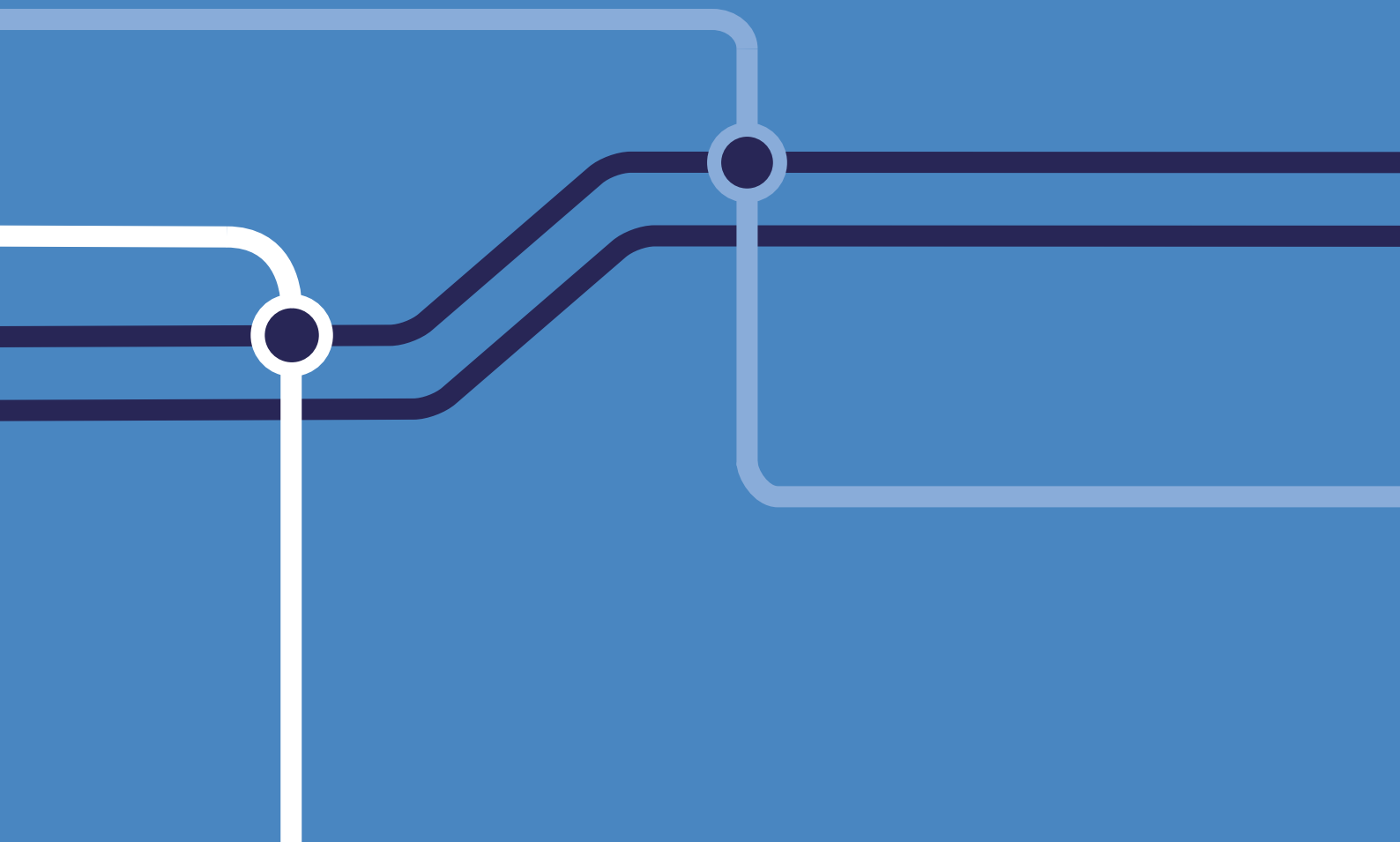
COMISIWNTRAFNIDIAETH
TRANSPORTCOMMISSION
DE DDWYRAIN CYMRU / SOUTH EAST WALES

Final Recommendations

November 2020



ONE **REGION**

ONE **NETWORK**

ONE **TICKET**

Contents

Mae'r ddogfen yma hefyd ar gael yn Gymraeg.
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Foreword

The First Minister established the Commission to investigate sustainable ways to tackle congestion on the M4 in South East Wales. This report sets out our final recommendations.

Our work began with an analysis of traffic on the motorway. This led us to the three 'fast-track' recommendations we put forward last December, each designed to improve M4 traffic flow. We then went further and considered broader questions about how people live, work and travel across the region. This and our engagement provided the basis for our interim findings, which we published in *Emerging Conclusions (July 2020)* earlier this year.

Our overarching finding was that South East Wales needs significant new transport options. This is why our recommendations are structured around the concept of a 'Network of Alternatives'.

The network is designed to give people and businesses new, credible transport options that do not involve the motorway or indeed the use of a car. We can deliver much of it through modification to the existing rail and road network. To be effective, the network needs to be part of a broader approach involving better governance and different land uses.

We are highly conscious that the continuing Covid-19 pandemic makes it a difficult time to make long-term decisions about transport. For this reason, our recommendations are designed to be flexible and robust to changes in how people may choose to work and travel. Our strong view is that Covid-19 does not alter the fundamental need to provide more transport options for South East Wales' growing population, especially in the context of the climate emergency.

We believe our recommendations are ambitious yet achievable. We are optimistic that efforts can now be channelled into delivery.

We are very grateful to all stakeholders, elected representatives and members of the public who have aided our work. We would also like to thank Peter McDonald and the Secretariat, who have provided an invaluable contribution to all aspects of the Commission's work, from inception to conclusion.

Lord Burns, Chair of the South East Wales Transport Commission

Lord Burns

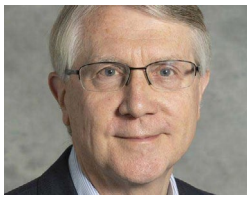
Chair

Lynn Sloman

Commissioner

Elaine Seagriff

Commissioner



Peter Jones

Commissioner

James Davies

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James Dowling, Mari Williams, Karen Fulford, Gareth Potter

Summary

There is an acute congestion problem on the M4 in South East Wales, particularly on the approach to the Brynglas tunnels. The single biggest cause – by some margin – is the sheer traffic volume at peak times, especially associated with commuting. Congestion on the road affects many more people than those travelling on it, in particular those living and working in the city of Newport.

Congestion can also be viewed as a symptom of a broader problem: the fact that people do not have good transport alternatives to the motorway. The existing rail, bus and active travel networks do not accommodate the range of journeys that people make.

As South East Wales develops and grows, there is an increasing need for new sustainable transport options. These need to be focused on regional, medium-distance travel, particularly trips starting or ending in the cities of Cardiff, Newport and Bristol – the most common journeys on the motorway.

We therefore recommend a 'Network of Alternatives' for South East Wales. A network approach puts a focus on integration, allowing for flexible journeys, reflecting the diversity of trips that people want to make. When the different parts work together, its value can be greater than the sum of its parts.

The 'Network of Alternatives' is concentrated on travel through the west to east corridor, reflecting the role played by the M4 and the natural topography of the region. It is therefore a natural complement to existing plans for the South Wales Metro, which is largely focused on north to south travel between the Valleys and Cardiff. From a user's perspective, there should be one, single integrated network.

To construct the network, we recommend an infrastructure package:

- Create a new South East Wales 'rail backbone' by significantly increasing the capacity and flexibility of the South Wales Main Line
- Transform access to the rail network by increasing the number of stations between Cardiff and the River Severn from three to nine
- Create new rapid bus and commuter cycle corridors across Cardiff and Newport, connecting to the rail backbone and Cardiff Council's public transport proposals
- Establish a 'hub and spoke' network of bus and cycle corridors within Newport city

To integrate the network, we recommend a network policies package:

- Integrate ticketing across all services, organised through a cross-city zonal fare system
- Coordinate bus and rail timetables at key points of interchange
- Deliver hassle-free interchange between rail and bus services
- Adopt a single brand and consistent standards for all stations and services

To encourage people to use the network, we recommend a behaviour change package:

- Workplace Travel Planning with large employers to influence commutes
- Flexible office hubs in major towns, cities and urban centres to support remote working
- Consider a Workplace Parking Levy as the network is implemented and improved
- Ensure public transport fares are affordable for all, particularly for bus travel within cities

To organise the network, we recommend a transport governance package:

- Formalise a partnership of Welsh Government, Transport for Wales and Local Authorities to govern transport design and operation in South East Wales
- Prioritise the investment and delivery of the rail backbone given its keystone role
- Legislate for a broader range of bus regulation powers as soon as possible in the next Senedd term

To complement the network, we recommend a land use and planning package:

- Plan new developments around the public transport network rather than the motorway
- Use South East Wales' forthcoming Strategic Development Plan to master plan the region, proactively identifying well-connected sites for development
- Equip Corporate Joint Committees to make land use and transport decisions in the round
- Encourage Welsh Government to continue to call in planning applications which are inconsistent with sustainable transport

Overall, our recommendations are intended to generate significant additional capacity in the transport system. This new capacity is more than equal to the equivalent number of vehicles that would need to be removed from the M4 to improve traffic flow, even allowing for significant growth in demand for travel. To give a sense of scale, reducing flow on the M4 by around 20% would significantly improve journey time reliability and facilitate speeds consistent with the 50mph average speed control we recommended in December.

These transport alternatives are designed to do more than just reduce traffic and the likelihood of congestion on the motorway. As such, the network is a comprehensive solution to a specific problem. If implemented, over 90% of people living in Cardiff and Newport would live within one mile of a rail station or rapid bus corridor. Within this, the number of people in Newport within one mile of a rail station would double. Designed and operated effectively, it would therefore support a meaningful and sustained modal shift from the car to public transport and active travel. This shift brings many wider benefits beyond congestion; for the environment, for public health, and for fair access to transport – all of which further Wales' well-being goals.

This is an ambitious set of recommendations which will take time to put in place. Given the scale of engineering work, the rail backbone and new stations will take several years to deliver. Detailed planning and technical work must therefore begin very soon, involving the Welsh Government, Transport for Wales, UK Government and Network Rail. However, it is feasible to deliver the vast majority of the walking, cycling and rapid bus recommendations within five years. Recent experience has also shown how some bus and cycling schemes can be swiftly implemented on a trial basis.

This implementation is not the end point. The network provides a flexible, future-proof framework which can be expanded as the region develops. This is important for accommodating the long-term impact of Covid-19, which will inevitably change how people live, travel and work.

Summary of key findings

Congestion on the M4 is largely a peak hours problem, predominately associated with commuting, and has become much worse over time.

10-50 miles

The road is largely used for regional, medium-distance travel of between **10-50 miles**, with many trips starting or ending in the cities of Cardiff, Newport or Bristol. Common M4 journeys are poorly served by alternatives; rail, bus and active travel networks are offering insufficient services. Rail and bus perform poorly compared with the journey times, ease of use and cost of using a car.

At peak times, the usage of the road approaching the Brynglas tunnels is around **3,000-5,000** vehicles per hour. Journey time reliability deteriorates significantly when these traffic volumes are reached.

3,000-5,000

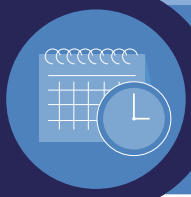
A relatively small increase in traffic leads to a disproportionate increase in congestion. Inflows and outflows vary greatly by junction, contributing to congestion levels. The M4 is not a resilient motorway and problems spill over onto the Newport road network, especially during incidents.

There is limited regional coordination of transport between transport providers and the different transport modes, making multi-modal journeys difficult, time consuming and expensive.

- Freight is not a major contributor to congestion, but the industry is highly affected
- Individual modes are poorly integrated in relation to interchange, timetables and ticketing
- Technology is unlikely to ameliorate the congestion problem
- Active travel is insufficiently integrated with the wider transport network
- Land use and transport decisions are contributing to congestion
- In the future, there will be significantly more people travelling across South East Wales and to the cities. However, future traffic growth is uncertain as a result of the Covid-19 epidemic
- Measures to alleviate congestion must be consistent with the Welsh Government's broader environmental ambitions

One region, one network, one ticket: key features of the Network of Alternatives

Coordinated timetables
Connecting arrival and departure services



Frequent timings
Services running every 15 minutes

Active travel routes
Improved and dedicated walking and cycling paths

Local stopping service with new rail stations
More stations closer to home

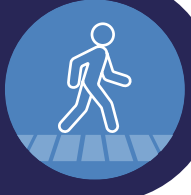
Bike storage at stations
Safe and secure bike storage

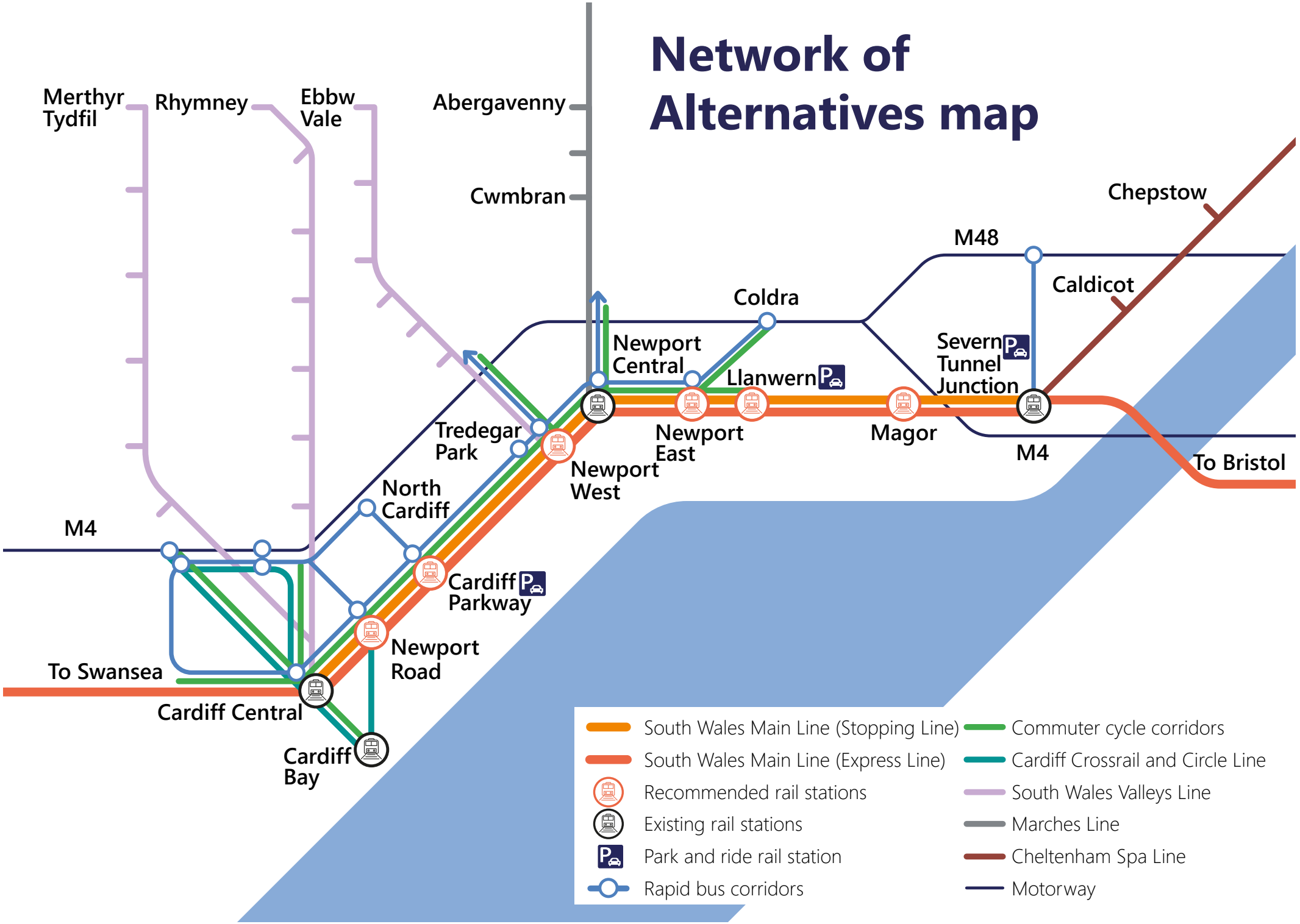
Cycle hire
New hire scheme

Priority lanes
Designated bus and cycling lanes

Integrated and contactless ticketing
One ticket for all modes

Accessible
Easy access for cyclists and pedestrians




Network of Alternatives map
Merthyr Tydfil
Rhymney
Ebbw Vale
Abergavenny
Cwmbran
Chepstow
M48
Caldicot
Coldra
Newport Central
Severn Tunnel Junction
Llanwern
Tredegar Park
Newport East
Magor
M4
To Bristol
Newport West
North Cardiff
M4
Cardiff Parkway
Newport Road
To Swansea
Cardiff Central
Cardiff Bay
South Wales Main Line (Stopping Line)
South Wales Main Line (Express Line)
Recommended rail stations
Existing rail stations
Park and ride rail station
Rapid bus corridors
Commuter cycle corridors
Cardiff Crossrail and Circle Line
South Wales Valleys Line
Marches Line
Cheltenham Spa Line
Motorway

How we have worked

27 Commission meetings

115 Attendees at 9 stakeholder workshops (6 virtual)

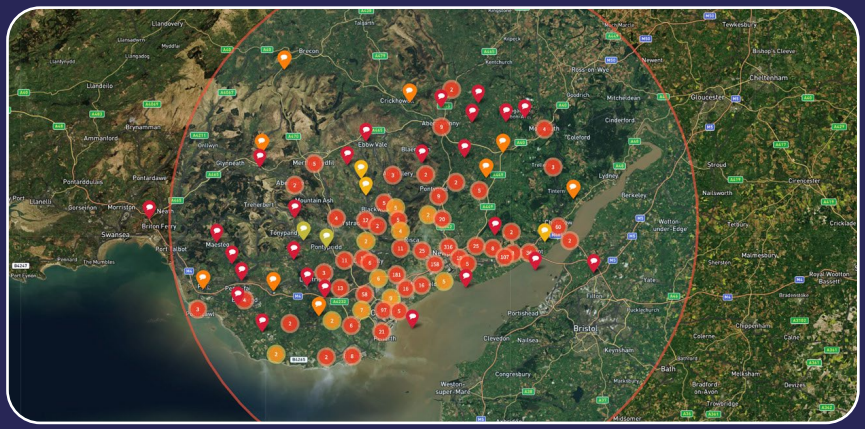
41 Employers responded to Travel to Work survey

17 Meetings with elected representatives across the region

"Have your say survey"

4,802
visits to platform

2,502
comments received



Chapter 1
Introduction

Summary

- **The First Minister established the Commission to find alternative ways of reducing congestion on the M4**
- ***Progress Update (December 2020)* set out three 'fast-track' recommendations to improve traffic flow on the motorway**
- ***Emerging Conclusions (July 2020)* set out our interim findings and analysis**
- **This is our final report, with specific recommendations for Ministers**
- **Our overarching recommendation is for a 'Network of Alternatives' in South East Wales, delivered through five packages: infrastructure, network policies, behaviour change, governance, and land use and planning**

1 The purpose of the Commission is to consider the problems, opportunities, challenges and objectives for tackling congestion on the M4. The Commission comprises Lord Burns (Chair), James Davies, Stephen Gifford, Jen Heal, Peter Jones, Elaine Seagriff, Lynn Sloman and Beverly Owen (Newport Representative). It is supported by a small Secretariat.

2 Our aim has been to provide evidence-based recommendations to Welsh Ministers on how to alleviate congestion in a sustainable way, while supporting the wider well-being of people who live, work and travel in South East Wales.

Ways of working

3 In *Our Approach (October 2019)*, we split our work into six phases: understanding the problem, identifying objectives, establishing the baseline, preparing a long list, assessing options, and making recommendations. This report concludes all of these phases, focusing on how they have led to our ultimate recommendations.

4 In undertaking our work, we have drawn on the five ways of working set out in the Well-being of Future Generations (Wales) Act 2015:

- **Long term.** We have considered future problems and opportunities as well as the current situation
- **Prevention.** We have taken a step back and reflected on what it means for people to have access to work, services and leisure in South East Wales. The experience of Covid-19 has demonstrated that this does not always require transport
- **Integration.** The way we travel impacts on much more than just transport, such as social inclusion, health, air quality and climate change
- **Collaboration.** We established relationships with central government, local authorities, stakeholder bodies and other representative organisations

- **Involvement.** We have engaged the people who use and experience the transport network each day

5 We describe how we have prepared our conclusions and recommendations in *Annex A (Our method)*.

Fast-track recommendations

6 In December 2019, we published *Progress Update*, which recommended three 'fast-track' measures, all designed to improve traffic flow on the M4. These were to implement an average speed control of 50mph, provide additional lane guidance on the westbound approach to the Brynglas tunnels and enhance Welsh Government Traffic Officer support. The 'fast track' recommendations are consistent with the final recommendations presented in this report, as discussed in *Chapter 4 (Infrastructure package)*.

Emerging conclusions

7 Earlier this year, we published our interim findings in Emerging Conclusions (July 2020), which was underpinned by four detailed, background analysis documents.

8 These findings and their implications formed the basis of our engagement work over the summer. In the light of that consultation, our emerging conclusions have evolved into the recommendations in this report.

Final recommendations

9 This report presents our final recommendations to Welsh Government, which brings the Commission's work to a close.

10 *Chapter 2 (A new strategy for South East Wales)* sets out what our work implies for the overall transport strategy for the region and *Chapter 3 (Network of Alternatives)* explains how our recommendations are all structured around a single concept – an integrated transport network for South East Wales.

11 The subsequent five chapters set out the packages of recommendations required to deliver the network: *Chapter 4 (Infrastructure package), Chapter 5 (Network policies package), Chapter 6 (Behaviour change package), Chapter 7 (Transport governance package)* and *Chapter 8 (Land use and planning package)*.

12 *Chapter 9 (Impacts)* provides our assessment of the impacts of these packages, including on congestion, and *Chapter 10 (Implementation)* discusses how and when the recommendations could be delivered. *Chapter 11 (After the Commission)* concludes and suggests next steps.

13 Significant further detail on the rail recommendations is available in *Rail technical background*, published alongside this report.

Chapter 2
A new strategy for South East Wales

Summary

- **Congestion on the M4 is a symptom of broader problems**
- **As South East Wales develops and grows, there is an increasing need for new sustainable transport options**
- **Public transport and active travel should be the focus, particularly within the cities of Cardiff and Newport**
- **This approach can bring many wider benefits, for the environment, communities and public health**
- **Covid-19 provides an opportunity to prepare significant transport improvements while demand is reduced**

Taking a step back

14 The work of the Commission arose from the decision not to proceed with the M4 relief road around Newport. It is not part of our remit to comment on that decision; instead, we have considered the consequences that flow from it.

15 While our work began with a detailed consideration of congestion on the M4, it quickly evolved into a wide-ranging assessment of transport and socio-economic patterns in South East Wales. This holistic approach has been vital in order to truly understand the problems and opportunities of transport in the region. Most pertinently, a key conclusion has been that congestion is a symptom of broader problems, in particular the lack of non-car transport options.

16 Taking a step back has also clearly shown that we need to take a sufficiently wide-ranging approach to the transport alternatives we are recommending. In particular, it is not enough to propose alternative infrastructure; we need to go further and set out a comprehensive package, incorporating behaviour change, governance, land use and other supporting policies. It is in effect a new strategy for South East Wales.

The case for more sustainable transport

17 Our work has demonstrated the general dominance of the car in the region, especially in the city of Newport.

18 This is also a characteristic of other parts of the UK. After all, the car is a very flexible mode of transport – it works at any time of day, the majority of households own one and the way we have designed our urban areas means it can usually travel direct from any origin to any destination.

19 Roads will inevitably continue to form part of an integrated transport network. However, a predominant use of private cars has a number of consequences, including for urban sprawl, safety, air quality and carbon emissions. In addition, and of most importance for our work, the car is fundamentally unsuitable for efficiently transporting large numbers of people in urban areas. There is simply not enough capacity or space for everyone to drive and park, with competing demands for land and road use.

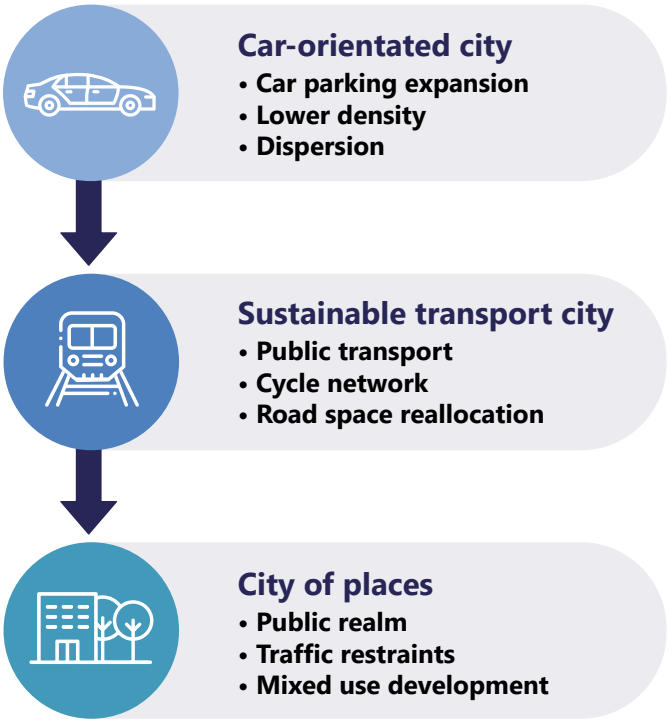


Figure 2.1: Stages of city transport development

20 As cities and city regions develop, their transport needs and challenges change over time. Experience suggests the role of public transport and active travel tends to increase as cities expand and become denser – they evolve from car-orientated cities to sustainable transport cities. This reflects that mass public transport is a highly space and time efficient means of transportation. Once this becomes the norm, cities have the opportunity to put increased focus on public realm and complementary land use development. Figure 2.1 illustrates the progression in simple terms.

21 Taking a long-term perspective, many of the most successful European cities have followed this broad path over the last quarter century. In each phase, changes to attitudes and behaviours drives further development in reaction to changes in policy and infrastructure.

22 Like many other city regions across the UK, we believe the major urban parts of South East Wales are on a similar long-term trajectory. There is in effect one city region which has formed a single 'Travel to Work' area. As it grows and develops, it increasingly merits a commensurate integrated transport network with a focus on travelling by sustainable modes and reducing the need to travel by car. The decision to not proceed with the M4 relief road may have accelerated the progression along this trajectory, but the end point is the same.

Supplying the demand for transport

23 In simple terms of demand and supply, our analysis has shown that the supply of transport for medium-distance travel between the main urban areas of South East Wales is insufficient for the demand. The result is significant congestion on the M4 and over-crowding on some key rail commuting services. We also believe there is suppressed demand – supply constraints mean some people who would like to travel do not.

24 There is a clear need for additional transport capacity. The combination of established patterns of urban development and our focus on non-motorway options prompts us to focus this new capacity on public transport and active travel.

25 The expected growth in population and pattern of future developments across South East Wales strengthens the case further. Within the region, the growth in population is projected to be focused on the city region. To give a sense of scale, over the next 20 years, Cardiff is expected to be the fastest growing major UK city.[1]

26 The cities – and the success of them – are likely to be a big part of the future story of the region, both socially and economically. As they grow, physical space will become scarcer. The potential for classic radial development is constrained by the coast and the topography of the Valleys. For this reason, travel will always be concentrated in a relatively narrow west to east corridor. These fundamentals will not change, which makes it increasingly untenable for cars to service all of the region's growing transport needs.

27 Now is therefore the time to develop the alternatives. These can be scaled over time as the cities and region continue to develop, in particular as they expand.

Covid-19 and the future

28 We have carefully considered the potential long-term impact of Covid-19 on this approach. It is undeniable that the current experience provides a challenging backdrop for cities and public transport. Regular commuting has fallen considerably, and social distancing is placing the emphasis on private car and active travel modes.

29 From our perspective, Covid-19 has been a striking illustration that transport is just one way to provide people with 'access' – the ability to reach people, goods, services and opportunities (such as work, a hospital appointment or a social gathering). In addition to transport, there are two other and fundamentally different ways to provide people with access: spatial proximity (through the land use system) and digital connectivity (through technology). This is illustrated in figure 2.2.[2]

30 During Covid-19, people have often been required to stay local and connect digitally. This has shown – on a national scale – how land use and technology can provide viable alternatives to transport. Looking to the future, these are not alternatives that people may wish to use all of the time, but the current experience has demonstrated the viability of a broader range of options. This is especially relevant for remote and flexible working, given peak-time commuting pressures on the transport system.

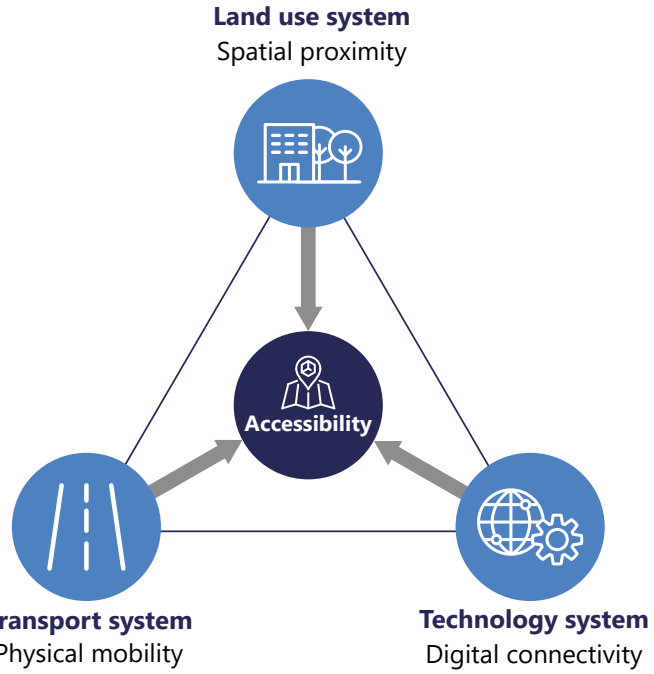


Figure 2.2: The 'Triple Access' system

1 Source: Cardiff Council, *Transport Vision to 2030 – Changing how we move around a growing city* (2020)

2 This discussion draws heavily from the work of Glenn Lyons and Cody Davidson, *Guidance for Transport Planning and Policymaking in the face of an uncertain future* (2016)

31 However, the changes resulting from Covid-19 do not fundamentally alter the long-term need for additional transport options in South East Wales. People may change their relationship with the workplace, but they will still need to travel to work for a significant part of the time. Similarly for cities, which will remain a strong draw for work and leisure, providing the agglomeration benefits which have driven city development over hundreds of years. Even if some Covid-19 habits are sustained for the long term, it is very likely that the rate of development and population growth will outweigh these impacts over time.

32 For these reasons, we believe changes in travel patterns caused by Covid-19 provide an opportunity to prepare significant public transport improvements for the future. This is valuable, as it will take strong leadership, public support and a number of years to put in place good alternatives to the private car and motorway.

Broader challenges and opportunities

33 These alternatives have the potential to affect far more than just transport outcomes. While our work necessarily started with congestion as the focus, it has been impossible not to reflect on the impact on broader aspects of life and well-being.

34 A shift to public transport and active travel has the potential to deliver against a range of wider aims. There are a plethora of co-benefits from shifting journeys to public transport and active travel, including:

- **Decarbonising the transport system**, which will require reducing the need to travel by and own petrol and diesel cars
- **Improving air quality**, especially in and around Newport
- **Fair access to transport**, as over a quarter of households do not own a car[3]
- **Healthier lifestyles**, from greater active travel

35 The business case for our recommendations will be significantly strengthened by taking these broader impacts into account; indeed, addressing congestion should not be the sole reason for significant levels of investment in the transport network.

The role of our recommendations

36 The approach set out in this chapter is the strategic context for our recommendations. It is important because congestion on the M4 cannot be considered in isolation. This report should therefore be a key input to the future transport strategy for the region.

37 In our view, the strategy should place significantly greater priority on public transport and active travel. This reflects the fact that a sizeable change in the availability and quality of transport alternatives is needed if we are to alleviate congestion sustainably.

38 This is a significant strategic aim which will take time to achieve. The 'Network of Alternatives' presented in this report sets out the first steps for delivering such a strategy. Over time, the network will need to evolve and expand, just as the region continues to develop. To embed its success, it will also need to be complemented by a supportive policy environment.

"There is a clear need for additional transport capacity – now is the time to develop alternatives"

3 Source: National Trip End Model (NTEM) (2015)

Chapter 3
Network of Alternatives

Summary of recommendations

- **Transport in South East Wales should be organised around the network concept**
- **We recommend a 'Network of Alternatives' made up of stations, key transport corridors and services**
- **The network provides a flexible, future-proof framework which can be expanded as the region develops**
- **We recommend five packages to deliver the network: infrastructure, network policies, behaviour change, transport governance, and land use and planning**

The importance of a network approach

39 In *Emerging Conclusions (July 2020)*, our overarching finding was that attractive and viable alternatives to motorway travel are needed if we are to alleviate M4 congestion sustainably. By creating these, we can provide different, credible travel options so that people can make a different transport decision, should they wish.

40 Analysis of origins and destinations shows the breadth of journeys that people are undertaking. It is clearly impossible to design a rail, bus or active travel system in isolation to facilitate each of these journeys. Given the flexibility of the car, no one single infrastructure scheme can provide an alternative to the M4.

41 Instead, we need to create a number of inter-connected transport services. This is why transport planners traditionally design services in a network which allows for interchange, for example in a grid or radial pattern. This greatly increases the number of journeys which can be facilitated. By incorporating a range of transport services and integrating routes, networks allow for a much greater and more flexible range of journeys.

42 To gain full utility from the network, the interconnections between services and modes must be well-designed and well-operated. When done properly, this provides a 'network effect' – the total utility is greater than the sum of the parts.

43 This network approach is viable in South East Wales because a large amount of transport demand is concentrated on a relatively small number of journey origins and destinations (such as journeys between Cardiff and west Newport). The population and employment densities in these corridors are sufficient to sustain a public transport network, particularly given the projected growth of the cities.

Developing a network for South East Wales

44 For these reasons, we have adopted a network approach as the overarching structure for our recommendations.

45 The basis for the network structure is analysis of travel patterns in South East Wales, as detailed in *Emerging Conclusions (July 2020)*. This includes but is not limited to M4 journeys, which has allowed us to build a picture of the journeys people are making on all modes of transport.

46 We have used this analysis to compare potential need for transport alternatives with the current provision of services. The result is a set of targeted transport improvements which are presented collectively in a 'Network of Alternatives', supported by a number of complementary policies.

47 These improvements have been designed to deliver two objectives, which flow from our Terms of Reference:

- **Objective 1** – to improve journeys on the M4 in South East Wales
- **Objective 2** – to increase the modal share of public transport and active travel in the region

48 These objectives are described further in *Chapter 9 (Impacts)*. A key point is that the network is not just about providing alternatives for common M4 journeys; it is about facilitating efficient travel across the region and opening up new travel opportunities.

"We need to create new, interconnected services, organised around a network"

49 This reflects our view that an increasing number of people will live, work and travel in South East Wales, especially in and around the cities of Cardiff, Newport and connecting to Bristol. These cities already feature heavily in analysis of regional travel patterns, especially for motorway trips. This is unsurprising given the relative density of housing and employment and we expect these trends to continue. Our aim is therefore to recommend a network which is both future-proof and allows for expansion and enhancement over time.

Components of the network

50 The network concept comprises three structural components:

- **Stations** – these are the places that people join or leave the transport network, either for rail, bus or active travel
- **Key transport corridors** – either connecting different stations or radiating out from them
- **Services** – which operate along each corridor and from each station

51 In *Emerging Conclusions (July 2020)*, we set out a draft set of principles for each component. These have been refined in the light of engagement and are described below. The principles primarily relate to the movement of passengers rather than goods and services (freight). Alternative options for freight traffic are discussed further in *Chapter 4 (Infrastructure package)*.

Principles for stations

52 Stations need to exist at or near the places where people live (origin) and wish to travel to (destination), especially their place of work. Wherever possible, stations should perform both origin and destination functions. This is particularly relevant for future flexibility as peoples' travel patterns will change over time.

53 As a general rule, all stations should be designed for swift and simple interchange between rail, bus, cycling and walking. This will greatly increase the population that can be served by each station. The facilities and transport services necessary for swift and simple interchange include high levels of secure and convenient cycle parking and, wherever possible, a 'cheek to cheek' interface between bus and train.

54 With the exception of designated park and ride stations, the amount of car parking at stations should be relatively small (although parking reserved for people with mobility difficulties should be provided). Where parking is provided, it should be accessible by roads that do not materially impact the communities living close to the stations.

55 Bus stations are as important as rail stations. To facilitate convenient interchange, bus and rail stations should be brought together into single interchange hubs wherever possible.

56 Bus stops are important points of entry to and exit from the network. Facilities at these stops (for example, shelters, travel information, seating and cycle parking) should be of high quality.

Principles for key transport corridors

57 Key corridors connect together stations, key origins and key destinations. They should reflect concentrations in the movement of people and goods.

58 Corridors combine to make a framework for the network, but they do not define the total reach of all transport services, which will need to include a number of local and specialised routes.

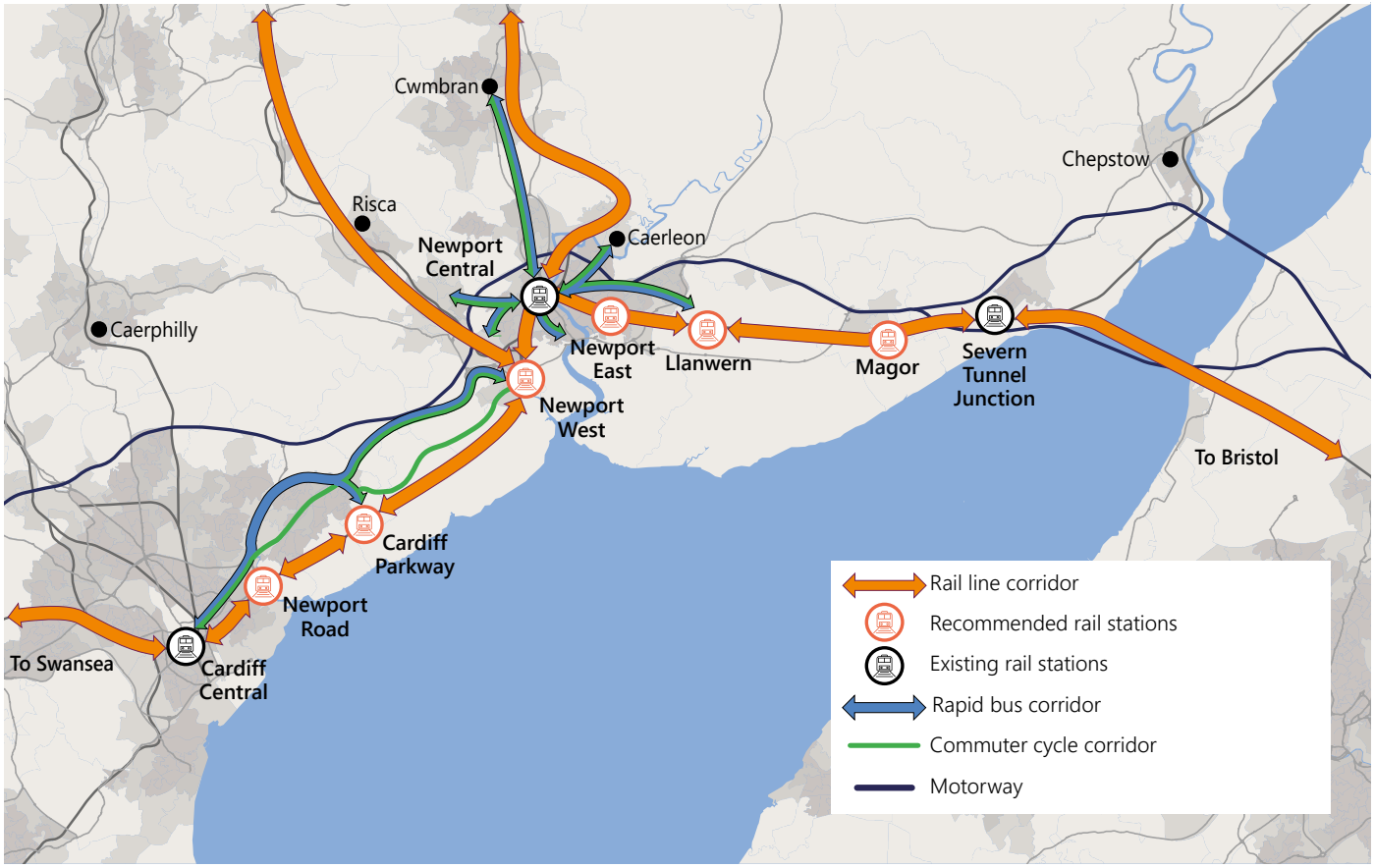


Figure 3.1: Transport corridors in South East Wales

59 Corridors should be served by either rail or rapid bus services. In addition, all corridors should facilitate unimpeded cycling. In general, a corridor need not be served by both rapid bus and train, as this may undermine the business case for investing in either infrastructure.

60 Corridors should make use of existing rail lines where they pass through areas with sufficient population and employment density. This is because of the ability of rail to move high volumes of people at speed (albeit only cost-effectively when there is sufficient demand).

61 Corridors should make use of bus services on the existing road network where a rail option is not viable. Bus corridors will require appropriate priority infrastructure to facilitate reliable and rapid journeys.

62 Where possible, rail corridors should separate inter-city or express services from local, stopping services, so as to not disrupt swift journeys. In addition and where possible, cycling should be segregated from bus and other traffic (especially large goods-carrying vehicles). The confidence of feeling safe is critical if we are to encourage more cycling.

63 Corridors define strategic transport movements. The particular route needs to be determined through detailed planning and local engagement. Within the same corridor, different modes may take different routes (for example, the cycle route may be on different roads from the bus route).

Principles for services

64 The capacity, frequency and hours of operation of transport services should reflect actual and potential demand, as determined by a range of factors, including residential density, level of employment and presence of other key destinations.

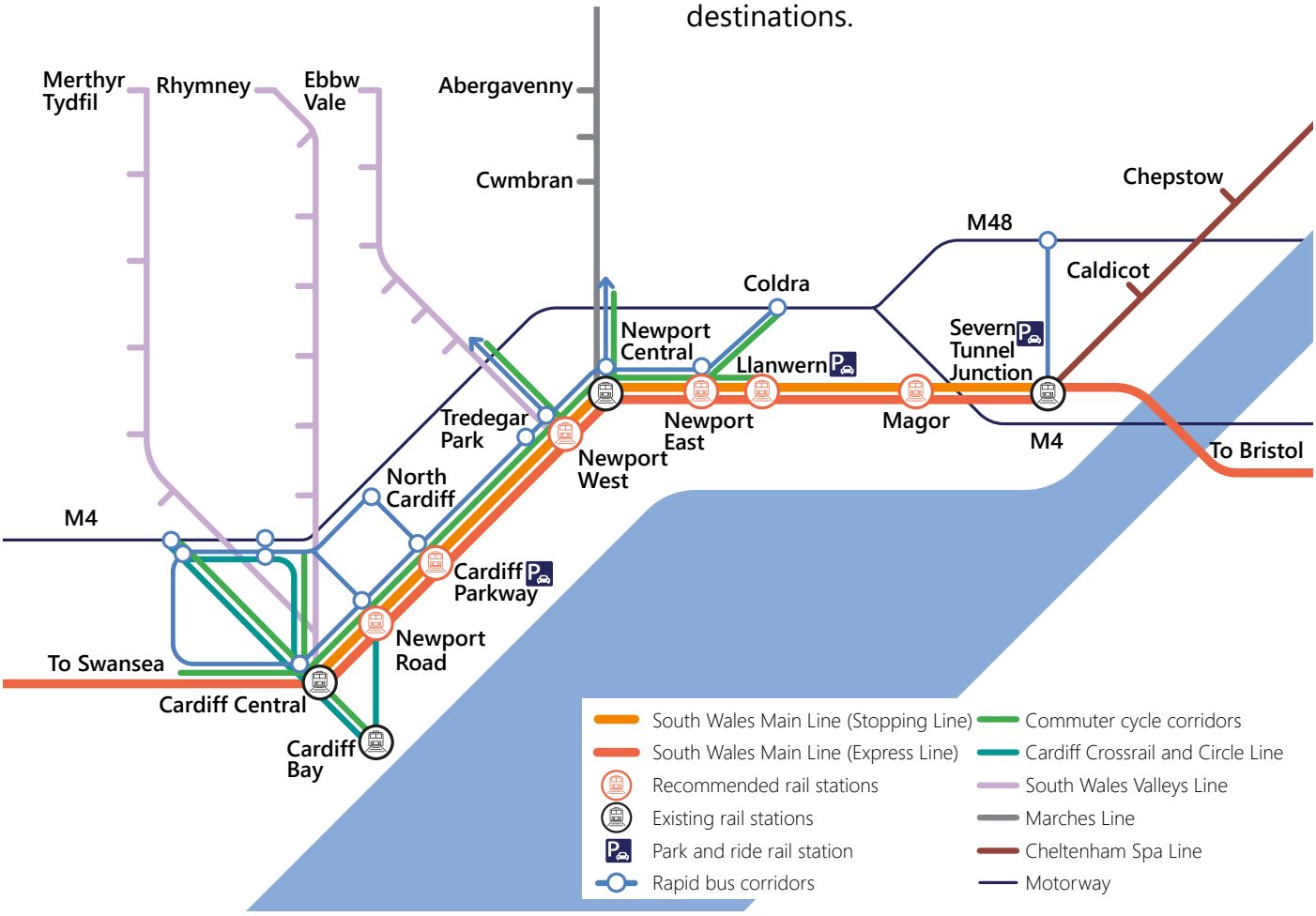


Figure 3.2: Network of Alternatives map

65 As a rule of thumb, we consider the minimum frequency for key corridors linking dense settlements should be four services an hour (equivalent to a 15-minute headway). This frequency of service is commonly referenced as the minimum necessary for passengers to 'turn up and go' rather than plan their movements on the basis of a timetable.

66 The appropriate frequency for places that are not on key corridors could be lower. This could be applied in a flexible way, to allow for some variation in demand between peak and off-peak periods.

67 With a well-planned network running a coordinated timetable, even a service operating at a lower frequency but which is predictable and reliable can give people confidence that there will be transport available when it is needed (for example, from early in the morning to late at night, seven days a week). This helps foster a culture of public transport use.

68 This culture could be further reinforced by preparing network-wide guidelines for frequency and hours of operation in different parts of South East Wales, based on population and potential demand. These guidelines would be set ambitiously, offering a long-term aim to work towards, while demonstrating the forward path for developing the network.

69 The extent to which services meet the guidelines should influence future decisions about rail and bus infrastructure investment, which will necessarily involve choices about what priority to attach to different projects. To inform these decisions, regular analysis should be undertaken of the potential demand for transport along each key corridor.

Network of Alternatives

70 We have used the combination of these principles, our analysis of travel patterns and general findings to design a high-level 'Network of Alternatives' for South East Wales. Figure 3.1 illustrates the transport corridors and figure 3.2 shows how these translate into a summary map of the network.

71 The building blocks for the network are largely existing transport assets. This reflects the fact that the basic transport infrastructure already exists, the question is how to gain the maximum benefit from it. In particular, South East Wales has inherited a large number of well-placed railway lines, going both north to south and west to east. This puts the region in a position of strength compared to other UK city regions.

72 However, infrastructure alone is insufficient. If we are to gain maximum value from the network, we need to operate it in an accessible and integrated manner. We also need to put supporting policies in place to build patronage and embed its success. This is the basis for the five recommendation packages described below.

Recommendations to deliver the network

73 The following chapters set out the five packages we recommend to establish, operate and support the network: infrastructure, network policies, behaviour change, transport governance, and land use and planning.

Infrastructure package

74 Infrastructure relates to the physical transport schemes necessary to deliver the stations, corridors and services described above. Our recommendations are set out in *Chapter 4 (Infrastructure package).*

75 At the heart is the recommendation to create a rail 'backbone' by making better use of the South Wales Main Line. This allows for a significant expansion of the number of stations on the line. Getting this rail backbone right is key to unlocking the majority of wider benefits if we are to serve M4 alternative journeys.

76 For those corridors which cannot be served by rail, we recommend rapid bus services. Commuter cycle corridors are also recommended. There is a particular emphasis on routes to connect people to the rail backbone and facilitate journeys in and around Newport.

77 As a package, the infrastructure recommendations will put a much greater share of the population in close contact with a rapid bus, rail service or high quality active travel route. This is what is necessary if we are to create meaningful alternatives to the road network.

78 The infrastructure is concentrated on travel between the west and east, reflecting the role played by the M4. It is therefore a natural complement to existing plans for the South Wales Metro, which is largely focused on north to south travel between the Valleys and Cardiff. It is also consistent with the proposed Cardiff Crossrail and Circles lines, which will improve the connections to the wider rail network for the increasing population of north and west Cardiff. Of course, from a user's perspective, there should be one, single integrated network.

Network policies package

79 Network policies describe the way in which the infrastructure should be operated and coordinated. These are what contribute to the 'network effect' and are particularly relevant to the integration of transport modes. Our recommendations are set out in *Chapter 5 (Network policies package)*.

Behaviour change package

80 We need to provide people with opportunities to change behaviour if we are to encourage switching from the car to public transport or active travel. Our recommendations are set out in *Chapter 6 (Behaviour change package)*. This includes a discussion of road user charging.

Transport governance package

81 The network has been designed on the basis of a holistic analysis and needs to operate in a similar manner. Our recommendations for the governance of the network are set out in *Chapter 7 (Transport governance package)*.

Land use and planning package

82 Land use is a fundamental determinant of the journeys that people make. The corridors described above are in effect a function of land use decisions of past decades. Looking forward, the network provides an opportunity to support different land use and planning decisions. Our recommendations for future land use and the planning hierarchy are set out in *Chapter 8 (Land use and planning package)*.

Interaction between the packages

83 The packages are a comprehensive response to the strategic context described in *Chapter 2 (A new strategy for South East Wales)*. To deliver this new approach to sustainable transport, it is not enough to implement any one package in isolation. For example:

- The network policies are necessary to knit together the infrastructure
- Many of these network policies can only be fully achieved if there is appropriate transport governance
- The business case for many of the infrastructure measures will only stack up if there is suficient behaviour change in favour of sustainable travel choices

84 Once they are pursued, the packages have the potential to catalyse a virtuous cycle of sustainable development which supports their further progression. Our recommendations can therefore be considered as the first step in a positive and progressive cycle of public transport and active travel investment, increased patronage and sustainable transit oriented development.

Chapter 4
Infrastructure package

Summary of recommendations

- **Reconfigure the South Wales Main Line to increase rail capacity and flexibility between Cardiff and the River Severn**
- **New rail station building programme to provide local, commuting services on the Main Line**
- **New rapid bus corridors across Cardiff and Newport, connecting to the rail backbone**
- **New commuter cycle corridors, connecting to the rail backbone and rapid bus corridors**
- **A fundamental redesign of transport interchange in the centre of Newport**

Our findings

85 In *Emerging Conclusions (July 2020)*, we explained our key findings in relation to infrastructure:

- Common M4 journeys are poorly served by public transport alternatives
- The South Wales Main Line is focused on inter-city rail services and there are few commuting services
- Many post-war developments are not served by rail services, such as eastern and north-eastern parts of Cardiff, and suburban areas of Newport. Newport is particularly poorly served by rail, even after the reopening of the Ebbw Vale branch in 2008
- Although bus services may work well for some intra-city commuting, the South East Wales bus network generally offers a poor service for common commutes
- Active travel is insufficiently integrated with the wider transport network

Our recommendations

86 Our recommendations consist of a series of complementary and connected infrastructure projects. While many could be implemented on a standalone basis and bring some benefits, the full impact of the projects can only be realised if they are designed and operated as a network.

Rail infrastructure and services

87 This section describes our recommendations for the rail network, which form the backbone for the 'Network of Alternatives'. Further detail is available in *Rail technical background*, published alongside this report.

Rail backbone

88 We note the significant potential for greater rail patronage in the region. The vast majority of journeys on the M4 are over 10 miles and the majority are longer than 20 miles; these are distances that could be served well by a train service.

89 As a result of Wales' industrial legacy, South East Wales has a relatively dense network of existing and former railway lines. But while there are many 'rails on the ground', the infrastructure is often not being fully utilised.

90 In particular, the South Wales Main Line (SWML) is a significant piece of rail infrastructure which connects South Wales with London. From Severn Tunnel Junction to Cardiff East Junction, it comprises four tracks, split into two pairs of 'main lines' and 'relief lines'. Between Severn Tunnel Junction and the Bishton flyover, the relief lines form the outer pair of lines; from Bishton flyover to Cardiff, the relief lines are the southern pair of lines.

91 The relief lines are limited to a speed of 60mph, whereas the main lines allow up to 90mph. Accordingly, in usual operation, one pair is for passenger services and the other is for freight. The difference in speeds and separation between passengers and freight substantially limits the total capacity of the line.

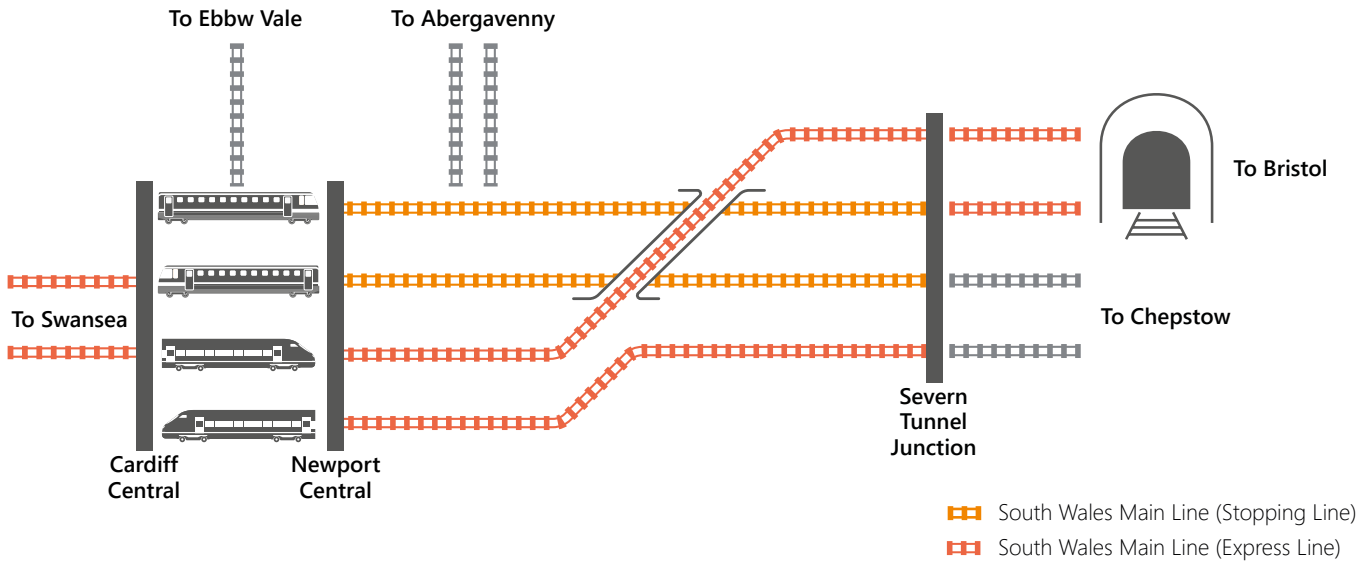
92 Our technical work has identified that it is possible to increase passenger service capacity and flexibility on this stretch by upgrading and reconfiguring the relief lines to effectively create two pairs of lines for passenger traffic. Instead of grouping services by type, trains would be grouped by speed, with slower services on paired stopping lines and faster services on paired through lines.

93 **We therefore recommend the SWML is reconfigured to separate local, commuting services from inter-city services. We also recommend the relief lines are upgraded so that all four tracks can operate up to 90mph.**

94 Reconfiguring the lines would put local services on a different pair of lines from inter-city services. Increasing the utilisation of the relief lines in this way is not a new idea; many technical studies, business cases and briefing notes have considered this over the last 10 – 15 years. In particular, Network Rail's *Welsh Route Study (2016)* looked at ways of achieving sufficient capacity on the SWML to meet 2043 requirements.[4]

Figure 4.1: Existing South Wales Main Line

4 One of the proposed routeing strategies centred on transferring through services (coming from the Severn Tunnel) onto upgraded relief lines, thereby freeing capacity on the main line for further local services from the Marches Line and Ebbw Vale Line



Note: Railway crossovers have not been shown for clarity

Figure 4.2: Proposed reconfiguration of the South Wales Main Line

95 Separating the four tracks of the SWML into a pair of local and pair of inter-city lines requires a substantial amount of track reconfiguration. Cost and lead times are discussed further in *Chapter 9 (Impacts)* and *Chapter 10 (Implementation), respectively*.

96 The result would be a set of four electrified rail lines available for all types of services, nearly doubling the capacity of the infrastructure at peak times and making it viable to introduce new local stations on the SWML.[5]

97 The question is then how to allocate that capacity between local services, inter-city services and freight services. Our assessment is that it would be viable to run local services without impacting on the capacity for inter-city services or freight paths (although some flexibility may be lost for freight paths given we estimate around half of them are not currently used). In the long-term, if passenger growth outstrips the technical ability to add further capacity to the line, choices may need to be made on which type of service to prioritise.

98 We propose the top pair of lines is mainly used for local, commuting services and the bottom pair of lines is mainly used for inter-city services. This configuration would allow for other branch lines to connect to the main line, such as the Ebbw Vale and Marches line. This is illustrated in figure 4.2

Rail stations

99 A key objective from the reconfiguration of the South Wales Main Line is to facilitate more stations on the line. Without reconfiguration, the impact of additional stops would be detrimental to journey times on inter-city services.

100 Currently, only three stations exist between Cardiff and the River Severn: Cardiff Central, Newport and Severn Tunnel Junction. This is plainly insufficient given the potential demand for rail travel in South East Wales, both now and in the future. Table 4.1 shows how the average distance between stations compares with a selection of other stretches of urban rail in the UK.

5 Upgrading the speed of the relief lines without reconfiguring the pairs of lines would allow for increased capacity (around 50% at peak times). However, this arrangement would not provide the opportunity to introduce new stopping stations.

	Route	Length of track (km)	Number of stations	Average station spacing (km)	Number of tracks
Current	Cardiff to Newport	19	2	19	4
	Cardiff to Severn Tunnel Junction	35	3	17.5	4
Proposed	Cardiff to Newport	19	5	4.8	4
	Cardiff to Severn Tunnel Junction	35	9	4.4	4
Comparisons	Wolverhampton to Birmingham New Street	19	8	2.7	2
	Weston Super Mare to Filton Abbey Wood	36.8	11	3.7	2
	Nottingham to Derby	25	5	5	4
	Bristol Temple Meads to Bath Spa	20	2	7	2
	Didcot to Reading	25	6	5	4

Source: South East Wales Transport Commission analysis

Table 4.1: Comparison of distance between rail stations

101 **We recommend a programme of new rail station developments along the main line**, facilitated by the reconfiguration of rail services described above. In total, this would triple the number of stations between Cardiff and the Severn. These new stations should not slow journeys between cities because stopping services are separated from express services. Following the reconfiguration of the SWML into two pairs of lines, it is envisaged that each station would have platforms sited on the northern pair of lines (to serve commuting services). For a small number of strategically important stations, platforms could also be sited on the southern pair (for example, Cardiff Parkway, to server inter-city services).

102 *Chapter 3 (Network of Alternatives)* describes the principles we have used to determine the prospective locations for new rail stations. On this basis, we make the following recommendations (going west to east). The purpose of each station is summarised in Table 4.2.

103 **We endorse Cardiff Council's and the Welsh Government's aspiration to extend the Cardiff Crossrail to a new station at Newport Road**, as described in *Wales Main line Railway Enhancement Requirements (September 2020)*. There are a large number of people who live in the vicinity, making it an attractive 'origin' station. In addition, the site has significant strategic potential as it could act as a key point of interchange between Cardiff Central, Cardiff Bay and the prospective Crossrail service. This is especially important given capacity constraints at Cardiff Central, which would prevent new services from terminating in the city centre. In the long-term, the tram-trains used on the Cardiff Crossrail could continue to Newport along the SWML and would facilitate direct rail journeys from the east to Cardiff Bay.

Station	Population in 2030		Employment density in 2030	Key features
	Within 2km	Within 5km		
Cardiff Central	75,000	193,000	Very high	Significant multi-modal interchange Rail connections to Valleys, West Wales and inter-city services
Newport Road *(new)*	51,000	113,000	Medium	Rail connection to Cardiff Bay
Cardiff Parkway *(new)*	14,000	38,000	High	Potential for multi-modal interchange between Cardiff and Newport Park and ride
Newport West *(new)*	15,000	25,000	High	Rapid bus and active travel connections to employment sites
Newport Central	33,000	59,000	High	Significant multi-modal interchange New bus access
Newport East *(new)*	38,000	39,000	Medium	Community station
Llanwern *(new)*	8,000	15,000	Low	Park and ride
Magor *(new)*	5,000	7,000	Low	Community station
Severn Tunnel Junction	6,000	15,000	Very low	Rail connection to Bristol, Cheltenham and inter-city services New bus access Potential for increased park and ride

Source: ONS 2018 data, factored to 2030

Table 4.2: Station purposes

104 **We endorse plans for the new Cardiff Parkway station in St Mellons**, as developed by Cardiff Parkway Developments Limited with the support of Welsh Government and Cardiff Council. It is located close to an area of high employment and population density with very limited access to rail. Beyond this local catchment, the station has the potential to connect a significant number of people in north-east and east Cardiff with the railway if properly connected to the bus and cycle network (see below). If designed well, the station could function as a multi-modal transport interchange between Cardiff and Newport.

105 **We recommend a new Newport West station**, in close proximity to the employment sites at Tredegar Park, Celtic Springs and Cleppa Park. Our analysis of M4 journeys demonstrates this could be an important 'destination' station, reflecting the fact that a significant number of people work in this area. It would also provide rail access for the residents of the large housing areas located within easy reach of the site.

106 Locating the station close to the A48 would provide good bus access to local employment sites. The station could also be well served by upgraded active travel routes over the River Ebbw and under the A48. Figure 4.3 depicts a visualisation of one option for how the station could be arranged, particularly to provide swift interchange to bus services.

107 **We recommend a new Newport East station**, in the Somerton area. While this is not a station proposal which has been considered in the recent past, there is a high population density in this part of Newport. Our technical work suggests a station might be constructed without significant track realignment or signalling alterations.

108 **We endorse plans for a new station at Llanwern**, as proposed by the Welsh Government. There is a large amount of housing development planned for this area and a station on this site would help serve these new homes. Over time, we hope this area could become a mixed use development.

109 **We endorse the Welsh Government's park and ride proposal for Llanwern station**. We note road access from junction 23A would suit westbound M4 travellers looking to travel to Newport or Cardiff. Consideration should be given to new pedestrian and cycling access over the main line to provide better access to east Newport, including Bishton and Llanwern village. Decisions on parking capacity should be made in the context of decisions at Severn Tunnel Junction, as both stations have the potential to offer park and ride services for westbound drivers (Llanwern for drivers from Greater Bristol; Severn Tunnel Junction for drivers from south Monmouthshire).

110 **We endorse the proposal for a new station at Magor**, as proposed by the Magor Action Group on Rail (MAGOR) as a 'walk and ride' station. This station is primarily envisaged as an 'origin' station serving the local community.

111 In addition to these recommendations for the main line, we also note the potential for two further stations on the Marches Line and Ebbw Vale Line, respectively.

112 The first is Caerleon station, with a station to serve the local community which has not had a rail connection since the 1960s. The station also has some potential to serve the Celtic Manor Resort and International Convention Centre. This station could be served by services to and from Abergavenny with relatively little impact on journey times.

113 The second is a new station at Maesglas in west Newport, which could serve the local community and provide very good access to the Tredegar Park employment site (especially for commuters from Ebbw Vale).

Figure 4.3a: Visualisation of new Newport West rail station with bus and active travel interchange

Figure 4.3b: Visualisation of new Newport West rail station with bus and active travel interchange

Rail services

114 Reconfiguring the SWML and constructing additional new stations provides for a much greater range of rail services to operate. Initially, we do not envisage a commuting service would operate solely between Cardiff and Severn Tunnel Junction. Instead, it would be more efficient for some existing services (including those from further afield) to call at the new stations.

115 The future service pattern therefore needs to reflect a wide range of considerations, not all of which are within our remit. However, to give a sense of what could be achieved, figure 4.4 depicts an illustrative pattern of rail services. This has been prepared on the basis of the principles for stations, corridors and services set out in *Chapter 3 (Network of Alternatives)* and a number of other factors, in particular that:

- Service frequencies should be at least four trains per hour wherever reasonable
- Seating capacity on trains should be sufficient to minimise the number of people required to stand
- Train types used should reflect future Transport for Wales rolling stock orders
- Train configurations and lengths should take account of peak and off-peak demand
- Service start and end points must allow for reliable turnaround arrangements, reflecting constraints at Cardiff Central and Severn Tunnel Junction

116 The ultimate result is that each of the new stations can be used by a number of different services, providing for regular trains and a range of journey options.

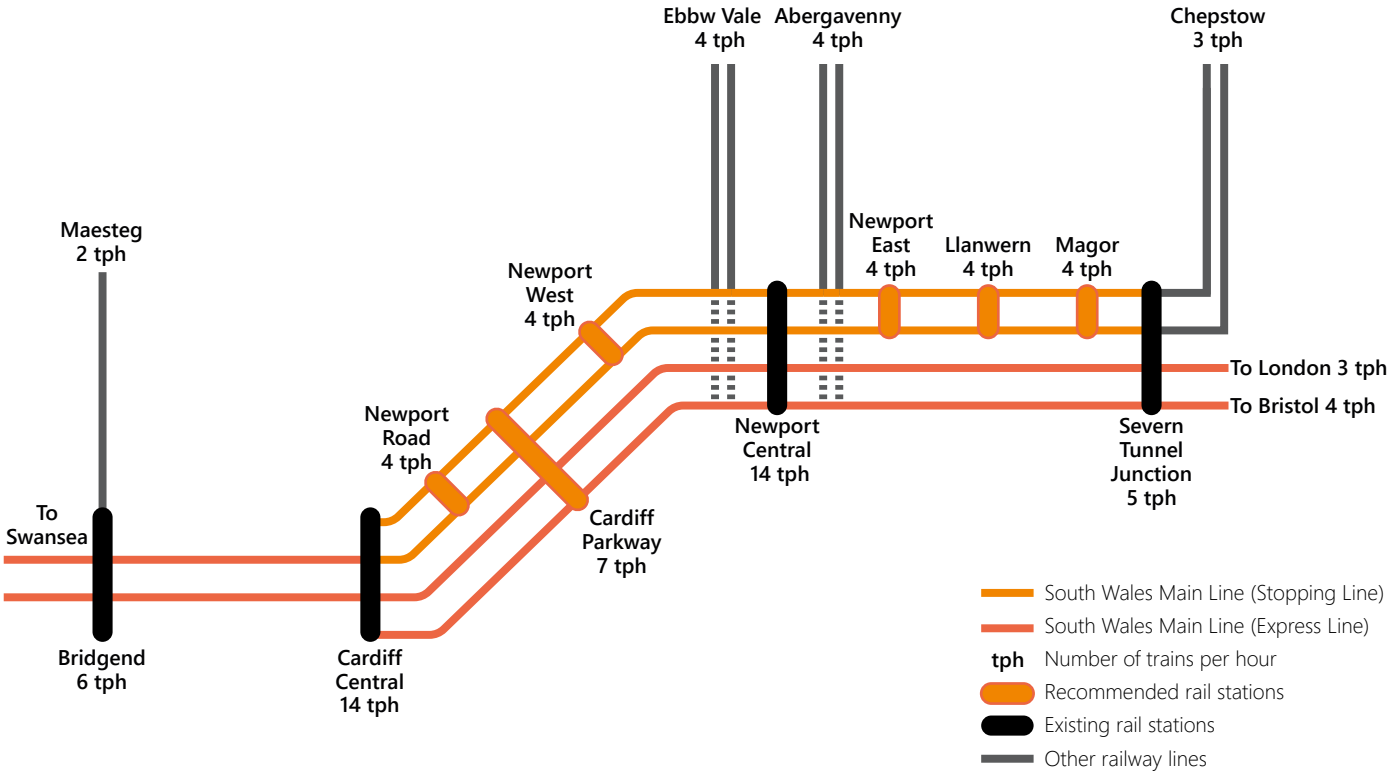


Figure 4.4: Illustrative pattern of rail services

117 Beyond the River Severn, the rail connection to Bristol is very important. While we accept capacity constraints in the Severn tunnels prevent a frequency of four trains per hour to Bristol Temple Meads, **we strongly support Welsh Government's proposals for additional London and Bristol Temple Meads services to Cardiff, Swansea and West Wales**. With additional rolling stock, this could significantly increase the capacity for Cardiff to Bristol and Newport to Bristol journeys.

Consequential upgrades

118 In order to get the most out of the reconfigured main line, further work will need to take place away from the main line. This is because the new, stopping services need somewhere to run, as there is not enough space for trains to terminate at Cardiff Central. For this reason, and for the significant benefit it would bring to the local communities and businesses, **we recommend:**

- **Upgrades to the Maesteg Line**, particularly the reinstatement of the Garw loop, to allow for two trains per hour along the line
- **Completing the upgrade of the Ebbw Vale line** (including the branch to a new station at Abertillery), as already proposed by Welsh Government, to allow for four trains per hour along the line and to provide services directly to Newport
- **Upgrades to Bridgend station**, to allow increased capacity for terminating services from east of Cardiff
- **Changes to Newport station to improve capacity and journey times**. There is a particular opportunity to upgrade platform 1, as this could allow for 'cheek to cheek' interchange with bus services. This is discussed further in *Chapter 5 (Network policies package)*

119 In addition, we note Cardiff Council's Crossrail proposal for a tram-train network across Cardiff. This is a highly complementary scheme which could interlink with the 'Network of Alternatives' at a number of key points, including Newport Road and Cardiff Parkway stations. The combination of our recommendations and Crossrail would ensure that the major residential areas to north, west and south of the city have access to the rail backbone.

Bus infrastructure and services

120 Local bus services account for three out of four journeys made by public transport in South East Wales, with around 30 million bus trips taken every year.[6]

121 Bus and coach services have the ability to reduce congestion on the M4 around Newport and also provide many wider societal benefits. In doing so, they have a key role to play in moving people around towns and cities, connecting people to the rail network and providing a flexible, local service for areas which cannot be supported by rail.

122 New bus infrastructure is also much swifter and more flexible to implement than rail infrastructure, which is important for delivering new transport options in the short and medium term. This is discussed further in *Chapter 10 (Implementation).*

Rapid bus corridors

123 Reflecting the principles of corridors set out in *Chapter 3 (Network of Alternatives)*, the primary role for our bus recommendations is to provide rapid travel along those corridors not served by the rail network. With appropriate bus priority infrastructure, buses could deliver reliable journeys along these corridors at a speed competitive with the car (especially express buses with limited stops).

124 Our analysis of travel patterns and average bus delays demonstrates that the priority is to improve infrastructure in the cities of Cardiff and Newport rather than further afield, as this is where buses generally experience congestion. For this reason, we structure our bus recommendations into three segments: within Cardiff, between Cardiff and Newport, and within Newport.

125 For travel within Cardiff, **we endorse Cardiff Council's ambitions to establish a series of Core Bus Corridors around the city centre and between the centre and the outskirts**. Radial routes to Cardiff Central and a circle line connecting to Newport Road and Cardiff Parkway would facilitate better bus journeys both within and beyond the region. This is especially important for existing and new communities in the north and east of Cardiff, which are currently poorly served by public transport.

126 For travel between Cardiff outskirts (in the north and east) and Newport outskirts (in the west), **we recommend a new rapid bus corridor between the two cities**. Our technical work demonstrates the potential for the existing A48 road to be used in this way, in order to provide segregated bus priority. This inter-city route could connect into rapid bus routes within Cardiff (see above) and Newport (see below). As such, it could serve city-to-city journeys which do not necessarily start or finish in the city centres.

127 For travel between Newport city centre and its outskirts, **we recommend a set of radial bus corridors in Newport, emanating from the city centre**. These would facilitate fast, reliable cross-city journeys within the city and are described further in the Newport section below.

6 Source: Welsh Government, Public Transport (Wales) Bill – Draft Regulatory Impact Assessment (2019) and Bus Services (Wales) Bill Explanatory Memorandum (2020)

128 In combination, these corridors would also expedite any bus and coach trips from further afield. These services, such as to and from Cwmbran, Monmouth and Bristol, generally experience their worst congestion and delay on the approach to the centres of Cardiff and Newport.

129 In all cases, our recommendation is to implement sufficient bus priority infrastructure along these corridors to facilitate reliable bus travel (such as extended and new bus lanes and priority measures at traffic signal junctions). As part of this, Local Authorities require appropriate enforcement powers to ensure bus lane compliance.

Local connecting bus services

130 The rapid bus corridors are not intended to reflect the entirety of the bus networks in Cardiff, Newport and broader region. A large number of other services and routes will need to be retained and improved.

131 We do not make specific recommendations on these other local routes. However, we recommend that the wider bus network is designed to fill the gaps between the rapid bus corridors and offer comprehensive connections from nearby communities and key destinations. This ensures the catchment for the rapid bus corridors is as wide as possible.

132 In some cases, demand responsive transport may be able to augment these services, especially where time of day or low density of population makes regular services unsustainable. Earlier this year, Transport for Wales began 'Fflecsi' trials in Cardiff and Newport, in which users book travel via an app or phone. This is welcome, but it should be treated as a complement rather than a substitute for frequent, timetabled services.

Active travel: walking and cycling

133 While the majority of M4 journeys are over distances not appropriate to be substituted by walking or cycling, these forms of travel have a key role to play in supporting modal shift across South East Wales. We also note the significant health, well-being and societal benefits which can arise from active travel. Our recommendations are focused around:

- Facilitating active travel as the natural choice for the 'first and last mile' of public transport journeys
- Commuter cycle corridors both within and between Cardiff and Newport, providing direct, comfortable and safe cycle routes
- A comprehensive network of cycle hire and cycle parking across the region, to help ensure cycling is a convenient and inclusive option

First and last mile

134 Every public transport journey involves an element of active travel to access transport services or to reach the final destination.

135 In order to improve the pedestrian experience, **we recommend all stations should have direct, high quality pedestrian access with priority over cars**. This also creates opportunities for placemaking around stations. Cycling can also fulfil this role, which is why we make recommendations to improve cycling facilities at stations.

136 In addition, **we recommend dedicated, signed and safe walking and cycling routes where bus and rail stations are close to one another**, such as between Cardiff rail and the new bus station, and Newport bus and rail stations.

Commuter cycle corridors

137 We want as many people as possible to be able to travel to work by bike for some or all of their journey. To make this possible, **we recommend a series of commuter cycle corridors in and around the cities of Cardiff and Newport**.

138 These corridors would of course be used for non-work journeys as well. But we describe them as commuter routes to emphasise the importance of providing direct and swift journeys at times of peak car traffic. The routes should not involve numerous stops or road crossings and will ideally run on fully segregated lanes, although this may not always be possible on some narrow roads, especially when a bus lane is required to facilitate the rapid bus corridors described above.

139 Similar to our recommendations for rapid bus routes, we structure our recommendations into three segments: within Cardiff, between Cardiff and Newport, and within Newport.

140 Within Cardiff, **we strongly endorse Cardiff Council's plans for new segregated cycleways**. The Council's recent work in response to Covid-19 is to be applauded and should be continued at pace. We note the proposed routes have the potential to provide excellent direct cycling access to rail stations at Cardiff Central, Newport Road and Cardiff Parkway. In particular, we encourage the Council to look for further opportunities to better connect north and north–east Cardiff with Cardiff Parkway, to provide residents with additional options for cycling connections to rail. This is very important for connecting Cardiff to the rail backbone.

141 To connect the two cities, **we recommend significant new cycling infrastructure between Cardiff and Newport**. They are already cycling distance apart, especially by the standards of European best practice, as demonstrated in Box 4.A. The propensity for cycling will only increase as the cities grow closer together and the prevalence of electric bikes increases. To maximise the opportunities for cycling, we propose two complementary schemes.

142 First, **we recommend the existing National Cycle Network Route 88 is significantly upgraded**. This currently provides a mainly quiet and off-road route between Cardiff and Newport over almost entirely flat ground. However, it is narrow in many places, often unpaved and generally unlit, so does not serve as a 'four seasons' commuting route.

143 Upgrading and widening the route to a high standard would provide a direct and comfortable way for commuters to cycle between residential areas in east Cardiff and major employment sites in west Newport (and vice versa). While some limited land acquisition would be required to achieve this, the potential benefits appear to justify that action, especially given the potential for the route to connect directly to the proposed Cardiff Parkway station and a new Newport West station.

144 Second, **we recommend a commuter cycle route along the A48**. The road already offers a very direct and relatively flat route between north Cardiff and west Newport, but the fact it is a dual carriageway dedicated to cars makes it an unattractive option. Based on the current road width, it would not be possible to consistently provide dedicated cycle, bus and car lanes in each direction. While our view is that new bus infrastructure is the roadspace priority for this road (to facilitate the rapid bus corridor described above), we believe there are opportunities to separate bikes from non-bus traffic and provide a safer and more pleasant cycling experience.

145 Both these schemes are designed to connect into routes within Cardiff and Newport, providing complete cycling coverage from the very west of Cardiff to the very east of Newport.

146 Within Newport, **we recommend a set of radial cycling corridors, emanating from the city centre**. These are particularly designed to facilitate intra-city journeys and are described further in the Newport section below.

Box 4.A: Best practice cycle superhighways

Cycling is often the quickest way of travelling short distances, particularly during peak periods of traffic congestion. Well-designed cycle 'superhighways' can increase the attraction of cycling over medium distances, as is already the case in other parts of Europe.

In the Copenhagen capital region of Denmark, cycle superhighways provide over 120 miles of safe, comfortable and direct infrastructure. These are not just 'hub and spoke' routes within Copenhagen, but routes that connect the capital to surrounding towns. Over 50% of users are women and 14% previously used a car.[7] A further 300 miles of superhighways are planned to connect the whole of the region to the city.

In the Netherlands, the RijnWaalpad super-highway was built in 2015 to connect two towns around 10 miles apart (broadly comparable to the distance between Cardiff and Newport). It uses a bridge and a tunnel under a motorway to give cyclists a free flow route, only having to give way to motor traffic twice. Cyclists are completely segregated from both pedestrians and traffic.

The increasing availability of electric bikes will make longer distance cycling trips easier and more accessible to a wider range of people. Combined with safe, dedicated infrastructure, ridership levels can start to become highly significant.

A major cycleway between Cardiff and Newport has the potential to offer an attractive, competitive alternative for commuters accessing large employment sites. Direct links to the Cardiff Parkway station in St Mellons and our proposed Newport West station would also support effective multi-modal trips from within and outside the region.

Cycle storage and hire

147 Cycling facilities are needed to maximise the flexible use of the commuter cycling corridors. In particular, well located and plentiful secure storage can also strongly influence peoples' choice of mode.

148 **We recommend an expansion of secure storage facilities for cyclists at stations and other points of transport interchange** (such as popular bus stops). These facilities should be as close to the rail platforms as possible, to make interchange as simple as possible.

149 **We recommend a Newport bike hire scheme**. A large number of UK cities now have bike hire schemes and Cardiff's on-street bike scheme – Nextbike – is the most successful bike-sharing scheme outside London.[8] We consider Newport to have the potential demand and density for a similar service, especially if it is integrated with the Cardiff scheme and bike hire facilities are available at every station. We note Newport's topography would lend itself to an electric bike hire scheme (which is becoming more widely available at competitive costs), but we consider there are a large number of journeys between different parts of the city which could be made with traditional bikes.

7 Source: Office for Cycle Superhighways (City of Copenhagen), Cycle Superhighways Bicycle Account (2019)

8 Source: Cardiff Council, Transport Vision to 2030 – Changing how we move around a growing city (2020)

Bus, cycle and car access to rail stations

150 To gain maximum benefit from the rail backbone, new infrastructure is needed to connect buses, bikes, pedestrians and cars to rail stations.

151 As noted above, our general principle is that active travel access should be prioritised at stations. Buses must also be able to access rail stations in sufficient numbers to allow for efficient interchange. These principles apply to every station and the policies necessary to deliver this are discussed in *Chapter 5 (Network policies)*.

152 Beyond these principles, we make a number of infrastructure recommendations in relation to specific rail stations, which reflect the particular purposes of those stations:

153 **Cardiff Parkway**. As noted above, this station has the potential to act as an interchange hub for the car, rail, bus and cycling. **We recommend Cardiff's rapid bus routes and cycleways connect directly to the station**.

154 **Newport West**. Some potential locations for this station offer excellent opportunities to connect buses to the A48 and provide active travel access to employment sites over the River Ebbw. **We recommend this station be fully connected to the Cardiff to Newport rapid bus and commuter cycle corridors**, and the Newport bus and cycling corridors discussed below.

155 **Newport Central**. There is a particular need for better cycling facilities, and better active travel connections to Old Green Roundabout and the bus stations. To reduce the interchange time between the stations, **we recommend that the large area outside Newport Central is redesigned to provide new bus bay facilities**. This would allow multiple buses to pull in immediately outside the station. As noted above, there is real potential for 'cheek to cheek' interchange if combined with an upgrade to platform 1. It would also reduce the pressure on the existing bus station, reducing the need for a far more costly complete relocation. This work would sit well with Newport Council's plans for a new footbridge over the railway line and could collectively develop into a highly beneficial placemaking project for the area. This is visualised in figure 4.5.

156 **Newport East**. This station would be very close to Chepstow Road, which has potential to be used for the recommended rapid bus and commuter cycling corridor from the centre of Newport to Coldra (M4 junction 24).

157 **Llanwern**. Road access already exists to facilitate this new station acting as a park and ride. For active travel, **we recommend provision is made to connect all local communities with good walking and cycling access to station, especially Llanwern village, Ringland and Lliswerry** (all of which would otherwise be separated from the new station by either the A48 or rail line). We note land is earmarked in the Local Development Plan for active travel access from the north and this should be progressed.

Figure 4.5: Visualisation of bus interchange at Newport Central rail station

158 **Severn Tunnel Junction**. **We recommend road access to the station is upgraded to allow bus access**. This would result in far better accessibility to this strategically significant station. In addition, we believe there is merit in more direct road access for car users from the north, removing the need to join the M4 and then turn back through the village of Magor. **We recommend Welsh Government should support Monmouthshire Council in developing and constructing a new, direct access junction from the M48 to the station**. It should have bus priority and be designed to attract trips to the station rather than new motorway journeys.

Newport

159 While some cross-Newport journeys are made on the M4, the majority of M4 trips do not involve travel from one part of Newport to another. That said, over half of M4 journeys in South East Wales either start or finish in Newport.[9] Indeed, the scale of Newport as an origin and destination is particularly notable given it is around a half the size of Cardiff and a third the size of Bristol.

160 Within Newport, the private car is particularly dominant as a mode, despite the fact that over a quarter of Newport households do not own a car. This is very relevant for our modal share objective, as described in *Chapter 9 (Impacts)*.

161 Based on our analysis of the key challenges within central Newport, we make infrastructure recommendations to:

- Improve interchange within the city centre
- Facilitate effective bus and cycling cross-city movements

162 For the purposes of demonstrating feasibility, we have restricted ourselves to measures that could fit within existing highway boundaries – they are therefore a reallocation of roadspace rather than the construction of new bus or cycle ways. Our analysis indicates that this can be done while still maintaining reasonable flow of general traffic around Newport. Of course, there is also the option to deliver more ambitious measures, such as to provide for greater cycle segregation through either new cycle ways or road reassignment.

Figure 4.6: Current Old Green roundabout in the centre of Newport

9 Source: South East Wales Transport Commission analysis

Figure 4.7: Visualisation of reconfiguration for Old Green roundabout in the centre of Newport

City centre interchange

163 Within central Newport, transport movements tend to converge on a small number of junctions, most notably Old Green Roundabout. Given this, it makes sense to characterise public transport and active travel in Newport in terms of a 'hub and spoke' system.

164 However, the current 'hub' is not well suited for buses, cyclists or walkers. Buses very often have to queue to leave the bus station and there is no bus priority on or around the roundabout. Cyclists and walkers have no opportunity for safe at-grade crossing; instead, they are directed toward a complex set of overbridges and underpasses.

165 **We recommend a fundamental reconfiguration of Old Green Roundabout in the centre of Newport**. Figure 4.7 demonstrates one option offering better bus access and egress to the bus stations, and at-grade crossings for walkers and cyclists.

166 We note this is a project which has been considered on multiple occasions over the last 20 years.[10] Past work and our analysis demonstrates that this can be achieved within the same footprint of the existing infrastructure and without an unacceptable impact on general traffic. The illustrative design presented here is one possible approach and should not be considered the most ambitious option. In particular, it would be possible to go further and undertake a more ambitious placemaking projecting to improve the public realm between the rail station, bus stations, riverside and shops.

167 Improving bus flow at Old Green, and new stops at Newport Central rail station, would also be complementary to Newport Council's consideration of amalgamating the two, slightly separated, existing bus stations.

Rapid bus spokes

168 Building on this new central interchange, **we recommend a series of radial spokes for bus travel across Newport**. These would radiate from the redesigned hub described above. The full potential for a Newport network can be seen in figure 4.8.

169 Our analysis of bus delay times in Newport demonstrates that the majority of delays occur at the very centre of the city (especially around Old Green), with relatively little delay on most other Newport roads. The success of any bus spokes therefore rests on a successful reconfiguration of the hub. Beyond the hub, our analysis has highlighted a number of critical parts of Newport where changes to infrastructure to provide reliable and rapid bus journeys would have a significant impact. These are described briefly below.

170 **We recommend improving bus priority at the Cenotaph Junction and Clarence Place Bridge**. The convergence of several key roads at this location results in regular congestion which affects multiple bus services.

171 **We recommend new bus priority infrastructure along Chepstow Road**. This connects large amounts of east Newport to the city, including Celtic Manor and the new International Convention Centre. This road could also be a viable approach for bus and coach services to Newport from places such as Monmouth, Bristol or further afield.

172 **We recommend new bus priority infrastructure along Malpas Road**. This is particularly relevant for the portion of the road between the city centre and junction 26. It is a key approach to Newport for the communities of Bettws, Malpas and Cwmbran.

10 Source: AECOM, Old Green Interchange Study, WelTAG Planning Stage Report (2017)

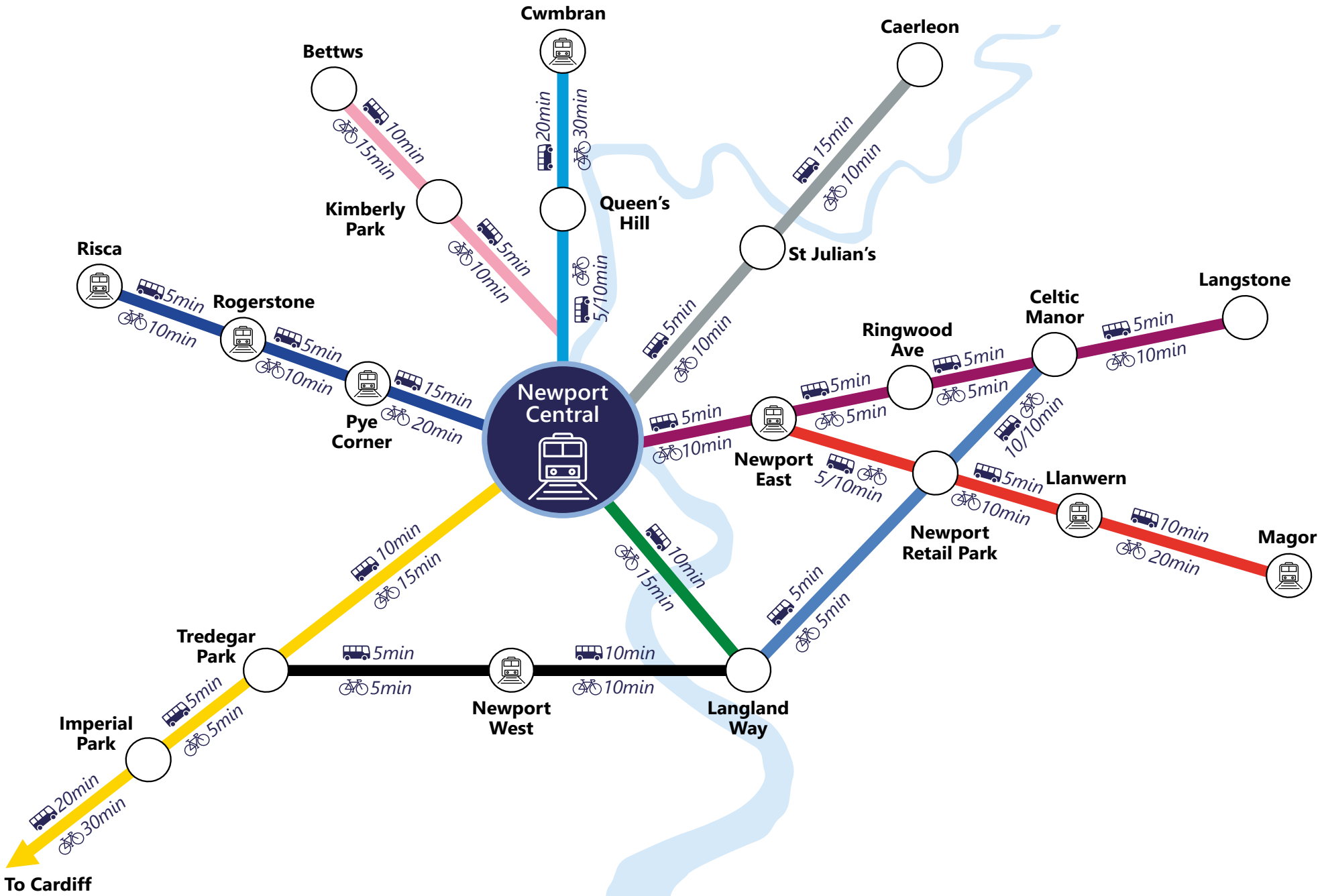


Figure 4.8: Recommended bus and cycle hub and spoke map for Newport

173 **We recommend new bus priority infrastructure along Cardiff Road**. This is a primary connection between the city centre and the employment sites at west Newport. Buses currently suffer significant delays, demonstrating the need for further roadspace reallocation.

174 **We recommend new bus priority infrastructure at the intersection of the A48 and A4810**. This roundabout experiences significant congestion as it is a confluence for traffic avoiding the M4, intra-Newport traffic and traffic to the Spytty Retail Park. While relatively few bus services currently use the roundabout, it is a strategically important intersection which requires new bus priority if bus services are to make use of the A48, for example to connect new housing around Llanwern and Glan Llyn to the city centre.

Commuter cycle spokes

175 Each of these corridors are also relevant for cycling journeys and a well-designed reconfiguration of Old Green has the potential to act as an effective hub for active travel as well as buses. In particular, our analysis indicates that Malpas Road, Cardiff Road and Chepstow Road are key corridors through which better cycling provision would complement a redesigned hub.

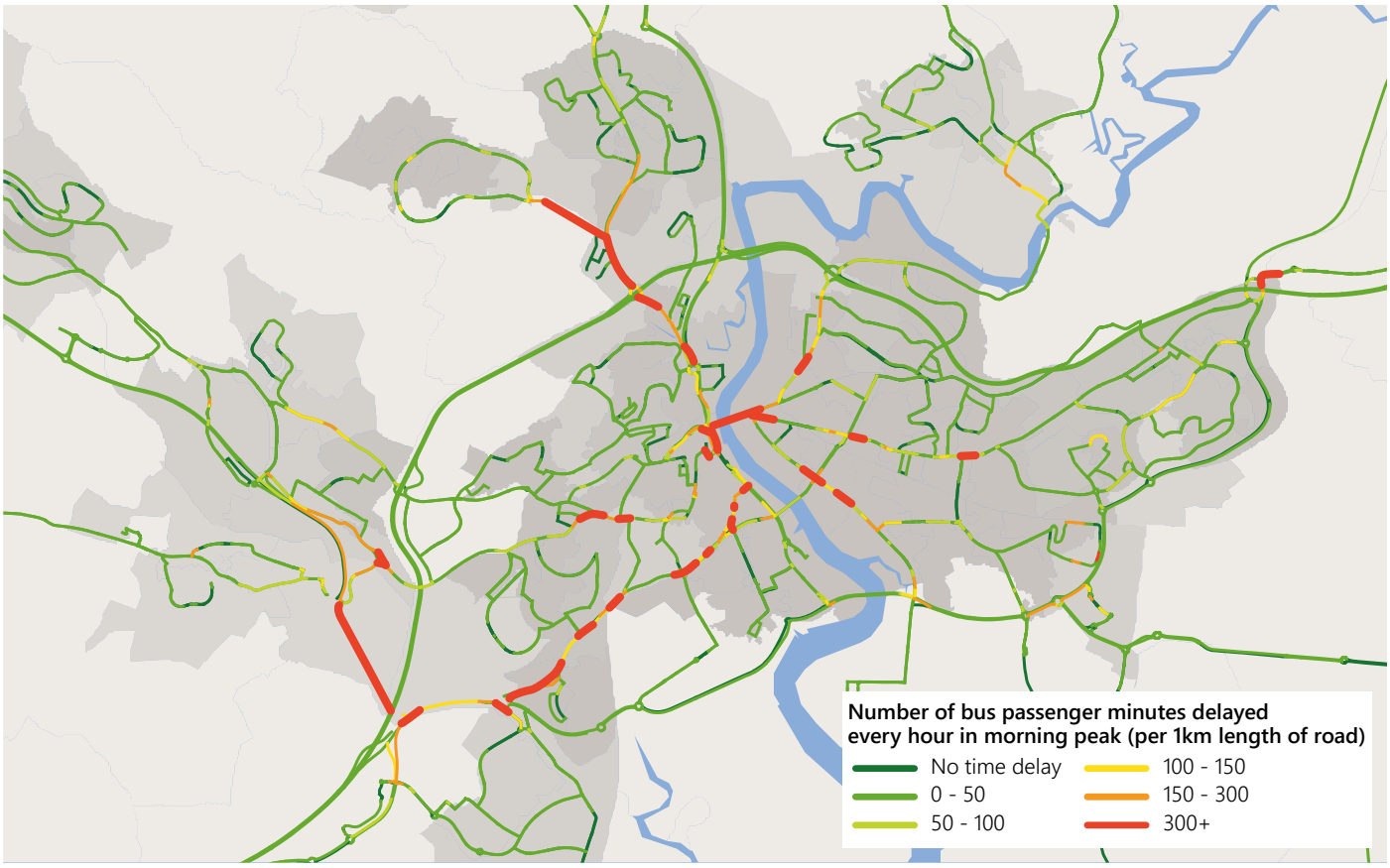


Figure 4.9: Average bus delay in Newport

176 **We recommend infrastructure improvements to facilitate commuter cycling on these spoke corridors**. Reallocation of roadspace between modes within a constrained cross-section is always a difficult challenge. Our work has indicated that even within the existing highway boundary there are opportunities to accommodate more dedicated cycleways alongside the bus priority measures we recommend. However, developments outside the highway boundary should also be considered, as providing fully segregated routes significantly enhances their usage. These detail are best developed and decided by Newport Council, with the support of Transport for Wales and Welsh Government. Cycle routes may of course be on different roads to bus routes through the same general corridor.

Goods and services traffic management

177 *Emerging Conclusions (July 2020)* set out the broad nature of goods and services traffic (also known as freight traffic). Between 15% and 30% of traffic on the M4 in South East Wales comprises light and heavy goods vehicles. The evidence suggests this traffic is largely serving the population and businesses in the region, particularly Cardiff and Newport.

178 Within this, it is important to distinguish between heavy goods vehicles (HGVs) and light goods vehicles (LGVs). The latter, predominantly vans, has seen particular growth in the region and across the whole of the UK in recent years. While LGV growth on the M4 is similar to other parts of the UK motorway network, vans have contributed disproportionately to M4 growth relative to other types of traffic over the last 20 years (although the growth is less concentrated during peak times).

179 Many of the underlying factors have been accelerated by Covid-19, most notably a sharp rise in online shopping and expectations of next-day delivery. Our engagement work has demonstrated a huge growth over past months – one logistics company told us they had experienced three years of growth in just three months.

180 These trends show no sign of reversing. While stakeholders did not often cite the problem of van traffic in our engagement, we believe it is a potential future problem for the region. It merits active management.

181 The response is likely to be different from the measures required to provide alternatives for passengers. Our focus has been on creating alternatives for private car trips on the motorway. A desirable outcome would therefore be to provide more reliable journeys for van and HGV traffic on the motorway, the majority of which is less easily substituted for a different mode. Indeed, there are a number of safety and environmental advantages to goods and services traffic using the motorway instead of local roads. The reconfiguration of the South Wales Main Line described in *Chapter 4 (Infrastructure package)*, also provides new capacity and flexibility for arranging passenger and freight rail services.

182 This does not mean there are not valid interventions to better manage growing road-based goods and services traffic. An important example is the concept of consolidation centres, which are described further in Box 4.B. These centres are most relevant on the outskirts of cities rather than the outskirts of the region, so the impact would be focused on city centres rather than the M4. The intervention is therefore best considered at a city level.

183 For this reason, we do not make specific recommendations in this area. Instead, **we recommend a regional-level freight strategy comes first, focused on the cities on Cardiff and Newport**.

Box 4.B: Goods consolidation centres

Traditional freight consolidation centres aggregate part-loads at a location remote from the final delivery point. The vehicle carrying out the final leg of the journey can be optimally loaded as multiple consignments are grouped together for final delivery. This keeps part-loaded vehicles, often HGVs, away from urban areas.

These centres generally only work successfully when there is a strict requirement to use them and when there are vehicle access restrictions beyond the centre. Voluntary arrangements are far less effective.

Micro-consolidation centres are sited within the cities themselves, providing a 'last mile' solution focused on improving urban freight movement. They are 'close proximity' platforms, close to a dense delivery area, enabling service by e-buggy or e-cargo bike. The benefits lie mostly within the city centre, rather than on the strategic road network (such as the M4).

Growth of LGV traffic and development of cities means there may be a case for micro-consolidation using urban depots. These need to be in close proximity to the delivery point and are therefore mostly economical in the densest of areas where HGV or LGV access restrictions can be justified. It is likely these will become commonplace in larger cities in the future.

184 It is also important for measures of this form to be considered holistically; isolated changes are unlikely to have the desired effect unless implemented as part of a package. For example, micro-consolidation centres would need supporting measures to deliver significant benefits, such as appropriate delivery vehicle access to the centre (perhaps at off-peak times) and use of zero emission delivery methods (such as porterage or e-cargo bikes).

Road infrastructure and M4 traffic management

185 Given the First Minister's decision to not proceed with M4 relief road, we have not considered options for significant expansion of road capacity in the region. Instead, we have focused on how to best allocate limited roadspace between different types of mode and vehicle. This is reflected in our recommendations on bus and cycling corridors.

186 In *Progress Update (December 2019)*, we made three M4 traffic management 'fast track' recommendations, which Welsh Government continues to implement.

187 While the impact of Covid-19 may have temporarily obviated the need for the measures, we believe that in the medium-term there is a still a strong rationale for the recommendations. This particularly concerns our recommendation to improve lane discipline on the motorway, to smooth traffic flow and improve journey time reliability.

Chapter 5
Network policies package

Summary of recommendations

- **Integrated, contactless ticketing on all bus and rail services across the region**
- **A cross-city zonal fare system to ensure clear, simple and fair pricing**
- **Timetable coordination at key points of interchange, such as the new Newport West rail station**
- **Design new rail stations to deliver hassle-free bus interchange, and build new facilities at Newport Central and Severn Tunnel Junction rail stations**
- **A single brand for transport services on the network, with consistent standards for all rail stations and bus interchanges**

188 In *Emerging Conclusions (July 2020)*, we explained that a lack of integration makes multi-modal journeys difficult, time consuming and expensive, especially as part of a daily commute.

189 This chapter makes recommendations for network policies to deliver better integration. These policies dictate how infrastructure should be operated and coordinated. The policies are important for maximising the 'network effect' and making a success of both the network as a whole and the individual transport services of which it is made.

Ticketing and integration

190 The vast majority of rail and bus services in South East Wales require some form of operating subsidy. This is no different from other parts of the UK, including some aspects of London transport. A careful balance needs to be struck between the funding provided by passengers (through tickets) and the government.

191 In our view, ticket prices and ticketing arrangements should be designed to be:

- **Clear and simple to understand**, especially for those people who use public transport infrequently
- **Priced fairly across the network**. In other words, similar journeys should cost similar amounts. For example, on some rail services, we note that similar length journeys cost different amounts depending on the operator
- **Not penalise multi-modal journeys**. Pricing should not penalise those people who are not able to make their journey without switching modes or transport services
- **Encourage modal shift**, where this is value for money. The role of price in attracting people to public transport is discussed in *Chapter 6 (Behaviour change package)*

192 We make three recommendations on the basis of these desired outcomes and our findings.

193 First, **we recommend all transport services on the network should offer contactless smartcard payment**. In many cases, this does away with the need for a physical ticket, which makes journeys swifter and the experience easier to navigate.

194 Second, **we recommend ticketing arrangements for rail and bus companies should be integrated into a single ticketing system**. This will make fares and ticketing more transparent and easier to understand. It will also facilitate a daily cap on the cost of travel, ensuring that passengers who need to change between services are not penalised. It also provides for flexible day journeys, which may start or end in different places or involve breaks in travel. The solution needs to be aligned with national standards to ensure cross border inter-operability. We note that appropriate bus governance arrangements are a key prerequisite for this to happen meaningfully; these are discussed in *Chapter 7 (Transport governance package)*.

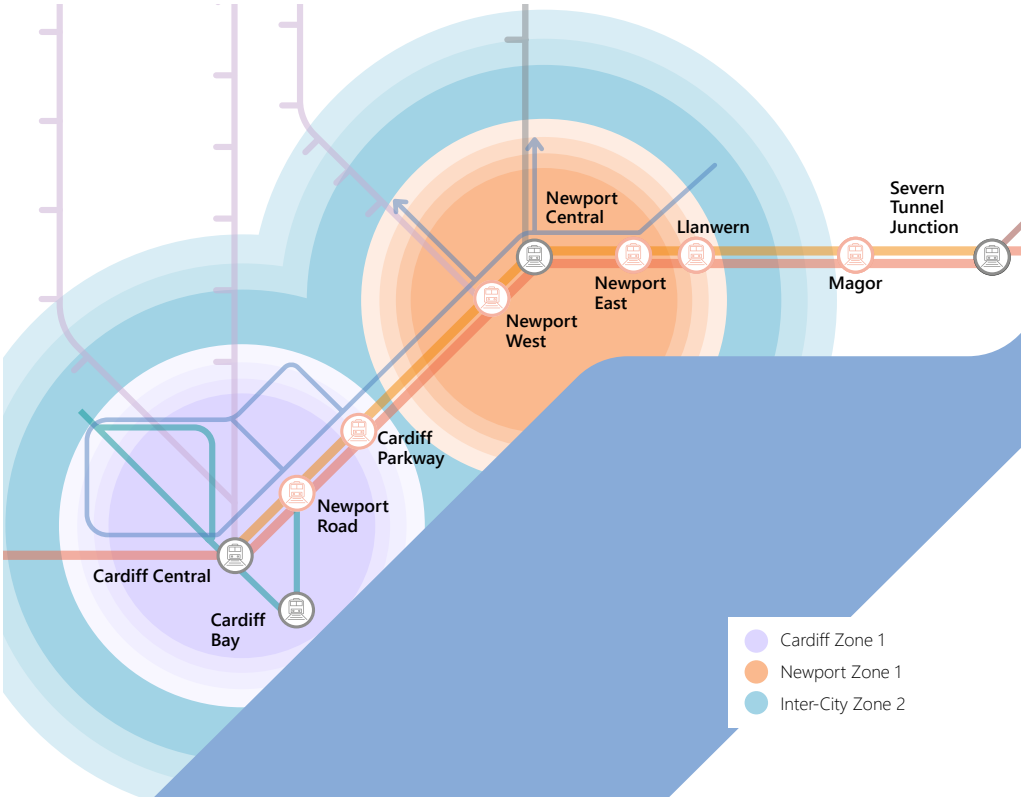


Figure 5.1: Potential for zonal pricing in South East Wales

195 Third, **we recommend steps are taken to align ticket prices for similar length journeys**. This is particularly relevant to the railway, where there are four different lines in South East Wales (the Valleys Lines, Ebbw Vale Line, Marches Line and South Wales Main Line). The most prominent existing disparity is fares from Abergavenny and Cwmbran to Newport, which are significantly more expensive than longer journeys such as Ebbw Vale to Cardiff. When new stopping services are operational, we would expect the fare from Cardiff to Severn Tunnel Junction to be similar given the distances involved.

196 One way of delivering our desired ticketing outcomes is through a zonal fares system. This is very common in other city regions and becomes more important as the range of transport options expands. In South East Wales, each transport operator already operates their own zonal system of some form, although some are less explicit than others. **We recommend a unified zonal system, integrated with the South Wales Metro to cover Cardiff, Newport and the surrounding areas**. Such a system is stylised in figure 5.1. Appropriate governance arrangements are necessary to deliver this, which are discussed in *Chapter 7 (Transport governance package)*. We also note that Transport for Wales is in the process of considering a zonal fares policy.

Coordinated public transport

197 The network has been designed to deliver direct journeys between high density origins and destinations, reflecting the fact that passengers prefer a direct service over an interrupted one.

198 Where a multi-service or multi-modal journey is required, the ideal approach is to run transport services at a sufficient frequency to limit waiting times between modes (as a rule of thumb, the usual network standard should be four services an hour). But it will not always be possible in every case, such as outside the cities where there may not be high demand throughout the day.

199 In these situations, the public transport timetable is an important tool for coordinating the arrival and departure of connecting services. Above all, we need to design networks that cater for passenger needs – connections at rail stations will be important for some, but for other passengers, connections with other bus services will be equally important. For example, a number of local bus services could be timed to arrive at a rail station a few minutes before a regular train is due to depart to a city. In some cases, small adjustments in timing could transform the attractiveness of public transport journey, without requiring any additional infrastructure or services. The difference between a good and bad connection is illustrated in figure 5.2.

200 We note that a number of integrated transport authorities in European city regions operate their entire public transport system around a regular 'pulse' or 'clock face' timetable. This is described further in Box 5.A.

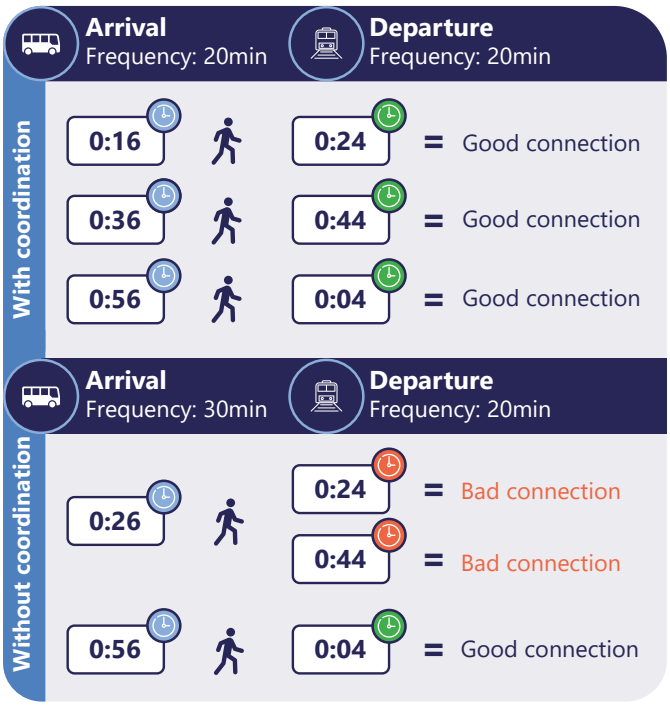


Figure 5.2: Benefits of a coordinated timetable

Box 5.A: The Taktfahrplan in Switzerland

Switzerland's Taktfahrplan is a regular-interval, patterned and symmetrical timetable in which trains connect systematically with one another and with buses. Over 150 public transport operators and 550 small transport companies operate within the system throughout Switzerland.

Literally translating as 'clock-face timetable', the concept is a simple one, centred on an hourly rhythm of services. Connections are given high importance, with buses arriving at stations a few minutes before trains and departing a few minutes after. All services repeat hourly and at regular intervals.

Services are designed to take regular units of time to ensure they conjoin at set parts of the hour. Building on this feature, improvements to infrastructure are determined by what could make a transport service fit better into a unit of time. This is succinctly reflected in the Swiss rail company's slogan: *"Not as fast as possible, but as quick as necessary."*

Regular schedules increase the attractiveness of public transport because they are easier to memorise for passengers, enable journey planning with timetable certainty and provide reassurance that a connecting service will be available. It also supports the planning of resources.

201 This is a highly novel concept for the UK and it is difficult to pursue comprehensively given the nature of the bus and rail markets. It is most relevant as a means to link rural and semi-rural locations, which do not merit a 'turn up and go' frequency of bus services, to the rail network. While this is something to be explored over time (in particular, once new governance arrangements are embedded), we do not recommend the principle is comprehensively implemented across the entire network at this stage.

202 Instead, we recommend timetable coordination is pursued at a small number of sites where interchange is particularly important. We hope the experience gained in operating such arrangements may demonstrate their value in other locations. At this stage, **we recommend transport services are explicitly coordinated at Newport West and Severn Tunnel Junction stations**.

203 For Newport West, buses to the employment sites should be timed to depart shortly after passengers alight from the station (and vice versa). A swift and certain connection will make the train service much more attractive. Severn Tunnel Junction is recommended because few people live or work close to the station and yet a train service from here to Cardiff, Newport and Bristol could serve Chepstow and parts of Monmouthshire if feeder bus services were designed to connect with trains. Connecting buses are therefore important if the station is to serve local communities, facilitated by our recommendation for better bus access, as described in *Chapter 4 (Infrastructure package)*.

Hassle-free interchange

204 As noted above, a key objective is facilitating multi-modal journeys on the network. These are most likely to involve:

- Rail and a local bus service
- Rail and a car, making use of a park and ride station
- Cycling to a rail station or bus stop

205 In each case, we attach a high priority to minimising the hassle of changes during travel. Transport-based social research tells us that people are generally averse to interchange, so we need to do everything possible to make changes swift and straightforward. Integrated ticketing and a coordinated timetable will make a positive difference, but we also need to consider the physical proximity of different modes. This also contributes to the general accessibility of transport to people with limited mobility.

206 Minimising the interchange penalty is particularly relevant for train and bus changes. In these situations, the ideal outcome is for the bus stop and train platform to be on the same level as each other and a very short distance apart, with no barriers in between. There are numerous examples of 'cheek to cheek' train and bus interchange on the continent, as illustrated in figure 5.3.

207 We accept this is difficult to retrofit at some stations. For example, Cardiff bus station is being built 200 metres from Cardiff Central rail platforms and Newport has two bus stations around 500 metres from the rail station. However, some retrofit is possible, in particular **we recommend new bus access arrangements are constructed at Newport Central and Severn Tunnel Junction stations**. These recommendations are described further in *Chapter 4 (Infrastructure package)*.

208 There are fewer challenges with respect to the new station builds we recommend in *Chapter 4 (Infrastructure package)*. For these, we recommend proactive steps are taken to **ensure the principle of hassle-free inter-change is prominent in their design**, notably:

- Buses should be able to drop off and pick up passengers as close as possible to train platforms
- Bike hire and bike storage facilities should be available very close to train platforms or station entrances, without having to navigate car parks
- Pedestrians should be able to access stations from all sides

Consistent user experience

209 A high quality user experience can contribute to the ease of use and perception of integration across the network.

210 People need to know what to expect when they use the network and a single style of branding can aid this association. **We recommend a single, overarching brand be applied to all transport services on the network, regardless of their operator**.

"We need to do everything possible to make transport interchange swift and straightforward"

Figure 5.3: 'Cheek to cheek' train and bus interchange on the continent
Credit: Zürcher Verkehrsverbund ZVV and Stadtwerke Muenster / Peter Lessmann

211 Rail stations, bus stations and bus stops in particular provide a key point of arrival into the network for the travelling public. It is therefore important to create a clear identity for the stations with a consistent level of quality and standards.

212 In terms of station facilities **we endorse Transport for Wales' 'Station Improvement Vision' which sets minimum standards for hub, interchange and crossnetwork stations.**[11] These standards should apply to the new rail stations on the rail backbone. We attach particular value to secure cycle storage,

11 Source: Transport for Wales, Station Improvement Vision (2019)

live service information, digital display screens, ticket facilities and comfortable waiting areas.

213 **We recommend these standards be extended to bus stations and bus stops on the rapid bus corridors**. Consistent with principles for stations described in *Chapter 3 (Network of Alternatives)*, there is no reason why larger bus stations could not offer the same facilities as railway stations.

214 Bus stops also matter and the quality of the waiting experience can make a real difference to whether an individual is prepared to use a bus rather than a car. Bus stops across the network will require improvements to make them more appealing to new passengers. **We recommend major stops should provide clean, sheltered waiting facilities with forward-facing seating, lighting, local area and active travel maps, live bus information, bike racks and CCTV**. Bike hire may also be appropriate at frequently used stops. Figure 5.4 illustrates a best practice example.

215 Finally, information needs to be available to suit both frequent and irregular users. This is primarily a case of good journey planning tools and easily accessible live journey time information. **We recommend live transport information and timetable data are made available to third party services to facilitate integration with existing applications**. We believe this is preferable to creating a new region-specific journey planning tool.

Figure 5.4: High quality bus stop infrastructure

Chapter 6
Behaviour change package

Summary of recommendations

- **Comprehensive Workplace Travel Planning to influence commuting choices**
- **Remote working hubs in towns, cities and suburban centres, located close to public transport and making flexible use of the public estate**
- **Consider a new Workplace Parking Levy, once new transport options exist and an overarching policy framework is in place**
- **Affordable public transport fares, particularly for bus travel within cities**

The role of behaviour change

216 Our approach is to create new, sustainable transport options to give people an alternative to using their car on the motorway. Given the commuting patterns seen on the M4, this is particularly relevant for individuals who regularly drive to work at peak times.

217 However, creating new transport options is not always sufficient to prompt significant usage of them. For this reason, we need ways to prompt and then embed behaviour change. Most structural modal shift occurs when people move home, change job or decide whether to buy a car. The existence of the network is designed to influence these habit-forming events. As noted in *Chapter 2 (A new strategy for South East Wales)*, Covid-19 has in effect been a highly disruptive habit-changing event for transport.

218 To help prompt behaviour change, we can provide people with information on their options and help coordinate potential demand to encourage take-up. In the light of Covid-19, this can include promoting remote and flexible working arrangements.

219 This is likely to achieve some change. But to go further, demand management measures, including changing the relative price of different transport modes, may be an important tool for matching demand to supply.

220 Decisions on transport prices can be driven by a number of different factors, such as raising revenue, changing incentives or internalising externalities. An important caveat is that pricing can only deliver effective behaviour change if alternatives are place.

Influencing commutes

221 Before Covid-19, best practice examples suggested that Workplace Travel Planning (WTP) could reduce car use by between 10% and 20%.[12] If combined with remote working opportunities (see below), it has the potential to be a high value intervention given its relatively low operational cost.

222 To make WTP effective, four main conditions must be satisfied:

- Credible transport alternatives in place (include remote working hubs)
- A support service from travel planners that employees can easily access
- Complementary parking restraint policies at workplaces to encourage workforce engagement
- Willingness to participate from the management of the workplace

223 Providing these conditions can be met, **we recommend a rolling programme of Workplace Travel Planning should be undertaken with key employers along the M4 corridor**. This should include improving awareness of transport alternatives, incentivising employees to try alternative modes (for example, through free trial bus tickets) and highlighting remote working opportunities in locations closer to home. WTP has particular power when undertaken across a whole organisation, or several colocated organisations, where the pool of employees is large enough to enable significant levels of car sharing or introduction of dedicated employee bus services.

224 **One way of delivering travel planning would be to support Local Authorities in this activity or create a new delivery unit within Transport for Wales (TfW)**. TfW's role in operating transport services and providing transport analysis could make it well placed to exploit synergies with workplace engagement. For example, travel plans could indicate potential demand for additional public transport to certain sites.

225 A large number of travel planning tools and expertise already exists. These should be exploited rather than reinvented. Examples include active travel planning, liftsharing coordination services and car-sharing clubs.

Influencing non-work journeys

226 Many of the tools relevant for effective Workplace Travel Planning have the potential to be deployed at other key destinations, including hospitals, schools and retail parks.

227 **We recommend the Welsh Government considers how the Workplace Travel Planning delivery mechanism can be more widely deployed, once established and successful.**

228 In turn, this broader approach may unlock changes in how people travel to work. In particular, our engagement has demonstrated that a person will often drive to work if they must first drive their children to school in a car. Providing an alternative way to make the school run (for example, by means of 'walking buses' and safe offroad cycle paths) may allow for the onward commute to also be made by an alternative mode. Other measures to encourage mode shift for the school run should also be considered, including 'school streets', in which the road outside a school is closed to cars to allow safe access for children at school arrival and departure times.

12 Source: Cairns, Sloman, Newson, Anable, Kirkbride and Goodwin, Smarter Choices – Changing the way we travel (2004)

Remote working opportunities

229 Before Covid-19, around 5% of South East Wales' employees worked at home for the majority of the week.[13] At the peak of lockdown in Easter 2020, around half of employees worked from home. This has now fallen but still remains at around a third of the workforce.[14]

230 Once the need for social distancing has come to an end, we do not expect the long-term proportion of home and remote working to return to its pre-crisis level. We note the Welsh Government has set a target for 30% of the Welsh workforce to be working from home or remotely at any one time.

231 If achieved, this would have a very significant positive impact on demand for travel on the M4. However, it is important to note the traffic impact would be much less than 30% because only around half of M4 trips are commuting trips and we would expect induced demand for motorway travel if there is less congestion. As such, the benefit would at some point be overtaken by the impact of economic and population growth on the demand for transport.

232 Our view is that Covid-19 will demonstrate to employers and employees that they can have a significantly more flexible relationship with the office, even if they continue to use it for some of their working week.

233 It could also change the time of day that people travel; instead of a 'regular' commute in the morning and evening, some people might only travel to work for a specific meeting or engagements. This could suppress and smooth traffic volumes at the height of peak-time travel. This has been the case over the past six months: over the summer, M4 traffic levels were at comparable levels but the peaks were less concentrated, leading to less congestion. Peak spreading could have a particularly significant impact on M4 journey time reliability as this is when we see the highest levels of congestion.

234 Engagement with employers along the M4 corridor confirms that an element of remote working is likely to be a long-term feature of working arrangements at most office-based workplaces, although this varies very widely dependent on sector and industry. Engagement has also demonstrated the importance of distinguishing between home and remote working. For social and practical reasons, a significant number of people prefer to work outside their home, even if that location is not their employer's main office (this may be especially true of young people and those on low incomes). This is particularly relevant to the M4 in South East Wales as over 90% of journeys involve travelling between different Local Authorities, so there is probably a closer town, city or suburban centre for most people (compared to their usual destination).[15]

"Changes in the time when people travel could suppress and smooth M4 peak-time travel"

13 Source: Office of National Statistics

14 Source: Office of National Statistics

15 Source: South East Wales Transport Commission analysis

235 **We endorse Welsh Government's intention to arrange for remote working sites across the main towns, cities and urban centres in South East Wales**. The 'Network of Alternatives' provides an opportunity to locate these hubs close to points of high public transport and active travel connectivity.

236 While this is relevant for all sectors, the public sector accounts for around a third of employment in the region, including some of the largest offices close to the motorway.[16] The Welsh Government is particularly well placed to influence arrangements across these employers. **We recommend that flexible and creative use is made of the full range of the public estate, making a virtue of the property portfolio to provide places to work close to where people live**. Over time, we would hope that the private sector could form location relationships with public sector organisations to create further opportunities.

Road user charging

237 Measures to manage demand for car travel can have a considerable impact on trip and mode choice. We are persuaded that it is difficult to achieve meaningful modal shift without a combination of roadspace reallocation and road user charging (RUC). We also note the car is under-priced relative to its social impact.[17]

238 We believe UK-wide RUC would be a fairer and more efficient way to raise revenue from motorists than the current collection of motoring taxes. Given these are a declining tax base for the UK Treasury (with the phasing out of petrol and diesel vehicles), we believe this is a highly probable long-term reform, most likely in the form of a pay-per-mile system with the ability to alter charges by hour of the day and location.

239 For these reasons, we are in favour of a comprehensive UK-wide, pay-per-mile RUC system. **However, at this stage, we do not recommend comprehensive RUC across the roads of South East Wales in the absence of a UK-wide scheme**.

240 In the long-term, a properly designed UK-wide RUC system would increase the effectiveness of the recommendations in this report. This could be within 10 to 15 years, given the projected trajectory for the decline in traditional motoring tax revenues. This is relevant for allowing the 'Network of Alternatives' to be in place before widespread charging is introduced.

241 In the future, if and when a UK-wide scheme is implemented in South East Wales, it will provide an important mechanism for addressing the congestion on the M4. **We recommend future policy decisions on RUC in South East Wales reflect our findings**, in particular:

- The case for higher charges at peak times and in places with the worst congestion and air quality
- The need to consider impacts on local roads if the motorway were charged in isolation
- The fact there are generally more alternatives for passenger car trips than for goods and services trips
- The case for some or all of the revenues to be put towards public transport improvements in the region.

242 Given the severity of the transport issues in the region, we would support Local Authorities taking earlier steps to implement local charging schemes to address congestion, improve environmental outcomes or raise revenue to invest in public transport schemes. Before these can be considered, two things must be in place: new transport options and an overarching policy framework.

16 Source: Stats Wales

17 Source: Institution of Engineering and Technology, Road User Charging (2010)

243 In terms of transport options, we are clear that alternatives must exist before local charges can be considered. As our analysis has shown, the primary issue in South East Wales is the lack of non-motorway options. Once these are in place, the relevant authorities will be in a better position to judge what demand management measures may be needed to match demand to supply. For ongoing public support, experience from other countries demonstrates the importance of linking any charges to wider transport improvements.

244 In terms of a policy framework, we strongly agree with the conclusion of the Turner report, which states that any local or regional schemes in Wales need to be governed by an overarching set of principles to avoid unintended consequences or unfair outcomes in different parts of the country.[18] This is particularly relevant if different schemes were to exist in Cardiff and Newport.

Workplace Parking Levy

245 **Once new transport options exist and an overarching policy framework is in place, we note there is a good case for Local Authorities to consider introducing a Workplace Parking Levy (WPL)**. In broad terms, this would charge employers for the number of parking spaces they provide to their employees. Box 6.A describes how the charge operates successfully in Nottingham.

246 Within South East Wales, we believe there are particularly strong arguments for a WPL, because:

- It is a targeted measure, focused on commuting, which often takes place at peak times
- It is a destination-based charge, which cannot be avoided by changing route, limiting unintended consequences on the wider road network
- It is charged at the employer level, which prompts businesses to reflect on their parking policies
- It is an effective complement for Workplace Travel Planning (see our recommendation above): WPL provides the financial incentive to engage, with travel planning, which helps identify alternatives to workplace parking
- It can be crafted in different ways, for example with exemptions for small businesses or car-sharing
- It is relatively simple to operate

247 In our view, the primary purpose of a WPL should be to influence behaviour rather than raise revenue. Nevertheless, the revenue raised would not be insignificant and should be ring-fenced for local transport improvements. Transport funding arrangements are discussed further in *Chapter 9 (Impacts)*. Table 6.1 gives a sense of scale to the potential coverage and revenue from the levy.

"Pricing can only deliver effective behaviour change if transport alternatives are place"

18 Source: Derek Turner, Independent Review of Road User Charging in Wales (2020)

City	Number of spaces	Number of spaces liable for the charge	Potential revenue
Cardiff	44,000	17,000	£7.1m
Newport	14,000	6,000	£2.7m
Total	58,000	23,000	£10.0m

Source: South East Wales Transport Commission analysis
Based on estimates of number of parking spaces and 40% of spaces being chargeable

Table 6.1: Illustrative coverage of a Workplace Parking Levy

Box 6.A: Nottingham's Workplace Parking Levy

The Nottingham WPL was launched in 2012. The scheme is the first of its kind in Europe, covering the entire city council administrative area.

The charge covers employers providing more than 10 liable parking places, although there are a number of exemptions. The charge has risen with inflation with each year and is currently £424 per space, per year.

The Nottingham WPL raises approximately £10.6 million in annual revenue and has raised approximately £61 million since its launch. All revenue raised through the WPL is ring-fenced for specific public and sustainable transport improvements.

Presently, around half of employers in Nottingham that pay the charge then pass the costs onto employees. A study by Dale et al (2019) examined the causal relationship between WPL and modal shift.[19] The study found around 9% of commuters on public transport had switched away from the car at least in part because of the WPL and the package of public transport service improvements the scheme revenues have funded.

Earlier studies showed that around 25% of liable parking places were removed when the charge was introduced, indicating proactive parking management measures were undertaken by employers to reduce their WPL liability.[20]

Displaced parking has not been a significant issue and the scheme has maintained a very high level of compliance among employers

19 Source: Dale et al, Impact of the Nottingham Workplace Parking Levy on Travel to Work Mode Share (2019)
20 Ibid

248 We note the risk that a WPL might displace parking to other locations, which would need careful management. We also note that the majority of driving commuters do not have access to an employer-provided car park. This clearly limits the impact of the measure. But we believe it is still a credible intervention, not least as it takes steps to 'level up' parking costs across the cities (as many drivers without access to an employer car park will be paying for on-street, municipal or private parking).

249 We have also considered other types of congestion charge, including city cordon charges. Of most relevance is Cardiff Council's consideration of a city congestion charge. This would reduce congestion and provide valuable funding for public transport improvements. However, we believe its effectiveness would be undermined by the suggestion to exclude residents from the charge.

Affordable public transport

250 Demand for public transport is influenced by a number of factors, including the frequency of the service, journey time, reliability, quality and of course price.

251 While low public transport fares have a role to play in generating demand, they only make sense in the context of a frequent service that is already of good quality. Lower fares for a poorer service are unlikely to be an attractive proposition.

252 Subject to that proviso, we believe the first priority in South East Wales should be to provide clarity and consistency across all transport service pricing. This is why we recommend a cross-city, zonal fares system, as described in *Chapter 5 (Network policies package)*. The zonal system ensures the different prices for different types of trips are fairly set and simple to explain.

253 Beyond this, **we recommend public transport fares are at set at a level which is affordable to all and does not stand in the way of modal shift**. Currently, our analysis suggests that bus and rail fares in the region are no greater than other economically-similar areas. Indeed, some fares are cheaper, particularly for rail travel on the Valleys Lines. Fares should continue to be set at a level commensurate with the level of household incomes in the region.

254 If Welsh Government wishes to pursue fare reductions, we believe there are arguments for prioritising a reduction in bus fares over a reduction in rail fares. This would complement our rapid bus recommendations, to help ensure that bus journeys can be competitive alternatives to the car. It also reflects the fact that the bus network is sometimes more accessible than rail, because not every community is served by a rail station.

255 With this in mind, we have considered a number of options for reducing bus fares. The most significant would be to offer free bus travel on all services within Newport. We note that a number of towns in France and the US are introducing free bus travel, in parallel with service improvements. There is evidence that the introduction of fare-free buses can lead to large increases in patronage, although the impact on mode shift can vary (in some cases, there is a drop in car use; in others, active travel trips shift to bus, although there may still be more active travel overall).

256 Most prominently, we note that free bus services and service enhancements in Dunkirk led to an 85% increase in patronage in a year (half of the new bus users previously drove).[21] The scheme is considered instrumental to reviving the fortunes of a town that was struggling economically and was culturally very attached to the car. Free bus travel in Dunkirk is funded through an employer public transport payroll levy, which is a widely used source of funding for public transport in French cities.

257 Free bus travel in Newport is not a formal recommendation because decisions need to be made by government in the light of other funding priorities. We note that while a Workplace Parking Levy could be used as a source of revenue funding for these reductions, a significant top-up would be necessary.

258 Given these costs, we also note two alternative and much less expensive options, both of which have merits. The first is introductory or time-limited discounts when new services become available, potentially coordinated through Workplace Travel Planning. Such an approach could also be used to stimulate public transport patronage once social distancing is no longer required.

259 The second is free connecting bus travel (or bike hire) for rail passengers. The purpose would be to limit the cost of a multi-modal journey and encourage people to access the rail backbone by using bus (or bike) at either end of their journey. Such a policy could be delivered through the daily ticketing cap described in *Chapter 5 (Network policies package)*.

21 Source: Huré , Javary and Vincent, Le nouveau réseau de transport gratuit à Dunkerque Observatoire des Villes du Transport Gratuit (2019)

Chapter 7
Transport governance package

Summary of recommendations

- **Adopt a single 'guiding mind' approach to transport governance**
- **Formalise a partnership between Welsh Government, Transport for Wales and Local Authorities to govern transport design and operation in South East Wales**
- **Prioritise the investment and delivery of the rail backbone given its keystone role in the effectiveness of the network**
- **Legislate for a broader range of bus regulation powers as soon as possible in the next Senedd term**

Single guiding mind principle

260 Good governance is a means to an end. The end is the integration and network outcomes, including coordinated services, hassle-free interchange, integrated ticketing and a consistent 'look and feel' to transport services. The way that transport is coordinated and governed is just as important as the infrastructure itself.

261 As explained in *Emerging Conclusions (July 2020)*, we have found there is insufficient integration and coordination of transport governance across South East Wales, resulting in transport services which do not operate as a single network from the user's perspective.

262 Our overarching principle is that governance works best when there is a single 'guiding mind', overseeing and coordinating the implementation and operation of the network. Such a body would have charge over each of the five recommendation packages described in this report, reflecting the fact all are important for delivering the full value of the network.

263 Outside of London and Transport for London, it is notable how rarely this is genuinely achieved in the rest of Great Britain. This demonstrates the difficulty. However, it is the norm in many city regions in continental Europe. Box 7.A explains how this currently works and the resultant benefits.

264 While the international best practice is compelling, we acknowledge we are dealing with different structures of government, funding and transport regulation in the UK and South East Wales. In particular, there is currently no regional-level democracy sitting between the numerous Local Authorities and the Welsh Government, and many of the transport services are controlled elsewhere (such as private sector bus operators, train operators and Network Rail).

265 The challenge is therefore how to apply the existing governance architecture to work towards the 'guiding mind' approach necessary for the effective functioning of the network.

Key partners in South East Wales

266 In terms of transport governance, there are three key institutions.

267 The first is **Welsh Government**, which provides the majority of transport funding. Beyond investment, its role is to set overall transport policy rather than operate transport services. However, it often plays a role in nationally important infrastructure projects which involve multiple Local Authorities or the rail network.

Box 7.A: Continental Verkehrsverbünde

Verkehrsverbünde (VV) are regional public transport executive bodies established in Germany, Austria and Switzerland. These coordinate and integrate transport across metropolitan areas and their surrounding regions. They are responsible for services, ticketing, fare structures, marketing and customer information. They are typically governed and funded by regional and local government. Delivery of services is by a mix of municipal public transport companies and commercial operators, acting under contract to the VVs. There is a strong ethos of collaboration and consultation between the VVs and public transport providers.

A notable example is Zürcher Verkehrsverbund (ZVV), the largest public transport executive body in Switzerland, which coordinates all public transport in Zurich canton. The ZVV itself is not operationally active, but it brings together more than 30 transport companies under one roof.

To promote efficient cooperation, the network area is divided into eight market regions with eight transport companies responsible for those markets. The transport companies ensure that regional operations proceed smoothly, timetables are maintained and budget guidelines are observed.

The Zurich Transport Network as a whole commenced activity in 1990. The idea behind the network was to bring together various transport businesses to operate as components of a greater whole rather than individual companies with their own fares and clearly defined areas. The ZVV defines strategic objectives and approaches while taking responsibility for finance and strategic marketing, while the transport companies retain responsibility for rendering the actual transport services.

Around 65% of the ZVV's annual expenditure is covered by ticket revenue and secondary sources of income. Of the remaining costs, half is met by the Canton of Zurich and half by the various municipalities of the Canton.

268 The second is **Transport for Wales (TfW)**, which is fully accountable to Welsh Ministers as a wholly subsidiary company limited by guarantee. TfW was established in 2015 with the original purpose to procure, develop and operate a new Welsh rail franchise. It is responsible for operating the Wales and Borders franchise as well as managing the Core Valleys Lines infrastructure. It is also rapidly building capacity and expertise in other areas, including transport planning, bus services and active travel. We note around 345 people now work in TfW, at a time when local government transport teams have seen a decline in numbers.

269 The third is **Local Authorities (LAs)**. LAs have a well-recognised and critical role to play in planning local services, especially in the area of transport. They currently have responsibility for the local road network, active travel and some aspects of bus services. There is some limited regional transport coordination through the Cardiff City Region Deal (CCRD), primarily relating to the distribution of funding rather than the coordination of transport services.

270 Coordination between Local Authorities is particularly important for transport in South East Wales. It is striking that over 90% of M4 trips in the region involve a journey from one Local Authority to another, rather than within the same Local Authority.[22] If we are designing alternatives to the motorway, the same will be true for many of the trips facilitated by the 'Network of Alternatives'.

271 There has been regional transport coordination among LAs in the past, most pertinently with the South East Wales Transport Alliance (SEWTA). SEWTA was established on a voluntary basis in 2003 between the 10 LAs in the region to produce regional transport plans, seek funding and deliver regional projects. It was disbanded in 2014 due to national changes to funding. While it made some positive steps towards coordination, it did not have the responsibilities or resources to genuinely guide decisions. For these reasons, we consider a similar model would fall significantly short of what is required in South East Wales.

272 We therefore note and welcome Welsh Government plans to strengthen regional partnerships between Local Authorities through the establishment of statutory Corporate Joint Committees (CJCs). These are intended to be bodies corporate with responsibility for strategic coordination of matters such as transport and land use across the region. These have the potential to play an important role in future governance, as discussed below.

A new partnership

273 **We recommend that the long-term aspiration for transport governance in South East Wales should be for a single 'guiding mind'.**

"The way that transport is coordinated and governed is just as important as the infrastructure itself"

22 Source: South East Wales Transport Commission analysis

274 However, as can be seen, there is currently no single body organising the different transport modes and services. Under the current structure, we do not consider it appropriate for any one of the institutions described above to be the sole coordinating body for the network. We also do not consider it appropriate to create a wholly new institution. In the last five years, two new bodies have already been created (TfW and the CCRD); there is little appetite for a new body.

275 **We therefore recommend Welsh Government, Transport for Wales and Local Authorities agree a formalised partnership to govern transport design and operation in South East Wales**. This would be a first and significant step towards the 'guiding mind' aspiration.

276 There is more than one way that the partnership could be structured. One possible approach (analogous to the VVs in Europe) would be to establish a 'partnership board' of Welsh Government and Local Authority (or CJC) representatives who would be responsible for strategic oversight over executive transport functions. Depending on their nature, these functions would be performed by a combination of Transport for Wales, Welsh Government and Local Authorities. Over time, there would be the option to delegate more functions to Transport for Wales to execute. There would also be an opportunity to place the board on more formal footing.

277 In this model, the 'partnership board' would:

- Develop the transport strategy for South East Wales
- Take strategic decisions about public transport enhancements, service levels and fares (in the light of available funding)
- Have an explicit objective to increase public transport patronage and active travel across the network
- Provide democratic accountability

278 Those with executive responsibilities would:

- Orchestrate the phased implementation of the network
- Plan and coordinate the different transport services operating in the region
- Implement integrated ticketing and a zonal fares system
- Let contracts to public transport operators, in particular for bus services
- Market the unified transport network
- Collaborate closely with the CJC on regional land use planning

279 We emphasise that this is just one possible governance model and there may be others that could work just as well. For this reason, we deliberately do not recommend the precise governance form; this should be decided through genuine discussion between all parties. To ensure long-term effectiveness, it is important that each partner is content with the spirit of the arrangement.

280 To guide these discussions, we recommend the partnership arrangement takes account of a number of points relating to each of the three institutions.

281 The **Welsh Government** has a number of important potential roles, including provision of capital and revenue funding, and leading discussions with the UK Government on non-devolved areas such as rail infrastructure. As a national government, it can also hold other parties to account for ensuring the strategic blueprint for the region is not diluted.

282 **Transport for Wales** will be able to contribute significant expertise and resources to the partnership. Given its role in overseeing and operating the rail franchise, it is well placed to contribute to the coordination of rail and other transport services. We note and welcome Welsh Government's plans to extend TfW's role on bus, potentially undertaking executive responsibilities on behalf of Welsh Government and Local Authorities. It will be important for TfW's work in South East Wales to be sufficiently accountable to local government as well as central government.

283 The establishment of a **Corporate Joint Committee** for South East Wales provides a helpful structure for the relevant Local Authorities to contribute to the partnership. This is especially relevant for strategic transport planning across the region. We note that the majority of the 'Network of Alternatives' relates to infrastructure and services involving Newport and Cardiff, so it will be important for these cities to be appropriately represented. There is also a significant opportunity to exploit the fact that the CJC will also have a role in regional land use planning across South East Wales, as discussed in *Chapter 8 (Land use and planning package)*.

Modal governance

284 Within the 'guiding mind' approach and the recommendation for a formalised partnership, each transport mode requires its own specific governance arrangements.

Rail

285 In England and Wales, Network Rail is the asset owner and network operator for rail infrastructure. While Welsh Government can invest in rail infrastructure and passenger services in Wales, and is a formal consultee in the development of Network Rail's Strategic Business Plans, the ultimate responsibility for rail investment in Wales sits with the UK Government. A notable exception is the Core Valleys Lines in South East Wales, which is a railway system largely unconnected with the remainder of the UK network, and now fully owned and controlled by Welsh Government.

286 M4 congestion is a cross-border problem and so requires a cross-border solution. Our infrastructure recommendations include significant rail projects relating to the South Wales Main Line (SWML), with implications for rail services in both Wales and England. **Should our recommendations be accepted, UK Government, Welsh Government and Network Rail should sufficiently prioritise the funding and delivery of the rail backbone given its keystone role in the effectiveness of the network**.

287 As part of this work, we note there is a good case for Transport for Wales (TfW) to undertake scheme design and development for enhancements to the SWML on behalf of Network Rail. In terms of rail operations, we note the opportunity for TfW to operate new, commuting rail services on the SWML. This would give the partnership a stake in the operation of the rail backbone and help exploit the full range of opportunities for other transport services to connect to it.

"M4 congestion is a cross-border problem and so requires a cross-border solution"

Bus regulation

288 Bus services in Wales are provided on a largely commercial basis with some revenue support for loss-making routes.[23] The context is similar to that of England but with some regulatory differences. Deregulation of bus services has resulted in a range of operators providing services, complicating the bus system for potential passengers in terms of timetable, frequency and ticketing options. In the vast majority of cases, bus services are not coordinated with train services, so passengers often face a lengthy or uncertain wait for the next stage of their journey.

289 As explained in *Emerging Conclusions (July 2020)*, our view is that the bus network does not well serve travel patterns and integration is hindered by the regulatory model (for example, the deregulated mode precludes a single, integrated ticketing system). A particular priority for the partnership should be to improve the existing governance model for buses.

290 **We recommend the partnership determines a new way to regulate bus services to deliver on a number of key outcomes**, namely:

- Ability for the partnership to determine key routes, frequency levels and hours of service
- Integrated ticketing, across different bus operators and across bus and rail. This is important to ensure multi-modal or multi-service journeys are not disproportionately costly
- Coordination with train services, for those stations and corridors where it is appropriate

291 We note there are a number of options for achieving this, including different types of franchising, involving private operators, municipal companies or both. Similar to best practice in Europe, the key point is that the guiding mind needs to be able to let contracts for bus services – placing it in control of the services provided. Arrangements would also be needed for operators to receive funding and collect fare revenue.

292 If these new arrangements are to be effective, they will very likely require a change in the law. **To improve the suite of powers, we recommend the Welsh Government reintroduce the Bus Services Bill to the Senedd as soon as possible in the next Senedd Term** (with amendments, as necessary).

293 Of course, changing the regulatory model does not in itself improve bus services or outcomes for passengers. For any model to be effective, buses must be taken out of congestion. The bus recommendations set out in *Chapter 4 (Infrastructure package)*, describe a series of rapid bus corridors for the region. Progress on infrastructure is a vital accompaniment to progress on the regulatory model.

294 Moreover, development of a bus strategy and network for the region (building on our recommendations, if they are accepted) and a commitment for significant investment in rapid bus infrastructure provides a unique opportunity for all stakeholders, including bus operators, to benefit.

Active travel

295 Local Authorities (LAs) are responsible for active travel routes and infrastructure, with major projects often funded by Welsh Government. We welcome the Welsh Government's recent statement that active travel funding will be linked to Integrated Network Maps.

296 We believe LAs are well placed to own these maps. We note TfW is increasing its capabilities in this area, so can offer support. Coordination will be required between LAs; this is particularly relevant for pursuing our recommendation for a segregated and swift commuter cycle corridor between Cardiff and Newport.

"For any regulatory model to be effective, buses must be taken out of congestion"

23 Due to Covid-19, significant additional subsidy is currently required.

Chapter 8

Land use and planning package

Summary of recommendations

- **Plan new developments around the public transport network, not the motorway**
- **Use the new Strategic Development Plan for South East Wales to master plan the region, proactively identifying well-connected sites**
- **Support Corporate Joint Committees to bring Local Authorities together to make land use and transport decisions in the round**
- **Draw on Transport for Wales to provide transport analysis of land use options**
- **Welsh Government to continue to call in individual applications which are inconsistent with sustainable transport policies**

Our findings

297 South East Wales is a growing and changing region, with a unique settlement pattern shaped by geography and history. The development of the M4 since the 1960s has had a major impact on how the region has developed, heavily influencing where people live and work.

298 In *Emerging Conclusions (July 2020)*, we explained our finding that land use and transport decisions are contributing to congestion. In particular, our judgement is that a root cause of M4 congestion is that many important origins and destinations have been located close to the motorway without meaningful transport alternatives.

299 We have found prominent examples in housing estates, employment sites and retail parks. In the absence of more developed transport alternatives, the motorway has been a natural axis around which to plan developments. While it may not always have been a conscious decision, the location of existing settlements and topographical constraints means the available land has generally been close to the M4.

300 Without a change in approach, this looks set to continue. In the future, both Cardiff and Newport are planning for physical and economic growth. The areas for development tend to be located in an arc across the northern and western fringes of Cardiff and in the east of Newport. These sites are relatively close to the M4, on the edges of built-up areas and often poorly served by public transport. Other things being equal, we expect these developments to increase use of the M4 and hence congestion.

301 Without transport alternatives, the design of many of these developments risks reinforcing car dependency rather than encouraging modal shift to public transport or active travel. While some non-car alternatives are in place for some developments, these are often only implemented once people have already moved into their homes and made their transport decisions.

Land use recommendations

302 Land use decisions determine the location of the places that people travel to and from. This has obvious implications for transport. But it is not a one-way relationship: the nature of transport can also influence and facilitate different types of land use. Our recommendations are focused on the land use opportunities which can arise from an effective public transport network in South East Wales.

The relationship between land use and transport

303 Certain patterns of land use can support the effectiveness of the network we are recommending, allowing a positive cycle of development and patronage to develop. For example, increasing public transport services to a station allows a greater number of people to access that area, which may prompt either a rise in population or employment density around the station, creating more demand for public transport and hence building the business case to increase services further.

304 By changing land uses as we develop a new public transport network, we can positively influence these cycles. While they may take a number of years to come to fruition, the risk of not taking action is that alternative cycles persist instead. For example, decreasing public transport services to a station increases car dependence of the people who live and work in that area, increasing demand for car travel, causing congestion, requiring either additional roadspace for cars or prompting relocations to places further afield and hence undermining the economics of existing public transport services.

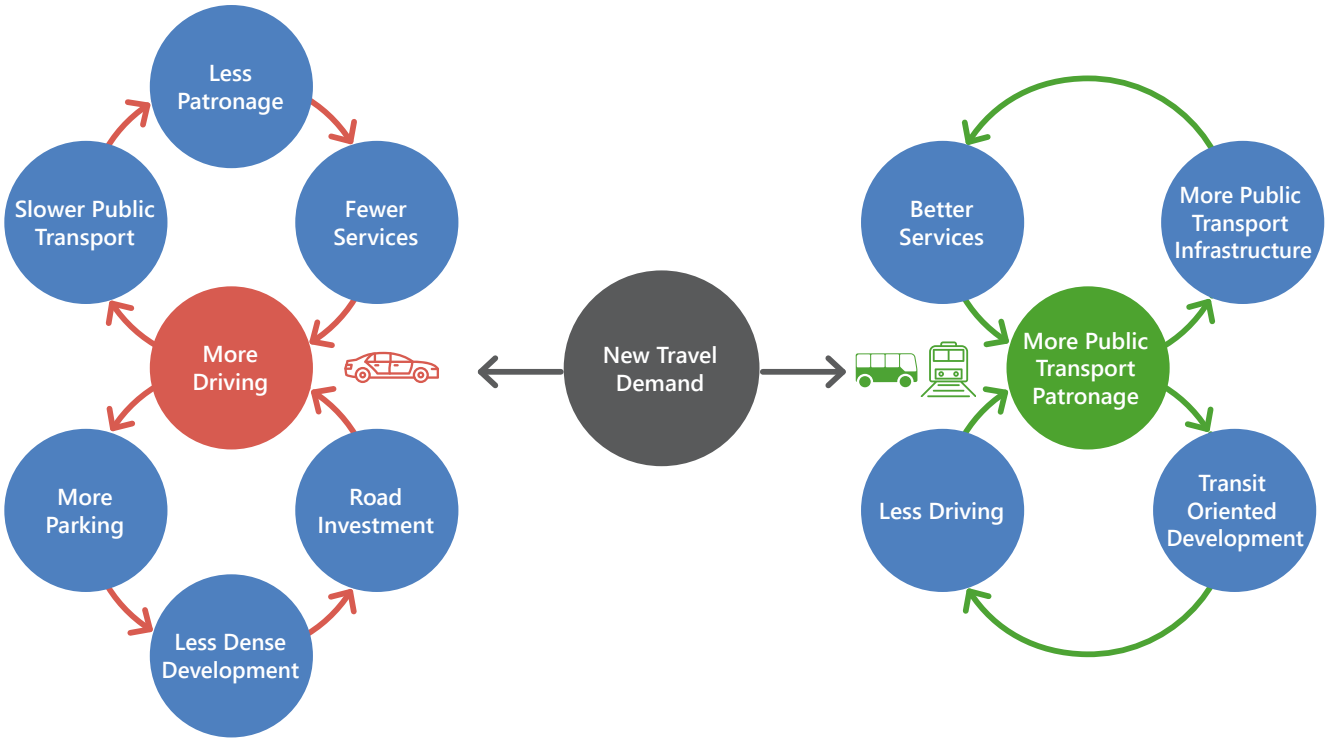


Figure 8.1: Different cycles of transport development

Transit Oriented Development

305 An approach to development that does not depend on cars is possible. Other successful city regions internationally and in the UK have located and designed new developments so that they can be served mainly by public transport and active travel.

306 As cities and towns develop, they have the opportunity to increase the concentration of development. Sustainable transport is most prominent in those places which are compact, dense and promote a variety of land uses. These features can be characterised as 'Transit Oriented Development' (TOD), described further in Box 8.A.

307 TOD is particularly relevant to the cities of Cardiff, Newport and Bristol because of their planned and projected growth. We understand this necessarily involves more housing. However, we believe it is possible to provide medium-density developments while promoting high quality public realm and green spaces. Indeed, we strongly believe the nature of a place is enhanced if it allows for a greater provision of walking, cycling and public transport.

308 We appreciate the Covid-19 experience is prompting reflections on the future of city centres. However, given the geographical constraints on growth and population projections for the region, we expect cities to continue to play a key role in the future development of the region, even if some peoples' relationships with them changes.

Box 8.A: What is Transit Oriented Development?

Transit Oriented Development is the deliberate development of residential, business and leisure spaces within walking distance of public transport. TOD can help meet housing targets, create high-quality walkable environments and promote sustainable transport which reduces the need to travel by car. In doing so, it is a means to meet development demand without unduly contributing to congestion and urban sprawl.

There are several requirements which must be in place in order for it to be a success, including:

- **Density.** This maximises the number of people who benefit from proximity to public transport without being limited by the requirement to supply parking. It also creates the critical mass to support viability of public transport and encourage the creation of walkable spaces characterised by proximity of amenities
- **Quality and frequency of public transport.** Reliable, fast, safe (especially in the minds of vulnerable users) high-quality and high-frequency (especially at the beginning and end of the day) public transport services are a prerequisite to successful schemes by reducing or eliminating the need to own a car
- **Walkability.** The development must provide accessible and high-quality public realm which encourages walking to access public transport and removes the necessity of car ownership. Dense development patterns help reduce distances, while smaller block sizes are facilitated through the reduction of car parking

Land use opportunities from the 'Network of Alternatives'

309 We make three land use recommendations which reflect the development opportunities which arise from the network approach. The pursuit of these developments and the effectiveness of the network are mutually-reinforcing – achieving one cannot help but embed the other.

310 First, **we recommend an increase in mixed use developments**. Solely residential developments are very likely to be significant car trip generators because all types of journey may require a car, such as going to the shops, taking children to school or attending a medical appointment. Instead, we believe that developments should be mixed use, with key services provided alongside housing. For example, every development should be designed so that peoples' homes are within walking or cycling access of a range of small shops, cafes, green space, services and – now especially relevant – a remote working hub. This is sometimes known as the '20 minute neighbourhood' and is reflected in Wales' Placemaking Charter.[24]

311 Second, **we recommend employment be located within towns and city centres and not on the outskirts close to the motorway**. We understand it is not always efficient or desirable for people to work close to their home; indeed a key role of the transport system is to allow people to have wide job catchments and employers to have wide labour market catchments. However, a public transport network is best able to efficiently serve commuting patterns if employment sites are located in the centre of towns and cities.

312 This is in contrast with many of the development patterns we have observed in South East Wales, where key employment sites are often located on the outskirts of cities (close to the motorway). There may be potential for these sites to be repurposed for residential or mixed use development. It is difficult for the existing public transport infrastructure to efficiently accommodate commutes because it was largely designed to suit radial suburban journeys to city centres, rather than lateral journeys between two suburban city fringe areas (as we see in Cardiff and Newport).

"Our vision is for a comprehensive public transport and active travel network to provide government and developers with an alternative framework to plan around"

24 Source: Placemaking Wales Charter (2020)

313 Third, **we recommend densification around the stations and corridors of the network**. Our vision is for a comprehensive public transport and active travel network to provide government and developers with an alternative framework to plan around. If properly developed and operated, the network should be able to provide accessibility to places without use of a car. This supports developments in close proximity to stations and transport corridors. The people who live and work in these places will be less likely to use a car if the network can support the journeys they need to make regularly.

Implications for the planning hierarchy

314 Wales has an emerging hierarchy of national, regional and local plans, which set out the spatial strategy and allocation of sites for developments at a local level. This section describes what the land use opportunities arising from the 'Network of Alternatives' mean for each level.

National level policy

315 **We endorse the high-level policy statements within Planning Policy Wales 10** and the National Development Framework.[25] These include policies on sustainable transport, the role of town centres and mixed use development to reduce the need to travel by car for essential services. This is consistent with our view on how land use policies can support public transport networks, as discussed above.

316 We particularly endorse the 'Town Centre First' policy for employment sites. This is also relevant for our recommendation to establish a network of remote working hub sites, as described in *Chapter 6 (Behaviour change package)*.

Regional level planning

317 Strategic Development Plans will be regional-level development plans which translate national level policy into a strategic framework to be applied at a more local level. These are currently the 'missing layer' in Welsh planning and Welsh Government is taking steps to ensure they are produced by Local Authorities in the coming years.

318 We believe regional planning is vital given the travel patterns that we have observed in the region. The vast majority of M4 trips in South East Wales involve travel between different Local Authorities, and the cities of Cardiff, Newport and Bristol are increasingly becoming one 'Travel to Work' area. We note that the National Development Framework describes Cardiff, Newport and the Valleys as a "main focus for growth". Regional-level planning therefore has a key role to play into translating this into sustainable outcomes.

319 **We recommend the Strategic Development Plan should deliver the function of master planning the region**, which cannot be done on an individual Local Authority basis. This master planning should identify the strategic locations most suitable for development in South East Wales. A proactive approach is necessary given the difficulty of retrofitting existing developments with transport infrastructure. A case in point is our recommendation for a new rail station at Newport West to provide access to the large employment sites; the options for the station and bus access is constrained by past decisions.

320 Our view is that regional planning is most effective when there is regional governance in place. This is only partially the case in Wales. We therefore welcome the establishment of statutory Corporate Joint Committees (CJCs) to provide for coordination across Local Authorities.

25 Source: Welsh Government, 'Future Wales – The National Plan 2040', (2020)

321 There is a significant opportunity in the fact that CJCs will have a role in both strategic transport and land use issues across the region. This gives the CJC a stake in where people live, where they work and how they travel between the two. Indeed, one possibility would be for Regional Transport Plans and Strategic Development Plans to be same the document.

322 To be effective in this role, CJCs will need to have sufficient resources, expertise and leadership. We believe there is particular value in a single executive supporting both the land use and transport functions. Properly resourced, the South East Wales CJC could be a powerful new force in joining up transport and land use decisions. However, this will not be the case if the SDP is simply the aggregation of Local Authorities' existing Local Development Plans. The CJC therefore requires robust governance to ensure that trade-offs can be made. This governance also needs to ensure sufficient interaction between transport and planning decisions.

323 To support the work of the CJC, **we recommend Transport for Wales provides advice on the sustainable transport implications of the strategic locations identified for development**. This should be informed by analysis similar to the PTAL (public transport accessibility levels) tool used by Transport for London to assess transport connectivity. PTAL analysis is used to determine whether new developments are sufficiently connected to the public transport network.

324 Transport for Wales and the CJC should also work together to understand the interactions between regional land use decisions and the provision of transport services. Land use decisions will influence the appropriate frequency, capacity and hours of operation for transport services along each corridor, as described in *Chapter 3 (Network of Alternatives)*. Similarly, the technical feasibility of reaching different service levels along a corridor may determine what type of development is appropriate for that corridor.

Local level decisions

325 Local Development Plans (LDPs) are currently the most important layer of planning in determining what happens on the ground. These plans are where sites are identified and allocated to different land uses.

326 Due to the long timescales required for plan production and renewal, it can take many years for changes to national policy to percolate to local development plans and change outcomes on the ground.

327 Until recent changes to national policy and future SDPs can meaningfully influence LDPs, we believe the Welsh Government has a key role in 'regulating' whether decisions made through the LDPs are consistent with the national level guidance. This is particularly important for embedding a culture of transit oriented Development, as we have seen the system-wide problems caused by a large number of individual decisions. As LDPs are reviewed and updated, there will be an opportunity to update plans in line with our recommendations.

328 It would be disproportionately disruptive to recall and refresh each relevant LDP. However, **we recommend Welsh Government continues to act proactively to scrutinise LDPs and call in individual applications which are at risk of being inconsistent with the land uses described above**, especially in relation to housing and employment sites.

Chapter 9
Impacts

Summary

- **Our recommendations generate significant additional capacity in the transport system**
- **Reducing flow on the M4 by around 20% would significantly improve jour-ney time reliability and facilitate speeds consistent with the 50mph average speed control we recommended in De-cember**
- **For the first time, over 90% of people in Cardiff and Newport would live within one mile of a rail station or rapid bus corridor. Within this, the number of people in Newport within one mile of a rail station would double**
- **This shift brings many wider benefits beyond congestion alleviation, for the environment, communities, public health and fair access to transport**
- **The capital cost of the recommendations is between £600m and £800m over 10 years**

Assessment framework

329 This chapter explains the potential impact of our recommendations. Our assessment framework comprises four components, which flow from our Terms of Reference:

- Transport objectives
- The seven goals of the Well-being of Future Generations Act 2015
- Wider assessment criteria, drawing from transport appraisal guidance
- Robustness to future uncertainty, particularly in relation to Covid-19

330 The assessment also draws from our engagement work and discussions with Welsh Government, Transport for Wales, Local Authorities and other stakeholder bodies who plan, operate and use the transport network. We expect the assessment to be refined over time as more detailed design work takes place on specific measures.

Transport objectives

331 In *Emerging Conclusions (July 2020)*, we set two objectives against which to assess potential recommendations:

- **Objective one** – to improve journeys on the M4 in South East Wales
- **Objective two** – to increase the modal share of public transport and active travel in the region

332 The purpose of objective one is to measure congestion alleviation. Our preferred measure of the easing of congestion is the proportion of vehicle trips which are made at an average speed greater than 40mph at peak times. This metric reflects that journey time reliability can often be more important than sheer speed. In approximate terms, 40mph is the speed which maximises the traffic flow on the most congested parts of the motorway.

Transport objectives impact	• Reducing flow on the M4 by around 20% would significantly improve journey time reliability and facilitate speeds consistent with the 50mph average speed control we recommended in December • Significant new transport capacity created in the rail, bus and cycling networks to serve as competitive alternatives to the most frequent M4 journeys, providing greater levels of access and choice
Financial impact	• Capital cost of between £600m and £800m • Average annual revenue cost of between £15m and £35m per year
Economic impact	• Journey time and reliability benefits for commuters, and goods and services traffic, increasing economic activity • Wider labour market catchments, especially for those people without access to a car, providing people with better access to employment
Social impact	• Improves access to public transport and active travel, particularly for those without access to a car • Over 90% of people in Cardiff and Newport would live within a mile of a rapid part of the public transport network
Environmental impact	• Reduced transport carbon emissions by transitioning away from low occupancy cars to public transport and active travel • Less congestion and fewer car trips would improve air and noise quality, particularly in Newport

Table 9.1: Summary of impacts

333 Objective one is deliberately focused on the M4 in South East Wales, reflecting the specific nature of our Terms of Reference. However, the transport network and movements within the region are a highly interconnected system. We are also mindful of the wider policy imperative to decarbonise the transport system, improve air quality and help ensure sustainable forms of development.

334 The purpose of objective two is to take account of these broader factors. We define this objective as increasing the proportion of trips within South East Wales which include an element of public transport or active travel.

Performance against objectives

335 Congestion on the M4 is largely a peak hours problem, predominantly associated with commuting. At its worst, drivers face median speeds of between 20mph and 30mph when travelling westbound towards the Brynglas tunnels in the early evening. There are two broad ways to help alleviate congestion.

336 The first is to take steps to regularise traffic flows on the motorway. This was the purpose of the fast-track measures we recommended in *Progress Update (December 2019)*. The recommendations for a 50mph average speed control and lane discipline are particularly relevant for helping traffic to flow without disruption at the speed which maximises flow.

337 The second is to reduce the number of vehicles using the road at any given time. During the morning and afternoon peak periods, between 3,000 and 5,000 vehicle trips per hour flow across each junction in either direction (roughly equivalent to around 4,500 and 7,000 passengers). By analysing M4 congestion patterns we know that to provide reliable journeys on the approaches to the Brynglas tunnels, around 20% of those trips would need to be avoided or catered for by other modes (for example, via remote working or public transport). Reducing traffic by this degree would significantly improve journey time reliability and facilitate speeds consistent with the 50mph average speed control we recommended in December. A smaller reduction in traffic would also bring benefits, indeed any reduction in traffic levels would disproportionately reduce congestion (because of the non-linear relationship between traffic and congestion).

"Reducing traffic by 20% would significantly improve journey time reliability and average speeds"

338 This reduction in traffic volume could be more than met by the scale of new transport capacity in our recommendations. In particular, table 9.2 shows how the rail backbone could provide for up to 4,600 additional passenger trips in a peak hour (which could be delivered incrementally over time as demand rises). The rapid bus and commuter cycling corridors would also generate additional capacity. This demonstrates that affordable public transport can have the capacity to help alleviate motorway congestion and provide for future population growth.

339 In terms of modal share, the current share of public transport and active travel in South East Wales is broadly comparable with other non-London regions in the UK. However, at a city level, Newport is particularly car focused compared to its counterparts, with around three quarters of trips to or for work made this way.[26] It is clearly possible to improve the proportion of sustainable transport trips, as evidenced by a number of cities in the UK in recent years (such as Brighton, Oxford, Exeter, Edinburgh and Nottingham, which have all reduced their car mode share over the last 20 years).

Rail line	Current passenger capacity	Future passenger capacity with SEWTC recommendations	Additional rail capacity created
Ebbw Vale Line	400	1,800	1,400
Marches Line	600	800	200
Cheltenham Line	500	1,000	500
South Wales Main Line	2,000	4,500	2,500
Peak total	3,500	8,100	4,600

Source: South East Wales Transport Commission analysis
Services have been grouped by the primary rail lines upon which they operate.

Table 9.2: Additional transport capacity created

26 Source: Census 2011

Rank	From	To	Potential impact
1 & 2	Cardiff	West Newport	Significant improvement by rail, bus and cycling. In particular, Newport Road, Cardiff Parkway and Newport West stations transform the rail connection
	West Newport	Cardiff	
3 & 4	Greater Bristol	East Newport	New stations at Newport East and Llanwern allow for good rail connections to Bristol. For journeys originating in Newport, bus and cycling connections to these stations is key
	East Newport	Greater Bristol	
5	West Newport	West Newport	Rapid bus and cycling corridors are well placed to facilitiate these journeys. Higher frequency services on the Ebbw Vale rail line would also serve Newport West station
6 & 7	West Newport	Greater Bristol	While Newport West offers a new rail connection, a change of service at Newport station may be required
	Greater Bristol	West Newport	
8 & 10	Cardiff	East Newport	New stations in Cardiff and Newport improve the rail connection. Rapid bus corridors will also connect, although a Newport city centre change may be required
	East Newport	Cardiff	
9 & 11	Monmouthshire	Cardiff	For south Monmouthshire, there will be better access to Severn Tunnel Junction and a new station at Magor
	Cardiff	Monmouthshire	
12 & 18	East Newport	West Newport	Cross-Newport journeys would be served by rail, rapid bus and cycling
	West Newport	East Newport	

Source: South East Wales Transport Commission analysis

Table 9.3: Impact of recommendations on common M4 journeys

Catchment	Newport	Cardiff
Population currently within 1 mile of a station	33%	67%
Population within 1 mile of a recommended station by 2030	62%	74%
Population within 1 mile of a recommended station or rapid bus corridor by 2030	82%	99%

Source: South East Wales Transport Commission analysis

Current provision based on 2018 population; projected provision based on 2030 population. Rail and rapid bus projection incorporates proposed Cardiff Core Bus Corridors

Table 9.4: Improving access to public transport

340 To address modal shift, the network is targeted at the most frequent M4 journeys in South East Wales and table 9.3 illustrates the potential impact on those trips. Moreover, our proposals would also transform peoples' access to the public transport network. Tables 9.2 and 9.4 show how the rail station catchments provide significant coverage for the communities between Cardiff and the River Severn. In particular, the number of people in Newport within one mile of a station would double. When considered alongside our recommendations for rapid bus corridors and Cardiff Council's proposals for Core Bus Corridors, over 90% of people in Cardiff and Newport would live within a mile of a rapid part of the public transport network.

341 Overall, we expect our recommendations would switch some journeys from car to public transport and active travel. In addition, they would be likely to attract new trips on the public transport network. If we are successful, we would also expect to see some new journeys on the M4 as a result of induced demand if there is less congestion. The balance between these effects is difficult to estimate and further complicated by how Covid-19 may change travel patterns in the long term, especially for regular, peak-time commuting. In addition, population increases will compound demand for travel both within and beyond the region.

342 While creating supply is a necessary first step, we acknowledge it does not necessarily lead to sufficient demand without other interventions. This is why we are making recommendations in areas beyond just infrastructure, in particular to stimulate behaviour change. We also acknowledge that the recommendations would likely not eliminate congestion entirely. No amount of infrastructure could guarantee this while the motorway remains free at the point of use – all UK urban motorways are prone to congestion at peak times. Instead, our focus is on giving people credible and attractive alternatives so they can choose to avoid congestion.

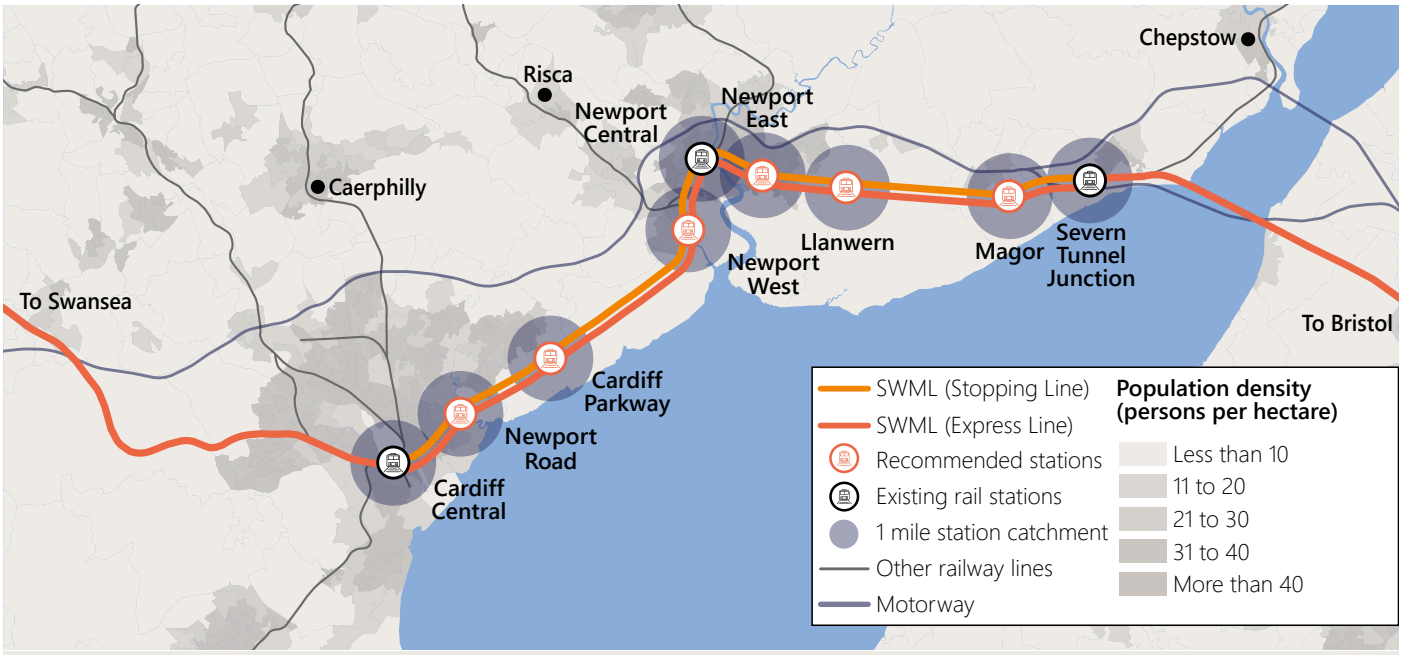
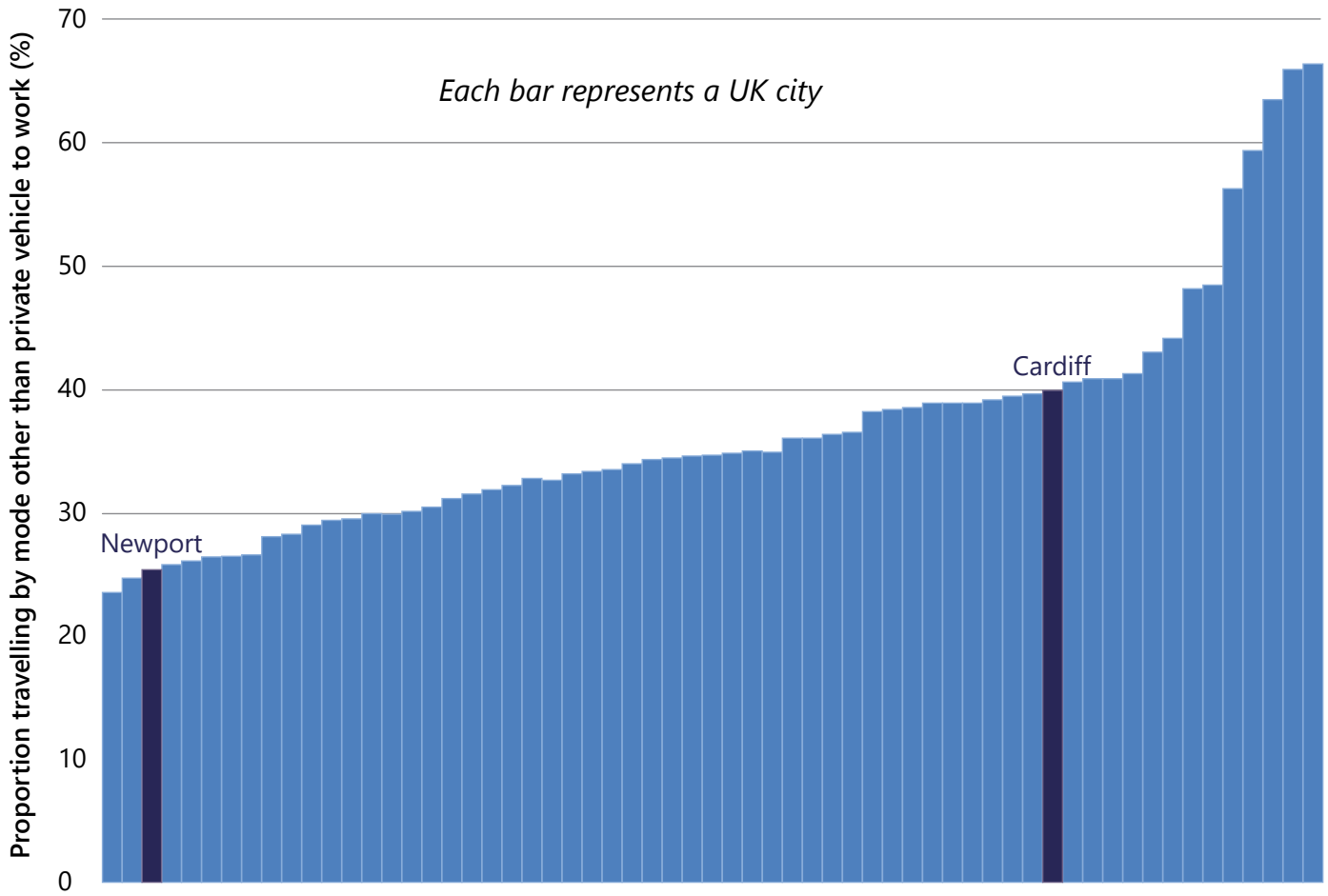


Figure 9.1: Rail station catchments



Source: Centre for Cities, Primary Urban Areas based on Census 2011.
Chart shows those commuting by means other than car/van.

Figure 9.2: Modal split across the UK.

343 If motorway congestion continues despite increased capacity and convenience of alternative modes, Welsh Government and Local Authorities may understandably choose to review car demand management measures to drive behaviour change, including road user charging. This is discussed further in *Chapter 6 (Behaviour change package)*.

Well-being goals

344 The Well-being of Future Generations (Wales) Act 2015 requires Welsh public bodies to pursue sustainable development and consider the long-term impacts of their decisions. Figure 9.3 summarises the likely impacts of our recommendations on the Act's seven goals.

Wider assessment criteria

345 We have also considered the impact of the recommendations on a set of wider criteria. The most relevant impacts are summarised here.

Financial impact

346 While the Commission has not been set a formal budget, we have considered whether the capital and revenue costs of our proposals are proportionate and value for money. This is distinct from affordability, which is a broader matter for Welsh Government.

347 We estimate the core capital cost of our recommendations could be between £600m and £800m, spread over around 10 years. This cost estimate has been produced using the outline design information the Commission has developed to inform its recommendations, benchmarked against comparative projects from the UK and Europe. We consider the investment would represent sound value for money.

348 The most significant cost is the upgrade of the South Wales Main Line and new stations, estimated at between £390m and £540m. Investment in the rail network is the responsibility for UK Government, who through the Department for Transport and Network Rail are already considering enhancements of this cross-border route. We note the Welsh Government has previously part-funded rail infrastructure in Wales, which it may choose to do here. Alternatively, Welsh Government could commit to funding other aspects of the network to generate the scale of patronage that would justify these significant works to the main line.

349 For bus and active travel measures in and around Newport, the capital cost of recommendations could be between £140m and £220m. We note there could be a good case for additional expenditure if more ambitious route options outside of the existing highway boundary are developed. There is also a good case for Welsh Government financial support because of the strategic importance of providing alternatives to the car in the Newport area (especially when considered against our objectives, given the high number of M4 trips which involve Newport and its very high car mode share). It is also a proportionate investment given the impact of congestion on the city and the limited travel choices currently available, especially in the context on air quality challenges.

350 Cardiff Council's bus and active travel proposals (as set out in their Transport White Paper) are treated separately but are highly relevant.[27] While we expect the proposals to have less of a direct impact on the M4 than measures in Newport, they all contribute to greater take-up of public transport and active travel in the region. We strongly endorse those plans and they would have a considerable value to the network.

27 Source: Cardiff Council, Transport vision to 2030 – Changing how we move around a growing city (2020)

Goals of the Well-being of Future Generations Act

A More Equal Wales
An improved public transport network would increase employment opportunities and provide better access to leisure and shopping areas, particularly for those currently disadvantaged due to poor transport connectivity or without access to a car.

A Healthier Wales
New and improved active travel routes would encourage physical activity; an attractive public transport network would incentivise people to change modes reducing the levels of traffic pollution.

A Resilient Wales
A new transport network and improved active travel routes would support community well-being, providing access to green space areas and reducing air pollution.

A Prosperous Wales
Accessible, reliable, timely and affordable public transport would provide better access to employment opportunities.

A Wales of Cohesive Communities
Supporting better connected communities through improved, attractive and safe transport environments. New local remote working hubs would bring employment closer to home.

A Wales of Vibrant Culture and Thriving Welsh Language
Assisting with better access to cultural events and attractions, especially for those without access to a car, and making places more attractive to live, work and visit.

A Globally Responsible Wales
Improvements to the public transport and active travel networks would contribute to the aims of reducing emissions and improving air quality.

Figure 9.3: Impacts of our recommendations on the Act's seven goals

351 Within Monmouthshire, we recommend enhancement of Severn Tunnel Junction rail station and its access arrangements, which we estimate to require around £50m. This would cover improvements to the station facility, bus access and a new M48 junction.

352 We estimate the average annual revenue cost of our recommendations to be between £15m and £35m. By way of context, pre-Covid-19, the Welsh Government subsidy for the Wales and Borders franchise was around £185m per year and, before abolition, the M4 Severn Bridge tolls raised around £100m (net of costs).

353 The scale of these revenue costs is nearly entirely dependent on the level of subsidy required to operate the new commuting services on the rail backbone. In very broad terms, around 2,200 additional passengers per peak hour are required on this part of the network for new rail services to operate at similar subsidy levels to the existing Wales and Borders franchise. This represents 60% growth from current levels of rail patronage, compared to 30% growth over the last 10 years (during which time no substantive rail infrastructure enhancements were delivered). Revenue costs are directly related to service levels, which could be increased gradually to reflect the trajectory of demand.

354 We appreciate the challenge of securing new revenue funding in the current fiscal climate. There are a range of funding options available and it is ultimately a political decision for Welsh Government. A first question is whether it should be funded from within transport or from general taxation. If the former, there are a number of options for road user charging, as described in *Chapter 6 (Behaviour change package)*.

355 We acknowledge that some of our recommendations could create revenue costs for Local Authorities as well as Welsh Government. Where this is the case, Welsh Government may consider the case for revenue support, especially for measures with the potential to assist wider strategic objectives.

Economic impact

356 Congestion alleviation will clearly bring benefits to people who continue to use the motorway, especially goods and services traffic which has less opportunity to shift onto other modes. Our engagement work has shown that improvements to journey time reliability would be particularly valued by businesses.

357 But looking beyond the motorway, our ambition is for the network to provide broader economic benefits by widening labour market catchments for workers and employers. This would most benefit those without access to a car, while there would also be benefits to all groups of people through increased travel choices.

358 Allowing more journeys by a broader range of modes should open up economic opportunities for more individuals. Traditionally, people search for jobs depending on commuting time; the better the transport system, the more places of employment will be within a person's catchment and the better the allocation of workers to jobs. The current transport system is in effect limiting the choice of where people can work. This is particularly relevant for turning the geographic position of Newport into an economic strength: its residents and businesses should be able to access jobs and employees from both Cardiff and Bristol.

Element	Indicative annual range
Additional rail services	£15m to £25m
Additional bus services	£0m to £5m
Other measures	£0m to £5m
Total	£15m to £35m

Source: South East Wales Transport Commission analysis. Ranges reflect different options for balance between fare funding and subsidy

Table 9.5: Revenue cost of recommendations

Element	Indicative cost range
Rail backbone: relief line upgrade and line reconfiguration	£130m to £180m
Rail backbone: consequential improvements	£140m to £190m
Rail backbone: new stations	£120m to £170m
Rapid bus routes	£100m to £130m
Commuter cycle corridors	£40m to £90m
Other measures	£60m to £80m
Total	£590m to £840m
Memo: Cardiff Council's Transport Vision to 2030	**£1bn to £2bn**

Source: South East Wales Transport Commission analysis. Consequential improvements include construction of a loop on the Maesteg line and the dualling of the Ebbw Vale line

Table 9.6: Capital cost of recommendations

Societal impact

359 Around a quarter of households in Wales do not own a car (the proportion is slightly higher in Newport).[28] These households are already reliant on the public transport which our analysis has shown is often significantly inferior to the car in terms of journey time and convenience. Improving public transport services offers significant benefits for these people by reducing inequities. In particular, it is striking that the South Wales Main Line passes through some of the most deprived parts of Cardiff and Newport – and yet there are no stations in these areas for rail services to stop.

360 Beyond this, the development of public transport, active travel and the land uses that support it can all contribute to creating better, greener, safer and more attractive places to live, work and play. This would help improve community cohesion, reduce community severance and catalyse an increased focus on placemaking.

Environmental impact

361 We have considered the impact of our recommendations on a range of environmental indicators, principally relating to decarbonisation, air quality and biodiversity.

362 It is well known that greenhouse gas emissions from road transport have remained stubbornly high over the last 30 years, despite commitments to achieve 'net zero' emissions by 2050.

363 Removing or reducing the need to travel is most effective from a carbon perspective. Our recommendations could make a significant contribution to emissions reduction, because they would help create conditions in which people could live comfortably without being dependent on cars. This is particularly relevant for our behaviour change and land use recommendations.

28 Source: National Trip End Model (NTEM) (2015)

364 Good infrastructure for active travel also has a role to play and this will become more significant with the growth of electric bikes, which are typically used for longer trips than conventional bikes. But this solution is impractical for all of society's travel needs. For longer distance trips, an integrated network of low emission or electric public transport will be more efficient than low occupancy cars.

365 Beyond carbon emissions, several areas in South East Wales suffer from particularly poor air quality, often linked to roads in Cardiff and Newport. In particular, the area between M4 junctions 25 and 26 has been identified as one of five locations in Wales where NO_2 levels exceed legal limits. Our recommendations would assist in mitigating these problems and contribute towards compliance with the air quality standards.

366 We do not foresee that any of our recommendations would cause detriment to any of the environmentally designated sites in the region, including the Severn Estuary Special Area of Conservation, and Gwent Levels Sites of Special Scientific Interest. On the contrary, reducing the impact of cars and vehicle emissions on these areas should bring benefits to biodiversity and the water environment.

Uncertainty and Covid-19

367 Even before Covid-19, there was a high degree of uncertainty around future traffic, mobility patterns, Wales' decarbonisation pathway and wider societal and technological trends. We have considered our recommendations against a range of future scenarios and believe the package to be robust to future uncertainty.

368 It is clearly too early to conclude on the long-term impacts of Covid-19. However, at this stage, we do not believe that it will fundamentally alter the need for people to travel in large numbers between the major urban areas in South East Wales, particularly given the projected population growth for the region. This is discussed further in *Chapter 2 (A new strategy for South East Wales)*.

"Our recommendations all contribute to a lower emissions, cleaner air and healthier lifestyles"

Chapter 10
Implementation

Summary

- **Detailed planning and technical work should begin very soon**
- **Covid-19 active travel schemes show what can be done on a short-term, 'trial and refine' basis**
- **It is technically possible to deliver the vast majority of our active travel and bus recommendations within five years**
- **The rail backbone could take around 10 years to deliver. During this time, there is an opportunity for express buses to serve rail station locations**
- **This is not a one-off task. The network will need to be scaled and expanded over time as demand grows**

General approach

369 There is understandable interest in when different measures might be implemented. While this is a matter for Welsh Government, Transport for Wales, Local Authorities, Network Rail and the Department for Transport, this chapter provides an indicative sense of what could be feasible.

370 The network is designed to be operated as a whole, rather than as disparate elements. Implementation should mirror this approach and be coordinated across services. However, different parts will take different times to deliver. The implementation of the recommendations can be described in three phases, as summarised in figure 10.1:

- **Immediate short-term actions**, which could begin within a matter of months
- **A medium-term action plan**, which we define as the next five years to align with the Welsh electoral cycle
- **Longer-term projects**, which will take more than five years to deliver (but which should begin much sooner)

371 The overall approach lends itself to a joint delivery team involving the Welsh Government, Transport for Wales and the relevant Local Authorities. **We recommend a joint delivery team be established shortly after Welsh Government has considered these recommendations**. This team needs to be empowered with a clear remit and budget so it can put plans in place and operate efficiently.

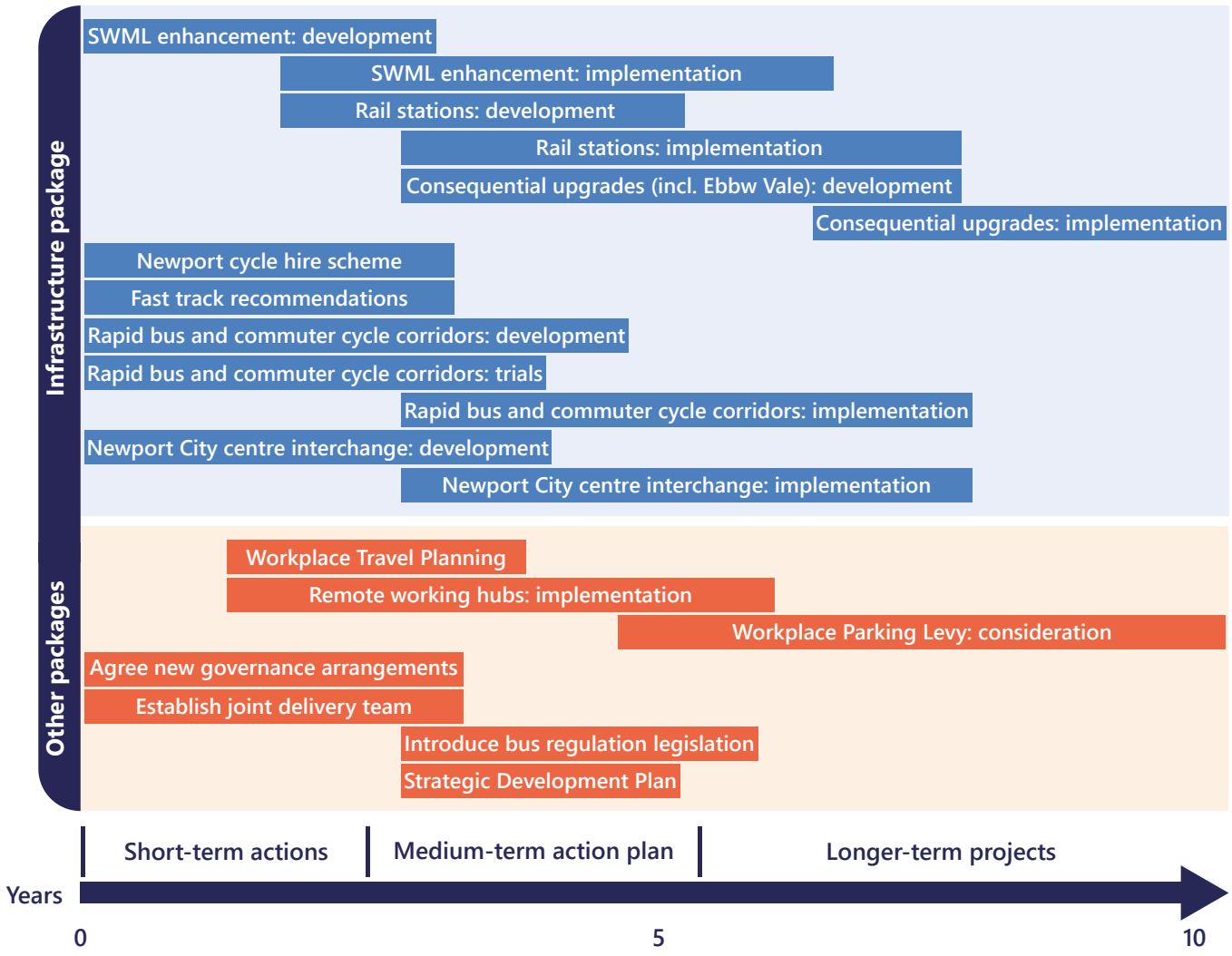


Figure 10.1: Illustrative implementation timeline

Immediate short-term actions

372 The Commission's work has been carried out at a strategic level and significant further detailed work will be required to take forward the majority of the recommendations, especially those relating to rail infrastructure. This will inform any necessary business case preparation, consenting applications and tendering processes, which could be done at a package or individual measure level, subject to size, scale and complexity. This work can and should begin very shortly. In particular, a full business case for the significant enhancement of the South Wales Main Line should be commissioned as soon as possible.

373 In terms of action on the ground, the Covid-19 experience over past months has shown how it is possible to swiftly implement trial transport projects at speed – and adapt them in 'real time'. This has been shown to be an attractive alternative to successive feasibility studies, which can take much longer to lead to on-the-ground delivery. This is particularly relevant for active travel, bus priority and roadspace reallocation schemes. While these projects are not without difficulty and require appropriate community engagement, they are also flexible and can be refined over time.

374 Where appropriate, **we encourage Local Authorities to build on their experience in identifying ways to fast-track the implementation of rapid bus and cycling corridors recommended in** *Chapter 4 (Infrastructure package)***, even if only on a pilot basis**. Provisional implementation is likely to offer insights on how to make more permanent infrastructure changes to embed these as key transport corridors.

375 We also note the Welsh Government continues to implement our fast-track recommendations for improving M4 traffic flow set out in *Progress Update (December 2019)*. These remain feasible for short-term delivery, the most important being to take all possible steps to improve lane discipline on the approaches to the Brynglas tunnels.

Medium-term action plan

376 It is technically feasible to deliver the vast majority of our non-rail recommendations in the next Senedd term. However, this requires swift detailed planning, securing approvals and allocating sufficient funding for each stage of delivery. To maintain momentum, all of this needs to be organised by the dedicated delivery team described above. We appreciate this has not always happened quickly in the past, leading to delays in potential implementation, for example on running Ebbw Vale services to Newport.

377 A five-year implementation programme is considered to be realistic for the bus, cycling and road access recommendations. To allow for this, each of the rapid bus and commuter cycle corridors described in *Chapter 4 (Infrastructure package)* have been deliberately designed to use existing road space, limiting disruption and the need for wholly new infrastructure. The one exception to this is the upgraded cycle route between Cardiff and Newport, which would benefit from a limited amount of additional land take.

378 The majority of the improvements to the railway would need to take place over a longer timeframe and this is discussed below. However, existing rail plans which are part of the South Wales Metro can bear fruit in the medium term. As part of this, Transport for Wales has plans in place to significantly increase capacity on weekday journeys within the region, including additional services on the Marches Line, Ebbw Vale Line, Valleys Lines, and between Swansea and Bristol Temple Meads.

379 Existing stations can benefit from significant upgrades during this period. Most notably, a new M48 junction connecting Severn Tunnel Junction to the east would provide direct bus access (currently there is none), and would relieve the pressure of car traffic on M4 junction 23A and the roads through Magor. In addition, adding bus bays outside Newport Central station would speed up interchange.

"It is possible to implement the vast majority of our bus and cycling recommendations in the next Senedd term"

380 Plans for the new Cardiff Parkway station are already well advanced. Subject to swift progress, Parkway has been submitted for planning approval and the developer has stated that it could be operational within five years.

381 Until the rail backbone can be delivered, there is the potential for bus services to operate in lieu of train services. By design, the rapid bus corridors described in *Chapter 4 (infrastructure package)* pass close to rail stations. Until a regular rail service is available at each station, it would be possible for express buses to simulate the rail network, with relatively few stops between stations, so as to minimise journey times.

382 In many cases, implementation of the integration policies described in *Chapter 5 (Network policies package)* requires appropriate transport governance to be established. This will need to flow from discussions between Welsh Government, Transport for Wales and Local Authorities on how to formalise the partnership recommended in *Chapter 7 (Transport governance package)*. This will need to include discussion on the role of the Corporate Joint Committee (CJC), which is due to form in 2021. The establishment of the CJC will also allow for strategic regional planning to begin, as recommended in *Chapter 8 (Land use and planning package)*.

383 Measures to change behaviour will generally work best when transport alternatives are first in place. This is particularly the case for any form of charging, such as the Workplace Parking Levy discussed in *Chapter 6 (Behaviour change package)*. Workplace Travel Planning may be able to start sooner, depending on when alternatives are available. Similarly, we hope swift progress can be made on the establishment of remote working hubs so that recent changes in behaviour can be locked in before habits revert.

Longer-term projects

384 The reconfiguration of the South Wales Main Line (SWML) and construction of new rail stations are significant undertakings. Much of the rail infrastructure work will need to be sequenced over a number of years. We expect the works would not be delivered as one single scheme, but would instead be aligned to a phased introduction of the rail services. These schemes would have different delivery and consenting strategies which would need to be considered as part of the detailed delivery plan.

385 There is a good case for the SWML enhancements to take priority. Rail stations along the line could then be more easily constructed as there would be more flexibility in routeing of services. The other branch line (Ebbw Vale and Maesteg), and non-SWML station enhancements, would be aligned in the programme to suit the introduction of new services. Some might be phased over longer periods. This is explored further in *Rail technical background*, published alongside this report.

386 Phasing could mean that a combination of different rolling stock procurement exercises are needed, providing either cascaded rolling stock or new rolling stock. Rail service frequencies could then increase over time as demand increases.

Scalability and expansion

387 As emphasised in *Chapter 3 (Network of Alternatives)*, it is important to recognise that implementation of the network is not a one-off task. As the region grows and develops its transport needs will change, requiring continual evolution and expansion.

388 Planning and implementation is therefore a perpetual task. This will be a matter for the 'guiding mind' to manage, which will need to develop an appropriate delivery cycle, in order to provide a transparent and regular rhythm for transport enhancement.

Chapter 11
After the Commission

389 The publication of this report concludes the work of the South East Wales Transport Commission. It is now for the Welsh Government to decide how to take forward the recommendations.

390 All the internal work and technical material produced for and by the Commission will be made available to assist Welsh Government, Transport for Wales, Local Authorities, Network Rail, the Department for Transport and any other relevant delivery bodies.

391 Our engagement has demonstrated a strong desire for progress and we hope this momentum can be channelled into delivery.

392 We have benefited from the work and engagement of a very large number of delivery bodies, representative organisations, consultancies and individuals. We would like to extend our thanks to all those who have generously supported our work.

393 Thanks are also due to our technical team, drawn from individuals in Mott MacDonald, WSP, Arup, Cogitamus, ChandlerKBS, DLA Piper, Costain, Commonplace, Calan, Storm and Shelter and Transport for Wales.

Annex A
Our method

Summary

This annex describes how the Commission undertook its work and prepared the recommendations in this report.

Ways of working

394 The Commission was established in October 2019. We initially met monthly in South East Wales (usually Newport), before moving to virtual meetings as a result of Covid-19. In total, the Commission met 27 times.

395 The Commission was supported by a small Secretariat. The team were responsible for coordinating the Commission's programme of work, budget management, drafting and publication of reports, commissioning and management of external technical experts, governance arrangements and relationship management. The Head of Secretariat and another member of staff were temporarily released to support Welsh Government during the height of the Covid pandemic in Spring 2020.

396 Experts from various fields were invited to attend meetings to discuss particular topics, technical issues and potential recommendations. A large amount of technical work was commissioned, which was distilled and steered by the Secretariat.

397 Prior to the pandemic, Commissioners undertook a number of site visits including to Newport Transport, the M4 Traffic Management Centre and Bristol Metrobus to understand first-hand the issues within the region, and to experience services running in other cities.

Engagement process

398 An initial round of stakeholder engagement was undertaken in Autumn and Winter 2019. Further in-person engagement was planned for Spring 2020 but was instead delivered digitally, in particular through online surveys. This work is summarised in *Engagement Background (July 2020).*

399 Following the publication of *Emerging Conclusions (July 2020)*, a programme of digital workshops were held over the summer period with a mix of attendees. The workshops provided an opportunity for stakeholders to provide feedback on the network concept and discuss how Covid-19 might change how people live and work in the region. In particular, we sought evidence from large employers in the M4 corridor on the potential for enhanced remote working after Covid-19.

400 Alongside our stakeholder workshops, Lord Burns and the Secretariat held a large number of regular bilateral meetings with a wide range of organisations and individuals. These included meetings with the elected representatives across the region to update on progress and discuss local issues.

Recommendations process

401 In *Our Approach (2019)*, we set out the planned structure of our work in six phases. These are outlined below.

402 **Understanding the problem and establishing the baseline**. An evidence-based approach was adopted. This incorporated traffic analysis and a wide range of other transport and non-transport analysis, including on broader socio-economic matters.

403 **Setting objectives.** The objectives described in *Chapter 9 (Impacts)* reflect the outcome of this phase. They formed part of our assessment framework.

404 **Identifying options**. A long list of potential measures was identified, with summary information on cost, timescales and interdependencies. The list of measures was collated from all relevant sources including Commissioner proposals, Secretariat analysis, technical working groups, stakeholder engagement and members of the public. Measures were considered predominantly through the lens of data on regional travel patterns and consistency with the objectives.

405 **Assessing recommendations**. Various mechanisms, such as Commission discussions and technical reviews, were used to refine this list of measures. Qualitative appraisal was based on the objectives and wider assessment framework described above. This included consideration of alignment to Well-being of Future Generations Act (Wales) 2015 goals, technical feasibility and financial impact. The level of detail undertaken was proportionate to the time available and generally equivalent to WelTAG Stages 1 or 2.

406 **Making recommendations**. Five packages of measures were collated, comprising the recommendations in this report.

Reports

407 The Commission published nine public documents.

408 *Our Approach (October 2019)* explained how we intended to undertake our work and interpret the Terms of Reference set for us by Welsh Government.

409 *Progress Update (December 2019)* summarised our early findings, concentrating on our understanding of M4 congestion. This led us to make three 'fast-track' recommendations to Welsh Government, all focused on ways to improve traffic management on the motorway.

410 *Emerging Conclusions (July 2020)* was the headline document in a package of summer publications. The document summarised our key findings and explained the implications for our final recommendations.

411 *Summary Background (July 2020)* provided further detail to underpin the key findings presented in *Emerging Conclusions*. The analysis focused on M4 congestion, the performance of transport alternatives and regional socio-economic context.

412 *Engagement Background (July 2020)* summarised the engagement activities undertaken and how these contributed to our key findings.

413 *Regional Travel Patterns Background (July 2020)* provided technical analysis on how people and goods are travelling across South East Wales, across all modes.

414 *M4 traffic background (July 2020)* presented detailed analysis of traffic patterns on the M4 in South East Wales.

415 This report sets out our final conclusions and recommendations.

416 *Rail technical background*, published alongside this report, provides significant further, technical detail on our rail recommendations.