as housing, jobs, shopping, leisure, and services.
- 2.1.57 Planning Policy Wales requires planning authorities to evaluate whether the scale of public transport services is sufficient to make it an appealing and feasible travel option for new development sites. The potential traffic impact of a development should be scrutinised, with the aim of reducing the number of car trips it might generate.
- 2.1.58 If there is a need for additional public transport for a particular development, this requirement should be integrated into the development plan. To fund this, financial contributions can be sourced through planning conditions or obligations.
- 2.1.59 As per Active Travel requirements, Planning Policy Wales also underscores the importance of rolling out any new public transport infrastructure early in a development's life cycle, ensuring that sustainable travel habits are ingrained from the beginning.
- 2.1.60 With regards to traffic management, Planning Policy Wales references The Road Traffic Reduction Act 1997², which requires local authorities to assess the traffic on the roads for which it is the local highway authority and provide forecasts of expected changes in traffic levels. This process should also contain targets for reducing levels of local road traffic or the rate of growth of those levels.
- 2.1.61 PPW paragraph 4.1.45 and 4.1.46 state that:

'Local authorities must adopt an integrated approach to traffic management. They should consider how different measures can complement one another and contribute to the achievement of wider planning and transport objectives, implementing the Active Travel Act and reducing exposure to air and noise pollution, taking into account the needs of the disabled and less mobile sections of the community.'

The development plan must include appropriate traffic management policies. These policies should be consistent with the approach adopted to fulfil local road traffic reduction targets and any national targets set by the Welsh Ministers under the Road Traffic Reduction (National Targets) Act 1998³.'

² Road Traffic Reduction Act 1997 <http://www.legislation.gov.uk/ukpga/1997/54/contents>

³ Road Traffic Reduction (National Targets) Act 1998 <http://www.legislation.gov.uk/ukpga/1998/24/contents>

Future Wales: The National Plan 2040 (2021)

- 2.1.62 Future Wales replaces the Wales Spatial Plan and applies the key principles of Planning Policy Wales. It forms part of the development plan for the Vale of Glamorgan, alongside the adopted local development plan.
- 2.1.63 Future Wales is focused on strategic developments and its policies must be applied for all new developments.
- 2.1.64 Key policies in the context of the STA are 11 and 12 and 36, which state:

Policy 11 – National Connectivity

The Welsh Government will support and invest in improving national connectivity. Our priorities are to encourage longer-distance trips to be made by public transport, while also making longer journeys possible by electric vehicles.

The Welsh Government will work with Transport for Wales, local authorities, operators and partners to support the delivery of the following measures to improve national connectivity:

- Rail Network – Transform the rail network and improve the quality of rail services for passengers.*
- Bus Network – Invest in the development of the national bus network, fully integrated with regional and local bus networks, to increase modal share of bus travel and improve access by bus to a wider range of trip destinations.*
- Strategic Road Network – Invest in road improvements to reduce journey times, deliver a safer and more resilient road network, and improve air and noise quality. Create a network of rapid-charging points to enable longer distance travel by electric vehicles throughout Wales.*
- National Cycle Network – Revitalise the National Cycle Network to create a network of traffic-free paths connecting cities, towns and countryside across Wales.*

Planning authorities should support developments associated with improvements to national connectivity and, where appropriate, maximise the opportunities that arise from them.

Planning authorities must ensure that, where appropriate, new development contributes towards the improvement and development of the National Cycle Network and key links to and from it.

Policy 12 – Regional Connectivity

The Welsh Government will support and invest in improving regional connectivity. In urban areas, to support sustainable growth and regeneration, our priorities are improving and integrating active travel and public transport. In rural areas our priorities are supporting the uptake of ultra-low emission vehicles and diversifying and sustaining local bus services.

The Welsh Government will work with Transport for Wales, local authorities, operators and partners to deliver the following measures to improve regional connectivity:

- *Active Travel – Prioritising walking and cycling for all local travel. We will support the implementation of the Active Travel Act to create comprehensive networks of local walking and cycling routes that connect places that people need to get to for everyday purposes.*
- *Bus – Improve the legislative framework for how local bus services are planned and delivered. We will invest in the development of integrated regional and local bus networks to increase modal share of bus travel and improve access by bus to a wider range of trip destinations.*
- *Metros – Develop the South East Metro, South West Metro and North Wales Metro. We will create new integrated transport systems that provide faster, more frequent and joined-up services using trains, buses and light rail.*
- *Ultra-Low Emission Vehicles – Support the roll-out of suitable fuelling infrastructure to facilitate the adoption of ultra-low emission vehicles, particularly in rural areas.*

Planning authorities must plan the growth and regeneration of the National and Regional Growth Areas to maximise opportunities arising from the investment in public transport, including identifying opportunities for higher density, mixed-use and car-free development around metro stations.

Active travel must be an essential and integral component of all new developments, large and small. Planning authorities must integrate site allocations, new development and infrastructure with active travel networks and, where appropriate, ensure new development contributes towards their expansion and improvement.

Planning authorities must act to reduce levels of car parking in urban areas, including supporting car-free developments in accessible locations and developments with car parking spaces that allow them to be converted to other uses over time. Where car parking is provided for new non-residential development, planning authorities should seek a minimum of 10% of car parking spaces to have electric vehicle charging points.

Policy 36 – South East Metro

The Welsh Government supports the development of the South East Metro and will work with Transport for Wales, local authorities and other partners to enable its delivery and maximise associated opportunities. Strategic and Local Development Plans must support the South East Metro. Planning authorities should plan growth and regeneration to maximise the opportunities arising from better regional connectivity, including identifying opportunities for higher density, mixed-use and car-free development around new and improved metro stations.'

2.2 REGIONAL & LOCAL TRANSPORT POLICY

South East Wales Corporate Joint Committee

- 2.2.1 The South East Wales Corporate Joint Committee (SEWCJC) comprises elected council leaders from ten local authorities within the region and a representative nominated by the Brecon Beacons National Park Authority.
- 2.2.2 A Corporate Joint Committee (CJC) functions as a regional corporate body with powers and duties similar to local authorities in Wales. CJsCs have comparable governance and administrative structures, but possess some flexibility in constitutional and operational arrangements.
- 2.2.3 The SEWCJC has been assigned the tasks of preparing Regional Strategic Development Plans, Regional Transport Plans, and taking any necessary actions to enhance or promote the economic well-being of the region from 30 June 2022 onwards. However, at the time of writing, the Strategic Development Plan had not been published.

The Vale of Glamorgan Corporate Plan 2020-2025

- 2.2.4 The Corporate Plan 2020-2025 for the Vale of Glamorgan Council outlines the objectives and actions for the next five years, focusing on the vision of:

'Strong Communities with a Bright Future'

- 2.2.5 This section provides the key points in the context of the Strategic Transport Assessment.
- 2.2.6 The four objectives of the plan are:
- 1. Work with and for Our Communities*
- 2.2.7 Emphasising collaboration and partnership, the Council aims to work closely with various stakeholders, including families, children, young people, health partners, the Police, the Fire service, and other public sector bodies.
- 2. Support Learning, Employment, and Sustainable Economic Growth*
- 2.2.8 The plan emphasises the importance of education, employment opportunities, and economic development within the community.
- 2.2.9 To achieve this, there are direct commitments to:

'Work as part of the Cardiff Capital Region to progress strategic planning and transport initiatives and promote sustainable economic growth and employment.'

3. Support People at Home and in Their Community

2.2.10 This includes providing essential services and support to individuals and families, ensuring that they have access to safe and affordable housing, and engaging with the community to understand and meet their diverse needs.

2.2.11 To achieve this, there are direct commitments to:

'Encourage & support people of all ages to have active and healthy lifestyles to improve and maintain their physical and mental well-being.'

'Provide more opportunities for everyday cycling and walking and work with our partners to develop a range of travel options to encourage people out of their cars.'

'Work in partnership to develop cohesive communities and promote community safety.'

4. Respect, Enhance, and Enjoy Our Environment

2.2.12 The Council is committed to environmental protection and sustainability, including waste management, energy-saving initiatives, and preserving the natural environment.

2.2.13 To achieve this, there are direct commitments to:

'Work to reduce the organisation's carbon emissions to net zero before 2030 and encourage others to follow our lead as part of minimising the negative impact of our activities on the environment.'

'Work with the community, developers and others to ensure that new developments are sustainable and that developers mitigate their impacts, integrate with local communities and provide necessary infrastructure.'

'Minimise pollution recognising the detrimental impact it may have on the environment and people's well-being.'

Vale of Glamorgan Council Climate Change Challenge Plan 2021-2030 (Project Zero)

2.2.14 In July 2019, The Vale of Glamorgan joined Welsh Government and other Local Authorities across the UK in declaring a Climate Emergency in response to the United Nations' Intergovernmental Panel on Climate Change report into the impact of global warming.

2.2.15 Project Zero is the Vale of Glamorgan Council's response to the Climate Change Emergency.

2.2.16 As part of the emergency declaration, the Council made a commitment to:

'Reduce the Council's carbon emissions to net zero before the Welsh Government target of 2030 and support the implementation of the Welsh Government's new Low Carbon Delivery Plan'

2.2.17 The prioritisation of sustainable development locations and transport solutions through the RLDP is critical to achieving this commitment.

Vale of Glamorgan Local Transport Plan 2015-2030

2.2.18 The Vale of Glamorgan Local Transport Plan (LTP) outlines the proposed sustainable transport measures for the period from 2015 to 2020, with a forward view to 2030.

2.2.19 Although certain elements of the LTP might be considered outdated, it continues to highlight relevant sustainable travel objectives. The plan's primary focus is on improving conditions for pedestrians, cyclists, and public transport users. The intent is to promote a shift from single occupancy vehicles to alternative means of transport.

2.2.20 The LTP also retains some elements relating to a requirement for targeted highway improvements, for example:

'The LTP also seeks to tackle traffic congestion by securing improvements to the strategic highway corridors for commuters who may need to travel by car as well as providing better infrastructure for freight.'

The Vale of Glamorgan Public Services Board Well-Being Plan 2023-2028

2.2.21 The Vale Public Services Board has set out three Well-being objectives, as follows:

- A more resilient and greener Vale;
- A more active and healthier Vale; and
- A more equitable and connected Vale.

2.2.22 In addition, three priority work streams have been identified:

- Responding to the climate and nature emergencies;
- Working with the people who live in our communities that experience the highest levels of deprivation; and
- Becoming Age Friendly.

Vale of Glamorgan Local Development Plan 2011-2026 - 4th Annual Monitoring Report April 2021 to March 2022 (October 2022)

2.2.23 The Annual Monitoring Report (AMR) provides an analysis of the performance of the existing local development plan (LDP) policies in achieving the Plan's strategy and objectives to date. It also highlights some issues which warrant further research and investigation. While these elements will continue to be monitored in future AMRs, any issues highlighted will be addressed through the new RLDP.

- 2.2.24 As in previous AMRs, the main conclusion is that good progress is being made in delivering the identified targets set out in the LDP monitoring framework.
- 2.2.25 With specific reference to transport, the AMR confirms that the 2020 targets for transport scheme implementation have been exceeded and that significant progress has been made across various projects, including those in public transport and active travel networks. All relevant planning applications have adhered to official guidelines and assessments.

2.3 CHAPTER SUMMARY & RECOMMENDATIONS

Summary of Key Findings

- 2.3.1 The comprehensive review of the existing legislation and policy frameworks has led to consistent findings relating to the requirement to locate development such that the need to travel is reduced and that where travel is required that there is genuine user choice that reflects the user hierarchy.
- 2.3.2 These findings are recommended to form the foundation for the RLDP site selection process and the Strategic Transport Assessment approach to appraising development traffic impacts and securing transport interventions.
- 2.3.3 A core aim of the STA and indeed the RLDP is to align with the Wales Transport Strategy vision to provide:

‘An accessible, sustainable, and efficient transport system.’

- 2.3.4 The Well-being of Future Generations Act provides the impetus for sustainable development, requiring that ‘A public body must act in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs’. Concurrently, Planning Policy Wales emphasises the integration of transport and land use planning, stating that ‘Transport planning and land use planning should be integrated to promote more sustainable transport choices’.
- 2.3.5 Aligned with these principles, our review supports the firm adoption of the sustainable transport hierarchy as outlined in the Wales Transport Strategy and Planning Policy Wales which is to prioritise walking and cycling for short journeys, then public transport and shared mobility services for longer journeys, with private cars or single occupancy vehicles considered last.

Recommendations

2.3.6 The recommendations provided in Figure 3 have been derived from the findings of this chapter and should underpin the RLDP policy approach to site selection and mitigation.

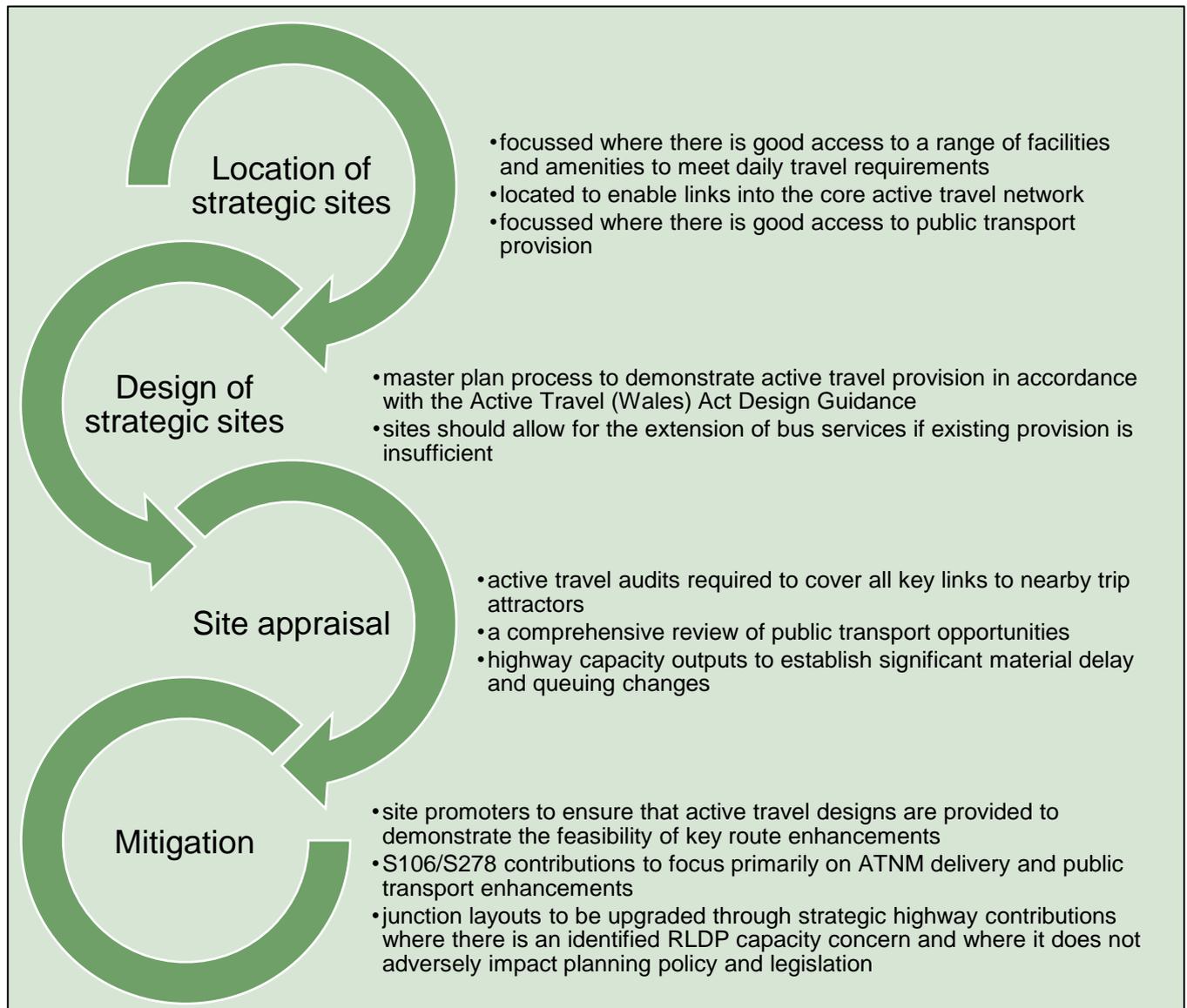


Figure 3: Policy-led recommendations

2.3.7 The above approach will help promote a reduction in private car use which will contribute towards an equitable, environmentally sound, and resilient transport network, thereby laying the foundation for a sustainable future in the Vale of Glamorgan.

3. BASELINE HIGHWAY OPERATION

3.1 Baseline Traffic Flows

Introduction

- 3.1.1 This section provides a review of various key data sources to provide an overview of highway traffic volumes and network operational conditions.
- 3.1.2 As has been identified, significant changes to the UK transport scene have occurred in recent years, imposed by the Covid-19 pandemic. This chapter will therefore review the current traffic situation in the context of recent trends to establish how representative historical data sources are for the purposes of drawing robust conclusions as part of the STA.

Existing LDP Strategic Transport Study

- 3.1.3 As part of the adopted LDP evidence base, a highway capacity study was undertaken by Capita Symonds (August 2013) to assess the impact of potential future residential developments on the strategic highway network within the Vale of Glamorgan and to inform the Council's Local Development Plan (LDP) process.
- 3.1.4 Key aspects of the assessment included forecasting peak hour trip generation for each strategic development site, forecasting background traffic growth between 2012 and 2026, and the assessment of AM and PM peak hour capacity and delay of highway network links and junctions.
- 3.1.5 The highway network scope for the Capita Symonds study was determined with input from the Vale of Glamorgan Council. Traffic data was acquired over weekdays in December 2012.
- 3.1.6 Weekday peak highway network periods in the Capita Symonds study were identified as 08:00 – 09:00 for the AM peak and 16:30 – 17:30 for the PM peak. No analysis was undertaken during the weekend period which is typical as weekday peak traffic volumes are typically higher across regional networks during neutral periods.
- 3.1.7 The assessment covered the existing LDP period, which culminated in 2026 traffic forecasts. These forecasts accounted for potential changes in car ownership, trip frequency, mode, trip distribution, and population using the Trip End Model Presentation Program (TEMPO).
- 3.1.8 The traffic flow data has been extracted from the report and summarised in Appendix A which can be utilised (with suitable adjustments) for any identified data gaps at the highway network assessment stage of the RLDP in the event of more recent data being unavailable.
- 3.1.9 Figure 4 provides an overview of the strategic junctions that were considered as part of the existing LDP.

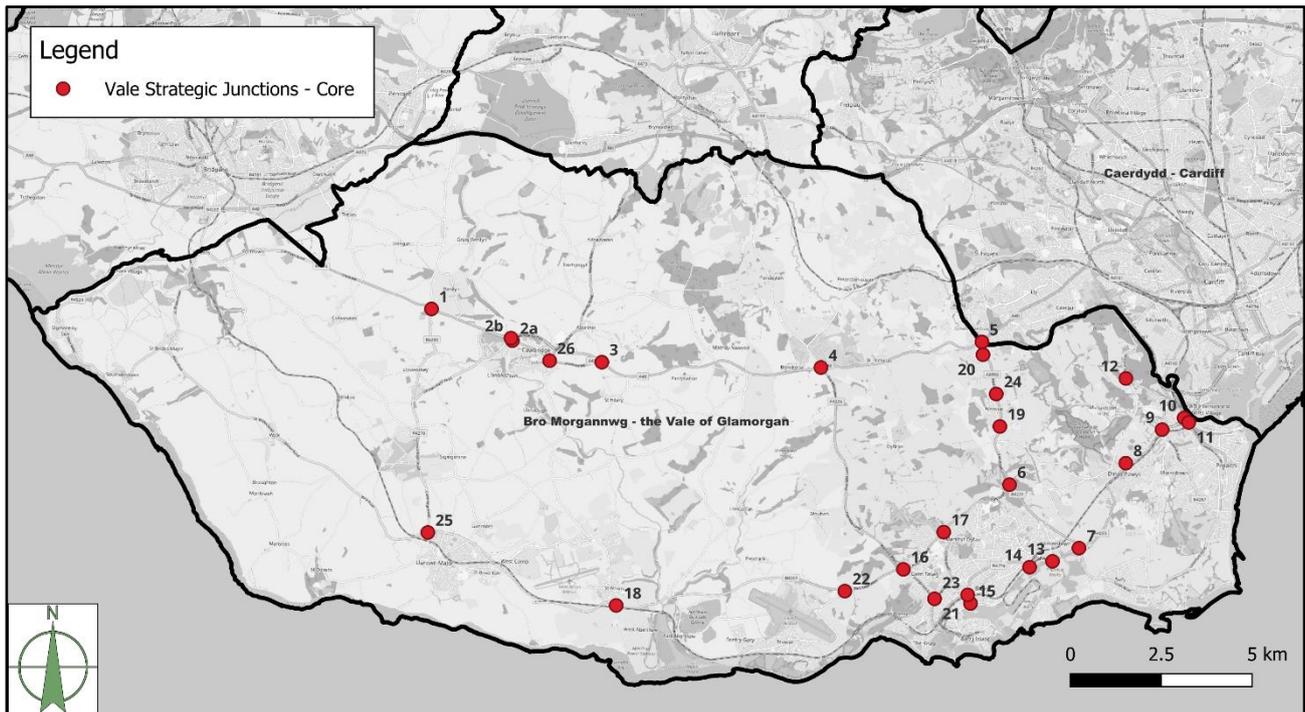


Figure 4: Existing LDP Strategic Junctions

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- 3.1.10 Following an initial highway network review and subsequent discussions with the Vale of Glamorgan, it is deemed appropriate that the junctions considered in the existing LDP are retained in the scope of works for this STA.
- 3.1.11 These initial core junctions are listed in Table 1.

Table 1: Existing LDP Strategic Junctions

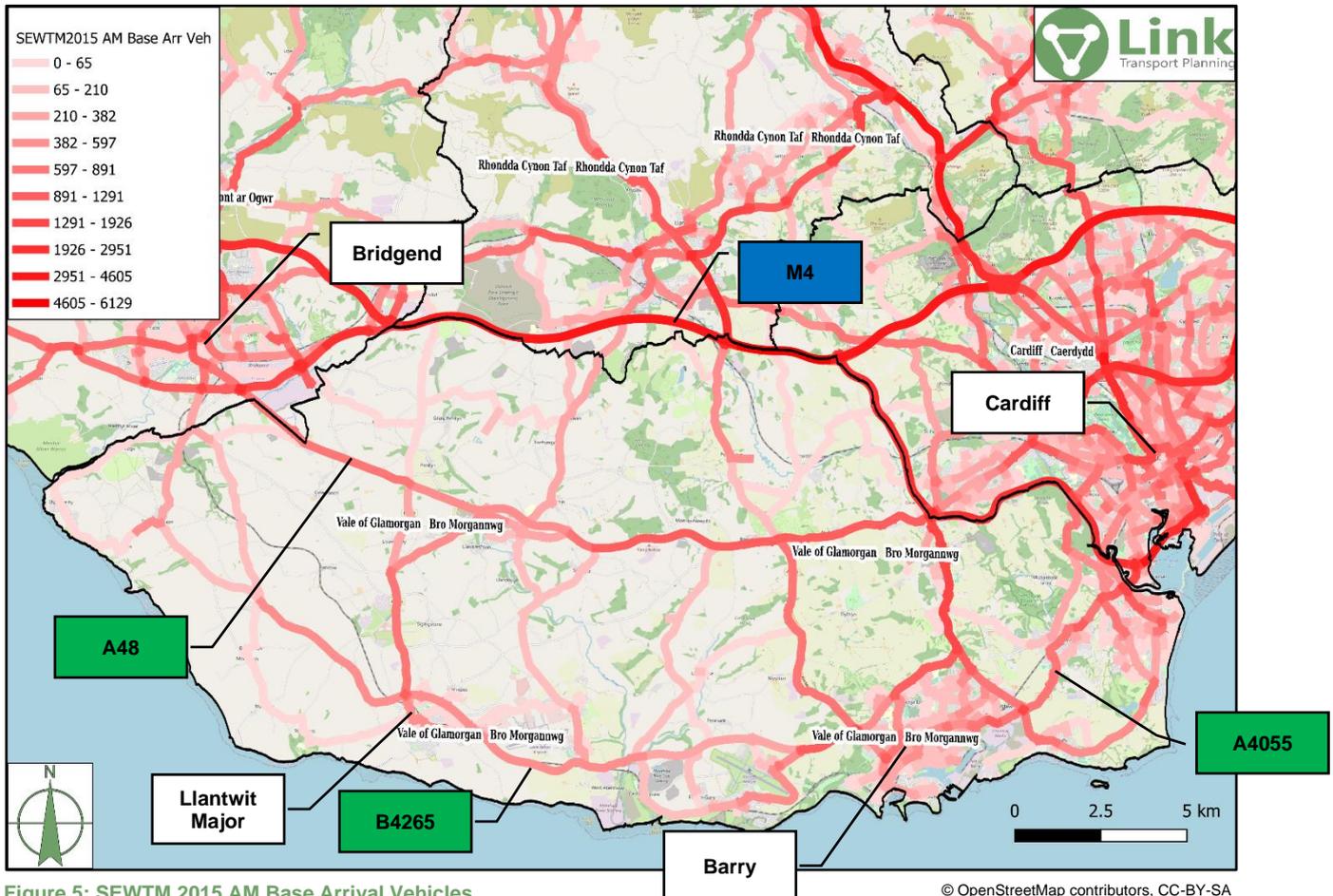
Junction ID	Junction Name
1	A48/B4265/Road to North Staggered Priority Junction
2A	A4222/B4270 Priority Junction
2B	A48/A4222 Westbound merge
3	A48/Primrose Hill Eastbound merge
4	A48/A4226/Road to North Staggered Priority Junction
5	A4232/Cowbridge Road W/A4050/A48 Signalised Roundabout
6	A4050/A4231/Port Road Roundabout
7	A4231/A4055 Cardiff Road/B4267 Sully Moors Road Roundabout
8	Cardiff Road/Murch Road/Millbrook Road Signal Junction
9	Penlan Road/Barry Road/Andrew Road/Cardiff Road and Cardiff Road/Redlands Road Linked Signal Junctions.
10	Penarth Road/Cogan Spur/Windsor Road/Barry Road Signal Junction
11	Cogan Hill/Approach from Terra Nova Roundabout
12	Leckwith Road/Pen-Y-Turnpike Road Priority Junction
13	Palmerston Road/Cardiff Road Signal Junction
14	Ffordd Y Mileniwm/A4055/Cardiff Road Roundabout
15	Ffordd Y Mileniwm/Gladstone Bridge Roundabout
16	Waycock Road/Port Road W/Pontypridd Road Roundabout
17	Port Road/Colcot Road Roundabout
18	B4265/Gileston Road Staggered Priority Junction
19	A4050 Port Road/Morfa Lane/Old Port Road Roundabout
20	A4050 Port Road/Brooklands Terrace/Old Port Road Signal Junction (former RB)
21	Pontypridd Road/Jenner Street / Park Crescent/Gaen Street Roundabout
22	A4226/Port Road Roundabout
23	Gladstone Road/Broad Street/Gladstone Bridge/ Roundabout
24	A4050 Port Road/Caerau Lane/Nant Isaf Roundabout
25	Llantwit Major Road/B4265/Cowbridge Road Roundabout
26	Aberthin Road/Cardiff Road/St. Athan Road/Eastgate Signal Junction

3.1.12 Further locations will be identified later in this report as part of the data gathering, analysis and VoG engagement process.

SEWTM (Base 2015)

3.1.13 The existing SEWTM has been provided by TfW and includes 'Base 2015' traffic flow data for the Vale of Glamorgan.

3.1.14 The data has been reviewed within Graphical Information System (GIS) software to provide an understanding of baseline traffic flows through the Vale, as shown in Figure 5 for the weekday AM peak and Figure 6 for the weekday PM peak.



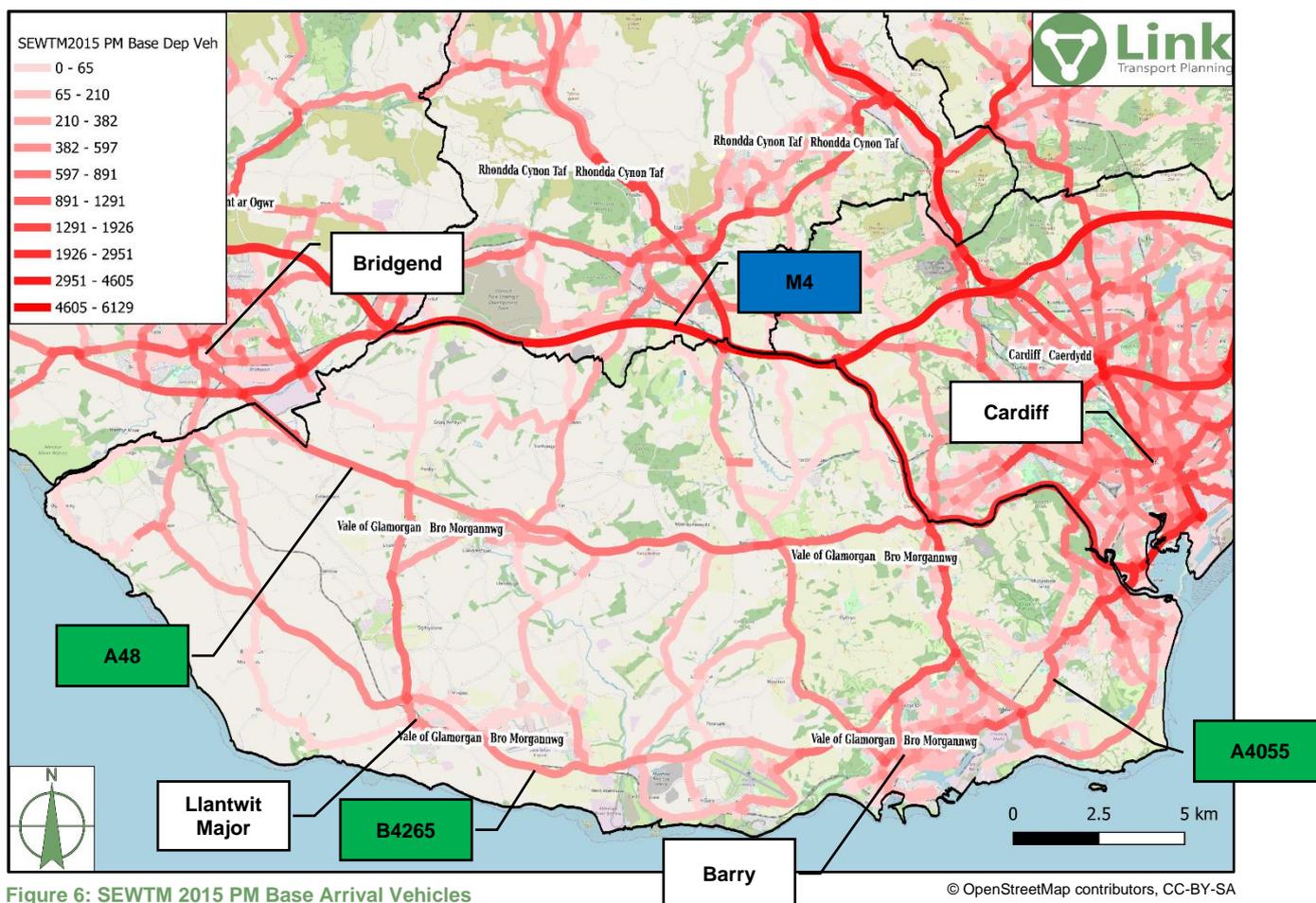


Figure 6: SEWTM 2015 PM Base Arrival Vehicles

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3.1.15 The outputs of Figure 5 and Figure 6 highlight that the main vehicular movement corridors through the Vale are generally east-west in either direction along the A48 and B4265/A4226. High traffic flows are also apparent along the B4270 north of Llantwit Major as well as the A4226, the A4050 and the A4055 to the northwest, north and northeast of Barry, respectively.

Covid-19 and Data Validation

3.1.16 A review of traffic statistics from the Department for Transport (DfT) has been undertaken to establish whether, firstly, in advance of the revised SEWTM outputs from TfW, the 2015 existing LDP study serves as a reasonable interim representation of current highway network operation. However, it is recognised that this does not include any developments that have taken since 2015.

3.1.17 Secondly, the data is useful to establish the impact of Covid-19 and the residual impact on current traffic patterns in the Vale of Glamorgan.

3.1.18 Figure 7 highlights the traffic variations in Great Britain since the Covid-19 pandemic began (i.e. the first lockdowns during March 2020)⁴.

⁴ <https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic>

3.1.19 As stipulated by the DfT, the daily road traffic estimates are suitable as an indication of traffic change rather than actual traffic volumes. The data provided is indexed to the first week of February 2020, and the comparison is to the same day of the week. Therefore, 100 would mean that traffic is the same as the equivalent day in the first week of February 2020. However, it is to be noted that over the course of a year, normal traffic can vary by +/- 20%.

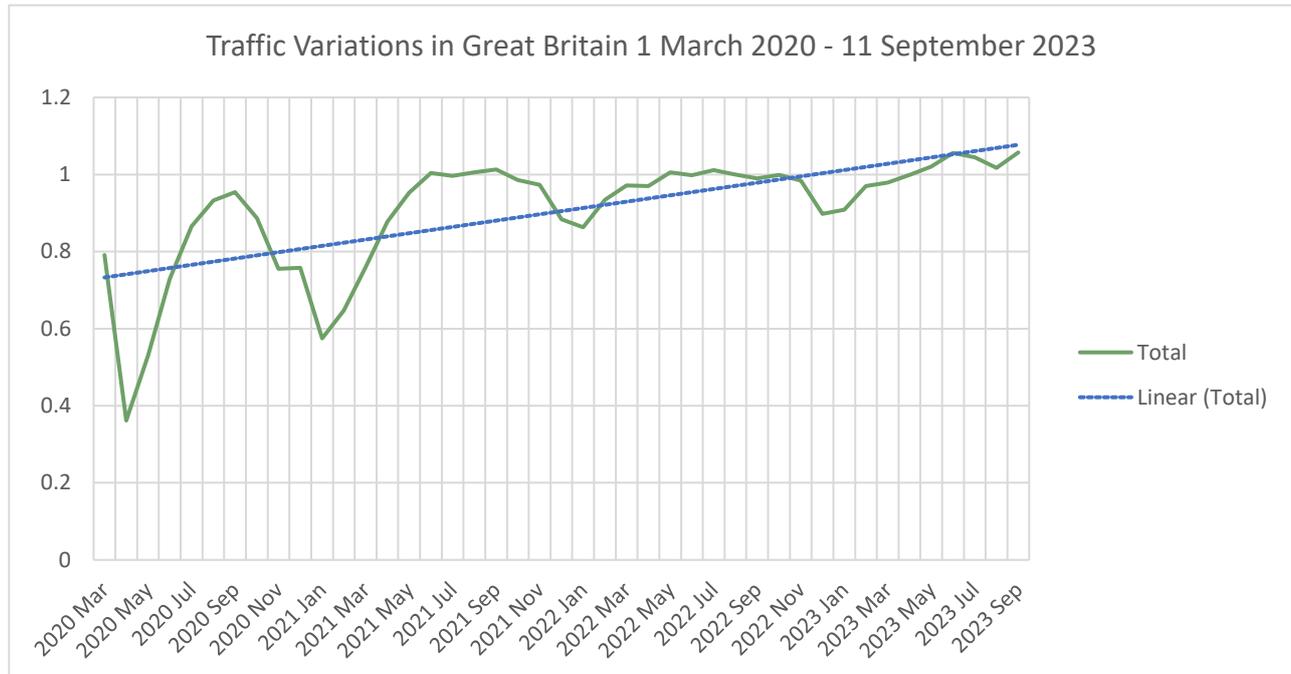


Figure 7: Traffic Variations in Great Britain ⁵

3.1.20 Figure 7 highlights that Great Britain has observed a pronounced increase in monthly traffic flows since the Covid-19 pandemic began and has now exceeded the pre-Covid reference case in February 2020. This measure gives reassurance that 2023 traffic counts are robust.

3.1.21 Figure 8 provides traffic data for the Vale of Glamorgan in terms of the vehicle miles travelled by three categories of vehicle:

- Cars and taxis.
- Light commercial vehicles; and
- Heavy goods vehicles.

⁵ Weekdays between 1 March 2020 to 11 September 2023. Excludes bank holidays.

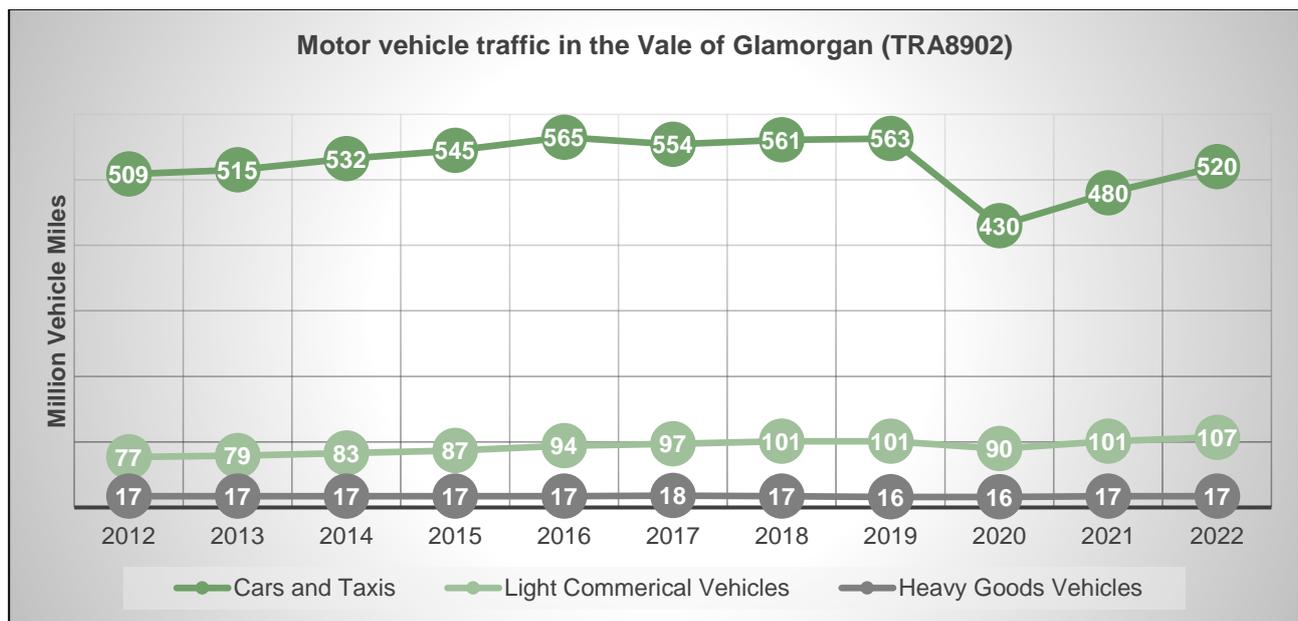


Figure 8: DfT Motor Vehicle Traffic in the Vale of Glamorgan 2012-2022

- 3.1.22 Figure 8 is limited to a 2022 endpoint, during which traffic volumes were experiencing a clear upward trend. Notwithstanding this, the data highlights that the Vale of Glamorgan observed 520 million car/taxi miles travelled in 2022, compared to 509 million car/taxi miles in 2012 (noted to be when the existing LDP STA traffic surveys were conducted).
- 3.1.23 In 2015 (the existing SEWTM base year), there were 545 million car/taxi miles travelled and 563 million car/taxis in 2019 before the pandemic began.
- 3.1.24 It is noted that, prior to the pandemic, car/taxi mileage remained relatively consistent between 2016 and 2019.
- 3.1.25 Light commercial vehicle mileage has displayed a steady increase from 77 million miles in 2012 to a peak of 107 million miles in 2022. This may reflect a change in work and shopping patterns, whereby increased flexible working has reduced car/taxi distances, but online shopping has contributed towards increased light commercial vehicle deliveries.
- 3.1.26 Heavy goods vehicle distances have remained consistent in the Vale between 2012 and 2022, where there were 17 million HGV miles travelled during each of those years.
- 3.1.27 It is reasonable to assume from the recent trajectory that the 2023 traffic levels in the Vale are largely back to pre-Covid levels. However, caution should be maintained as to how travel patterns may have changed as a result of the pandemic in terms of trip purpose, peak spreading and alternative route choice due to differing lifestyle schedules. For example, there could be more daily trips but fewer during peak hours.

STA Study Area Definition

3.1.28 Based on the data presented in this report thus far, and ongoing discussion with the Vale of Glamorgan officers, Figure 9 highlights three additional strategic junctions that are to be included in the STA alongside those identified in Figure 4.



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Figure 9: Additional RLDP Strategic Junctions

3.1.29 As shown in Figure 9 and Table 2, the following junctions are considered to have a strategic function on the movement of people in the Vale of Glamorgan and are to be included in the STA.

Table 2: Additional Identified Strategic Junctions

Junction ID	Junction Name
27	A48/B4270/Unnamed Access Road Roundabout
28	M4 Junction 34 (Miskin) Part Signalised Roundabout
29	Valegate Retail Park/Tesco Signal junction

3.1.30 The combined junctions identified in Table 1 and Table 2 of this report will form the scope of the strategic highway network for the STA.

3.2 HIGHWAY CAPACITY ANALYSIS

Introduction

- 3.2.1 This section provides an interim analysis of highway capacity analysis based on existing data sources. The focus is predominantly on junctions (or 'nodes'), but reference will also be made to links where appropriate.
- 3.2.2 Junctions (or nodes) refer to the specific points within the network where links intersect or connect. These can be junctions or interchanges where the flow of traffic merges, diverges, or crosses. Junctions function as the control elements of the highway network, often determining the efficiency of traffic movement through the system.
- 3.2.3 The capacity at junctions is constrained by various elements such as traffic control (e.g., traffic signals), geometry, topography, and traffic demand. Typically, junctions represent the main constraints in a transport network and have a substantial impact on the performance of the overall network, as congestion at these points can cause delays that propagate along connecting links.
- 3.2.4 Links refer to the stretches of road that connect distinct points in the network. These can vary in type, such as motorways, arterial roads (trunked and non-trunk 'A' roads), or local roads ('B', 'C' and unclassified roads), and they generally have uniform characteristics for a given segment, including the number of lanes, posted speed limits, and level of service. The assessment of link capacity enables an understanding of the volume of traffic a specific road segment can accommodate before congestion occurs.
- 3.2.5 Factors affecting link capacity include connecting junctions, highway geometry, traffic control, environmental factors, vehicle composition and driver behaviour.

Network Operation Indicators

- 3.2.6 To provide a high-level insight into existing traffic conditions throughout the Vale of Glamorgan highway network, Google Traffic and INRIX data have been reviewed to ascertain current junctions and links that are under strain during peak hour periods.

Google Traffic

- 3.2.7 Google Live Traffic is a feature integrated into Google Maps that provides real-time information on road conditions, congestion, and estimated travel times.

- 3.2.8 The data for Google Live Traffic is aggregated from a variety of sources to ensure accuracy and comprehensiveness. One of the primary data sources is anonymised location data from smartphones with Google Maps installed. When users enable location services, their speed and route information are sent back to Google's servers, which then process this data to provide live traffic updates. Google employs advanced algorithms to ensure that individual privacy is maintained while collecting this crowd-sourced information.
- 3.2.9 Google Traffic categorises road conditions into different levels of congestion, which are represented through a colour-coded system on Google Maps. The colour coding is based on speed thresholds that compare real-time speed data against the speed limits of specific roads or against historical average speeds for the corresponding time of day and week.
- 3.2.10 The categories are:
- Green - indicates free-flowing traffic where vehicles are moving at or near the posted speed limits.
 - Orange - suggests moderate traffic where speeds are slower than the optimum, but not excessively so.
 - Red - indicates heavy congestion where speeds are considerably below the posted limits or the historical average speeds.
 - Dark red - represents severe congestion or a standstill condition, indicating that traffic is moving extremely slowly.
- 3.2.11 Figure 10 and Figure 11 display the 'typical' traffic conditions at typical highway network peak hours of 8.30am and 5.30pm on a typical weekday⁶.
- 3.2.12 It is important to note the limitations inherent in using Google Traffic data as a source. A key limitation is the lack of transparency regarding their output methodology. Google's proprietary algorithms restrict the depth of analysis and validation that can be performed. Moreover, the data's focus on 'average' conditions means it lacks the granularity necessary to display the fluctuations in traffic scenarios. This could result in a misrepresentation of delays at specific links or junctions within the outputs.

⁶ Snapshot obtained from Google Maps on 09/11/2023 and outputs are subject to continual change

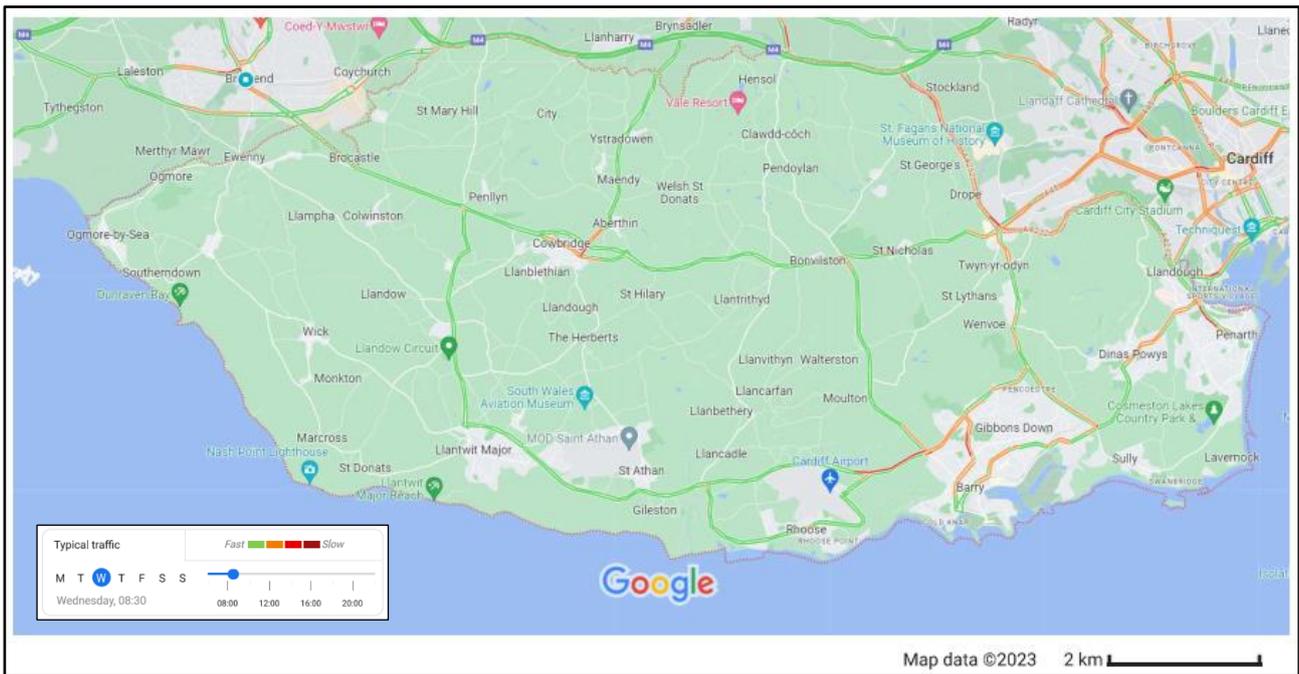


Figure 10: Google Maps Typical Vale of Glamorgan Traffic Speeds Weekday AM

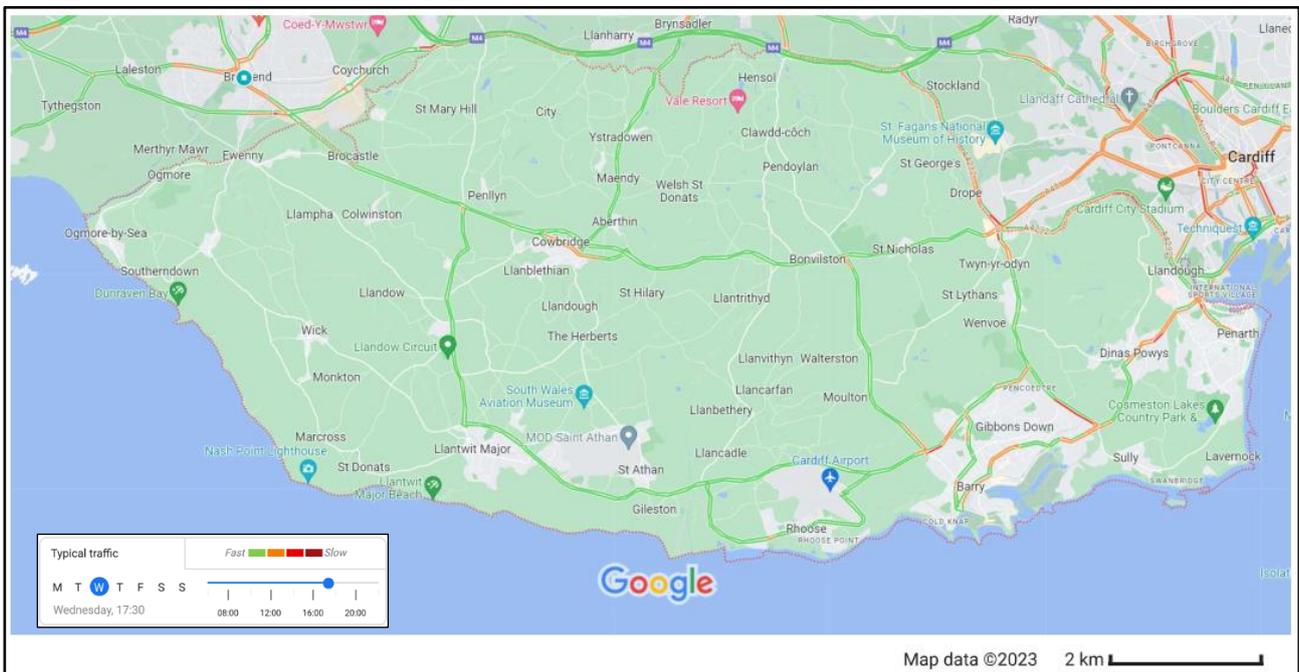


Figure 11: Google Maps Typical Vale of Glamorgan Traffic Speeds Weekday PM

3.2.13 The ‘typical traffic’ output highlights instances throughout the network of capacity constraints and congestion (considered to be indicated by moderate and slow-moving traffic) in locations such as Culverhouse Cross roundabout, Barry, Penarth, Dinas Powys and Cowbridge.

3.2.14 It should be noted that on Sunday 17th September 2023, Wales introduced a nationwide default 20mph speed limit in built-up areas. This has the potential to alter the traffic observations, such as the above typical traffic speed data outputs, as the Google algorithms are updated with ongoing new data.

INRIX

3.2.15 Further average speed data has been provided by INRIX (via TfW through the existing user licensing agreement). INRIX gathers average speed data on a highway network through a combination of methods such as roadside sensors, which include radar, laser, and video cameras to capture real-time speed metrics.

3.2.16 In addition, modern vehicles equipped with GPS technology provide anonymous data on their speed and location. This is supplemented by data from mobile applications that use location services, contributing further anonymous data points regarding speed and location.

3.2.17 Figure 12 and Figure 13 display INRIX average speed data for the month of May 2023 and include Tuesdays, Wednesdays, and Thursdays only.

3.2.18 The data provided by TfW focuses on two peak traffic periods:

- Weekday AM from 0800 to 0900; and
- Weekday PM from 1600 to 1700.

3.2.19 It should be noted that average speed data provides useful background information relating to the highway network performance but must be considered in the context of the associated link speed limit and the urban setting. For example, in more densely populated urban areas such as Barry, it is to be expected that average traffic speeds will be around 30mph, due to the predominance (at the time of the outputs) of 30mph speed restrictions. The '20-30mph' band is, therefore, not necessarily an indication of a strained network in this area. However, a '20-30mph' average speed along a rural link with a higher posted limit could indicate capacity constraints.

3.2.20 As per the Google Traffic outputs, the recently introduced nationwide default 20mph speed limit in built-up areas is likely to have an impact on the INRIX data outputs within former 30mph zones. However, whilst average link speeds are likely to reduce in periods of free-flow traffic, congestion levels at the busiest locations are unlikely to change significantly.

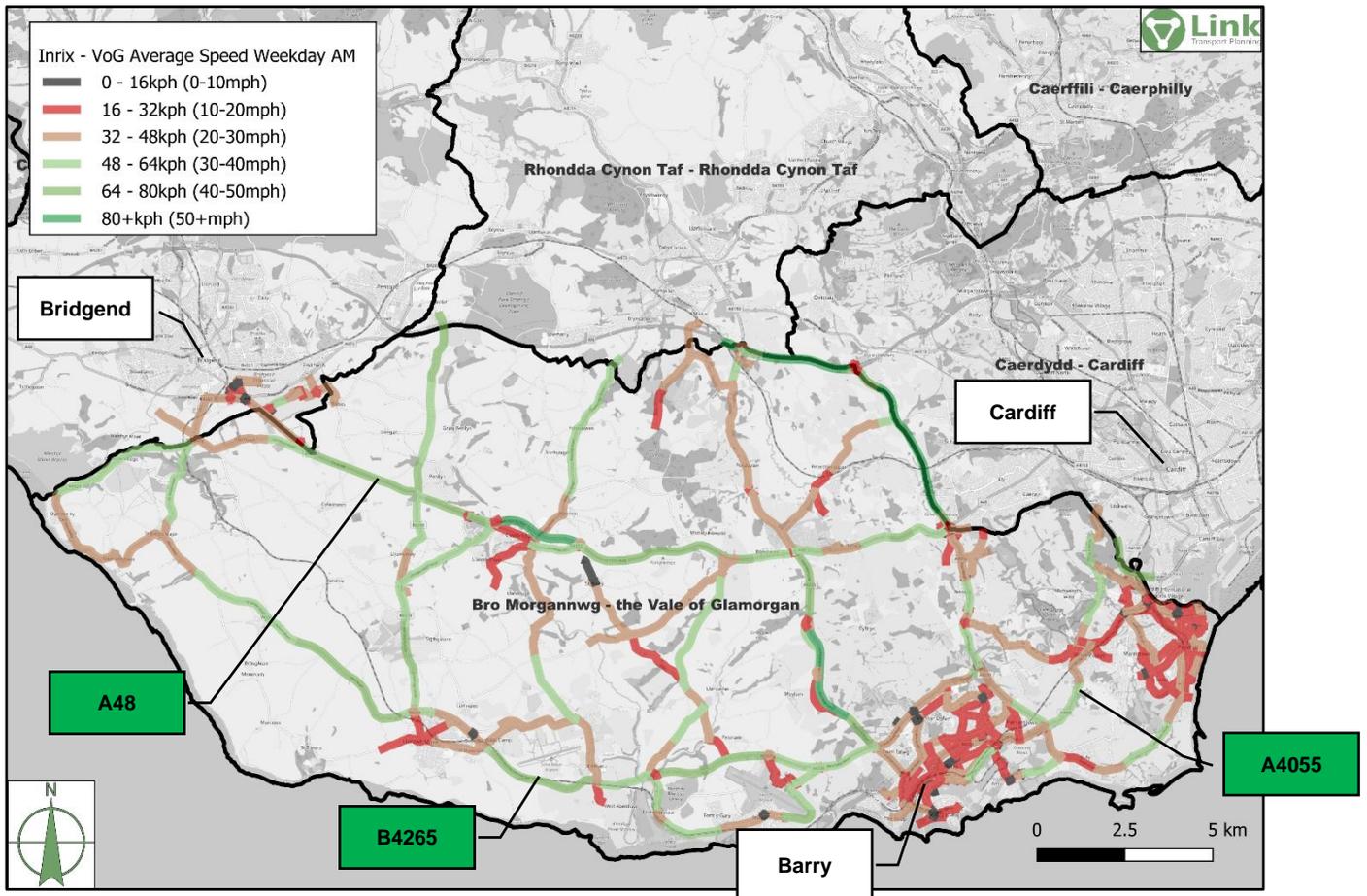


Figure 12: INRIX Average Speed - VoG Weekday AM

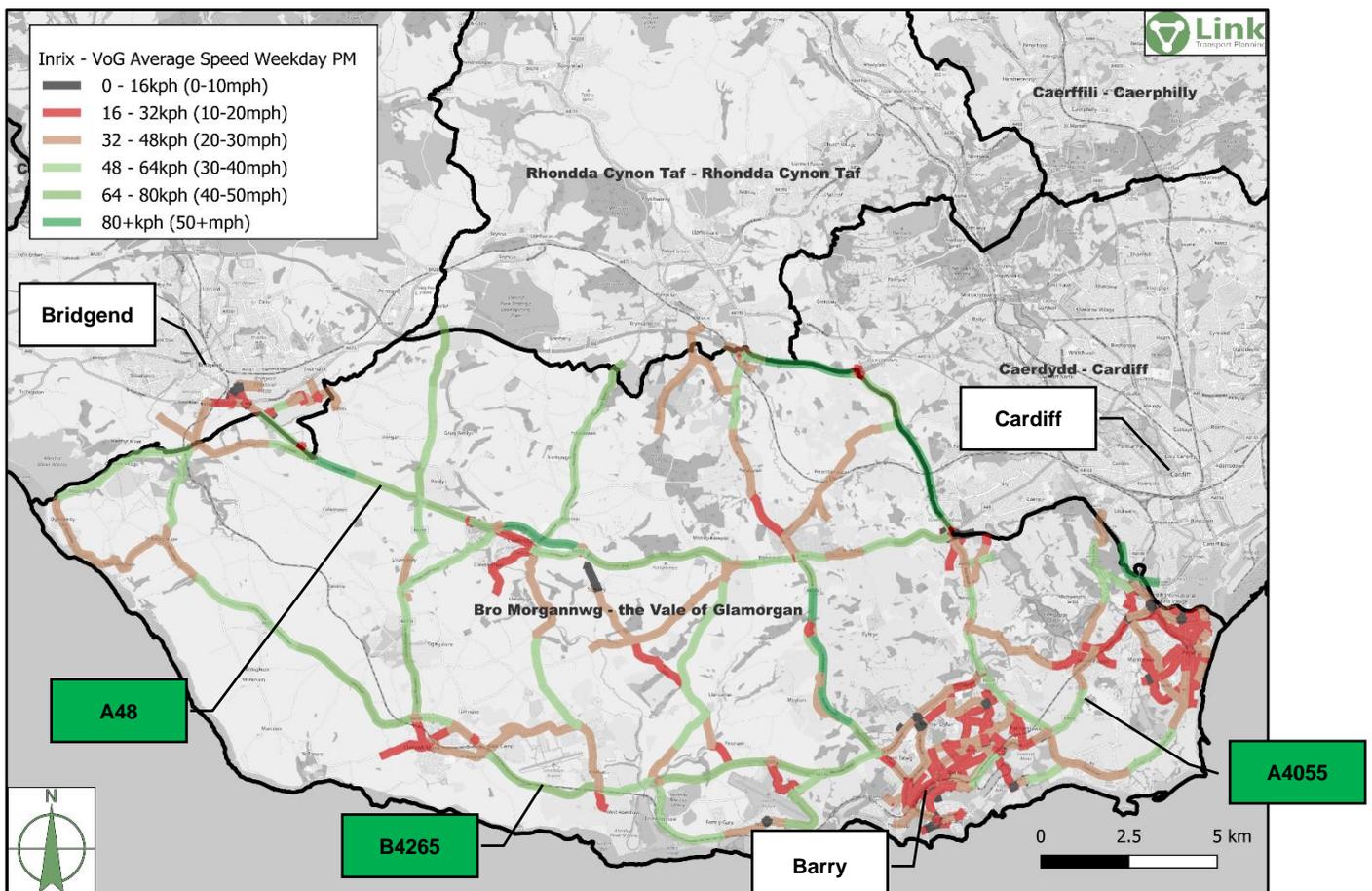


Figure 13: INRIX Average Speed - VoG Weekday PM

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3.2.21 The analysis of average speed data highlights consistently low speeds in all major urban areas and at numerous strategic highway junctions highlighted in this report, whereby traffic is below 10mph (16kph). This suggests that queuing and delays at these junctions are likely to be frequent occurrences.

Highway Junction Capacity

3.2.22 This sub-section provides an overview of existing congestion ‘hotspots’ within the Vale of Glamorgan’s highway network.

3.2.23 The most suitable source of data for this exercise is the rebased SEWTM, which is being managed by TfW. However, at the time of writing, this was not available for use and RLDP timescales required an alternative appraisal methodology to avoid affecting on the programme.

3.2.24 As such, a multi-sourced approach has been undertaken to highlight the anticipated locations of highway congestion and delay. This exercise will assist with the high-level appraisal of strategic land allocations, which will subsequently be required to identify and mitigate their collective impact on key strategic junctions.

3.2.25 In appraising existing junction performance, priority has been given to recent Transport Assessments for committed developments and RLDP candidate sites, as these provide the most up-to-date traffic data.

3.2.26 Where strategic junctions are absent from the collective Transport Assessment resource pool, reference will be made to the existing LDP evidence base or alternative sources.

Table 3: Interim Strategic Junction Capacity Review

Junction ID	Junction Name	Data source	Capacity results (Weekday)	Limitations
1	A48/B4265/Road to North Staggered Priority Junction	Existing LDP Evidence Base	AM – Exceeded PM - Within	2026 forecast based on 2012 traffic counts
2A	A4222/B4270 Priority Junction	Existing LDP Evidence Base	AM – Exceeded PM - Within	2026 forecast based on 2012 traffic counts
2B	A48/A4222 Westbound merge	Existing LDP Evidence Base	AM – Within PM - Within	2026 forecast based on 2012 traffic counts
3	A48/Primrose Hill Eastbound merge	Existing LDP Evidence Base	AM – Within PM - Within	2026 forecast based on 2012 traffic counts
4	A48/A4226/Road to North Staggered Priority Junction	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
5	A4232/Cowbridge Road W/A4050/A48 Signalised Roundabout	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
6	A4050/A4231/Port Road Roundabout	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
7	A4231/A4055 Cardiff Road/B4267 Sully Moors Road Roundabout	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
8	Cardiff Road/Murch Road/Millbrook Road Signal Junction	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
9	Penlan Road/Barry Road/Andrew Road/Cardiff Road and Cardiff Road/Redlands Road Linked Signal Junctions	Transport Assessment for 01170OUT	AM – Exceeded PM - Exceeded	2027 forecast based on 2022 traffic counts

10	Penarth Road/Cogan Spur/Windsor Road/Barry Road Signal Junction	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
11	Cogan Hill/Approach from Terra Nova Roundabout	Existing LDP Evidence Base	AM – Within PM - Within	2026 forecast based on 2012 traffic counts
12	Leckwith Road/Pen-Y-Turnpike Road Priority Junction	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
13	Palmerston Road/Cardiff Road Signal Junction	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
14	Ffordd Y Mileniwm/A4055/Cardiff Road Roundabout	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
15	Ffordd Y Mileniwm/Gladstone Bridge Roundabout	Existing LDP Evidence Base	AM – Within PM - Within	2026 forecast based on 2012 traffic counts
16	Waycock Road/Port Road W/Pontypridd Road Roundabout	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
17	Port Road/Colcot Road Roundabout	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
18	B4265/Gileston Road Staggered Priority Junction	Transport Assessment for Church Farm, St Athan	AM – Within PM - Within	2025 forecast based on 2022 counts with committed development and NTM growth
19	A4050 Port Road/Morfa Lane/Old Port Road Roundabout	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
20	A4050 Port Road/Brooklands Terrace/Old Port Road Signal Junction (former RB)	Existing LDP Evidence Base	AM – Within PM - Within	2026 forecast based on 2012 traffic counts
21	Pontypridd Road/Jenner Street / Park Crescent/Gaen Street Roundabout	Existing LDP Evidence Base	AM – Within PM - Within	2026 forecast based on 2012 traffic counts

22	A4226/Port Road Roundabout	Existing LDP Evidence Base + TA for 00733FUL	AM – Within PM - Within	1. 2026 forecast based on 2012 traffic counts 2. 2024 forecast with 2022 counts
23	Gladstone Road/Broad Street/Gladstone Bridge/Roundabout	Existing LDP Evidence Base	AM – Exceeded PM - Exceeded	2026 forecast based on 2012 traffic counts
24	A4050 Port Road/Caerau Lane/Nant Isaf Roundabout	Existing LDP Evidence Base	AM – Exceeded PM - Within	2026 forecast based on 2012 traffic counts
25	Llantwit Major Road/B4265/Cowbridge Road Roundabout	Existing LDP Evidence Base	AM – Within PM - Within	2026 forecast based on 2012 traffic counts
26	Aberthin Road/Cardiff Road/St. Athan Road/Eastgate Signal Junction	Existing LDP Evidence Base + TA for application 00958FUL	AM – Exceeded PM - Within	1. 2026 forecast based on 2012 traffic counts 2. 2024 forecast based on 2022 traffic counts
27	A48/B4270/Unnamed Access Road Roundabout	TA for application 01505OUT	AM – Within PM - Within	2021 forecast based on 2014 traffic counts
28	M4 Junction 34 (Miskin) Part Signalised Roundabout	Existing LDP Evidence Base	No data	No data but considered to be highly sensitive to material traffic increases
29	Valegate Retail Park/Tesco Signal junction	Existing LDP Evidence Base	No data	No data but considered to be highly sensitive to material traffic increases

3.2.27 Table 3 provides an interim indication of the junctions in the Vale that are likely to be sensitive to traffic increases. This will assist with ongoing candidate site scoping discussions associated with the submission of supporting evidence for each site.

3.2.28 The above results are ‘interim’ until further detailed analysis is undertaken as part of the STA and the updated SEWTM. The interim results are subject to significant limitations at many of the locations due to substantial behavioural, development and infrastructure changes that have occurred since.

Highway Link Capacity

- 3.2.29 Highway link capacity was reviewed as part of the existing LDP evidence base whereby no constraints were identified.
- 3.2.30 All new links that have since been constructed are assumed to have a suitable design life to accommodate future growth in line with DMRB.
- 3.2.31 Highway network constraints are typically associated with nodes which regulate traffic levels on the connecting links and a number of key strategic junctions will be assessed at the next stage of this STA.
- 3.2.32 The Google and INRIX traffic speed outputs referenced in Figure 10 through to [Figure 13](#) confirm that there are no isolated links in the Vale (other than those connected to and impeded by heavily trafficked junctions) that represent a significant constraint to the efficiency of the network.

Highway Safety

Data Source

- 3.2.33 Collision data (resulting in casualties), known as Personal Injury Collisions (PIC) has been obtained from the Department for Transport (DfT) using the STATS19 database. This database gathers information on accidents that occur on public roads and result in personal injury, which are reported to the police. STATS19 includes an array of details for each incident, such as the location, severity of the accident, number of vehicles involved, weather conditions, and details about the individuals involved (like age and gender).
- 3.2.34 Personal injuries are classified into three main categories of 'fatal', 'serious', and 'slight', as defined by the STATS19 data collection form. A 'fatal' casualty is one where death occurs within 30 days due to the accident. 'Serious' and 'slight' injuries are differentiated based on the medical attention required, adhering to the guidelines set by the DfT.
- 3.2.35 The final processed data is published annually in comprehensive reports and is also made available through various digital platforms.

Analysis

- 3.2.36 The most recent publicly available PIC data for the Vale has been obtained from the STATS19 database, which covers the latest available validated five-year data between 01/01/2018 to 31/12/2022.

Table 4: Collisions resulting in personal injury

Year	Collisions resulting in personal injury			
	Fatal	Serious	Slight	Total
2018	0	17	129	146
2019	2	17	114	133
2020	6	6	90	102
2021	2	14	72	88
2022	0	17	86	103
Total	10	71	491	572

- 3.2.37 Table 4 highlights that over the latest publicly available five-year period, there were 10 fatal collisions, 71 serious collisions and 572 slight collisions in the Vale.

3.2.38 The table shows that a general decreasing trend was observed, declining from 146 incidents in 2018 to 103 in 2022. However, it is important to contextualise the data for 2020 and 2021, given the significant impact of the Covid-19 pandemic and the associated lockdown measures in the UK which imposed constraints on movement and led to a drastic decline in travel. This likely contributed to the reduction in the number of 'serious' and 'slight' collisions recorded for those years.

3.2.39 It is noted that despite this backdrop of reduced traffic, 2020 saw an increase in 'fatal' collisions. However, the subsequent data shows that this temporary spike had fallen to the pre-pandemic levels.

3.2.40 Further interrogation of the DfT road accident data reveals that during the 2018-2022 period, there were 102 KSI casualties out of a total of 842 casualties in the Vale of Glamorgan; a KSI ratio of 17%, which is below the 2021 Great Britain average of 22%⁷.

3.2.41 Figure 14 provides a heat map of personal injury collision density in the Vale⁸.

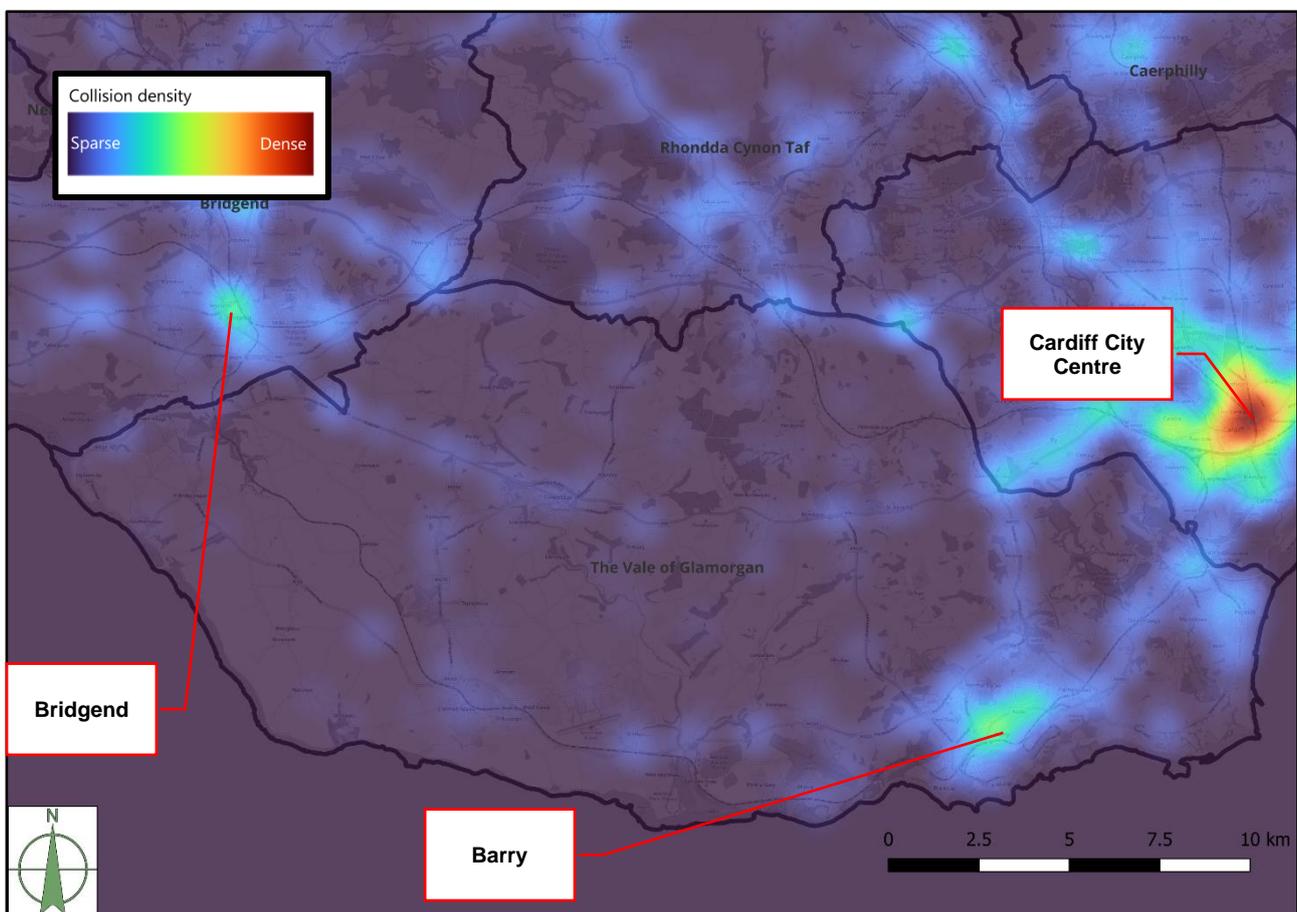


Figure 14: Heatmap of personal injury collisions (2018-2022)

© OpenStreetMap contributors, CC-BY-SA

3.2.42 The heatmap highlights that the highest concentration of PICs in the Vale of Glamorgan is in Barry, followed by Penarth.

⁷ Reported road casualties Great Britain, annual report: 2022

⁸ Sources: OpenStreetMap contributors & Department for Transport

3.2.43 Figure 15 displays the locations of all personal injury collisions in the Vale of Glamorgan between 2018 and 2022.

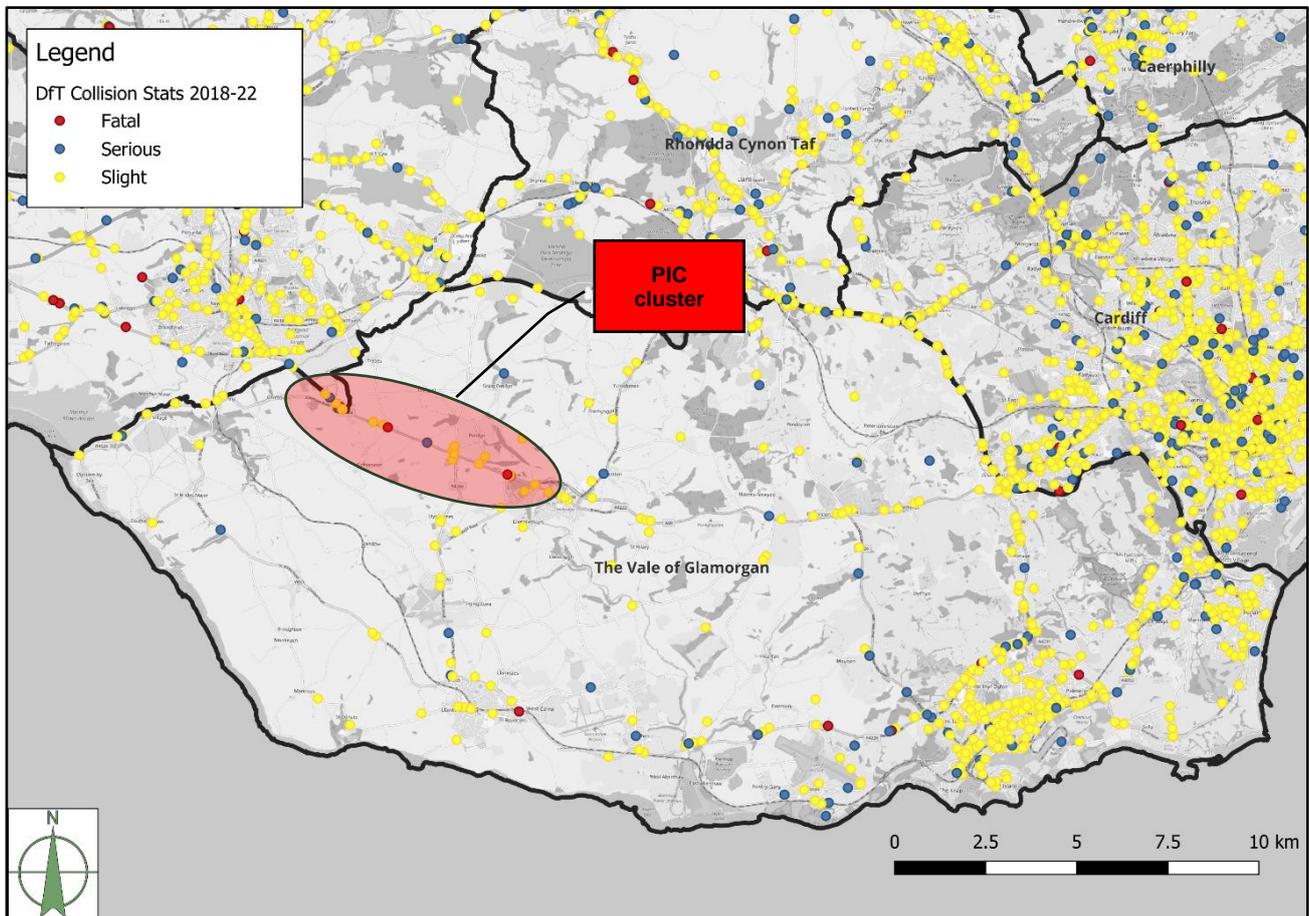


Figure 15: PIC Accident Locations and Severity (2018-2022)

© OpenStreetMap contributors, CC-BY-SA

3.2.44 Figure 15 reaffirms the heatmap in Figure 14. However, it also reveals that there have been four fatal accidents along the A48 between Cowbridge and Bridgend. Please note that one fatal PIC was recorded on the A48 just north of the Corntown Road junction falls within Bridgend County Borough Council's administrative boundary.

3.2.45 Further discussions with the Vale of Glamorgan's Traffic and Road Safety team have identified that there are ongoing signing and speed reduction measures being implemented along this section to address the safety concerns. The situation will continue to be monitored in line with Welsh Government guidance.

3.3 CHAPTER SUMMARY & RECOMMENDATIONS

Summary

- 3.3.1 This Chapter has provided a review of various data sources relating to the current operation of the Vale of Glamorgan's highway network, including details of the applicable limitations.
- 3.3.2 The Chapter provides a thorough review of existing traffic flow data sources in the Vale of Glamorgan, incorporating interim analyses from the existing Local Development Plan (LDP) evidence base and the 2015 South East Wales Transport Model (SEWTM).
- 3.3.3 The data reviewed, particularly concerning the impact of Covid-19 on traffic patterns in the Vale of Glamorgan, suggests that car traffic has largely returned to pre-pandemic levels.
- 3.3.4 The analysis of the Department for Transport (DfT) statistics, comparing current traffic flows with pre-pandemic levels, indicates a significant increase in traffic in the Vale of Glamorgan since the onset of the pandemic. As of 2022, traffic volumes have shown a general upward trend, with the mileage for cars and taxis surpassing previous years' figures and aligning closely with the levels observed before the pandemic. Additionally, there has been a consistent increase in the mileage of light commercial vehicles, which could be attributed to shifts in work and shopping behaviours, notably the rise in online shopping and deliveries.
- 3.3.5 However, it is important to note that while overall traffic volumes are back to pre-Covid levels, the distribution of these volumes may have shifted. The pandemic's lasting impact could include changes in trip purposes, the spreading of peak travel times, and alternative route choices driven by new lifestyle schedules. This means that, although the total number of trips might be similar to pre-Covid times, they could be more evenly distributed throughout the day rather than concentrated during traditional peak hours.
- 3.3.6 The Highway Capacity Analysis section highlights existing potential capacity issues within the Vale of Glamorgan's highway network. To gain insights into this capacity constraints, data from Google Traffic, INRIX, the existing LDP and local development Transport Assessments have been analysed. This analysis has pinpointed areas under strain during peak hours, with issues identified at Culverhouse Cross roundabout, Barry, Penarth, Dinas Powys, and Cowbridge.
- 3.3.7 This interim analysis lays the groundwork for a more detailed investigation in Stage 2 of the Strategic Transport Assessment (STA). The data and insights gathered thus far are considered provisional and will be further refined with more detailed analysis, taking into account recent behavioural, development and infrastructure changes.

Recommendations

Study Area

- 3.3.8 It is recommended that Stage 2 of the Strategic Transport Assessment covers all junctions identified in Table 1 and Table 2. These junctions are considered to serve a strategic function in terms of facilitating the key corridors of movement through the Vale and are potentially sensitive to traffic increases associated with strategic development allocations either in isolation or through a cumulative impact.

Data Validation

- 3.3.9 It is recommended that all site promoter Transport Assessments utilise recent traffic survey count data, to avoid the years 2020 and 2021 when traffic volumes were notably lower.
- 3.3.10 Where it is not possible to obtain new traffic counts, suitable Covid-19 adjustment factors using DfT or local data sources should be applied to ensure that the Transport Assessment conclusions are robust.

Land Allocations and Further Assessment

- 3.3.11 Whilst there are several locations throughout the Vale of Glamorgan highway network which are shown to experience existing peak hour congestion and delay, these locations are often within the dense urban areas which are best suited to facilitate and promote sustainable transport patterns at new development sites.
- 3.3.12 The second stage of the STA will utilise traffic modelling outputs from the updated SEWTM (expected in January 2024) for further base year appraisal and scenario forecasting. This will quantify the cumulative impact of the RLDP sites on key strategic junctions and establish the individual impact of each strategic site.
- 3.3.13 Where gaps are identified in the SEWTM, or where more detailed junction analysis is required to understand the future year scenario implications, additional analysis using empirical traffic modelling software (Junctions 10 and Linsig) will be undertaken as part of the STA and site promoter Transport Assessments.

4. GEOSPATIAL ANALYSIS

4.1 National Census Data

Introduction

- 4.1.1 Census data in the United Kingdom is published by the Office for National Statistics (ONS). The ONS is responsible for the collection and publication of statistics related to the economy, population, and society of England and Wales at national, regional, and local levels.
- 4.1.2 Census data has traditionally formed a fundamental resource in transport planning, providing a robust empirical foundation for transport strategies, policies, and projects.
- 4.1.3 However, the latest UK Census (2021) was conducted during the Covid-19 pandemic, a time when lockdown measures, furlough schemes and social distancing significantly altered commuting habits and modes of transportation. This unusual context means some Census data, particularly regarding travel and work patterns, may not accurately reflect typical post-pandemic conditions and therefore might be unsuitable for long-term planning and policy decisions⁹.
- 4.1.4 Therefore, for key transport planning datasets that will be interrogated in this Chapter, the 2011 Census will remain the default source, but 2021 data will be referenced where it is deemed to be useful for comparative purposes or where the metrics are considered to be less susceptible to statistical anomalies.

Car Ownership

- 4.1.5 Car ownership statistics within the Vale of Glamorgan have been examined as a key metric to understanding transport patterns. Through comparative analysis of Census data from 2011 and 2021, the aim is to identify any significant shifts in car ownership rates. This will highlight areas potentially most reliant on personal vehicular transportation for mobility and highlight regions where the enhancement of active travel and public transport provision are particularly important to ensure equality in social mobility.

⁹

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/methodologies/traveltoworkqualityinformationforcensus2021>

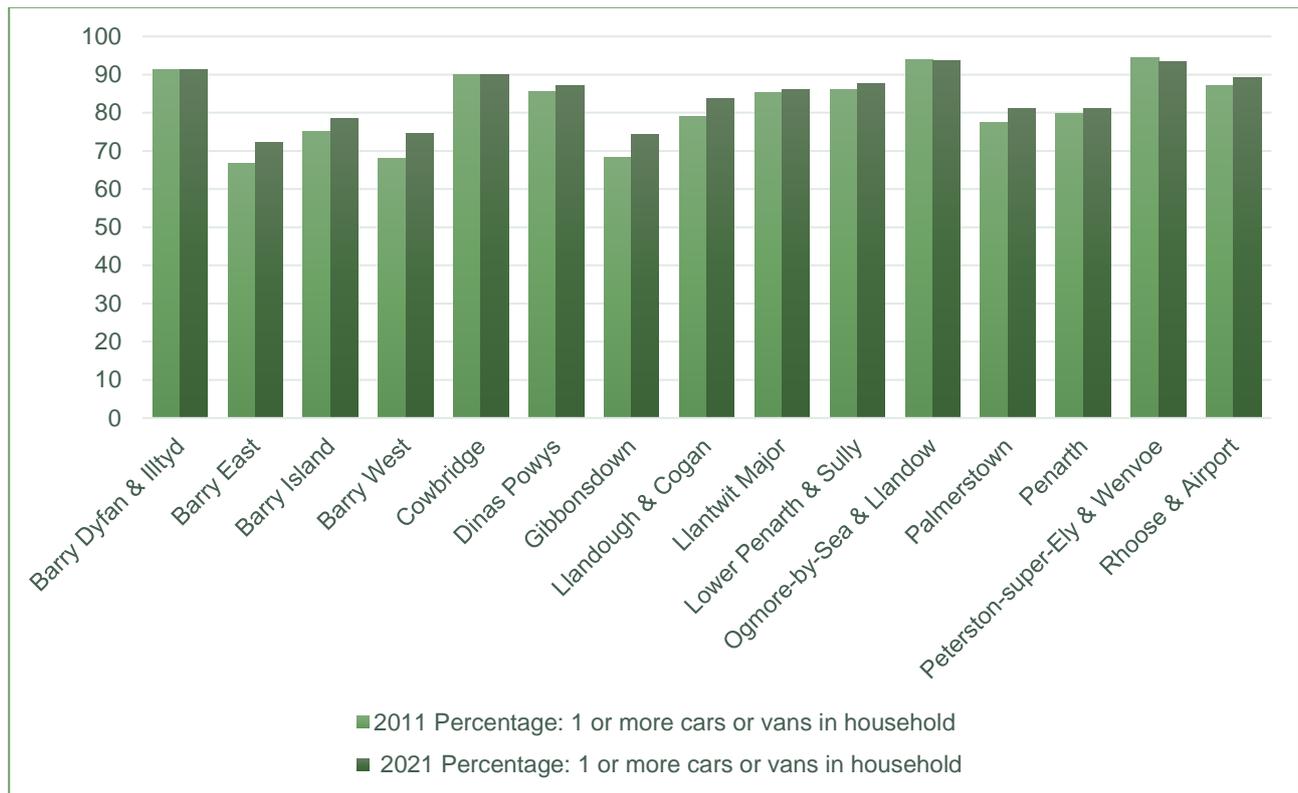


Figure 16: Households by number of cars or vans available, Census 2011 & 2021¹⁰

4.1.6 Figure 16 illustrates that most of the areas observed an increase in the percentage of households with cars or vans over the decade.

4.1.7 Furthermore, several areas observed a significant increase in the percentage of households with cars or vans from 2011 to 2021. These include the following:

- Barry West - increase from approximately 68% in 2011 to just under 75% in 2021.
- Barry East - increase from approximately 67% in 2011 to 72% in 2021.
- Gibbonsdown - increase from approximately 68% in 2011 to 74% in 2021.

4.1.8 There are some noted exceptions to the trend, with Barry Dyfan & Illyd, Ogmored-by-Sea & Llandow, and Peterston-super-Ely & Wenvoe having seen a slight decrease in households with cars or vans. However, these decreases are restricted to locations which had an initially high starting point.

4.1.9 Overall, the 2021 Census identifies that there is a high level of car ownership in the Vale, with 83.4% of households having one or more cars or vans; an increase of 2.8 percentage points since 2011. Furthermore, this is higher than neighbouring authorities, with Bridgend at 81.8%, Rhondda Cynon Taf at 77.8%, and Cardiff at 74.0%. This is considered to be a reflection of the high proportion of rural areas in the Vale and highlights the challenge of modal shift in a car-orientated population.

¹⁰ Office for National Statistics – 2011 Census and Census 2021

Journey to Work Origin/Destination Data

4.1.10 This section provides an insight into the origin and destination patterns of home to work-related journeys in the VoG.

Census 2011

4.1.11 Due to recognised quality concerns with the 2021 Census regarding home/work travel patterns, attributed to the Covid-19 pandemic, the 2011 Census data has been utilised as it is considered to represent the most reliable dataset for understanding current origin and destination trip patterns for this journey purpose¹¹.

4.1.12 To provide further geographic context, the Vale of Glamorgan Middle Super Output Areas (MSOA) have been nominally divided into West and East regions to provide an approximate even split in geographic coverage. This grouping is as summarised in Table 5 below and presented in Figure 17.

Table 5: Vale of Glamorgan MSOA Grouping

MSOA	Urban areas include	Vale West	Vale East
The Vale of Glamorgan 001 - W02000237	Ewenny, Ogmore-by-Sea, St Brides Major, Wick, Colwinston	X	
The Vale of Glamorgan 002 - W02000238	Cowbridge	X	
The Vale of Glamorgan 003 - W02000239	Bonvilston, Wenvoe, Peterston-super-Ely		X
The Vale of Glamorgan 004 - W02000240	Llandough		X
The Vale of Glamorgan 005 - W02000241	Penarth		X
The Vale of Glamorgan 006 - W02000242	Dinas Powys		X
The Vale of Glamorgan 007 - W02000243	Barry		X
The Vale of Glamorgan 008 - W02000244	Sully		X
The Vale of Glamorgan 009 - W02000245	Barry		X
The Vale of Glamorgan 010 - W02000246	Barry		X
The Vale of Glamorgan 011 - W02000247	Llantwit Major	X	
The Vale of Glamorgan 012 - W02000248	Barry		X
The Vale of Glamorgan 013 - W02000249	Barry		X
The Vale of Glamorgan 014 - W02000250	St Athan, Rhoose	X	
The Vale of Glamorgan 015 - W02000251	Barry Island		X

¹¹ Data obtained from Office for National Statistics (ONS) (2011). Table WU03EW.

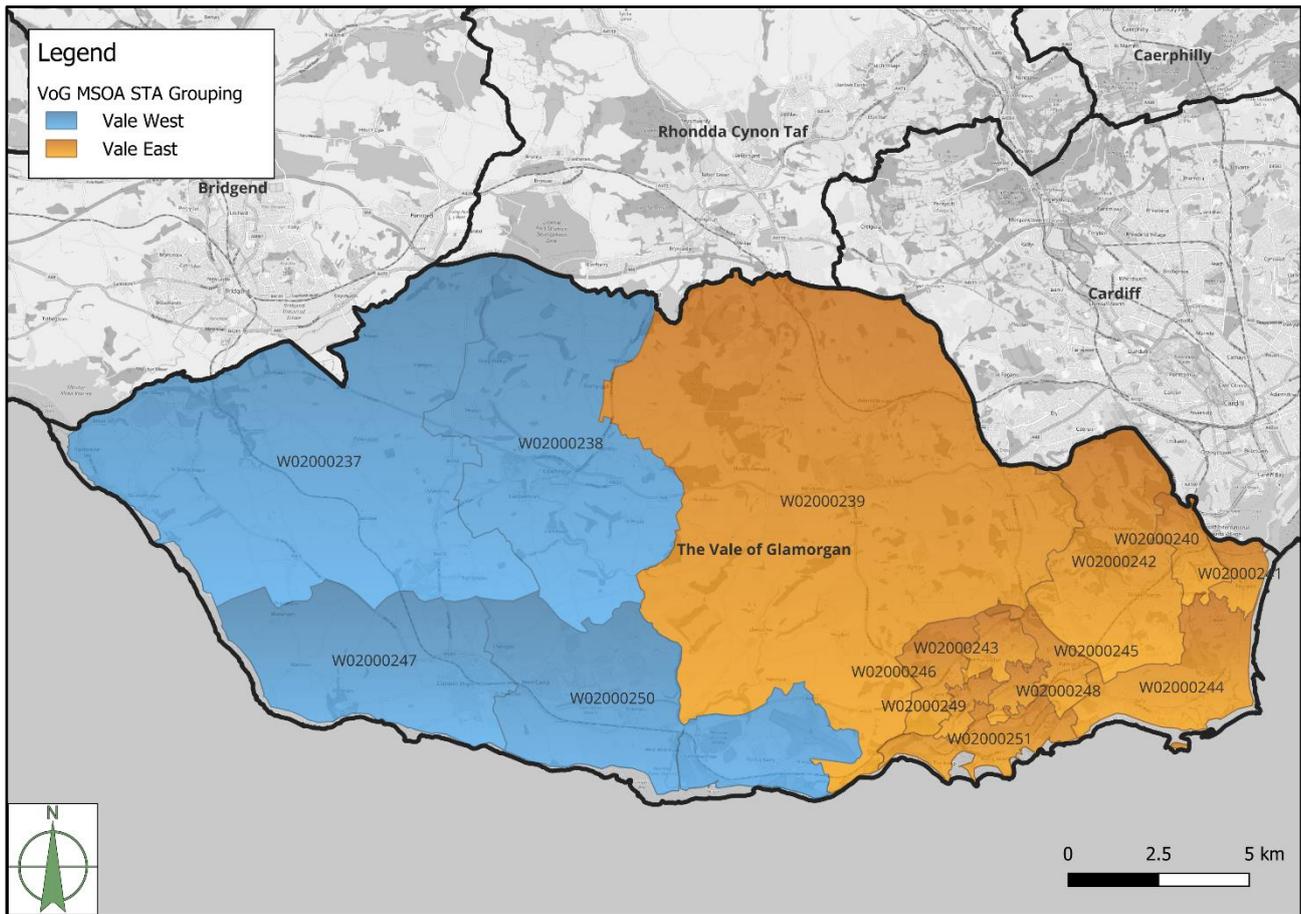


Figure 17: Vale of Glamorgan STA MSOA Grouping

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4.1.13 Table 6 provides the origin and destination for the Vale’s resident population workplace, which are subsequently illustrated in Figure 18 and Figure 19.

Table 6: Census 2011 Home to Work Origin/Destination Matrix

	Administrative Name	ONS Authority Reference	Origin	
			Vale West	Vale East
Destination	England (Aggregate)	England (Aggregate)	4.37%	3.59%
	Isle of Anglesey	W40000001	0.01%	0.00%
	Gwynedd	W40000002	0.00%	0.00%
	Conwy	W40000003	0.00%	0.00%
	Denbighshire	W40000004	0.00%	0.01%
	Flintshire	W40000005	0.02%	0.01%
	Wrexham	W40000006	0.00%	0.01%
	Ceredigion	W40000007	0.01%	0.01%
	Pembrokeshire	W40000008	0.06%	0.08%
	Carmarthenshire	W40000009	0.23%	0.12%
	Swansea	W40000010	1.19%	0.46%
	Neath Port Talbot	W40000011	0.98%	0.34%
	Bridgend	W40000012	11.81%	2.43%
	The Vale of Glamorgan	W40000013	47.84%	43.04%
	Cardiff	W40000014	22.11%	39.38%
	Rhondda Cynon Taf	W40000015	4.24%	2.83%
	Caerphilly	W40000016	0.73%	1.01%
	Blaenau Gwent	W40000017	0.05%	0.08%
	Torfaen	W40000018	0.36%	0.52%
	Monmouthshire	W40000019	0.17%	0.24%
	Newport	W40000020	1.24%	1.95%
	Powys	W40000021	0.06%	0.05%
Merthyr Tydfil	W40000022	0.17%	0.26%	
Total			100.00%	100.00%

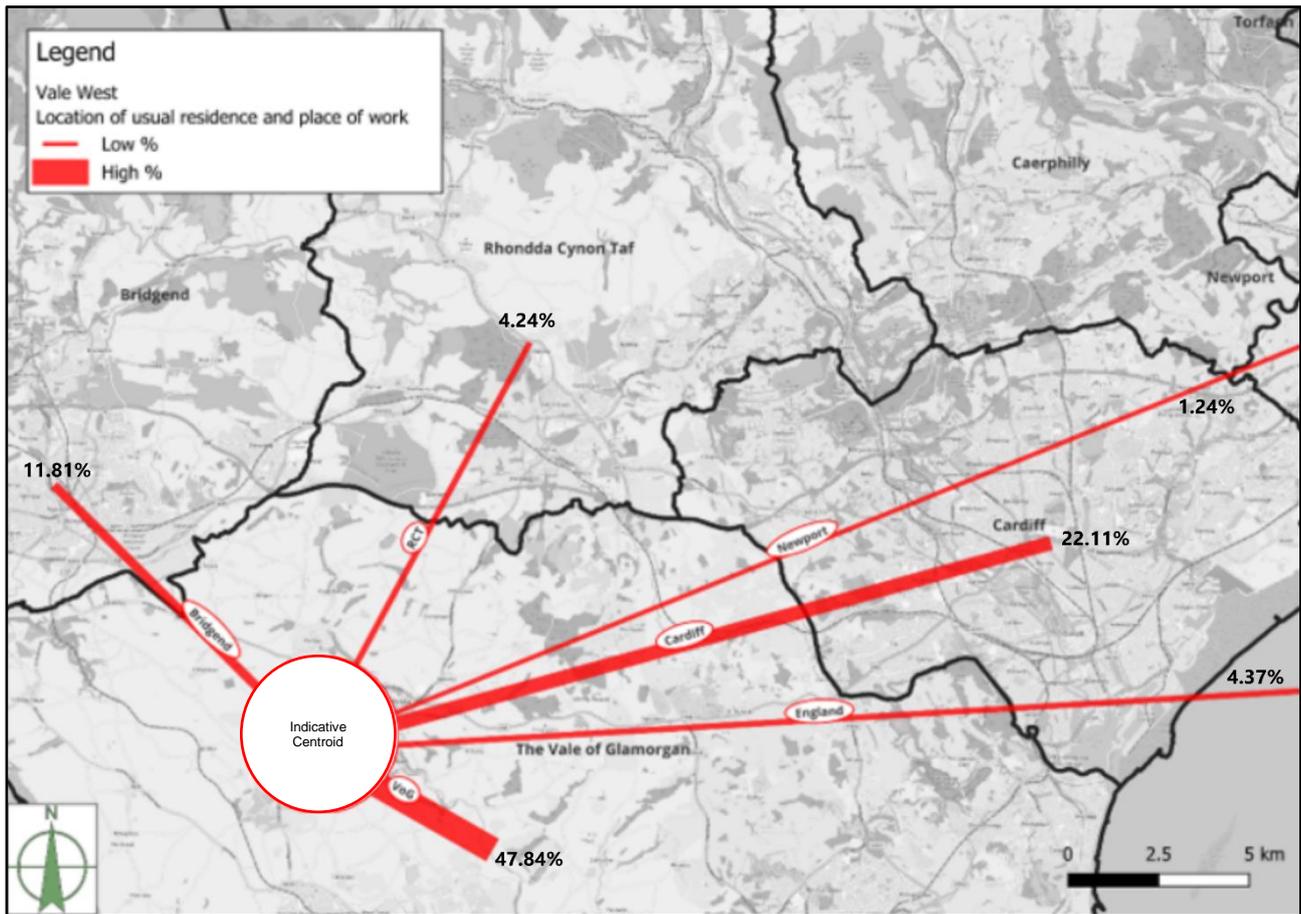


Figure 18: Vale West Census 2011 Workplace Destination¹²

© OpenStreetMap contributors, CC-BY-SA

¹² Origin and destination points are for illustrative purposes only

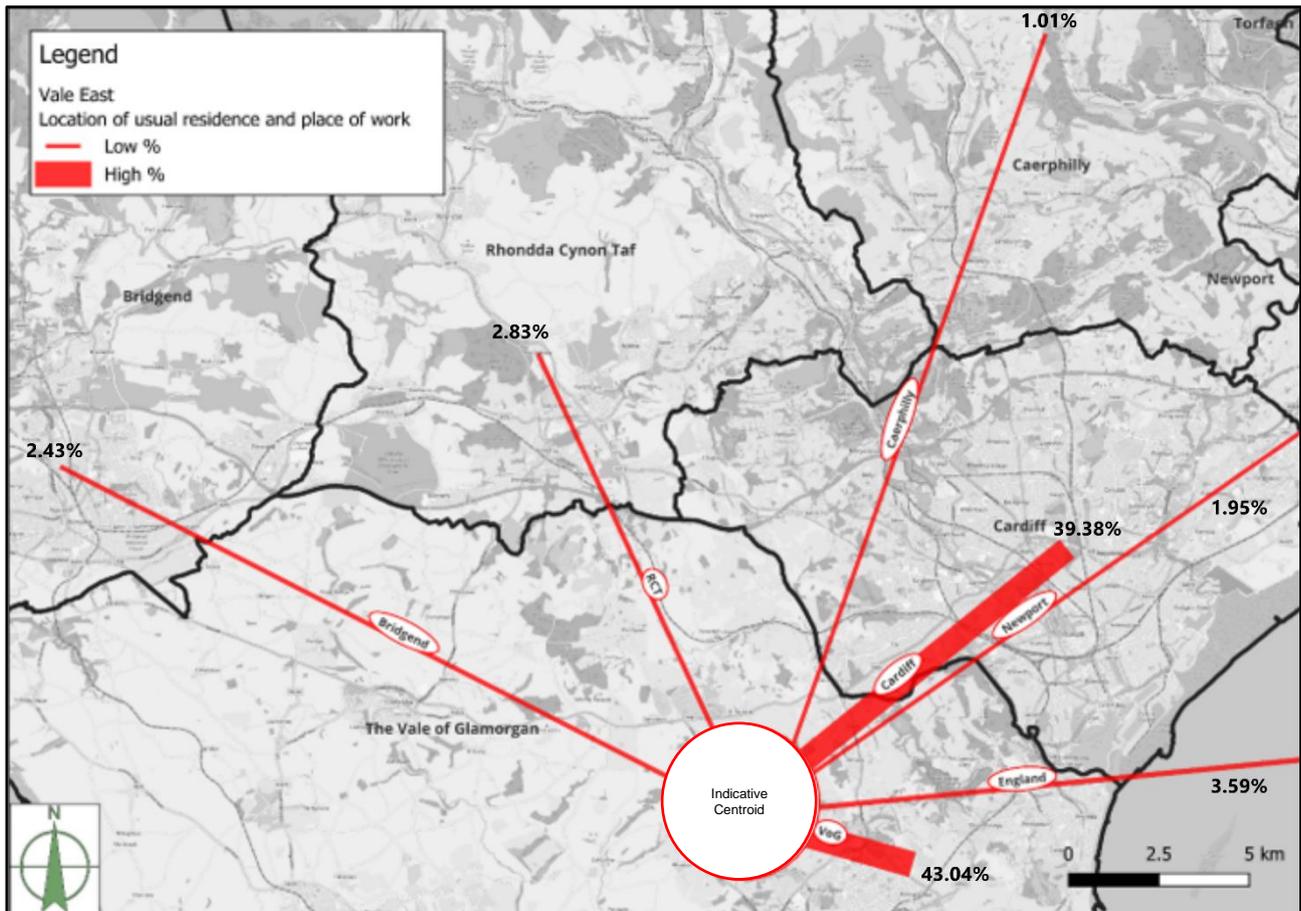


Figure 19: Vale East Census 2011 Workplace Destination¹³

© OpenStreetMap contributors, CC-BY-SA

- 4.1.14 As shown in Table 6, Figure 18, and Figure 19, the 2011 Census data indicates that the Vale of Glamorgan is primarily self-sustaining in terms of employment. This is shown by a majority 47.84% of Vale West and 43.04% of Vale East residents working within the county borough.
- 4.1.15 Cardiff is shown to be the principal external employment hub for Vale of Glamorgan residents. Notably, 22.11% of the Vale West workforce and a substantial 39.38% of the Vale East workforce commute to Cardiff. This trend is indicative of Cardiff's strong economic pull and its critical role in the regional employment landscape.
- 4.1.16 The variation between the proportions from Vale West and East to Cardiff indicate that slight variations in geographic proximity has a material influence on origin/destination patterns.

¹³ Origin and destination points are for illustrative purposes only

- 4.1.17 Secondary to Cardiff, Bridgend and Rhondda Cynon Taf also draw commuters from the Vale of Glamorgan, albeit to a lesser extent. Bridgend accounts for 11.81% of the workforce from Vale West and 2.43% from Vale East. Meanwhile, Rhondda Cynon Taf attracts 4.24% and 2.83% of the commuting population from Vale West and East, respectively. These figures, although significantly lower than those for Cardiff, highlight the importance of these areas as alternative employment centres.
- 4.1.18 The remaining administrative areas within Wales show a marginal intake of the Vale of Glamorgan's workforce, with the majority recording inflows of under 1%. Such minimal values suggest these areas do not significantly influence the commuting decisions of Vale residents, perhaps due to distance, accessibility, or the availability of suitable employment opportunities.
- 4.1.19 Cross-border commuting to England accounts for 4.37% of Vale West and 3.59% of Vale East residents. While these percentages are relatively minor in the context of the overall data, they nonetheless represent an important economic connection that further increases the gravitational pull of commuter trips to/from the Vale via the east.

Census 2021

- 4.1.20 The ONS' 2021 Census data on origin-destination work patterns was collected during a national lockdown amid the Covid-19 pandemic.
- 4.1.21 The previously identified Covid-induced inaccuracies could affect various worker categories, especially those unable to work or on furlough temporarily, who might be inconsistently classified, complicating the assessment of commuting patterns.
- 4.1.22 Given these quality concerns, relying on the 2021 Census for accurate origin/destination travel patterns in the Vale of Glamorgan is not advisable.

Modal Share

- 4.1.23 This sub section provides insight into the modal split for journeys attributed to the Vale of Glamorgan.

Welsh Government Modal Share Targets

- 4.1.24 The Welsh Government modal split targets for sustainable modes of travel is provided in Llwybr Newydd: the Wales Transport Strategy (2021). This aims to increase journeys by walking, cycling and public transport in Wales from a 2019 baseline of 32% to 45% by 2040.
- 4.1.25 Whilst modal split data focusses on trips that are made, it is important to note that the Welsh Government has also set a separate working from home target:

'30% of the workforce to work from home or near home in the long term.'

4.1.26 Further detail on modal share targets is provided by the Welsh Government ‘Net Zero Wales Carbon Budget 2’ (2021)¹⁴.

‘Policy 31 – Increase trip mode share of active travel from a current estimated proportion of 27% to 33% by 2030 and at least 35% by 2040.

Policy 32 – Increase trip mode share of public transport from a current estimated proportion of 5% to 7% by 2030 and 13% by 2040.’

4.1.27 The above revised targets provide a national target of 48% of trip mode share to be by active travel and public transport by 2040.

4.1.28 Using linear interpolation, the target sustainable trip mode share by the end of the Vale of Glamorgan’s RLDP period of 2036 is shown in Table 7.

Table 7: Interpolated Welsh Government Sustainable Transport Mode Share Target

Year	Active Travel Mode Share Target (%)	Public Transport Mode Share Target (%)
2030	33.0	7.0
2031	33.2	7.6
2032	33.4	8.2
2033	33.6	8.8
2034	33.8	9.4
2035	34.0	10.0
2036	34.2	10.6
2037	34.4	11.2
2038	34.6	11.8
2039	34.8	12.4
2040	35.0	13.0

4.1.29 The table above can be summarised to provide a bespoke Vale of Glamorgan sustainable transport target for the RLDP as follows:

***A sustainable transport mode share target for the Vale of Glamorgan of 45% by 2036.
 This target comprises 34% active travel trips and 11% public transport trips.***

2011 Census

4.1.30 The 2011 Census has also been reviewed for ‘Method used to Travel to Work’¹⁵.

4.1.31 Figure 20 provides a chart of the modal share for the Vale of Glamorgan, with those in ‘unemployment’ and ‘working from home’ removed from the dataset to enable focus on actual journeys.

¹⁴ Accessible at: <https://www.gov.wales/net-zero-wales-carbon-budget-2-2021-2025>

¹⁵ Source: Office for National Statistics – Census 2011 (Dataset QS701EW).

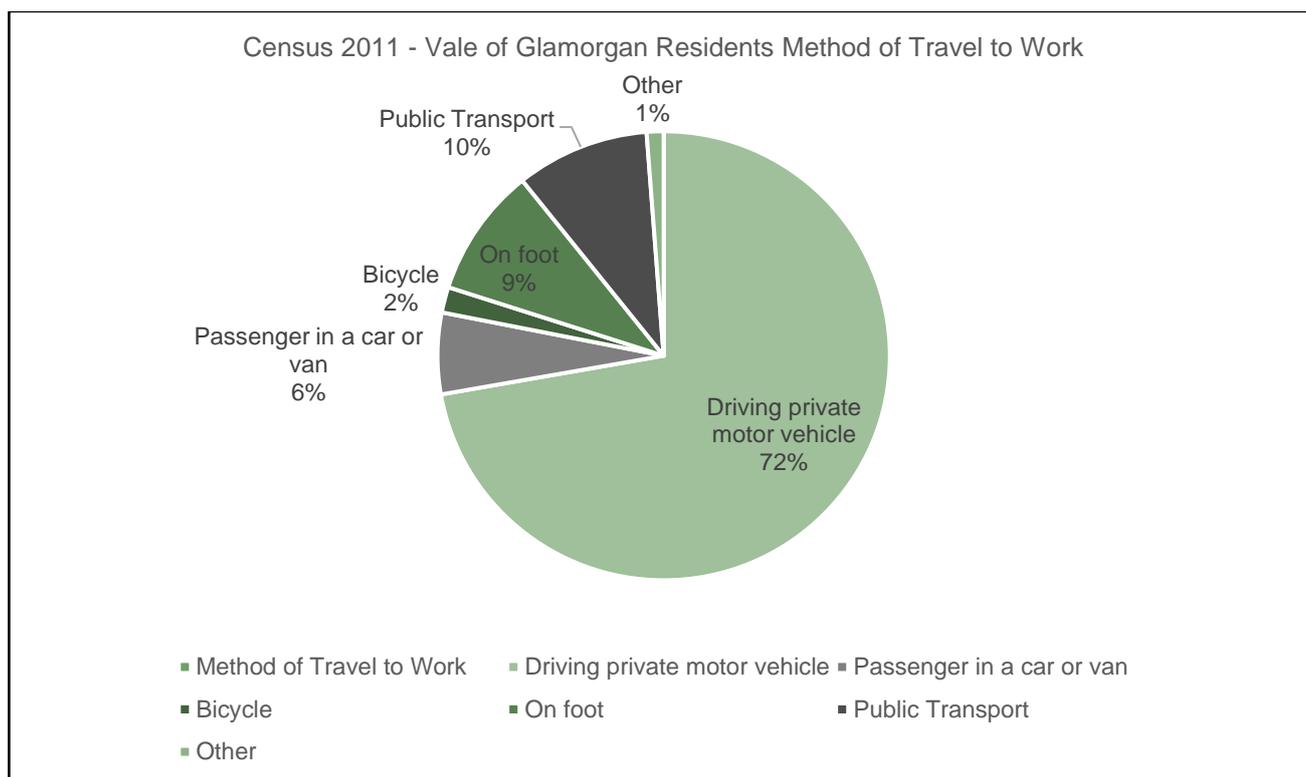


Figure 20: Census 2011 Vale of Glamorgan Residents' Method of Travel to Work

- 4.1.32 The 2011 Census data for the Vale of Glamorgan presents a commuting pattern where the majority of residents, 72%, travelled to work by driving private motor vehicles¹⁶.
- 4.1.33 A significant proportion, 10%, relied on public transport, whilst walking, accounted for 9% of the commute methods. Those who cycled to work constituted 2%.

2021 Census

- 4.1.34 The 2021 Census has also been reviewed for 'Method used to Travel to Work'¹⁷. As has already been highlighted, because of the Covid pandemic in relation to the Census day (21 March 2021), the results are to be treated with a high degree of caution.
- 4.1.35 The 2021 Census reported that 34% of Vale of Glamorgan residents primarily worked from home, exceeding the target set in the Wales Transport Strategy. This high proportion is considered to reflect the temporary distortions caused by the Covid pandemic, prior to recent initiatives by major companies to return employees to office settings.
- 4.1.36 Figure 21 provides a summary of the method of travel to work for those residing in the Vale of Glamorgan. Please note that the 'work mainly at or from home' category has, once again, been excluded from this chart to enable focus on the modal share of actual journeys.

¹⁶ Driving private motor vehicle category includes car drivers and motorcycles
¹⁷ Source: Office for National Statistics – Census 2021 (Dataset TS061).

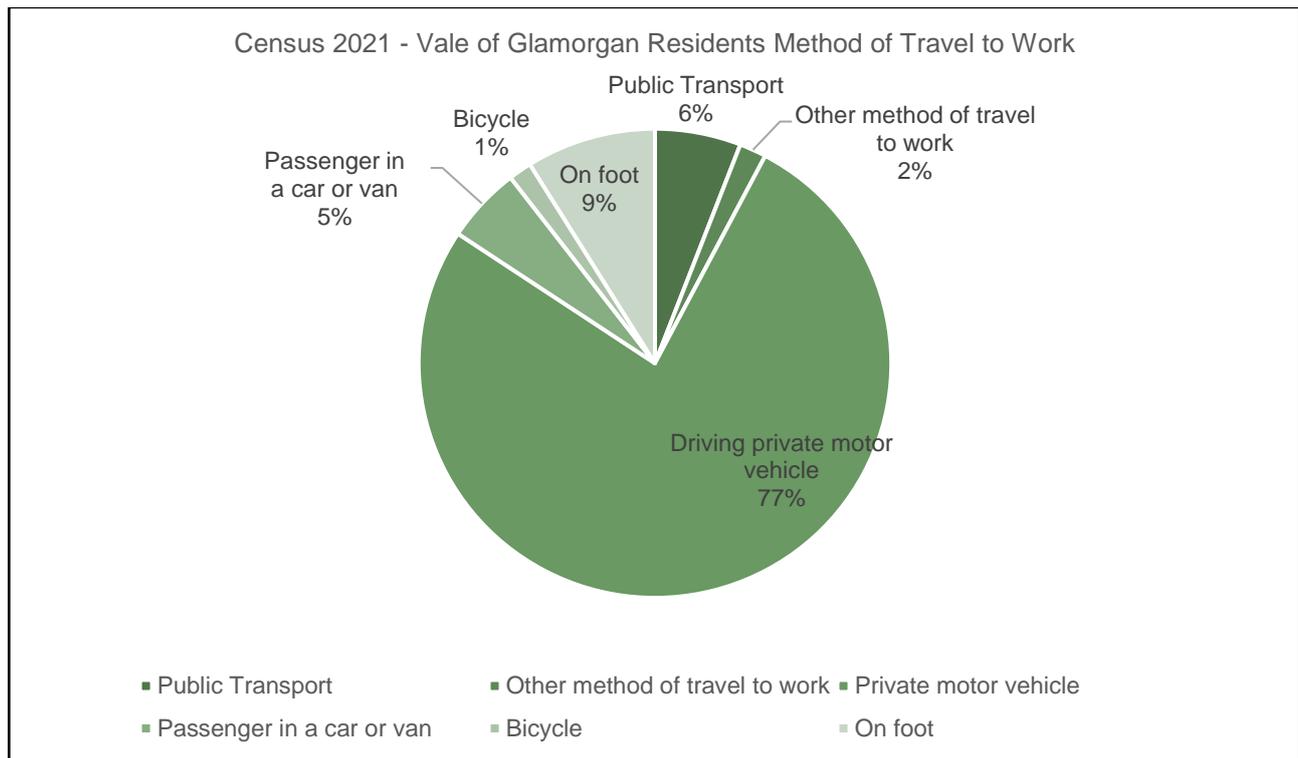


Figure 21: Census 2021 Vale of Glamorgan Residents' Method of Travel to Work

- 4.1.37 The chart in Figure 21 shows that the vast majority, 77%, prefer driving private motor vehicles for their daily commute.
- 4.1.38 Public transport is utilised by 6% of the population, which surpasses those who opt to travel as passengers in a car or van, at 5%.
- 4.1.39 Walking to work is the choice for 9% of the residents, indicating a modest inclination towards active travel. However, the use of bicycles stands at just 1%, showing limited uptake for cycling as a mode of transport.
- 4.1.40 A comparison of the Census data from 2011 and 2021 for the Vale of Glamorgan, reveals that the most significant change is the increase in the use of private motor vehicles, which rose by 5% over the decade, from 72% to 77%.
- 4.1.41 The usage of public transport saw a decrease from 10% to 6%. The slight reduction in the percentage of passengers in a car or van, from 6% to 5%, is also notable, although not markedly significant.
- 4.1.42 Walking has remained a consistent choice for 9% of the population across both census periods, indicating stability in this mode of active travel. Cycling has not seen any substantial change, maintaining a low preference at 1% to 2%.
- 4.1.43 In summary, while the overall patterns of travel to work in the Vale of Glamorgan appear relatively stable, there is a noticeable shift towards more private vehicle use and away from public transport, which are likely a result of the Covid-19 pandemic on service provision and commuting behaviours.

4.2 Mobile Network Data

Introduction

- 4.2.1 Mobile Network Data (MND) has been provided to the Vale of Glamorgan by Transport for Wales under their existing licence agreement with BT Group.
- 4.2.2 Transport for Wales are utilising the data as part of the ongoing process of updating the South East Wales Transport Model (SEWTM).
- 4.2.3 The data provides a comprehensive view of travel patterns, which, when processed and analysed, provides valuable insights into the origin and destination patterns in the Vale of Glamorgan.

Scope and Methodology

- 4.2.4 The dataset provided by Transport for Wales comprises trip matrix of every recorded trip that has an origin or destination in the Vale of Glamorgan at MSOA level, which have been grouped to provide clarity in analysis. The data covers a weekday in Autumn 2022 for the hours of 08:00-09:00, 15:00-16:00 and 17:00-18:00.
- 4.2.5 The outputs are collected through a series of data collection and processing algorithms. It involves tracking 'pings' from mobile devices, providing a vast dataset that reflects multi-modal movement patterns within, to and from the Vale of Glamorgan, for all trip purposes.
- 4.2.6 Whilst MND is a valuable tool and is being utilised more extensively in modern transport planning, it is important to be aware of several notable advantages and some limitations to the data.

Advantages of MND in Transport Planning

- 4.2.7 MND is able to encompass all modes of travel, which is a significant advancement over traditional methods like ticket sales or road sensors. While the former primarily captures public transport users and the latter vehicular movements, MND provides a more complete picture of travel patterns across various modes of transport.
- 4.2.8 The method employed in MND collation utilises an ever-present data source which can be frequently, and quickly, updated over a wide coverage area across neighbourhoods, cities, and countries. This extensive reach is made possible through the widespread use of mobile phones, coupled with the precision of mobile phone masts in pinpointing locations alongside accurate timestamps.
- 4.2.9 From a financial perspective, MND is a cost-effective alternative to traditional data collection methods, such as the use of manual traffic counts or automatic number plate recognition (ANPR). Its less resource-intensive nature makes it a useful resource in supporting strategic transport models.

Limitations of MND in Transport Planning

- 4.2.10 The spatial accuracy of mobile phone data has certain limitations, primarily because of its reliance on mobile phone mast triangulation. This method can sometimes restrict the precision of the data, inhibiting the ability to identify specific roads used by individuals.
- 4.2.11 In terms of distinguishing between different travel modes, MND encounters significant challenges. While there have been attempts to categorise travel modes based on the speed of movement, this method is still unreliable and requires further research and more detailed signalling data to be more accurate.
- 4.2.12 To ensure privacy, statistical disclosure control is applied. This involves suppressing data in cases where the dataset is too small, ensuring that individual privacy is maintained. This can be at the expense of data accuracy as these trips would need to be omitted or reassigned.
- 4.2.13 Data collection issues, such as system outages can result in significant data loss which requires the use of assumptions using similar days' data and time-series clustering algorithms.

MND Origin/Destination Outputs

4.2.14 The data provided by TfW has grouped the MSOAs into the sectors shown in Table 8¹⁸.

Table 8: TfW Mobile Network Data MSOA Grouping

Local Authority or Combined Region	TfW Mobile Network Data Sectors
Blaenau Gwent	Brynmawr Blaenau, Ebbw Vale, Tredegar
Bridgend	Bridgend, Bridgend Valleys, Maesteg, Porthcawl Kenfig Hill
Caerphilly	Blackwood Pontllanfraith, Caerphilly, Ystrad Mynach Nelson, Newbridge Risca, Rhymney
Cardiff	Cardiff Central, Cardiff East, Cardiff Inner West, Cardiff North, Cardiff South, Cardiff West
Carmarthenshire	Carmarthenshire
Ceredigion	Ceredigion
Merthyr Tydfil	Merthyr
Monmouthshire	Abergavenny, Monmouthshire Central, Monmouthshire South East
Neath Port Talbot	Neath Port Talbot
Newport	Newport East, Newport West
Rhondda Cynon Taf	Aberdare, Hirwaun, Pontypridd, Rhondda, Talbot Green, Pontyclun Llanharan
Swansea	Swansea
Torfaen	Blaenavon Torfaen, Cwmbran Pontypool
Vale of Glamorgan	Barry Penarth, Vale of Glamorgan rural, Cardiff Airport Enterprise Zone
Powys	Powys
Pembrokeshire	Pembrokeshire,
North Wales	Gwynedd Conwy Anglesey, Wrexham Denbighshire Flintshire
England and Scotland	England Midlands, England North and Scotland, England South

4.2.15 Table 8 details that the Vale of Glamorgan origin/destination zones have been categorised as follows:

- Barry Penarth (includes Barry, Penarth, Dinas Powys and Sully);
- Vale of Glamorgan rural (includes Wenvoe, Cowbridge, Ogmere-by-Sea and Llantwit Major); and
- Cardiff Airport Enterprise Zone (includes St Athan and Rhoose).

4.2.16 The grouped MSOAs in Table 4 are displayed in Figure 22.

¹⁸ Areas created by TfW to represent logical sectors derived from MSOA boundaries.

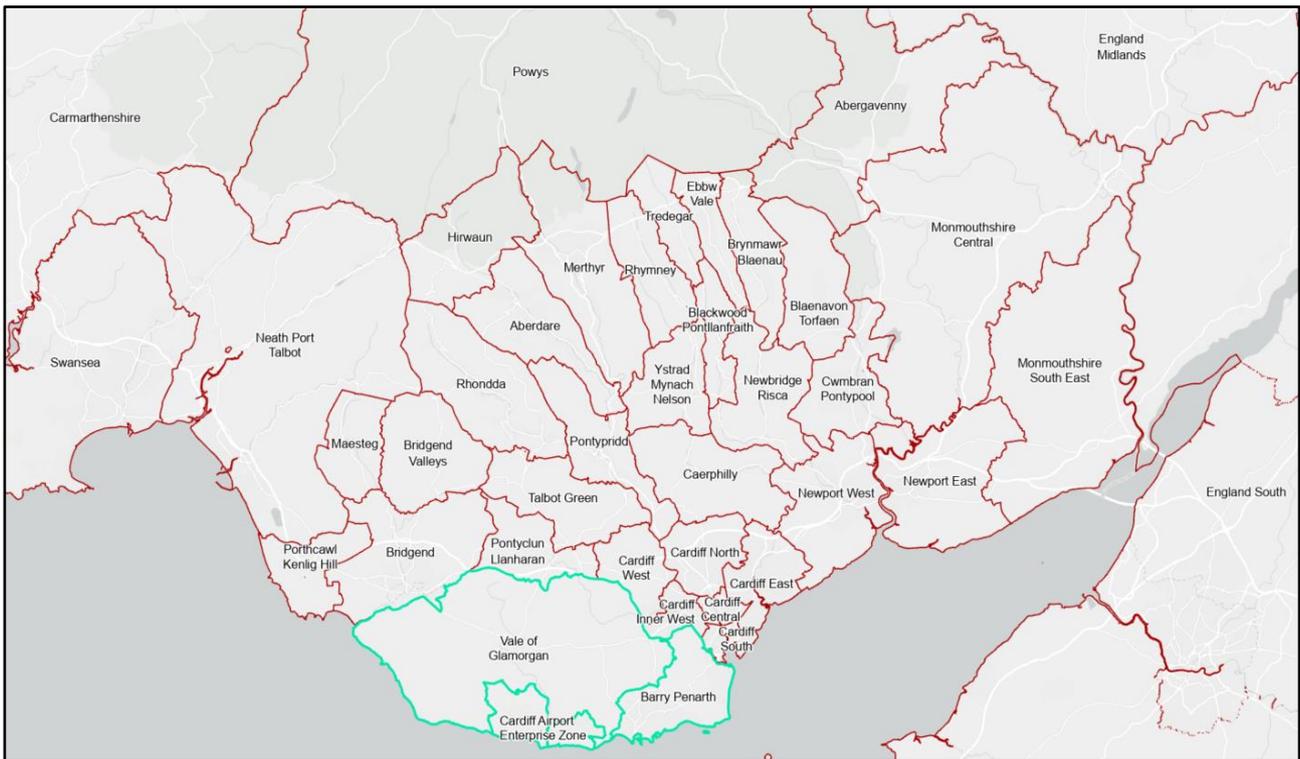


Figure 22: TfW Sectors for Mobile Network Data Origin/Destinations

Source: Transport for Wales

- 4.2.17 The full original destination data for the traditional Weekday AM peak (0800-0900) school PM peak (1500-1600) and traditional PM peak (1700-1800) is provided in Appendix A¹⁹. This data provides movements for all trip purposes and all modes linked to MSOAs in the Vale of Glamorgan.
- 4.2.18 The data highlights that there is a heavy weighting toward internal trips within the Vale. For example, 81.2% (AM peak) and 73.5% (PM Peak) of all recorded trips were internal, with a journey start and finish point within the Vale of Glamorgan.

¹⁹ Current peak hours will be established in Stage 2 of the STA with use of the revised SEWTM

4.2.19 Focussing firstly on internal trips, Table 9 and Table 10 provide a trip matrix for all internal journeys in the Vale, for all modes of travel and trip purposes, during the traditional highway network Weekday AM and PM peak hours respectively. The data provides the proportional destination of each origin location.

Table 9: Internal Vale of Glamorgan Trips Proportions by Origin – AM Peak Hour

AM (0800-0900) Trip Matrix		Destination		
		Barry Penarth	Cardiff Airport Enterprise Zone	Vale of Glamorgan rural
Origin	Barry Penarth	93.71%	1.42%	4.88%
	Cardiff Airport Enterprise Zone	20.20%	45.80%	34.01%
	Vale of Glamorgan rural	13.77%	9.28%	76.95%

4.2.20 The data in Table 9 provides the following key points relating to internal Vale of Glamorgan trips in the Weekday AM peak hour:

- The majority of trips starting in ‘Barry Penarth’ remain within the same area, accounting for a substantial 93.71% of travel.
- Only a small proportion of trips from ‘Barry Penarth’ go to the ‘Cardiff Airport Enterprise Zone’ (1.42%) and the ‘Vale of Glamorgan rural’ area (4.88%).
- The ‘Cardiff Airport Enterprise Zone’ witnesses a more distributed pattern of travel, with 20.20% of the trips going to ‘Barry Penarth’, a notable 45.80% remaining within ‘Cardiff Airport Enterprise Zone’, and 34.01% heading to the ‘Vale of Glamorgan rural’ area.
- The ‘Vale of Glamorgan rural’ area exhibits the highest level of outbound travel, with 13.77% of trips going to ‘Barry Penarth’ and 9.28% to the ‘Cardiff Airport Enterprise Zone’.
- However, the ‘Vale of Glamorgan rural’ area also demonstrates a high degree of internal travel with 76.95% of trips staying within the defined locality.

Table 10: Internal Vale of Glamorgan Trips Proportions by Origin – PM Peak Hour

PM (1700-1800) Trip Matrix		Destination		
		Barry Penarth	Cardiff Airport Enterprise Zone	Vale of Glamorgan rural
Origin	Barry Penarth	91.78%	3.42%	4.79%
	Cardiff Airport Enterprise Zone	20.28%	48.69%	31.03%
	Vale of Glamorgan rural	16.61%	13.63%	69.75%

4.2.21 The data in Table 10 provides the following key points relating to internal Vale of Glamorgan trips in the Weekday PM peak hour:

- A high percentage of trips that start in ‘Barry Penarth’ remain within the same area during the evening peak, at 91.78%, which is slightly lower than the AM peak’s 93.71%.

- Trips from 'Barry Penarth' to the 'Cardiff Airport Enterprise Zone' show a minor increase to 3.42% in the PM peak from the AM's 1.42%, and those to the 'Vale of Glamorgan rural' area also show a small decrease to 4.79% from the AM's 4.88%.
- For the 'Cardiff Airport Enterprise Zone', 20.28% of trips are to 'Barry Penarth', almost identical to the AM peak figure, and 48.69% of the trips are within the 'Cardiff Airport Enterprise Zone' itself, showing a slight increase from the AM peak's 45.80%.
- Trips from the 'Cardiff Airport Enterprise Zone' to the 'Vale of Glamorgan rural' area in the PM peak decrease to 31.03% from 34.01% in the AM peak.
- The 'Vale of Glamorgan rural' area has 16.61% of trips to 'Barry Penarth' and 13.63% to the 'Cardiff Airport Enterprise Zone', both of which are increases from the AM peak (13.77% and 9.28%, respectively).
- Internal trips within the 'Vale of Glamorgan rural' area decreased to 69.75% in the PM peak from 76.95% in the AM peak.

4.2.22 Overall, this data shows that travel patterns from the AM to the PM peak hours are reasonably consistent during both time periods.

4.2.23 Secondly, external trips associated with the Vale are shown in Figure 23 and Figure 24 which illustrate the combined origin and destination movements for trips that either originate from, or are destined for, the Vale of Glamorgan (i.e. internal trips are excluded).

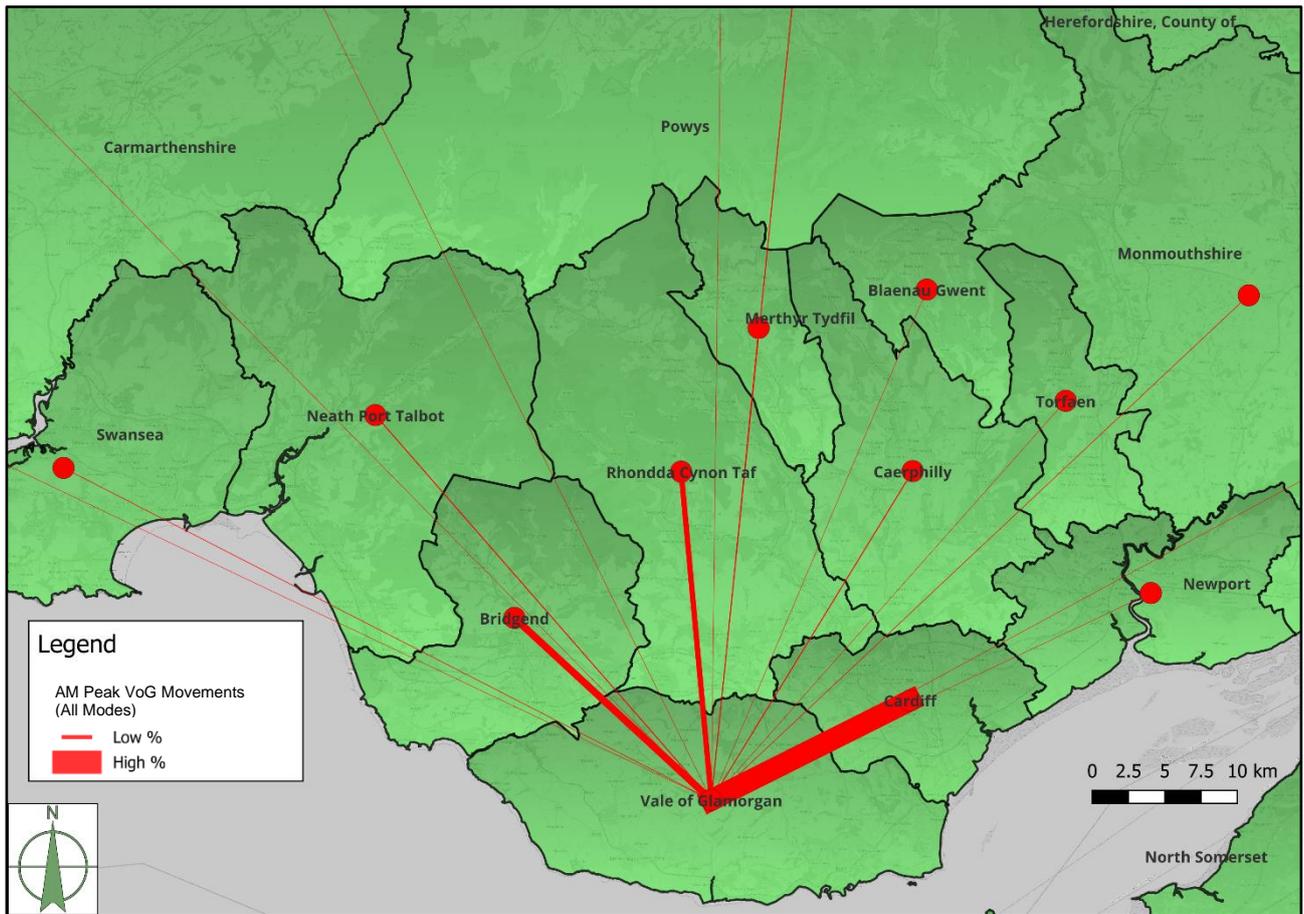


Figure 23: Mobile Network Data AM Peak (0800-0900) Origin/Destination for all external VoG Trips

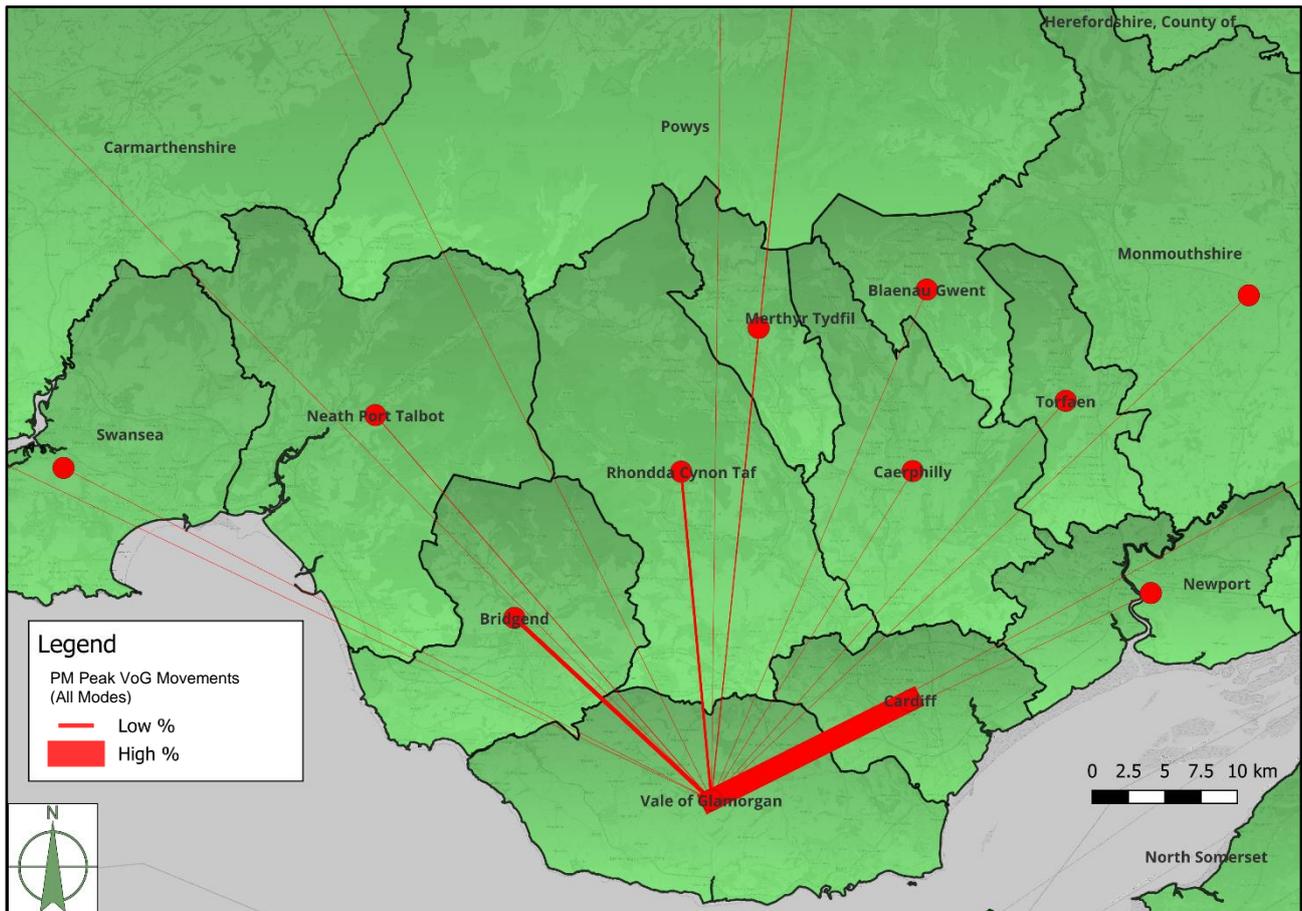


Figure 24: Mobile Network Data PM Peak (1700-1800) Origin/Destination for all external VoG Trips

- 4.2.24 The outputs of Figure 23 and Figure 24 highlight the strong trip links between the Vale of Glamorgan and Cardiff, which accounts for 59% of all weekday AM trips and 71% of all PM trips to/from the Vale.
- 4.2.25 In the AM peak, Bridgend (19%), and Rhondda Cynon Taf (14%) have notable links with the Vale. In the PM peak, these proportions fall to 14% and 8% for the respective areas.

4.3 Welsh Index of Multiple Deprivation

Introduction

4.3.1 The Welsh Index of Multiple Deprivation²⁰, which is published by Welsh Government, has been reviewed to provide insight into measures of deprivation within the Vale of Glamorgan. The latest WIMD report was published in 2019.

4.3.2 The WIMD is an intricate index structured on eight distinct domains or types of deprivation, each composed of a variety of indicators. These domains are:

- Income
- Employment
- Health
- Education
- Access to Services
- Housing
- Community Safety
- Physical Environment

4.3.3 An overall WIMD score is also provided for an area, which is a weighted sum of the deprivation score for each domain.

Access to Services

4.3.4 Access to services is a domain that considers a household's inability to access essential services for day-to-day living.

4.3.5 The indicators within this domain range from average public and private travel times to essential amenities like food shops, GP surgeries, schools, post offices, and libraries, to a new digital indicator related to access to fast (>30mb/s) broadband.

4.3.6 This domain is of particular importance to the STA as lower access to services is likely to promote higher car ownership and usage, or further deprivation in other indicators for those who are unable or unwilling to undertake private car travel.

²⁰ Accessed at: wimd.gov.wales

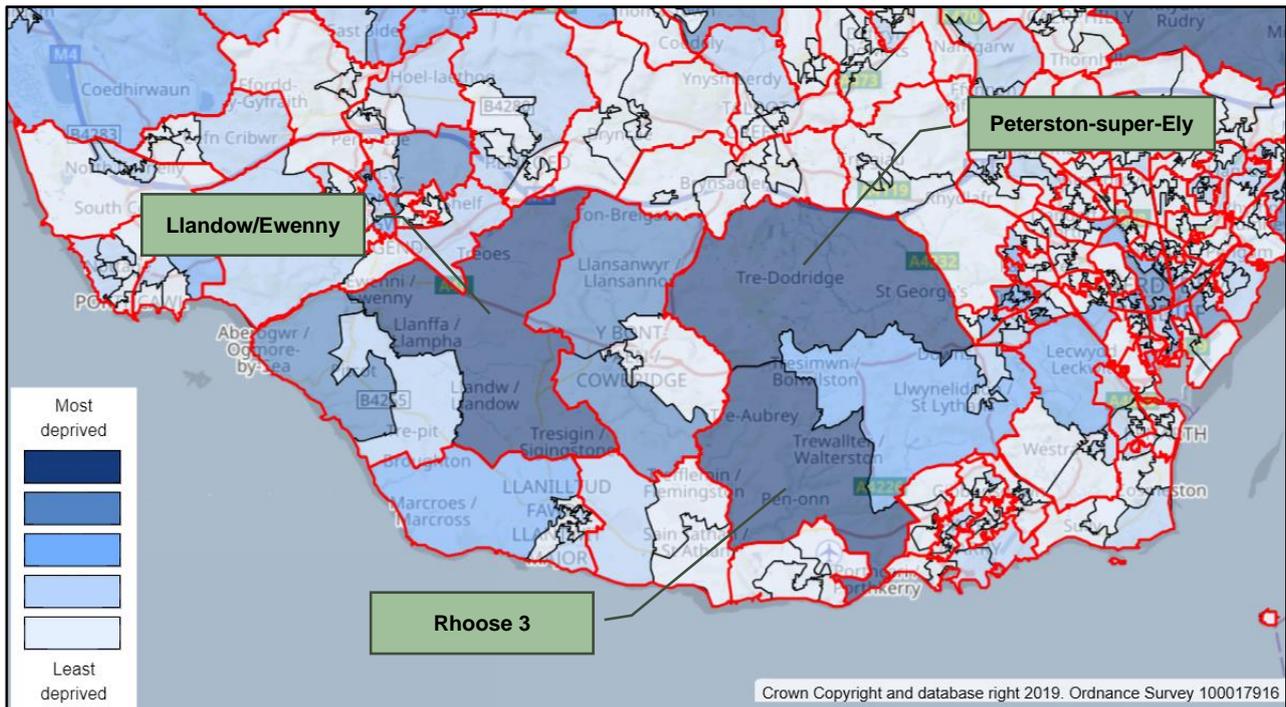


Figure 25: WIMD Access to Services

4.3.7 As shown in Figure 25, areas of highest deprivation in relation to access to services in the Vale are:

- Rhoose 3 (Ranked 180 of 1909);
- Peterston-super-Ely (Ranked 189 of 1909); and
- Llandow/Ewenny.

4.3.8 However, it is noted that the access to services throughout Rhoose 3, which includes the rural communities of Llancafarn, Penmark and a number of small hamlets, is likely to differ substantially between the more rural north and the near-urban areas to the south.

4.3.9 By locating development where there is good access to services, demand for private car ownership and travel will be reduced.

4.4 CHAPTER SUMMARY & RECOMMENDATIONS

Summary of Key Findings

- 4.4.1 This Chapter has provided a geospatial analysis of movement patterns in the Vale of Glamorgan. A variety of sources have been reviewed to provide insight into how people are moving throughout the area and reasons that may be affecting these observations.
- 4.4.2 The key findings from the analysis of UK Census data indicate that the 2021 Census, conducted during the Covid-19 pandemic, is not entirely representative of post-pandemic conditions for some categories.
- 4.4.3 Therefore, for key transport planning datasets that have been interrogated in this report, the 2011 Census has remained the default source, but 2021 data has been referenced where it is deemed to be useful for comparative purposes or where the metrics are considered to be less susceptible to statistical anomalies.
- 4.4.4 In relation to car ownership within the Vale of Glamorgan a comparative analysis between 2011 and 2021 Census data reveals a general trend of increased car or van ownership. Notable examples include Barry West, Barry East, and Gibbonsdown, which all saw significant increases in households with cars and vans over the decade. However, there are exceptions, such as Barry Dyfan & Illtyd, Ogmores-by-Sea & Llandow, and Peterston-super-Ely & Wenvoe, where there was a slight decrease in households with cars or vans, albeit from a low initial base.
- 4.4.5 Overall, the 2021 Census identifies that there is a high level of car ownership in the Vale, with 83.4% of households having one or more cars or vans; an increase of 2.8 percentage points since 2011. Furthermore, this is higher than neighbouring authorities, with Bridgend at 81.8%, Rhondda Cynon Taf at 77.8%, and Cardiff at 74.0%. This is considered to be a reflection of the high proportion of rural areas in the Vale and highlights the challenge of modal shift in a car-orientated population.
- 4.4.6 The 2021 Census data for the Vale of Glamorgan regarding work travel patterns has been reviewed and is noted by the Office for National Statistics to have been heavily influenced by the temporary restrictions of the Covid-19 pandemic. This situation makes the data less reliable for understanding usual travel habits. Therefore, the more stable 2011 Census data has been used for a clearer picture of commuting patterns in the area, albeit that the post-pandemic norm is likely to be somewhere between the two datasets.

- 4.4.7 From the 2011 data interrogation, it is clear that most residents in the Vale of Glamorgan work within the county borough itself. However, Cardiff stands out as a key destination for commuters, especially from the eastern part of the Vale. However, other areas like Bridgend and Rhondda Cynon Taf also attract workers from the Vale, but to a far lesser extent than Cardiff. Commuting to England is also a factor, but it involves a far smaller percentage of the population. This pattern shows that while the Vale has a good number of local jobs, unsurprisingly, Cardiff's role as an employment hub is significant for the area's residents.
- 4.4.8 To enhance the Census data findings and provide a clearer understanding of observed trip patterns for all journey purposes and all modes of travel, Mobile Network Data was also obtained from Transport for Wales (via a licence agreement with BT Group) and reviewed. This yielded significant insights into local travel dynamics in the Vale of Glamorgan.
- 4.4.9 A key finding from the analysis is that, similar to the Census data findings, a high proportion of trips are retained within the Vale of Glamorgan. This suggests a strong localised travel pattern for all trip purposes, with a majority of the population opting for short trips during the reviewed peak hours.
- 4.4.10 Furthermore, when focussing on external trips, there is a significantly high weighting of travel between the Vale of Glamorgan and Cardiff. This interconnection between the two areas reiterates the importance of good sustainable travel links between the two areas.
- 4.4.11 A review of the modal share of trips in the Vale of Glamorgan has focussed on observed trends and aspirations of Welsh Government policy. The 2011 Census data for the method used to travel to work for residents in the Vale of Glamorgan shows a dominant reliance on private vehicle use at 72%, with public transport at 10%, walking at 9%, and cycling at 2%. However, the 2021 Census (albeit influenced by the Covid pandemic) recorded an increase in private vehicle use to 77%, and a decline in public transport use to 6%. Walking remained stable at 9%, while cycling was marginally used at 1%. Given high levels of recent active travel funding, it is expected that walking and cycling modal share will increase once a more cohesive network is established.
- 4.4.12 It has been identified that the Welsh Government Wales Transport Strategy sets ambitious goals to boost the use of walking, cycling, and public transport from a 2019 baseline of 32% to 45% by 2040. Additionally, a long-term target of 30% of the workforce working from home has been established. The 'Net Zero Wales Carbon Budget 2' (2021) further specifies these objectives, aiming to raise the share of active travel to 33% by 2030 and 35% by 2040, with public transport increasing to 7% by 2030 and 13% by 2040. These figures contribute to a national goal of 48% for active travel and public transport by 2040, with an interpolated target of 45% sustainable transport mode share by 2036, comprising 34% active travel and 11% public transport.

- 4.4.13 This Chapter has also reviewed the Welsh Index of Multiple Deprivation. It highlights the 'Access to Services' domain as a key domain, which assesses the accessibility of essential services for households. This assessment considered factors such as travel times to key amenities and the availability of high-speed broadband. Limited access to these services might lead to greater dependence on private car ownership and use, or increase other forms of deprivation for those who cannot or choose not to use private vehicles.
- 4.4.14 In the Vale of Glamorgan, the areas of Rhoose 3, Peterston-super-Ely, and Llandow/Ewenny were identified as having the most significant deprivation in terms of service access. However, it should be noted that there is a marked difference in service access within Rhoose 3, which includes the rural communities of Llancarfan, Penmark and a number of small hamlets, particularly between the more rural north and near-urban south of the defined area boundaries.

Recommendations

Enhanced Sustainable Mode Share in RLDP and Transport Assessments:

- 4.4.15 Both the Replacement Local Development Plan and Strategic Site Transport Assessments should aim for a 45% sustainable mode share of new trips on the highway network. This target is crucial for promoting sustainable transport and reducing reliance on less environmentally friendly modes across the region.

Focused Transport Network Mitigation:

- 4.4.16 Transport network mitigation for all Replacement Local Development Plan sites should focus on the Vale of Glamorgan's high incidence of internal trips, which are well suited to active travel and short distance public transport travel. Mitigation should also place high emphasis on the significant external link to Cardiff but also recognise that Bridgend and Rhondda Cynon Taf represent an important strategic connection for the Vale of Glamorgan's.

Utilisation of Report Data in Strategic Site Transport Assessments:

- 4.4.17 Strategic Site Transport Assessments should consider utilising the origin/destination data within this report for accurate trip distribution and assignment calculations. This would ensure that assessments reflect the most current and relevant regional travel patterns, enhancing the precision and effectiveness of independent traffic models.

5. SUSTAINABLE TRANSPORT

5.1 Active Travel

Introduction

5.1.1 This section provides an overview of the existing active travel network in the Vale of Glamorgan, current usage and future aspirations. This section aims to highlight constraints and opportunities to enable them to be considered as part of the RLDP process.

5.1.2 Active travel in Wales is defined in the Welsh Government Active Travel Act Guidance (2021) as:

‘walking and cycling for utility or purposeful journeys, as opposed to recreational walking and cycling’

5.1.3 The Active Travel (Wales) Act 2013 mandates local authorities to improve and promote routes for active travel.

5.1.4 Active Travel routes are specifically designed and mapped routes that aim to facilitate shorter, everyday journeys for walking and cycling. They are engineered to high standards of safety, accessibility, and convenience, as stipulated under the Active Travel Act design guidance. The focus is on connecting key destinations such as schools, offices, and shops. They must undergo community consultation and meet certain criteria before being approved and designated by the Welsh Government.

5.1.5 General footpaths or footways are also a vital component of everyday active journeys for many, but they may not meet the criteria set out for active travel routes. They might lack features such as lighting, signage, or crossing facilities and may not be as well-maintained.

5.1.6 The National Cycle Network (NCN), which has prominent routes in the Vale, serves both recreational and utility cycling. The NCN may include rural and scenic routes that are not directly aimed at facilitating short-distance utility trips and therefore may or may not meet the criteria set out in the Active Travel Act for everyday cycling routes.

5.1.7 Local cycling routes are also often developed by local authorities or community groups for the benefit of residents and visitors. These routes may serve various purposes, including recreational cycling or connecting local points of interest. However, like parts of the NCN, they may not necessarily meet the specific safety, accessibility, and connectivity standards outlined in the Active Travel Act design guide. Features like clear signage, adequate lighting, and smooth surfaces suitable for all types of bicycles might be absent.

5.1.8 Typical distances for active modes of travel are summarised in the Active Travel Act guidance and replicated as Figure 26.

Mode	Less than 1 mile	Up to 2 miles	Up to 3 miles	Up to 4 miles	Up to 5 miles	Up to 7.5 miles	Up to 15 miles
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
Colour	Average active user likelihood						
●	Many users likely to travel this distance for utility journeys						
●	Some users likely to travel this distance for utility journeys						
●	Few or no users likely to travel this distance for utility journeys						

Figure 26: Typical Active Travel Distances²¹

Existing Network

5.1.9 Figure 27 displays the existing active travel network, as approved by the Welsh Government. Please note that there are some recently completed active travel routes which have not yet been through the formal approval process and are therefore not displayed on the map (e.g. the new active travel route along the A48 at Brocastle).

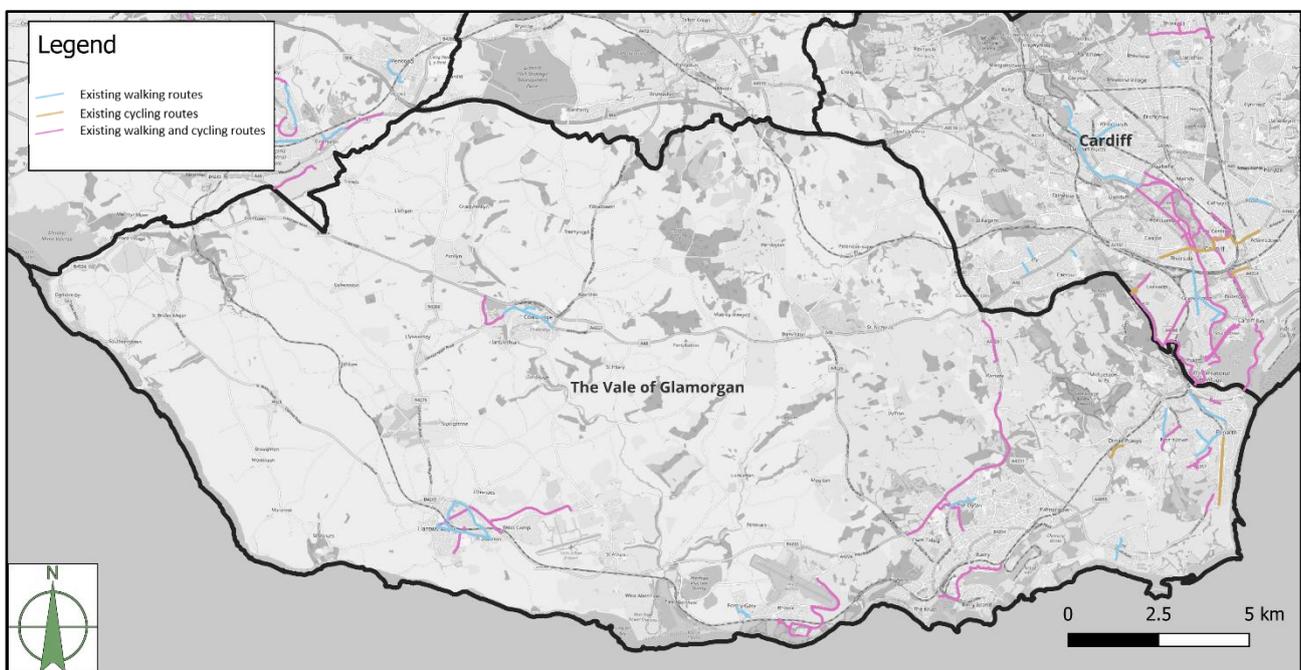


Figure 27: Existing Active Travel Routes

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²¹ Table 4.1 of Welsh Government Active Travel Act Guidance Table (July 2021)

- 5.1.10 Figure 27 highlights that the active travel network in the Vale of Glamorgan is sparse and fragmented, and there are no suitable routes between the main urban areas.
- 5.1.11 However, there are sections of active travel routes in Llantwit Major, St Athan, Cowbridge, Rhoose, Barry, Wenvoe, Penarth and Dinas Powys. These offer scope for localised travel to key trip attractors.
- 5.1.12 The NCN Routes 88 and 888 also provide further connections for some users between Barry and Ewenny, as shown in Figure 28. However, these routes are not part of the active travel network and therefore lack the criteria to encourage mass usage for utility trips.

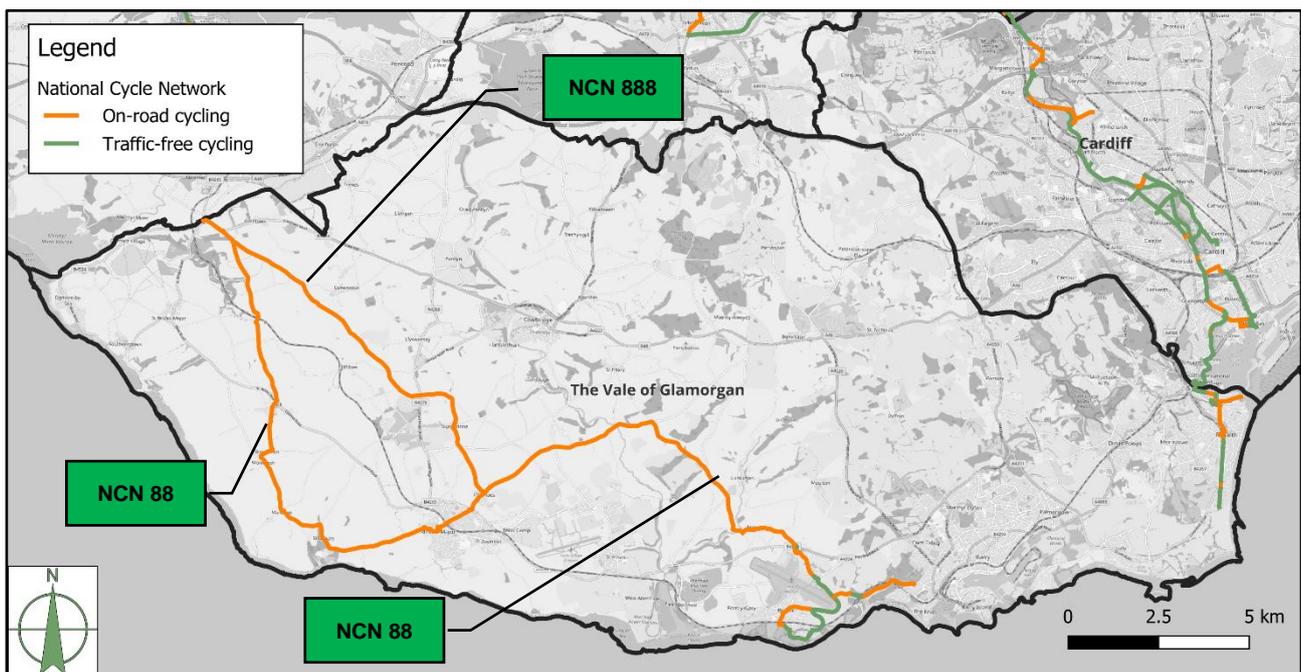


Figure 28: National Cycle Network

© OpenStreetMap contributors, CC-BY-SA

Recent Network Enhancements

- 5.1.13 There has been significant recent capital investment in the Vale's active travel network^{22,23}, which includes:
- Cycle storage in towns, villages and schools;
 - Ongoing accessibility improvements (dropped kerbs and tactile paving);
 - Financial year 2022/23 Active Travel funding - £104,995 as match funding for shared use footway/cycleway along Porthkerry Road and Fontygary Road in Rhoose. Additional S106 sustainable transport funding of £418,484 was also used for this scheme;
 - Financial year 2023/24 Active Travel fund – £2,433,231 Eglwys Brewis Active Travel route (Construction of segregated walking/cycling route);

²² Source: Vale of Glamorgan Council Active Travel (Wales) Act 2013 Reporting Duties up to 31/03/2023

²³ Source: Welsh Government ATF: Grants Awarded 2023 to 2024

- Financial year 2023/24 Active Travel fund – £674,900 Station Road, Rhoose (Construction of shared use path linking the village to the transport interchange);
- Financial year 2023/24 Active Travel fund – £336,074 Wenvoe. Funding for a Toucan crossing to be installed at Walston Castle and pedestrian improvements through Wenvoe;
- Brocastle to Bridgend – 1.4km of new 3-3.5m shared cycleway footway along the A48 which connects the proposed new Welsh Government employment site at Brocastle to Bridgend and connects to other recently completed active travel routes.
- A 250m cycle/pedestrian link was provided from the A48 to Darren Farm in Cowbridge. It will connect a new residential development with a new school and Llantwit Major Road. Phase 1 is now constructed with Phase 2 ongoing.

Electric Bicycle Hire

- 5.1.14 Electric bicycles (E-bikes) offer many advantages that extend beyond traditional cycling. These benefits include enhanced range and speed, making them a more viable mode of transport for utility trips.
- 5.1.15 E-bikes contribute towards an inclusive transport system, by enabling cycling for individuals who might be deterred by physical limitations or steep topography. E-bikes also contribute to sustainability by offering a low-carbon alternative to motorised transport.
- 5.1.16 The report 'E-bikes and their capability to reduce car CO2 emissions' (Philips et al., 2022)²⁴ focuses on the potential of electric bicycles to mitigate carbon emissions from the transport sector. Key findings of the report include:
- E-bikes have a 'modest CO2 saving capability per person' but can make a 'very significant contribution to transport carbon reduction' when adopted widely.
 - Areas vulnerable to car-related economic stress also have a high potential for E-bike adoption.
- 5.1.17 E-bike hire stations are provided at the following locations in the Vale:
- Windsor Road, Penarth;
 - The Esplanade, Penarth;
 - Penarth Train Station;
 - Cosmeston Country Park;
 - Llandough Hospital;
 - The Barrage;
 - Sully;
 - Stanwell, Penarth;
 - Dinas Powys; and

²⁴ Philips et al., (2022). *E-bikes and their capability to reduce car CO2 emissions. Transport Policy, Volume 116*

- Cogan.

5.1.18 The Council's contract expires next financial year and there is currently uncertainty whether this will be renewed.

Usage

5.1.19 Active Travel data usage data is regularly captured by the National Survey for Wales and reported by the Welsh Government.

5.1.20 In the latest available dataset (April 2022 to March 2023), the following statistics were reported:

- 6% of people cycled at least once a week for active travel purposes.
- 51% of people walked at least once a week for active travel purposes.

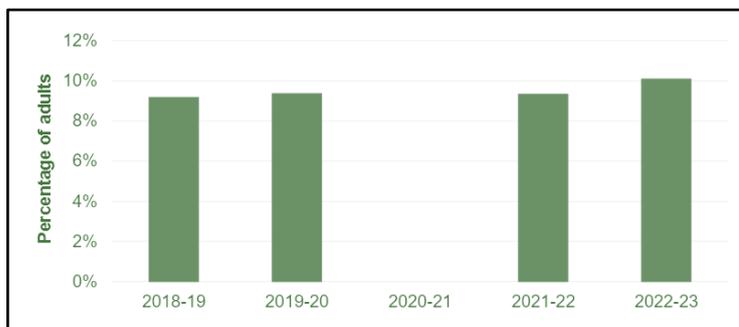


Figure 29: Proportion of people that travelled by cycling at least once a month²⁵

5.1.21 The data in Figure 29 indicates a minor increase in cycling (according to this metric) over recent years²⁶, despite significant funding being provided to encourage wider adoption whereby some may expect a more pronounced change. However, it is important to acknowledge the poor standard of baseline cycling infrastructure in Wales and the engrained car-dominant nature of the population which requires time before meaningful change can be observed.

5.1.22 It is therefore anticipated that as cycle networks become more coherent, direct, safe, comfortable and attractive, that adoption rates will increase.

5.1.23 Figure 30 provides a measure of walking frequency amongst adults in Wales.

²⁵ Source: National Survey for Wales, Welsh Government

²⁶ note that 2020-21 is excluded due to the Covid-19 pandemic

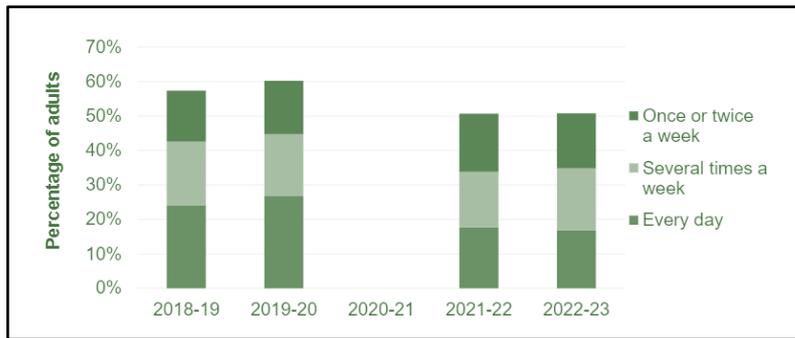


Figure 30: Frequency of active travel by walking

- 5.1.24 The data in Figure 30 indicates a marginal decrease in walking (according to this metric) over recent years from approximately 58% walking at least one a week in 2018/19 to just over 50% in 2022/23.
- 5.1.25 This reduction is contrary to a backdrop of significant funding being provided to encourage wider adoption as part of active travel measures. There are no definitive reasons for this, but increased working from home and online deliveries may be a prominent influence.

Future Routes

- 5.1.26 The Active Travel (Wales) Act 2013 places specific duties on local authorities in Wales, including the obligation to continually improve facilities and routes for pedestrians and cyclists.
- 5.1.27 This includes the requirement for the Vale to produce future route maps setting out ambitious plans to develop a network of active travel routes. This exercise has recently been completed by the Vale of Glamorgan and the routes were developed through an extensive consultation process in line with the following aims:
- Improved access to key services and facilities including town centres, employment areas, retail areas, and transport hubs;
 - improved access to education facilities such as schools and colleges; and
 - Improvements to, and expansion of, the existing strategic network.
- 5.1.28 Figure 31 displays the future routes which have been approved for the Vale of Glamorgan by Welsh Government, alongside the existing active travel routes.

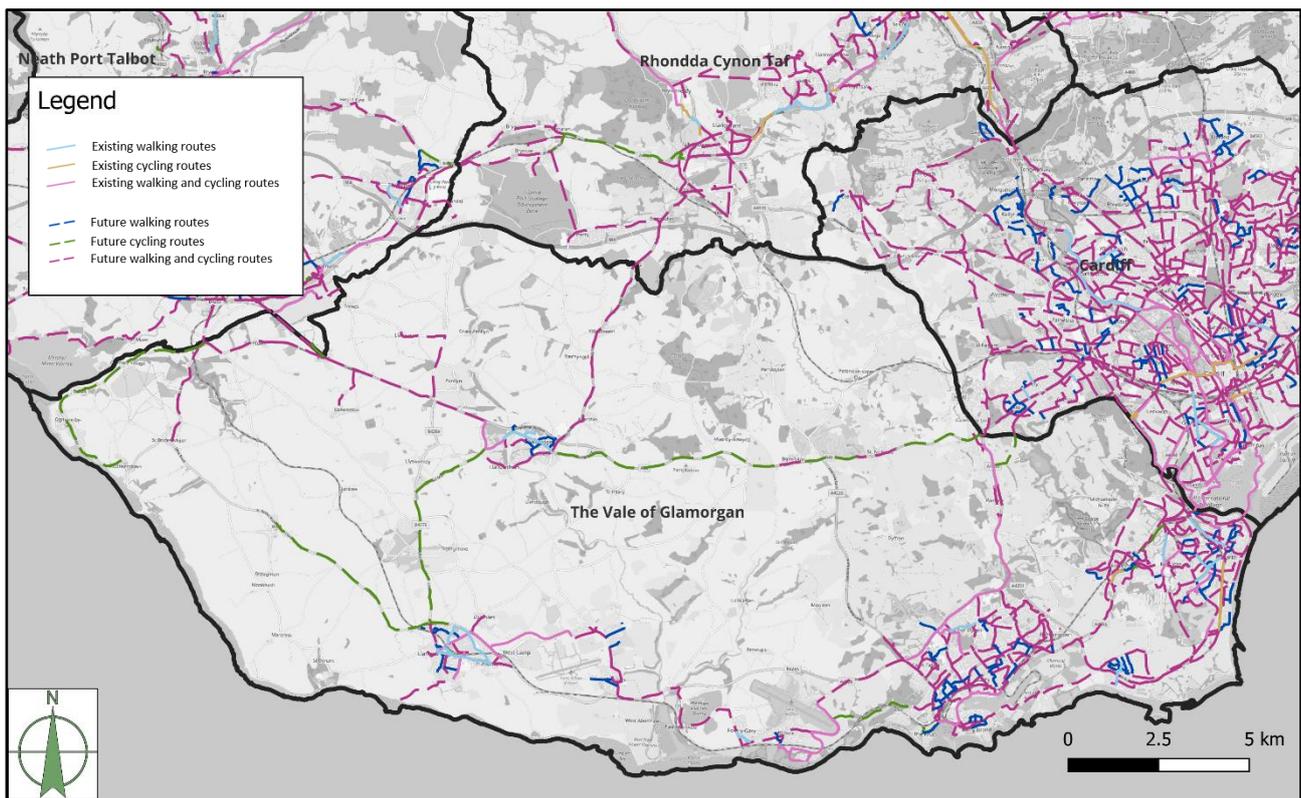


Figure 31: Future Active Travel Routes in the Vale

- 5.1.29 The future routes map displays a focus on active travel network development in the main urban areas of Barry and Penarth, with an inter-urban link running east-west through the Vale along the A48 between Cardiff and Bridgend via Culverhouse Cross, Bonvilston and Cowbridge.
- 5.1.30 A further east-west active travel link is proposed along the southern area of the Vale, connecting Penarth, Barry, Rhose, St Athan, Llantwit Major and Ewenny (via the NCN).
- 5.1.31 Active travel infrastructure enhancements are also proposed north-south from Pontyclun (Rhondda Cynon Taf) to Llantwit Major via Cowbridge and from Culverhouse Cross to Barry via the A4050.
- 5.1.32 In the current financial year (2023/24) the Vale of Glamorgan has been awarded a grant of £645,000 of Active Travel Funding from Welsh Government, which is being invested into the development of the following schemes:
- Feasibility of AT route – Culverhouse Cross to St Nicholas;
 - Design of AT route – Sully to Cosmeston;
 - Design of AT route - Waycock Cross to Cardiff Airport;
 - Investigation work for AT route - Barry to Dinas Powys;
 - Cycle storage in towns, villages and schools; and
 - Area-wide accessibility improvements (dropped kerbs and tactile paving).

5.2 Bus

Existing Network

5.2.1 National Public Transport Access Nodes (NaPTAN) has been obtained from the DfT²⁷ to provide an overview of bus stop locations and density in the Vale, as shown in Figure 32.

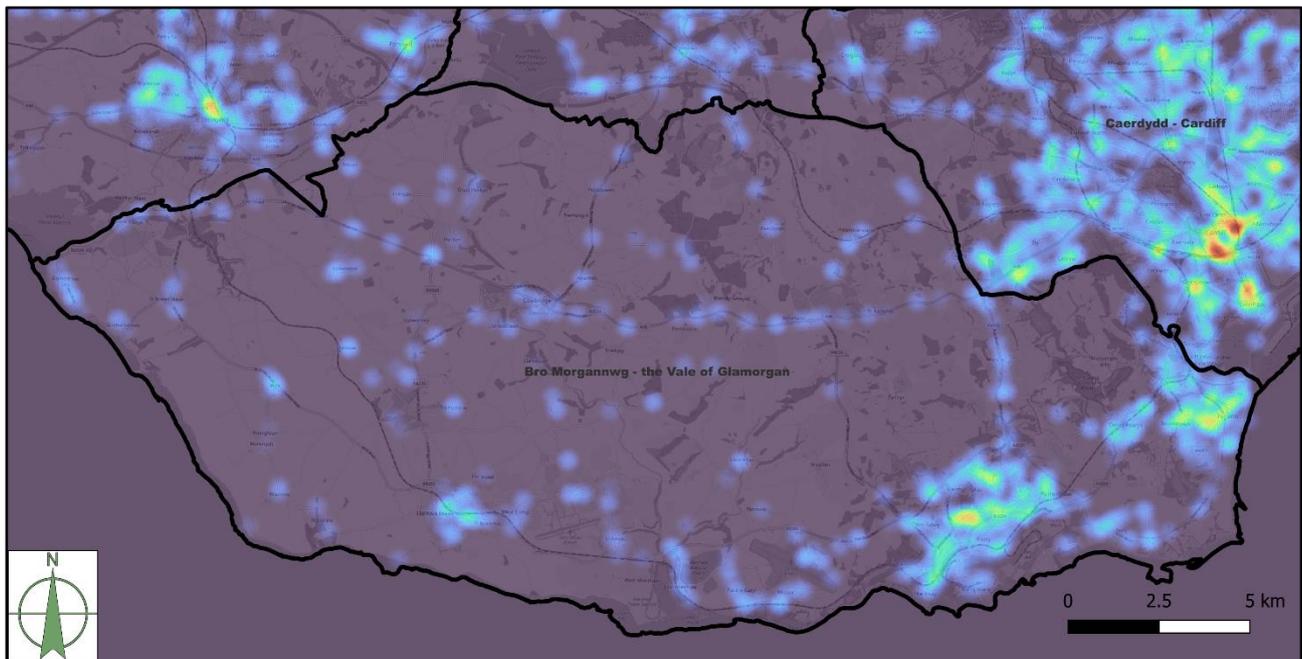


Figure 32: Bus Stop Density Heatmap – Vale of Glamorgan

© OpenStreetMap contributors, CC-BY-SA

5.2.2 The data in Figure 32 shows that there is a high concentration of bus stops in the larger urban settlements of Barry and Penarth, with further clusters in Llantwit Major, Dinas Powys and St Athan. There are further defined corridors of bus stop provision along the A48 through the Vale between Cardiff and Bridgend, and the A4050 between Culverhouse Cross and Barry.

5.2.3 Whilst the presence of a bus stop does not automatically indicate provision of a service (which will be discussed later in the report) it does provide an indication of where services are most likely to run or to be in demand if modal shift was to accelerate and market conditions were more favourable.

²⁷ Data last updated on 6th October 2023

5.2.4 Table 11 identifies the local bus services that currently operate in the Vale²⁸:

Table 11: Existing Local Bus Services in the Vale

Bus Number	Route Description	Operator
7	Cardiff City Centre to Penarth	Cardiff Bus
92, 92B, 93, 94	Cardiff to Penarth (92/93/94) and Barry (93/94)	Cardiff Bus
95	Cardiff City Centre to Barry	Cardiff Bus
96	Cardiff to Barry	Cardiff Bus
B1	Highlight Park to Barry Island	Cardiff Bus
B2	Cwm Talwg to Barry Town Centre	Cardiff Bus
X2	Porthcawl – Cardiff via Bridgend, Cowbridge, Bonvilston and Culverhouse Cross	First Cymru
905	Cardiff Airport - Rhoose Rail Station - St Athan Village	Adventure Travel
89A	Cardiff - Dinas Powys	Adventure Travel
89B	Cardiff - Llandough	Adventure Travel
304	Cardiff Bay - Llantwit Major Barry, Rhoose, St Athan, Eglwys Brewis	Adventure Travel
100	Barry Town Circular: Colcot, Coldbrook, Cadoxton, Town Centre, Barry Island, Highlight Park (Port Road) & Cwm Talwg	Adventure Travel
B3	Barry Town Centre (Circular) Cadoxton	Adventure Travel
320	Cardiff City Centre – Talbot Green via Peterstone Super Ely & Hensol	Adventure Travel
321	Talbot Green - Llantwit Major Bus Station Cowbridge	Adventure Travel
303	Llantwit Major - Bridgend: St Donats, Broughton, Wick, Ogmere-by-Sea	Adventure Travel

²⁸ Services correct as of October 2023 but subject to change

5.2.5 Figure 33 illustrates the bus services that currently operate in the Vale of Glamorgan.

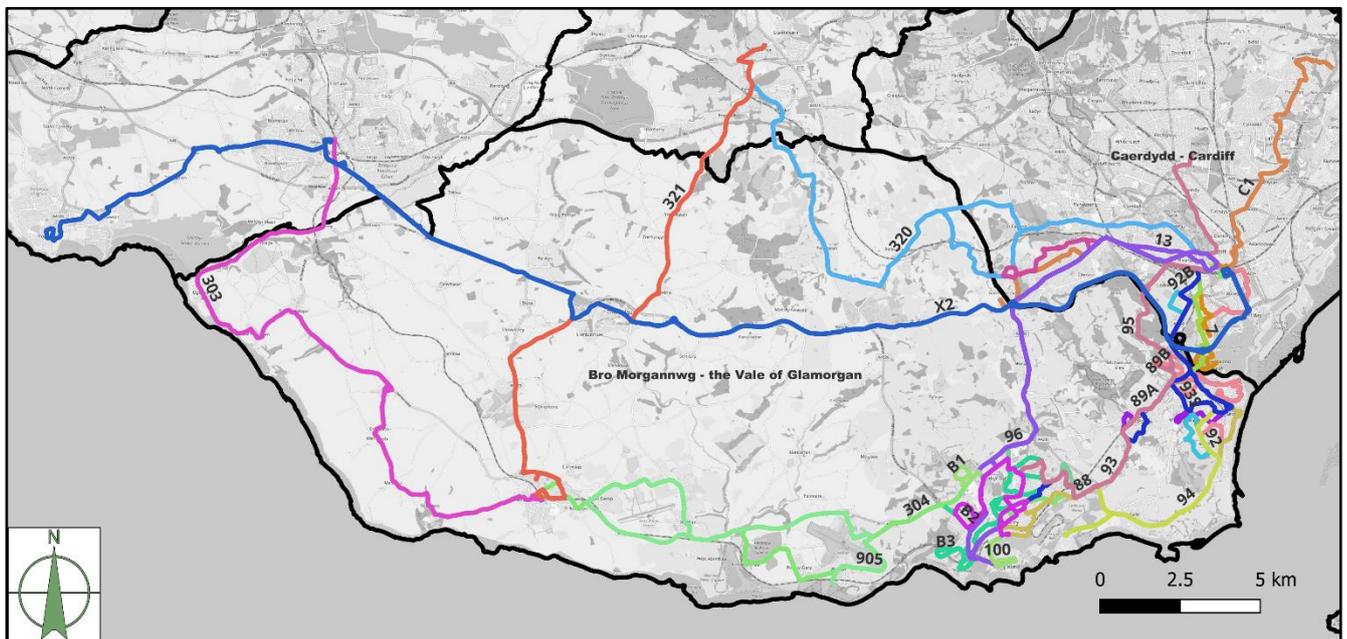


Figure 33: Bus Services in the Vale of Glamorgan²⁹

© OpenStreetMap contributors, CC-BY-SA

- 5.2.6 As shown, there are several existing Cardiff Bus services linking Barry, Penarth and Cardiff. These services also pass through Wenvoe, Culverhouse Cross, Sully and Dinas Powys.
- 5.2.7 The bus routes operated by Adventure Travel connect Llantwit Major, St Athan, Rhoose, Barry, Dinas Powys and Penarth to key external trip attractors including Cardiff, Talbot Green and Bridgend.
- 5.2.8 The existing First Cymru service (X2) connects Porthcawl, Bridgend, Cowbridge, Cardiff Bay and Cardiff City Centre.

²⁹ Source: Transport for Wales (October 2023 version and subject to change)

5.2.9 A summary of service frequency and coverage is provided in Table 12 below.

Table 12: Vale of Glamorgan Bus Timetable Summaries

Service	Route Type	Typical Frequency (M-F)	First Service (M-F)	Last Service (M-F)	Saturday service	Sunday service
7	Cardiff – Penarth	Hourly	09:00	18:20	No	No
	Penarth to Cardiff	Hourly	08:57	17:15	No	No
92/92B/94	Cardiff – Penarth	12 mins	06:42	23:30	Yes	Yes
	Penarth to Cardiff	12 mins	06:12	22:57	Yes	Yes
93	Cardiff-Barry Dock via Cogan	Hourly	07:12	18:20	No	No
	Barry Dock - Cardiff via Cogan	Hourly	07:25	17:40	No	No
95	Cardiff – Barry via Llandough	30 mins	06:15	21:00	Yes	Yes
	Barry – Cardiff via Llandough	30 mins	04:55	21:00	Yes	Yes
96	Cardiff – Barry via Wenvoe – Culverhouse Cross	30 mins	07:20	23:10	Yes	Yes
	Barry – Cardiff via Culverhouse Cross - Wenvoe	30 mins	06:15	23:04	Yes	Yes
B1	Highlight Park to Barry Island via Colcot – Gibbonsdown - Barry	Hourly	08:12	17:21	Yes	No
	Barry Island to highlight Park via Barry – Gibbonsdown - Colcot	Hourly	07:40	16:50	Yes	No
B2	Highlight Park to Barry Island via Colcot – Gibbonsdown - Barry	Hourly	09:44	15:49	No	No
	Barry Island to highlight Park via Barry – Gibbonsdown - Colcot	Hourly	09:12	15:20	No	No
X2	Porthcawl – Cardiff via Bridgend – Cowbridge	30 mins	06:10	21:20	Yes	Yes
	Cardiff – Porthcawl via Cowbridge - Bridgend	30 mins	07:05	23:00	Yes	Yes
905	Rhoose railway station – Cardiff Airport – Rhoose railway station	Hourly	05:51	23:16	Yes	Yes
89A	Cardiff – Dinas Powys	Bi-hourly	09:05	17:25	Yes	No
	Dinas Powys - Cardiff	Bi-hourly	07:50	16:20	Yes	No
89B	Cardiff – Llandough	135 mins	08:50	19:00	Yes	No
304	Llandough - Cardiff	135 mins	08:53	20:00	Yes	No
	Llantwit Major – Cardiff via Barry	Hourly	06:45	23:05	Yes	Yes
100	Cardiff – Llantwit Major via Barry	Hourly	04:55	23:05	Yes	Yes
	Barry – Calcot via Barry Island – Barry TC – Colcot	N/A	N/A	N/A	No	Yes
B3	Calcot – Barry via Colcot – Barry TC – Barry Island	N/A	N/A	N/A	No	Yes
	Barry – Barry via Cadoxton	Hourly	07:23	15:25	Yes	No
320	Cardiff City Centre – Talbot Green via Peterstone Super Ely & Hensol	Bi-hourly	08:10	18:10	Yes	No
	Talbot Green – Cardiff City Centre via Hensol & Peterstone Super Ely	Bi-hourly	07:10	17:10	Yes	No
321	Talbot Green – Llantwit Major	Bi-hourly	07:10	19:10	Yes	No
	Llantwit Major – Talbot Green	Bi-hourly	06:30	20:00	Yes	No
303	Llantwit Major - Bridgend	Hourly	05:50	23:05	Yes	Yes
	Bridgend – Llantwit Major	Hourly	05:50	23:00	Yes	Yes

5.2.10 Additional community bus services are provided by:

- Greenlinks;
- VEST;
- East Vale Community Transport; and
- Dinas Powys Voluntary Concern.



Figure 34: Existing in-shelter digital bus timetable information

5.2.11 Whilst these services are not able to facilitate widespread modal shift, they offer significant benefits for inclusivity in the Vale's transport



Figure 35: Existing e-flag bus timetable

network.

5.2.12 The Vale also benefits from existing estate of 74 x 28" in-shelter e-displays and associated CCTV cameras (Figure 34), as well as five solar/battery powered e-flag displays (Figure 35). Currently the information provided is scheduled information received via the PTI Cymru (Traveline Cymru) database. However, it is anticipated that these will soon enable real time information.

5.2.13 A map of the existing in-shelter digital display locations is provided in Figure 36.

5.2.14 Whilst mapping for the e-flag display locations is not available, they are located at:

- Penarth Esplanade (adjacent to the pier);
- Jenner Road, Barry;
- De Clare Court, Eagleswell Road, Llantwit Major;
- Boverton Road, Boverton (opposite shops); and
- The War Memorial, St Athan.



Figure 36: In-shelter digital display locations

Usage

5.2.15 Reference to the latest bus usage in Wales for 2021-2022³⁰, published by the Welsh Government, offers an insight into the current challenges facing the bus industry in Wales. The number of passenger journeys on local bus in Wales between 1994 and 2022 is shown in Figure 37.

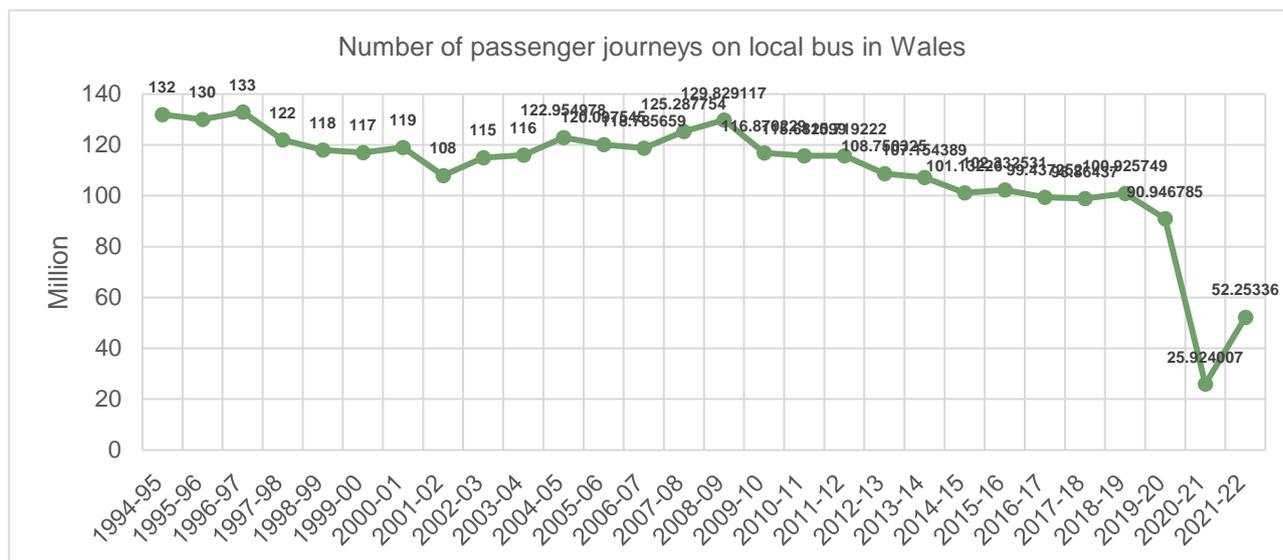


Figure 37: Number of Passenger Journeys on Local Bus in Wales

5.2.16 Figure 37 shows that a total of 52.3 million passenger journeys were recorded in Wales between 1 April 2021 and 31 March 2022 which shows a significant uplift from the 25.9 million journeys undertaken in the previous fiscal year of 2020-2021 during which the Covid-19 pandemic caused a significant drop in public transport journeys.

5.2.17 Despite this recovery, it is crucial to note that bus usage has yet to return to pre-pandemic levels, showing a 42.6% decline from the 91.0 million passenger journeys reported in the fiscal year 2019-2020.

5.2.18 Due to commercial sensitivities, local bus service patronage and revenues were not made available to this study, however, discussion with the Vale of Glamorgan Council officers acknowledge a significant level of uncertainty on the commercial viability of a number of services.

Future Outlook

5.2.19 Some bus services in the Vale have operated in recent years with subsidies for the following sources:

- Vale of Glamorgan Council funding;
- Welsh Government Bus Emergency Scheme (ended 24th July 2023); and
- Welsh Government Bus Transition Fund (funding currently only covers until the end of the 2023/24 financial year)

³⁰ Welsh Government (May 2023). Public service vehicles (buses and taxis): April 2021 to March 2022. Obtained from <https://statswales.gov.wales>

- 5.2.20 If Welsh Government funding is withdrawn or further reduced, the viability of several existing commercial services remains unknown beyond the current financial year (2023/24).
- 5.2.21 However, despite the immediate challenges to the bus industry, there is a firm commitment in transport planning policy to prioritise bus travel in order to realise a multitude of benefits relating to emissions targets, well-being and social mobility.
- 5.2.22 Furthermore, the Welsh Government initiated a public consultation in March 2022, titled 'One Network, One Timetable, One Ticket: Planning Buses as a Public Service for Wales'. This paper seeks public views on new bus legislation in Wales.
- 5.2.23 The overarching vision is to transform the bus system in Wales to better serve the public interest with recognition that buses are a critical part of the public transport system, carrying three times as many passengers as trains.
- 5.2.24 The document outlines the need for a bus system that is:

'governed and designed to serve the public interest, with the widest possible geographic coverage, fully integrated connections between different services, the highest possible service frequencies, and simple unified easy-to-use ticketing and information'

- 5.2.25 It sets out that the current deregulated bus system, driven by market forces, is inadequate for the scale and pace of change required to meet climate goals.
- 5.2.26 The paper aims to:
- Design a bus system that maximises public good;
 - use public investment efficiently to address public priorities; and
 - Create an integrated transport network that provides excellent travel options throughout Wales.
- 5.2.27 Whilst the consultation status of the document is noted, the ongoing action to ensure that bus travel forms an integral part of Welsh Government transport strategy is apparent, despite the ongoing financial challenges.

Barry Docks

- 5.2.28 A key project which has the potential to positively impact on bus travel is the ongoing redevelopment of Barry Docks to provide a new multi-modal transport interchange. Phase 1 has recently been completed.
- 5.2.29 Figure 38 provides an extract of the original design proposal, produced by Amey Consulting.



Figure 38: Barry Docks Interchange – Option 2 Drawing Extract31

5.2.30 Situated south of the train station at the Barry Dock Office, the interchange is designed to enhance station facilities and access.

5.2.31 This initiative is a collaborative effort involving the Vale of Glamorgan, Cardiff Capital Region and the Welsh Government.

5.2.32 Key deliverables identified by the Vale of Glamorgan Council³² include:

- 1) A multi-modal transport interchange for various forms of public transport;
- 2) An upgraded Park and Ride facility; and
- 3) Support for the Welsh Government’s 2021 Transport Strategy.
- 4) Economic development benefits for Barry and the Cardiff City region.

³¹ Source: Vale of Glamorgan Council. Design © Amey Consulting

³² Source: www.valeofglamorgan.gov.uk

- 5) Electric vehicle charging stations in car park areas.
- 6) Enhanced cycle parking, including Sheffield stands and cycle lockers.
- 7) Future potential for business, retail, and community hubs within the central area of the interchange.
- 8) Provision for a possible OVObike hire dock.

5.2.33 The WelTAG Stage 3 report which appraised the project (Amey Consulting, May 2022), highlights that there is potential for an additional Park & Ride facility, residential, and commercial spaces as part of Phase Two. These will be located north and northwest of the station respectively.

5.2.34 The WelTAG Stage 3 report submits that Barry Docks Station is considered to be instrumental in advancing Barry's overall development and regeneration and that it aims to connect residential zones to the north with the Waterfront development to the south, thereby enhancing the public realm. These upgrades will enhance sustainable transport links for accessing employment opportunities within Barry and the broader Cardiff Capital Region (CCR). This will improve town centre footfall and facilitate tourist movements to Barry Island, whilst reducing road congestion and carbon emissions.

5.2.35 The station improvements are the first phase in transforming Barry Docks into a comprehensive mobility hub. The longer-term vision includes:

- Repurposing the station as a key gateway to Barry;
- Enhancing rail service access routes;
- Expanding the mobility hub to integrate various sustainable transport solutions;
- Incorporating additional amenities like housing, retail, and business-cycling hubs; and
- Aligning these services with Barry's wider transport network.

5.2.36 Progress on the above will be dependent upon funding being secured.

5.3 Rail

Existing Network

5.3.1 The Vale of Glamorgan has 11 railway stations, which are located on the Vale of Glamorgan Line. These stations are:

- Barry ;
- Barry Docks;
- Barry Island;
- Cadoxton;
- Cogan;
- Dinas Powys;
- Dingle Road;
- Eastbrook;
- Llantwit Major;
- Penarth; and
- Rhoose (Cardiff International Airport).

5.3.2 The car parking and cycle stand provision at these stations is detailed in Table 13³³. However, it should be noted that at some locations on-street parking may be available in the vicinity.

5.3.3 Car and cycle parking provision is important to facilitate integrated transport as part of multi-modal trip.

Table 13: Parking Facilities at Railway Stations in the Vale

Station Location	Car Parking Provision (spaces)	Cycle Spaces	Cycle spaces sheltered	Bike Hire
Barry	110	10	No	No
Barry Docks	132 (shared between VoG Dock office, and the transport interchange) ³⁴	10	Yes	No
Barry Island	0	0	N/A	No
Cadoxton	31	2	No	No
Cogan	24	0	N/A	Yes – Ovo (at Penarth Leisure Centre)
Dinas Powys	0	0	N/A	No
Dingle Road	0	0	N/A	No
Eastbrook	31	0	N/A	No
Llantwit Major	40	10	Yes	Yes – Brompton Bike
Penarth	15	10	Yes	Yes - Ovo
Rhoose (Cardiff Int Airport)	66	0	N/A	No

³³ Source: *NationalRail.co.uk* (accessed October 2023)

³⁴ Additional EV charging, EV Taxi charging and motorcycle bays are available.

- 5.3.4 The information in Table 13 highlights that there are opportunities to enhance the integrated transport network through the enhancement of cycle parking and hire facilities at several railway stations in the Vale.
- 5.3.5 The current Metro Network is shown in Figure 39.

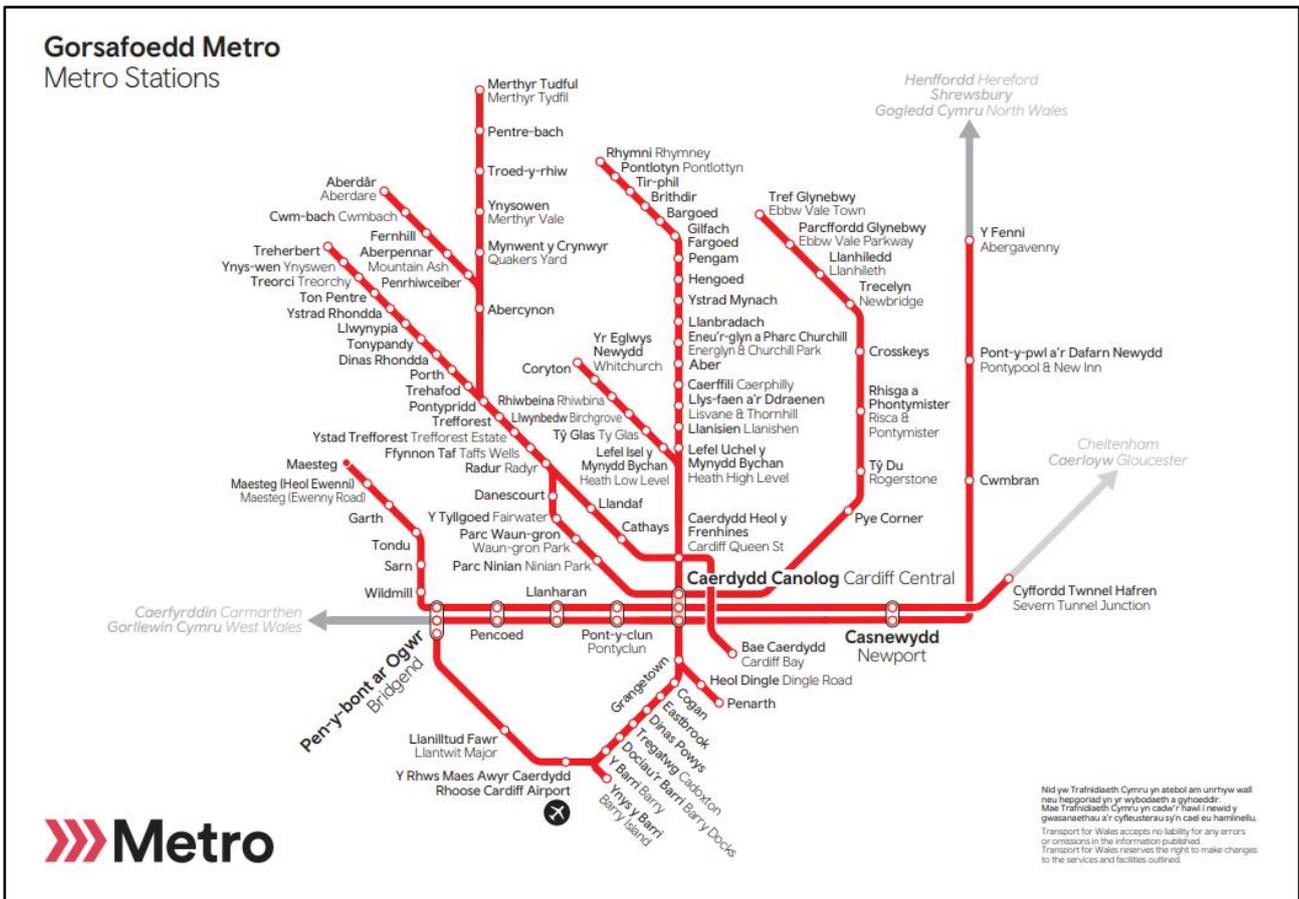


Figure 39: Existing South Wales Metro Network

- 5.3.6 The Metro map highlights that the majority of the main urban settlements situated along the Vale of Glamorgan Line benefit from good links to key regional trip attractors in Bridgend, Cardiff, Newport and the South Wales Valleys.
- 5.3.7 It is to be noted that the Welsh Government took full control of the Wales and Borders rail franchise in February 2021, citing a sharp decrease in passengers due to the Covid-19 pandemic. This transition was facilitated through the Transport for Wales subsidiary, which now manages the franchise under its own licenses. The Office for Rail and Roads oversees this entity to ensure compliance within the UK rail industry framework.

Usage

5.3.8 Table 14 provides the number of railway station entries and exits in the Vale between 2016 and 2022³⁵.

Table 14: Rail station entries and exits in the Vale

Station	Year					
	2021-22	2020-21	2019-20	2018-19	2017-18	2016-17
Barry	349,146	109,594	518,364	524,102	533,732	532,602
Barry Docks	169,502	53,694	238,964	251,044	245,760	224,246
Barry Island	303,684	110,356	762,042	832,222	753,404	711,812
Cadoxton	204,930	75,100	256,400	270,514	282,098	287,136
Cogan	184,704	50,428	285,600	309,080	310,002	317,012
Dinas Powys	52,590	12,656	85,148	89,990	93,374	97,050
Dingle Road	83,682	20,174	151,144	145,484	139,000	108,090
Eastbrook	79,628	25,534	175,908	171,072	167,798	174,262
Llantwit Major	172,426	51,254	277,488	301,470	298,418	297,958
Penarth	262,384	69,056	619,104	655,474	626,950	633,412
Rhoose (Cardiff Int Airport)	98,234	25,674	174,648	184,498	178,334	181,272

5.3.9 The latest available dataset shows Barry as the busiest station in the Vale³⁶, having surpassed Barry Island during the Covid-19 pandemic.

5.3.10 To establish the residual Covid-impact of the information presented above, data has been interrogated from the Office of Rail and Road for Great Britain in the latest available quarter (1 January to 31 March 2023). This shows that provisionally, 389 million rail passenger journeys were recorded. This is 88% of the 443 million journeys in the same quarter four years ago which indicates that rail usage is close to returning to pre-Covid levels.

5.3.11 There are no readily available datasets specific to the Vale of Glamorgan, however, the Office of Rail and Road data provides data for TfW rail, which offers a more local perspective, as shown in Figure 40.

³⁵ Source: Office of Rail and Road Statistics

³⁶ Subject to statistical methodology and data collection challenges described in <https://dataportal.orr.gov.uk/media/1917/station-usage-quality-and-methodology-report.pdf>

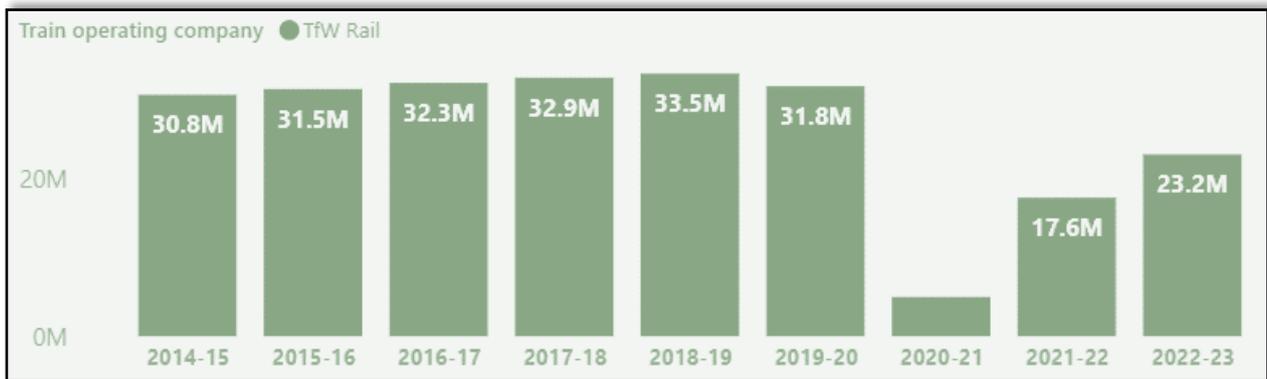


Figure 40: TfW Passenger Journeys by financial year³⁷

5.3.12 Figure 40 highlights that 23.2 million passenger journeys were recorded in the financial year 2022/23, compared with 33.5 million in 2018/19 prior to the pandemic. This equates to just 69% of pre-pandemic railway passenger levels.

5.3.13 It is therefore concluded that there is scope for railway passenger numbers in the Vale of Glamorgan to increase further than present levels, but this is subject to influencing residual travel behaviour changes induced by the Covid-19 pandemic.

³⁷ Source: Office of Rail and Road

Future Outlook

South Wales Metro

5.3.14 The Vale of Glamorgan forms part of the South Wales Metro, which aims to enhance accessibility to key trip attractors across the region through a fully integrated sustainable transport network.

5.3.15 Figure 41 illustrates the emerging priorities for the South Wales Metro through to 2029.

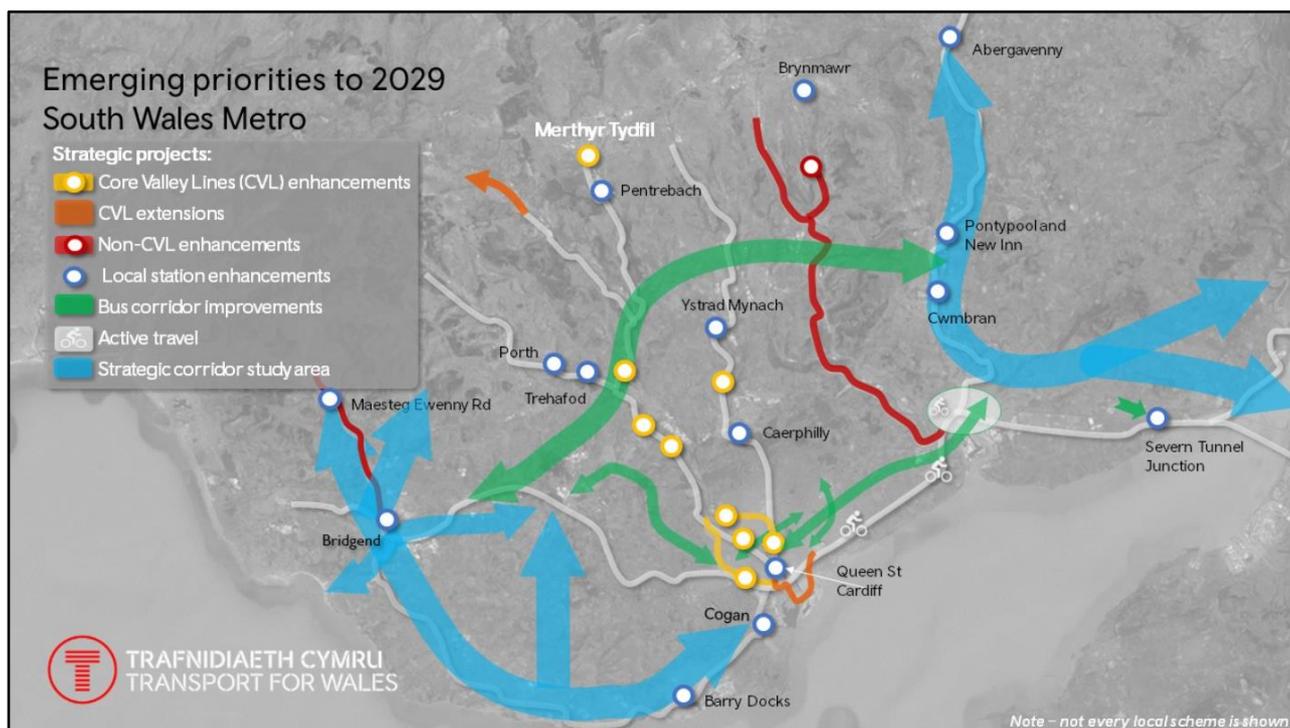


Figure 41: South Wales Metro Priorities to 2029

5.3.16 The emerging priorities above highlight a clear aspiration to enhance the identified strategic corridor through the Vale along the existing Vale of Glamorgan Line through Penarth, Cogan, Barry, St Athan and Llantwit Major.

5.3.17 With regards to rail enhancements in the Vale, Welsh Government and TfW have committed to increased frequency to provide an extra service per hour between Cardiff and Bridgend via the Vale of Glamorgan Line³⁸.

5.3.18 The National Transport Delivery Plan 2022 – 2027 also confirms an aspiration for railway electrification in the Vale. However, this is subject to programme priorities and progression of a feasibility study.

³⁸ National Transport Delivery Plan 2022 - 2027

St Athan

- 5.3.19 Arcadis was commissioned by the Vale of Glamorgan Council to undertake a feasibility study to understand the potential for a new railway station located on the Vale of Glamorgan Line at St Athan. This study was completed in May 2022.
- 5.3.20 The study provided a SWOT analysis of various potential locations and recommended that for the proposal to progress, a WelTAG study should be commenced.
- 5.3.21 The above study by Arcadis is in addition to TfW-led regional strategic corridor studies. These studies include enhances Metro links between Cardiff and Bridgend via the Vale of Glamorgan. This is anticipated to include detailed investigation and justification for new rail and bus infrastructure in the Vale, which includes the potential for a new railway station at St Athan.
- 5.3.22 It is understood that there is significant Council and Cardiff Capital Region support for a new railway station at this location and that there is ongoing dialogue with Transport for Wales on this matter. Transport for Wales is generally supportive of the proposal, subject to further study and funding.

5.4 CHAPTER SUMMARY & RECOMMENDATIONS

Summary

- 5.4.1 This Chapter has provided a review of the existing sustainable transport conditions, trends, and emerging opportunities to be considered as part of the evidence base for the Vale of Glamorgan Replacement Local Development Plan 2021-2036. This Transport Note forms a component of a wider Strategic Transport Assessment for the Vale of Glamorgan (VoG).
- 5.4.2 It has been identified that the current Active Travel network significantly lacks continuity between and within the major urban areas. Significant investment has been provided through a number of sources in recent years, including Welsh Government grant funding (via TfW) and S106 contributions to enhance the network. Even so, further investment is required over the short, medium and long term to provide an active travel network that is suitable for mass adoption as a viable mode of transport for utility trips.
- 5.4.3 A review of the bus network highlights that the Vale of Glamorgan is currently served by bus services which connect all key urban settlements both locally and regionally into Cardiff, Bridgend and Llantrisant. However, many of these routes have an infrequent service frequency.
- 5.4.4 Bus usage remains below pre-Covid pandemic levels, raising commercial viability concerns for some services. These challenges are currently being mitigated with bus service subsidies, but there are uncertainties regarding funding beyond the current financial year which could result in services being reduced or withdrawn.
- 5.4.5 The rail network analysis reveals that most of the larger urban settlement in the Vale of Glamorgan are able to access one of the 11 railway stations. Settlements without current local access to a railway station include Cowbridge, St Athan and Ogmores-by-sea. Whilst a recovery in rail usage post-pandemic is noted, the numbers remain below 2019 levels.
- 5.4.6 The South Wales Metro initiative has been highlighted as a significant endeavour to increase rail service frequency and progress electrification, thereby enhancing regional connectivity. A regional corridor between Cardiff and Bridgend along the Vale of Glamorgan Line has been identified by TfW as a priority and studies are ongoing to enhance active travel, public transport and railway connectivity.
- 5.4.7 Despite the challenges relating to sustainable modes of travel, current transport policy and legislation make it clear that such modes must be prioritised to meet the core vision of the Wales Transport Strategy, which is to provide:

‘An accessible, sustainable, and efficient transport system.’

Recommendations

5.4.8 The following recommendations have been derived from this Chapter.

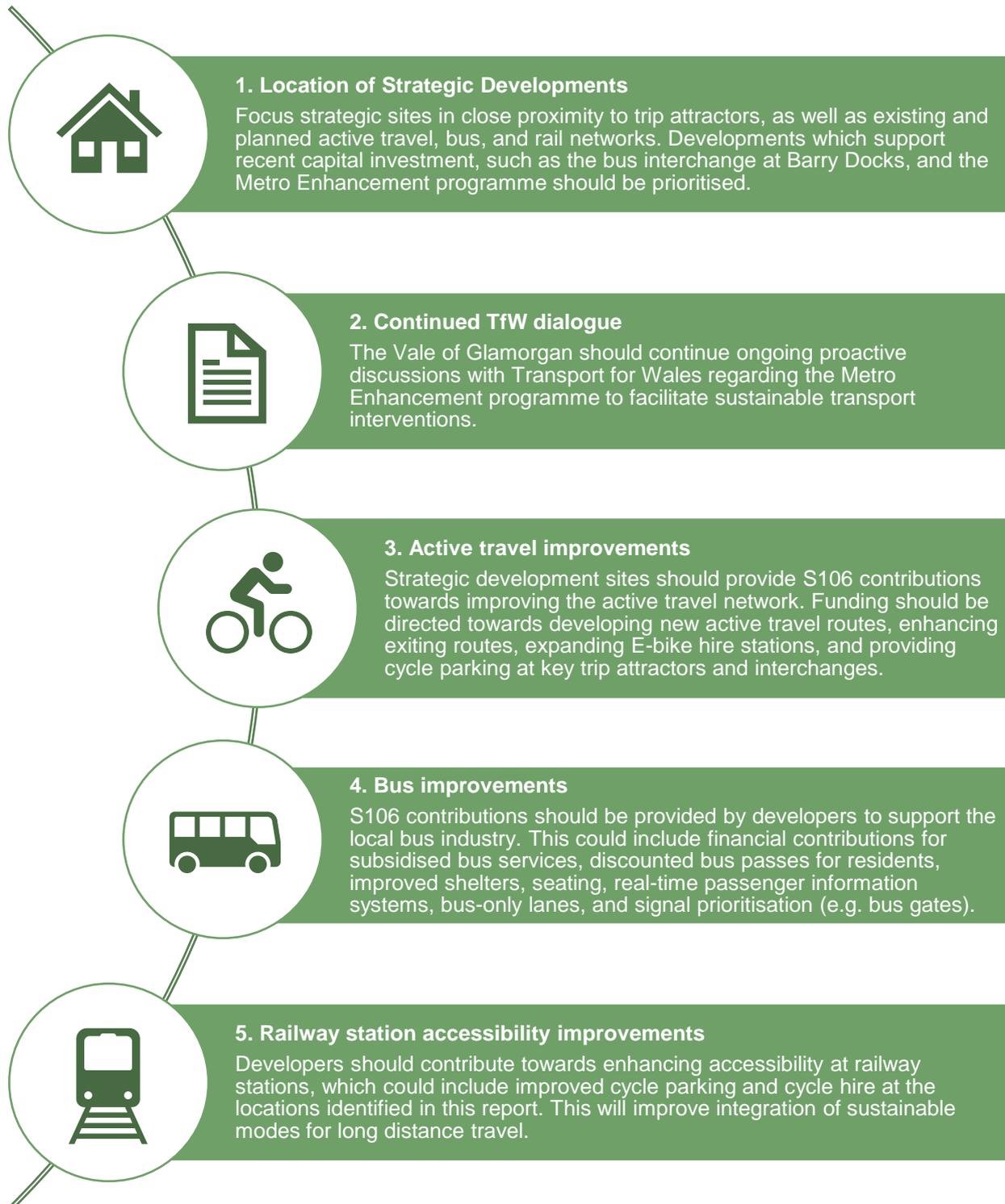


Figure 42: Sustainable Transport Recommendations

6. FINAL SUMMARY & RECOMMENDATIONS

6.1 Summary

Transport Policy and Legislation

- 6.1.1 The review of the existing legislation and policy frameworks at local and national level identifies the fundamental requirement for new development to be located such that the need to travel is reduced and that where travel is required there is genuine user choice that reflects the sustainable transport hierarchy of Planning Policy Wales – Edition 11 (2021), as shown in Figure 2.
- 6.1.2 These unequivocal findings are recommended to form the foundation for the RLDP site selection process and the Strategic Transport Assessment approach to appraising development traffic impacts and securing transport interventions.
- 6.1.3 A core aim of the STA and indeed the RLDP is to align with the Llwybr Newydd - The Wales Transport Strategy (2021) vision to provide:

‘An accessible, sustainable, and efficient transport system.’

- 6.1.4 The Well-being of Future Generations (Wales) Act 2015 provides the impetus for sustainable development, requiring that ‘A public body must act in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs’. Concurrently, Planning Policy Wales emphasises the integration of transport and land use planning, stating that ‘Transport planning and land use planning should be integrated to promote more sustainable transport choices’.
- 6.1.5 Aligned with these principles, the Strategic Transport Assessment supports the firm adoption of the sustainable transport hierarchy, which is to prioritise walking and cycling for short journeys, then public transport and shared mobility services for longer journeys, with private cars or single occupancy vehicles considered last.

Baseline Strategic Highway Operation

- 6.1.6 The Stage 1 Strategic Transport Assessment provides a thorough review of existing traffic flow data sources in the Vale of Glamorgan, incorporating interim analyses from the existing Local Development Plan (LDP) evidence base and the 2015 South East Wales Transport Model (SEWTM). Limitations in this process have also been noted, which include the unavailability of an updated SEWTM until January 2024.
- 6.1.7 The data reviewed in the report, particularly concerning the impact of Covid-19 on traffic patterns in the Vale of Glamorgan, suggests that car traffic has largely returned to pre-pandemic levels.
- 6.1.8 An analysis of the Department for Transport statistics, comparing current traffic flows with pre-pandemic levels, indicates a significant increase in traffic in the Vale of Glamorgan since the onset of the pandemic. Traffic volumes have shown a general upward trend, with the mileage for cars and taxis surpassing previous years' figures and aligning closely with the levels observed before the pandemic. Additionally, there has been a consistent increase in the mileage of light commercial vehicles, which could be attributed to shifts in work and shopping behaviours, notably the rise in online shopping and deliveries.
- 6.1.9 However, it is important to note that while overall traffic volumes are largely back to pre-Covid levels, the distribution of these volumes may have shifted. The pandemic's lasting impact could include changes in trip purposes, more prolonged peak traffic periods, and alternative route choices driven by new lifestyle schedules. This means that, although the total number of trips might be similar to pre-Covid times, they could be more evenly distributed throughout the day rather than concentrated during traditional peak hours.
- 6.1.10 The locations of potential highway network capacity issues within the Vale of Glamorgan's highway network have been identified using available data sources. To gain insights into these capacity constraints, data from Google Traffic, INRIX, the existing LDP and local development Transport Assessments have been analysed. This analysis has pinpointed areas under strain during peak hours, with issues identified at Culverhouse Cross roundabout, Barry, Penarth, Dinas Powys, and Cowbridge.
- 6.1.11 This interim analysis lays the groundwork for a more detailed investigation in Stage 2 of the Strategic Transport Assessment. The data and insights gathered thus far are considered provisional and will be further refined with more detailed analysis, taking into account recent behavioural, development and infrastructure changes. Even so, this early analysis will help guide emerging Transport Assessment modelling work.

Geospatial Analysis

- 6.1.12 The Stage 1 Strategic Transport Assessment has provided a geospatial analysis of movement patterns in the Vale of Glamorgan. A variety of sources have been reviewed to provide insight into how people are moving throughout the area and the reasons that may be affecting these observations.
- 6.1.13 The key findings from the analysis of UK Census data indicate that the 2021 Census, conducted during the Covid-19 pandemic, is not entirely representative of post-pandemic conditions for some categories.
- 6.1.14 Therefore, the 2011 Census has remained the default source, but 2021 data has been referenced where it is deemed to be useful for comparative purposes or where the metrics are considered to be less susceptible to statistical anomalies.
- 6.1.15 In relation to car ownership within the Vale of Glamorgan a comparative analysis between 2011 and 2021 Census data reveals a general trend of increased car or van ownership. Notable examples include Barry West, Barry East, and Gibbonsdown, which all saw significant increases in households with cars and vans over the decade. However, there are exceptions, such as Barry Dyfan & Illtyd, Ogmore-by-Sea & Llandow, and Peterston-super-Ely & Wenvoe, where there was a slight decrease in households with cars or vans, albeit from a low initial base.
- 6.1.16 Overall, the 2021 Census identifies that there is a high level of car ownership in the Vale, with 83.4% of households having one or more cars or vans; an increase of 2.8 percentage points since 2011. Furthermore, this is higher than neighbouring authorities, with Bridgend at 81.8%, Rhondda Cynon Taf at 77.8%, and Cardiff at 74.0%. This is considered to be a reflection of the high proportion of rural areas in the Vale and highlights the challenge of modal shift in a car-orientated population.
- 6.1.17 The 2021 Census data for the Vale of Glamorgan regarding work travel patterns has been reviewed and is noted by the Office for National Statistics to have been heavily influenced by the temporary restrictions of the Covid-19 pandemic. This situation makes the data less reliable for understanding usual travel habits. Therefore, the established 2011 Census data has been used for a clearer picture of commuting patterns in the area, albeit that the post-pandemic norm is likely to be somewhere between the two datasets with regards to homeworking proportions and car-borne trips.
- 6.1.18 From the 2011 data interrogation, it is clear that most residents in the Vale of Glamorgan work within the county borough itself. However, Cardiff stands out as a key destination for commuters, especially from the eastern parts of the Vale. However, other areas like Bridgend and Rhondda Cynon Taf also attract workers from the Vale, but to a significantly lesser extent than Cardiff. Commuting to England is also a factor, but it involves a far smaller percentage of the population. This pattern shows that while the Vale has a good number of local jobs, Cardiff's role as an employment hub is significant for the area's residents.

- 6.1.19 To enhance the Census data findings and provide a clearer understanding of observed trip patterns for all journey purposes and all modes of travel, Mobile Network Data was obtained from Transport for Wales (via a licence agreement with BT Group) and reviewed. This yielded significant insights into local travel dynamics in the Vale of Glamorgan.
- 6.1.20 A key finding from the analysis is that, similar to the Census data findings, a high proportion of trips are retained within the Vale of Glamorgan. This suggests a strong localised travel pattern for all trip purposes (e.g. education, employment, leisure, retail), with a majority of the population opting for short trips during the reviewed peak hours.
- 6.1.21 Furthermore, when focussing on external trips, similar to the Census data findings, there is a significantly high weighting of travel between the Vale of Glamorgan and Cardiff. This interconnection between the two areas reiterates the importance of high-quality sustainable travel links between the authorities.
- 6.1.22 A review of the modal share of trips in the Vale of Glamorgan has focussed on observed trends and aspirations of Welsh Government policy. The 2011 Census data for the method used to travel to work for residents in the Vale of Glamorgan shows a dominant reliance on private vehicle use at 72%, with public transport at 10%, walking at 9%, and cycling at 2%. However, the 2021 Census (albeit influenced by the Covid pandemic) recorded an increase in private vehicle use to 77%, and a decline in public transport use to 6%. Walking remained stable at 9%, while cycling was marginally used at 1%. Given high levels of recent active travel funding, it is expected that walking and cycling modal share will increase once a more cohesive network is established.
- 6.1.23 It has been identified that Llwybr Newydd - The Wales Transport Strategy (2021) sets ambitious goals to boost the use of walking, cycling, and public transport across the nation from a 2019 baseline of 32% to 45% by 2040. Additionally, a long-term target of 30% of the workforce working from home has been established. The 'Net Zero Wales Carbon Budget 2' (2021) further enhances these objectives, aiming to raise the share of active travel to 33% by 2030 and 35% by 2040, with public transport increasing to 7% by 2030 and 13% by 2040. These figures contribute to a national modal share target of 48% for active travel and public transport by 2040. Using interpolation, the Stage 1 STA identifies a Vale of Glamorgan RLDP target of 45% sustainable transport mode share over the plan period through to 2036, comprising 34% active travel and 11% public transport.
- 6.1.24 A review of the Welsh Index of Multiple Deprivation has been undertaken, with a focus on the 'Access to Services' domain, which assesses the accessibility of essential services for households. The findings highlighted that the areas of Rhoose 3, Peterston-super-Ely, and Llandow/Ewenny were identified as having the most significant deprivation in terms of service access. However, it should be noted that there is a marked difference in service access within Rhoose 3, which includes the rural communities of Llancarfan, Penmark and a number of small hamlets, particularly between the more rural north and near-urban south of the defined area boundaries.

Sustainable Transport

- 6.1.25 It has been identified that the Vale's current Active Travel network significantly lacks continuity between and within the major urban areas. Significant investment has been provided in recent years through Welsh Government grant funding (via Transport for Wales) and S106 contributions to enhance the quality and coverage of the routes. Even so, further investment is required over the short, medium and long term to provide an active travel network that is suitable for mass adoption as a viable mode of transport for utility trips.
- 6.1.26 A review of the bus network highlights that the Vale of Glamorgan is currently served by bus services which connect all key urban settlements both locally and regionally into Cardiff, Bridgend and Llantrisant. However, many of these routes have an infrequent service frequency.
- 6.1.27 Bus usage remains below pre-Covid pandemic levels, raising commercial viability concerns for some services. These challenges are currently being mitigated with bus service subsidies, but there are significant uncertainties regarding funding beyond the current financial year which could result in several services being reduced or withdrawn.
- 6.1.28 The rail network analysis reveals that most of the larger urban settlement in the Vale of Glamorgan are able to access a railway station. Notable settlements without local access to a railway station include Cowbridge, St Athan, and Ogmere-by-sea. Whilst a recovery in rail usage post-pandemic has been documented, the numbers remain below 2019 levels.
- 6.1.29 The South Wales Metro initiative has been highlighted as a significant endeavour to increase rail service frequency and coverage, thereby enhancing regional connectivity. A regional corridor between Cardiff and Bridgend along the Vale of Glamorgan Line has been identified by TfW as a high programme priority and studies are ongoing to enhance active travel, public transport, and railway connectivity.
- 6.1.30 It is understood that there is significant Council and Cardiff Capital Region support for a new railway station at St Athan, and that there is ongoing dialogue with Transport for Wales on this matter. Transport for Wales is generally supportive of the proposal, subject to further study and funding.

Recommendations

6.1.31 The following recommendations represent the consolidated key findings from each Chapter of this report. This set of recommendations is designed to guide the future direction of the RLDP and the second stage of the Strategic Transport Assessment.

1. Strategic Location and Design of Development Sites:

- Prioritise strategic sites with good access to daily amenities, active travel networks, and public transport access.
- Ensure developments support recent capital investments, such as the bus interchange at Barry Docks and the South Wales Metro Enhancement programme.
- Implement active travel provision in master planning with a focus on the Active Travel (Wales) Act Guidance and allow for extension of bus services if current provision is insufficient.

2. Site Appraisal and Mitigation:

- Ensure that all site appraisals include active travel audits for key links to trip attractors and include a comprehensive review of public transport opportunities in order to fully understand sustainable transport deficiencies.
- All candidate site Transport Assessments should clearly identify highway implications on safety, capacity and delay, at identified sensitive locations.
- Site promoters to identify and provide active travel designs for key off-site route enhancements with reference to the Vale of Glamorgan's approved Active Travel Network Map.
- Candidate site Transport Assessments to consider the STA Stage 1 origin/destination data outputs for accurate trip distribution and assignment calculations.
- Focus network mitigation on high internal trip incidences and significant external links to Cardiff. Connections to Bridgend and Rhondda Cynon Taf are also to be given significance.

3. Study Area and Data Validation for Stage 2 of the STA:

- Include all identified strategic junctions in the Vale for Stage 2 of the STA, covering key corridors of movement.
- Transport Assessments to utilise recent traffic survey data, applying Covid-19 adjustment factors where necessary.
- Sustainable Mode Share and Transport Network Improvements:
 - Target a 45% sustainable mode share of new trips on the network.
 - Secure S106 contributions and S278 works towards improving active travel networks, bus industry support, and enhancing railway station accessibility.
- Highway capacity enhancements to be considered at sensitive locations where it does not adversely affect transport planning policy targets.
- Continue proactive discussions with Transport for Wales regarding the Metro Enhancement programme.

Next steps

- 6.1.32 Stage 2 of the STA will document further highway network analysis that will be undertaken by Link Transport Planning, Transport for Wales via the South East Wales Transport Model and site promoter Transport Assessments.
- 6.1.33 This process will undertake further baseline and forecasting scenario testing of the highway network, and detail the identified opportunities and constraints over the RLDP period.
- 6.1.34 As part of the Stage 2 report, Link Transport Planning will identify appropriate highway mitigation and funding mechanisms to enable the RLDP land allocations.

Appendix A

Existing LDP Strategic Highway Assessment Traffic Flow Data

Existing LDP Strategic Highway Assessment Traffic Flow Data

ID	Road & Location	Direction	Weekday AM Peak Hour		Weekday PM Peak Hour	
			2012 Flow	2026 Flow	2012 Flow	2026 Flow
181	B4265 Between St Brides Major and Ewenny	Nb	268	215	No data	No data
181	B4265 Between St Brides Major and Ewenny	Sb	164	232	No data	No data
182	B4265 Between Llantwit Major and Wick	Eb	144	180	125	143
182	B4265 Between Llantwit Major and Wick	Wb	133	157	158	208
183	A48 Crack Hill	Eb	564	645	553	699
183	A48 Crack Hill	Wb	604	741	538	603
184	B4265 Between Llantwit Major and Wick	Eb	140	175	122	139
184	B4265 Between Llantwit Major and Wick	Wb	129	152	151	199
185	B4270 Llantwit Major to Llandow	Nb	565	679	253	328
185	B4270 Llantwit Major to Llandow	Sb	225	270	480	621
186	B4270 Llantwit Major to Llandow	Nb	611	734	282	365
186	B4270 Llantwit Major to Llandow	Sb	225	270	473	613
187	B4270 Penyrheol Terrace	Nb	316	375	177	208
187	B4270 Penyrheol Terrace	Sb	150	185	226	307
188	B4268 Between Llysworney and Pentre Meyrick	Nb	328	394	225	291
188	B4268 Between Llysworney and Pentre Meyrick	Sb	192	231	259	335
189	A48 (East of Pentre Meyrick)	Eb	495	565	705	847
189	A48 (East of Pentre Meyrick)	Wb	897	1079	569	650
190	High Street, Cowbridge	Eb	263	270	267	276
190	High Street, Cowbridge	Wb	306	345	364	420
191	A4222 Cardiff Road, Cowbridge	Eb	242	268	214	235
191	A4222 Cardiff Road, Cowbridge	Wb	284	338	402	513
192	A4222 Aberthin Road	Nb	323	378	283	311
192	A4222 Aberthin Road	Sb	395	411	249	272
193	A48 Cowbridge Bypass	Eb	606	810	365	490
193	A48 Cowbridge Bypass	Wb	282	327	349	385
194	A48 (Nr St Hilary)	Eb	944	1068	555	633
194	A48 (Nr St Hilary)	Wb	488	601	697	814
195	A48 (Nr the Old Post)	Eb	1055	1194	606	691
195	A48 (Nr the Old Post)	Wb	513	632	828	968
196	A48 (Nr St Nicholas)	Eb	1129	1277	543	619
196	A48 (Nr St Nicholas)	Wb	360	443	853	997
197	A4226 Five Mile Lane, Barry	Nb	413	313	No data	No data
197	A4226 Five Mile Lane, Barry	Sb	356	393	No data	No data
198	B4265 Between Llanmaes and Boverton Signals	Eb	272	365	244	301
198	B4265 Between Llanmaes and Boverton Signals	Wb	283	365	285	345
199	B4265 (near toucan crossing)	Nb	364	489	366	451
199	B4265 (near toucan crossing)	Sb	384	495	345	417
200	B4265	Eb	541	727	496	612
200	B4265	Wb	480	619	477	578
201	Port Road West (West Waycock Cross)	Eb	978	1303	653	834
201	Port Road West (West Waycock Cross)	Wb	554	725	808	1083
202	A4426 (Airport Roundabout)	Eb	475	633	431	551
202	A4426 (Airport Roundabout)	Wb	334	437	355	475
203	A4226 West of Tredogan Road Roundabout	Eb	476	634	346	442
203	A4226 West of Tredogan Road Roundabout	Wb	294	385	395	529

204	Pontypridd Road, Barry	Nb	495	603	705	812
204	Pontypridd Road, Barry	Sb	897	1025	569	646
205	Windsor Road, Penarth	Nb	572	592	714	734
205	Windsor Road, Penarth	Sb	608	628	1069	1087
206	Penarth Road, Barons Court	Nb	601	610	420	441
206	Penarth Road, Barons Court	Sb	358	373	543	550
207	Barry Road, Barons Court NB	Nb	952	1151	862	955
207b	Barry Road, Barons Court SB	Sb	730	840	972	1201
208	Redlands Road, Penarth	Nb	713	808	532	594
208	Redlands Road, Penarth	Sb	527	600	656	761
209	Cardiff Road, Dinas Powys (North)	Nb	658	937	585	681
209	Cardiff Road, Dinas Powys (North)	Sb	432	547	790	1005
211	Sully Moors Road	Nb	716	759	755	787
211	Sully Moors Road	Sb	745	773	486	521
212	Barry Docks Link Road	Nb	616	804	893	1091
212	Barry Docks Link Road	Sb	832	1042	560	757
213	Barry Docks Link Road (North of Signals)	Nb	655	854	938	1146
213	Barry Docks Link Road (North of Signals)	Sb	1056	1322	799	1080
214	Cardiff Road (Gwenllian Street)	Eb	1080	1278	878	989
214	Cardiff Road (Gwenllian Street)	Wb	857	966	1101	1334
215	Ffordd Y Mileniwm	Nb	671	811	791	957
215	Ffordd Y Mileniwm	Sb	594	719	651	787
216	Gladstone Road (East), Barry	Eb	421	514	371	417
216	Gladstone Road (East), Barry	Wb	324	371	447	535
219	Broad Street, Barry	Eb	730	1283	525	896
219	Broad Street, Barry	Wb	319	674	614	1144
221	Jenner Road, Barry	Nb	374	380	464	493
221	Jenner Road, Barry	Sb	578	595	393	404
222	Colcot Road, Barry	Nb	893	908	799	847
222	Colcot Road, Barry	Sb	905	931	656	675
223	Port Road West (Tesco)	Nb	869	1112	587	703
223	Port Road West (Tesco)	Sb	485	561	653	812
224	Port Road (Merthyr Dyfan Road)	Eb	814	974	759	844
224	Port Road (Merthyr Dyfan Road)	Wb	859	985	1048	1297
225	Port Road (Wenvoe Golf Club)	Nb	1368	1679	1074	1202
225	Port Road (Wenvoe Golf Club)	Sb	1068	1215	1358	1681
226	Port Road (South Wenvoe)	Nb	1490	1829	1134	1269
226	Port Road (South Wenvoe)	Sb	1095	1245	1412	1748
227	Port Road (VoG Depot)	Nb	1359	1657	1120	1264
227	Port Road (VoG Depot)	Sb	1143	1314	1324	1687

Appendix B

BT Group Mobile Network Origin Destination Data (provided by TfW)

Dataset Autumn 2022 – All Modes & All Trip Purposes

