

**Strategic Environmental Assessment
South East Wales Regional Transport Plan
Environmental Report**

CAPITA SYMONDS

successful people, projects and performance

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Acronyms

ALC	Agricultural Land Classification
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
CEEQUAL	Civil Engineering Environmental Quality Assessment and Award Scheme
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
dB	Decibel
DCLG	Department for Communities and Local Government
DETR	Department of the Environment, Transport and the Regions
DfT	Department for Transport
EU	European Union
GIS	Geographical Information System
GP	General Practitioner
GRIP	Guide to Rail Investment Process
LBAP	Local Biodiversity Action Plan
MtC _e	Million tonnes of carbon equivalent
NCN	National Cycle Network
NHS	National Health Service
NNR	National Nature Reserve
N ₂ O	Nitrous Oxide
NO _x	Oxides of Nitrogen, including Nitrogen Dioxide (NO ₂) and Nitric Oxide (NO)
PM _{2.5}	Particulate matter measuring 2.5 µm across or less
PM ₁₀	Particulate matter measuring 10 µm across or less
RTP	Regional Transport Plan
SAC	Special Area of Conservation
SAM	Scheduled Ancient Monuments
SCC	Social Cost of Carbon
SE	South East
SEA	Strategic Environmental Assessment
Sewta	South East Wales Transport Alliance
SO ₂	Sulphur Dioxide
SOA	Super Output Area
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
UDP	Unitary Development Plan
UKBAP	United Kingdom Biodiversity Action Plan
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
VOCs	Volatile organic compounds
WAG	Welsh Assembly Government
WelTAG	Welsh Transport Appraisal Guidance
WSP	Wales Spatial Plan
WTS	Wales Transport Strategy

1. Non-Technical Summary

Non-Technical Summary

Introduction

1.1 In order to develop a transport system across South East (SE) Wales fit for the 21st Century, the SE Wales Transport Alliance (Sewta) has developed a Regional Transport Plan (RTP), which sets out a number of objectives, policies, actions, and projects which it is hoped will help achieve their vision, which is to provide:

“a modern, accessible integrated and sustainable transport system for South East Wales which increases opportunity, promotes prosperity for all and protects the environment; where walking, cycling, public transport, and sustainable freight provide real travel alternatives”.

1.2 The SE Wales RTP has been produced by Sewta on behalf of the ten local authorities across SE Wales. These local authorities include Blaenau Gwent, Bridgend, Caerphilly, Cardiff, Merthyr Tydfil, Monmouthshire, Newport, Rhondda Cynon Taff, Torfaen, and the Vale of Glamorgan.

1.3 The SE Wales RTP aims to achieve a wide range of competing objectives. These objectives range from providing a transport system across SE Wales which enables greater environmental protection, enhanced accessibility, and in particular to develop a transport system which supports greater productivity and economic growth. In particular, the SE Wales RTP aims to be consistent with the aims and objectives of ‘People, Places, Future – the Wales Spatial Plan’, Welsh Assembly Government, 2008 consultation version, and the ‘One Wales: Connecting the Nation – the Wales Transport Strategy’, Welsh Assembly Government, 2008. The vision of the Wales Spatial Plan is:

“We will sustain our communities by tackling the challenges presented by population and economic change. We will grow in ways which will increase Wales’ competitiveness while assisting less well-off areas to catch up on general prosperity levels and reducing negative environmental impacts. We will enhance the natural and built environment and we will sustain our distinctive identity.”

1.4 It is a statutory requirement that the SE Wales RTP be subject to a Strategic Environmental Assessment (SEA) under the SEA Regulations for Wales, ‘Environmental Assessment of Plans and Programmes (Wales) Regulations 2004’, Welsh Statutory Instrument No. 1656 (W.170). The SEA Regulations reflect the European Union’s SEA Directive 2001/41/EC ‘On the Assessment of the Effects of Certain Plans and Programmes on the Environment’.

1.5 The SEA process aims to ensure that the likely significant environmental effects arising from plans and programmes are identified, assessed, mitigated, communicated and monitored, and that opportunities for public involvement are provided. It enables plan-making authorities to incorporate environmental considerations into decision-making at an early stage and in an integrated way.

1.6 This report fulfils the statutory requirements of the SEA Regulations for Wales, by identifying, describing, and evaluating, the likely significant effects on the environment of implementing the SE Wales RTP, taking into account the objectives and the geographical scope of the SE Wales RTP.

High Level Summary of the Influence of the SE Wales RTP on the Environment and Socio-Economic Context across SE Wales

1.7 The SE Wales RTP sets out a number of strategies, policies, actions, and projects which aim to influence the future development of the transport network across SE Wales, and in particular, to meet the plan objectives, relating to economic growth, social inclusiveness and enhanced accessibility, and greater environmental protection. However, the SE Wales RTP alone cannot solve all of the challenging transport issues facing SE Wales in the near future. For example, reducing carbon dioxide (CO₂) emissions from the transport network is partly dependent on people deciding to use more efficient engines in cars, as well as the future land use planning decisions taken at local authority level, influencing the demand for travelling. Thus the SE Wales RTP aims to influence a number of issues, which it hopes to achieve through collaborative working between central and local government, and other public bodies.

1.8 The SE Wales RTP supports the development of an increasingly integrated and more efficient public transport system across SE Wales, which is presented as a more favourable solution to road congestion than building additional road capacity. By supporting the growth in public transport capacity, through the provision of more bus and rail services with greater frequency, some people could be encouraged to switch from car use to public transport. However, the cost of using public transport, viewed from both a financial and convenience of use perspective, is not always competitive with car use, which could in turn discourage the use of public transport. Another disadvantage to relying on public transport to reduce road congestion is that it is only commercially viable to provide significant public transport capacity in areas of high population density where it is assumed there is a high demand for public transport, as typically these areas have good connections and a range of available destinations. The integration of different modes of public transport is also often required for people to be persuaded to use it in favour of the car. Likewise, the waiting times between different modes of public transport at any intermodal interchange facility will need to be as minimal as is practicable to encourage their use. The SE Wales RTP outlines an intention to improve the interchange of facilities, proposing a myriad of potential measures.

1.9 The SE Wales RTP presents strategies which could boost the future numbers of SE Wales residents who cycle or walk shorter journeys in favour to motorised transport, by outlining a number of specific cycleway and pedestrian walkway developments schemes which it supports across each of the ten local authorities in SE Wales. Such measures may persuade some people to live healthier lifestyles and reduce their car use for shorter journeys. However, it is more likely the development of such schemes, given the longer term trend of rising petrol and diesel prices, provide opportunities for people to save money and yet still access shops, work or community facilities.

1.10 The SE Wales RTP aims to significantly reduce the future levels of CO₂ emissions arising from transport use across SE Wales, and outlines measures which could assist with the achievement of such an objective. The proposals in the SE Wales RTP which support the creation of better integrated public transport services across SE Wales, allowing for the increased ease of change between different transport modes at various junctures across the transport network, could encourage people to make fewer car journeys and therefore potentially assist with reducing CO₂ emissions.

1.11 The SE Wales RTP also supports the introduction of road user charging, which if successfully implemented across aspects of the road network in SE Wales, could reduce road congestion by discouraging people from taking unnecessary road journeys during peak travel hours, and hence assist with reducing CO₂ emissions. However, such schemes can be unpopular with the electorate, and if the scheme fails to significantly reduce road congestion or does not precipitate a reduction in other taxes, then it could be viewed as a revenue raising tool.

1.12 It will be difficult for the SE Wales RTP to successfully mitigate all local air quality emissions and noise incidents across SE Wales. With a growing population, the demand for transport is expected to increase in the near future across SE Wales. As a consequence, although the SE Wales RTP supports greater use of public transport, cycling and walking, the net overall growth in transport use means that some areas will continue to suffer from noise and poor local air quality. However, in areas where people switch from car use to public transport, noise and local air quality could improve.

1.13 There are two key proposals outlined in the SE Wales RTP which are expected to significantly assist in reducing the future environmental effects of the transport network across SE Wales. The first is the support the SE Wales RTP gives to assisting with the development of sustainable towns and cities across SE Wales. Only by designing and developing towns and cities which are self contained and hence which effectively reduce the need to travel can the environmental effects of transport begin to be significantly mitigated. The other key proposal which could begin to seriously tackle road congestion is for businesses to cooperate and encourage greater flexibility for its employees, through more home working and the forceful use of green travel plans. The only way to significantly reduce peak hour road congestion is to remove peoples' need to be on the road at that time. That can only be achieved if businesses become more flexible, otherwise, the problems will remain, particularly in those areas where public transport is not commercially viable or effective in providing a range of appropriate destinations at suitable frequencies.

Influence of the SE Wales RTP on individual SEA Objectives

1.14 The next section summarises the general influence of the SE Wales RTP on each of the seventeen SEA Objectives selected for the assessment. Table 1.1 summarises, at a high level, the general influence of the SE Wales RTP on each of the seventeen SEA Objectives.

1.15 The rankings presented in Table 1.1 below measure the relative performance of the SE Wales RTP compared to the reference case. The reference case assumes that the future development and use of the transport system across SE Wales is simply a continuation of the existing trends. It is important to note that the presentation of the outcome of the SEA in Table 1.1 shows the general performance of the SE Wales RTP as measured against SEA objective, and not the specific performance of the SE Wales RTP against each different facet of each SEA Objective, which are encapsulated by indicators (as discussed in sections 6 and 7).

1.16 The relative performance of the SE Wales RTP as measured against the reference case is ranked on a scale ranging from **xxx** to **✓✓✓**, with **✓✓✓** representing a major positive change to the transport system in SE Wales relative to the reference case, whilst **xxx** represents a serious negative outcome compared to the reference case. The '0' symbol denotes that the effect is neutral or not significantly different to that envisioned to occur in the reference case. The symbol '/' is used in cases where the outcome may be positive or negative or neutral, as the outcome is most likely to differ across different geographic locations. The '?' symbol represents a situation where the outcome of the assessment is uncertain.

1.17 The outcome of the SEA process presented below in Table 1.1 demonstrates how the SE Wales RTP supports the principles of sustainable development, and outperforms or performs just as well as the reference case in all of the SEA Objectives aside from the one representing flooding of the transport network. Following Table 1.1 is a summary outcome for each SEA Objective.

Table 1.1: The Outcome of the SE Wales RTP as Measured Relatively to the Reference Case for each SEA Objective

Strategic Environmental Assessment Objectives	Performance of the SE Wales RTP relative to the Reference Case
1. To reduce the contribution of transport to air pollution and other harmful pollutant emissions	✓✓ / ✗
2. To reduce the contribution of transport to greenhouse gas emissions and minimise the vulnerability of transport infrastructure to the effects of climate change	✓✓
3. To reduce the negative effects of noise and vibration from transport on the environment	✓✓/ ✗✗
4. To reduce the negative impacts of transport on biodiversity and to increase its positive impacts	✓✓
5. To avoid transport related damage to designated wildlife sites and protected species avoiding irreversible losses	✓✓
6. To improve access to key services and facilities	✓✓ / 0
7. To reduce transport related community severance	✓ / 0
8. To encourage healthy lifestyles	✓✓✓
9. To improve access to healthcare	✓ / 0
10. To improve the actual and perceived safety and security of travel	✓
11. To reduce transport related land contamination	?
12. To limit transport related pollution of water resources	0
13. To minimise the risk of flooding associated with transport related development	✓ / ✗✗
14. To minimise the use of finite resources, and increase the use of recycled materials in the provision of new transport infrastructure	✓
15. To minimise the negative impact of transport on our heritage – the historical environment, and regional and local distinctiveness	✓
16. To protect and enhance the landscape character and townscape from the negative effects of transport	?
17. To minimise light pollution caused by transport	✓ / ✗

Source: Capita Symonds

To reduce the contribution of transport to air pollution and other harmful pollutant emissions (SEA Objective 1)

1.18 It is expected that the provisions outlined in the SE Wales RTP will support the improvement in air quality across aspects of the transport network in SE Wales, although there is no certainty that improvements will be universal. Measures outlined in the SE Wales RTP support the reduction in the use of cars in favour of public transport, which could improve the general level of air quality across some locations in SE Wales, should a significant number of people switch to using public transport rather than using cars. However, particular parts of the road network could suffer from deteriorating air quality should the expected increase in population across SE Wales precipitate an increase in car use in the near future.

1.19 Additional measures in the SE Wales RTP which could be of benefit to improving local air quality across SE Wales include the promotion of walking and cycling schemes to encourage people to leave their cars when undertaking short journeys. This would assist with reducing emissions of nitrogen dioxide and particulate matter from the transport network, and subsequently the formation of low lying ozone, which is damaging to the health of both flora and fauna.

To reduce the contribution of transport to greenhouse gas emissions and minimise the vulnerability of transport infrastructure to the effects of climate change (SEA Objective 2)

1.20 The future growth in the emissions of greenhouse gases such as Carbon Dioxide (CO₂) from the transport network across SE Wales is dependent on people using their private vehicles less frequently, and encouraging people to use cleaner forms of transport. The SE Wales RTP provides a large range of measures predominantly aimed at persuading people to use their cars less, by encouraging the greater use of a more integrated public transport system, or walking or cycling more. However, with car use expected to grow across SE Wales in the near future, achieving a successful reduction in CO₂ emissions from the transport network will be challenging.

1.21 One approach to reducing the future growth in car use and hence CO₂ emissions is to increase the cost of driving. Rising fuel prices will discourage many people from taking unnecessary car journeys. These external economic effects will automatically induce reduced emissions of CO₂ as people drive less. In addition to these effects, the SE Wales RTP outlines its support for the introduction of road user charging across aspects of the road network in SE Wales, although such a measure is not foreseen to be implemented before 2018. However, should such a scheme be politically achievable, road user charging could reduce the number of non essential road trips made at peak hour travel times, if set at the appropriate level to discourage the marginal road user. However, given the demand for road use at rush hour times, road user charging may result in simply being a revenue raising tool, rather than an effective fiscal instrument which reduces road congestion and CO₂ emissions. Such an outcome is unlikely to be politically acceptable.

1.22 Measures which increase car occupancy, reduce the frequency of trips made and trip length, such as business green travel plans and enhanced public transport intermodal interchange facilities, approaches supported by the SE Wales RTP, could all assist with reducing the volume of road traffic across SE Wales and hence assist with reducing CO₂ emissions. However, with the general forecast growth in car use which is predicted across SE Wales, it is likely that the aforementioned measures will only slow the growth in emissions of CO₂ from the transport network.

1.23 The key measure outlined in the SE Wales RTP which would assist with reducing CO₂ emissions across SE Wales in the long and very long term is the support for the construction of more sustainable towns which reduce the need to travel across SE Wales.

To reduce the negative effects of noise and vibration from transport on the environment (SEA Objective 3)

1.24 The SE Wales RTP does not specifically specify the installation, use, or construction of physical measures to mitigate noise arising from the transport network. Such measures would be beneficially located around major transport routes, particularly if there are any noise sensitive receptors, such as schools or residential areas located nearby. However, the SE Wales RTP does outline its support for traffic calming measures, which would reduce traffic speeds, and thus assist in reducing the level of noise arising from the road network, particularly in urban areas, where there are more noise sensitive receptors.

1.25 In addition to this, a number of indirect effects arising from the implementation of the proposals in the SE Wales RTP will influence the future outcome of this SEA Objective. For example, by proposing a greater range of public transport services across SE Wales, the SE Wales RTP could encourage people to use their cars less, and consequentially assist with reducing noise across parts of SE Wales, particularly in those areas well served by public transport. Likewise, by supporting the development of green travel plans for local businesses, and supporting pedestrian and cycleway projects, as well the development of more sustainable towns which reduce the need to travel, could all benefit local residents and biodiversity through reduced motorised transport use and hence less noise generated from busy transport corridors. However, given that the demand for car use is forecast to increase in the near future across SE Wales, the noise impact of road transport is expected to increase, particularly in areas which are not adequately supported by high frequency and highly integrated public transport services.

To reduce the negative impacts of transport on biodiversity and to increase its positive impacts (SEA Objective 4)

1.26 As it is conceptually difficult at the strategic level to evaluate particular impacts of the SE Wales RTP on existing biodiversity across SE Wales, it will be necessary that any new transport infrastructure proposed for development across SE Wales be carefully evaluated on a project by project basis to ensure that any impact to local biodiversity is mitigated. It should be noted that there is a significant risk that the cumulative impact of individual transport projects could have a significantly adverse effect on biodiversity, by reducing the extent of habitats and incrementally increasing the emission or release of harmful pollutants.

1.27 Generally however, it is expected that the provisions in the SE Wales RTP will indirectly benefit the protection of biodiversity across SE Wales. Reducing the use of private vehicles in favour of home working, public transport or cycling and walking, would assist with reducing air quality emissions, and noise impacts, which would be to the benefit of biodiversity across SE Wales.

To avoid transport related damage to designated wildlife sites and protected species (SEA Objective 5)

1.28 The extent of damage arising to designated wildlife sites and protected species due to the policies and projects proposed in the SE Wales RTP is presented in detail within the Appropriate Assessment Report.

1.29 It is unlikely that the proposals in the SE Wales RTP will significantly affect any designated wildlife sites across SE Wales, as specific road infrastructure projects are aimed at upgrading existing transport routes rather than building new roads through previously undeveloped sites. However, there may be some loss of roadside verges, which are valuable wildlife habitats for a range of animals.

1.30 The critical future impacts on wildlife habitats and protected species across SE Wales are likely to be determined by factors beyond the direct influence of the SE Wales RTP. For example, the future development of the transport network will in part be determined by the future decisions made by local planning authorities concerning new housing developments, future commercial and industrial developments, and general land use change. The transport system will be developed sequentially to fulfil the requirements of these new developments. It is likely however that consideration will be taken on the future impacts of such decisions on wildlife habitats across SE Wales as all strategic plans influencing future uses of land are subject to promoting the principles of sustainable development.

To improve access to key services and facilities (SEA Objective 6)

1.31 The SE Wales RTP supports a number of new high speed bus schemes for future development across SE Wales. The location of these new public transport services and the routes they serve will be vital for assisting with the alleviation of the poor levels of accessibility faced by many across SE Wales. This is particularly important for those areas of SE Wales, such as Monmouthshire, which suffer disproportionately from poorer levels of accessibility, although it is acknowledged that it is more difficult to alleviate accessibility problems in such locations due to the low population density, making high frequency public transport services less commercially viable.

1.32 The SE Wales RTP outlines a range of proposals to improve accessibility across SE Wales, including the development of better integrated public transport schemes by providing a greater range of intermodal interchange facilities which link bus and rail services, and improved car parking facilities to increase access to such services. The proposals to provide community led and demand responsive transport could be very beneficial for the most vulnerable members of communities across SE Wales, although such services are expensive and could require reorganising to deliver a suitable level and coverage of service for local residents.

To reduce transport related community severance (SEA Objective 7)

1.33 The SE Wales RTP provides support for the prioritisation of aspects of the transport network for pedestrian use, ensuring that appropriate measures are installed in the road network to enable the severance of communities to be reduced, encouraging more people to walk and hence enjoy healthier lifestyles. The SE Wales RTP also outlines a number of specific projects which would enlarge the coverage of the National Cycleway Network and pedestrian walkway schemes across SE Wales, which could encourage more people to cycle and walk and therefore assist with improving the general level of connectivity of particular towns and cities.

To encourage healthy lifestyles (SEA Objective 8)

1.34 The key measures promoted in the SE Wales RTP to encourage residents across SE Wales to live healthier lives include the development of a cycleway and pedestrian network with greater connectivity, which could encourage more people to walk or cycle short journeys instead of using the car. The SE Wales RTP also supports the development of more sustainable towns which would reduce the need to travel by motorised transport, although any future benefit of such a measure are only expected to materialise in the longer term.

1.35 There is no certainty that the measures outlined in the SE Wales RTP will succeed in encouraging residents across SE Wales to live healthier lives, as much of the change will need to materialise from individuals themselves through behavioural change.

To improve access to healthcare (SEA Objective 9)

1.36 The SE Wales RTP is supportive of making better use of community led and demand responsive transport services. Such services respond to local need as it arises, and would therefore be of great benefit to both rural areas and areas suffering from poorer accessibility overall, and be of particular value to vulnerable members of society when accessing healthcare. However, such services are voluntary and are dependent on the availability of drivers. There are also cost issues, particularly important given the rising price of fuel, which could reduce the availability and viability of such services.

1.37 The future accessibility to healthcare facilities is in part dependent on how health services are delivered across SE Wales, as well as the general location of existing service relative to the transport network and residential areas, both of which are beyond the influence of the SE Wales RTP. However, measures in the SE Wales RTP to support greater provision of public transport, and in particular a more integrated transport system with improved intermodal interchange facilities, could significantly assist access to healthcare facilities for those without access to a car, and provide a suitable alternative to car use.

To improve the actual and perceived safety and security of travel (SEA Objective 10)

1.38 Proposals in the SE Wales RTP to increase safety across the transport network in SE Wales mainly relate to the development of procedures or closer working relationships between groups responsible for transport safety rather than any specific projects. Such procedures include improving training for cyclists and young drivers, and publicity campaigns to make people more aware of the dangers of the road. Such measures are likely to assist in reducing road accidents to some extent, although alone are unlikely to prevent all accidents.

1.39 Additional measures outlined in the SE Wales RTP aimed at improving road safety include the installing of safety or speed cameras across the road network and implementing new speed limits through the active use of traffic calming measures. It is likely that the greatest benefits of improving actual road safety would arise in Rhondda Cynon Taff given the poor level of road safety recorded in this local authority area in recent years¹.

To reduce transport related land contamination (SEA Objective 11)

1.40 The likely future impact of the transport network on the contamination of land is expected to vary geographically, and be dependent on the distribution of traffic flows, and the location of receptors sensitive to contamination. For this reason, the future impact of transport activity on the level and extent of land contamination across SE Wales is uncertain. This is largely due to the limited availability of data concerning the extent of land contamination in riparian areas to the transport network, and a clear cause and effect link between transport activity and the extent of land contamination.

¹ See National Statistics.

1.41 The measures outlined in the SE Wales RTP are expected to contribute to the reduction of the flow of road transport across parts of SE Wales, as more people switch to using public transport. Should such behavioural change arise, the overall extent of land contamination arising from transport activity across SE Wales could also be reduced in those areas with accessible public transport services. However, given that car use is forecast to grow over the next five to ten years across SE Wales due to the increasing affluence of the growing population, it is likely to be only those areas of SE Wales which can significantly benefit from the provision of enhanced public transport services which are likely, as a consequence, to benefit from a reduction in the level of land contamination, due to transport activity. Other areas may suffer from greater land contamination.

To limit transport related pollution of water resources (SEA Objective 12)

1.42 The future impact of the transport network on water pollution is likely to be small overall, especially in comparison to air and noise pollution. The number of recorded water pollution events where transport is the primary cause is not expected to significantly change given the proposals outlined in the SE Wales RTP, which are supportive of improving road drainage and incorporating water quality treatment measures across the transport network. Thus there is likely to be some pollution of water resources due to the movement of particles arising from tyre or brake wear or spilt oil being washed into waterways during a surface runoff event.

To minimise the risk of flooding associated with transport related development (SEA Objective 13)

1.43 The future risk of flooding facing the transport network across SE Wales is uncertain. This is because the future effects of climate change are largely uncertain, although there is evidence to suggest that flooding could become more prevalent and of a greater extent in low lying areas in expansive flood plains. As a consequence there is a significant risk that some locations may be at serious risk of flooding in the future. The SE Wales RTP will have limited impact on reducing flood risk across SE Wales as it does not outline a particular strategy to mitigate flood risk, largely because flood protection is the remit of the Environment Agency. However by providing wider support for the enhancement of public transport services in preference to wide scale road building, the future risk of flooding will be smaller than it could otherwise have been had a different approach to developing the transport network across SE Wales been adopted in the SE Wales RTP.

To minimise the use of finite resources, and increase the use of recycled materials in the provision of new transport infrastructure (SEA Objective 14)

1.44 It is not possible to quantify the effect of the SE Wales RTP on the future uses of recycled materials or secondary aggregates in road maintenance or infrastructure projects as the SE Wales RTP includes no explicit policy or project which supports the greater use of recycled materials for such uses, although the SE Wales RTP does have a high level objective to minimise the impact of the transport network on natural resources. The future rate of use of recycled or secondary aggregate in transport infrastructure construction projects will be dependent on the terms specified in road maintenance contracts between the Welsh Assembly Government or local authorities, and road maintenance contractors.

To minimise the negative impact of transport on our heritage – the historical environment, and regional and local distinctiveness (SEA Objective 15)

1.45 There is a slight risk of cumulative impacts arising to heritage sites in highly accessible locations across SE Wales, due predominantly to the incremental growth in car use which is expected to arise in the next five to ten years, leading to increased noise, visual impacts and increased emissions of local air quality pollutants, which can cause damage to the exterior of buildings. The SE Wales RTP is supportive of proposals to limit car access to heritage sites, through the greater use of park and ride schemes to transfer visitors between heritage sites, which could mitigate the future cumulative impacts to heritage sites to some extent.

1.46 The future effect of the transport system in SE Wales on archaeological resources is unknown.

To protect and enhance the landscape character and townscape from the negative effects of transport (SEA Objective 16)

1.47 The future effect of the policies and projects proposed in the SE Wales RTP on the existing landscape character and townscapes across SE Wales is highly uncertain. It is likely that any future impacts would be better identified at the project level, when particular development schemes are brought forward for implementation. In general however, the SE Wales RTP's support for the provision of enhanced public transport services and the promotion of softer measures such as walking and cycling in favour of greater levels of road infrastructure development, suggests that the majority of landscape and townscapes across SE Wales should be protected from future developments. However, there is some future rail infrastructure developments proposed in the SE Wales RTP which if brought forward could impact upon landscapes surrounding the new rail corridors or stations.

To minimise light pollution caused by transport (SEA Objective 17)

1.48 There is a risk that inadequate funding will be available to alter all transport corridor lighting to mitigate light lost skyward over SE Wales. Additionally, light pollution is not just caused by the transport network; office lighting, lighting at industrial premises, and lighting from domestic properties all contribute to light pollution, so any initiative to reduce light pollution from the transport network in isolation may not necessary lead to significant benefits without a coordinated effort by policymakers to address all sources. It is likely that the future impact across SE Wales will be positive in some locations and negative in others, reflecting the general level of development.

Significant Effects of the SE Wales RTP

1.49 All of the significant effects of the SE Wales RTP are summarised below in Table 1.2, grouped by their economic, social, and environmental effects.

Table 1.2: Significant Effects of the SE Wales RTP

	Benefits	Costs
Economic	<ul style="list-style-type: none"> Reduced road congestion in the long term across parts of SE Wales through the increased capacity, frequency, and integration of public transport, enabling a reduction in journey times for business and leisure users of the road network. Road user charging revenues could fund new transport infrastructure in the medium to longer term. 	<ul style="list-style-type: none"> Car use is forecast to grow in short term future across SE Wales due to rising population, which is likely to lead to increased road congestion, particularly in areas surrounding Cardiff and Newport.
Social	<ul style="list-style-type: none"> Improved access to social facilities could be achieved across certain towns in SE Wales through enhanced pedestrian 	<ul style="list-style-type: none"> Not all areas will benefit from enhanced connectivity of cycleways and pedestrian walkways and hence local accessibility to

	<p>walkway connectivity and provision of cycleways, as well as improved provision of public transport services.</p> <ul style="list-style-type: none"> • Health of residents might be improved if they are sufficiently encouraged to walk or cycle shorter distances as opposed to driving. 	<p>social facilities might not be enhanced for some areas.</p> <ul style="list-style-type: none"> • Access to social facilities via public transport might not be enhanced for more rural areas of SE Wales relative to more urban areas. • Demand responsive and community led transport initiatives might not materialise due to rising costs of such services.
Environmental	<ul style="list-style-type: none"> • Emissions of CO₂ could be reduced from the transport network across SE Wales should people be sufficiently encouraged to use public transport. Should businesses implement green travel plans, peak travel time road congestion could be reduced, assisting with reducing CO₂ emissions. In the long term, the introduction of road user charging, and the development of sustainable towns which reduce the need to travel would also further reduce emissions of CO₂ from the transport network across SE Wales. • The quality of townscape and landscapes should be protected across SE Wales given the provisions outlined in the SE Wales RTP, although there is a slight risk that new transport infrastructure developments could impact upon some townscapes. • The provision of park and ride facilities at cultural and heritage sites should assist with reducing road congestion in the vicinity of such sites and hence protect them from harmful air pollutants and noise impacts. 	<ul style="list-style-type: none"> • It is unlikely that the provisions in the SE Wales RTP will be sufficient to improve local air quality and noise sufficiently across all areas of SE Wales as car use will remain the primary mode of transport for a number of people, particularly those residing in rural areas. • Some parts of the transport network may be at significant risk of flooding in the future due to the threat of climate change. • There is a risk that CO₂ emissions may increase from the transport network across SE Wales, should the measures in the SE Wales RTP not successfully encourage people to substitute away from car use to public transport use or reduce their taking of unnecessary journeys. • There is a risk that biodiversity could be adversely affected by the loss of road verges across SE Wales, which could be lost due to the construction of new transport infrastructure.

Source: Capita Symonds

Monitoring

1.50 There is a requirement in the SEA Regulations to monitor significant environmental effects from the implementation of plans. Measures have been proposed in the Environmental Report to monitor a number of indicators which were identified as being either uncertain in the future, or for which receptors were at risk from environmental damage. As a general approach indicators selected for monitoring included those which measured:

- Usage of public transport to identify the extent of modal shift away from cars;
- Development of new transport infrastructure on wildlife habitats; and
- Monitoring of AQMA data to identify improvement in air quality.

SEA Consultation

1.51 Public involvement through consultation is a key element of SEA. The SEA Regulations set specific requirements for consultation with the Statutory Consultation Bodies, as well as the public and 'other interested parties'. Consulting on the scope of the SEA is commonly undertaken through the production of a Scoping Report.

The following Statutory Consultation Bodies were consulted on the scope of the SEA:

- Countryside Council for Wales (CCW);

- Environment Agency; and
- Cadw.

Key Tradeoffs and Uncertainties in the SE Wales RTP

1.52 The SE Wales RTP has to take an approach which attempts to find a satisfactory balance between the competing high level objectives of economic development, social inclusion, and environmental protection. Determining the balance between the three thematic objectives requires tradeoffs, as different perspectives from different people apply different weights to these competing thematic objectives. For this reason, the key tradeoffs are summarised below in Table 1.3.

1.53 In addition to the tradeoffs between economic development, social inclusion, and environmental protection, the SEA identified a number of uncertain outcomes. The uncertainty has arisen due to limitations of the assessment. Namely, some outcomes in the SEA arise as a result of a multitude of interrelating factors. In certain cases, the influence of the SE Wales RTP on some of these factors is unknown, or not clear, and as a consequence, the likely outcome is too uncertain to determine. This section briefly summarises these uncertainties below in Table 1.3.

Table 1.3: Key Tradeoffs and Uncertainties in the SE Wales RTP

Key Tradeoffs in the SE Wales RTP
Financing greater provision of public transport services to enhance the general level of accessibility across SE Wales in favour of enhancing roads could impact upon economic growth by increasing travel times as road congestion could consequentially increase due to limited road capacity
Enhancing general level of accessibility by providing additional public transport services has incremental impacts on the environment, through increased emissions in air pollutants, especially in areas where people do not substitute car use for public transport use
Enhancing the environmental protection of heritage sites across SE Wales is likely to require the restricting of private vehicle access to particular sites
Protection of existing sites of ecological value from incremental development of the transport system could lead to an increase in road congestion on existing roads impacting upon economic productivity of SE Wales
Key Uncertainties in the SEA of the SE Wales RTP
The future quality of air across particular parts of SE Wales is uncertain as it is unclear where new sources of demand for car use will materialise and how road user charging, should it be introduced, will cause changes in the uses of existing roads
It is uncertain if companies will initiate the development of green travel plans, and more importantly, vigilantly monitor their performance
It is unclear which parts of the transport network will be afforded additional protection from the increasing risks of flooding
The future influence of the SE Wales RTP on the level of land contamination arising from the transport network is uncertain
It is uncertain if the SE Wales RTP supports the fitting of efficient light fittings in road street furniture, to mitigate light pollution.
It is uncertain how people will respond to increasing oil prices. People are likely to make fewer journeys, or drive shorter distances, or people might simply buy more economical cars and not change their current driving behaviour. Hence future outcomes concerning air quality, noise and CO ₂ emissions are somewhat uncertain.
It is not possible to quantify the future environmental and socio-economic impacts of the SE Wales RTP due to a limitation in terms of available quantified direct effects on the transport network of the policies and projects in the SE Wales RTP, particularly in terms of its influence on traffic volumes along specific routes across SE Wales. As a consequence all identified impacts are presented qualitatively.

Source: Capita Symonds

How the Strategic Environmental Assessment Influenced the Development of the Regional Transport Plan

1.54 This Environmental Report was the result of an iterative assessment, which begun with the assessment of seven plan alternatives which combined a variety of policy drivers and combinations, which mainly focussed on plan outcomes. The seven strategic options included:

- A pro-road strategy;
- A pro-public transport strategy;
- A demand restraint strategy;
- A strategy which aimed to maximise resources in the delivery of enhanced accessibility;
- A preferred strategy (which combined policies from all of the other alternatives);
- An alternative strategy (which combined a different mix of policies to the preferred strategy); and
- A do minimum strategy (which assumes that no new plan is brought forward by Sewta).

1.55 As a consequence of the initial strategic environmental assessment, a number of issues were identified, which affected the environmental performance of the transport system across SE Wales. By refining the preferred strategy to reflect the identified environmental issues from the initial SEA, the SEA process enabled the development of a more environmental beneficial RTP for SE Wales. The final SE Wales RTP assessed as part of this Environmental Report is the amended preferred strategy. Table 1.4 below summarises how the SEA process has influenced the development of the SE Wales RTP.

Table 1.4: Demonstration of how the SEA influenced the development of the SE Wales RTP

Theme	Influence of SEA on SE Wales RTP
Economic	The SE Wales RTP acknowledges the economic risk that particular settlements would face should car parking restrictions in town centres be set at too severe a level, as local centres might become economically unviable, with a subsequent loss of jobs. As a consequence, the SE Wales RTP has sought to develop car parking restrictions which are appropriate to a particular setting and context and therefore meet the needs of the local communities.
	The SE Wales RTP notes that any plans to invest in new infrastructure at particular locations would be costly in the long run unless it accords with the aspirations to transcend to a low carbon economy.
	The SE Wales RTP acknowledges that the introduction of road user charging across SE Wales might be construed as simply a revenue raising tool for government.
Environmental	The SE Wales RTP reflects and acknowledges the consequences of 'predict and provide' in terms of responding to demand for more road space, as the building of new roads would lead to worsening air quality and increased emissions of greenhouse gases from the transport network.
	The SE Wales RTP will not respond to growing populations across SE Wales by building new roads to accommodate them.
	The SE Wales RTP acknowledges that building new roads would not be a sufficient response to the transport problems facing SE Wales as the cumulative impact of worsening air quality, increased traffic flows and noise, would impact upon biodiversity, potentially leading to the loss of more sensitive species from the area.
	The SE Wales RTP reflects the need to reduce the demand for travel by building more sustainable settlements, benefiting the local environment.
	The SE Wales RTP includes statements which support the introduction of measures which increase car occupancy, reduce the frequency of trips made, and reduces the distance of any trip. Such measures are expected to assist with reducing traffic volume across SE Wales and hence emissions of CO ₂ .
	The SE Wales RTP acknowledges the pros and cons of introducing road user charging across parts of the SE Wales road network.
	Measures to mitigate against noise arising from the transport network will need to be reflected in the final allocation of resources in the SE Wales RTP. In particular, solid barriers and sound insulation measures should be constructed around any major transport corridors which are located within the vicinity of sensitive noise receptors, such as schools, residential areas, and areas of land with habitats sensitive to noise.

	<p>The SE Wales RTP promotes measures which facilitate a more environmentally friendly way of accessing sites of historical value across SE Wales, by supporting the provision of public transport from a centralised car park to reduce car traffic around sites of historical value.</p> <p>The SE Wales RTP is aware that the best approach to mitigating the effects of the transport network on biodiversity and their habitats is at the project level rather than at the plan level, although any proposed infrastructure development which would fragment existing habitats is unlikely to gain the support of the SE Wales RTP.</p>
Social	<p>The SE Wales RTP acknowledges that the location of new public transport services and the routes they take are vital for assisting with alleviating poor accessibility across SE Wales, particularly in those areas judged to be suffering from accessibility deprivation.</p> <p>The SE Wales RTP recognises the need to prioritise the transport network for pedestrian use, to ensure that appropriate measures are installed in the road network to enable the severance of communities to be reduced, and to ensure that by doing so it encourages more people to walk, and to enjoy healthier lifestyles.</p> <p>The SE Wales RTP reflects the potential solutions which encourage people to lead healthier lifestyles, including promoting cycling and walking; encouraging a change in transport behaviour; and implementing road safety awareness measures in areas of poor road safety records.</p> <p>The SE Wales RTP supports the supply of demand led public transport services, which respond to local need as it arises on a short term basis. Such services would be of great benefit to both rural areas and areas suffering from poor accessibility overall.</p>

Source: Capita Symonds

2. Introduction to the Strategic Environmental Assessment

Introduction to the Strategic Environment Assessment

Introduction

2.1 It is a statutory requirement that the SE Wales RTP be subject to a Strategic Environmental Assessment (SEA) under the SEA Regulations for Wales, '*Environmental Assessment of Plans and Programmes (Wales) Regulations 2004*', Welsh Statutory Instrument No. 1656 (W.170). The SEA Regulations reflect the European Union's SEA Directive 2001/41/EC '*On the Assessment of the Effects of Certain Plans and Programmes on the Environment*'.

2.2 It is a requirement of the SEA Regulations for Wales that the Environmental Report identifies, describes, and evaluates, the likely significant effects on the environment of implementing the SE Wales RTP, taking into account the objectives and the geographical scope of the SE Wales RTP.

2.3 The information presented in the Environmental Report must include the information referred to under Schedule 2 of the SEA Regulations for Wales, which covers the full scope of the Environmental Report and includes:

- (i) An outline of the contents and main objectives of the SE Wales RTP, and of its relationship with other relevant plans and programmes;
- (ii) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the SE Wales RTP;
- (iii) The environmental characteristics of areas likely to be affected;
- (iv) Any existing environmental problems which are relevant to the SE Wales RTP, including in particular, those relating to any areas of a particular environmental importance, such as areas designated to Council Directive 79/409/EEC on the conservation of wild birds, and the Council Directive 92/43/EEC on the protection of habitats;
- (v) The environmental protection objectives, established at international, Community or Member State level, which are relevant to the SE Wales RTP and the way those objectives and any environmental considerations have been taken into account during its preparation;
- (vi) The likely significant effects on the environment including short, medium and long term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues, including biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage, including architectural heritage; landscape; and the inter-relationship between the aforementioned issues;
- (vii) The measures envisioned to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the SE Wales RTP;
- (viii) An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken, including a summary of any difficulties encountered in compiling the required information;

- (ix) A description of the measures envisaged concerning the monitoring of the significant environmental effects of the implementation of the SE Wales RTP, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action; and,
- (x) A non-technical summary of the information collected in the Environmental Report.

The Environmental Report

2.4 The Environmental Report follows an interim SEA (July 2007), which assessed a number of strategic alternatives (see Section 3) and assisted with the shaping of the preferred SE Wales RTP option which has been incorporated into the current SE Wales RTP. The Environmental Report is therefore an iterative output from the SEA process, although it is the statutory document which is subject to consultation.

2.5 The Environmental Report is structured to cover the full scope of the SEA Wales Regulation requirements, by presenting the required information in the following sections:

- (i) Section 3 entitled 'Introduction to the Regional Transport Plan', which outlines the policy context within which the SE Wales RTP has been prepared, and the priorities and objectives which it hopes to achieve;
- (ii) Section 4 entitled 'Plans, Programmes, Policies and Strategies of a Material Consideration', which outlines the plans, programmes and policies at international, national, regional and local level which influenced the priorities and objectives developed in the SE Wales RTP;
- (iii) Section 5 entitled 'Baseline Data Summary' which presents a summary of the current trends in a number of environmental, social and economic indicators across SE Wales, and the likely evolution without the implementation of the SE Wales RTP;
- (iv) Section 6 entitled 'SEA Framework' which presents the SEA Framework against which the SE Wales RTP is assessed;
- (v) Section 7 entitled 'SEA Methodology' which summaries the methodology used in the undertaking of the SEA, and defines the terms used throughout the assessment;
- (vi) Section 8 entitled 'Assessment and Mitigation' which presents the assessment of the SEA, identifying the significant environmental effects of the SE Wales RTP, as well as the important social and economic effects;
- (vii) Section 9 entitled 'Monitoring Programme' which presents the proposed monitoring programme for the SEA; and
- (viii) Section 10 entitled 'Conclusion' which presents an overall conclusion of the assessment of the SE Wales RTP.

2.6 In addition a number of annexes are included which summarise how the Environmental Report complies with the requirements of the SEA Directive, an appraisal of the compatibility of the SEA objectives, and a summary of the effects of each policy against the SEA Framework. These are presented as follows:

- (i) Annex I: Compliance with the SEA Directive;

- (ii) Annex II: Comparison of Plan and Assessment Objectives;
- (iii) Annex III: Compatibility of SEA Objectives; and,
- (iv) Annex IV: Assessment of Policies on SEA Objectives.

Consultation

2.7 It is a requirement of the SEA Regulations for Wales that every draft plan or programme undergoes a period of public consultation. To complete an adequate level of consultation with the public, the responsible authority, in this case Sewta, must:

- (i) Send a copy of the SE Wales RTP and Environmental Report and supporting documents to each statutory consultation body: the Environment Agency Wales; the Countryside Council for Wales, the statutory advisor to the Welsh Assembly Government on wildlife and landscape conservation issues; and Cadw, the body with responsibility to protect and manage the built heritage of Wales; and,
- (ii) Take the steps considered appropriate to bring the Environmental Report and SE Wales RTP to the attention of persons who, in Sewta's opinion, will be affected, or are likely to be affected by, or have an interest in the decisions involved in the assessment and adoption of the SE Wales RTP.

2.8 The period of consultation will last for no shorter than twenty eight days, and will be of a length considered appropriate to ensure that all consultation bodies and public consultees are given an effective opportunity to express their opinion on the SE Wales RTP and its associated documents, including the Environmental Report.

2.9 It is the intention of the consultation period that a number of comments will be invited on the SE Wales RTP and Environmental Report, and as a consequence, it is expected that the Environmental Report will be updated to reflect the views and opinions expressed during the consultation period wherever a material point is made or wherever omissions or oversights in the assessment are identified.

Appropriate Assessment

2.10 The Appropriate Assessment is a separate statutory requirement to SEA for all Plans or Programmes which are considered to have a likely significant effect on Natura 2000 sites (Special Areas of Conservation (Habitats Directive) and Special Protection Areas (Wild Birds Directive)). It is mentioned in the Environmental Report to make readers aware that such a report will be prepared to accompany this SEA and the SE Wales RTP.

3. Introduction to the Regional Transport Plan

Introduction to the Regional Transport Plan

Introduction

3.1 The accession of the Transport Wales Act 2006 and the Railways Act 2005 into law requires the Welsh Assembly Government (WAG) to produce a Wales Transport Strategy. The acts also give WAG powers to promote regional transport planning and to take direct control of local and regional rail services in Wales.

3.2 To reduce the burden placed on the twenty-two local authorities across Wales, WAG approved a Regulatory Order to rescind their requirements to produce Local Transport Plans, and instead introduced the requirement for four regional Transport Plans to be prepared by four Regional Transport Consortia, of which Sewta is one.

3.3 The national level policy documents which provide the framework which shapes the development of the Regional Transport Plans include:

- (i) ‘One Wales – A Progressive Agenda for the Government of Wales’, 27 June 2007, WAG;
- (ii) ‘People, Places, Futures: The Wales Spatial Plan’ (WSP), 2008 Consultation version, WAG; and
- (iii) ‘One Wales: Connecting the Nation - the Wales Transport Strategy’ (WTS), 2008, WAG.

3.4 The WTS sets out how WAG proposes to fulfil its transport duty to 2030 and beyond and is therefore of direct relevance to the shaping of policy within the SE Wales RTP. The WSP sets out the planning agenda across the whole of Wales, whilst ‘One Wales – A Progressive Agenda for the Government of Wales’ is a statement of the aims and objectives of the present coalition government in the Welsh Assembly.

3.5 The body responsible for producing the SE Wales RTP is Sewta, which is a consortium of ten local authorities, which comprises of the councils of Blaenau Gwent, Bridgend, Caerphilly, Cardiff, Merthyr Tydfil, Monmouthshire, Newport, Rhondda-Cynon-Taf, Torfaen, and the Vale of Glamorgan.

Wales Spatial Plan

3.6 The WSP provides a vision for the whole of Wales, outlining the future spatial development across Wales. The vision articulated for SE Wales is:

“An innovative skilled area offering a high quality of life – international yet distinctively Welsh. It will compete internationally by increasing its global visibility through stronger links between the Valleys and the coast and with the UK and Europe, helping to spread prosperity within the area benefiting other parts of Wales.”

3.7 The SE Wales RTP must respond and reflect the overall aims and objectives of the WSP and therefore strive to achieve them. The overall goal of the WSP is stated as:

“The overall objective is to enable people to have easy access to goods and services that support their economic and social life without damaging the environment. Current car usage trends point to increasing congestion within the area if action is not taken. The overall priority is therefore seen as making better use of the area’s existing transport infrastructure, to deliver sustainable transport.”

3.8 A number of proposals are stated in the WSP which outline approaches to delivering a more sustainable transport system across SE Wales, including the increase in the provision of high capacity public services with high frequencies of service serving the key population centres, Cardiff and Newport.

3.9 There is less emphasis placed on increasing provision for road transport, with the main priorities being aimed to ensure that the existing road capacity is used with maximum efficiency. A proposal is made to investigate the merits of introducing road user charging across SE Wales, although such a policy would only be introduced after public transport provision has been significantly enhanced across the area.

3.10 The WSP aims to link fourteen key settlements in SE Wales through a significantly enhanced transport network, to create a networked city region. These key settlements include: Aberdare, Abergavenny, Barry, Blackwood, Bridgend, Caerphilly, Cardiff, Chepstow, Cwmbran, Pontypool, Ebbw Vale, Merthyr Tydfil, Newport, Pontypridd, and Llantrisant.

Wales Transport Strategy

3.11 Given the hierarchical nature of transport strategies in Wales, the SE Wales RTP has been developed within the context set by the WTS, and therefore reflects the national objectives and priorities stated by WAG. However, the WTS acknowledges that the future transport issues facing SE Wales differ structurally from the rest of Wales in the following respects:

- (i) Traffic congestion is worse, and is exacerbated by a lack of peak junction capacity, causing unreliability for all modes;
- (ii) There is great scope to give buses priority over other traffic and there is more opportunity for modal change and to reduce CO₂ emissions from transport;
- (iii) Road freight traffic impacts considerably on the local environment and highway maintenance is a greater burden as a result;
- (iv) Social deprivation is worse than elsewhere in Wales but accessibility is better; and,
- (v) Tourism is important and growing, travel planning is under-exploited in the area, and car occupancy should be raised.

3.12 It is clear therefore that the WTS sets the priorities which must be addressed by the SE Wales RTP.

The SE Wales Regional Transport Plan

3.13 The SE Wales RTP has been developed within the policy context set in the WTS, albeit tailored to suit the particular needs of the SE Wales. The nature of past and present land uses across SE Wales is heterogeneous compared to the other regions in Wales, and has led to the growth of large towns and cities with highly concentrated population densities. This particular context, as compared to the general low population density across other regions in Wales, means that specific policies in the SE Wales RTP must be tailored to meet the expected future challenges facing SE Wales.

3.14 Despite the heterogeneous nature of SE Wales relative to the rest of Wales, the fifteen outcomes desired by the WTS are expected to be achieved indirectly by the achievement of SE Wales RTP objectives. The WTS outcomes are presented below in Table 3.1 against three thematic objectives. In addition, due to the specific nature of this region, two additional outcomes have been added for the South East region.

Table 3.1: SE Wales RTP Outcomes

Thematic Outcome	SE Wales RTP Outcomes
Social: To achieve greater use of more sustainable and healthy forms of travel	Improve access to healthcare
	Improve access to education, training and life-long learning
	Improve access to shopping and leisure facilities
	Encourage healthy lifestyles
	Improve the actual and perceived safety of travel
Environmental: To minimise the need to travel	Improve access to employment opportunities
	Increase the use of more sustainable materials in our country's transport assets and infrastructure
	Reduce the contribution of transport to air pollution and other harmful emissions
	Improve the positive impact of transport on the local environment
	Adapt to impacts of climate change
	Reduce the impact of transport on greenhouse gas emissions
	Reducing the negative impact of transport on Wales' heritage – landscape, townscape, historical environment and Wales' distinctiveness
Reducing the negative impact of transport on biodiversity and increasing positive impacts	
Economic: To achieve a more effective and efficient transport system	Improve connectivity within Wales and internationally
	Improve sustainable access to key visitor attractions
	Improve the efficient, reliable and sustainable movement of people
	Improve the efficient, reliable and sustainable movement of freight

Source: Sewta

3.15 The SE Wales RTP also has a vision for the future provision of transport infrastructure and the future use of the existing transport network across South East Wales. The vision sets an aspirational goal for all stakeholders to the plan, providing focus and motivation to deliver the plan. The vision for the SE Wales RTP is:

“A modern, accessible, integrated and sustainable transport system for South East Wales which increases opportunity, promotes prosperity for all and protects the environment; where walking, cycling, public transport, and sustainable freight provide real travel alternatives.”

3.16 In addition to the outcomes and vision of the SE Wales RTP, a number of priorities have been set alongside plan objectives. The SE Wales RTP priorities set out an approach to tackling the key future issues and problems facing the transport network in the region. These priorities are presented below in Table 3.2.

Table 3.2: Priorities of the SE Wales RTP

1. To improve access for all to services, facilities and employment, particularly by walking, cycling and public transport.
2. To increase the proportions of trips undertaken by walking, cycling and public transport.
3. Minimising demand on the transport system.

4. To develop an efficient, safe, and reliable transport system with improved transport links between the 14 key settlements in South-East Wales and between South-East Wales and the rest of Wales, the UK and Europe.
5. To provide a transport system that encourages healthy and active lifestyles.
6. To reduce significantly the emission of greenhouse gases and the impact of the transport system on local communities.
7. To ensure developments are accessible by sustainable transport and make sustainable transport and travel planning an integral component of regeneration schemes.
8. To make better use of the existing transport system.

Source: Sewta

3.17 The SE Wales RTP Objectives support the priorities and assist the plan by prioritising interventions in the region to help achieve the vision. The SE Wales RTP objectives are presented below in Table 3.3.

Table 3.3: SE Wales RTP Objectives

1. To reduce the number and severity of road traffic casualties.
2. To improve actual and perceived levels of personal security when travelling.
3. To improve access for all to employment opportunities, services, healthcare, education, tourism and leisure facilities.
4. To improve connectivity by sustainable transport between South-East Wales and the rest of Wales, the UK and Europe.
5. To improve interchange within and between modes of transport.
6. To improve the quality, efficiency and reliability of the transport system.
7. To reduce traffic growth, traffic congestion and to make better use of the existing road system.
8. To achieve a modal shift towards more sustainable forms of transport for moving both people and freight.
9. To reduce significantly the emissions of greenhouse gases from transport.
10. To reduce the impact of the transport system on the local street scene and the natural, built and historic environment.
11. To promote sustainable travel and to make the public more aware of the consequences of their travel choices on climate, the environment, and health.
12. To ensure that land use developments in South East Wales are accessible by sustainable transport measures.
13. To make sustainable transport and travel planning an integral component of regeneration schemes.

Source: Sewta

3.18 It is anticipated that the proposed improvements to the transport system across South East Wales will enable a number of wider government policies, such as those on social inclusion and equity, economic development, health and the environment to be achieved. Namely these wider goals are:

- (i) Develop the economy, through improving connectivity for business and freight, making transport more effective and efficient, providing access to employment, education, shopping and leisure, and by improving transport integration;
- (ii) Promote social inclusion and equality, by providing a transport system that is safe, accessible and affordable to all sections of the community; and
- (iii) Protect the environment, by minimising transport emissions and consumption of resources and energy, by promoting walking, cycling, quality public transport, modal shift and minimising demand on the transport system.

Development of the SE Wales Regional Transport Plan

3.19 It is a requirement of the SEA to assess a number of strategic alternatives to the preferred option to ensure that a range of approaches which facilitate the delivery of the plan objectives are investigated. This is to ensure that the environmental effects of each possible delivery route are known, so that a better informed choice of plan option can be made which promotes policies which better protect the environment.

3.20 A full range of plan options were developed and were assessed against the SEA Framework in the Initial SEA. This enabled an iterative assessment to be undertaken of seven plan alternatives. Each plan alternative combined a variety of policy drivers and combinations, which focussed on final outcomes. The seven strategic plan options assessed in the Interim SEA stage of the SEA process are summarised below in Table 3.4.

Table 3.4: Strategic Alternatives

Strategic Alternative	Description
Pro road strategy	A strategy that is highly orientated to building roads. This mirrors the policy of 'predict and provide'.
Pro public transport strategy	A strategy that is highly orientated towards improving bus and rail services at the expense of other possible solutions.
Demand restraint strategy	A strategy based on restraining the demand for travel. This option also aims to significantly mitigate emissions of CO ₂ arising from the transport network.
Pro accessibility	A strategy orientated predominately towards improving accessibility and in particular reducing the incidence of social exclusion. This is primarily achieved through the delivery of better public transport, but targeted at those areas of SE Wales suffering from poor levels of accessibility.
Preferred option	This is the preferred plan, which seeks to achieve the aspirations of stakeholders across SE Wales by applying a combination of policies contained within the four previous strategic alternative plans. It is an ambitious approach financially, and in terms of a changed regulatory base.
Alternative option	This strategic alternative was considered the best alternative to the preferred option. It is less ambitious in its approach to the preferred option, and is unlikely to achieve all of the aspirations of stakeholders across SE Wales.
Do minimum	This is the reference case and assumes that there is little resource input into the transport system across SE Wales in the immediate and long term. It therefore assumes that the future development of the SE Wales transport system is little more than a continuation of existing trends. It therefore makes no contribution towards meeting the SE Wales RTP plan objectives.

Source: Sewta

3.21 Each strategic alternative combined different combinations of policies, focussed on a particular strategic approach to delivering the high level plan objectives for the SE Wales RTP. For example, the pro-road strategy focussed heavily on the building of new roads, which whilst such an approach might assist with the achievement of the SE Wales RTP objectives, it also had a multitude of environmental consequences.

3.22 The initial SEA assessed each strategic plan alternative, identifying the likely outcome of each approach to delivering the SE Wales RTP objectives against each of the SEA Objectives. Mitigation measures were proposed to offset potential adverse effects. This facilitated the development of the preferred option, which combined aspects of each strategic alternative and proposed mitigation measures to derive a plan alternative which achieved the SE Wales RTP's objectives whilst minimising its future impact on the environment. It is this preferred option which is now subject to this stage of the SEA process.

4. Plans, Programmes, Policies and Strategies of a Material Consideration

Plans, Programmes, Policies and Strategies of a Material Consideration

Introduction

4.1 A number of plans, policies, and strategies have influenced the development of both the SE Wales RTP and the design of the SEA Framework. It is this framework which will be used to assess the environmental, economic, and social effects of the SE Wales RTP.

4.2 This section of the report provides a summary of how the SEA Framework was developed, and how it ensures that a suitable scope of assessment is undertaken which takes account of the key policy issues influencing transport delivery across SE Wales, as well as the key drivers influencing the development of policies in the SE Wales RTP, set at international, national, regional and local levels.

4.3 It is necessary to present the relationship between the SEA Framework, the SE Wales RTP and other plans, programmes, policies and strategies of relevance in the Environmental Report, as per the requirements of Article 5(1) and Annex I of the SEA Directive. As a consequence, Table 4.1 below presents a summary of each plan, programme, policy or strategy which has a material influence on the development of the SE Wales RTP and the objectives of environmental protection set at international, national, regional and local levels.

Table 4.1: Relevant Plans, Programmes, Policies, and Strategies

Plans, Programmes, Policies and Strategies	Objectives / Requirements
INTERNATIONAL	
The World Summit on Sustainable Development (WSSD), Johannesburg Declaration on Sustainable Development (Statutory) (UN) (2002)	A reaffirmation of international commitment to sustainable development. Global development issues such as poverty, hunger, and access to water were highlighted, and aims were set out to accelerate the shift towards more sustainable consumption and production practices. Particular emphasis was placed on greater resource efficiency and waste reduction, with a goal to significantly reduce the loss of biodiversity by 2010. Key sustainability objectives addressed within this strategy includes social progress which recognises the needs of everyone; effective protection of the environment; prudent use of natural resources; and, the maintenance of high and stable levels of economic growth and employment.
European Spatial Declaration on Sustainable Development (Non-statutory) (EU) (1999)	This guidance calls for balanced and sustainable spatial development, with balanced settlement structure being the key. It sets out an agreement on common objectives and concepts for the future development of the European Union. The strategy aims to ensure that the three fundamental goals of European Policy are achieved equally in all the regions of the EU. These include economic and social unity; conservation and management of all natural resources; and, balanced competitiveness within the European Union. These aims shall be achieved while maintaining and preserving European Heritage which includes cultural landscapes, cities and towns, and various natural and historic monuments.
Air Quality Framework Directive (96/63/EC) and various daughter Directives (Statutory) (1999/30/EC); (2000/69/EC); (2002/3/EC); (2004/107/EC).	EU Directives legally bind all Member States to an overall objective regarding the assessment and management of ambient air quality through the establishment of mandatory air quality standards and limits for selected air pollutants. This Directive, along with the daughter Directives, address individual and specific groups of pollutants including sulphur dioxide, nitrogen dioxide, particulate matter, lead and ozone (which are pollutants governed by pre-existing ambient air quality objectives) and benzene, carbon monoxide, poly-aromatic hydrocarbons, cadmium, arsenic, nickel and mercury.
Framework Waste Directive (Directive 75/442/EEC, as amended) (Statutory) (EC) (1975)	This Directive sets out the requirement for member states to prevent or reduce waste production to protect the environment and human health, as well as waste recovery by recycling, re-use or reclamation or any other process with a view to extracting secondary raw materials or energy. The guidance requires Member States to take necessary measures to avoid the dumping and uncontrolled disposal of waste, as well as establishing an integrated network of disposal initiatives which take into account the best available cost-effective technologies. These measures should be self-sufficient, adapted to suit specialised individual circumstances for different waste types, and disposed of at the nearest appropriate location by the most appropriate techniques and technologies to ensure a high level of protection and public health.
EC Birds and Habitats Directives (79/409/EEC and 92/43/EEC respectively).	The main aim of the EC Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species at an appropriate conservation status, as well as introducing enforced habitat and species protection. Therefore, Member States are required to take into consideration the economic, social, and cultural needs as well as the local and regional attributes to each habitat and species. A recent ruling by the European Court of Justice ruled that ‘Appropriate Assessments’ are required, as set out in Article 6(3) of the Habitats Directive, whenever, “any plan or strategy not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives.” The objectives of the EC Bird Directive include providing a framework for the conservation, protection, control, and management of wild birds, including priority species, within the EU, as well as setting out rules for their exploitation.
NATIONAL	

Plans, Programmes, Policies and Strategies	Objectives / Requirements
'One Wales – A Progressive Agenda for the Government of Wales', 27 th June 2007, WAG	This document is a statement of the objectives and aims of the ruling coalition government in the Welsh Assembly. It outlines the high level objectives which the Welsh Assembly hopes to achieve in the coming years. The objectives are wide in scope and include, albeit not exhaustively, objectives relating to economic development, social inclusion and justice, and environmental protection. The SE Wales RTP must reflect these high level aims and therefore the objectives derived for the SE Wales RTP are complementary to those stated in 'One Wales – A Progressive Agenda for the Government of Wales'.
'People, Places, Future - The Wales Spatial Plan', 2008, consultation version, WAG	The Wales Spatial Plan outlines the future spatial vision for Wales as a whole. Individual regions were also provided with a vision, with the South East of Wales' vision stated as, <i>"An innovative, skilled area offering a high quality of life – international yet distinctively Welsh. It will compete internationally by increasing its global visibility through stronger links between the Valleys and the coast and with the UK and the rest of Europe, helping to spread prosperity within the area and benefiting other parts of Wales."</i>
'One Wales: Connecting the Nation – the Wales Transport Strategy', 2008, WAG	This is the parent document to the SE Wales RTP and is therefore of material significance to its development. This document encourages the close integration of transport considerations into the earliest stages of the spatial planning process in order to work towards sustainable development.
Environmental Liability Directive 2004/35/EC, European Union	The Environmental Liability Directive is due to be implemented by UK law by December 2008. The intention of the directive is to ensure the 'polluter pays' by imposing a liability for the prevention and remediation of any significant environmental damage to EU-protected biodiversity, and waters subject to EU legislation. Diffuse pollution is excluded from the scope of the directive, as are oil and nuclear pollution incidences subject to other international laws.
The Regional Waste Plan, March 2004, South East Wales Regional Waste Group.	This document provides a strategic, integrated, approach for the sustainable management of wastes and recovery of resources in South East Wales - an area that contains nearly half the population of Wales. The WAG has given the responsibility of preparing, monitoring, and reviewing the Regional Waste Plan to the South East Wales Regional Waste Group. This group is led by a Steering Group of councillors from the 11 local planning authorities in the south east region of Wales with a Technical Group of officers from local government, the Welsh Assembly Government, Environment Agency Wales, and other government bodies, and representatives from the waste industry and environmental groups. The Regional Waste Plan first Review document will be published in 2007 - 08. This document is useful as it provides an overview of how waste will be transported around the region and managed.
'Wales: A Vibrant Economy', Welsh Assembly Government, 2005	This strategy aims to deliver strong and sustainable economic growth by providing opportunities for all. This will be achieved by developing shorter decision chains, utilising local knowledge, and close partnerships in order to achieve the delivery of increased skilled and innovative workers; advanced technology and knowledge, strong communities and the natural environment, which will increase the quality of life for all.
Review of Energy Policy in Wales, the National Assembly of Wales, 2002	The National Assembly of Wales recognises that over the next twenty to fifty years it will be necessary to move towards a zero carbon emission electricity generating system. It was recommended in the report that Wales also move towards producing 10% of its electricity from renewable sources by 2010.
Environment Strategy for Wales, WAG, 2006	The Environment Strategy for Wales provides a long term strategy for environmental protection across Wales, covering the next 20 years. The Strategy aims to address issues such as climate change; sustainable resource use; characteristic biodiversity, land and seascapes; environmental hazards and the local environment including access to green space, environmental nuisances, and flood risk management. The strategy explains existing environmental issues and sets outcomes and associated indicators which aim to address solutions for these issues within a series of delivery timelines.

Plans, Programmes, Policies and Strategies	Objectives / Requirements
Welsh Transport Planning and Appraisal Guidance, draft guidance only available, Steer Davies Gleave, 2007	This guidance is required to enable WAG and other funding bodies to make sound and robust decisions on the allocation of resources for transport within Wales. This will apply to all modes, investment proposal types and transport strategies through a complex, time-consuming and resource-intensive procedure. Greater consideration for sustainable issues and new EU guidance on Environmental Impact Analysis and Strategic Environmental Appraisal will be taken into account.
South Wales Regional Aggregates Working Party: Annual Report: 2006	The Annual Report outlines sales of aggregate in South Wales in the calendar year 2006, including the sale of secondary aggregates, an important resource to reduce waste and preserve primary aggregate reserves. The South Wales Regional Aggregate Working Group is a technical working group with membership drawn from officers of the 18 Mineral Planning Authorities (including Blaenau Gwent, Brecon Beacons National Park, Bridgend, Caerphilly, Cardiff, Carmarthenshire, Ceredigion, Merthyr, Monmouthshire, Neath Port Talbot, Newport, Pembrokeshire County Council, Pembrokeshire Coast National Park, Powys, Rhondda Cynon Taff, Swansea, Torfaen and Vale of Glamorgan), representatives of the Quarry Products Association, British Aggregates Association, Environment Agency Wales, Countryside Council for Wales, Welsh Assembly Government, Department for Communities and Local Government, Cuddy Demolition, Welsh Environment Trust and British Geological Survey.
Planning Policy Wales, March 2002, WAG	Outlines the current land use planning policy in Wales, providing the strategic policy framework for the effective preparation of local planning authorities' development plans. This is supplemented by topic based Technical Advice Notes (Wales) (TANs). Procedural guidance is given in Welsh Office / National Assembly for Wales circulars. This document effectively sets the parameters within which the SE Wales RTP will operate.
Technical Advice Note (TAN) 1: Joint Housing Land Availability Studies (2006) WAG	This Advice Note requires that these studies be undertaken annually in order to monitor land availability, provide an agreed statement and action plan for development planning and control purposes as well as address the need for action of insufficient supply is identified. These studies will be performed by a Study Group which consists of the Department of Enterprise, Innovation, and Networks of the Welsh Assembly Government, the local council, and the Home Builders Federation.
Technical Advice Note (TAN) 4: Retailing and Town Centres (1996) WAG	This Advice Note requires information on the retail industry in a local planning authority's area together with information on the functionality of their town centres which will be used in the assistance and preparation of development plans and the consideration of planning applications. Information regarding the retail industry is detailed in this Advice Note.
Technical Advice Note (TAN) 5: Nature Conservation and Planning (1996) WAG	This Advice Note provides advice on development control issues for Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Sites of Special Scientific Interest (SSSIs); the selection and designation of non-statutory conservation sites, such as local nature reserves; the protection of species, commons and greens; annexes outlining the statutory framework for nature conservation and designated sites and give information about the Countryside Council for Wales.
Technical Advice Note (TAN) 6: Agricultural and Rural Development (2000) WAG	This Advice Note provides advice on agricultural considerations; re-use and adaptation of rural buildings; development related to farm diversification; development related to agriculture and forestry; agricultural and forestry dwellings; and, development involving horses.
Technical Advice Note (TAN) 8: Renewable Energy (2005) WAG	This Advice Note provides advice on renewable energy and planning; offshore wind and other onshore renewable energy technologies; design and energy; implications for development plans; development control; and, monitoring.
Technical Advice Note (TAN) 11: Noise (1997) WAG	This Advice Note provides advice on how the planning system can be used to minimise the negative impact of noise without placing difficult restrictions on development or adding excessive costs to local businesses. It includes some of the main considerations which local planning authorities should take into account in drawing up development plan policies and whether specific planning applications will either generate noise or be exposed to existing noise sources.
Technical Advice Note (TAN) 13: Tourism (1997) WAG	This Advice Note considers guidance on hotel development; holiday and touring caravans; and, seasonal and holiday occupancy conditions.

Plans, Programmes, Policies and Strategies	Objectives / Requirements
Technical Advice Note (TAN) 14: Coastal Planning (1998) WAG	This Advice Note provides advice on planning the coastal zone; recreation; heritage coasts and non statutory coastal groupings; as well as shoreline management plans.
Technical Advice Note (TAN) 15: Development and Flood Risk (2004) WAG	This Advice Note is used to advise caution in respect of new developments in areas susceptible to the high risk of flooding by outlining a precautionary framework to direct planning decisions. The aim of this framework is to direct new development schemes away from areas of high flood risk, and if a development is considered within an area of high flood risk, those developments need to be justified based on tests outlined further within this advice note.
Technical Advice Note (TAN) 16: Sport and Recreation (1998) WAG	This Advice Note gives guidance on planning frameworks; standards of provision; local authority land; provision of sites and facilities; sport and noise; and, sport and floodlighting.
Technical Advice Note (TAN) 18: Transport, (2007) WAG	This advice note provides guidance on planning transport infrastructure provision in the future. It also advises on development control and integration of transport into new development proposals.
Technical Advice Note (TAN) 21: Waste (2001) WAG	This Advice Note provides advice on the planning framework in Wales; regional co-ordination in Wales; principles and techniques regarding waste; planning considerations in waste issues; unitary development plans; development control; and, types of waste.
Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Working Together for Clean Air (2000) and Addendum (2003), Defra	This strategy provides guidance on how to improve and protect ambient air quality in the UK in the medium term, including aims to: Provide best practicable protection to human health by setting health-based objectives for air pollutants as well as objectives for the protection of vegetation and ecosystems.
The Wildlife and Countryside Act 1981, and the Countryside and Rights of Way Act (CROW) 2000	National legislation for species and habitat protection transposed from the EU Birds and Habitats Directives. The CROW Act extends a duty to take actions to protect biodiversity to all government departments. The 1981 Act, as amended by the 2000 Act, also contains a robust national legislative framework for the notification, protection and positive management of nationally important conservation sites.
National Park and Areas of Outstanding Natural Beauty Management Plans (various)	National policy directly addressing the Welsh National Parks is found in Circular 13/1999 Environment Act 1995, Part III: National Parks in Wales. This addresses the purposes of the Parks and policies for their delivery. It provides guidance on the administration of the Parks by the National Park Authorities, and stresses the importance of working in partnership in realising policy expectations for these Authorities. Therefore, it is not the sole responsibility of the NPAs to deliver the purposes of the National Parks, but it involves those who directly and indirectly make decisions affecting these protected areas as outlined in Section 62(2) of the Environment Act 1995 (Chapter 6). Areas of Outstanding Natural Beauty (AONB) are protected by law because of the special qualities of their landscape and are considered equal in status to National Parks. They are managed by Local Authorities and developments that lie within AONBs are more tightly controlled through the planning process to ensure they do not adversely affect the landscape. Effective partnerships between organisations, public bodies, and individuals are important for the management of AONBs with special funding often available for projects within them. Local community consultation is given when proposed developments lie within AONBs and can influence the management of the AONB Management Plans.
UK Biodiversity Action Plan, January 1994, Defra	The UK Biodiversity Action Plan (BAP) was published in response to Article 6 of the Biodiversity Convention, to develop national strategies for the conservation of biological diversity and the sustainable use of biological resources. It describes the UK's biological resources, and commits a detailed plan for the protection of these resources. Several reviews of the current status of designated priority species and habitats have been commissioned by government to see present progress in protection biological resources across the UK.

Plans, Programmes, Policies and Strategies	Objectives / Requirements
Trunk Road Estate Biodiversity Action Plan (2004 – 2010) WAG	<p>The objectives of this Action Plan, within the constraints of resources and road safety, are to:</p> <ul style="list-style-type: none"> • set practical and realistic actions and targets for the period 2004 – 2014; • link with other relevant Biodiversity Action Plan targets for habitats and species; • increase awareness of the Transport Directorate’s staff and contractors, its environmental partners, and the general public, of the biodiversity interest of the trunk road and motorway network; • encourage the use, and dissemination, of best practice for biodiversity in the management and development of the trunk road and motorway network; and • reflect the requirements of the Assembly’s Sustainable Development Scheme and Action Plan where relevant.
LOCAL	
Local Biodiversity Action Plans (various)	Each of the ten local authorities in the Sewta region has a Local Biodiversity Action Plan which outlines the measures to be taken to protect a number of Priority habitats and species.
Blaenau Gwent County Borough Council Unitary Development Plan (July 2006)	This UDP’s aim will be pursued through the promotion of sustainable development ensuring that economic development, community development and regeneration take place, and in ways and locations that do not compromise any future ability to meet needs. This will ensure that a sustainable valley community is retained in the region to support an adequate range of community services and facilities.
Bridgend County Borough Council Unitary Development Plan (May 2005)	This UDP aims to improve the quality of life for the residents of the region in ways which are compatible with the principles of sustainable development including key objectives such as addressing the need for social progress which recognises the needs of everyone; addressing the necessity for effective environmental protection; strictly making use of natural resources on a prudent basis; and recognising the importance of economic growth and employment within the region.
Caerphilly County Borough Council Unitary Development Plan (Adopted April 2003)	This Plan identifies where new developments will go and provides a framework for local decision-making as well as the reconciliation of development and conservation interests to ensure that land use changes proceed logically while maximising local community benefits. It also provides a development strategy which takes into account a number of factors including the availability of suitable sites, the willingness of the private sector to invest, the environment, and the transport and service infrastructure in the local region. Three distinct areas have been developed to define this development strategy, namely, areas of Consolidation; Areas of Growth and Community Regeneration Areas.
Torfaen County Borough Council Adopted Local Plan 2000	The principle objectives of this Plan include ensuring that a sufficient range, choice and supply of land is available to meet the foreseeable housing needs of the region; ensuring that new development is well related to existing urban areas and does not rise or lead to the potential for urban sprawl; ensuring that pressure for residential development within the existing built-up area does not result in the loss of land required for public open space/recreation or other considered necessary for the maintenance of balance communities; and ensuring the planned renewal of older buildings within the built-up area and open countryside.
Merthyr Tydfil County Borough Council Development Plans (see text to right for dates of publication)	<p>The Development Plan Framework for this region is currently provided through:</p> <p>The Mid Glamorgan (Merthyr Tydfil County Borough) Replacement Structure Plan 1991 - 2006 (adopted August 1996)</p> <p>The Merthyr Tydfil Borough Local Plan 1996 – 2006 (adopted May 1999)</p> <p>The Mid Glamorgan (Merthyr Tydfil County Borough) Minerals Local Plan for Limestone Quarrying (adopted September 1999).</p> <p>The above plans will be superseded by the new Local Development Plan upon adoption in October 2009 and aims to be prepared in partnership with local communities to stimulate economic growth; help promote social inclusion; and, protect the best elements of the environment.</p>

Plans, Programmes, Policies and Strategies	Objectives / Requirements
Newport City Council Unitary Development Plan (Adopted 2006)	This UDP is used to guide new developments that are likely to take place over the next 5 years. This guidance will implement and protect the strategy of growth and regeneration within the region which is a predominantly rural area.
Rhondda Cynon County Borough Council Local Development Plan 2006	This Plan will provide the development strategy and policy framework for the local region over a 15 year period between 2006 and 2021. It will be used by the Council to guide and control development, provide a basis by which planning application can be determined consistently and appropriately. It is the Council's intentions to engage with local residents, service users, stakeholders and partners in an effective and cost -beneficial way.
Gwent Structure Plan 1991 – 2006	This Plan aims to develop land-use and transport policies which seek to reflect the principle of sustainable development; to maintain and improve the living standards of the people of Gwent; to improve the economic prosperity of Gwent; and, to maintain and enhance the countryside and built environment of Gwent.
Monmouthshire County Council Adopted Unitary Development Plan 2006	This UDP is prepared within the Welsh Assembly Government's policies for the operation of the planning system in Wales and its objectives include maintaining high and stable levels of economic growth and employment; social progress which recognises the needs of all; effective environmental protection; and careful use of natural resources.
Cardiff City Council Unitary Development Plan (Deposited October 2003)	This Plan has currently been put on deposit but may remain a consideration in development control decisions.
Vale of Glamorgan Unitary Development Plan 1996- -2011	This UDP provides the strategic and detailed policy framework within which provision will be made for development and conservation needs within the region. It guides development for a 15 year period and consists of two Parts. The first Part consists of the Council's strategic policies for the development and other use of land in its area and provides a context and framework for more detailed policies and proposals in the second Part. An overall provision is made for housing, employment and other major land uses in the region as a whole, identifying the broad locations for development, and areas where policies for restraint are necessary. The second Part consists of justifications of these strategic policies and contains more detailed policies, proposals, and guidance.

Source: Capita Symonds

5. Baseline Data Summary

Baseline Data Summary

Introduction

5.1 A comprehensive environmental baseline review was undertaken in October 2006 and is presented in Sewta's 'SEA of Sewta's Regional Transport Plan: Baseline Study Report'. The data collected in that report primarily identified the existing environmental issues facing the Sewta region. This section of the Environmental Report presents a snapshot of the environmental baseline data available in the aforementioned report. The interested reader is asked to review the Baseline Study Report to identify more detailed information, much of which is utilised throughout the assessment. This baseline summary as well as presenting a snapshot of environmental data also presents previously uncollected data representing the present economic and social trends across SE Wales. The additional data is presented in this baseline as the SE Wales RTP has a wider range of objectives beyond merely environmental protection, including supporting economic growth and development, and boosting social inclusiveness and enhanced accessibility.

5.2 The additional baseline data allows for a better understanding of the wider socio-economic context within which the SE Wales RTP will be implemented. By presenting a more detailed baseline covering a wider scope, it engenders a greater evidence base against which to identify the significant effects of the SE Wales RTP, which include the social and economic aspects as well as the environmental.

SEA Requirements for Baseline Data

5.3 The presentation of baseline data is required in the Environmental Report, as outlined under Article 5(1) of the SEA Directive. In particular, the following is required:

- (i) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;
- (ii) The environmental characteristics of areas likely to be significantly affected by the implementation of a plan; and,
- (iii) Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC².

Climate Change

² Areas designated pursuant to Directive 79/409/EEC and Directive 92/43/EEC are known as Special Protection Areas and Special Areas of Conservation, respectively.

5.4 Annual emissions of greenhouse gases at the UK level have decreased by approximately 100 MtCO₂ since 1990 to approximately 675 MtCO₂³ in the year 2006, despite emissions from the UK transport sector having increased from 58.5 MtCO₂ to 86 MtCO₂ between 1990 and 2002⁴. This trend however is not present in Wales where CO₂ emissions from the transport sector have remained at around 6 MtC over the period 1990 and 2004⁵. Total greenhouse gas emissions in Wales have remained relatively constant between the period 1990 to 2004, with emissions fluctuating between 13 and 15 MtC_e⁶.

5.5 It is therefore evident that without the intervention of the SE Wales RTP, emissions of CO₂ from road transport would be expected to continue to increase, assuming other exogenous parameters influencing the demand for car use, such as cost of motoring, or average disposable income of the local population, does not significantly increase, or decline, in the immediate future.

5.6 It is expected that in the long run the cost of fuel will increase with growing world demand and a fixed finite supply. The increasing cost of petrol and diesel should slow the growth in the demand for use of private vehicles, as people avoid making unnecessary journeys to save fuel. However, the rate of substitution between car use and public transport will be limited by public transport capacity. As a consequence, ticket prices will increase to choke off any rising demand for public transport at peak hours of the day, which is likely to make car use slightly more competitive for particular journeys. Thus against a forecast growth in population across SE Wales, without significant alterations to the fuels used to power transport, it is expected that emissions of CO₂ from road transport will grow in the future, albeit more slowly than in the past.

Air Quality

5.7 The key road transport routes across SE Wales generate large volumes of traffic, with the M4 alone currently carrying in excess of 100,000 vehicles per day on the most heavily used sections surrounding Newport. The areas in the vicinity of these roads experience poor air quality, due to emissions of 1,3-Butadiene, Benzopyrene, Benzene, Carbon Monoxide, Carbon Dioxide, Nitrogen Oxides, Lead, Sulphur Dioxides, Volatile Organic Compounds and Particulate Matter⁷.

5.8 Air quality is also adversely impacted by air transport, both directly by air travel, and indirectly by surface emissions from those accessing the airport. This would suggest that areas surrounding Cardiff International Airport suffer from poor air quality although no data is presently available to quantify these emission levels. Cardiff is however currently experiencing an increased number of days with moderate or higher pollution levels since 2001⁸.

³ Source: Baggot, S.L. et al (2006): 'UK Greenhouse Gas Inventory 1990 – 2004'.

⁴ Source: National Statistics (2006): 'Key Environmental Statistics for Wales'.

⁵ National Statistics: 'Key Environmental Statistics for Wales 2007'.

⁶ Ibid.

⁷ Sources: Welsh Assembly Government (2006): 'Key Statistics for Wales' and 'Air Quality in Wales'.

⁸ Ibid.

5.9 The Local Authorities of Cardiff, Monmouthshire, Rhondda Cynon Taff, and Newport have declared Air Quality Management Areas (AQMAs) within their respective boroughs. Cardiff has declared four AQMAs, Monmouthshire has declared two AQMAs, Newport has declared seven AQMAs, and Rhondda Cynon Taff has declared eight AQMAs. These local authorities must compile detailed Air Quality Action Plans and strategies to reduce emission levels for those pollutants which exceed National Air Quality Objectives. No AQMAs have been declared by the other local authorities located within the Sewta Region.

5.10 It is evident that the SE Wales RTP has scope to influence the future air quality across SE Wales, particularly in the areas surrounding the transport corridors which presently suffer disproportionately from road vehicle emissions. Without policies which encourage a reduction in road vehicle use, or policies which support the development of a low carbon fuel infrastructure, then it is likely that local air quality will continue to decline into the future across SE Wales.

5.11 Table 5.1 below summarises the number of days measured across urban areas in Cardiff and Cwmbran where local air quality was considered poor, due to moderate or high concentrations of one of PM₁₀, Ozone, Sulphur Dioxide, Nitrogen Dioxide, and Carbon Monoxide. The main causes of moderate or higher pollution (defined as a concentration exceeding National Air Quality Standards⁹) at urban sites are fine particles (PM₁₀) and Ozone. It is noticeable that Cardiff suffered from abnormally high levels of local air pollution in 2003. This has been explained by the significant amount of construction activity occurring in Cardiff in that year.

Table 5.1: Number of Days with Moderate or Higher Pollution Levels across Urban Centres in SE Wales

	2000	2001	2002	2003	2004	2005
Cardiff	24	22	30	59	24	n/a
Cwmbran	n/a	n/a	n/a	n/a	17	37

Source: Defra, AEA Energy and the Environment

Noise and Vibration

5.12 Noise levels are generally higher in areas located adjacent to busy road and rail networks. Aircraft noise generation, particularly during take-off and landing, in addition to road traffic and rail are the key sources of transport noise within the local environment. Noise therefore is a particular issue in areas surrounding the transport corridor and Cardiff Airport.

5.13 Existing areas of concern within SE Wales were identified during a Noise Mitigation Study for Wales, undertaken in 2002 on behalf of WAG. These areas included a number of junctions along the M4, namely, Junctions 23a to Junction 24, Junction 24 to Junction 25, Junction 25 to Junction 26, Junction 26 to Junction 27, Junction 27 to Junction 28, Junction 28 to Junction 29, Dixton, Monmouth, and Monmouth to Raglan. Mitigation measures recommended included the provision of low noise surfacing for the A40 at Dixton, the A40 at Monmouth, and the implementation of barriers for the M4 Junctions 24 to 25 and 26 to 27, the stretch of the A40 between Monmouth and Raglan¹⁰.

⁹ National Air Quality Standards are stated in Defra's 'Air Quality Strategy: Volume 1', July 2007.

¹⁰ Sewta, 'SEA of Sewta's Regional Transport Plan: Baseline Study Report', October 2006.

5.14 It is likely that without direct intervention, noise levels will continue to increase as the local population continues to grow across SE Wales, leading to an increase in demand for road use, and in consequence, an increase in noise impacts in areas surrounding key roads.

Ecology and Nature Conservation

5.15 There are a number of international, national, and regional sites designated for nature protection purposes located within close proximity to principal road and rail routes within SE Wales. These include areas of the Brecon Beacons National Park, the Wye Valley AONB and the Newport Wetlands National Nature Reserve (NNR).

5.16 In addition, there are 25 Special Areas of Conservation (SAC) within the region, with the Severn Estuary, situated between Cardiff and Newport, designated as a Ramsar Site¹¹.

5.17 Large areas of ancient semi-natural woodland are located throughout SE Wales, with some areas located in close proximity to major A-roads and railways.

5.18 All local authorities have local government strategies aimed at conserving and enhancing biodiversity in the form of Biodiversity Action Plans (BAPs). It can be expected therefore that the existing quality of designated sites is likely to be retained through careful management of land uses across SE Wales by each local authority, although the increased use of cars could begin to impact upon vegetation located close to transport corridors, particularly road verges, which are valuable sites for local wildlife. A whole range of priority of species and habitats are included in each of the Local BAPs.

Soil

5.19 There is limited data available outlining the current state of soils across SE Wales. Furthermore the impact arising from transport on soils is unquantified.

5.20 Agricultural land quality in England and Wales is expressed by the system of Agricultural Land Classification (ALC) devised by Defra which divides land into grades according to the extent to which its physical or chemical characteristics impose long term limitations on land-use. The grades range, from “excellent quality” (Grade 1) soil through to “very poor quality” soil (Grade 5).

5.21 The agricultural land data relating to SE Wales indicates that both Blaenau Gwent and Merthyr Tydfil are classified as being ‘severely disadvantaged’ for agricultural use, whereas the Vale of Glamorgan, Cardiff, and Newport have favourable soils located on more than 85% of their total land area, classified at a Grade 3 (“moderate/good”) standard. The highest proportion of severely disadvantaged land is located within Caerphilly, while Cardiff has the highest proportion of Grade 1 agricultural land within the region¹².

¹¹ Countryside Council for Wales (www.ccw.gov.uk)

¹² Welsh Assembly Government, ‘Local Authority Statistics’, 2004.

5.22 In addition, SE Wales has a number of contaminated sites located within former industrial areas, including Rhondda Cynon Taff, Merthyr Tydfil, Bridgend, and the Vale of Glamorgan, all of which account for 20% of all contaminated sites in Wales¹³. The SE Wales region contains more than 600 closed landfill sites, accounting for half the total national closed landfill sites. The majority of these are clustered together around ports such as Cardiff and Newport.

Water Quality and Flood Risk¹⁴

5.23 River water quality across SE Wales varies within each of the ten local authorities. A significant proportion (90%) of all rivers within Newport, Monmouthshire, the Vale of Glamorgan, and Bridgend, are classified as having good biological quality. All other authorities had fewer than 55% of rivers classified with good biological quality. In particular, only 40% of all rivers across Torfaen are classified as having good biological quality.

5.24 In terms of chemical quality, rivers located within Newport and Bleanau Gwent were measured to have low water quality, with Newport having only 48% of its rivers with good chemical quality. However, approximately 80% of rivers across the rest of the Sewta area have good chemical quality.

5.25 The majority of the Sewta region is located on a minor aquifer. Major aquifers are located in the Vale of Glamorgan and to the east of Newport. Source Protection Zones are also located within this general area, in addition to the Blaenau Gwent and Merthyr Tydfil.

5.26 The WAG '*Technical Advice Note 15 (TAN 15): Development and Flood Risk*', uses flood zone maps based on the Environment Agency's extreme flood outlines. Areas along the coast and rivers within SE Wales are at extreme risk of flooding and are either classified as Zone C1 or Zone C2. Zone C1 is defined in TAN 15 as areas of floodplain which are developed and served by significant flood defence infrastructure. Therefore it is recommended that developments located within these areas are subject to application of justification tests, including the acceptability of consequences. Zone C2 is defined as areas of a floodplain without significant flood defence infrastructure and therefore only less vulnerable development will be considered subject to application of justification testing, including the acceptability of consequences.

Light Pollution

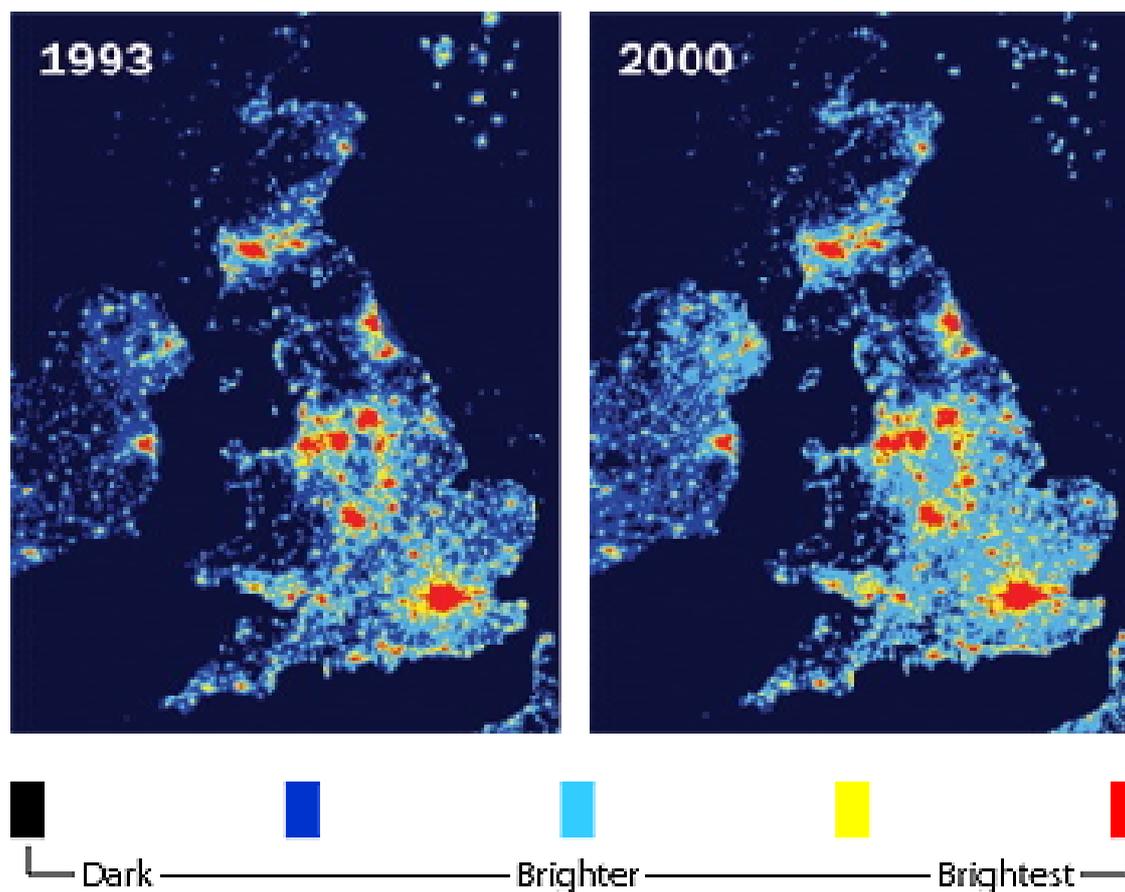
5.27 The beaming of outdoor light upwards into the sky at night increases light pollution in an area, and causes a reduction in the clarity of views of the stars and planets in the night sky.

5.28 The satellite data below, compiled by the Campaign for the Protection of Rural England from US Air Force weather satellites, demonstrate how light pollution has worsened and spread over the last decade across the UK, particularly around urban centres and into the surrounding countryside, as urban centres continue to grow and be developed. As is evident, the greatest amount of light pollution in Wales occurs in the densely populated SE region.

¹³ Land Regeneration Network, '*The Extent of Contamination in Wales*', 2004.

¹⁴ Source for all data in this section: Welsh Assembly Government, '*Key Environmental Statistics for Wales*', 2007.

5.29 Light pollution is expected to continue to increase both in the SE Wales without the adoption of new technology to reduce light lost to the sky during the night with the expected growth of the human population and urban centres across SE Wales.



Source: Campaign for the Protection of Rural England (data collected by US Air Force Weather Satellites)

Cultural Heritage¹⁵

5.30 There are a large number of cultural heritage sites across SE Wales. This includes the Blaenavon Ironworks which is listed on the United Nations Educational, Scientific and Cultural Organisation's (UNESCO) World Heritage List 2000, in recognition of its importance during the industrial revolution. The ironworks covers a site approximately 33 km² in area and is located to the south west of Abergavenny.

5.31 Many Scheduled Ancient Monuments (SAMs) are located within the region, a large majority of which are situated in close proximity to major road and railway networks, in particular the M4 corridor.

¹⁵ All data taken for this section available from Cadw.

5.32 There are five designated Sites of Special Historic Interest, which are listed in Table 5.1 below. In addition, there are six designated sites of Landscapes of Outstanding Historic Interest which are provided in Table 5.2 and 5.3 below¹⁶. There are also a large number of Listed Buildings within SE Wales.

Table 5.2: Register of Landscapes of Special Historic Interest in SE Wales

Name	Authority	Details
East Forest Fawr and Mynydd-y-glog	Rhondda Cynon Taff, Powys	Situated between the A4059, A470, and A465
Gelli-gaer Common	Caerphilly, Merthyr Tydfil	Situated near the B4254
The Rhondda	Rhondda Cynon Taff	Large area situated around the A4061, A4107, and A4233
Margam Mountain	Bridgend, Neath Port Talbot	Situated to the east of the M4 in close proximity to Port Talbot and near the A4107 and B428
Clydach Gorge	Monmouthshire, Blaenau Gwent	A relatively small area with the A4047 running through the middle. Near Gilwern and Bryn-Mawr

Source: Cadw

Table 5.3: Register of Landscapes of Outstanding Historic Interest in SE Wales

Name	Authority	Transport details
Merthyr Mawr, Kenfig and Margam Burrows	Bridgend, Neath Port Talbot, Vale of Glamorgan	Two separate areas, the eastern most parts of which are on the Coast. The M4 cuts across the north east part of Kenfig and Margam Burrows and the B4524 runs through the Merthyr Mawr Warren (which is also in close proximity to the A48 and A4106)
Merthyr Tydfil	Merthyr Tydfil	Situated at the intersection of numerous A-roads including A470, A465, A4102 and the A4060
Llancarfan, Vale of Glamorgan	Vale of Glamorgan	The A48 bounds the northern part of this site and it is in close proximity to the A4226 and B4265
Blaenavon	Monmouthshire, Torfaen, Blaenau Gwent	Centred around Blaenavon and in close proximity to Abergavenny the site is close to the A465, A4043, B4248 and B4246
Gwent Levels	Newport, Monmouthshire Cardiff	A large site situated along the north bank of the Severn Estuary with the M4 running across the east of the site
Lower Wye Valley	Monmouthshire, Forest of Dean, Herefordshire	A large site situated between Monmouth and Chepstow. The main road which runs through the site is the A466

Source: Cadw

Landscapes

5.33 Various sections of the SE Wales coastline have been designated as Heritage Coastlines, including the Glamorgan Heritage Coastline which covers 14 miles between West Aberthaw and Porthcawl and consists of sand dunes, beaches, and bays¹⁷.

5.34 There are 100 Registered Parks and Gardens within SE Wales, particularly condensed around Cardiff and Newport, in addition to the north east of the region. The M4 corridor provides access to approximately twenty of these sites with many of the other major A-roads and railway lines servicing these parks and gardens in the south of the region¹⁸.

¹⁶ Source for Tables 5.1 and 5.2: Register of Landscapes of Special Historic Interest in Wales and Register of Outstanding Historic Interest in Wales, from Cadw.

¹⁷ Heritage coastline information available from www.southernwales.com/en/valleys.php

¹⁸ The Register of Landscapes, Parks and Gardens of Special Historical Interest in Wales is available from Cadw.

5.35 There are three National Parks in Wales, one located in SE Wales, the Brecon Beacons. It covers an area of 1,344 km², stretching from Llandeilo in the west to Hay-on-Wye in the east.

Population¹⁹

5.36 In 2005, the population for SE Wales was 1.416 million, which accounts for 48% of the total population of Wales. This figure has remained static since 1991. The SE Wales area has an average population density of 6.92 people per hectare, although this differs widely across the region. Cardiff has a very high density, whilst there is a much lower population density within Monmouthshire.

5.37 Migration patterns within the region for 2002 indicate a disproportionate movement of young people moving from rural areas into urban centres, with a particular growth in 16 – 24 year olds moving into Cardiff, with 25 – 44 year olds, moving in the opposite direction.

5.38 The Statistical Directorate of the Welsh Assembly Government has developed population projections for SE Wales which forecasts the population of Wales to increase over the period 2008 to 2023. It is therefore expected that with growth in the population across SE Wales, *ceteris paribus*, the demand for transport will continue to grow.

Employment and Business Growth

5.39 In 2001, a significant proportion of young people were unemployed across SE Wales, some 30.83% of all 16 – 24 year olds. In contrast, only 16.46% of those aged 50 and over were unemployed across SE Wales²⁰.

5.40 The average gross weekly earnings for residents across SE Wales in 2006 was £474.18 which increased by 7.71% from 2004. However, both Merthyr Tydfil and Monmouthshire experienced a slight decrease in weekly earnings between 2005 and 2006.

5.41 Cardiff accounts for the highest number of people employed within the area. With the exception of Newport and Merthyr Tydfil, all SE Wales local authorities have, on average, increased in workplace employment between 2001 and 2005.

5.42 Based on the three year survival rates of VAT registered businesses located across SE Wales, business growth increased by 10.7% on average between 1995 and 2002. Torfaen, Bridgend, and Monmouthshire experienced the highest survival rates in 2002 while Merthyr Tydfil and Blaenau Gwent had the lowest rates. Both Newport and Cardiff maintained a fairly steady rise in business survival rates over the same period.

Multiple Deprivations

¹⁹ Source of data for this section: Local Government Data Unit - Wales.

²⁰ Source for this section: Local Government Data Unit - Wales.

5.43 The WAG's 'Welsh Index of Multiple Deprivation 2008 Summary Report' compares levels of deprivation across Wales. This Index is made up of 8 separate domains of deprivation, namely, income (23.5%); employment (23.5%); health (14%); education, skills and training (14%); housing (5%); physical environment (5%); geographical access to services (10%); and community safety (5%) which are weighted accordingly. These domains have been informed by indicators which are outlined in Table 5.4 below.

Table 5.4: Indicators used to inform domains for Deprivation Indexes

Domain	Indicators
Income	Income support claimants
	Income based jobseeker's allowance
	Working family's tax credit
	Disabled person's tax credit
Employment	Claimants of unemployed related benefits
	Claimants of incapacity benefit
	Severe disablement allowance
	Participants on New Deal for Young People and Intensity Activity Period
Health	Limiting long term illness
	Deaths
	Cancer incidence
Education, Skills and Training	Proportion of adults with low or no qualifications
	Proportion of 17 or 18 year olds not entering further or higher education
	Secondary school absence rates
Housing	Lack of central heating
	Overcrowding (excluding student housing)
Physical Environment	Air quality
	Air emissions
	Living within 1 km of a waste disposal site
	Proportion of people living within 1 km of an Environment Agency regulated industrial source
	Proportion of people living within an area at significant risk of flooding
Geographical Access to Services	Access to: food shops, GP Surgery, primary school, post office, public library, leisure centre, NHS dentist, and secondary school
Community Safety	Police force recorded crime
	Youth offenders
	Adult offenders
	Fire incidence

Source: WAG

5.44 Results of the overall deprivation scores indicate that there are 190 Super Output Areas (SOAs) within Wales which fall within the top 10% most deprived areas, as measured against all deprivation domains. Of these 190 SOAs, 18% are located within Cardiff and 15% are located within Rhondda Cynon Taff.

5.45 Merthyr Tydfil (31%), Blaenau Gwent (21%), Neath Port Talbot (19%), and Rhondda Cynon Taff (18%) had the highest percentage of their SOAs in the most deprived ten percent in Wales, for overall deprivation.

5.46 The Welsh Index of Multiple Deprivation 2008 Summary Report indicates the ranking of SOAs within Wales in terms of their separate domains as well as the overall deprivation for all domains. Rankings are ordered so that Rank 1 indicates the most deprived SOA out of all the 190 SOAs. Table 5.5 below shows the top ten rankings of SOAs within SE Wales local authority areas.

Table 5.5: Top Ten Ranks of Multiple Deprivation for each domain within SE Wales by Super Output Area

Local Authority	Overall deprivation score	Income	Employment	Health	Education, skills, and training	Housing	Physical Environment	Access to services	Community Safety
Bridgend				1	3				
Vale of Glamorgan									
Rhondda, Cynon, Taff	10		5, 7	2, 5	4				
Merthyr Tydfil	7		9, 10		7				
Caerphilly	8, 9	7	4, 6, 8						
Blaenau Gwent					2				
Torfaen									
Monmouth-Shire								2	
Newport		10		9			2, 7, 8, 9, 10		10
Cardiff	2	6, 8, 9		3, 6, 7	1, 5				3, 7, 8, 9

Source: WAG

5.47 Specific SOAs within Caerphilly experienced the greatest levels of overall deprivation, largely because of the weight given to employment deprivation, a critical issue in this local authority area. Cardiff has the second most deprived SOA in Wales, arising due to the poor levels of income a number of households across this local authority suffer.

5.48 There were no SOAs within SE Wales which fell within the top ten most deprived SOAs for housing. In addition, the Vale of Glamorgan and Torfaen did not have any SOA's included within the Top 10 most deprived SOAs.

Transport and Travel

5.49 Northern and southern parts of SE Wales are well connected by transport networks. In 2001, over 570,000 households within SE Wales owned at least one private vehicle (car or van). Furthermore, 77.8% of the working population within SE Wales used either a car or a van when travelling to work as presented below in Table 5.6.

Table 5.6: Percentage of people in SE Wales (aged 16-74) in employment who usually travel to work by different modes of transport

Mode of transport	Percentage of those in employment in SE Wales
Car or van	77.77 %
Rail	1.89 %
Bus	6.31 %
Taxi or minicab	0.6 %
Motor cycle	0.82 %
Bicycle	1.25 %
On foot	10.94 %
Other	0.45 %

Source: National Statistics

Roads

5.50 There is an extensive road network located across SE Wales, which includes the M4 motorway, which runs along the southern extent of the region, in addition to a wide network of Trunk 'A' and Primary Roads. However, the Sewta Transport Survey 2005 revealed that there is a limited cycle network across SE Wales. Motor vehicle use has gradually increased for all of the 10 unitary authorities in the Sewta region. Cardiff, Rhondda Cynon Taff, and Newport have the highest volume of traffic on roads, with in excess of 1.2 billion vehicle kilometres being driven in these unitary authorities²¹.

5.51 Between 1999 and 2004, road traffic casualties (killed or seriously injured) have decreased by 17.85%, while the percentage of people travelling to work by road has increased by 2% in the same period²².

5.52 Road lengths in Wales were extended by 48 km in 2005 as a result of an increase in minor surfaced roads. A large proportion of all households in Wales (76%) in 2005 were estimated to be within 15 minutes journey time on foot or by public transport of a doctor. However, only 16% of households were estimated to be within 15 minutes journey time of a hospital. In 2004/2005, 86% of households within Wales were estimated to be within 13 minutes walk of the nearest bus stop with a service at least once an hour. In the same period, 38% of households were estimated to be within 26 minutes walk of the nearest train station.

5.53 The volume of road traffic within SE Wales has steadily increased by 23.5% between 1993 and 2005, with two-wheeled motor vehicles increasing by 47% and cars, taxis and minibuses by 20.55% respectively in the same period. Existing road volume levels for 2005 in SE Wales are outlined in Table 5.7.

Table 5.7: Volume of Road Traffic in SE Wales by Local Authority in the year 2005

Local Authority	Volume road traffic (Billion vehicle kms)	Motorway	A – Trunk roads		A – County Roads	
			Urban	Rural	Urban	Rural
Bridgend	1.25	0.4	-	-	0.16	0.26
Vale of Glamorgan	1.06	0.14	-	-	0.11	0.26
Cardiff	2.92	0.46	-	0.07	0.68	0.31
Rhondda, Cynon, Taff	2.02	0.28	0.1	0.29	0.3	0.34
Merthyr Tydfil	0.38	-	-	0.22	0.03	0.02
Caerphilly	1.13	-	-	0.03	0.17	0.35
Blaenau Gwent	0.4	-	0.03	0.06	0.06	0.09
Torfean	0.6	-	0.03	0.1	0.08	0.05
Monmouth-Shire	1.34	0.31	0.03	0.52	0.01	0.11
Newport	1.82	0.84	-	0.13	0.19	0.07
Total South East Wales	12.92	2.43	0.19	1.42	1.79	1.86

Source: Welsh Transport Statistics 2006

5.54 Table 5.8 illustrates that there has been steady growth in the quantum of traffic flow across SE Wales since 1997, from 11,467 million vehicle kilometres to 13,085 million vehicle kilometres, a 14.1 % growth over this period, which corresponds to an annual average growth rate of 1.48 %. This rate of growth in road transport has remained relatively constant as a proportion of total road traffic across the whole of Wales, which is growing by 1.58 % per annum on average – a slightly faster rate than across the SE of Wales.

²¹ WAG, 'Welsh Transport Statistics 2006'.

²² WAG: Welsh Health Survey 2005/06.

Table 5.8: Estimated Traffic Flows for all motor vehicles by Unitary Authority in SE Wales 1997 – 2006 (million vehicles kilometres)

Local Authority	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Blaenau Gwent	347	349	351	353	357	364	365	383	395	392
Bridgend	1,073	1,093	1,137	1,135	1,164	1,218	1,210	1,268	1,252	1,279
Caerphilly	1,007	1,024	1,038	1,050	1,051	1,090	1,097	1,133	1,128	1,145
Cardiff	2,659	2,733	2,785	2,737	2,825	2,900	2,951	3,051	2,915	2,957
Merthyr Tydfil	335	338	335	338	337	356	356	369	383	393
Monmouthshire	1,169	1,188	1,226	1,223	1,229	1,268	1,250	1,328	1,338	1,323
Newport	1,619	1,659	1,684	1,676	1,717	1,769	1,797	1,854	1,820	1,850
Rhondda Cynon Taff	1,778	1,819	1,854	1,848	1,881	1,954	1,936	2,006	2,018	2,054
Torfaen	516	534	542	549	561	576	596	601	603	632
Vale of Glamorgan	964	979	992	997	986	1,016	1,027	1,071	1,065	1,060
Total: South East Wales	11,467	11,716	11,944	11,906	12,108	12,511	12,585	13,064	12,917	13,085
Total: Wales as a whole	24,178	24,493	24,909	24,865	25,248	26,203	26,592	27,315	27,277	27,846
Proportion of SE Wales traffic of Wales total	47.4 %	47.8 %	48.0 %	47.9 %	48.0 %	47.7 %	47.3 %	47.8 %	47.4 %	47.0 %

Source: Department for Transport – National Road Traffic Survey (1997)

5.55 The local authority areas which have seen the most rapid growth in road traffic over the last decade, as outlined above in Table 5.7, are Torfaen (22.5 % growth, with an average annual growth of 2.28 %), Bridgend (19.2 % growth, with an annual average growth of 1.97 %), and Merthyr Tydfil (17.3 % growth with an annual average growth of 1.79 %). In contrast, the local authorities with the slowest growth in road traffic in SE Wales were Vale of Glamorgan (10.0 % growth with an annual average growth of 1.06 %) and Cardiff (11.2 % growth with an annual average growth of 1.19 %).

5.56 It is evident that current trends suggest that road congestion across SE Wales will, *ceteris paribus*, continue to worsen without drastic interventions.

Rail

5.57 An extensive rail network exists within the Sewta region, joining major city centres and towns such as Cardiff and Newport. In 2004/2005 the total number of rail passenger journeys made in Wales was 19.9 million, the majority of which were internal journeys within Wales, with 39% of these journeys destined for Cardiff²³.

Air Travel

²³ Office for Rail Regulator, 'National Rail Trends Yearbook 2005/06', 2006.

5.58 The principal airport located within SE Wales is Cardiff International Airport. The demand for air travel from this airport has grown considerably since 1981, almost quadrupling the number of passengers passing through the airport to approximately 1.9 million people per annum in 2004. Much of this demand has arisen from international passengers, which made up 82% of the total throughput at the airport²⁴.

Shipping

5.59 Cardiff, Newport, and Barry are the main ports located within SE Wales. In total, more than 1,400 ships per annum have arrived at ports in SE Wales between 1991 and 2002. There has been a general trend for ship arrivals at ports across SE Wales to increase over time, against a general annual fluctuation in actual ship arrivals²⁵.

²⁴ WAG, 'Welsh Transport Statistics 2005'.

²⁵ WAG, 'Welsh Transport Statistics 2005'.

6. SEA Framework

SEA Framework

Introduction

6.1 The SEA Framework sets out the assessment criteria against which the effects of the SE Wales RTP are considered. The SEA Framework is derived from the issues highlighted by the baseline assessment, the review of the plans, policies, and programmes influencing the SE Wales RTP, and the objectives and priorities of Sewta.

6.2 The SEA objectives utilised in this report were determined in the '*SEA Scoping Report*', Sewta, January 2007, and are closely linked to the outcomes listed in WAG's '*Wales Transport Strategy*', 2006, and comply with the guidance stated in the '*Welsh Transport Appraisal Guidance*' (WelTAG), April 2006.

6.3 The SEA Framework is presented below in Table 6.1. In summary, it presents a number of SEA Objectives, and a number of associated indicators for each objective, which represent different aspects of each Objective, and which allow for meaningful measures to be taken. This facilitates after plan monitoring, a requirement of the SEA Directive. A short summary is presented of potential sources of existing data which could be utilised to monitor the selected indicators.

Table 6.1: SEA Framework

SEA Objective	Indicators	Data Source	Data Trends
1. To reduce the contribution of transport to air pollution and other harmful pollutant emissions	Number of AQMAs in SE Wales	Local Authorities	Four local authorities in SE Wales presently have AQMAs for NO _x and PM ₁₀ , with a total of 21 AQMAs so far declared across SE Wales.
	Number of road vehicle miles driven in SE Wales	Department for Transport – The National Road Traffic Survey	There has been steady growth in the quantum of traffic flow across South East Wales since 1997, from 11,467 million vehicle kilometres to 13,085 million vehicle kilometres, a 14.1 % growth over this period, which corresponds to an annual average growth rate of 1.48 %. This rate of growth in road transport has remained relatively constant as a proportion of total road traffic across the whole of Wales, which is growing by 1.58 % per annum on average – a slightly faster rate than across SE Wales.
	Number of times annually the hourly mean concentration of NO ₂ exceeds the target concentration of 200 µgm ⁻³ in each SE Wales local authority	The Welsh Air Quality Archive	Data trends available from www.airquality.co.uk
	Number of times annually the hourly mean concentration of PM ₁₀ exceeds the target concentration of 50 µgm ⁻³ in each SE Wales local authority	The Welsh Air Quality Archive	Data trends available from www.airquality.co.uk
2. To reduce the contribution of transport to greenhouse gas emissions and minimise the vulnerability of transport infrastructure to the effects of climate change	Proportion of total greenhouse gas emissions in Wales arising from transport sources	Greenhouse gas inventory for Wales from National Atmospheric Emissions Inventory	Greenhouse gas emissions have decreased across Wales since 1990. Emissions from transport have however increased between 1990 and 2002, from 58.5 MtCO _{2e} to 86 MtCO _{2e}
	Modal share for journeys to work – based on usual mode of travel to work by people in employment (aged 16 – 74)	Labour Force Survey – Household Surveys, carried out by National Statistics (this indicator is indirectly related to greenhouse gas emissions)	
	Modal share for journeys to school – based on usual mode of travel to school by 5 – 16 year olds	National Travel Survey (DfT) via the National Centre for Social Research	
3. To reduce the negative effects of noise and vibration from transport on the environment	Number of noise complaints made to local authorities across SE Wales which refer to transport related sources	Local authorities in SE Wales	Noise issues presently exist in areas surrounding Cardiff International Airport and in areas in the vicinity of the M4
4. To reduce the negative impacts of transport	Number of new transport links built through a	A potential source of data for this indicator	27 % of SSSIs in the Vale and Valleys,

on biodiversity and to increase its positive impacts	designated area of consequence to wildlife (i.e. Special Area of Conservation, Special Protection Area etc)	would be local planning authorities (although this indicator is presently not collected)	Cardiff, Newport and Monmouth are classified as 'unfavourable / declining'; 22 % are classified as 'unfavourable / declining'; 5 % are classified as 'favourable / declining'. 18 % of SACs in SE Wales are classified as 'unfavourable / declining'; 22 % are classified as 'unfavourable / recovering'; 11 % of SACs are classified as 'favourable / maintained'.
	Number of bat roosts located within close approximation of the road network	This is an initiative in WAG's 'Trunk Road Estate Biodiversity Action Plan 2004 – 2014', January 2004	
	Number of areas on the trunk road network noted as a location with a high bat mortality	This is an initiative in WAG's 'Trunk Road Estate Biodiversity Action Plan 2004 – 2014', January 2004	
5. To avoid transport related damage to designated wildlife sites and protected species avoiding irreversible losses	Number of new transport links built through a designated area of consequence to wildlife (i.e. Special Area of Conservation, Special Protection Area etc)	A potential source of data for this indicator would be local planning authorities (although this indicator is presently not collected)	27% of SSSIs in the Vale and Valleys, Cardiff, Newport and Monmouth are classified as 'unfavourable / declining'; 22% are classified as 'unfavourable / declining'; 5% are classified as 'favourable / declining'. 18% of SACs in SE Wales are classified as 'unfavourable / declining'; 22 % are classified as 'unfavourable / recovering'; 11% of SACs are classified as 'favourable / maintained'.
	Short term changes in the abundance of widespread breeding birds by major habitat type	The Breeding Bird Survey is collected by the British Trust for Ornithology, the Royal Society for the Protection of Birds, and the Joint Nature Conservation Committee. One drawback is that specific data relating to SE Wales may not be available	
6. To improve access to key services and facilities	Proportion of households across SE Wales within 15 minutes of a (i) school; (ii) bus stop; (iii) a train station.	This indicator is currently not collected. It would require an Accession / GIS analysis, and an agreement over the methodology and definitions to be used in the modelling	2004/2005 – 86% of households in Wales were within a 13 minute walk of a bus stop (with a service frequency of at least one per hour); 2004 / 2005 – 38% of households within 26 minute walk of the nearest train station; Passenger bus journeys have decreased by 0.8% between 1999 and 2005; Average population density was 6.92 people per hectare in 2001; The total number of educational facilities decreased by 181 schools between 1991 and 2004
7. To reduce transport related community severance	Average distance travelled by walking or by public transport in any given year	All indicators are available from the National Travel Survey collected by the DfT. Weakness of data set is that data is only available at the UK level	The average number of miles walked per person in the UK has stayed relatively constant over the past decade, with an average distance of 201 miles. Car and bus use have stayed relatively constant too. Surface rail use has increased by 45 % over the last decade.

	Trips per person per year by age by walking or by public transport		In 2006, younger people (29 or younger) walked more than older people, with older people (30 – 69) driving much more
	Trips to school by walking and/or public transport		The number of 11-16 year olds accessing school by walking has decreased from 43 % to 41 % between 2004 and 2006 with the number using the bus increasing from 22 % to 24 %. The number of 5 – 10 year olds accessing school by walking increased from 49 % to 52 % with an associated reduction in the number travelling by car or van from 43 % to 41 % between 2004 and 2006.
8. To encourage healthy lifestyles	Proportion of local trips which were made by (i) bicycle and (ii) walking for all purposes less than 5 miles in length	National Travel Survey (DfT) via the centre of National Social Research	The National Travel Survey stated that in 2006, 24 % of all trips were made by walking, up from 23 % in 2005, and 2 % by bicycle, up from 1 % in 2005.
9. To improve access to healthcare	Proportion of households within 15 minutes of a doctor of hospital by public transport and/or car	This indicator is currently not collected. It would require an Accession / GIS analysis, and an agreement over the methodology and definitions to be used in the modelling	76 % of households in SE Wales lived within 15 minutes of a doctor in 2005, whilst 16 % of households were 15 minutes within a hospital in the same year. SE Wales: 6.1 GPs per 10,000 people Number of hospital units in Wales marginally decreased from 2001 – 2005.
10. To improve the actual and perceived safety and security of travel	Number of annual road accidents in SE Wales	The DfT collects data on annual road accidents in Great Britain as part of its Annual Transport Statistics publication and the Road Safety Council of Wales (RoSCoW) collect data for Wales annually, although this data may not be able to be disaggregated down to the regional level	There were 8,701 road accidents involving personal injury recorded in Wales in 2006, 0.1 % less than in 2005. These accidents resulted in 12,692 casualties, which is 41 % less than in 2005. At the Great Britain level, there were 258,404 recorded casualties in 2006, 5 % less than in 2005.
11. To reduce transport related land contamination	Number of land pollution incidents arising from the transport network	Environment Agency Wales	Transport accounted for 4 % of the 219 land related pollution incidents in England and Wales in 2006. In total, there were two Category 1 land pollution incidents in Wales in 2006, the same as in 2005, and 33 Category 2 incidents, up by 5 incidents from the 28 in 2005

12. To limit transport related pollution of water resources	Number of recorded water pollution incidents where transport is the identified primary cause	Environment Agency Wales	There were 605 water related pollution incidents which had a serious impact on water quality in England and Wales in 2006 (Category 1 or 2 incident), 8 % less than in 2005 and the lowest on record. There were 11 Category 1 water pollution incidents in Wales, and 59 Category 2 incidents in 2006. Transport accounted for 3 % of the incidents in 2006 in England and Wales, and less than 1 % in Wales
13. To minimise the risk of flooding associated with transport related development	Number of flooding events per annum of consequence to the transport network	The term 'of consequence' will need to be defined although it could be taken to be any flood event which prevents the normal flow of traffic	The Environment Agency collects an indicator which measures the frequency which the River Wye is at risk of flooding. The risk of flooding is determined by the frequency at which the river water depth exceeds a specified threshold level. The threshold is set at the level which has been historically exceeded on average three times a year over the period 1981 to 2000. The threshold wasn't exceeded in 2003, but was exceeded twice in 2004, and once in 2005
14. To minimise the use of finite resources, and increase the use of recycled materials in the provision of new transport infrastructure	Proportion of transport schemes across SE Wales awarded the Civil Engineering Environmental Quality Assessment and Award Scheme (CEEQUAL)	This data would need to be collected on a project by project basis	Parc Cybi business park development in the Island of Anglesey; the Cardiff International Sports Village; and the A470 Dolwyddelan to Pont-yr-Afanc Road Improvement Scheme between Cardiff and Llandudno have all been awarded CEEQUAL
	Percentage of sustainable resources used in the maintenance of transport assets or new transport infrastructure in SE Wales	Individual scheme contractors would need to collect this data and supply to a central monitoring agency. The data will need to cover the % of recycled material used in the particular development built by the contractor (this indicator might not be collected diligently by contractors unless specified as a requirement in contracts)	No data available
15. To minimise the negative impact of transport on our heritage – the historical environment, and regional and local distinctiveness	Proportion of new transport schemes which are judged to have a negative effect on the cultural and historic environment	This data is not presently collected. Data would need to arise from environmental assessments of new transport schemes, which would have to be collected by appropriate	There are a large number of historical and cultural resources across the SE of Wales including Blaenavon Ironworks, which covers 33 km ² and is listed as a World Heritage Site

		public body (likely that there would be no consistent objective approach to assessing the significance of any impact to the cultural or historical environment brought about by a proposed transport scheme, as they are likely to be assessed by different people)	by the United Nations
16. To protect and enhance the landscape character and townscape from the negative effects of transport	Proportion of new transport schemes which are judged to have a negative effect on the landscape character and townscape in the surrounding areas	This data is not presently collected. Data would need to arise from environmental assessments of new transport schemes, which would have to be collected by appropriate public body (likely that there would be no consistent objective approach to assessing the significance of any impact to the landscape or townscape brought about by a proposed transport scheme, as they are likely to be assessed by different people)	A 14 miles stretch of coastline across SE Wales is a designated heritage coastline. There are also approximately 20 Registered Parks and Gardens located in riparian areas to the M4
17. To minimise light pollution caused by transport	Light pollution across SE Wales	Data is collected and presented on an ad hoc basis by the Campaign to Protect Rural England, which has produced a number of light pollution maps. It should be noted that the indicator is very general and is based upon the data presented in the baseline	Light pollution has increased across the SE Wales between the years 1993 and 2000

7. SEA Methodology

SEA Methodology

Introduction

7.1 This section of the Environmental Report presents the methodology used to undertake the assessment of the likely significant effects of the SE Wales RTP. It also defines a number of the terms utilised throughout the assessment.

The Aim and Scope of the Methodology

7.2 The Environmental Report summarises the environmental impacts resulting from the implementation of the SE Wales RTP and its associated objectives, policies, and projects, planned for implementation across SE Wales.

7.3 The proposed scope of the Environmental Report goes beyond the assessment of the environmental impacts of the SE Wales RTP, as the economic and social impacts will also be identified, making the final scope more akin to a sustainability appraisal. This allows for a wider identification of the various tradeoffs in economic benefits or costs and environmental or social benefits and costs which will arise due to the implementation of the SE Wales RTP.

7.4 The aim of the assessment is to determine whether the emerging SE Wales RTP is likely to produce sufficient sustainability benefits whilst highlighting the potential negative effects. The identification of likely regional effects allows for the development of mitigation measures to offset or reduce any adverse effects which are forecast to arise. All potential effects of the SE Wales RTP are measured relatively to the baseline situation, which is assumed, would be characterised by a continuation of the existing environmental, social and economic trends across SE Wales, as outlined in Sewta's '*SEA for Sewta regional Transport Plan: Baseline Study Report*', October 2006 and in the baseline section of this report.

The SEA Methodology

7.5 To evaluate the likely future environmental, economic and social effects of the SE Wales RTP, it is assumed that all future effects are derived from policies stated within each strategy or from proposed projects in the SE Wales RTP. The policies and projects will therefore be the sources or influences of change across SE Wales.

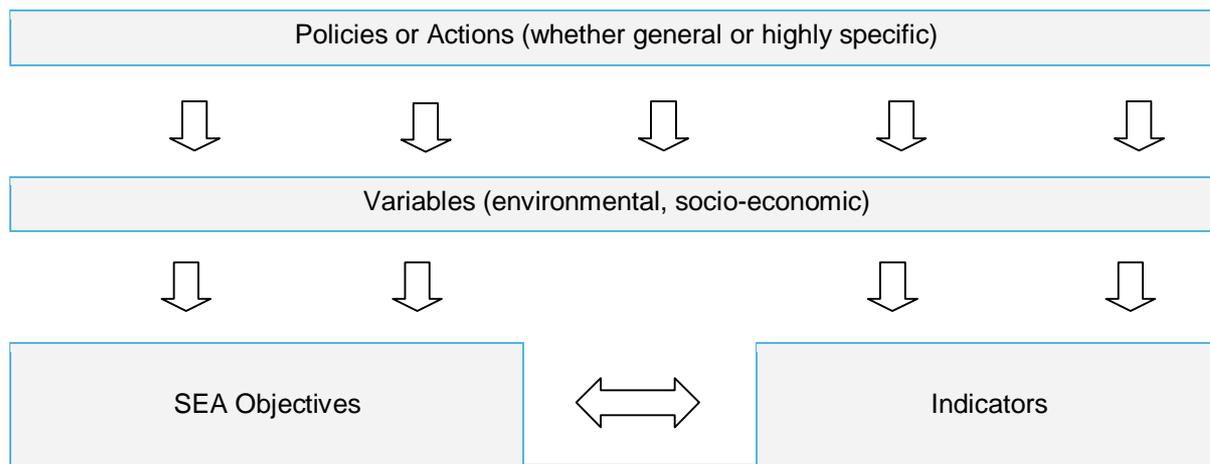
Using a 'Network Model' to carry out the Strategic Environmental Assessment

7.6 The Network Model is an approach used to assess the effects of plans and strategies, and is consistent with the approaches presented in the Department for Communities and Local Government (DCLG) official guidance on SEAs, '*A practical Guide to the Strategic Environmental Assessment Directive*', September 2005. The Network Model approach allows for the systematic identification of cause and effect linkages between environmental and socio-economic variables affected by the proposals in the SE Wales RTP.

7.7 In general, the Network Model assesses the effects of the SE Wales RTP by identifying how the strategies and projects outlined in the SE Wales RTP, when implemented, can cause a direct effect on the future outcome of the SEA Objectives. For example the achievement of the SEA Objective to reduce the transport sector's contribution to greenhouse gas emissions and to minimise the vulnerability of the transport infrastructure to the effects of climate change, would be determined by future investment in new road infrastructure, new public transport schemes and demand management measures influencing transport use. However, the more general relationship between development principles and SEA Objectives are expressed as a source-pathway-receptor mechanism where:

- (i) Policies or actions affect a range of variables; and
- (ii) Changes in these variables affect the achievement of a range of SEA Objectives.

7.8 Conceptually, the model can be represented as follows:



7.9 Extending the example above relating to the reduction in the share of greenhouse gases emitted by the transport sector across SE Wales; by implementing policies which encouraged the reduced use of private cars, through the enhanced provision of public transport, a number of indirect effects will occur, which would influence further socio-economic or environmental variables and therefore influence the outcome of other SEA Objectives. For example, a reduction in private car use could also improve local air quality, encourage a greater number of trips made by pedestrians, and hence improve the health of residents across SE Wales.

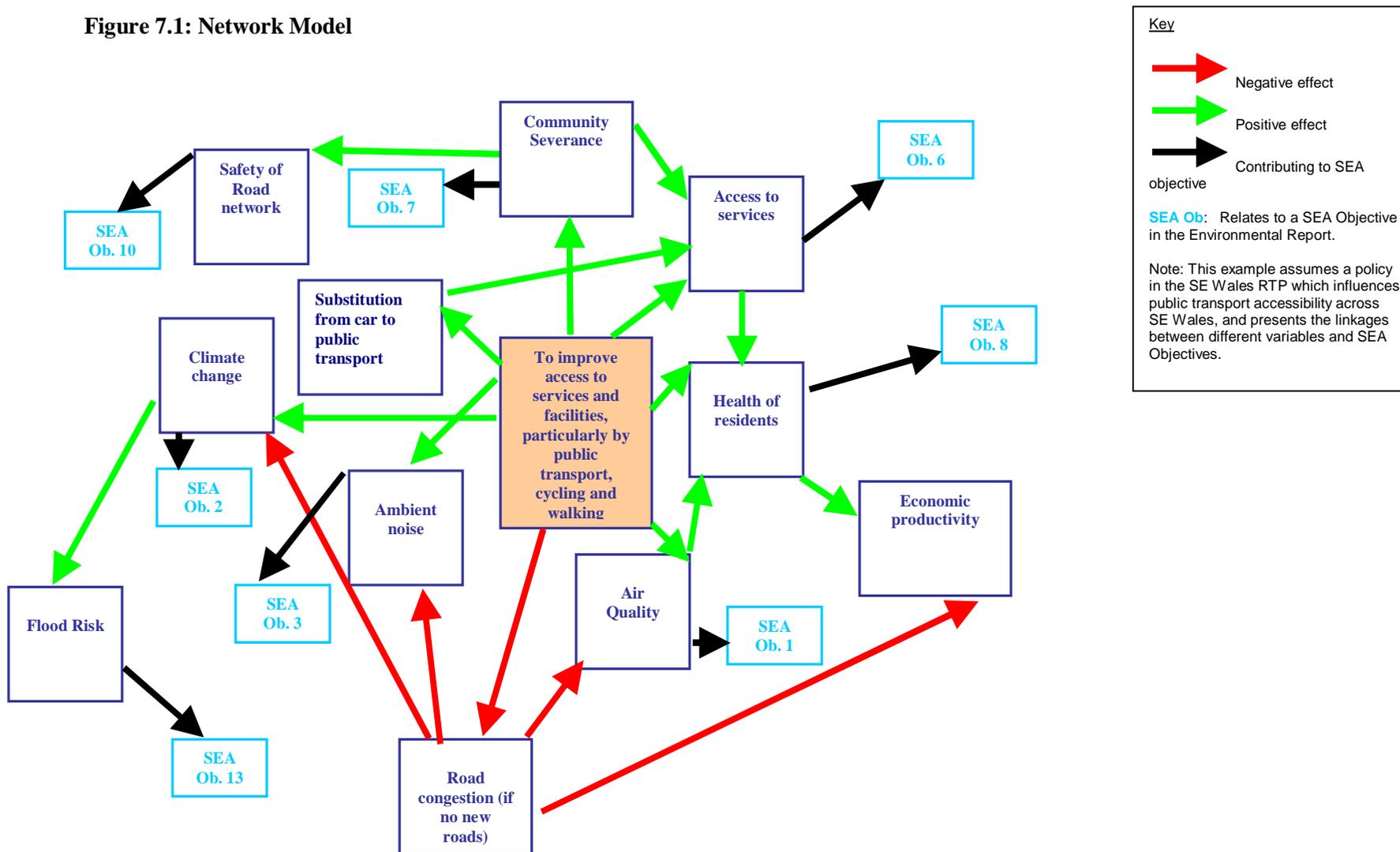
7.10 The process of SEA emphasises the importance of identifying indicators through which the attainment of the chosen SEA Objectives (and changes in their associated variables) can be monitored. Suitable indicators need to be quantifiable, and there must be a commitment to measuring them regularly. It is unrealistic to assume that the data required to compile new indicators will be forthcoming. Therefore the majority of indicators selected for inclusion in the SEA Framework are those which are predominantly already monitored by public bodies.

7.11 The Network Model works by testing the policies and projects in the SE Wales RTP by mapping them according to the degree to which it would be expected to affect a range of environmental, social, economical and health variables, such as air quality, soil, biodiversity, ambient noise, access to health services and social exclusion. The interactions between these variables (such as the positive relationships between improved air quality and human health; and between reduced flooding in marginal areas and social exclusion) can also be mapped. Each link in this chain of effects can be characterised in terms of direction, strength, and quality (positive / neutral / negative).

7.12 The second part of the Network Model comprises the equivalent set of relationships between the variables and the SEA Objectives (or, more precisely, between the variables and the indicators selected to illustrate the extent to which the SEA Objectives are likely to be achieved).

7.13 An example of a Network Model is provided to illustrate how the model would work, is shown overleaf in Figure 7.1 and provides an example of the relationships between variables and individual SEA Objectives.

Figure 7.1: Network Model



7.14 As can be seen in Figure 7.1, the proposal to improve the access to services and facilities by enhancing public transport provision and cycleways and the pedestrian network across SE Wales, influences the outcome of a number of socio-economic and environment variables, which in turn influence the outcome of a number of SEA Objectives.

7.15 It is therefore the interaction of these variables, and the policies and projects presented in the SE Wales RTP which determine the outcome of each SEA Objective. Then by comparing the likely effects of the SE Wales RTP's policies against the baseline case for each SEA Objective, a comparative and relative assessment of the effects of the SE Wales RTP can be undertaken.

7.16 It should be noted that whilst the Network Model allows for the mapping of cause and effect relationships, the assessment of the significance of likely effects arising from the proposals in the SE Wales RTP can only be assessed via expert opinion. This is because the network model is limited to identifying cause and effect relationships, none of which are stated in a precise formulaic manner, and thus the significance of any impact must be determined exogenously to the model.

7.17 It should be noted that throughout the assessment geographical specific impacts will be identified, wherever location specific impacts are relevant to the assessment. However, this approach cannot be adopted for all of the SEA Objectives, due to uncertainties in the effects of policies and the quality of existing environmental and socio-economic data for SE Wales.

Assessing and Identifying Different Effects in the Network Model

7.18 The assessment encompasses five different kinds of effects between variables, be they positive or negative. These include direct effects, indirect effects, cumulative effects, synergistic effects, and feedback effects. These effects are briefly defined in this section.

7.19 A **direct effect** on a variable is defined as an effect resulting from the implementation of a proposal in the SE Wales RTP onto a variable. The direction in the change of this variable and its relationship with other variables which affect different SEA Objectives, influences the kind of effect which is induced.

7.20 Another potential effect which may arise from the implementation of proposals stated in the SE Wales RTP is a **feedback effect**. A feedback effect arises when there is a two way relationship between variables. As the value of one variable changes, it influences the state of the other variable, which in turn influences a further change in the initial variable, and so on.

7.21 An **indirect effect** can be described as an effect which occurs due to an indirect consequence of a direct effect or another indirect effect. For example, the direct effect of increasing the connectivity of the pedestrian network could be to improve the number of trips taken by foot. This could indirectly improve health of residents across SE Wales.

7.22 **Cumulative effects** are additive in nature, and occur when two proposals combine to exacerbate the effect on a variable, which in turn could cause an indirect effect on another variable. An example of a cumulative effect could be the building of roads. Building several new roads would initially decrease general road congestion, although in the long run the increased supply of roads would lead to a demand response and the roads would over time become congested, leading to the indirect effects of increased greenhouse gas emissions from transport and worsening local air quality.

7.23 **Synergistic effects** arise when two different effects result independently from a proposal in the Plan, and interact together to induce an effect greater than the sum of their independent effects, causing a secondary effect on another variable.

7.24 All of the environmental and socio-economic effects caused by the implementation of the SE Wales RTP, be they positive or negative, are expected to occur predominately over SE Wales with minimal transboundary effects.

7.25 The probability of any effects will also be considered, to demonstrate the likelihood of occurrence. Many of the potential effects that could occur from the implementation of proposals in the SE Wales RTP for a particular SEA Objective are mutually exclusive. Thus the most likely effect which would occur from the implementation of the SE Wales RTP is presented in the analysis. However, it should be noted that probabilities are not presented as confidence intervals or as stated quantitative probabilities, as data constraints preclude their calculation.

7.26 The time scale which an identified effect will occur over is also considered. Many of the effects will happen in the short term and be of a temporary nature. However, other effects will be permanent or in the longer term. There is no special method adopted to assess the time scale or permanency of effects. They are simply mentioned alongside the assessment of each SEA Objective wherever relevant.

Baseline Case

7.27 It is necessary for the SEA to measure the effects of the SE Wales RTP against a fixed reference point so that the relative strengths and weaknesses of the proposed Plan can be assessed. The fixed point of reference is the baseline case. This baseline point of reference assumes that the SE Wales RTP is not implemented, and instead assumes that the status quo baseline perpetuates in its place. This baseline scenario however is not static. It is assumed that the baseline evolves within the context of the presently identified trends in the economic, environmental, and social indicators across SE Wales, as described in Section 5 of this report.

Definition and Significance of Terms Used In the Assessment

7.28 This section of the Environmental Report briefly provides definitions for a number of terms used throughout the SEA, in order to avoid any ambiguity which may arise from their use.

7.29 The magnitude of an identified effect in the SEA is measured relatively to the baseline case, and is in all cases only explicitly presented alongside the indicators in the SEA Framework. Judgement must be made concerning both the magnitude of the baseline trend any expected divergence away from that established trend, should one exist.

7.30 The significance of an effect is a function of the likelihood of an effect occurring and its likely level of magnitude. In particular the following guidance is used to identify the level of significance of an effect:

- (i) **High significant positive effects:** are those judged highly likely to produce gains of high magnitude when measured against the relevant indicators, are judged to be of high importance, and which are directly attributable to the course of action under consideration;

- (ii) **High significant negative effects:** are those judged highly likely to produce losses of high magnitude when measured against the relevant indicators, which are directly attributable to the course of action under consideration, are considered to be of high importance, and which justify either mitigation or a change to the proposed course of action;
- (iii) **Effects of low significance:** are those judged likely to produce changes of no more than medium magnitude and/or low probability when measured against the relevant indicators, and are of limited importance;
- (iv) **Effects of medium significance:** fall between those of that are of 'low significance' and 'significant'. Negative effects of medium significance would not necessarily justify a change to the proposed course of action.

7.31 Where probability is concerned, it has to be assessed on the basis of judgement rather than with the use of quantitative analysis, unless there is a clear theoretical or proven empirical case for a certain effect, enabling the use of quantitative measure of probability. Thus the definitions of likelihood of an effect occurring in the assessment are as follows:

- (i) An effect is considered to have a **high probability** if the likelihood of an effect occurring has a greater than two-in-three chance;
- (ii) An effect is considered to have a **low probability** if the likelihood of an effect occurring has a less than one-in-ten chance;
- (iii) An effect is considered to have a **medium probability** if the likelihood of an effect lies within the range of the high and low probabilities. That is, the chance of an effect occurring is less than two-in-three but greater than one-in-ten.

7.32 The time scale of the effects relates to the initial point at which the effect may occur from the implementation of a SE Wales RTP project or policy, although this is distinct to the duration of the effect. All effects are also either of a temporary or permanent nature. The duration of an effect, if temporary, is also stated wherever relevant. It should be noted that all four time scales relate to a period of time between 2010 and 2050. This time period represents the stated period over which the SE Wales RTP will influence transport policy across SE Wales. Thus time scales are thus defined:

- (i) A **very long time** period is the period beyond 25 years from 2010, or the period beyond 2035;
- (ii) A **long time** period is the period between 15 years and 25 years from 2010, or the period between 2025 and 2035;
- (iii) A **medium time** period is between 5 and 15 years, or the period between 2015 and 2025; and
- (iv) A **short time** period is 5 years or less, or the period between the years 2010 and 2015.

7.33 All other terms used in the assessment have their obvious meaning.

7.34 The measures used to represent the magnitude of the effect of the policies and proposals outlined in the SE Wales RTP on various indicators in the SEA Framework are presented below in Table 7.1.

Table 7.1: Measures used in Assessment

Magnitude of Effect	Symbol
Major positive	✓✓✓
Medium positive	✓✓
Minor positive	✓
Both positive and negative (the effect varies spatially or temporally resulting in a positive effect in some locations at some times and a negative effect in others)	✓ / ✗
Minor negative	✗
Medium negative	✗✗
Major positive	✗✗✗
Positive and no effect (the effect varies spatially or temporally resulting in a positive effect in some locations at some times and no effect in others)	✓ / 0
Negative and no effect (the effect varies spatially or temporally resulting in a negative effect in some locations at some times and no effect in others)	✗ / 0
Neutral or no significant effect	0
Effect unclear or depends upon nature of implementation of SE Wales RTP	?

Source: Capita Symonds

8. Assessment and Mitigation

Assessment and Mitigation

Introduction

8.1 This section of the Environmental Report presents the SEA of the SE Wales RTP. The SEA also considers the wider economic and social aspirations of the SE Wales RTP and therefore identifies the likely future trade offs which will be necessary between the competing demands of economic development, social inclusion, and environmental protection.

8.2 As well as presenting the conclusions of the assessment of the SE Wales RTP, any risks and uncertainties associated with the implementation of any of the policies, actions, and projects identified in the SE Wales RTP are noted, highlighting either the shortcomings of the assessment, or with the general uncertainty as to the future change in an environmental or socio-economic factor influenced by the SE Wales RTP.

8.3 As outlined in Section 7, the future outcome for each SEA Objective is determined by the combination of policies, actions, and projects proposed by the SE Wales RTP. Table 8.1 below presents how the SEA Objectives are influenced by each SE Wales RTP Objective.

Table 8.1: SE Wales RTP Objectives and SEA Objectives

SE Wales RTP Objectives	SEA Objective
1. To reduce the number and severity of road traffic casualties.	10
2. To improve actual and perceived levels of personal security when travelling.	7, 10
3. To improve access for all to employment opportunities, services, healthcare, education, tourism and leisure facilities.	1, 2, 3, 6, 7, 8, 9
4. To improve connectivity by sustainable transport between South-East Wales and the rest of Wales, the UK and Europe.	2, 6, 7, 9, 13
5. To improve interchange within and between modes of transport.	6, 7, 9
6. To improve the quality, efficiency and reliability of the transport system.	6, 7
7. To reduce traffic growth, traffic congestion and to make better use of the existing road system.	1, 2, 3, 4, 5, 6, 9, 11, 12, 14, 15, 16
8. To achieve a modal shift towards more sustainable forms of transport for moving both people and freight.	1, 2, 4, 5, 11, 12, 13, 14, 15, 16, 17
9. To reduce significantly the emissions of greenhouse gases from transport.	1, 2
10. To reduce the impact of the transport system on the local street scene and the natural, built and historic environment.	1, 3, 4, 5, 11, 12, 14, 15, 16, 17
11. To promote sustainable travel and to make the public more aware of the consequences of their travel choices on climate, the environment, and health.	2, 8
12. To ensure that land use developments in South East Wales are accessible by sustainable transport measures.	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
13. To make sustainable transport and travel planning an integral component of regeneration schemes.	4, 5, 6, 7, 8, 9, 10, 14, 15, 16

Source: SE Wales RTP and Capita Symonds

8.4 In addition to the high level objectives stated in the SE Wales RTP, a number of policies and actions are also planned to be implemented across SE Wales, which will influence both the achievement of the SE Wales RTP Objectives, but also influence the outcome of the SEA Objectives. Table 8.2 below summarises the relationship between the policies and actions in the SE Wales RTP, the SE Wales RTP Objectives, and the SEA Objectives.

Table 8.2: Linkages between SE Wales RTP Policies and Actions, SE Wales RTP Objectives, and SEA Objectives

SE Wales RTP Policies	SE Wales RTP Objectives	SEA Objectives
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PLP1: Sewta supports improved public transport links between the 14 WSP key settlements and equivalent neighbouring settlements in Mid and South West Wales and adjoining regions in England, and between the WSP key settlements, other core market towns (e.g. Monmouth) and their hinterlands	3, 4, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
PLP2: Sewta supports improved sustainable transport links to the 'Strategic Opportunity Areas' identified in the WSP.	3, 4, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
PLP3: Sewta will seek to ensure that Local Development Plans, supplementary planning guidance and development control processes establish a pattern of land use that reduces the need to travel and maximises the potential for sustainable transport infrastructure and services (including car-free housing developments), secure contributions towards improvements to the transport network and ensure that all significant development proposals are accompanied by effective travel plans.	7, 8, 9, 10, 12	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
PLP4: Sewta opposes land use proposals which will adversely affect transport networks or which will conflict with the objectives, policies and proposals of the RTP.	7, 8, 9, 10, 12	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
PLP5: Sewta supports the transport elements of regeneration and development programmes where they are to the benefit of RTP objectives, make provision for pedestrians, cyclists and public transport and do not adversely affect the operations of the highway network.	13	4, 5, 6, 7, 8, 9, 10, 14, 15, 16
PLA1: Sewta will develop plans for improved public transport links between the 14 WSP key settlements, and equivalent neighbouring settlements in Mid and South West Wales and adjoining regions in England, and between the WSP key settlements, other core market towns (e.g. Monmouth) and their hinterlands.	1, 2, 4, 7	1, 2, 3, 6, 7, 9, 11, 12, 15, 16, 17
PLA2: Sewta will seek to ensure that Local Development Plans contain appropriate planning obligation policies	3, 4, 5, 6, 7, 8, 9, 10, 12, 13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
PLA3: Sewta will seek to ensure that the location of public services is guided by accessibility analysis to ensure services are provided in locations that reduce the need to travel by car.	3, 13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, 17
WCP1: Sewta supports improved infrastructure for walking and cycling	1, 2, 3, 8, 12, 13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
WCP2: Sewta supports consistent regional design standards for walking and cycling infrastructure to improve provision for pedestrians and cyclists in new or regenerated developments	1, 2, 3, 8, 12, 13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
WCA1: Sewta will develop plans for improved walking and cycling infrastructure, including urban cycle networks, secure cycle parking provision, better cycle facilities at bus and rail stations, and the reallocation of road space for walking and cycling.	1, 2, 3, 8, 12, 13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
WCA2: Sewta will develop common regional design standards for walking and cycling infrastructure to improve provision for pedestrians and cyclists in new or regenerated developments.	1, 2, 3, 8, 12, 13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
WCA3: Sewta will develop plans for the provision of cycle carrying facilities on trains and busses.	1, 2, 3, 8, 12, 13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
SCPI: Sewta supports the promotion, development and marketing of sustainable travel choices (Smarter Choices agenda) including travel planning, home-working, teleconferencing, car sharing, car clubs and personal travel plans	3, 7, 9, 10, 11, 12	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14, 15, 16, 17
SCA1: Sewta will implement an ongoing, high quality campaign promoting the importance of sustainable travel choices and the impact on health and well being.	7, 8, 9, 10	1, 2, 3, 4, 5, 6, 9, 11, 12, 13, 14, 15, 16, 17
SCA2: Sewta will continue to promote and develop a regional car sharing system.	7, 9, 10, 11	1, 2, 3, 4, 5, 6, 9, 11, 12, 13, 14, 15, 16, 17
SCA3: Sewta will assist, coordinate and monitor travel plan development and implementation.	7, 9, 10, 11	1, 2, 3, 4, 5, 6, 9, 11, 12, 13, 14, 15, 16, 17
SCA4: Sewta councils will each develop, implement and monitor organisational travel plans for staff and visitors	7, 9, 10, 11	1, 2, 3, 4, 5, 6, 9, 11, 12, 13, 14, 15,

		16, 17
SCA5: Sewta will promote regional travel planning best practice advice and guidance	7, 9, 10, 11	1, 2, 3, 4, 5, 6, 9, 11, 12, 13, 14, 15, 16, 17
RAP1: Sewta supports improvements and further extensions to the regional rail system.	3, 7, 8, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
RAP2: Sewta supports capacity improvements to facilitate increased movement of freight by rail.	3, 7, 8, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
RAA1: Sewta will develop plans to improve the regional rail system, including plans for train/platform lengthening, line speed increases, frequency improvements, rolling stock improvements, station upgrades, capacity enhancements and to make services more accessible.	3, 7, 8, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
RAA2: Sewta will develop plans to extend the rail system through line and station re-openings.	3, 7, 8, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
BUP1: Sewta supports further improvements to the regional bus network.	3, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
BUP2: Sewta supports the introduction of a more efficient and effective bus regulatory system.	3, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
BUP3: Sewta supports regional quality standards for all bus services and the associated infrastructure.	3, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
BUA1: Sewta will develop measures that aim to reduce bus journey times and their variability, including the reallocation of road space, bus lanes, junction priority measures and civil parking enforcement	3, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
BUA2: Sewta will work with operators to improve the reliability, frequency and timetabling between services, and the quality of vehicles including proposals to reduce vehicle emissions.	3, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
BUA3: Sewta will develop measures to improve accessibility to services, vehicles and infrastructure, and to enhance the safety and security of users.	1, 2, 3, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
BUA4: Sewta will develop regional standards to ensure concessionary passes are issued in a fair, timely, and efficient manner, including a consistent approach to eligibility assessment and the retention of a common approach to operator reimbursement.	2, 6	6, 7, 10
FTP1: Sewta supports flexible transport services, including Demand Responsive Transport and Voluntary and Community Transport that compliment and enhance the mainstream transport system.	3, 6	1, 2, 3, 6, 7, 8, 9
FTA1: Sewta will develop flexible transport initiatives that complement and add to the mainstream transport system through an enhancement programme.	3, 6	1, 2, 3, 6, 7, 8, 9
IIP1: Sewta supports further improvements and expansion of public transport interchanges and Park & Ride facilities	3, 5, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
IIP2: Sewta supports a single integrated ticketing system for the regional public transport network.	6	6, 7
IIP3: Sewta supports consistent high quality standards for public transport information provision across the region.	5	6, 7, 9
IIA1: Sewta will develop plans for public transport interchanges at the 14 key settlements and other appropriate locations.	3, 5, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
IIA2: Sewta will develop consistent high quality criteria for interchange facilities to enable consistency across the region e.g. for signage, information and waiting facilities.	5	6, 7, 9
IIA3: Sewta will develop plans for Park & Ride and Park & Share facilities across the region.	3, 5, 8	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
IIA4: Sewta will develop plans for integrated ticketing across the region, including consideration for smart-card based schemes, for cash-less ticketing and for off-vehicle purchase.	6	6, 7

IIA5: Sewta will develop a public transport information programme	6	6, 7
HIP1: Sewta supports the management and maintenance of the regional road network to a uniform high standard.	10	13
HIP2: Sewta supports control of access to the regional roads network in the interests of highway safety and capacity.	6	6
HIP3: Sewta supports selective improvements to the regional highway system through make-better-use proposals.	1, 3, 4, 7	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
HIP4: Sewta supports selective improvements to the national highway system where they are to the overall benefit to RTP objectives.	1, 3, 4, 7	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
HIP5: Sewta supports measures to ensure that the transport system is more resilient and less susceptible to the influences of climate change.	10	2, 13, 14, 15
HIA1: Sewta will work with highway authorities to ensure highways are maintained and improved with minimum impact on the built, natural, and historic environment.	10	2, 13, 14, 15
HIA2: Sewta will work with highway maintenance authorities to implement the highway asset management plan as required by the Traffic Management Act to a uniform high standard.	10, 11	1, 2, 3, 4, 5, 8, 11, 12, 14, 15, 16, 17
HIA3: Sewta will develop a model traffic order, together with examples.	1, 6, 7, 10	1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15, 16, 17
HIA4: Sewta will develop a make-better-use programme to improve journey time reliability, reduce congestion, keep traffic moving, reduce the negative impact of traffic on people and the environment, and support public transport proposals.	6, 7, 8	1, 2, 3, 4, 5, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17
DMP1: Sewta supports demand management schemes such as road user charging or workplace parking levies, to reduce the demand for travel by car and to avoid increases in traffic that might otherwise occur.	7, 8, 9, 10	1, 2, 3, 4, 5, 6, 9, 11, 12, 13, 14, 15, 16, 17
RSP1: Sewta supports measures to reduce the number and severity of road traffic collisions and to improve road safety levels.	1, 2	7, 10
RSA1: Sewta will develop a road safety strategic framework to enhance performance and achieve a greater consistency in delivery of road safety measures across the region.	1, 2	7, 10
RSA2: Sewta will develop a road safety improvement programme for the region (if Road Safety Grant funding is devolved to Sewta).	1, 2	7, 10
RSA3: Sewta will develop a Safe Routes in Communities programme for the region (if Safe Routes in Communities funding is devolved to Sewta).	1, 2,	7, 10
CPP1: Sewta supports a consistent approach to car parking standards across the region.	5	6, 7, 9
CPP2: Sewta supports the development of a regional car parking strategic framework and local car parking policies by member councils.	5	6, 7, 9
CPA1: Sewta will develop a regional car parking strategic framework.	5	6, 7, 9
AEP1: Sewta will take account of the needs of people or groups that experience difficulties more than most when using the transport system when developing plans, programmes, or projects.	3	1, 2, 3, 6, 7, 8, 9
AEA1: Sewta will develop an Equality Impact Assessment of the RTP.	3	1, 2, 3, 6, 7, 8, 9
ECP1: Sewta supports improved links between South East Wales and other parts of Wales and the UK, in particular by rail, coach and sea.	4	2, 6, 7, 9, 13
ECP2: Sewta supports improved sustainable access to Cardiff International Airport.	12	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
FRP1: Sewta supports measures to improve the sustainability, efficiency and effectiveness of the transport of freight, including the transfer to rail and water where practical.	7, 8	1, 2, 3, 4, 5, 6, 9, 11, 12, 13, 14, 15, 16, 17
FRP2: Sewta supports improve access to key destinations such as major industrial sites, seaports, airports, rail hubs and freight interchanges, in particular, by rail and water.	12	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17

FRP3: Sewta supports provision of secure freight interchange sites and lorry parking sites, including overnight lorry parking.	8	1, 2, 4, 5, 11, 12, 13, 14, 15, 16, 17
FRP4: Sewta supports signing of the regional road network to assist effective and sustainable movement of freight across the region.	7	1, 2, 3, 4, 5, 6, 9, 11, 12, 14, 15, 16
FRA1: Sewta will develop plans to support the freight policies within the Wales Freight Strategy and the RTP.	8	1, 2, 4, 5, 11, 12, 13, 14, 15, 16, 17
TOP1: Sewta supports measures to improve access to tourism and leisure sites in South East Wales, especially by walking, cycling, and public transport.	3, 8, 12	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17
TOA1: Sewta will work with tourism and visitor organisations to encourage the development and marketing of sustainable forms of access to tourism sites, including promotion of cycling opportunities such as cycle hire facilities for tourists.	3, 8, 12	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17

Source: SE Wales RTP and Capita Symonds

8.5 In addition to the objectives, policies, and actions, the SE Wales RTP outlines a number of specific projects which it plans to bring forward for development. It should be noted that there is no certainty that all of the specified projects will be developed, and as a consequence, it is likely that only a subset of all the projects specified in the SE Wales RTP will be brought forward for development. The following section describes the specific projects specified for development in SE Wales.

Five Year Capital Expenditure Programme

8.6 Sewta's five year capital expenditure programme includes a list of regional and local transport interventions that the consortium of ten local authorities across SE Wales wish to pursue in the short term future. It is assumed that funding would be available for the projects included in the five year capital expenditure programme.

8.7 The overall five year capital expenditure programme is divided into three programmes, the legacy programme, the rail programme, and the SE Wales RTP programme. The latter two programmes are preliminary only, and there is no guarantee that funding will become available to deliver all of the stated projects. This therefore creates a number of uncertainties in the assessment of their environmental effects.

8.8 A summary of the projects listed under the rail and SE Wales RTP programmes is provided below. It is assumed that the legacy programme is independent of the SE Wales RTP, and is only included in the five year capital expenditure programme as it was intended to proceed regardless of whether the SE Wales RTP came into existence.

8.9 The project list below in Table 8.3 sets out a proposed five year costed programme of improvements to the walking and cycling infrastructure across SE Wales, although due to uncertainty over future budgets, some of the proposed improvements might not be brought forward. The programme takes account of extension to the National Cycle Network, links to major employment, commercial and residential areas; connections to communities where there exist barriers to movement; and proposals complementary of regeneration schemes.

Table 8.3: Proposed Walking and Cycling Projects in the SE Wales RTP

Scheme Reference	Scheme description
B1	A4061 Bridgend Northern Distributor Road Cycle Route
B2	Bridgend to Pencoed
B3	Bridgend to Porthcawl
B4	Garw Valley Cycle Route – Missing Link
B5	Llynfi Valley Cycle Route
B6, B7 & B8	Bridgend Active Travel Network - Maesteg, Pencoed, Pyle
B9	Porthcawl to Pyle
BG11 & BG4	Extension to the South Griffin Cycle Route south of Abertillery to Aberbeeg & South Griffin

	Cycle route providing completion of missing sections through Blaina and south Abertillery
BG12	Link to Tafarnaubach Industrial Estate from the existing Heads of the Valleys Cycle Route
BG13	Link between the proposed Heads of the Valleys Cycle Route extension and Rassau Industrial Estate
BG21 & T17	Royal Oak to Swffryd & Crumlin to Pontypool
BG3 & BG10	Link between NCN 46 and Cwm via Ebbw Vale following the route of the Ebbw Valley Railway in places; Link between Cwm and Aberbeeg to CCB
BG5	Links through Brynmawr town centre to NCN 46 - including link from Warwick Road to A467 footbridge.
BG6 & BG7	Links from NCN 46 into Ebbw Vale Town Centre west and east
BG8	Completion of NCN 46 following dualling of the A465
C1	Completion of Rhymney Valley Cycle Route NCN 46 to Lawn Industrial Estate and Continuing south to Rhymney SRTS
C16	Blackwood / Newbridge – Crosskeys & Link to Sirhowy / Oakdale
C17	Caerphilly Basin / Town Centre – Radial Routes
C2 & BG2	Northern extension to the Sirhowy Valley Cycle Route to the boundary with Blaenau Gwent CB from Hollybush to Bedwelty Pits
C20 & C23	Rhymney Valley Linear Route & HotV's to Bedwas/Caerphilly
C3 & C15	Extension of Route NCN 46 into Bute Town and along through to Bryn Bach Park & Completion of NCN46 within Heads of the Valleys corridor
C8	A local link from Bargoed Country Park Cycle Route to Bowen Industrial Estate at Aberbargoed
MT10	Merthyr Tydfil Connect 2 bid route
MT2	Extension to the Taff Trail to provide a western link across the Heads of the Valleys into RCT along with an eastern link into Caerphilly CB
RCT1, RCT2 & RCT3	Cynon Valley Cycle Route Phase 3 and beyond
RCT16 & RCT19	Heads of the Valleys Cycle Route and Links to Hirwain Industrial Estate from planned and aspirational routes
RCT20	Route through the Rhondda Fawr
RCT21	Talbot Green to Thomastown
RCT24	Aberdare Access Improvements
RCT28	Pontygwaith to Maerdy
RCT30 & RCT35	Pontypridd to Tonyrefail via Church Village and Llantrisant & Route from University of Glamorgan Treforest to Llantrisant
RCT31 & RCT34	Pontypridd Proposals & Treforest Connect 2
T13	Mamhilad to Coed-y-Gric Road, Griffithstown
T6	Link between Blaenavon town centre and Kays and Kears and Gilchrist Thomas Industrial Estates. Link to additional over attractions such as Big Pit National Mining Museum.

Source: Sewta

8.10 Rail schemes remain subject to considerable lead times due to a range of practical and operational constraints. Sewta's Prioritised Investment Programme reflects the key stages of Network Rail's Guide to Rail Investment Process (GRIP) and is summarised below in Table 8.4.

Table 8.4: Rail Projects Specified in the SE Wales RTP, Listed in order of Priority

Priority	Description	Key Elements
1	Completion of 5 year strategy	Improvements to provide increased passenger platform capacity at Cardiff Queen Street (confirmed and will go ahead)
		Introduction of half hourly frequencies on the Rhymney and Maesteg lines (confirmed and will go ahead)
		New stations at Energlyn and Brackla (confirmed and will go ahead)
		Early measures to accelerate improved reliability and capacity at Barry Station (confirmed and will go ahead), Llandaff, Cogan Junction (confirmed and will go ahead) and on the Treherbert Line
		Re-modelled station at Severn Tunnel Junction
		Additional rolling stock to meet further peak passenger requirements, with associated platform lengthening on the Barry Line
		New rolling stock, to replace the ageing Pacer fleet, with associated improvements in fleet reliability and passenger experience

2	Queen Street North – Cogan Junction	Improved frequency to provide a reliable “turn up and go“ service within Cardiff’s core journey to work area through additional platforms at Cardiff Central (confirmed and will go ahead) and Queen Street (confirmed and will go ahead)
		Remodelling of Cogan Junction
		Turnback facilities at Caerphilly (confirmed and will go ahead) and Porth
		Track and signal enhancements
3	Ebbw Valley Line Phase 2	Direct hourly service between Newport and Ebbw Vale, with the longer ten mile passing loop and new stations at: Ebbw Vale Town Centre, Cwm, Crumlin, Pye Corner.
4	Improved service frequencies	Additional services to provide at least half hourly frequencies and encourage an increased modal transfer on the following corridors: Abergavenny – Newport – Cardiff, with new stations at Caerleon and St Mellons; and studies of new stations at Sebastopol and Llantarnam; Vale of Glamorgan Line
		Chepstow – Newport – Cardiff, with new stations at Llanwern and Coedkernew
5	Station improvement and integration Measures	Package of measures at stations across the region including: Station facilities, such as improvements to customer information, safety and security, waiting areas and toilets
		Station access
		Park and ride (new facilities and expansion of existing sites)
		Rail-link bus services
6	Beddau – Cardiff network extension	Introduction of a half hourly passenger services on a former freight line, with new stations at: Talbot Green, Llantrisant, Gwaun Meisgyn, Beddau.

Source: Sewta

8.11 Table 8.5 below summarises a number of rail projects which require implementation by Network Rail, and the likely timescale within which they will be delivered.

Table 8.5: Potential Projects Specified in the SE Wales RTP which contribute towards rail improvements

Project	Likely Timescale for Implementation	Project Description
Station improvement schemes	On-going	Programme of improvements to station facilities, access, information, safety and security, car parking and rail link bus services
Bargoed to Rhymney capacity improvements (including Rhymney – Cardiff half-hourly service and Energlyn)	2011	Capacity improvements (including signalling and passing loop) to enable an half-hourly service to operate between Rhymney and Cardiff and a new station at Energlyn.
Maesteg Line capacity improvements (Maesteg-Cardiff half-hourly, including Brackla and Wildmill))	2011	Capacity improvements (including signalling and passing loop on the Maesteg branch), between Maesteg and Bridgend to enable an half-hourly service to operate between Maesteg and Cardiff, with improvements to the park and ride at Wildmill and a new station at Brackla.
Cardiff Area Signalling Renewals	2013	
Cardiff Queen Street North Junction to Cogan Junction (including Cardiff-Caerphilly and Cardiff-Pontypridd additional hourly services) and Valley Lines Frequency Enhancement Phase 1	2013	Capacity improvements building upon Network Rail’s Cardiff Area Signalling Renewal Project (including signalling, new crossovers, additional platforms at Central and Queen Street and new turnback facilities at Caerphilly and Pontypridd) to enable an additional hourly service between Cardiff and Caerphilly and between Cardiff and Pontypridd.
Valley Lines Frequency Enhancement Phase 2	2017	Introduction of further additional hourly services between Cardiff and Caerphilly and between Cardiff and Pontypridd.
Abergavenny – Newport – Cardiff Corridor Improved Service Frequencies	2013	Capacity improvements building upon Network Rail’s Newport Area Signalling Renewal Project (including signalling, new crossovers, relief line speed increases,

		turnback facility and new station at Caerleon) to enable an additional half-hourly local service between Abergavenny and Cardiff.
Vale of Glamorgan half-hourly service	2013	Capacity improvements building upon Network Rail's Cardiff Area Signalling Renewal Project (including signalling, new crossovers and turnback facilities at Barry to enable additional hourly service on the Vale of Glamorgan Line.
Severn Tunnel Junction Enhancement	2010	Station improvements, including P&R extension, building upon Network Rail's Newport Area Signalling Renewal Project.
Llanwern station and relief line improvements	2012	New station (with P&R) facilitated by the relief line speed increases associated with Network Rail's Newport Area Signalling Renewal Project.
Gloucester-Newport-Cardiff corridor improved service frequencies	2010	Capacity improvements building upon Network Rail's Newport Area Signalling Renewal Project (including signalling, new crossovers and relief line speed increases) to enable hourly local services to operate between Gloucester and Cardiff.
St Mellons and Coedkernew stations	2014	New stations facilitated by the relief line speed increases associated with Network Rail's Newport Area Signalling Renewal Project.
Chepstow-Newport-Cardiff corridor improved service frequencies	2014	Capacity improvements building upon Network Rail's Newport Area Signalling Renewal Project (including signalling, new crossovers, relief line speed increases, and turnback facility) to enable an additional hourly local service between Chepstow and Cardiff.
Ebbw Vale line Phase 2	2014	Capacity improvements building upon Network Rail's Newport Area Signalling Renewal Project (including signalling, new crossovers, passing loop and a new station at Ebbw Vale Town) to enable an additional hourly local service between Ebbw Vale and Newport and additional new stations.
Beddau to Cardiff Network Extension	2018	Reinstatement of former freight line for passenger use, with new stations at Beddau, Gwaun Meisgyn, Llantrisant and Cross Inn to enable an half-hourly service to operate.

Source: Sewta

Bus

8.12 The proposed capital investment into bus services will be focussed on core commuter corridors. Key investment on bus priority (lanes and junction priority), 'red routes' and decriminalised enforcement is needed to address the main constraints and causes of bus unreliability. By providing focus on existing routes and route modification, the bus investment programme specified improvements to the following strategic network routes:

- Pontypool – Cwmbran - Newport corridor
- Blaengarw – Pontycymer - Bridgend corridor
- Cardiff – St Mellons – Castleton - Newport corridor
- Maesteg – Tondy – Aberkenfig - Bridgend corridor
- Pontypridd – Treforest – Taff's Well – Whitechurch - Cardiff corridor
- Dinas Powys – Llandough – Leckwith - Cardiff corridor
- Brynmawr – Abertillery – Newbridge – Blackwood – Sirhowy Valley – Crosskeys – Risca - Newport corridor
- Llanharan - Talbot Green – Pontyclun – Llandaff - Cardiff corridor
- Bridgend - Cowbridge – Bonvilston – Ely - Cardiff corridor
- Blackwood / Bargoed – Ystrad Mynach - Caerphilly - Cardiff corridor
- Pontypridd town centre
- Merthyr Tydfil bus stop enhancements
- Cardiff City Centre bus routeing

- A470 bus corridor improvements
- Western bus corridor
- A469 bus and cycle improvements
- Merrier Harrier

8.13 Additional investment is proposed to support real time passenger information systems and area wide bus stop improvements.

Interchange Projects

8.14 A number of interchange projects are proposed in the SE Wales RTP as part of the 5 year programme. These projects include the following:

- Porth interchange
- Bridgend transport interchange
- Newport city centre regeneration
- Cardiff central rail and bus interchange redevelopment and access improvements
- Severn tunnel junction interchange
- Aberdare bus station security upgrade
- Tonypany Bus interchange
- Cardiff Queen Street Rail/Bus Interchange - access improvements
- Caerphilly Station Park & Ride Access Road
- Wildmill Park & Ride
- Taffs Well Park & Ride
- Abercynon Park & Ride
- Bargoed Park & Ride
- Pengam Park & Ride
- Rhymney Park & Ride
- Pontyclun Park & Ride
- Barry Waterfront - Park & Ride
- Llanrumney Park & Ride / Park & Share
- Cardiff NW Corridor Strategic P&R/P&S (Leckwith)
- Cardiff SW Corridor Strategic Bus P&R/P&S (International Sports Village Site)
- Cardiff SW Corridor Strategic Bus P&R/P&S (Ikea Site)

8.15 The following schemes are only potentially going to be brought forward as part of the 5 year programme, although all have been identified as possibilities:

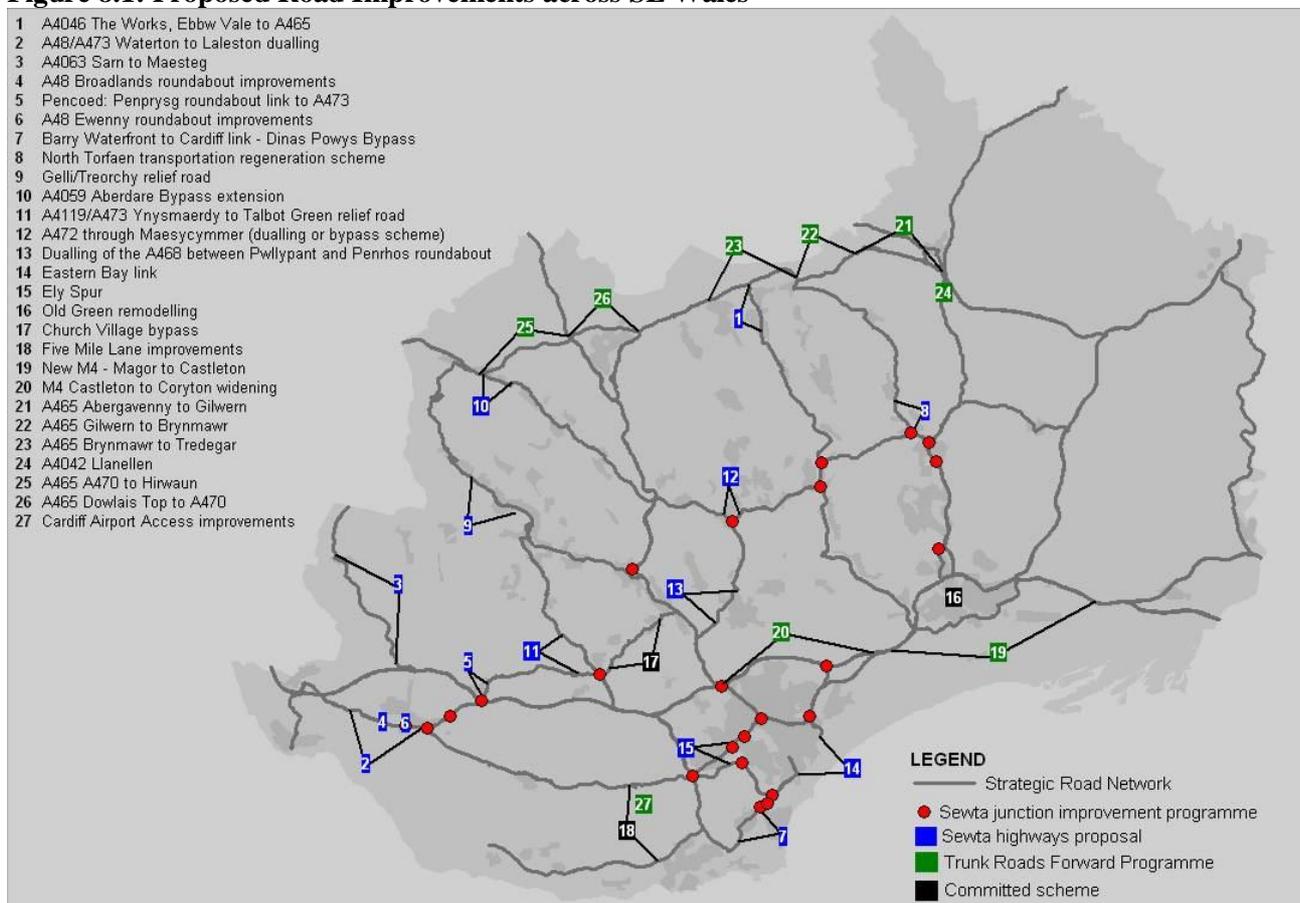
- Barry Docks bus Interchange
- Brynmawr Bus Interchange
- Cwmbran Bus Interchange
- Ebbw Vale Bus Interchange
- Maesteg Rail/Bus Interchange
- Merthyr Bus Interchange
- Newbridge Bus Interchange
- Pontypool Bus Interchange
- Severn Tunnel Junction Park & Ride
- Ystrad Mynach Park & Ride (Extension)
- Parkway Llanbradach
- A470 Northern Corridor Park & Ride / Park & Share
- NW Corridor Strategic Park & Ride / Park & Share
- Cwmbran Interchange Park & Ride
- Pontypool and New Inn Station Park & Ride
- M4 Junction 35 - Park & Share

- M4 Junction 36 - Park & Share
- Pencoed Station Park & Ride
- Porthcawl Bus Park & Ride
- Sarn Station Park & Ride
- Bargoed Park & Ride (Garage Site)
- Abergavenny Rail Station Park & Ride and Bus Access Improvements
- Chepstow Park & Ride
- Chepstow Rail Station Park & Ride and Bus Access Improvements
- Monmouth Bus Park & Ride
- A470 Northern Corridor Park & Ride / Park & Share
- Aberdare Station Park & Ride decking
- Taffs Well Park & Ride decking
- Treforest Station Park & Ride decking

Roads

8.16 Twenty seven road improvements across SE Wales have been highlighted for prioritisation in the investment programme. These are summarised below in Figure 8.1.

Figure 8.1: Proposed Road Improvements across SE Wales



Source: Sewta

8.17 It is the SE Wales RTP Objectives, policies and projects which will influence the outcome of the SEA Objectives, through their effect on environmental and socio-economic variables which determine the outcome of indicators linked to each SEA Objective. The effects of the SE Wales RTP are now discussed under a series of sub headings which present each SEA Objective individually.

SEA Objective 1: To reduce the contribution of transport to air pollution and other harmful pollutant emissions

8.18 The SE Wales RTP objectives influencing the outcome of this SEA Objective include SE Wales RTP Objectives 3, 7, 8, 9, 10 and 12. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Road vehicle miles driven across SE Wales;
- (ii) Capacity, price and accessibility of public transport relative to private transport;
- (iii) Pedestrian and cycleway route length, connectivity and accessibility;
- (iv) Growth in demand for road transport;
- (v) Construction and demolition activity.

8.19 A number of the SE Wales RTP policies and actions also influence the determination of this SEA Objective, including PLP1, PLP2, PLP3, PLP4, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, FTP1, IIP1, HIP3, HIP4, AEP1, DMP1, FRP1, FRP2, FRP3, FRP4, ECP2, TOP1, PLA1, PLA2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, FTA1, IIA1, IIA3, HIA2, HIA3, HIA4, AEA1, FRA1 and TOA1. It is expected that all projects brought forward would influence the future outcome of this SEA Objective and the indicators associated with it. Table 8.6, below, summarises the effect of the SE Wales RTP against a number of indicators representing air quality across SE Wales.

Table 8.6: SEA Objective 1: To reduce the contribution of transport on air pollution and other harmful pollutant emissions				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Number of air quality management areas in SE Wales	✓✓ / ✗	Medium	Long term	Medium
Number of road vehicle miles driven in SE Wales (indirectly a determinant of local air quality)	✓ / ✗	High	Long term	Medium
Number of times annually the hourly mean concentration of NO ₂ exceeds the target concentration of 200 µgm ⁻³ in each SE Wales local authority	✓ / ✗	High	Long term	Medium
Number of times annually the hourly mean concentration of PM ₁₀ exceeds the target concentration of 50 µgm ⁻³ in each SE Wales local authority	✓ / ✗	High	Long term	Medium
Conclusions, Risks and Uncertainties				
<p>Reducing the demand for travel by introducing road user charging or developing sustainable settlements, could be successful in reducing the number of unnecessary trips made across SE Wales, although benefits are most likely to arise in urban centres, and not rural areas.</p> <p>Increased car parking restrictions could lead to a negative impact on businesses in urban centres, but it would encourage people to shift to alternative forms of transport to private vehicles, benefiting local air quality.</p> <p>The best methods to counter a deterioration in air quality across SE Wales would be to encourage increased walking and cycling, and to minimise the use of cars through the encouragement of car sharing or use of public transport.</p> <p>Assisting the flow of traffic to prevent continual stop and go for road drivers will assist with reducing emissions, although increasing traffic speeds above 35 mph can lead to an increase in CO and NO_x emissions, although this is still preferable to the emissions arising from road congestion.</p> <p>Reducing the idling of cars can rapidly assist with reducing emissions of PM₁₀, CO, NO_x, VOCs, and SO_x.</p> <p>It is expected that air quality will improve across particular areas of SE Wales, although worsen across others due to the proposals in the SE Wales RTP, largely due to the expected growth in car use forecast across SE Wales.</p>				

8.20 The UK's air quality policies and regulations are stated in Defra's 'Air Quality Strategy', 2007. The strategy sets a number of air quality standards and objectives nationally for a number of air quality pollutants. Many of these local air quality pollutants arise either directly or indirectly as by products from the combustion processes which power road, rail, and air transport. The principal pollutants of note arising from road transport are nitrogen oxides (NO_x), nitric oxide (NO) (directly) and nitrogen dioxide (NO₂) (indirectly after nitric oxide is oxidised in the atmosphere), benzene, sulphur dioxide (SO₂), and carbon monoxide (CO) from the incomplete combustion of fuels²⁶. The pollutants can also form ground level ozone, a secondary pollution, which can damage vegetation, and when dissolved in water, can form nitric acid, a potential source of acid rain. Another air pollutant of note arising from road transport is micro scale particulate matter (PM₁₀) or aerosols, tiny particles suspended in air, which can cause respiratory health issues for humans if inhaled.

8.21 Short and long term exposure to air pollutants, in particular PM₁₀, is associated with a number of adverse health impacts, including heart conditions and lung diseases, such as asthma, bronchitis and emphysema²⁷. Airways of the lungs can also be irritated when emissions of NO₂, SO₂, and O₃ are inhaled. Inhalation of CO prevents the normal transportation of oxygen by the blood, which leads to significant reduction in the supply of oxygen to the heart.

8.22 Less critical, although still of importance, a number of additional air pollutants arise from road transport, including lead, benzo(a)pyrene, 1,3-Butadiene, and volatile organic compounds (VOC). Emissions of carbon dioxide (CO₂) are dealt with under SEA Objective 2. There are also growing concerns over the health risks of very fine particulate matter (PM_{2.5})²⁸, which can damage the health of people by causing respiratory problems.

8.23 Urban locations with higher volumes of road traffic generally suffer from worse air quality compared to rural areas. For example, Cardiff suffered from 59 days of moderate or high concentrations of air pollution in 2003, compared to 41 days in Narberth in Pembrokeshire. Thus there are 21 AQMA across SE Wales, approximately half are located in either Cardiff or Newport, both urbanised areas relative to the rest of SE Wales, with NO_x being the principal source of pollution precipitating the requirement for an AQMA²⁹. Rhondda Cynon Taff suffers from poor air quality as it has the second highest volume of road traffic across any of the ten local authorities in SE Wales, as noted in Table 5.7. As a consequence eight AQMAs have been declared in Rhondda Cynon Taff. Problems are anticipated to worsen across SE Wales in the near future given the forecast growth in road traffic³⁰.

²⁶ Department for Transport, 'Transport Statistics Great Britain: 2007', November 2007.

²⁷ Defra, 'Air Pollution: What it means for your Health', 2002.

²⁸ PM_{2.5} refers to particulate matter less than 2.5 micrometres in diameter. These are considered to be the most toxic form of particulate matter as they can penetrate deeper into lungs than PM₁₀. Further information is available in the Department of Health's 'Cardiovascular Disease and Air Pollution: A Report by the Committee on the Medical Effects of Air Pollutants', February 2006.

²⁹ www.airquality.co.uk

³⁰ Department for Transport, 'National Road Traffic Forecasts 1997'.

8.24 There are no stated policies within the SE Wales RTP advocating or encouraging a switch from petrol or diesel to alternative fuels. It is noted that any significant substitution away from fossil fuels to alternative fuels would require very substantial and significant investment into new infrastructure which would support the transportation and storage of the new fuels for road vehicles. Such a move may be required in the very long term to mitigate the future emissions of NO_x across SE Wales.

8.25 Air quality is predominantly poorer in the urban areas surrounding Cardiff and Newport, and in the local authorities with large absolute populations and generous car ownership rates, which includes Caerphilly. As the general affluence of the population across SE Wales grows, greater car ownership and use could be encouraged and hence greater emissions of local air quality pollutants could result. In fact, it has been forecast that road traffic will grow across SE Wales in the medium term future. It should be noted however that the relatively low level of car ownership across the Valleys in general could make the local population become increasingly reliant on rail services, potentially precipitating a situation where the Valleys become increasingly dormitory in relation to Cardiff, with an associated decline in the local economies of these local authority areas.

8.26 The transfer of freight from roads onto rail, as advocated by SE Wales RTP Policy FRP1, could assist with reducing road congestion across the trunk road network in SE Wales in particular locations, and could therefore assist in the reduction of the emissions of local air quality pollutants such as NO_x and PM₁₀ across parts of the road network, particularly the M4 and A48 which are key routes into SE Wales. However, there are likely to be constraints to moving freight by rail, including rail line capacity, and appropriate origins and destinations for the freight, as well as the practicability of moving particular loads by rail. In addition, the movement of freight by rail might not prove financially viable, particularly if a load is handled several times before arriving at its final destination. There is also the fact that any freight load moved by rail is likely to require a final movement by road which would lead to some residual emissions of air quality pollutants.

8.27 The location of new public transport services would in part influence the future geographical distribution of traffic, and hence the future distribution of air pollutants. The greatest concentrations of air pollutants are expected to continue to be concentrated along the motorway (M4) and key trunk roads across the SE Wales area, particularly those connecting Cardiff and Newport, which carry significant volumes of traffic at peak travelling hours.

8.28 It should be noted that whilst the minor roads across SE Wales carry in total a greater volume of road traffic per annum than the trunk road network, this traffic is spread over a greater road length, and hence the concentration of the volume of daily traffic is greatest on trunk roads, which suffers from greater levels of congestion. The number of vehicles per day on the M4 around Newport reaches as high as 100,000, with the A470 North of Cardiff carrying in excess of 70,000 vehicles per day. In contrast, most minor roads in other local authorities across the SE Wales only carry in the order of 30,000 vehicles per day³¹.

³¹ Welsh Assembly Government, 'Welsh Transport Statistics 2007'.

8.29 The proposals to significantly enhance the bus and rail services across SE Wales alongside softer measures, such as improved advertising campaigns to encourage people to switch from private vehicles to public transport, is likely to succeed in changing peoples' behaviour to a greater degree in urbanised areas, such as Cardiff and Newport, where high frequency services are likely to be more viable and commercially attractive, than in rural areas. However, such measures would be unlikely to sufficiently reduce demand for road travel in rural areas, and as a consequence, it would not dramatically reduce car traffic arising from such locations. Thus the benefits to local air quality of the proposals in the SE Wales RTP to induce a switch from car use to public transport will be greater in urban areas than in the more rural areas.

8.30 The provision of improved rail services, through increased rolling stock to increase peak rail capacity, platform lengthening at particular stations (such as at Barry), and providing general station improvements across SE Wales which enable better security, information and access for passengers, as well improving the frequency of trains available for use, are expected to increase the potential for people to substitute away from using cars to trains. This is expected to arise as people gain confidence in rail, with services available at regular intervals with suitable destinations. Such services would be ideal for the transport of commuters from the neighbouring more rural local authority areas to Cardiff and Newport. This would reduce car use, emissions of local air quality pollutants and CO₂ emitted per km travelled, and noise from the road network, as well as enhancing accessibility to community facilities.

8.31 It would also be beneficial should there be closer collaborative working between several rail consortia, particularly between those operating within different regions of Wales, to encourage the greater mobility of people, reduce travel times, and therefore discourage people from using their cars to take such journeys and hence potentially benefit air quality across much of SE Wales.

8.32 Constructing cycleways will be of particular benefit in a small number of contexts. Geographically they would be beneficial in rural places by opening up access to the countryside without an associated increase in the use of the motorcar to access such areas. In urban areas, cycleways could reduce car use for shorter journeys where congestion is a considerable issue. It is expected that implementing these measures alone would not lead to a suitable reduction in the level of air pollution across SE Wales, as it fails to adequately deal with the forecast growth in road traffic, instead prioritising the improvement of accessibility of those residents in SE Wales presently suffering from income and accessibility deprivation. As a consequence, road traffic would be expected to grow in line with past trends, and air pollution would be expected to deteriorate, although should such measures encourage a reduction in people driving unnecessary short journeys, then the generation of low level ozone might be reduced.

8.33 The proposals in the SE Wales RTP encourage the integration of transport planning and town regeneration strategies across SE Wales, as outlined under Policy PLP3. It is expected that such policies should facilitate the development of better informed regeneration strategies which will enable the better focusing of transport resources to serve particular locations and reduce the need to travel. This could be beneficial to air quality across Wales. However, it should be noted that local planning authority's Local Development Frameworks could constrain the development of more sustainable settlements which reduce the need to travel in the short term, as land could already be set aside for alternative purposes to those supported under SE Wales RTP Policy PLP3.

8.34 It is expected that air quality will improve across some areas of SE Wales due to the proposals outlined in the SE Wales RTP but only in the medium to long term as behavioural change will take time. However, road use is expected to increase in general due to the rising population across SE Wales, and thus air quality could worsen in particular areas surrounding heavily used transport corridors. These areas could include in Newport, and across Rhondda Cynon Taff which has experienced rapid growth in car use over the last decade.

Geographic Specific Issues³²

8.35 There are two AQMAs in Monmouthshire, both for NO₂ emissions which have been identified as exceeding the annual mean statutory limits around a number of road junctions, which suffer from heavy road traffic volumes. The areas identified across Monmouthshire suffering from high NO₂ emissions are located along Bridge Street in Usk, and the A48 at Hardwick Hill / Mount Pleasant at Chepstow, and the junction of the A40 and A466 Wyebridge Street in the vicinity of Monmouth Boy's School. As a consequence AQMAs have been designated in Usk and Chepstow.

8.36 No specific measures are outlined within the SE Wales RTP to alleviate the specific problems which exist in the AQMAs in Monmouthshire, although these are better managed at the local authority level with Air Quality Management Plans. There are however a large number of indirect measures outlined in the SE Wales RTP which would have a positive effect on the road vehicle miles driven across the local authority area, including the increase in provision of public transport, community led transport and demand responsive transport for elderly and vulnerable members of local communities, and measures which encourage land use developments which reduce the need to travel.

8.37 The expected trend in local air quality pollutant emissions resulting from the proposals outlined in the SE Wales RTP across Monmouthshire should be positive in general, although there remains a risk that the gains will not be significant. This is because Monmouthshire is predominantly a rural area, and hence there is an enduring need for local residents to continue to use private vehicles, given the flexibility they offer over public transport. It is for this reason that encouraging people to utilise alternative forms of transport would be very difficult in such areas aside from the simplest or most routine of trips.

8.38 The rate of car or van ownership is approximately the same across Torfaen as it is across Wales as a whole, although the majority of people living within Torfaen on average work closer to their home than does the average commuter at the national level. Marginally more of the resident population of Torfaen travel to work by road (37.5%) or as passengers in cars or vans (5.9%) than people across Wales as a whole. As a consequence, marginally less people use public transport to access work across Torfaen than do at the national level. Despite this, air quality across Torfaen currently meets national standards, although the concentration of NO₂ is approaching the objective limits at some roadside locations³³. Whether this local authority area is subject to a future AQMA ruling depends upon whether public transport services are initiated in the area to try and offset residents' general preference for the use of cars. However, the long run effects in this local authority area concerning the future state of local air quality are unknown, and would be in part dependent on how the local economy and future housing need influences future demand for road use.

³² Note all data in this section taken from National Statistics and the Air Quality Archive.

³³ National air quality objectives and European Directive Limit and target values for the protection of human health are specified in Defra's 'Air Quality Strategy: Volume 1', 2007.

8.39 There is a large population across the Blaenau Gwent area, and the rate of car ownership is commensurate with the national rate of car ownership per household, although there are a significant proportion of households across Blaenau Gwent owning no cars or vans. As a consequence, a large number of people who work in the local authority of Blaenau Gwent work relatively close to home, with 6.3% of the local population accessing work by foot, and 31.3%, a smaller proportion than at the national level, accessing work by car. However, a smaller proportion of Blaenau Gwent residents use public transport to access work relative to the proportion at the national level. Given the nature of car ownership across Blaenau Gwent, there are at present no AQMAs in this local authority area. It is expected that given the proposals set out in the SE Wales RTP, that the air quality of the local authority area will not deteriorate to such an extent that an AQMA would be required, particularly given the rural nature of the area.

8.40 On average, there is a lower rate of car and van ownership than at the national level across Caerphilly. The majority of people accessing work in Caerphilly travel relative short distances of generally less than 20 km, which is a considerably higher proportion of people than do so at the national level. Given the travel habits of local residents of this local authority, there are presently no AQMAs in Caerphilly, although given that Caerphilly is predominately rural, it is expected that the provisions in the SE Wales RTP are likely to benefit the air quality across this local authority.

8.41 Air quality has deteriorated at a number of locations across Rhondda Cynon Taff, with concentrations of NO₂ exceeding the national standard. This has resulted in eight AQMAs being designated across the local authority area in 2007. Given the provisions in the SE Wales RTP, and the general nature of the local authority area, it is expected that car use would increase over time. Local initiatives will be required to mitigate the risk of worsening local air quality in the designated AQMAs in this local authority area.

8.42 Although there is currently a large population living across Rhondda Cynon Taff, the rate of car ownership per household is generally lower than at the national level. However, a greater proportion of people in Rhondda Cynon Taff travel greater distances to access work than people across Wales as a whole. This is likely to be due to the rural nature of this local authority area. However, a lower proportion of people in this local authority access work by driving their own vehicle, with a higher proportion doing so at the national level. Instead a high proportion of people (6.6%) in Rhondda Cynon Taff access work as passengers in a car or van, compared to only 5.1% at the national level.

8.43 There is a growing population across the Bridgend area which suggests that the number of cars owned in this local authority will grow. At present, car and van ownership at the local level in Bridgend is directly comparable to that at the national level. However residents across Bridgend travel on average slightly longer distances than at the national level to access work. Most people residing in Bridgend or working in Bridgend access their place of work by car (37.0% and 36.2% respectively), or as a passenger in a car or van (6.1% or 6.2% respectively), with both proportions of people being greater than at the national level.

8.44 A detailed assessment of air quality across Bridgend, conducted in 2005, concluded that the current air quality objectives for NO₂ and PM₁₀ were being met and that the 2010 Air Quality Daughter Directive limit value for NO₂ would also be achieved at the road junctions assessed³⁴. However, it was concluded that the indicative limit value for PM₁₀ for 2010 will not be met at any of the road junctions. It is therefore likely that in the short term an AQMA will be declared at particular locations across Bridgend. The provisions in the SE Wales RTP are unlikely to prevent this eventuality, as given the growing population of the local authority area, it is expected that car use will grow, unless additional rail services or high speed bus services are brought forward. Particular bus routes are supported in the SE Wales RTP, and include routes between Maesteg and Bridgend and Blaengarw and Bridgend. However, the local authority area is already well served by high frequency bus services and has a new award winning bus station located in Bridgend. There are also a number of park and ride services already available in the local authority, which provide ready access to the rail network.

8.45 There is a growing population across the Vale of Glamorgan and as a consequence it can be expected that the total number of cars owned in this local authority will increase in time. The current rate of ownership of cars or vans across the Vale of Glamorgan is approximately the same as at the national level, albeit with a slightly greater proportion of local residents owning two or three cars than do across Wales as a whole. The majority of people across the Vale of Glamorgan work relatively closer to their home relative to the population of Wales as a whole. However, a significant proportion of people in the Vale of Glamorgan access their place of work by car, some 39.3%, which is greater than across Wales as a whole (35.0%). The use of motorised travel dominates across the Vale of Glamorgan, with smaller proportions of people than at the national level walking to work. However, 2.4% of the working population in the Vale of Glamorgan use train to access their workplace compared to 0.7% across Wales as a whole.

8.46 Presently there are no AQMAs designated in the Vale of Glamorgan, and although it has been determined that there is very little probability that NO₂ emissions will exceed statutory limits, NO₂ emissions will continue to be monitored at busy junctions and roads across the local authority area. Such areas subject to further monitoring include Merrie Harrier and Windsor Road in Penarth. There is some uncertainty as to whether the 2010 indicative objective will be met for annual or 24 hour mean concentrations of PM₁₀ emissions across the Vale of Glamorgan. It is clear that the provisions in the SE Wales RTP will influence the future levels of air quality across the area, but the future outcome will be dependent on the behavioural change of the local populace which is difficult to predict.

³⁴ The EU limit values for PM₁₀ for the period beyond January 2005 include a 24 hour mean value of 50 µgm⁻³, not to be exceeded more than 35 times in a year, and an annual mean target of 40 µgm⁻³. The NO₂ emissions targets for 2010 include not exceeding a 24 hour average concentration of 200 µgm⁻³ more than 18 times in a year, with an annual mean concentration of 40 µgm⁻³.

8.47 There are four AQMAs in Cardiff. These include the Newport Road AQMA, centred on the junction of Newport Road and Albany Road, Philog AQMA, located at the junction of Manor Way and Birchgrove Road, and the Cardiff West AQMA located along Western Avenue, and the Llandaff and Ely Bridge areas, and an additional AQMA located at the junction of St Mary Street and the High Street. The AQMAs were declared in respect of the predicted concentrations of NO₂ which are expected to exceed statutory standards. Since the adoption of the AQMAs, the air quality within them has improved considerably. There is now evidence to suggest that the Newport Road and Philog AQMAs are now unnecessary and that the Cardiff West AQMA can be replaced with an AQMA covering the Ely Bridge area although these changes would be subject to public consultation.

8.48 There is a growing population across Cardiff, although in general the rate of car ownership per household is below the national rates. This is not surprising given that Cardiff already has excellent public transport services and is well connected by rail. A much larger proportion of people in Cardiff use bus services to access their place of work than the national level, with 6.5% compared to only 3.0%, whilst a smaller proportion of people use their cars to access work compared to the national proportion (33.0% and 35.0% respectively). In general, the provisions in the SE Wales RTP, should encourage a further reduction in car use, with a move towards greater use of pedestrian and cycleway networks.

8.49 Given that 39% of all rail journeys in Wales arrive in Cardiff, further developing the rail system serving Cardiff could have significant benefits in terms of greater environmental protection for people across SE Wales, through improved local air quality and reduced CO₂ emissions. There has been a significant growth (55%) in total rail passenger journeys into Cardiff between 1995/6 and 2004/5, significantly above the overall growth of 38% across Wales as a whole, suggesting that rail transport is significant for people wanting to access the Welsh capital. Sewta supports the proposed rail link between Cardiff and Holyhead to connect the north and south of Wales, as well as the South Wales Main Line Technical Officers Group's aim to increase capacity and therefore to accommodate the likely growth in demand to the east and west of Cardiff, a move also supported by the Department for Transport's 'Delivery of a Sustainable Railway', July 2007.

8.50 The rate of car ownership per household across Newport is generally lower than it is across Wales as a whole, although given the growing population across Newport, the absolute numbers of cars across the area might increase in time. Given the low rate of car ownership per household in Newport, the majority of people tend to work close to their place of residence, and thus travel short distances to reach work, much shorter than is generally the case at the national level. In terms of accessing work, 5.8% of all people within Newport access work via bus, minicab or coach, compared to 3.0% at the national level.

8.51 It is expected that the future annual mean concentrations of NO₂ will exceed the statutory standard at a number of receptors across Newport, including: the M4 – east to west of the Newport Borough where properties exist in relatively close proximity; the A48 (Chepstow Road), running north and south of the M4; the B4596 (Caerleon Road); the A4051 (Malpas Road), running north and south of the M4; the A4042 (Heidenheim Drive); the B4591 (Glassllwch Crescent); and the A449. This has resulted in the designation of seven AQMAs. Future concentrations of PM₁₀ are not expected to exceed statutory standards across Newport in the immediate future.

8.52 Despite the provisions outlined in the SE Wales RTP, including the planned widening and restructuring of the M4 in the areas surrounding Newport, it is expected that the volume of cars flowing along the M4 will continue to grow in the medium term, with the annual mean concentration of NO₂ likely to worsen at particular locations across Newport.

SEA Objective 2: To reduce the contribution of transport to greenhouse gas emissions and minimise the vulnerability of transport infrastructure to the effects of climate change

8.53 The SE Wales RTP objectives influencing the outcome of this SEA Objective include SE Wales RTP objectives 3, 4, 7, 8, 9, 11, and 12. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Road vehicle miles driven across SE Wales;
- (ii) Capacity, price and accessibility of public transport relative to private transport;
- (iii) Pedestrian and cycleway route length, connectivity and accessibility;
- (iv) Scale and length of construction and demolition activity across transport network;
- (v) Growth in demand for transport.

8.54 A number of SE Wales RTP policies and actions will influence the future outcome of this SEA Objective. These include PLP1, PLP2, PLP3, PLP4, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, FTP1, IIP1, HIP3, HIP4, HIP5, DMP1, AEP1, ECP1, ECP2, FRP1, FRP2, FRP3, FRP4, TOP1, PLA1, PLA2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, FTA1, IIA1, IIA3, HIA1, HIA2, HIA3, HIA4, AEA1, FRA1, and TOA1. All projects specified in the SE Wales RTP will also influence the future outcome of this SEA Objective. Table 8.7 below summarises the impact of the SE Wales RTP on this SEA Objective.

Table 8.7: SEA Objective 2: To reduce the contribution of transport to greenhouse gas emissions and minimise the vulnerability of transport infrastructure to the effects of climate change				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Transport's contribution to greenhouse gas emissions in Welsh economy	✓✓	High	Short term	High
Modal share for journeys to work – based on usual mode of travel to work by people aged 16 – 74 in employment (positive means a more diverse modal share, and less reliance on car)	✓ / ✗	High	Short term	High
Modal share of journeys to school for 5 – 16 year olds (positive means a more diverse modal share, and less reliance on car)	✓ / ✗	High	Short term	High
Conclusions, Risks and Uncertainties				
<p>It will be necessary to induce behaviour change in users of transport across SE Wales to assist the UK with achieving its 2050 target to reduce CO₂ emissions by 80% from 1990 levels, as technological change alone will not enable the achievement of the 80% reduction target.</p> <p>Road user charging, if set at a sufficiently high price, is likely to reduce the level of non essential road trips made. However, given the demand for road use at rush hour times, road user charging may result in simply being a revenue raising tool, rather than an effective fiscal instrument which reduces road congestion and greenhouse gas emissions, which might not be politically acceptable.</p> <p>Plans to invest in new infrastructure at particular locations could be costly in the long run unless it accords with aspirations to transcend to a low carbon economy.</p> <p>Providing new measures which allow for traffic calming or the installation of tougher speed limits would slow the flow of traffic across SE Wales and assist with reducing CO₂ emissions.</p> <p>Measures which increase car occupancy, reducing the frequency of trips and trip length, such as business green travel plans and enhanced public transport interchange facilities could all assist with reducing the volume of road traffic across SE Wales and reducing CO₂ emissions.</p> <p>The key measures outlined in the SE Wales RTP which would assist with reducing CO₂ emissions across SE Wales in the long and very long term is the support for the construction of more sustainable developments which reduce the need to travel across SE Wales.</p>				

8.55 The Climate Change Act commits the UK to reduce 2050 carbon emission by least 80% of the 1990 emission level. It is therefore necessary that the SE Wales RTP has a sufficient mixture of policies and initiatives to reduce future levels of CO₂ emissions from the transport network across SE Wales.

8.56 The future impacts of climate change are well documented³⁵. These include changes in the annual or seasonal averages in temperature across SE Wales, including warmer and drier summers, and milder and wetter winters. There could also be rising sea levels and consequentially an increased risk in tidal flooding along the south coast of Wales. There would also be an increased frequency of extreme weather conditions, including an increase in the number of very hot days experienced, more intense downpours of rain and the subsequent increase in the risk of flooding from rivers and the coast. Thus increase flooding, subsidence and droughts could be the consequential effects of climate change in SE Wales. There is also the increased risk of roads melting in intense heat, and the threat of delays on the rail system due to the effects of extreme weather on rail infrastructure.

8.57 While many of the policies proposed in the SE Wales RTP will influence the future demand and supply of road transport, the SE Wales RTP will not directly influence the future demand for air travel. The SE Wales RTP only has policy levers which can influence consumers' generalised costs of accessing the airport, through the direct supporting of road user charging on particular roads, or by influencing factors which increase or decrease travel journey times. As a consequence the SE Wales RTP cannot directly influence the future CO₂ emissions from aviation directly, although in principal, it could influence the emissions arising from surface transport access methods to airports. However, Sewta do seek to encourage better transport links to Cardiff International Airport, particular better public transport links, as it is the only airport in Wales which offers flights to international destinations.

8.58 With an expected increase in 108,000 additional residents across SE Wales within the next 20 years³⁶, it is expected that increases in CO₂ emissions from the transport sector is unavoidable, regardless which particular set of policies or projects are taken forward. Even assuming improvements in engine efficiency of future automobiles, driven by EU legislation and targets, it is likely that any growth in road vehicles will lead to the growth in CO₂ emissions, albeit at a decreasing rate. It has been estimated that to meet the UK Government's long term CO₂ emissions target, the volume of road traffic across SE Wales would have to reduce at a rate commensurate to the rate of growth in road transport across SE Wales over recent years. This would suggest that the target is unlikely to be met through the provisions in the SE Wales RTP alone. However, this in itself it not necessarily a significant effect arising from the provisions outlined in the SE Wales RTP. It is in the wider interests of the public that those areas of industry which are best placed to reduce CO₂ emissions at lowest cost do so first, whilst allowing those areas of the economy where it is more costly to reduce emissions to continue to emit. In fact, if in the future transport is responsible for all of SE Wales' emissions of CO₂, and the 2050 target is attainable under such conditions, then it does not matter that transport is the cause of all the emissions of CO₂. However, it should be noted that it is unlikely that this will be the case, and therefore it is necessary that the SE Wales RTP include policies and projects which are both cost effective and technical feasible and which encourage a reduction in the demand for private car use and hence CO₂ emissions.

³⁵ HM Treasury: Stern, N. 'Stern Review on the Economics of Climate Change', 2006.

³⁶ WAG, 'Wales Spatial Plan: People, Places, Futures', November 2004.

8.59 It is vital that the SE Wales RTP develop cost effective solutions to reducing CO₂ emissions from transport, as it would not be economically efficient to cut emissions from transport if the same quantity of emissions could be reduced at lower cost from another sector of the economy. Additionally, it would not be sensible to cut emissions of CO₂ from transport if the marginal cost of abating an emitted tonne of carbon from transport is greater than the perceived marginal social cost of an emitted tonne of carbon. If the estimate for the marginal social cost of carbon stated in the Stern Review of Climate Change³⁷ is accepted, then the estimated marginal social cost of carbon is in the order of approximately £42 per tonne (assuming that the UK remains on the business as usual emission pathway). Other estimates of the future social cost of carbon (SCC) are lower if the future atmospheric concentrations of CO₂ are smaller, reflecting the fact that less warming of the earth would occur and therefore less damage is expected to result. A lower SCC reduces the opportunities to introduce more costly technologies or solutions to reduce future emissions³⁸. However, it should be noted that should the UK act unilaterally in reducing CO₂ emissions, it will be an excessively costly approach to achieving very little³⁹.

8.60 Given the risks of climate change and the declining stocks of world reserves of oil, it is important that the SE Wales RTP avoids promoting policies which encourage further investment into a transport system heavily reliant on a carbon-based infrastructure. Thus the SE Wales RTP aims to promote policies and solutions which both assist the wider objectives of the Wales Transport Strategy, to promote accessibility and economic efficiency and environmental protection, although there is no explicit objective to avoid investing into costly schemes which lock SE Wales into a long term high carbon infrastructure.

8.61 Amongst Sewta's best options to mitigate the growth in emissions of greenhouse gases includes the promotion of low emission vehicles, a goal which will be championed by the UK in the EU government, to assist with EU wide legislation to improve the fuel efficiency of automobiles. Additional benefits would also be available if future cars were increasingly powered by alternative fuels, such as compressed natural gas, liquid petroleum gas, methanol, ethanol, biodiesel, hydrogen, and electricity. It has been estimated that these approaches, supported by Sewta, would generate savings in CO₂ emissions in the order of 10.9 MtC_e (million tonnes of carbon equivalent) to 27.4 MtC_e⁴⁰.

³⁷ 'Stern Review: The Economics of Climate Change', HM Treasury, 2007.

³⁸ Defra recently issued guidance concerning the 'Shadow Price of Carbon'. This was necessary because any estimate of the Social Cost of Carbon is dependent on the future concentration of CO₂ in the atmosphere, which is determined by the emissions of all countries, which the UK cannot influence. In addition, as there is uncertainty as to the future level of CO₂ emissions which will stabilise the concentration of CO₂ emissions in the atmosphere at a safe concentration, it is unknown if the price level selected is sufficient to induce the necessary level of abatement required to reach the stabilisation goal. Therefore, the Shadow Price of Carbon has been introduced which represents the non market traded price of carbon, and has been set at such a level to reflect estimates of marginal abatement costs required to reach a particular stabilisation goal i.e. a higher Shadow Price of Carbon would induce greater levels of abatement and hence make it more likely that the stabilisation goal will be achieved.

³⁹ Newsnight, BBC2: 'Ethical Man Debate', 11th April 2007. Professor Bjorn Lomborg was quoted as saying that even if everybody in the UK took all the steps required to meet the proposed 2050 UK CO₂ target, it would delay climate change by 7 hours if no other country joined the UK in its actions, according to his models.

⁴⁰ Saving estimates taken from the University College London and Halcrow report 'Looking over the Horizon', January 2006, funded by the Department for Transport.

8.62 The SE Wales RTP outlines its intention to encourage greater levels of walking and cycling. If successful, this would reduce the unnecessary taking of short car trips and assist with the reduction of CO₂ emissions. The factors affecting walking include the directness and legibility and consistency in gradient of the pedestrian network, the presence of barriers in the network, including severance caused by road traffic, fear of accidents and other security issues. As the SE Wales RTP promotes the development of the pedestrian network across parts of SE Wales, more people could be encouraged to walk rather than drive when taking short journeys. This could be achieved through the implementation of policies which reduce the severance of areas and by the provision of infrastructure which prioritises pedestrian walkways over roads as is outlined under SE Wales RTP policies WCP1 and WCP2.

8.63 The cycling infrastructure across SE Wales in all urban centres is considered to be poor, particularly across Cardiff and Newport. It is considered that to improve the cycling network, roads must be made to be less hostile to cyclists, with designated cycling lanes designed. Additionally, the planning process must begin to deliver more cycleways, with a particular need to consider the cycling facilities located at the destinations of cycling trips. For example, to encourage people to cycle to work, infrastructure which allows the secure and safe storage of bicycles and changing facilities for the cyclist would be needed. The soft measures are expected to generate reductions in CO₂ emissions in the order of 0.9 MtC_e to 2.4 MtC_e⁴¹.

8.64 The promotion of public transport over car use is supported in the SE Wales RTP, although public transport is often only commercially viable without the need for public subsidy in areas of high demand, which requires a suitably dense local population to serve. For public transport to be a success, the capacity and frequency of the service must be suitable to meet the requirements of the passengers, and the duration of the journey time must also be comparable and competitive with private vehicles. If it is not, then demand for public services will not materialise, and the service would not be commercially viable. The SE Wales RTP outlines its intention to develop new railway platforms, track re-modelling and signalling improvements, allowing for an enhancement in track capacity and the reliability of rail services for all passengers across SE Wales. Such measures are supported in the SE Wales RTP under policies and actions PLP1, RAP1, RAP2, RAA1, and BUP3. It has been estimated that the provision of long distance forms of public transport could substitute for the use of private vehicles, generating savings of CO₂ emissions in the order of 0.5 MtC_e and 0.7 MtC_e⁴².

⁴¹ University College of London and Halcrow, 'Looking over the Horizon', January 2006.

⁴² Ibid.

8.65 Adapting the transport network across SE Wales to mitigate the potential future effects of climate change is crucial. The principal climate change risk facing SE Wales is flooding, which would be greatest in the low lying coastal areas of SE Wales and the Usk Valley, and it is therefore these areas which should be prioritised for flood protection measures. However, any part of the transport network located in the flood plain of an existing waterway could potentially be at risk. Additionally, other climate change risks facing the transport network across SE Wales include the threat of melting roads and the expansion of rail track due to possible increased ambient temperatures. Potential solutions to these issues could include better drainage off the transport network, flood protection measures, and the procurement and use of heat resistant materials in roads and rail tracks. SE Wales RTP Policy HIP5 responds to these risks by reflecting the need to ensure the future transport network infrastructure across SE Wales is more reliable and less susceptible to the influences of climate change.

8.66 Particular measures which could be implemented to mitigate the risk of flooding include greater provision of soakaways and the implementation of more sustainable urban drainage systems and attenuation ponds, which help store water during heavy rainfalls to reduce the rate at which water reaches waterways, assisting with reducing flood extents and depths, the chief properties which determine flood damage. To reduce the threat of water quality being adversely affected by the road network, water treatment plants could be operated alongside the road network, including the utilisation of reed beds to mitigate pollution washed from the road surface during a surface run off event.

8.67 The extent of the problems facing SE Wales in reducing the quantum of road travel is significant, particularly given that 570,000 households in SE Wales owned at least one private vehicle in 2001, and 77.8% of the working population travel to work by car and van, as opposed to 10.94% by foot⁴³.

⁴³ Statistics available from the 'Neighbourhood' data centre of National Statistics and the Welsh Assembly's 'Wales Transport Statistics 2007'.

8.68 Cardiff, Rhondda Cynon Taff, and Newport have the highest volume of traffic on their roads in SE Wales, all with at least 1.2 billion vehicle km being driven across their areas annually, with Cardiff having 2.92 billion vehicle km⁴⁴. The growth in road traffic between 1993 and 2005 of 23.5% demonstrates the key issue in addressing future reductions in the emissions of greenhouse gases from the transport network across SE Wales, particularly given that bus use has declined by 0.8% between 1999 and 2005. Growth in car use across Torfaen has grown by 2.28% per annum over the last ten years, the highest growth rate across SE Wales. Bridgend (1.97%) and Merthyr Tydfil (1.79%) also have high rates of growth in car use across SE Wales, whilst the Vale of Glamorgan (1.06%) and Cardiff (1.19%) have the slowest rates of growth in car use. It is evident that car use will continue to increase across SE Wales into the future. Traffic congestion costs the local economy across SE Wales £600 million per annum, as noted in the SE Wales RTP⁴⁵. To counter the likely rising cost of road congestion across SE Wales, which is rising faster than the growth in road traffic, it is necessary that the planned upgrade of the M4, supported by Sewta, is brought forward, although this will cause significant short term disruptions. In the longer term, it is inevitably that although economic benefits will be realised, by at least offsetting the cost of congestion rising to around £1 billion per annum, there will be increased emissions of CO₂ due to the increased use of cars along the M4 in the long term.

8.69 However, although CO₂ emissions will increase in the long run due to the widening of the M4 motorway, given the importance of connectivity to the general success of the SE Wales economy, the widening of the M4 corridor will bring substantial economic benefits to the SE Wales economy, with increased trade with the SW and SE of England.

8.70 The introduction of road user charging would assist with reducing CO₂ emissions, by reducing the number of unnecessary car journeys taken. However, demand restraint measures will achieve little for those residents residing in rural areas, who on average, generally have poor accessibility to public transport and to key local services relative to those living in more urbanised areas, and will therefore continue to be more reliant on the use of private transport.

8.71 There are a number of trade offs which need to be considered in relation to the introduction of an economic instrument with the aim of reducing the demand for road transport. Firstly, the price elasticity of road use is highly inelastic at peak hours of use – many people have little or no alternative to road use to access their place at work, or to reach their home in the morning and evenings respectively. Therefore road user charging could need to be of a significant amount to engender a sufficient change in behaviour of road users. Such a policy would however likely prove to be highly unpopular if set at too high a level. It is likely that should such a policy be introduced, it would do so at a low level, rising in future years as the general populace become accustomed to it. There is also the risk that by placing the charge on particular roads, that car users simply begin to use uncharged roads, with the consequential shifting of road congestion between roads arising, with no significant benefit in terms of reduced CO₂ emissions. Estimates suggest between 1.1 MtC_e and 2.3 MtC_e are achievable through such measures albeit at a national level⁴⁶.

⁴⁴ See Section 5 of this report for baseline data.

⁴⁵ Goodwin, P. 'The Economic Costs of Road Traffic Congestion', 2004. Population based estimate, using the University College London figure of £30 billion per annum in 2010 for the whole economy.

⁴⁶ University College London and Halcrow, 'Looking Over the Horizon', 2006.

8.72 The proposals to significantly enhance the bus service across SE Wales, would be of significant benefit for a number of local authority areas, in terms of assisting with reducing the level of road congestion and boosting the level of accessibility. It is expected that the present frequency of service and average bus journey duration, which is highly variable and presently often double that of the car, would be improved by the proposals outlined in the SE Wales RTP. Improvements to the bus service would encourage residents to use them instead of their car, particularly at peak travel times, assisting with reducing road transport's contribution to CO₂ emissions. However, bus services can be a poor substitute for car use in some contexts, including the weekly trip to buy food, where the weight of goods bought reduces the opportunity to use public transport.

8.73 In addition, the development of out of town shopping precincts, often located some distance from residential areas, encourages the greater use of automobiles, contributing greater emissions of CO₂. It could therefore be beneficial for Sewta to lobby local planning authorities to discourage more developments of out of town shopping areas, particularly if they do not integrate accessible public transport services into their design. This could lend itself to encouraging people to shop more locally, benefiting the more local and immediate economies. However, should local authority Local Development Frameworks already support the development of out of town shopping areas, with candidate sites designated for such uses, then it could be of benefit to ask developers to contribute towards the delivery of appropriate transportation systems to rival that of the automobile.

8.74 Emissions of CO₂ could be reduced by encouraging people and businesses across SE Wales to reduce their use and dependence of the transport system. To achieve this, companies must be encouraged to embrace green travel plans where practicable, and to develop appropriate environmental management systems which reduce their carbon emissions per unit activity, as supported by the SE Wales RTP. In addition, businesses should be encouraged to encourage their staff to work from home if this is achievable for part of the week, to both reduce road congestion and public transport congestion. It is expected that such measures would contribute a reduction in CO₂ emissions in the region of 0.3 MtC_e and 1.2 MtC_e⁴⁷.

8.75 The transfer of freight off of roads onto rail or water could significantly assist with reducing road based congestion, often caused by slow moving articulated lorries or vehicles with heavy loads, and hence contribute to reducing emissions of CO₂ from the road network. Policy FRP1 supports this approach. The WAG supports this policy, and actively offers Freight Facility Grants to fund the shift in transport mode used to transport freight. It has been estimated that such a measure can reduce national emissions of CO₂ by between 0.7 MtC_e and 2.5 MtC_e⁴⁸.

⁴⁷ University of London and Halcrow, 'Looking over the Horizon', 2006

⁴⁸ Ibid.

8.76 All future provision of road infrastructure must be undertaken within the context of the shape of the likely future demographic profile of SE Wales. The population of Wales as a whole is expected to increase by 11% to 3.3 million by 2031. Pensioners are expected to comprise 24% of the future population, whilst children 17%. Thus the average age of the Welsh population will increase from 40.6 years old in 2006 to 44.3 years old by 2031⁴⁹. Table 8.4 below summarises the recent change in the population of the ten local authorities in SE Wales. Because of the forecast increase in population across SE Wales, optimistic forecasts see future road traffic growing by 20% in the short to medium term⁵⁰.

Table 8.4: Population Change across SE Wales between 2005 and 2006

(Units in thousands)	Resident population 2005	Natural change (births – deaths)	Net migration	Total change	Resident population 2006
Monmouthshire	87.8	-0.1	0.2	0.1	87.9
Torfaen	91.0	0.2	-0.1	0.1	91.0
Blaenau Gwent	69.1	0.0	0.3	0.2	69.3
Caerphilly	170.9	0.4	0.0	0.4	171.3
Merthyr Tydfil	55.6	0.1	-0.2	-0.1	55.5
Rhondda Cynon Taff	233.3	0.4	0.2	0.6	233.9
Bridgend	131.7	0.1	0.9	0.9	132.6
Vale of Glamorgan	122.2	0.0	1.1	1.1	123.3
Cardiff	314.1	1.4	2.0	3.4	317.5
Newport	139.8	0.3	0.0	0.3	140.1
Wales	2953.6	1.9	10.5	12.3	2965.9

Source: WAG, 'Wales Population – a Demographic Overview', 2008

8.77 Introducing measures which attempt to offset the forecast future growth in road traffic, including reducing single car occupancy rate are priorities for Sewta. A significant number of potential measures have been brought forward for consideration, which if successfully implemented, could have a material influence on the future behaviour of current car users. Such measures include the development of coach interchange sites, park and ride sites, kiss and ride, park and share, and park and stride⁵¹. The development of a more integrated public transport operation is likely to require amendments to the Transport Act 1985 which presently effectively makes it illegal for public transport operators to cooperate on similar routes as they could be judged to be colluding as a cartel to increase prices.

⁴⁹ WAG, 'Wales Population – a Demographic Overview', 2008.

⁵⁰ DETR, 'National Road Traffic Forecasts (Great Britain)', 1997.

⁵¹ A park and ride scheme allows people to collectively park their cars usually in an out of town centre and then collectively use some form of public transport to reach their final destination. Kiss and ride schemes allow people to temporarily park at a point to collect or discharge passengers, usually at a public transport site. Park and share schemes allow people to collectively park their cars in a designated site, and then pool in a smaller number of cars. Finally, park and stride schemes is equivalent to a large car park where people collectively park and then walk to their final destination.

8.78 A critical policy contained within the SE Wales RTP, Policy PLP4, could bring long term dividends in terms of reducing CO₂ emissions arising from the transport network across SE Wales. This policy aims to encourage the development of more sustainable settlements through the land use planning system. In particular, it aims to encourage local authorities across the SE Wales region to seriously consider developing planning policy in their LDFs which reduce the need to travel. This can ideally be achieved by encouraging developers to design proposed developments which encourage people to access them by public transport, or by foot or bicycle. Such measures could, if implemented nationally, reduce CO₂ emissions in the order of 0.5 MtC_e to 2.4 MtC_e⁵².

Geographic Specific Issues

8.79 Rhondda Cynon Taff, Cardiff, and Newport local authority areas all suffer from very high volumes of road traffic, although the traffic along the southern local authorities in SE Wales is generally concentrated along the M4 and the trunk road network serving this important transport corridor. Given the general increase in population across Wales which is expected over the next decade and the forecast growth in road traffic across SE Wales, road use along the M4 is expected to increase, regardless of any medium to long term policy instruments such as road user charging which is introduced along this stretch of road. The planned works to the M4 would ease congestion in the short run, although as demand for road use increases in the future, the congestion would begin to grow, with the consequential increase in CO₂ emissions. In addition, the use of roads across Rhondda Cynon Taff is expected to increase despite provisions of cycleways and public transport, as the more rural nature of the local authority requires residents to utilise cars.

8.80 The proposed improvements to the A40, which links to the M50 and allows connections with the West Midlands, are supported by the SE Wales RTP. The proposed enhancement would allow greater connectivity of Wales to England, particularly allowing greater access for residents of Monmouthshire, and other south-eastern local authorities of Wales. However, any road improvements are likely to encourage greater use of cars, and thus contribute to increasing emissions of CO₂. This is unavoidable, although the increase in emissions is likely to be offset by greater economic gains for residents of SE Wales, through reduced road congestion.

8.81 Additional road improvements and developments are supported by the SE Wales RTP. These include the completion of the A465 Heads of the Valley Road; an access road to Cardiff International Airport and the planned new developments at St. Athan; the building of a new district hospital and supporting new highway in Ystrad Mymach; support for four road schemes with WAG approval at Wentloog-St Mellons; the Tredegar Park Junction improvement; the improvements to the A4226 to Five Mile Lane; and the Church Village by-pass.

⁵² University College London and Halcrow, 'Looking over the Horizon', 2006.

8.82 Other possible road schemes which the SE Wales RTP is supportive for further development should funding be available, includes, the A48 between Cardiff and Bridgend; the A48 and A473 in the Bridgend area, critical as the roads suffer from poor design and are suffering significant road congestion; the A469 in Natgarw and A468 Caerphilly Northern by-pass; the A470 accessing Newport; the A472 and A4043 from New Inn to Blaenavon; the linking of the A4046 at Ebbw Vale to the A465; the A4050 from Culverhouse Cross to Barry; improvements to the A4050, A4226 and B4265 linking Barry with St. Athan; the A4051 at Malpas; the A4055 at Dinas Powys; the A4059 between Abercynon and Hirwaun, which is the Aberdare by-pass extension; the A4061 and A4058 between Upper Rhondda Fawr and Pontypridd; the A4063 linking Sarn and Maesteg; the A4119 at Llantrisant and Talbot Green; and the A4232 Cardiff Eastern Bay Link.

8.83 New road building and improvements to existing roads whilst beneficial for local economies (reducing road congestion and speeding up journeys) and job creation (and retention), it has negative environmental impacts, such as increased noise in surrounding areas, impacts to local wildlife and increased emissions of CO₂ and local air quality pollutants.

8.84 As noted previously, the use of cars for short journeys across the transport network in SE Wales could be offset by proposals to significantly enhance the cycle network across SE Wales. The SE Wales RTP outlines a large number of proposals for extensions of the cycleway network, covering all geographic areas of SE Wales. Some of the proposals, although not exhaustive, include linking the National Cycle Network (NCN) route 46 between Cwm and Ebbw Vale following the route of the Ebbw Valley Railway; developing the A4061 Bridgend Northern Distributor Road Cycle Route; developing radial cycle routes throughout Caerphilly town centre and linking to the NCN route 4; and completion of the NCN route 46 in the Heads of the Valleys corridor, allowing linkage with employment sites in this area, including the Tafarnaubach Industrial Estate. Soft measures such as enhancing and expanding the coverage of the NCN over SE Wales have been estimated to be able to reduce urban traffic by between 3 – 14%, peak time urban traffic by between 5 – 21% and off-peak urban traffic by between 3 – 13%. Half of these reductions are expected to arise from cutting car journeys to work, and travel planning and teleconferencing for another one third. Such measures, if successful, would assist with reducing CO₂ emissions, improving air quality, and reducing noise from the transport network.

8.85 There are a number of specific public transport related projects which are supported in the SE Wales RTP including the introduction of a half hourly rail service on the Abergavenny and Chepstow lines; a second hourly rail service on the Ebbw Valley line running between Ebbw Vale and Newport. There is also support in the SE Wales RTP for the provision for additional rail services on the Rhymney Valley and Taff Vale lines to cope with recent increases in passenger demand as well as an additional hourly service on the Vale of Glamorgan line between Cardiff and Bridgend via Rhoose and Cardiff International Airport. There is also support for the development of four new train stations on existing rail lines, at Caerleon, Coedkernew, Llanwern and St. Mellons, as well as network extensions with a new station at Ebbw Valley line to Ebbw Vale town centre; an extension of a Cardiff service beyond Pontyclun to Beddau, with new stations at Talbot Green, Llantrisant, Gwaunmeisgyn and Beddau.

8.86 Potential future bus services offered support in the SE Wales RTP include a route between Abertilly and Newport; Maesteg to Bridgend; Baengarw to Bridgend; Pontypool to Newport; Dinas Powys to Cardiff; Talbot Green to Cardiff; and Cardiff to Newport. It is hoped, by providing such services, alongside a better integrated public transport system with conveniently located interchange facilities and better service frequencies, that car use will be reduced and thus assist with reducing CO₂ emissions.

SEA objective 3: To reduce the negative effects of noise and vibration from transport on the environment

8.87 The SE Wales RTP objectives influencing the outcome of this SEA Objective include SE Wales RTP objectives 3, 7, 10 and 12. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Road vehicle miles driven across SE Wales;
- (ii) Capacity, price and accessibility of public transport relative to private transport;
- (iii) Scale and length of construction and demolition activity across transport network;
- (iv) Noise reduction and mitigation measures imposed across the transport network;
- (v) Economic activity across SE Wales; and
- (vi) Change in demand for air travel.

8.88 A number of policies and actions in the SE Wales RTP influence the outcome of this SEA Objective, including PLP1, PLP2, PLP3, PLP4, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, FTP1, IIP1, HIP3, HIP4, DMP1, AEP1, ECP2, FRP1, FRP2, FRP4, TOP1, PLA1, PLA2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, FTA1, IIA1, IIA3, HIA2, HIA3, HIA4, AEA1 and TOA1. It is expected that the projects specified in the SE Wales RTP would influence the outcome of this SEA Objective in a varying manner across the geographic area of SE Wales. Table 8.8 below summarises the effects of the SE Wales RTP on this SEA Objective.

Table 8.8: SEA Objective 3: To reduce the negative effect of noise and vibration from transport on the environment				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Number of noise complaints made to local authorities in SE Wales referring to transport related sources of noise	✓✓ / ✕✕	Medium	Medium term	Medium
Conclusions, Risks and Uncertainties				
<p>The SE Wales RTP does not specifically specify the installation, use, or construction of physical measures to mitigate noise arising from the transport network. Such measures would be beneficially located around major transport nodes and corridors, particularly if there are any noise sensitive receptors, such as schools, hospitals, or residential areas located nearby. Traffic calming measures would reduce traffic speeds, and thus assist in reducing the level of noise arising from the road network, particularly in urban areas, where there are more noise sensitive receptors.</p> <p>There is little scope for the SE Wales RTP to influence the demand for air travel, and hence influence noise arising from activities at Cardiff International Airport.</p> <p>The SE Wales RTP outlines a number of policies and projects which whilst not directly focussing on reducing noise across SE Wales, would indirectly assist with reducing noise from aspects of the transport network, particularly from some roads. However, these effects might be offset to some extent by the forecast future increase in road use which is expected to materialise across SE Wales in the medium term. In addition, with plans to increase the frequency of particular rail services, noise arising from the rail network might increase.</p>				

8.89 Noise and vibration arising from the transport network can cause nuisances to people living in close proximity to busy roads and rail lines. Noise generally arises from the operation of the transport system, and is affected by the rate of flow of traffic and the nature of the surrounding landscape, particularly whether natural or man made noise barriers line the transport corridor. Therefore the noise impact arising from the transport network can be mitigated through better operational management of the transport system, and through the strategic locating of various noise barriers.

8.90 The key factors influencing the level of disturbance people suffer from road traffic noise are its general level and its variability with time. The latter refers to short term variations due to the passage of individual vehicles and to longer period variations at different times of the day due to general changes to the flow of traffic. The level of disturbance arising from road traffic noise generally varies in accordance with peak noise levels.

8.91 Noise arising from aircraft at Cardiff International Airport can cause particular disturbance for residents living below flight paths. Aircraft noise consists of a build up of noise to a peak level and then a gradual fall off. These noise events occur over time intervals, as opposed to the continuous but fluctuating noise arising from road traffic. Methods to mitigate noise generated from Cardiff Airport should be investigated, although many potential measures are beyond the policy levers of Sewta, such as the future development of the airport itself. However, Sewta can potentially influence land use planning decisions in areas surrounding the airport, and the associated road and rail transport networks used to access the airport, although the general aim of the policies is not to directly reduce noise, but rather indirectly reduce it by reducing the need to travel, particularly by car. Policies stated in the SE Wales RTP outlining the need to influence land use and the demand for travel include Policy PLP4, which outlines Sewta's aim to influence the level of demand for travel, and development control policies in Local Development Plans across SE Wales to establish a pattern of development which reduces the need to travel.

8.92 Noise is predominantly a greater issue to residents in urban areas than for residents in more rural areas, as noise is generally around 10 dB greater, largely due to the greater volumes of traffic in urban areas, and morphology of the townscape, which effectively creates a greater number of reflective noise barriers.

8.93 Measures which could be utilised to mitigate noise impacts arising from the transport network could include ensuring that road and rail corridors are properly sound insulated to avoid noise pollution affecting sensitive receptors, such as residential areas, schools, or sensitive ecosystems, as well as deploying low-noise emitting road surfaces across the road network in SE Wales. Whilst the SE Wales RTP does not explicitly outline its intention to mitigate against noise arising from the transport network across SE Wales, there are a number of implicit policies and projects which would assist with reducing the demand for private vehicle use and hence assist to some extent the noise generated by the use of the road network.

8.94 Given that there has been a 33% increase in road traffic across SE Wales between the period 1989/91 to 2003/04, it will difficult to significantly alter this trend and hence reduce noise generated by the road network. Particular effort will be required to reduce demand around those locations presently experiencing significant road travel to mitigate noise, which would predominantly include Cardiff and Newport, where 65% of all people who commute into these areas doing so by car, although bus is also an important form of travel for commuters into these two cities as well.

8.95 One particular solution to reducing dependency of car use in areas surrounding Cardiff and Newport include enhancing the reliability and frequency of bus and rail services. Any reduction in the number of road vehicles moving around the road network would assist in reducing the number of noise events arising, as would reducing the overall speed of vehicles. This option is unlikely to significantly benefit rural areas, where enhanced public transport is more difficult to successfully develop, although there is often less noise sensitive receptors located in such areas, as opposed to urban areas where public transport is more likely to be able to be developed successfully which is effective in reducing the demand for car use.

SEA Objective 4: To reduce the negative impacts of transport on biodiversity and to increase its positive impact

8.96 The SE Wales RTP objectives influencing the outcome of this SEA Objective include SE Wales RTP objectives 7, 8, 10, 12 and 13. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Proportion of new transport infrastructure developments proposed to be built on or through existing green open spaces or designated sites;
- (ii) Noise reduction and mitigation measures imposed across the transport network;
- (iii) Road surface run off of contaminants; and
- (iv) Local air quality.

8.97 The policies and actions in the SE Wales RTP which influence the future outcome of this SEA Objective include PLP1, PLP2, PLP3, PLP4, PLP5, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, IIP1, HIP3, HIP4, DMP1, ECP2, FRP1, FRP2, FRP3, FRP4, TOP1, PLA2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, IIA1, IIA3, HIA2, HIA3, HIA4, FRA1, and TOA1. It is expected that some of the projects specified in the SE Wales RTP, if brought forward for development, could impact upon biodiversity across SE Wales. Table 8.9 below summarises the future effects of the SE Wales RTP on this SEA Objective.

Table 8.9: SEA Objective 4: To reduce the negative impacts of transport on biodiversity and to increase its positive impacts				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Number of new roads or rail lines built through a designated area of consequence to wildlife (i.e. special area of conservation, special protection area etc)	✓✓	Low	Short – long term	High
Number of bat roosts located within close approximation of the road network	✓	Low	Medium term	Low
Number of areas on the trunk road network noted as a location with a high bat mortality	✓	Low	Medium term	Low
Conclusions, Risks and Uncertainties				
<p>Any new transport infrastructure proposed for development should be carefully evaluated on a project by project basis to ensure that any potential impact to local biodiversity is mitigated.</p> <p>The future impact of the SE Wales RTP on biodiversity across SE Wales is likely to be generally beneficial as there is expected to be limited new transport infrastructure developments in previously undeveloped locations. However, some sites will be affected due to new infrastructure, particularly where roads are widened, possibly leading to the loss of road verges, a key habitat for a number of species.</p> <p>If proposals encroach onto existing habitats then measures should be included to plant new verges with species-rich grassland and other native species of wild flowers, trees, and hedgerows</p> <p>It is expected that biodiversity would be adversely affected by increases in the concentration of NO_x, O₃, and CO generated from the use of road vehicles across SE Wales.</p>				

8.98 Noise, air pollution, and severance of habitats, can all negatively affect the coverage of biodiversity across an area, as can visitors disturbing the environment through increased littering. Shipping has a specific impact on sea life and noise arising from Cardiff Airport can also negatively affect biodiversity.

8.99 Atmospheric nitrogen disposition represents a threat to naturally nutrient-poor plant communities. Usually estimated atmospheric deposition loads are compared with 'critical loads' below which environmental effects do not occur, according to present understanding. Hence wherever an exceedance of a critical load occurs on sites of value to nature, ecological impacts are expected. The critical load, given as an annual mean, for the deposition of NO_x on UK habitats is given as 30 grams NO_x (as NO₂) per cubic metre⁵³. A number of species, notably those which receive their nutrients from the atmosphere, are at risk from air pollution, including the mosses, liverworts, and lichens. However, it should be noted that although air pollution is a contributing factor to habitat degradation and consequentially to the decline in some species, it is impossible to contribute the true effect of air pollution in isolation of other factors.

8.100 High emissions of NO_x can be directly toxic to plants. Nitrous oxides also contribute to wet and dry deposition of nitrogen, causing eutrophication of naturally nitrogen limited terrestrial and aquatic eco-systems. Such eutrophication may result in the degradation of semi-natural habitats and the loss of species of nature conservation value.

8.101 Nitrogen deposition can also result in the acidification of an environment which can disturb ecosystems from their equilibrium. Furthermore, nitrogen oxides are one of the precursors for photochemical ozone formation. The creation of tropospheric Ozone is a significant issue for biodiversity, particularly for plants, as it is toxic to plants at low concentrations. To clarify the extent to the environmental impacts which can arise from the transport network, the environmental effects of road transport on heathland vegetation, measured up to 200 metres from a dual carriageway road were identified in a study along the A31 in Hampshire⁵⁴, where it was determined that NO_x, de-icing salts, and heavy metals were all having deleterious effects on the health of the heathland vegetation.

8.102 The principal approach to protecting biodiversity is to protect wildlife habitats from being lost to alternative forms of land use development. SE Wales RTP Policy PLP5 seeks to influence the development of local authority Local Development Plans to establish a pattern of land use that reduces the need to travel. This would benefit biodiversity across SE Wales, should the policy successfully reduce the demand for travel and hence protect established areas of value to biodiversity from being developed as part of the transport network. Reducing the need to travel, through the creation of cycleways, the better integration of land use decisions and hence locating of future community facilities and places of work in relation to the transport network and residential areas, or through the implementation of road user charging, could further assist to some extent with the reduction of noise and air pollution arising from the transport network across SE Wales, which would indirectly benefit the biodiversity of SE Wales. It is expected that any benefits generated by the SE Wales RTP would be geographically variable, depending on which locations would benefit from reduced trips.

⁵³ See www.apis.ac.uk

⁵⁴ Angold, P.G. (1997) 'The Impact of a Road upon Adjacent Heathland Vegetation: Effects on Plant Species Composition', *Journal of Applied Ecology*, 34, 409 - 417.

8.103 The protection of road verges would be particularly important given the excellent variety of biodiversity such habitats provide across SE Wales as well providing corridors of movement for local wildlife. Many such verges are protected and managed through local biodiversity action plans across the ten local authority areas of SE Wales. Should any development proposals encroach onto existing habitats, then measures should be included to plant new verges with species-rich grassland and other native species of wild flowers, trees, and hedgerows

8.104 Critical to protecting biodiversity across SE Wales is to minimise the creation of new transport infrastructure projects which damage the existing connectivity of ecological habitats. The Countryside Council of Wales is actively committed to reducing the fragmentation of habitats and isolation of species, to discourage the negative impacts which development of any kind can have on biodiversity. In particular, it will be necessary that any specific projects specified in the SE Wales RTP which at the project level are identified to impact upon the connectivity of ecological habitats, then appropriate mitigation measures should be developed to offset the impact. In addition, any mitigation measure identified at the project level should be designed or developed in such a way as to support the migration of species, should the effects of climate change cause a fundamental change in the nature of habitats and ecosystems across parts of SE Wales.

8.105 The cumulative impact of the growth in road traffic which is forecast to arise due to the increasing affluence of the population of SE Wales, could precipitate demand for increased road building. Should there be such a response, the cumulative growth in new road construction would increasingly encroach on the natural environment, leading to habitat loss, and to the cumulative decline of air quality, increases in noise and increases in the potential for the run off of waste oils from the road surface. Should ecosystem threshold tolerances be exceeded, then non linear responses to the environmental impact caused by the transport network could arise, potentially leading to a significantly adverse impact on particularly sensitive species.

8.106 Enhancing the range of public transport services available across SE Wales, as outlined under Policies and Actions RAP1, RAP2, RAA1, RAA2, and BUP1 is likely to assist with reducing the demand for driving, and hence assist with alleviating road congestion to some extent, potentially reducing the need for additional road building. Consequentially, this is likely to assist with reducing any would be impact on local biodiversity across SE Wales.

SEA Objective 5: To avoid transport related damage to designated wildlife sites and protected species avoiding irreversible losses

8.107 The SE Wales RTP objectives influencing the outcome of this SEA objective include SE Wales RTP objectives 7, 8, 10, 12 and 13. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Noise reduction and mitigation measures imposed across the transport network;
- (ii) Road surface run off of contaminates; and
- (iii) Local air quality.

8.108 A number of SE Wales RTP policies and actions influence the outcome of SEA Objective 5, including PLP1, PLP2, PLP3, PLP4, PLP5, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, IIP1, HIP3, HIP4, DMP1, ECP2, FRP1, FRP2, FRP3, FRP4, TOP1, PLA2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, IIA1, IIA3, HIA2, HIA3, HIA4, FRA1, and TOA1. A number of the specified projects in the SE Wales RTP would also influence the future outcome of this SEA Objective, as would a number of the projects proposed to be brought forward for development. Table 8.10 below summarises the future effects of the SE Wales RTP on this SEA Objective.

Table 8.10: SEA Objective 5: To avoid transport related damage to designated wildlife sites and protected species avoiding irreversible losses				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Number of new roads or rail lines built through a designated area of consequence to wildlife	✓✓	Low	Short – long term	High
Short term changes in the abundance of widespread breeding birds by major habitat across SE Wales	?	?	?	?
Conclusions, Risks and Uncertainties				
<p>It is unlikely that the proposals in the SE Wales RTP will significantly affect any designated wildlife sites across SE Wales, as specific road infrastructure projects are aimed at upgrading existing transport routes.</p> <p>The impact on the indicator 'short term changes in the abundance of widespread breeding birds by major habitat across SE Wales' is impossible to predict given the proposals outlined in the SE Wales RTP, as other factors outside the influence of the SE Wales RTP will influence the abundance of breeding birds, such as housing development for example.</p> <p>It will be critical that all transport related planning decisions made in conjunction with general land use policies or planning decisions should consider the future impact of such decisions on key wildlife habitats across SE Wales.</p>				

8.109 It is often the loss of habitats which precipitate the decline in the abundance of biodiversity across an area, although the loss of keystone species in ecosystems also indirectly impact upon other species in the locality. Likewise, altering land uses can impact upon the wider behaviour of species, affecting their overall ability to survive, for example, by damaging their ability to reproduce. Likewise, altering the nature of the environment, by increasing the rate of drainage from an area, can also negatively impact upon some species which are dependent on water, and potentially lead to an increase in the immigration of an invasive species to the locality which may dominate over existing native species.

8.110 The SE Wales RTP states its intention to protect sites of nature conservation value through Objective 15, and outlines policy responses which encourage the reduced use of the road network in favour of rail, walking or cycling, such as Policies and Actions RAP1, RAP2, RAA1, RAA2, WCP1, WCP2, WCA1, WCA2, and WCA3. Additional policies, such as Policy PLP4, aims to discourage the need to travel, by encouraging local authorities to develop new developments in close proximity to established residential areas to help to create more sustainable communities. Further policies outline the need to consider social, environmental and economic considerations when supporting new developments to the road network, as articulated in Policy HI4P, whilst Action HIA1 which outlines the need to ensure that the road highway is maintained whilst minimising any impact on the environment arising from this activity. These measures should ensure that any future impacts of the transport network on sites of nature conservation value are reduced as the impact of noise and air pollution on eco-systems would be prevented to some extent.

8.111 There could be a detrimental impact upon habitats and wildlife across SE Wales due to the cumulative effect of road congestion, which is expected to worsen across parts of SE Wales, as the affluence of the general populace increases⁵⁵. The proposals outlined in the SE Wales RTP will need to take precedence over any potential initiatives to construct new roads due to general growth in road traffic to ensure that no adverse impact to statutorily protected species or their habitats arises.

8.112 Policy DMP1 outlines Sewta's support for the introduction of road user charging across parts of the transport network in SE Wales. Should such a measure be successfully implemented, and the charge set at such a level which significantly reduces the demand for road use, then noise impacts and air pollution emissions arising from those parts of the transport network subject to the charge across SE Wales could be reduced, indirectly benefiting biodiversity. However, the introduction of the road user charge could simply cause people to change their travel behaviour by altering the routes they take to complete their journey to avoid paying the congestion charge. Thus the environmental impacts would simply be displaced between locations. The future influence of road user charging on the environment is therefore uncertain, and will only become more certain once the effects of trial schemes of such approaches are better known.

8.113 Any future impacts of the SE Wales RTP on wildlife habitats across SE Wales are generally unknown, as the majority of impacts would arise from factors beyond the direct influence of the SE Wales RTP. For example strategic decisions taken by local planning authorities concerning future housing developments, commercial and industrial developments, or social infrastructure, will all influence the development of the transport infrastructure. It is these strategic decisions which will fundamentally influence the future impact of the transport network on habitats across SE Wales. It will therefore be critical that all transport related planning decisions made in conjunction with general land use policies should consider the future impact of such decisions on key wildlife habitats across SE Wales.

SEA Objective 6: To improve access to key services and facilities

8.114 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP objectives 3, 4, 5, 6, 7, 12, and 13. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Capacity, price and accessibility of public transport relative to private transport;
- (ii) Pedestrian and cycleway route lengths and accessibility;
- (iii) Location of healthcare facilities relative to residential communities; and
- (iv) Level of road congestion across SE Wales.

⁵⁵ Department for Transport, 'National Road Traffic Forecasts (Great Britain) 1997.'

8.115 A number of policies and actions specified in the SE Wales RTP will influence the future outcome of this SEA Objective, including PLP1, PLP2, PLP3, PLP4, PLP5, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, FTP1, IIP1, IIP2, IIP3, HIP2, HIP3, HIP4, PMP1, CPP1, CPP2, AEP1, ECP1, ECP2, RFP1, FRP2, FRP4, TOP1, PLA1, PLA2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, BUA4, FTA1, IIA1, IIA2, IIA3, IIA4, IIA5, HIA3, HIA4, CPA1, AEA1, and TOA1. A number of the projects specified for future development are also likely to significantly influence the future levels of accessibility for residents across SE Wales. Table 8.11 below summarises the future effects of the SE Wales RTP on this SEA Objective.

Table 8.11: SEA Objective 6: To improve access to key services and facilities				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Proportion of households across SE Wales within 15 minutes of a (i) school; (ii) bus stop; (iii) a train station.	✓✓	High	Medium term	High
Conclusions, Risks and Uncertainties				
<p>The location of new public transport services and the routes they take will be vital for assisting with alleviating poor accessibility across SE Wales, particularly in those areas suffering from deprivation. A range of new, higher frequency, bus services, is proposed for service across SE Wales which would assist with improving accessibility for residents of SE Wales.</p> <p>Monmouthshire presently suffers disproportionately from poor accessibility, but it is acknowledged that it is more difficult to alleviate the problems in this location due to the low population density. There could be potential for a park and ride scheme to reduce the need to use cars and to reduce the journey time of public transport. There are also proposals for a new half hourly rail service between Abergavenny and Chepstow, which could assist local accessibility for residents of Monmouthshire.</p> <p>The proposals to provide community led and demand responsive transport could be very beneficial for the most vulnerable members of communities across SE Wales, although such services are expensive and could require reorganising to deliver a suitable level and coverage of service for local residents.</p>				

8.116 The accessibility to community facilities and public services can significantly influence peoples' opportunities and general quality of life. Poor accessibility to community facilities, public services, and places of social interaction leads to social exclusion, which in turn can lead to social and economic problems. Many potential solutions exist to improve the accessibility of local populations to community facilities and social infrastructure. One such solution is the strategic locating of social infrastructure, such as schools and health facilities in accessible areas, particularly in locations close to areas of high population density. However, the SE Wales RTP can only indirectly influence such decisions, although it is critical to the successful achievement of this SEA Objective.

8.117 The SE Wales RTP outlines measures to support the enhancement of residents' accessibility to local community facilities and public transport. The approaches supported in the SE Wales RTP to enhance accessibility include the encouragement of the development of an integrated transport system across SE Wales, through the development of better intermodal interchange facilities, and stronger car parking around rail stations to encourage their use, particularly at Chepstow and Abergavenny rail stations. In the medium to long term, the proposals to integrate transport policy with future developments should enable the construction of sustainable settlements which reduce the need for travel. These measures are outlined in the SE Wales RTP under Policies PLP4, IIP1, and IIP3.

8.118 Most children in full time education in SE Wales are able to walk to school, although many do not, with 44% travelling by car, and only 37% walking, as measured in 2003/04⁵⁶. Of the Sewta Local Authorities, Monmouthshire has the greatest proportion of children eligible for free transport to schools, given the relatively poor access to schools in that area. In fact, Monmouthshire suffers from a general lack of accessibility to public services, largely due to the distribution of people across the area and the reliance on the car. This lack of accessibility in Monmouthshire is exacerbated by the relatively poor access to bus services, with only 71% of the local population in the local authority being within half a mile of a bus stop. All other local authorities in SE Wales have over 80% of their local populations living within half a mile of a bus stop. In general, there is a perceived feeling that the limited provision of public transport in more rural areas is a serious issue. This issue is exacerbated at weekends and bank holidays when public transport services can be severely limited, increasing social exclusion.

8.119 Accessibility to rail services is particularly poor in the Vale of Glamorgan, with only 32% of residents being within half a mile of a railway station. For this reason, there are plans to expand the coverage of rail services across this local authority, of which the SE Wales RTP is supportive. The proposals include running an additional hourly service between Cardiff and Bridgend on the Vale of Glamorgan line, which also provides a link to Cardiff International Airport. There are also proposals to develop a network extension to the Cardiff service, providing new stations at Talbot Green, Llantrisant, Gwaunmeisgyn and Beddau just to the north of the Vale of Glamorgan.

8.120 With the decline in the number of school and educational facilities across Wales (181 such institutions have been lost in recent times) and the growth in the number of pupils, as stated in the baseline, accessibility to education facilities would appear to be declining across certain areas of SE Wales. There has also been a decline in the number of nursery school places across SE Wales. It is clear that in the medium and long term accessibility to schools will improve, as transport and land use developments become better integrated, and more sustainable settlements are constructed. In the shorter term, better public transport and enhanced pedestrian and cycleways are likely to improve accessibility for young people accessing schools. Increasing the take up of home schools transport plans could be beneficial in terms of increasing accessibility to school, and reducing the number of parents driving their children to school, a key contributor to early morning road congestion.

8.121 It has been outlined from the Sewta surveys presented in the “*Outline of the Regional Transport Plan*”, January 2007, that 76% of all households in Wales in 2005 were estimated to be within a 15 minute journey to a local hospital, 86% within a 13 minute walk to a bus stop with an hourly service, and only 38% within a 26 minute walk to a railway station. Car use is also still the dominant form of transport across SE Wales, where cars are used to access work and education facilities 77% and 44% of the time respectively, 61% of the time for shopping, and 61% on average for all purposes. Thus given the small proportion of residents living close to a rail station, and the significant number of people who presently use their cars to access work and shopping, it demonstrates the problems of encouraging residents to switch from car use to rail use. The SE Wales RTP acknowledges this, and supports greater provision of car parking around rail stations to encourage greater use of rail, as well as stronger intermodal interchange facilities at rail stations to facilitate the ease of use of public transport. However, convincing people to stop using cars and to begin using public transport will require a significant behavioural change, which might only be forthcoming in the long term.

⁵⁶ WAG, ‘Wales Transport Statistics’.

8.122 The proposals outlined in the SE Wales RTP are expected to assist with improving accessibility to key local services, particularly for those residents living in urban areas. Focussing new public transport services in locations suffering from poor accessibility and income deprivation, such as Newport, and areas of Cardiff and Rhondda Cynon Taff, is likely to generate significantly greater benefits from the enhancement of residents' accessibility than in alternative locations. However, it will be more difficult to enhance the accessibility of residents living across Monmouthshire, which is less densely populated and therefore more difficult to adequately provide public transport which is both reliable, minimises journey times, and is accessible to a high number of individuals within walking distance from their home.

8.123 The SE Wales RTP proposes measures which could lead to a reduction in the level of accessibility to particular locations across SE Wales. Measures in the SE Wales RTP which encourage reduced car use, through road user charging or increased car parking restrictions, could reduce the accessibility of urban centres, particularly for those residents of SE Wales who have limited access to public transport and make heavier reliance on the car. This would be a particular issue for people residing in more rural areas of SE Wales which have a dispersed population at low density, where public transport provision is not necessarily as viable as in highly populated centres. However, by focussing car parking restrictions in urban centres with a strong local economy, such as Cardiff for example, would assist with reducing road congestion, and encourage people to make more use of public transport.

8.124 Opportunities to increase the accessibility for disabled people to bus platforms could be improved by dropping kerbs at such locations, to allow wheelchair access.

8.125 There are opportunities to increase the coordination of public transport provision between regions in Wales, particularly those which share borders. By encouraging more collaborative working between public transport service providers, accessibility to wider areas of Wales may be facilitated, making movement between regions more convenient and timely. It is doubly important that movement across SE Wales and the wider regions of Wales, and accessibility in general is not constrained, as economic development could be harmed. To facilitate such a measure, it would be necessary to have real time travel information readily available at the point of use of service.

8.126 As a further measure which could boost accessibility across SE Wales, the SE Wales RTP could provide support to the enhancement of the movement of people by water across SE Wales, it should be noted that presently passenger services are available for short coastal movements of people, with a passenger berth located on the River Usk, at Newport, with passenger transport vessels calling at Penarth, Barry, and Porthcawl. There could be opportunities to increase the scope of such services, to reduce the dependence on the automobile, as well as enhance the general level of accessibility local residents across SE Wales can enjoy.

SEA Objective 7: To reduce transport related community severance

8.127 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP objectives 2, 3, 4, 5, 6, 12, and 13. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Pedestrian and cycleway route lengths and accessibility;
- (ii) The level of subway or bridge provision as part of the pedestrian network.

8.128 There are a number of SE Wales RTP policies and actions which influence the future outcome of this SEA objective, including PLP1, PLP2, PLP3, PLP4, PLP5, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, FTP1, IIP1, IIP2, IIP3, HIP3, HIP4, RSP1, CPP1, CPP2, AEP1, ECP1, ECP2, FRP2, TOP1, PLA1, PLA2, PLA3, WCA1, WCA2, WCA3, RAA1, RAA2, BUA1, BUA2, BUA3, BUA4, FTA1, IIA1, IIA2, IIA3, IIA4, IIA5, HIA3, HIA4, RSA1, RSA2, RSA3, CPA1, AEA1, and TOA1. It is expected that a number of the projects specified in the SE Wales RTP should they be brought forward for development would influence the future outcome of this SEA objective. Table 8.12 below summarises the future effects of the SE Wales RTP on the future level of transport related community severance.

Table 8.12: SEA Objective 7: To reduce transport related community severance				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Average distance travelled by walking or by public transport for any given year	✓	Low	Medium term	Medium
Trips per person per year by age by walking or by public transport	✓	Low	Medium term	Medium
Trips to school made by walking or by public transport	✓	Low	Medium term	Medium
Conclusions, Risks and Uncertainties				
<p>The SE Wales RTP provides support for the prioritisation of aspects of the transport network for pedestrian use, ensuring that appropriate measures are installed in the road network to enable a reduction in the severance of communities, and to ensure that by doing so it encourages more people to walk, and to enjoy healthier lifestyles.</p> <p>The SE Wales RTP outlines a number of specific projects which would enlarge the coverage of the National Cycleway Network and pedestrian walkway schemes across SE Wales, which could encourage more people to use bicycles and walk, and therefore assist with improving the connectivity of particular settlements.</p>				

8.129 Community severance arises from the poor design of transport schemes, or from the social barriers which exist within different communities. Community severance does not necessarily relate to poor accessibility to transport or to community facilities, but usually results from poor transport planning, such as for example, the cutting off of a community from a key local service due to the construction of a new road, without the necessary construction of a footbridge. Thus community severance can be solved through good *ex ante* design of proposed road schemes, such as the construction of a foot bridge, to avoid the potential community severance which could result from poor design.

8.130 The SE Wales RTP is proposed within a context of increasing average journey lengths across SE Wales, which grew by 21% between 1990/91 to 2003/04, alongside a corresponding general increase in road traffic of 33% over the same period. This suggests that community severance could continue to decline.

8.131 The WSP outlines its intention to support the development of a highly interconnected SE Wales, by supporting the linking of 14 key settlements across the SE area. These key settlements include Aberdare, Abergavenny, Barry, Blackwood, Bridgend, Caerphilly, Cardiff, Chepstow, Cwmbran and Pontypool, Ebbw Vale, Merthyr Tydfil, Newport, Pontypridd, and Llantrisant. Two of these settlements presently suffer from a lack of rail passenger services, namely Blackwood and Llantrisant. It is likely that the linking of these settlements will be achieved through the enhanced provision of public transport, although Sewta will consider support for new highway schemes which are part of wider regeneration proposals but which do not add to peak hour capacity on the road network. Measures to enhance the A470, supported by Sewta, would enable greater road capacity linking Merthyr Tydfil with Cardiff, as well as to areas north of the Brecon Beacon's National Park.

8.132 Proposals to significantly enhance the provision of public transport across SE Wales are outlined under Policies and Actions RAP1, RAP2, RAA1, RAA2, BUP1, BUP2, and BUP3. Whilst such measures are expected to reduce the number of cars on the roads, as people switch from car use to bus and rail, such an approach might not necessarily have a material influence on the connectivity of inner city locations or more rural settlements. Such measures are complemented by proposals to reduce the demand for travel, through the restricting of car parking in town centres, the support of road user charging across certain parts of the trunk road network, and crucially, the support for the development of more sustainable communities, as delivered through the planning system. The latter approach, as advocated under Action PLA2 is expected to deliver the greatest benefits in terms of improving community connectivity.

8.133 The SE Wales RTP also outlines its support for developing a wider range of intermodal transport interchange sites, which if successfully developed would significantly enhance the connectivity of SE Wales. Proposals such as park and ride, kiss and ride, park and share, and park and stride are all supported in the SE Wales RTP. It is likely that such schemes would be best located in the WSP key settlements as they are established transport hubs, whilst Maesteg, Monmouth, Porth, and Brynmawr are already established and successful interchange sites. New park and ride sites are proposed to be located in Caerphilly, Newport, Rhondda Cynon Taff, and the Vale of Glamorgan, with car and rail interchanges proposed at Llanharan, Abercynon South, and Llanbradach, respectively.

8.134 There is also support for the development of coach services in the SE Wales RTP. It is recognised that coach services complement the rail network, as they are often both fairly well integrated with one another, with good interconnections between the two services at various rail stations. By providing support for coach services, the SE Wales RTP assists with meeting the key goal of the WSP of connecting 14 key settlements across the area and hence improving the general level of connectivity across SE Wales.

8.135 Rail ticketing and bus interchange services are to be introduced at Cardiff Central, Newport Central, Bridgend, Caerphilly bus and rail station, Merthyr Tydfil bus station, Pontypridd, Cwmbran, Blackwood and Aberdare. Such services, supported by the SE Wales RTP, would make journeys which require several different modes of transport more easily completed and at lower cost to the consumer. This would encourage more people to use public transport, and hence boost the level of connectivity across parts of SE Wales.

8.136 The SE Wales RTP provides a number of additional measures which could be expected to assist with alleviating community severance across SE Wales. For example, a number of policies in the SE Wales RTP support the enhancement of the pedestrian network across urban centres, which would enable pedestrians greater freedom to access places of work, or public services or community facilities safely, and hence boost the level of connectivity across particular towns. Such measures are outlined under Policies WCP1, WCP2, and Actions WCA1, WCA2 and WC3. It would also be of particular benefit should pavement be supplied to both sides of the road in busy urban areas which experience high volumes of road traffic.

SEA Objective 8: To encourage healthy lifestyles

8.137 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP objectives 3, 11, 12 and 13. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Length and connectivity of pedestrian and cycleway route networks;
- (ii) Location of public transport nodes;

- (iii) Road charging schemes; and
- (iv) Car parking restrictions imposed across SE Wales.

8.138 There are a number of SE Wales RTP policies and actions which influence the future outcome of this SEA Objective, including PLP1, PLP2, PLP3, PLP4, PLP5, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, FTP1, IIP1, HIP3, HIP4, AEP1, ECP2, FRP2, TOP1, PLA2, PLA3, WCA1, WCA2, WCA3, RAA1, RAA2, BUA1, BUA2, BUA3, FTA1, IIA1, IIA3, HIA2, AEA1, and TOA1. It is likely that the projects specified in the SE Wales RTP, particularly the walking and cycling projects, could influence the future outcome of this SEA Objective. Table 8.13 below summarises the future effects of the SE Wales RTP on its influence of encouraging people to live healthier lifestyles.

Table 8.13: SEA Objective 8: To encourage healthy lifestyles				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Proportion of local trips which were made by bicycle or by walking for all purposes less than 5 miles in length	✓✓✓	High	Medium – long term	Medium
Conclusions, Risks and Uncertainties				
<p>Potential solutions stated in the SE Wales RTP to encourage the residents of SE Wales to live healthier lifestyles include the promoting of cycling and walking; encouraging a change in transport behaviour; and implementing road safety awareness measures in areas with poor road safety records.</p> <p>There is no certainty that the measures outlined in the SE Wales RTP will succeed in encouraging residents across SE Wales to live healthier lives, as the benefits will be dependent on behavioural change of the residents of SE Wales. A public body can only assist with facilitating a change in peoples' behaviour rather than physically cause change.</p>				

8.139 This SEA Objective cuts across many policy areas, and can therefore only be achieved with the integration of disparate policies, one of which would include local transport policy. Given that pockets of SE Wales is characterised with poor health, it will be important for the SE Wales RTP to encourage walking and cycling, to assist in improving the general health of residents across the area.

8.140 It has been estimated that half of the adult population across SE Wales is over weight and this trend is worsening. This trend is correlated with the growth in car use over recent years across SE Wales, and the consequent decline in walking, which now accounts for less than one quarter of all trips made, a 33% decline over the last 15 years. Cycling also accounts for only 1% of all trips made, which could be attributed to fears for personal safety and lack of bicycle storage facilities at destinations⁵⁷. However, the SE Wales RTP aims to increase the number of trips made by bicycle, by increasing the number of secure bicycle storage areas across SE Wales, as outlined under SE Wales RTP Action WCA1. In addition, the SE Wales RTP outlines a range of policies and actions to significantly enhance both the pedestrian and cycleway network across SE Wales, as outlined under Policies WCP1 and WCP2, and Actions WCA2, and WCA3.

⁵⁷ WAG, 'Welsh Transport Statistics 2007'.

8.141 The Government has concluded that between 12,000 and 24,000 people every year might die prematurely as a result of short-term exposure to air pollution. There is also evidence to suggest a further 14,000 to 24,000 hospital admissions and readmissions may be caused by air pollution⁵⁸. It is known that air pollution can trigger an increase in the number of asthma attacks, and that people living in streets with heavy traffic tended to suffer greater incidents of illness than residents living in streets with lighter traffic⁵⁹. Similar studies in other countries have demonstrated a correlation between the volume of road traffic in a given area and the number of people suffering from respiratory symptoms⁶⁰. By boosting the accessibility to better pedestrian walkways and cycleways, it could encourage people to take fewer short distance car journeys and thus contribute towards improving local air quality and hence the general level of health across SE Wales.

8.142 In addition to the physical quality of air across SE Wales, social conditions can also influence the quality of health enjoyed by people across SE Wales. Good health is shaped by the physical and social infrastructure, the quality of services and amenities, income and access as well as the aforementioned environmental factors. Adequate and accessible and equitable healthcare and treatment can also be a key determinant of health with inequities to accessibility resulting in lengthy waits for treatment or care. These inequities can arise due to a lack of adequate or effective public transport systems, which isolates people without cars, often the least well off, the young, the old, and those in rural locations. But it can also make it difficult for people reliant on public transport to access employment and a wide array of other services and amenities.

8.143 By providing the necessary resources to significantly improve the connectivity and coverage of the existing pedestrian and cycleway networks across the main centres in SE Wales, it could encourage people to make more use of them and thus live healthier lifestyles, as well as encourage greater access to health facilities. However, the actual benefits would not be equitable across the complete geographic area, largely because more rural areas will still be dependent on car travel, as opposed to more urban areas, where it is more likely that people would be encouraged to walk or cycle more.

8.144 The SE Wales RTP outlines its intention to prioritise the pedestrian and cycleway network over the road network at various locations across SE Wales where such a measure is practicable. Such measures would encourage local residents to live healthier lifestyles, as the existing trend of growing car use could be slowed or even reversed. This would be further enhanced should Policy PLP4 successfully encourage a better integration between land use planning decisions and the transport network, reducing the need to travel for all but the essential journeys, by providing local public services and community facilities within walking or cycling distance of residential areas.

⁵⁸ Committee on the Medical Effects of Air Pollutants, *'Quantification of the Medical Effects of Air Pollution in the United Kingdom'*, 1998.

⁵⁹ Whitelegg et al. *'Traffic and Health Report'*, 1993.

⁶⁰ Parliamentary Office of Science and Technology, *'Breathing in our Cities'*, 1994.

8.145 Restricting car parking across SE Wales in town centres, where such a policy is viable, coupled with development schemes which encourage greater connectivity across the urban landscape and enhanced and better connected public transport, could encourage people to lead healthier lifestyles, by encouraging people to walk to a public transport node, or the town centre as opposed to driving. However, whilst such policy measures would encourage some to lead healthier lifestyles, it might be seen as an inconvenience to those with limited time available to them and hence prove to be an unpopular measure. In addition, there is little point in introducing stricter car parking standards across particular towns if there is no public transport alternative, or if the car parking restrictions made the town centre economically unviable.

SEA Objective 9: To improve access to healthcare

8.146 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP objectives 3, 4, 5, 7, 12, and 13. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Accessibility to public transport;
- (ii) Cost of public transport relative to private vehicles;
- (iii) Location of healthcare facilities relative to residential communities;
- (iv) Length and connectivity of pedestrian and cycleway route networks; and
- (v) Level of road congestion across SE Wales.

8.147 There are a number of policies and actions in the SE Wales RTP which will influence the future outcome of this SEA objective. These include PLP1, PLP2, PLP3, PLP4, PLP5, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, FTP1, IIP1, IIP3, HIP3, HIP4, DMP1, CPP1, CPP2, AEP1, ECP1, ECP2, FRP1, FRP2, FRP4, TOP1, PLA1, PLA2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, FTA1, IIA1, IIA2, IIA3, HIA3, HIA4, CPA1, AEA1, and TOA1. Some of the projects specified within the SE Wales RTP, could, if brought forward for development, influence the future outcome of this SEA Objective. Table 8.14 summarises the future effects of the SE Wales RTP on SEA Objective 9.

Table 8.14: SEA Objective 9: To improve access to healthcare				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Proportion of households within 15 minutes of a doctor or hospital by public transport and/or car	✓ / 0	Medium	Medium term	Medium
Conclusions, Risks and Uncertainties				
The SE Wales RTP is supportive of making better use of community led and demand responsive transport services. Such services respond to local need as it arises on a short term basis. Such services would be of great benefit to both rural areas and areas suffering from poor accessibility. However, such services are voluntary and are dependent on the availability of drivers. There are also cost issues which given the rising price of fuel, could reduce the availability and viability of some services. The future accessibility to healthcare facilities is in part dependent on future policy concerning the nature of the delivery of health services across SE Wales, as well as the general location of existing services relative to the transport network and residential areas.				

8.148 The issues relating to improving transport accessibility to healthcare facilities are directly related to those mentioned previously under SEA Objective 6. However, it should be noted that improving accessibility to healthcare in particular, as opposed to more generally to say shopping areas or places of employment, is particularly difficult, given the sunk costs of existing health facilities and the large fixed costs which would be involved in financing new health facilities in locations with greater accessibility. Thus in many ways, the goal is to try and improve accessibility to existing facilities, or to develop a different form of health service delivery. The location of existing healthcare facilities imposes many constraints on the potential solutions to improving accessibility, as historic decisions involving land use decisions and transport planning in recent history will prevent many potential solutions from being implemented.

8.149 A key problem with access to health facilities is that there has been little integrated thinking between the delivery of health services, and how healthcare facilities are accessed. In many senses, the locating of smaller walk in centres in areas of greater population density would be beneficial in reducing the need to travel in particular circumstances, and would enhance the accessibility of healthcare facilities and services. However, the delivery of healthcare is beyond the direct influence of the SE Wales RTP. It should be noted that spatial planning for health services across SE Wales appear to be responding to the policy contained within WSP, as demonstrated by Gwent Clinical Features, where accessibility has been the driving force behind their strategy of future health care provision.

8.150 In 2001, 63.75% of the population within SE Wales was experiencing 'good' health. This is lower than the overall Wales population average of 65.1%. Percentages for the rest of SE Wales experiencing 'fairly good' health and 'not good' health were 22.75% and 13.5% respectively. When compared to the Wales averages of 22.5% and 12.5% respectively, statistics show that those living in SE Wales have relatively poorer general health to those within the rest of Wales⁶¹. It is therefore of importance that accessibility be improved to healthcare facilities across SE Wales.

8.151 Poor access to healthcare is most severe amongst those members of the SE Wales population with limited access to cars. These individuals are usually within the lowest 10% of earners⁶². Those residents with the greatest need for health care facilities are predominately the elderly, those of working age with physical ailments and parents with young children.

8.152 It may be more beneficial to focus resources in those areas suffering from poorer accessibility and lower levels of income relative to other areas. The multiple index of deprivation for Wales showed a number of clear issues across the local authorities of Cardiff and Rhondda Cynon Taff, which have the most deprived areas, as a proportion, across SE Wales. The strategic locating of new and enhanced bus routes, particularly between Talbot Green and Cardiff and Dinas Powys and Cardiff, as supported in the SE Wales RTP, with greater frequency, faster routes and more capacity, could enhance accessibility to healthcare facilities.

⁶¹ National Statistics.

⁶² The Institute for Public Health in Ireland, 'The Social and Economic Determinants of Health', 2007.

8.153 The increase in public transport proposed in the SE Wales RTP is likely to assist with enhancing accessibility to healthcare facilities across SE Wales. However, the locating of any new healthcare facilities is beyond the scope of the SE Wales RTP. Policy FTP1, proposes the operation of demand led public transport services, such as minivans, which could be of significant benefit to elderly people across SE Wales, by providing them with a service which they can directly access from their place of residence. There are however drawbacks to such services, including the over-reliance on the availability of drivers, and rising price of fuel, which could limit the availability of such services.

SEA Objective 10: To improve the actual and perceived safety and security of travel

8.154 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP objectives 1, 2, and 13. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Price and availability of public transport across SE Wales;
- (ii) Location of public transport connections; and
- (iii) Condition of the transport system.

8.155 A number of policies and actions in the SE Wales RTP will influence the future level of actual and perceived safety of the transport network across SE Wales. These include PLP5, WCP1, WCP2, HIP3, HIP4, RSP1, PLA2, PLA3, WCA1, WCA2, WCA3, BUA4, HIA3, RSA1, RSA2, and RSA3. It is expected that the projects specified in the SE Wales RTP, if brought forward, could influence the future outcome of this SEA Objective. The future effects of the SE Wales RTP on SEA Objective 10 are summarised below in Table 8.15.

Table 8.15: SEA Objective 10: To improve the actual and perceived safety and security of travel				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
People's perception of transport safety	✓	Medium	Medium to long term	Medium
Number of annual road accidents in SE Wales	✓	Medium	Medium to long term	Medium
Conclusions, Risks and Uncertainties				
<p>Proposals in the SE Wales RTP to increase the level of safety across the transport network in SE Wales mainly relate to the development of procedures, or the development of closer working relationships between groups responsible for transport safety, rather than any specific projects. Such procedures include improving training for cyclists and young drivers, and publicity campaigns to make people more aware of the dangers. Such measures are likely to assist in reducing accidents to some extent, although alone are unlikely to prevent all accidents.</p> <p>Additional measures outlined in the SE Wales RTP which aim to improve road safety include installing safety or speed cameras across the road network; implementing new speed limits through the active use of traffic calming measures; and highlighting the safety issues associated with motorcycles to the public. Such measures are likely to be beneficial in improving the safety of the road network in the medium term.</p> <p>It is likely that the greatest benefits would arise in Rhondda Cynon Taff should road safety measures be prioritised, given the poor level of road safety recorded in this local authority area in recent years.</p>				

8.156 Data collected from National Statistics suggests that the number of people killed or injured due to transport in Wales has substantially declined in recent years by 6% between 1994 and 1998, although there is more work to be done to meet the DfT's 2010 target to reduce the number of such incidents. Particular efforts should be made in Rhondda Cynon Taff where the number of road accidents increased in recent years. There are approximately 5,500 road traffic casualties each year in SE Wales⁶³. This costs Wales approximately £250 million per annum, with the causality rate per head of population greatest in Cardiff and Bridgend and lowest in Torfaen and Caerphilly.

8.157 Walking and cycling have been in decline for many reasons across SE Wales, with particular concerns over general safety and fear of crime, and the general inadequacy of available facilities on route to destinations. There are also fears over the possibility of a collision, the perception of risk, and lifestyle choices. This has a side effect of more people driving shorter distances, leading to a general increase in obesity across the population, and an increase in the level of peak hour congestion across the road network of SE Wales.

8.158 It is critical, to reduce transport related crime across SE Wales, that the police and local authorities work together, as required under Section 17 of the Crime and Disorder Act 1998. This is because the level of crime and its impact is often influenced by the decisions and activities taken by local bodies and organisations. The responsible authorities are required to provide a range of services in their community from policing, fire protection, planning, consumer and environmental protection, transport and highways, each of which carries out a number of core activities which can significantly contribute to reducing crime and improving the quality of life in their area. Section 17 of the 1998 Act is aimed at giving the vital work of crime and disorder reduction a focus across the wide range of local services and putting it at the heart of local decision-making.

8.159 Should local police forces and local authorities develop a successful working partnership, crime relating to the transport network could be reduced. Particular measures which could be used to mitigate transport related crime include the provision of improved cycle parking and storage facilities, conformity of local authorities to schemes such as 'Park Mark', the Safer Parking award scheme; the Association of Chief of Police Officers' 'Secured by Design' award scheme; or the adoption of other principles such as those stated within 'Crime Prevention Through Environmental Design'. The principles supported in the latter measure, includes incorporating natural surveillance in new developments, including car parking areas; designing territorial reinforcement into new developments; and designing new developments with natural access control.

8.160 The SE Wales RTP outlines its intention to improve the safety for users of the SE Wales transport network under SE Wales RTP Objective 5. Additionally, Action BUA3, outlines Sewta's intention to improve the safety of bus trips, possible through the installation of CCTV technology across the bus network.

⁶³ National Statistics

8.161 In particular, Sewta aims to target measures at specific groups of road users, and improve the quality and consistency of accident analysis and practical ways to reduce the speed of traffic, by, for example, favouring engineering measures such as developing 20 mph zones in residential areas, and providing more education and training to increase awareness and raise standards. The SE Wales RTP also encourages each of the SE Wales local authorities to develop a Safety Business Plan. Other engineering solutions which could be utilised to reduce criminal activity related to the transport system across SE Wales includes the deployment of Automatic Number Plate Recognition cameras which could detect vehicles without MOT certificates or valid road tax certificates. It should be noted that whatever strategic decisions are taken in relation to controls exercised over roads in SE Wales will have an increasing impact on policing resources, by increasing the demands for enforcing existing and new traffic regulations.

8.162 It will be critical that public transport is provided in greater quantities in areas serving large towns and cities across SE Wales, to reduce peoples' willingness to drive into these areas and park illegally, should car parking supply not satisfy the demand. This is a particular issue within Cardiff City Centre, as people increase their rate of off street car parking, leading to greater incidence of car crime.

8.163 Sewta supports the completion of the A465 which runs along the southern boundary of the Brecon Beacon's National Park, primarily because of its poor accident record, but also because it could potentially bring greater prosperity to some of the disadvantaged communities located along its alignment.

8.164 Rhondda Cynon Taff suffers from a significant number of road accidents, and the problem is a factor of three larger than in any other local authority across the Sewta area. The majority of serious accidents occur to car occupants, with 68 such accidents in 2003, although there were 70 such accidents in the year 2000. In the same year there were 42 serious accidents involving pedestrians, the highest quantity since 1999, with a low of 25 pedestrian accidents in 1999 over this five year period. By prioritising road safety measures in this local authority it is likely to generate greater benefits per unit cost relative to the other local authority areas across SE Wales should similar measures be implemented there.

8.165 Merthyr Tydfil is an example of a local authority area across SE Wales which has introduced a number of traffic calming measures across the local authority area, to control the speed of traffic and hence improve road safety, for both road users and pedestrians. Particular measures introduced include speed hump schemes, 20 mph zones, and homezones, with a view to slowing traffic speed to encourage greater traffic flow. Merthyr Tydfil prioritises traffic calming measures in areas with poor accident histories. As a result of the measures introduced by Merthyr Tydfil, road accidents have not increased since 1999.

SEA Objective 11: To reduce transport related land contamination

8.166 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP objectives 7, 8, 10, and 12. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Location of proposed new transport infrastructure;
- (ii) Location of green open spaces across SE Wales; and,
- (iii) Location of existing transport corridors of significance.

8.167 A number of policies and actions in the SE Wales RTP will influence the future level of transport related land contamination across SE Wales. These include PLP1, PLP2, PLP3, PLP4, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, IIP1, HIP3, HIP4, DMP1, ECP2, FRP1, FRP2, FRP3, FRP4, TOP1, PLA1, PLA2, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, IIA1, IIA3, HIA2, HIA3, HIA4, FRA1, and TOA1. It is expected that the projects specified in the SE Wales RTP, if brought forward, could influence the future outcome of this SEA Objective. The future effects of the SE Wales RTP on SEA Objective 11 are summarised below in Table 8.16.

Table 8.16: SEA Objective 11: To reduce transport related land contamination				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Number of land pollution incidents arising from the transport network	?	?	?	?
Conclusions, Risks and Uncertainties				
<p>The likely future impact of the transport network on the contamination of land would vary geographically, and be dependent on the distribution of traffic flows, and the location of receptors sensitive to contamination. However, the future impact of transport activity on the level and extent of contaminated land across SE Wales is highly uncertain. This is largely due to the limited resources thus far employed in measuring the extent of land contamination in riparian areas to the transport network to ascertain the present contribution of transport in contaminating land, as well as the difficulty in attributing any future contamination of land as having originated from the transport network.</p> <p>It is expected that by reducing the flow of road transport would assist in reducing the overall extent of land contaminating pollution arising from transport across SE Wales. However, given that car use is forecast to grow by 20% in the medium term, only those areas which can benefit from enhanced public transport are likely to benefit from reduced contamination of land due to transport activity. Other areas may suffer greater contamination.</p>				

8.168 The contamination of land from transport sources is largely minimal compared to other sources of contamination, such as industrial processes. The key sources of transport related land contamination are run off of waste liquids spilled on the road network, or the deposition of nitric acid in precipitation in local soils across SE Wales. Such pollutants could potentially have a negative effect on local vegetation.

8.169 The coverage of contaminated sites across SE Wales is generally concentrated in Rhondda Cynon Taff, Merthyr Tydfil, Bridgend, and the Vale of Glamorgan local authority areas, which account for 20% of all contaminated sites across Wales. The contamination however largely arose from former industrial works in these areas, rather than predominantly from transportation activity.

8.170 With the general increase in road transport which is forecast to arise in the short to medium term across SE Wales, there is likely to be an increased risk of transport directly contaminating land across the SE Wales. Growth in public transport could assist in reducing car use to some extent at particular locations across SE Wales, although it is expected that car use would increase in more rural areas as public transport is not as viable in less densely populated areas. This could lead to an increase in land based contamination in less densely populated locations, and vice versa, although any such outcomes are highly uncertain.

8.171 Any construction project involving the development of new transport infrastructure would have a short term impact upon soils across SE Wales, as they would be temporarily disturbed. Soils could also become contaminated during such developments, although any potential impacts would be managed under existing waste management legislation.

8.172 Reducing the demand for car use, through the introduction of road user charging or by restricting car parking across urban centres in SE Wales, could assist with reducing the flow of road traffic in those local authority areas where such measures are successfully implemented. By reducing road traffic in such areas, there could be consequential reductions in the extent of land contamination caused by road transport, by reducing the extent of oil and particles from tyre and brake wear getting into soils. However, implementing car parking restrictions will only be achievable in those towns and cities across SE Wales where such measures do not have negative impacts on the economic viability of town centres. It is likely that such policies can only be successful if there are adequate transport alternatives available.

SEA Objective 12: To limit transport related pollution of water resources

8.173 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP Objectives 7, 8, 10, and 12. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Growth in the demand for transport across SE Wales;
- (ii) Proximity of waterways to key transport corridors;
- (iii) Level of economic activity across SE Wales; and
- (iv) Scale of transport network drainage system.

8.174 A number of policies and actions in the SE Wales RTP will influence the future level of transport related pollution of water resources across SE Wales. These include PLP1, PLP2, PLP3, PLP4, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, IIP1, HIP3, HIP4, DMP1, ECP2, FRP1, FRP2, FRP3, FRP4, TOP1, PLA1, PLA2, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, IIA1, IIA3, HIA2, HIA3, HIA4, FRA1, and TOA1. It is expected that the projects specified in the SE Wales RTP, if brought forward, could influence the future outcome of this SEA Objective. The future effects of the SE Wales RTP on SEA Objective 12 are summarised below in Table 8.17.

Table 8.17: SEA Objective 12: To limit transport related pollution of water resources				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Number of recorded water pollution events where transport is the primary cause	0	Low	Long term	Medium
Conclusions, Risks and Uncertainties				
<p>By enhancing the drainage of roads, the movement of particles arising from tyre or brake wear, or spilt oil, would be controlled, rather than the free flowing of such particles or liquids into waterways during a surface runoff event.</p> <p>The impact of the transport sector on water pollution is likely to be small overall, certainly in comparison to air and noise pollution. The number of recorded water pollution events where transport is the primary cause is probably going to remain consistent over time, as a reflection of unintended accidents and general behaviour of transport operators.</p> <p>It is presently unknown the extent of water quality treatment facilities or water drainage measures which will be built into any new transport infrastructure across SE Wales.</p> <p>The widening of any carriageways to provide bus lanes will result in an increase in the extent of non-permeable surfaces, which may result in an increase in surface run off. This could impact surface waters in riparian areas to such developments, particularly where pollutants are held in suspension during surface run off events during heavy downpours.</p>				

8.175 The main pressures on freshwater resources in Wales come from a multitude of sources, including nutrient enrichment (eutrophication) of water bodies, surface run off of soluble chemicals, soil erosion, industrial pollution, acidification, water abstraction, and climate change. Of most relevance to transport planning is the run off of spilt fuel liquids from hard surfaces, and the acidification of waters, which rivers across Wales suffer from disproportionately, largely from the local precipitation of nitric acid, formed through increased NO_x emissions from road transport and the deposition of sulphuric acid. In 2001, 16% of all water pollution incidents in Wales related to transport, arising from oils and fuels, from either the physical highway infrastructure, such as bridge maintenance or road construction, or from vehicles themselves. Thus both point and diffuse pollution are evident from transport, the latter making the identification of potential sources of pollution difficult to judge.

8.176 The principal solution to mitigating the risk of polluting waterways involves minimising the extent that new transport infrastructure is constructed alongside waterways, to reduce the risk of potentially sensitive waterways suffering from contaminated surface run off. This could also be avoided by designing appropriate drainage systems across the road network, for example, reed beds, or attenuation ponds to store surface run off, or by implementing sustainable urban drainage systems. Likewise, introducing measures which mitigate pollution arising from shipping should also be investigated. Ships transporting passengers are already subject to the requirements of the Low Sulphur Fuel Directive 1999/32/EU which aims to ensure that all heavy fuel oil and marine gas oils have 1% sulphur content, to reduce emissions of sulphur dioxide, which can be a cause of acidification of waters. However, freight shipping is not subject to such requirements.

8.177 In terms of the existing quality of river water across SE Wales, Torfaen's rivers have been estimated to be suffering from poor biological quality relative to the rivers across SE Wales, although only 48% of all rivers across Newport have been measured to have a good chemical quality. It is not clear what the cause of the relatively poor river water quality is in these two local authority areas. This demonstrates the difficulty in linking cause and effect, and in particular, linking transport activity to the pollution of waterways across SE Wales.

8.178 By introducing measures which reduce the demand for travel, such as road user charging under Policy DMP1, the generalised costs of travelling would be increased, which could encourage people to take fewer journeys by road. This could consequentially benefit surface waters by reducing the volume of traffic which could be responsible for generating the particles and waste oils which can pollute surface waters. Reducing the flow of road traffic would assist to some extent with the reduction in impact road traffic has on water pollution, by reducing the extent of oil and particles from tyre and brake wear getting into waterways or groundwater.

8.179 The enhanced provision of public transport across SE Wales is likely to encourage a greater substitution away from car use to buses and rail, particularly in the more densely populated areas of SE Wales where public transport is more viable. These areas are more likely to benefit from a reduction in water related contamination arising from the transport network. However, any project developments which enhance the provision of public transport and hence require the construction of new infrastructure, such as a bus lane, or rail track, will increase the amount of non-permeable surfaces across SE Wales, which could increase the risk of surface water contamination as a consequence of a surface run off event during a heavy downpour, as particulates get washed away in suspension.

8.180 The greater provision of pedestrian walkways and cycleways across SE Wales as proposed in the SE Wales RTP, could encourage a reduction in the number of short and largely unnecessary journeys made by motorised vehicles. This could produce a small albeit largely insignificant benefit to the quality of surface waters across SE Wales. All impacts are also likely to be location dependent.

SEA Objective 13: To minimise the risk of flooding associated with transport related development

8.181 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP Objectives 4, 8, and 12. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Location of new transport infrastructure across SE Wales;
- (ii) Proximity of existing transport infrastructure located in a flood plain;
- (iii) Flood mitigation measures installed to protect the transport network;
- (iv) Scale of transport network drainage system.

8.182 A number of policies and actions in the SE Wales RTP will influence the future risk of flooding of the transport network across SE Wales, albeit predominately indirectly. These include PLP1, PLP2, PLP3, PLP4, WCP1, WCP2, RAP1, RAP2, BUP1, BUP2, BUP3, IIP1, HIP1, HIP3, HIP4, HIP5, DMP1, ECP1, ECP2, FRP1, FRP2, FRP3, TOP1, PLA2, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, IIA1, IIA3, HIA1, HIA4, FRA1, and TOA1. It is expected that the projects specified in the SE Wales RTP, if brought forward, could influence the future outcome of this SEA Objective, depending on the particular location they are built. The future effects of the SE Wales RTP on SEA Objective 13 are summarised below in Table 8.18.

Table 8.18: SEA Objective 13: To minimise the risk of flooding associated with transport related development				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Number of flooding events per annum of consequence to the road network	✓ / ✖✖	High	Very long term	Medium
Conclusions, Risks and Uncertainties				
The future risk of flooding facing the transport network across SE Wales is uncertain, largely because the future effects of climate change are also unknown. However, there is evidence to suggest that climate change is likely to lead to flooding becoming more prevalent and of a greater extent in low lying areas in expansive flood plains. Thus, there is a significant risk that some locations may be at risk of future flooding.				

8.183 One of the likely effects of climate change across SE Wales is the increasing risk of flooding in existing flood plains. Given this risk, it will be increasingly required that the drainage of existing transport infrastructure across SE Wales be amended, and appropriate flood mitigation measures installed to ensure that the transport network is adequately adapted to the increased future risk of flooding. Such measures could include those which store water for periods of time, to reduce the rate of flow of surface run off to waterways.

8.184 To increase the economic benefits arising from the transport network, it will be important to protect the road and rail networks from fluvial flooding from rivers, coastal flooding from the Bristol Channel, and estuarine flooding. By protecting the SE Wales transport network from flooding, it will reduce the risk of increased journey times and therefore increase the productiveness of the SE Wales economy. Funds should be prioritised for flood defences for those roads considered to be key access routes for economic purposes.

8.185 Long term decisions will be required to ensure that adequate funding is provided to design and develop a road network which is capable of successfully operating within the constraints posed by climate change and its associated effects.

8.186 The proposed improvements outlined in the SE Wales RTP to significantly boost funding and provision of public sector transport is likely to assist with reducing the future risk of flooding of the transport network across SE Wales. The provision of greater public transport will offset the need to invest in a greater provision of new transport infrastructure which would increase the proportion of impermeable surfaces across SE Wales and therefore increase the risk of surface flooding from heavy downpours onto the transport network.

Geographic Specific Issues

8.187 Although it is not possible to give a full account of all aspects of the road network at risk of flooding across SE Wales, this section provides a short summary of some of the roads which could be at threat of flooding, as based on indicative flood modelling undertaken by the Environment Agency. Note also that no particular risk of flooding is attached to any particular area which is at risk of flooding, or the likely frequency of flood which an area is particularly susceptible to the onset of flooding, which is common when undertaking flood risk assessments. Such assessments are beyond the scope of the SEA and should be undertaken at the project level.

8.188 The transport network across Monmouthshire is at little risk of flooding, aside from those parts in riparian locations to river corridors, including parts of the A40 running north and south to the town of Monmouth⁶⁴.

8.189 Areas of the town of Merthyr Tydfil, including parts of the road network, are at risk of flooding, including a small section of the A4054 surrounding the town centre. The town centre is also threatened by flood risk, although the railway serving the town centre is not considered to be at risk from flood water.

8.190 The Gwent Roads area, extending from Cardiff to Chepstow is a natural flood plain below the high tide level, with a very high ever present risk of flooding. Given that there is a lot of valuable transport infrastructure in this area, including the main line railway between Cardiff and Paddington, the M4 motorway, and several A-roads and cycleways. There are also a number of developed areas and Sites of Special Scientific Interest in these areas which would also all be at risk of flooding.

8.191 Parts of the road network serving the town of Aberdare in the Cynon Valley is at risk of flooding from the Afon Cynon, including the A4059, which runs alongside the river corridor. Parts of the rail track serving the Aberdare rail station is also threatened by an extreme flood event, although the probability of such flood events (one in two hundred flood event) occurring are highly unlikely.

8.192 A very small stretch of the A4061 is at threat of flooding from the Rhondda River in the area to the north west of the town of Rhondda.

⁶⁴ As noted by Environment Agency's 'What's in your Backyard' flood map function.

8.193 A small stretch of the A48 to the south of the town of Bridgend is at risk of flooding from the Ogmere River. The River Ewenny is also at risk of flooding the road network to the south east of the town of Bridgend.

8.194 Newport is at risk of flooding from the Bristol Channel. There is a possibility that the flood risk facing the transport network across Newport might increase should new road building be advocated across the local authority area of Newport to alleviate the present level of road congestion which exists at peak travel hours. It will be necessary for suitable flood mitigation measures to be implemented alongside the roads if appropriate, which take account of the risks of climate change.

SEA Objective 14: To minimise the use of finite resources, and increase the use of recycled materials in the provision of new transport infrastructure

8.195 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP Objectives 7, 8, 10, 12, and 13. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Scale of construction and demolition on transport network across SE Wales; and
- (ii) Relative price and availability of primary, secondary, and recycled aggregates.

8.196 A number of policies and actions in the SE Wales RTP will influence the future rate of use of finite resources in new transport infrastructure projects across SE Wales, albeit many of them influence the outcome of this SEA objective indirectly. These include PLP1, PLP2, PLP3, PLP4, PLP5, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, IIP1, HIP3, HIP4, HIP5, DMP1, ECP2, FRP1, FRP2, FRP3, FRP4, TOP1, PLA 2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, IIA1, IIA3, HIA1, HIA2, HIA3, HIA4, FRA1, and TOA1. It is expected that the projects specified in the SE Wales RTP, if brought forward, could influence the future outcome of this SEA Objective, depending on the particular location they are built and the materials used in their construction. The future effects of the SE Wales RTP on SEA Objective 14 are summarised below in Table 8.19.

Table 8.19: SEA Objective 14: To minimise the use of finite resources and increase the use of recycled materials in the provision of new transport infrastructure				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Proportion of new transport schemes across South East Wales awarded the Civil Engineering Environmental Quality Assessment and Award Scheme (CEEQUAL)	?	?	?	?
Percentage use of sustainable resources in the maintenance of transport assets or new transport infrastructure in SE Wales	✓	Medium	Medium – long term	Medium
Conclusions, Risks and Uncertainties				
<p>It is not possible to quantify the impact of the SE Wales RTP on this SEA Objective as there are no explicit statements relating to the use of recycled or secondary aggregates in road maintenance or infrastructure projects, although it is believed that in the medium to long term there will be greater use of recycled or secondary aggregates in road maintenance projects.</p> <p>By promoting policies which ensure that recycled materials form a minimum proportion of all materials used in the works, as well as encouraging the use of sustainably sourced materials in the development of transport infrastructure, particularly locally sourced materials wherever possible, would assist in reducing the impact on the natural environment.</p> <p>Roads across Monmouthshire presently are considered to be of a poor quality and hence should be prioritised in terms of road maintenance measures.</p> <p>It is uncertain as to the proportion of new transport schemes across SE Wales which could be awarded the CEEQUAL award in the future, as there is no intention specified within the SE Wales RTP to develop new transport schemes which aspire to achieve this award.</p>				

8.197 By utilising recycled or secondary materials in the construction or maintenance of transport infrastructure, it reduces the rate of use of primary materials, such as primary aggregates, and therefore assists with reducing the rate at which waste materials arise and helps preserve reserves of natural resources. This would enable a more sustainable approach to the development of the future transport network across SE Wales, particularly the highways. However, there are often concerns over the cost, quality, and availability of recycled or secondary materials which can preclude their use.

8.198 The SE Wales RTP supports the use of a greater proportion of recycled and secondary aggregates in highway maintenance projects through Action HIA1. This promotes the development of a protocol based on current best practice to ensure that highways are maintained with minimal impact upon the natural environment, suggesting that such a protocol will encourage the use of recycled or secondary materials in all highway maintenance work. Such a protocol could also encourage the use of sustainable sourced materials in the development of transport infrastructure, particularly locally sourced materials wherever possible, to minimise transport distances. However, highway maintenance is the responsibility of the local authorities and not Sewta, and therefore any progress on the greater use of recycled or secondary aggregates in highway maintenance will be subject to contracts agreed between contractors and WAG or local authorities.

8.199 Many of the roads across SE Wales are currently of a poor quality, particularly given that the residual life of 17% of all A-roads in the area is less than four years, with 11% of all A-roads being life expired⁶⁵. This does present the opportunity to repair these roads with secondary or recycled aggregates. This issue is most acute in Monmouthshire, and should be addressed, particularly given the growing population across this local authority and the large flow of people commuting into Cardiff.

8.200 The reallocation of freight services from the road network to rail will contribute to protecting the highways of SE Wales from the effects of freight traffic. Heavy freight loads bear great weight on the road network, and the cumulative effect of freight activity across the SE Wales highway network has an estimated effect on road destruction of approximately 10,000 times the effect of a family car. Measures are available from WAG to support local businesses move freight off roads onto either rail or water, through Freight Facility Grants, as removing freight from roads can benefit the environment, by reducing road congestion, reducing the rate of damage to roads, and reducing CO₂ emissions, amongst other benefits.

SEA Objective 15: To minimise the negative impact of transport on our heritage – the historical environment, and regional and local distinctiveness

8.201 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP Objectives 7, 8, 10, 12, and 13. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Proximity of new and existing transport infrastructure to existing sites of cultural and heritage importance across SE Wales.

⁶⁵ Road condition survey data, supplied by local authorities across SE Wales region.

8.202 A number of policies and actions in the SE Wales RTP will influence the future impact of transport on natural and built heritage sites across SE Wales. These include PLP1, PLP2, PLP3, PLP4, PLP5, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, IIP1, HIP3, HIP4, HIP5, DMP1, ECP2, FRP1, FRP2, FRP3, FRP4, TOP1, PLA1, PLA2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, IAA1, IAA3, HIA1, HIA2, HIA3, HIA4, FRA1, and TOA1. It is expected that the projects specified in the SE Wales RTP, if brought forward, could influence the future outcome of this SEA Objective, depending on the particular location they are implemented. The future effects of the SE Wales RTP on SEA Objective 15 are summarised below in Table 8.20.

Table 8.20: SEA Objective 15: To minimise the negative impact of transport on our heritage – the historical environment, and regional and local distinctiveness				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Landtake from road or rail projects (new schemes or improvements) in designated areas of ancient woodland or landscapes (national park, historic landscape, Area of Natural Beauty).	✓	Low	Medium to long term	High
Conclusions, Risks and Uncertainties				
<p>There is a slight risk of cumulative impacts arising to some heritage sites across SE Wales due to the incremental growth of new transport infrastructure projects, leading to increased noise, visual impacts, and increased emissions of local air quality pollutants. Such air quality pollutants can cause damage to the exterior of buildings.</p> <p>The SE Wales RTP is supportive of proposals to limit car access to heritage sites, through the greater use of park and ride schemes to transport visitors between particular heritage sites.</p> <p>The future effect of the transport system in SE Wales on archaeological resources is unknown, although any proposed projects should take reference of any historic landscapes potentially affected, as recorded in publicly held record as the Register of Landscapes of Historic Interest in Wales.</p>				

8.203 Transport has the potential to adversely affect cultural heritage, archaeology, and architecture directly and indirectly. These impacts can arise directly through the construction of new transport infrastructure, or indirectly through the corrosive impact of sulphur and nitrogen on the exterior of graded buildings or historical structures, an effect which is magnified by synergistic interaction with tropospheric ozone⁶⁶. Such pollutants are emitted from the combustion of transport fuels impacts of transport, and can lead to acid corrosion of stone, metal and paints, and ozone damage to polymeric materials, particularly natural rubbers. However, it should be noted that sulphur is not a major component of vehicle exhaust emissions due to the low sulphur content of modern fuels. In addition, the soiling of buildings and other structures can result from poor local air quality, which would require regular cleaning to ensure the present quality of cultural buildings is retained across SE Wales. Thus the impact of the transport network on buildings of historic interest includes an economic component as well as environmental.

⁶⁶ Many studies present evidence of acid damage of air quality pollutants such as sulphur dioxide and nitrogen dioxide on the exterior of buildings. These studies are summarised in Holland, M.R., Haydock, H., Lee, D.S., Espenhahn, S., Cape, J.N., Leith, I.D., Derwent, R.G., Lewis, P.M., Fella, N.A.R., and Mower, K.G., (1998), 'The effects of ozone on materials', contract report for the Department for Environment, Transport and the Regions.

8.204 An additional indirect effect of the transport network on heritage sites is the construction of new drainage systems, which could alter the nature of ground conditions in proximity to the heritage site, or from noise arising from road transport, which can lead to the loss of amenity for visitors of the site, potentially reducing the quality of any visit to such sites for tourists. A particular risk to the cultural heritage across SE Wales arises from the cumulative impacts which could arise from the transport network, through both the increased use of the transport network through additional car movements, and the incremental development of new transport infrastructure projects.

8.205 Despite SE Wales being largely an industrial area, it is well endowed with a number of buildings of cultural value, which are listed for protection, as are town centres and the countryside. There are more than 300 listed ancient monuments across the SE Wales area. Given the large range and number of sites, monuments and landscapes of heritage value across SE Wales, it will be critical that use is made of the Register of Landscapes of Historic Interest to inform decision making concerning the initiation of transport projects and their impacts across SE Wales.

8.206 The Balenavon Ironworks in Monmouthshire is a world heritage site, located in SE Wales. This site is located to the south west of Abergavenny and is in very close proximity to the Brecon Beacons National Park. Such a site is attractive to tourists both within and beyond SE Wales, and as a consequence generates demand for transport to the site. The tourism economy in SE Wales has been growing in real terms at over 2% per annum in recent years, as the local culture and heritage providing key local attractions. The key destinations for tourists tend to be the Wye Valley, Cardiff, Brecon Beacons, and the Glamorgan Heritage Coast.

8.207 Use of private cars accounts for 83% of all tourism journeys made to SE Wales, and 74% within the region. The share of journeys made by car could however be significantly reduced should rail services be enhanced, particularly by linking SE Wales to the West Midlands and beyond with more regular rail services, to support the growth in demand, which has risen by 50% over the last decade, a move supported by the SE Wales RTP. The SE Wales RTP also supports measures such as the Brecon Beacons Bus project, which aims to reduce the number of cars accessing the site, as part of the National Park's Visitor Transport Initiative. Additional measures, such as making use of buses to move people around sites from a central car park location are also under consideration, which would further reduce the impact on the local heritage sites should they be commercially viable and desirable for local visitors.

8.208 The SE Wales RTP outlines its intention to significantly increase the scale of public transport across SE Wales, with support given to a number of particular routes, for both rail and bus services. Despite these provisions, there is uncertainty as to whether tourists would utilise the public transport in favour of the car, and hence the future impact of the transport system on cultural heritage across SE Wales is uncertain. In particular, the Glamorgan Heritage Coast would benefit from being more accessible by public transport.

8.209 SE Wales RTP policies which encourage the reduction in the demand for travel across SE Wales, through road user charging (Policy DMP1) for example, should be of benefit to the natural or built heritage of SE Wales as air pollution arising from the transport network could be reduced, although any impact is highly uncertain as the true effects of any such scheme are unknown.

8.210 Sewta supports the expansion of train services serving SE Wales, which connect the area more widely with services running between Bristol Temple Meads and Manchester and beyond, with better connections with Birmingham from Cardiff. There is greater potential for such a route in the future, given Newport's hosting of the Ryder Cup in 2010, which could be an attraction for tourists. There are also potential economic opportunities available for Monmouthshire, given its rich historical and cultural heritage, should the town of Chepstow be part of a new western running rail service originating from the Midlands.

SEA Objective 16: To protect and enhance the landscape character and townscape from the negative effects of transport

8.211 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP Objectives 7, 8, 10, 12, and 13. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Proximity of new and existing transport infrastructure to sites of landscape or townscape value across SE Wales.

8.212 A number of policies and actions in the SE Wales RTP will influence the impact of the transport network on the landscapes and townscape character across SE Wales, largely through indirect mechanisms. These include PLP1, PLP2, PLP3, PLP4, PLP5, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, IIP1, HIP3, HIP4, DMP1, ECP2, FRP1, FRP2, FRP3, FRP4, TOP1, PLA1, PLA2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, IIA1, IIA3, HIA2, HIA3, HIA4, FRA1, and TOA1. It is expected that the projects specified in the SE Wales RTP, if brought forward, could influence the future outcome of this SEA Objective, depending on the particular location they are built. The future effects of the SE Wales RTP on SEA Objective 16 are summarised below in Table 8.21.

Table 8.21: SEA Objective 16: To protect and enhance the landscape character and townscape from the negative effects of transport				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Proportion of new transport schemes which are judged to have a negative effect on the landscape character and townscape in the surrounding areas (difficult to measure or determine but presented for illustrative purposes)	?	?	?	?
Conclusions, Risks and Uncertainties				
It will be important to carefully plan any new transport infrastructure to ensure that it does not cause any adverse impact on the surrounding landscape or townscape, or sever access to such landscapes. The future impact on the landscape and townscapes across SE Wales will be determined at the individual project level, as the provisions in the SE Wales RTP are at present too general to determine with any confidence the likely future impact.				

8.213 Transport, particularly road traffic, can have a significant impact on townscapes and landscapes. For example, building main roads through national parks could have a significantly negative effect on the overall quality of a given landscape. Likewise, large volumes of road traffic can impact upon the overall aesthetic quality of a townscape. Often it is not only the sight of the road traffic which is the cause of a negative influence over the quality of the landscape or townscape, but also the noise generated from the traffic can also blight an area and cause a reduction in the quality of the environment.

8.214 The SE Wales area has many townscapes considered worthy of protection from development, including the market towns of Abergavenny and Usk, valley towns such as Aberdare and Pontypool and big cities in the region of Cardiff and Newport. There are also a number of parks and sites of located in the north of the SE Wales area, in the Valleys, including the Brecon Beacons National Park. Likewise, there are sites of importance for nature conservation located in coastal areas around Cardiff and Newport.

8.215 Landscapes of special historic interest across SE Wales include:

- East Forest Fawr in Rhondda Cynon Taff, located between the A4059, A470 and A465;
- Gelli-gaer Common located between Caerphilly and Merthyr Tydfil near the B4254;
- The Rhondda in Rhondda Cynon Taff near to the A4061, A4107, A4233;
- Margam Mountain in Bridgend, which is east of the M4 and close to Port Talbot and near to the A4107 and B428;
- Clydach Gorge located in Monmouthshire and Blaenau Gwent close to Abergavenny. It is a small area with the A4047 bisecting the area.

8.216 There are also a small number of landscapes of outstanding historic interest located across SE Wales which need to be protected from the future development of the transport network. These sites include:

- Methry Mawr, Kenfig and Margam Burrows, in Bridgend and the Vale of Glamorgan;
- The settlement and surrounding area of Merthyr Tydfil, which is situated at the intersection of numerous A-roads, including the A470, A465, A4102 and the A4060;
- Lancarfan in the Vale of Glamorgan, which is bounded by the A48 to the north, and is close to the A4226 and the B4060.
- Blaenavon, in close proximity to Abergavenny and located in both Monmouthshire and Torfaen. Road access is available from the A465, A4043, B4248, and the B4246.
- Gwent Levels, located across Newport, Monmouthshire and Cardiff local authority areas. This is a large site located along the north bank of the Severn Estuary, and has the M4 running across the east of the site; and
- The Lower Wye Valley in Monmouthshire. This is a large site situated between the towns of Monmouth and Chepstow, and has the A466 running through it.

8.217 Another heritage site of considerable value to the SE Wales tourist economy includes the Glamorgan Heritage Coastline, which covers 14 miles of coastline between West Aberthaw (near to Barry) and Porthcawl in Mid Glamorgan. There are also approximately 100 registered parks and gardens across SE Wales, twenty of which are accessible by the M4 corridor.

8.218 Measures to protect townscapes from the adverse effects of road transport developments would include the careful planning of new transport infrastructure, to ensure that any proposals do not adverse impact on the surrounding landscape by selecting routes that minimise severance or obstruction of key views.

8.219 A number of policies and actions in the SE Wales RTP will assist with mitigating the risk of future transport projects impacting upon the landscapes and townscapes of SE Wales. One such action includes Action PLA1, which aims to improve public transport links between key settlements in SE Wales and Cardiff and Newport, and therefore assist with reducing the growth in road traffic volumes in these areas. This will assist in reducing the environmental impact of noise, emissions of local air quality pollutants, and therefore the impact on local landscapes and townscapes in areas surrounding Cardiff and Newport.

8.220 The improvements proposed for public transport include enhancing the rail system across SE Wales, which would require significant investment to improve accessibility across the whole of SE Wales to the rail network, as well as to improve the frequency and capacity of services. This would alter the landscape across SE Wales wherever new rail corridors or stations are required to be constructed. Policies RAP1, and RAP2, and Actions RAA1, and RAA2 all outline Sewta's aim to enhance rail services across SE Wales. All landscape and townscape specific impacts arising from the implementation of such projects will need to be assessed in depth at an individual project level when design details are known. Operating rail services at greater frequency on the existing rail network would increase noise impacts on landscapes to some extent. Increases in bus services or capacity or route length would also only impact in terms of noise or local air quality pollutant emissions on local landscapes or townscapes, although these impacts are unlikely to be significant.

8.221 By minimising an approach to build roads across SE Wales, the impact on the townscape and landscape by the SE Wales RTP will be relatively minimal, with the majority of proposals and policies aiming to promote alternative forms of travel to the car. In the areas where road building (or widening) is advocated, the objectives are more aimed at economic benefits, such as reducing road based congestion and reducing journey times, than environmental objectives which aim to protect the landscape.

8.222 Any impacts on the landscape and townscape across SE Wales would be as a result of plans to enhance the road network in Newport along the M4 corridor in an attempt to alleviate road congestion. The increase of flows of road traffic through urban centres would impact upon townscapes, caused by the combined effect of rising population and affluence, although the proposals to enhance the bus and rail services in areas with high population density may offset the level of absolute future growth in car use which is expected to arise.

8.223 There could also be impacts on the townscape across SE Wales due to alterations proposed by the SE Wales RTP concerning road junction upgrades or developments of bus lanes.

8.224 Policies which encourage a reduction in private car use would benefit the landscape and townscapes, such as Policy DMP1 which promotes road user charging, Policies WCP1, and WCP2, and Actions WCA1, WCA2, and WCA3, which aim to enhance pedestrian networks and cycleway routes across SE Wales, are likely to all encourage a beneficial improvement in townscapes and landscapes.

SEA Objective 17: To minimise light pollution caused by transport

8.225 The SE Wales RTP Objectives influencing the outcome of this SEA Objective include SE Wales RTP Objectives 8, 10, and 12. These objectives relate to the following environmental and socio-economic variables in the network model:

- (i) Lighting provision and design across the SE Wales transport network.

8.226 A number of policies and actions in the SE Wales RTP will influence the future quantity of light pollution created by the transport network across SE Wales. These include PLP1, PLP2, PLP3, PLP4, WCP1, WCP2, SCP1, RAP1, RAP2, BUP1, BUP2, BUP3, IIP1, HIP3, HIP4, DMP1, ECP2, FRP1, FRP2, FRP3, TOP1, PLA1, PLA2, PLA3, WCA1, WCA2, WCA3, SCA1, SCA2, SCA3, SCA4, SCA5, RAA1, RAA2, BUA1, BUA2, BUA3, IIA1, IIA3, HIA2, HIA3, HIA4, FRA1, and TOA1. It is expected that the projects specified in the SE Wales RTP, if brought forward, could influence the future outcome of this SEA Objective, depending on the particular location they are built. The future effects of the SE Wales RTP on SEA Objective 17 are summarised below in Table 8.22.

Table 8.22: SEA Objective 17: To minimise light pollution caused by transport				
Indicator	Magnitude of impact	Significance	Time Scale	Probability
Light pollution across South East Wales (theoretical indicator)	✓ / ✗	Low	Medium – long term	Medium
Conclusions, Risks and Uncertainties				
<p>The SE Wales RTP does not explicitly state whether new highway developments will be accompanied by new light efficient street light designs.</p> <p>There is a risk that inadequate funding will be available to alter all transport corridor lighting to mitigate light lost skyward over SE Wales. Additionally, light pollution is not just caused by the transport network; office lighting, lighting at industrial premises, and lighting from domestic properties all contribute to light pollution, so any initiative to reduce light pollution from the transport network in isolation may not necessary lead to significant benefits, without a coordinated effort by policymakers to address all sources. It is likely that the future impact across SE Wales will be positive in some locations and negative in others, reflecting the general level of development. The future intensity of light pollution across SE Wales is likely to have many different factors contributing, of which the transport network and infrastructure is but one of these factors.</p>				

8.227 Light pollution is defined as the illumination of the night sky caused by the emission of stray light or glare from lighting fixtures in manners that counter the purpose of the light. Light pollution, among other effects, disrupts ecosystems, wastes energy, and obscures the view of the stars for city dwellers.

8.228 Given that light pollution is caused by stray light and glare from lighting fixtures, such pollution can be mitigated by applying an appropriate engineering design to future lighting fixture installations. For example, the key source of light pollution arising from the transport network arises from light seeping skyward from street lamps. Such an impact could be mitigated through the careful design of street lighting, by restricting the direction in which the light is emitted by the street lamp to a predominantly downward direction, or through the use of reflective materials to reduce the need for additional lighting. The extent of the benefit of improving street lighting fixtures might not prevent light pollution obscuring night sky views in the heavily developed urban areas of SE Wales, but it might have beneficial outcomes for more rural areas.

8.229 Light pollution in SE Wales is worse than anywhere else in Wales, and has deteriorated between the years 1993 and 2000. In 1993 the worse areas were Cardiff, Newport, and Cwmbran. By 2000, Barry and Bridgend had deteriorated to an extent to be of a comparable problem area.

8.230 The measures outlined in the SE Wales RTP to increase access and use of public transport across SE Wales would assist with removing some of the predicted growth in road traffic on the roads during early morning and evening commuting periods, and thus could assist with reducing adverse lighting arising from car traffic blighting the night sky during the winter months. However, any beneficial impact is likely to be small and would occur over the long term, with benefits being location dependent. It should be noted that Sewta is not responsible for highway maintenance and street lighting, which is the responsibility of the local authorities which comprise the transport consortia. Therefore it is uncertain whether light pollution will be significantly reduced due to the SE Wales RTP.

8.231 It is expected that as road traffic in areas surrounding Newport increase, particularly in areas surrounding the M4 corridor where road building is expected to cater for existing congestion problems, light pollution will also increase.

9. Monitoring Programme

Monitoring Programme

Introduction

9.1 It is a requirement of the SEA directive, as stated in Article 10 that:

“Member States shall monitor the significant environmental effects of the implementation of plans and programmes in order, inter alia, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action.”

9.2 As a consequence, it is necessary by law that a monitoring programme be designed for the SE Wales RTP.

9.3 To ensure the monitoring programme complies with legislative requirements, the monitoring programme must be sufficient in its scope to allow for the identification of any future unforeseen environmental effects which may arise once the SE Wales RTP has begun to be implemented. The monitoring programme is however constrained by the need to minimise the regulatory burden placed on those responsible for monitoring the environmental effects of the SE Wales RTP.

9.4 It is for this reason that the monitoring programme proposed is risk-based, and hence only include a set of indicators which are critical in determining the relative success of the SE Wales RTP in achieving its environmental objectives. In particular, the monitoring programme will focus on indicators relating to environmental effects which if observed to show a negative future trend, would signal a significant issue needing immediate attention.

Risk Based Monitoring Programme

9.5 To reduce the overall future burden placed on public bodies in collecting data for performance monitoring purposes, all indicators selected in the monitoring programme are predominantly indicators already monitored, albeit for other purposes. This is in accordance with the SEA Directive which states under Article 10:

“existing monitoring arrangements may be used if appropriate, with a view to avoiding duplication of monitoring.”

9.6 As the SE Wales RTP will be owned by the ten local authorities across SE Wales, it is these local authorities, possibly through Sewta, who will ultimately be responsible for collating monitoring data. However, the physical monitoring and collection of data could be undertaken by other public sector organisations. For example, the Environment Agency Wales routinely monitors a number of environment receptors, such as river water quality. Therefore it is advocated that while the local authorities would ultimately be responsible for the collation and presentation of the monitoring report for the SE Wales RTP, other public sector organisation would be responsible for the monitoring and collection of raw data for a number of the indicators.

9.7 The frequency over which data is collected for each indicator should be determined by the cost of data collection. Ideally an annual monitoring report should be produced summarising the progress of each indicator. However, some of the indicators may not already be routinely collected on an annual basis. Therefore it is advised that voluntary sample surveys potentially be undertaken biennially or on an adhoc basis, determined by cost and the considered *ex ante* significance of the indicator.

The headline points to arise from the proposed monitoring programme are:

- (i) The ten local authorities across SE Wales through Sewta, will jointly have the responsibility to monitor the Environmental Report for the SE Wales RTP;
- (ii) The local authorities should take advantage of data sets already monitored, such as the performance indicators for local authorities, and data collected by National Statistics, the Environment Agency and WAG; and
- (iii) In some cases, the use of voluntary sample surveys could be beneficial to collect data for indicators which are difficult to monitor directly.

9.8 The risk based monitoring programme devised for this Environmental Report is presented below in Table 9.1. In addition to listing those indicators which should be collected, it summarises those organisations best placed to collect the data.

Table 9.1: Risk Based Monitoring Programme

SEA objective	Indicator	Organisation to collect data
1	Number of Air Quality Management Areas in SE Wales (measured annually)	UK National Air Quality Archive
1	Number of times annually the hourly mean concentration of NO ₂ exceeds the target concentration of 200 µgm ⁻³ in each SE Wales local authority	UK National Air Quality Archive
1	Number of times annually the hourly mean concentration of PM ₁₀ exceeds the target concentration of 50 µgm ⁻³ in each SE Wales local authority	UK National Air Quality Archive
2	Transport's annual contribution to greenhouse gas emissions in Welsh economy	UK National Atmospheric Emissions Inventory
2	Modal share for journeys to work – based on usual mode of travel to work by people aged 16 – 74 in employment in the Sewta area (positive means a more diverse modal share, and less reliance on car) (measured annually)	National Statistics
2	Modal share of journeys to school for 5 – 16 year olds in the Sewta area (positive means a more diverse modal share, and less reliance on car) (measured annually)	National Statistics
3	Number of annual noise complaints made to local authorities in SE Wales referring to transport related sources of noise	Local authorities across SE Wales
4	Annual landtake from road or rail projects built through a designated area of consequence to wildlife (i.e. special area of conservation, special protection area, site of special scientific interest, and national nature reserve)	Planning departments of the SE Wales local authorities
6	Proportion of households across SE Wales within 15 minutes of a (i) school; (ii) bus stop; (iii) a train station (measured annually)	To be confirmed
8	Walking and cycling as a % of local trips for all purposes of less than 5 miles in length (measured annually)	National Statistics
10	Number of annual road accidents in SE Wales	Road Safety Wales
12	Number of annual recorded water pollution events in SE Wales where transport is the primary cause	Environment Agency
13	Number of annual flooding events per annum of consequence to the road network in SE Wales	Environment Agency
14	Percentage use of sustainable resources in the maintenance of transport assets or new transport infrastructure annually in South East Wales	Local authorities across the SE Wales area

Source: Capita Symonds

9.9 Note that no targets are set for any of the indicators. The reason for this is because no targets have been set for the majority of these indicators at the national level, aside from the standards set for certain concentrations of local air quality pollutants. Thus to identify whether an environmental issue appears to be arising, it is advised that any downward trend in any indicator be used as a signal to adverse impacts occurring, and which should be investigated early to determine the cause of the downward trend, and allow for fresh initiatives to be proposed to mitigate against the downward trend.

10. Conclusion

Conclusion

10.1 The SE Wales RTP is expected to generate a mixture of geographically varying environmental and socioeconomic effects across SE Wales, due to the proposed policies, actions, and projects stated within it.

10.2 The SE Wales RTP is very supportive of plans to encourage people to make greater use of public transport, by significantly enhancing the number of bus and rail services provided across SE Wales. In particular, the SE Wales RTP provides support for the development of new high speed high frequency bus services connecting a number of key settlements across SE Wales and makes statements of support for the future development of rail infrastructure and alterations to the rail network to boost the capacity and accessibility of such services.

10.3 To support the public transport proposals, the SE Wales RTP outlines the urgent need to accompany these measures with significantly upgraded intermodal interchange facilities. By developing a better integrated public transport services, it could encourage more people to substitute away from using their cars to making greater use of public transport, especially if the integrated services significantly increased the convenience of use.

10.4 There is also significant support provided in the SE Wales RTP to provide better cycling and pedestrian networks across SE Wales. Such measures, if successful, could encourage residents to live healthier lives, and could reduce the number of short and local trips currently made by car. The benefits for local people would be significant in improving accessibility to town centres and local community facilities. However, the environmental benefits, such as reduced emissions of local air quality pollutants and the subsequent formation of secondary pollutants, noise impacts, and reduced emissions of CO₂, are likely to be modest given the relatively short distances which could be travelled by such measures.

10.5 The SE Wales RTP outlines that the building of roads, utilising a 'predict and provide' approach to managing road congestion is not sustainable, and hence seeks alternative approaches to dealing with the transport problems facing SE Wales. The SE Wales RTP does however still provide support for the enhancement of a select number of A-roads, and the M4 around Newport, to assist with reducing the considerable road congestion which exists on these particular routes. However, with a forecast growth in car use of around 20% by 2020⁶⁷, the road network could become overly congested despite the immediate need to expand the capacities of particular roads. However, with the rising price of petrol and diesel, the forecast growth in car use that is currently anticipated might not materialise, as people are likely to alter their behaviour to save on fuel costs and hence drive less relative to their present behaviour.

10.6 The implications of the growth in car use across SE Wales, include increased emissions of CO₂, and increased emissions of NO_x and PM₁₀ which adversely affect local air quality and consequentially the health of local residents and flora and fauna. It is expected that improvements in engine efficiency in cars in the future will assist with reducing the rate of growth of such emissions.

⁶⁷ Department for Transport, 'National Road Traffic Forecasts (Great Britain)', 1997

10.7 It is expected that the local air quality and noise which residents across SE Wales suffer in the future will vary geographically, being dependent on the extent and volume of traffic flow across aspects of the road network. Some particular areas will suffer from deteriorating local air quality as road congestion increases, although others will benefit, as people switch to using public transport.

10.8 The growth in car use could be further restricted through the SE Wales RTP's proposal to support the future implementation of road user charging across busy parts of the road network in SE Wales. Over use of public roads gives rise to a market failure. Road users only consider their marginal private costs when using public roads, but should the road become overused, a marginal external cost is imposed by every road user on one another. The marginal external cost incorporates the increased journey time, fuel costs, and pollution which arise from over congestion, which are imposed on each and every road user. Road user charging would, if set at the appropriate level, remove the market failure, by charging road users the marginal external cost of road use, and would assist in reducing road use and road congestion, to some extent, and benefiting the environment from fewer emissions. However, as the demand for road use is price inelastic during peak travel times, the extent that road use will be reduced due to any charge might not be sufficient to reduce road congestion, and may result in the congestion charge being seen as an unpopular revenue raising tool for government.

10.9 Moving freight off the roads onto rail is expected to only bring modest benefits, as the existing rail capacity and morphology of the existing rail network constrain where and how freight could be moved by rail, which could make it undesirable for a number of businesses. In addition, moving freight by rail often requires the double handling of freight as it is loaded and unloaded at the point of origin and destination from road transport. In a number of circumstances, this could make rail use uncompetitive relative to road. Thus the economic and environmental benefits of such policies may be minimal.

10.10 There is unlikely to be any significant impacts to the cultural heritage or landscapes of SE Wales due to the proposals outlined in the SE Wales RTP, although any specific impacts would become more identifiable at the individual project level when particular schemes supported by the SE Wales RTP are developed.

10.11 The future risk of flooding to the transport network is expected to continue to rise given the increase in the atmospheric concentration of CO₂ and the consequential onset of climate change. Resources will need to be invested to identify which particular aspects of the transport network are at greatest risk, with appropriate resources targeted in these areas to mitigate the risk of flooding.

10.12 The future use of recycled or secondary aggregates in road maintenance or construction projects will be subject to contracts agreed between local authorities or WAG, and contractors. Although the SE Wales RTP aims to reduce the rate of use of primary materials and thus minimise the impact the transport network across SE Wales has on the use of natural resources, the SE Wales RTP provides limited initiatives to achieve this aim in the respect to use of recycled or secondary materials in construction work. The future outcome is therefore uncertain, although in principle it is believed that greater use than at present would be made of recycled and secondary materials, given the general trends in this direction generally.

10.13 In summary, the SE Wales RTP will provide a range of benefits to the residents of SE Wales, and will assist with facilitating a more diverse and active economy, with better accessibility for residents and in particular for those wishing to access Cardiff and Newport by public transport. There will be some medium term issues which will be unavoidable. Growth in car use will lead to pockets of increased noise and worsening air quality, which is likely to be unavoidable, although in other areas it can be expected to improve as people switch to public transport to avoid rising fuel costs and congestion.

10.14 The key policies within the SE Wales RTP which will in the long term bring the greatest environmental and socio-economic benefits to SE Wales, include the aim to build more sustainable settlements which are self contained, and which therefore minimise the need to travel, and the development of green travel plans by existing businesses across SE Wales. Only by directly changing what businesses expect of their employees and how they behave can the present level of demand for road use be cut at peak travel times. By encouraging a greater proportion of workers to work from home, or by staggering the start times, congestion on the road network could be significantly mitigated. It is believed that these last two policies are the most optimistic in producing environmental benefits for SE Wales, as despite how improved public transport becomes, it is only truly viable in high density locations or in areas where the service serves highly desirable destinations at high service frequencies.

10.15 It should be noted that it will not be possible to deliver sustainable towns which reduce the need to travel in the short term, as many possible sites for such developments are already allocated to future uses in the emerging LDFs of each local authority in SE Wales. This has to be a long term approach which will eventually bring great dividends, environmentally, economically and socially should this policy be carefully implemented across SE Wales.

Annex I. Compliance with SEA Directive

Compliance with SEA Directive

Introduction

I.1 As the SE Wales RTP is statutorily required to be subject to SEA, the Environmental Report must comply with the requirements of the SEA Directive 2001/42/EC. Table AI.1 below signposts where and how the Environmental Report complies with these requirements.

I.2 The SEA Objectives cover the environmental protection requirements prescribed by the SEA Directive as set out in Annex 1(f) of the Directive. These requirements demand consideration of biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, landscape, as well as the interrelationship between these factors. Table A.2 below illustrates the extent to which the SEA Objectives comply with the range of issues referred to within the SEA Directive.

Table AI.1: The SEA Directive Requirements

SEA Directive Requirements	
Preparation of an environmental report (article 5 and Annex I)	
a) outline of contents, main objectives of the plan and relationship with other relevant plans and programmes	Sections 1, 2, and 4
b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan	Section 5
c) the environmental characteristics of the areas likely to be significantly affected	Section 5
d) any existing environmental problems which are relevant to the plan including those relating to any areas of a particular environmental importance	Section 5
e) the environmental protection objectives which are relevant to the plan, established at international, EC or national level, and the way those objectives and any environmental considerations have been taken into account during its preparation	Section 4
f) the likely significant effects on the environment including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between these factors	Section 8
g) the measure envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan	Section 8
h) an outline of the reasons for selecting the alternatives dealt with and a description of how the assessment was undertaken including any difficulties encountered in compiling the required information	Section 3
i) a description of measures envisaged concerning monitoring	Section 9
j) a non-technical summary of the information provided under the above headings	Non-technical summary

Source: European Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment'

Table AII.2: SEA Environmental protection issues

SEA issues as defined by SEA Directive Annex I(f)	SEA Objective assessing significant impacts on factor
Biodiversity	SEA Objectives 4, 5
Population	SEA Objective 1, 3, 6, 7, 8, 9
Human health	SEA Objective 1, 3, 6, 8, 9, 10
Flora	SEA Objective 4, 5
Fauna	SEA Objective 4, 5
Soil	SEA Objective 11
Water	SEA Objective 12, 13
Air	SEA Objective 1
Climatic factors	SEA Objective 2, 17
Material assets	SEA Objective 14
Cultural heritage (including architectural and archaeological heritage)	SEA Objective 15
Landscape	SEA Objective 16

Source: Capita Symonds

Annex II. Comparison of Plan and Assessment Objectives

Comparison of Plan and Assessment Objectives

Introduction

II.1 This annex provides a comparison between the objectives of the SE Wales RTP and the SEA, and therefore demonstrates the coverage of the SEA Directive by the SE Wales RTP in terms of achieving complimentary objectives.

SE Wales RTP Objectives	Employment Access	Services access	Seamless interchange	Modal Shift	Personal security	Economic performance	Improve connections	Reduce traffic and congestion	Better use of system	Sustainable land uses developments	Regeneration	Reduce road casualties	Promote healthier lifestyles	Less dominant traffic	Protect the environment	Robust system and climate	Reduce greenhouse gases	Increase public awareness
Reduce Air Pollution				✓			✓	✓	✓	✓				✓	✓		✓	
Reduce greenhouse gases & climate change				✓				✓	✓	✓	✓		✓		✓	✓	✓	✓
Reduce noise & vibration			✓	✓			✓	✓	✓	✓				✓	✓			
Reduce negative impacts on biodiversity								✓	✓		✓				✓		✓	
Protect wildlife site								✓	✓	✓	✓				✓			
Improve access to services	✓	✓	✓	✓		✓	✓	✓	✓		✓		✓					✓
Reduce community severance	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓					
Encourage healthy lifestyles	✓	✓	✓	✓		✓			✓			✓	✓		✓			✓
Improve access to healthcare		✓	✓				✓						✓					
Improve transport safety & security			✓	✓	✓	✓	✓	✓	✓			✓		✓				
Reduce land contamination			✓	✓					✓	✓	✓		✓	✓	✓			
Reduce water pollution				✓				✓			✓		✓		✓			
Minimise flood risk							✓			✓	✓		✓		✓	✓		
Increase use of re-cycled goods &																		

SE Wales RTP Objectives	Employment Access	Services access	Seamless interchange	Modal Shift	Personal security	Economic performance	Improve connections	Reduce traffic and congestion	Better use of system	Sustainable land uses developments	Regeneration	Reduce road casualties	Promote healthier lifestyles	Less dominant traffic	Protect the environment	Robust system and climate	Reduce greenhouse gases	Increase public awareness
materials		✓	✓				✓			✓	✓				✓	✓		✓
Reduce impact on cultural heritage									✓	✓	✓				✓			✓
Protect landscape / townscape				✓				✓	✓	✓	✓			✓	✓			✓
Minimise light pollution			✓	✓				✓					✓	✓	✓			

Source: Capita Symonds

Annex III. Compatibility of SEA Objectives

Compatibility of SEA Objectives

Introduction

III.1 SEA guidance advises that, “*The objectives of any plan or programme will need to be tested against SEA objectives to identify both potential synergies and inconsistencies. This information may help in developing alternatives during development of the plan or programme, and may in some cases help to refine the objectives of the plan or programme itself. Where a plan or programme has several objectives it may also be helpful to test them against each other, as inconsistencies may give rise to adverse environmental effects.*” (DfT 2004, p 14).

III.2 Therefore, this section investigates whether there are potential conflicts or tensions between any of the SEA objectives. The results of the compatibility assessment are summarised in Table below.

Table AIII.1: Key to Table AIII.2.

	Objectives not compatible
	Objectives compatible
?	Uncertainty over compatibility
	No relationship between objectives

Source: Capita Symonds

III.3 Table AIII.2 below presents the summary of the compatibility of the SEA objectives utilised in this Environmental Report. It demonstrates the clear trade offs which exist within the assessment of the SE Wales RTP.

Annex IV. Assessment of Policies on SEA Objectives

Assessment of Policies on SEA Objectives

VI.1 This annex summarises the effect of the SE Wales RTP policies and projects on each of the SEA Objectives.

Policy or Project	Variables influenced	Receptors Affected (or indicators)	SEA Objectives Effected	Impacts		
				Magnitude	Probability	Significance
PLP1: Sewta supports improved public transport links between 14 WSP key settlements and equivalent neighbouring settlements in Mid and South West Wales and adjoining regions in England, and between the WESP key settlements, and other core market towns (e.g. Monmouth) and their hinterlands	Road congestion: With an increase in the availability of public transport, more people across SE Wales could be encouraged to substitute away from using their private cars to public transport	Emissions of CO ₂ could be reduced if people substitute away from using private cars to access Cardiff and Newport and other WSP key settlements	2	✓	Medium	Low
		Local air quality across SE Wales could be improved through a reduction in car use, albeit only in those locations better served by public transport	1	✓ / ✗	Medium	Low
		Noise impacts arising from transport network might be improved from reduced road congestion along those roads connecting the WSP key settlements	3	✓ / ✗	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease	11, 12	✓	Medium	Low
	Public transport accessibility: An increase in the provision of public transport could enhance the accessibility for vulnerable members of society and assist with reducing social exclusion	Older members of society and less mobile members of society in settlements surrounding Cardiff and Newport and other WSP key settlements would benefit from enhanced accessibility to community services	7, 9	✓✓✓	High	High
	Proximity of existing transport infrastructure to sites of cultural and heritage importance to SE Wales	Accessibility to sites of cultural value could be improved for less mobile members of society by enhancing public transport across SE Wales. There is unlikely to be any significant environmental impact to such sites due to Policy PL1	15, 16	✓✓	Medium	Medium
	Lighting provision and design across the SE Wales transport network	The location of new strategic developments could influence the growth of lighting fixtures across SE Wales. It will be necessary for such lighting to be appropriately designed so as to minimise light pollution. As a consequence, the future affect of this policy on future levels of light pollution are unknown.	17	?	?	?

PLP2: Sewta supports improved sustainable transport links to the 'Strategic Opportunity Areas' identified in the WSP.	Location of public transport nodes	Accessibility to key public services is expected to improve, benefiting vulnerable members of society	6, 7, 9	✓✓	High	Medium
	Reduced road congestion: arising from people increasingly substituting away from using private vehicles to making more use of public transport	There could be a small reduction in the use of private vehicles to access Cardiff and Newport and other WSP key settlement, reducing the total quantum of CO ₂ emissions emitted	2	✓	Low	Low
		Air quality could be improved in those corridors connecting key settlements and their hinterlands through a reduction in car use should people substitute to making greater use of public transport, although other areas may not benefit	1	✓/✗	Medium	Low
		Noise impacts arising from transport network might be reduced due to reduced road congestion as more people substitute away from car use to public transport use. Such benefits might only arise however in those transport corridors linking the key settlements and their hinterlands	3	✓/✗	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease overall	11, 12	✓	Low	Low
	Proximity of existing transport infrastructure to sites of cultural and heritage importance to SE Wales	Accessibility to sites of cultural value could be improved for less mobile members of society by enhancing public transport across SE Wales. There is unlikely to be any significant environmental impact to such sites due to Policy PL2	15	✓	Low	Low
Lighting provision and design across the SE Wales transport network	The location of new strategic developments could influence the growth of lighting fixtures across SE Wales. It will be necessary for such lighting to be appropriately designed so as to minimise light pollution. As a consequence the future affect of this policy on the future level of light pollution across SE Wales is unknown	17	?	?	?	
PLP3: Sewta will seek to ensure that Local Development Plans, supplementary planning	An increase in the capacity and accessibility to public transport relative to private transport could encourage a reduction in the demand for road use	Emissions of CO ₂ could be reduced as people substitute away from using private vehicles to making greater use of public	2	✓/0	Low	Low

guidance and the development control processes establish a pattern of land use that reduces the need to travel and maximises the potential for sustainable transport infrastructure and services (including car-free housing developments), secure contributions towards improvements to the transport network and ensure that all significant development proposals are accompanied by effective travel plans.		transport or walking				
		Air quality could be improved through a reduction in car use albeit at only locations where land use developments encourage a reduction in the need for travel	1	✓/0	Medium	Low
		Noise impacts arising from transport network might be reduced due to reduced road congestion, albeit only at locations where people substitute private vehicle use for public transport use	3	✓/0	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease overall, although benefits are likely to be location dependent	11, 12	✓/0	Low	Low
	Location of public transport nodes	Accessibility to key public services is expected to improve, benefiting vulnerable members of society	6, 9	✓✓	High	Medium
	Location of green open spaces across SE Wales relative to the transport network	New transport infrastructure could impact upon wildlife habitats should it be developed in close proximity to areas of value to biodiversity, although given the proposals to minimise travel through the planning system, green spaces and biodiversity should be better protected	4, 5	✓✓	Medium	Medium
	Proximity of existing transport infrastructure to sites of cultural and heritage importance to SE Wales	Accessibility to sites of cultural value could be improved for less mobile members of society due to the enhancement of public transport across SE Wales	15	✓	Medium	Low
PLP4: Sewta opposes land use proposals which will adversely affect transport networks or which will conflict with the objectives, policies and proposals of the RTP	Proximity of new and existing transport infrastructure to sites of landscape or townscape value to SE Wales	Sites of landscape or townscape value are expected to be protected from any adverse impacts which could arise from new developments on the transport network due to this policy	16	✓	Medium	Low
	An increase in the capacity and accessibility to public transport relative to private transport could encourage a reduction in the demand for road use	Emissions of CO ₂ could be reduced as people substitute away from using private vehicles to making greater use of public transport or walking	2	✓/0	Low	Low
		Air quality could be improved through a reduction in car use albeit at only locations where land use developments encourage a reduction in the need for travel	1	✓/0	Medium	Low
		Noise impacts arising from transport	3	✓/0	Medium	Low

		network might be reduced due to reduced road congestion, albeit only at locations where people substitute private vehicle use for public transport use				
		Land and water related contamination arising from road network might reduce should road traffic volume decrease overall, although benefits are likely to be location dependent	11, 12	✓ / 0	Low	Low
	Location of public transport nodes	Accessibility to key public services is expected to improve, benefiting vulnerable members of society	6, 9	✓✓	High	Medium
	Location of green open spaces across SE Wales relative to the transport network	New transport infrastructure could impact upon wildlife habitats should it be developed in close proximity to areas of value to biodiversity, although given the proposals to minimise travel through the planning system, green spaces and biodiversity should be better protected	4, 5	✓✓	Medium	Medium
	Proximity of existing transport infrastructure to sites of cultural and heritage importance to SE Wales	Accessibility to sites of cultural value could be improved for less mobile members of society due to the enhancement of public transport across SE Wales	15	✓	Medium	Low
	Proximity of new and existing transport infrastructure to sites of landscape or townscape value to SE Wales	Sites of landscape or townscape value are expected to be protected from any adverse impacts which could arise from new developments on the transport network due to this policy	16	✓	Medium	Low
PLP5: Sewta supports the transport elements of regeneration and development programmes where they are to the benefit of RTP objectives, make provision for pedestrians, cyclists and public transport and do not adversely affect the operations of the highway network	Accessibility: Regeneration programmes are likely to influence future levels of car parking across a residential area, or boost accessibility via the provision of enhanced public transport services, to encourage people and businesses to move to the area	Accessibility to key public services is expected to improve. This would benefit vulnerable members of society should public transport become more accessible through regeneration programmes. In addition, with greater provision of cycleways and pedestrian walkways, people could be encouraged to live healthier lives. All benefits are likely to be location dependent	6, 8, 9	✓ / 0	Low	Low
PLA1: Sewta will develop plans for improved public transport links between the 14 WSP key settlements, and equivalent neighbouring	Road congestion: With an increase in the availability of public transport, more people across SE Wales could be encouraged to substitute away from using their private cars to public transport	Emissions of CO ₂ could be reduced if people substitute away from using private cars to access Cardiff and Newport and other WSP key settlements	2	✓	Medium	Low
		Local air quality across SE Wales could be	1	✓ / ✗	Medium	Low

settlements in Mid and South West Wales and adjoining regions in England, and between the WSP key settlements, other core market towns (e.g. Monmouth) and their hinterlands		improved through a reduction in car use, albeit only in those locations better served by public transport				
		Noise impacts arising from transport network might be improved from reduced road congestion along those roads connecting the WSP key settlements	3	✓/x	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease	11, 12	✓	Medium	Low
	Public transport accessibility: An increase in the provision of public transport could enhance the accessibility for vulnerable members of society and assist with reducing social exclusion	Older members of society and less mobile members of society in settlements surrounding Cardiff and Newport and other WSP key settlements would benefit from enhanced accessibility to community services	7, 9	✓✓✓	High	High
	Proximity of existing transport infrastructure to sites of cultural and heritage importance to SE Wales	Accessibility to sites of cultural value could be improved for less mobile members of society by enhancing public transport across SE Wales. There is unlikely to be any significant environmental impact to such sites due to Policy PL1	15, 16	✓✓	Medium	Medium
Lighting provision and design across the SE Wales transport network	The location of new strategic developments could influence the growth of lighting fixtures across SE Wales. It will be necessary for such lighting to be appropriately designed so as to minimise light pollution. As a consequence, the future affect of this policy on future levels of light pollution are unknown.	17	?	?	?	
PLA2: Sewta will encourage planning authorities to secure obligations which require contributions towards improvements to the transport network needed as a result of development, particularly at the outline application stage, and it will also seek to ensure that Local Development Plans contain appropriate planning	Capacity of public transport services: Planning obligations could include junction or road improvements which allow for an increase in the capacity of public transport serving a particular area, which could encourage a reduction in the demand for private car use	Emissions of CO ₂ could be reduced should people substitute away from using private vehicles in favour of public transport	2	✓	Medium	Medium
		Air quality could be improved through a reduction in car use, although benefits would be location dependent	1	✓/0	Medium	Low
		Noise impacts arising from transport network might be reduced should people substitute away from car use to public transport, although benefits would be location dependent	3	✓/0	Medium	Low

obligations policies	Enhanced pedestrian walkways and cycleways: It is likely that planning obligations could lead to an enhancements to pedestrian walkways and cycleway across SE Wales	By enhancing the coverage of pedestrian walkways and cycleways across SE Wales, accessibility could be enhanced for local residents, although benefits are likely to be location dependent	6, 7, 8	✓ / 0	Low	Low
PLA3: Sewta will seek to ensure that the location of public services is guided by accessibility analysis to ensure services are provided in locations that reduce the need to travel by car	Public transport capacity: An increase in the capacity and accessibility to public transport relative to private transport could encourage a reduction in the demand for private car use across SE Wales, should public services be located in a location highly accessible by public transport	Emissions of CO ₂ could be reduced should people substitute away from private car use to public transport, although this effect will be constrained to those areas where public services are provided in highly accessible locations	2	✓ / 0	Medium	Low
		Air quality could be improved through a reduction in car use although benefits will be location dependent	1	✓ / 0	Medium	Low
		Noise impacts arising from transport network might be reduced due to reduced road congestion although benefits will be location dependent	3	✓ / 0	Medium	Low
		Incidences of land and water related contamination arising from use of the road network might decrease should the volume of road traffic decrease, although benefits are expected to be location dependent	11, 12	✓ / 0	Medium	Low
	Location of public transport nodes	Accessibility to community services and facilities will be enhanced in certain locations across SE Wales	6, 7, 8, 9	✓✓ / 0	Medium	Medium
WCPI: Sewta supports improved infrastructure for walking and cycling	Pedestrian and cycleway route length, connectivity and accessibility	An enhanced pedestrian and cycleway infrastructure would improve the accessibility to community facilities locally to residential communities. However, benefits are likely to be located dependent	7	✓✓ / 0	Medium	Medium
	Level of subway and bridge provision on pedestrian network	The transport related community severance would be reduced across some towns or cities in SE Wales	7	✓✓ / 0	Medium	Medium
	Road vehicle miles driven across SE Wales	There could be a small reduction in the use of private vehicles across SE Wales, potentially reducing emissions CO ₂ arising from the transport network	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use although benefits are likely to be location dependent	1	✓ / 0	Medium	Low
	Noise impacts arising from transport network might decrease due to a reduction	3	✓ / 0	Medium	Low	

		in road congestion, although benefits will be location dependent				
		Incidences of land and water related contamination arising from use of the road network might decrease should the volume of road traffic decrease, although benefits are expected to be location dependent	11, 12	✓ / 0	Medium	Low
WCP2: Sewta supports consistent regional design standards for walking and cycling infrastructure to improve provision for pedestrians and cyclists in new or regenerated developments	Pedestrian and cycleway route length, connectivity and accessibility	An enhanced pedestrian and cycleway infrastructure would improve the accessibility to community facilities	7	✓✓	Medium	Medium
	Level of subway and bridge provision on pedestrian network	The transport related community severance would be reduced across some towns and cities in SE Wales	7	✓✓ / 0	Medium	Medium
	Road vehicle miles driven across SE Wales	There could be a small reduction in the use of private vehicles for short journeys across SE Wales, reducing the emissions of CO ₂ , although the benefits would be very small	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use although benefits would be location dependent and probably very small. However, reducing the number of short car journeys taken can benefit air pollution by reducing the likelihood of low level ozone forming, particularly in the summer months	1	✓ / 0	Medium	Low
		Noise impacts arising from the transport network might be slightly reduced as people substitute away from cars to using bicycles for short trips, although the benefit would be small, and location dependent	3	✓ / 0	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease overall although benefits would be location dependent	11, 12	✓ / 0	Medium	Low
WCA1: Sewta will develop plans for improved walking and cycling infrastructure, including urban cycle networks, secure cycle parking provision, better cycle facilities at bus and rail stations and the	Pedestrian and cycleway route length, connectivity and accessibility	An enhanced pedestrian and cycleway infrastructure would improve the accessibility to community facilities locally to residential communities	7	✓✓	Medium	Medium
	Level of subway and bridge provision on pedestrian network	The transport related community severance would be reduced across certain locations of SE Wales	7	✓✓ / 0	Medium	Medium

reallocation of road space for walking and cycling	Road vehicle miles driven across SE Wales	There would be a marginal reduction in emissions of CO ₂ arising from the road network as people use bicycles for short trips instead of cars, although the benefits are likely to be small	2	✓ / 0	Medium	Low
		The could be a small improvement in the local air quality in locations where people use bicycles instead of their car for shorter journeys although the benefits are likely to be small	1	✓ / 0	Medium	Low
		Noise impacts arising from the transport network might be slightly reduced as people substitute away from cars to using bicycles for short trips, although the benefit would be small, and location dependent	3	✓ / 0	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease overall although benefits would be location dependent and are also likely to be small	11, 12	✓ / 0	Medium	Low
WCA2: Sewta will develop common regional design standards for walking and cycling infrastructure to improve provision for pedestrians and cyclists in new or regenerated developments	Road vehicle miles driven across SE Wales	There could be a small reduction in the use of private vehicles across SE Wales as people substitute to using bicycles for short journeys. This could slightly reduce emissions of CO ₂	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use for short journeys as people substitute to using bicycles, although benefits would be location dependent and are likely to be small	1	✓ / 0	Medium	Low
		Noise impacts arising from the transport network might be slightly reduced as people substitute away from cars to using bicycles for short trips, although the benefit would be small, and location dependent	3	✓ / 0	Medium	Low
		Land and water related contamination arising from road network might reduce should people substitute away from car use to bicycle use for short trips, although benefits would be small and location dependent	11, 12	✓ / 0	Medium	Low

	The level of security and safety measures applied across the transport network	The perceived level of safety of travellers across SE Wales should be improved to some extent in particular locations, most certainly across town centres	10	✓ / 0	High	Medium
WCA3: Sewta will develop plans for the provision of cycle carrying facilities on trains and buses	Pedestrian and cycleway route length, connectivity and accessibility	An enhanced pedestrian and cycleway infrastructure would improve the accessibility to community facilities locally to residential communities	7	✓	Medium	Medium
	Road vehicle miles driven across SE Wales might decrease in certain locations across SE Wales, most probably towns and cities as people travelling shorter journeys walk or cycle rather than drive	There could be a small reduction in the use of private vehicles across SE Wales in locations where road space is reallocated to cyclists and pedestrians, potentially encouraging people to use private vehicles less for short trips. This could reduce future emissions of CO ₂ , although the benefits would be small and location dependent	2	✓ / 0	Medium	Low
		Air quality could be improved through a reduction in car use as people substitute to using bicycles and walking for short trips, although benefits would be location dependent and likely to be small in magnitude	1	✓ / 0	Medium	Low
		Noise impacts arising from the transport network might be slightly reduced as people substitute away from cars to using bicycles for short trips, although the benefit would be small, and location dependent	3	✓ / 0	Medium	Low
		Land and water related contamination arising from road network might reduce should people substitute away from car use to bicycle use for short trips, although benefits would be small and location dependent	11, 12	✓ / 0	Medium	Low
	Road safety	Road safety might suffer as more people use bicycles to access their place of work or other local public services relative to private vehicles although any impacts would be location dependent	10	✗ / 0	Medium	Low
SCP1: Sewta supports the promotion, development and marketing of sustainable travel choices (Smarter Choices	Road vehicle miles driven across SE Wales could be reduced should people switch from using private vehicles to more sustainable forms of travel such as walking or cycling or using public	There could be a small reduction in the use of private vehicles across SE Wales, reducing the total quantum of CO ₂ emissions emitted, should people be	2	✓	Medium	Low

agenda) including travel planning, home-working, teleconferencing, car sharing, car clubs and personal travel plans	transport	persuaded to use public transport in favour of the car				
		Air quality could be improved through a reduction in car use should people be persuaded to use public transport in favour of the car, although any future outcome is uncertain	1	✓	Low	Low
		Noise impacts arising from transport network might be reduced should sufficient numbers of people be persuaded to use public transport in favour of the car, although any future outcome is uncertain	3	✓	Low	Low
		Land and water related contamination arising from road network could be reduced should sufficient numbers of people be persuaded to use public transport over cars, although any future outcome is uncertain	11, 12	✓	Low	Low
SCA1: Sewta will implement an ongoing, high quality campaign promoting the importance of sustainable travel choices and the impact on health and well being	Road vehicle miles driven across SE Wales could be reduced, with people switching to the use of public transport in favour of cars	There could be reduction in the use of private vehicles across SE Wales as people are persuaded to reduce the number of journeys they make, reducing future emissions of CO ₂	2	✓	Medium	Low
		Air quality could be improved if people are persuaded to make fewer unnecessary trips in their car	1	✓	Medium	Low
		The noise generated from the transport system could be reduced if people are persuaded to make fewer unnecessary trips in their car	3	✓	Medium	Low
		Incidences of land and water related contamination arising from road network could be reduced should people be persuaded to make fewer unnecessary trips by private vehicles across SE Wales	11, 12	✓	Medium	Low
SCA2: Sewta will continue to promote and develop a regional car sharing system	Road vehicle miles driven across SE Wales	There could be a small reduction in the use of private vehicles across SE Wales, as people fully the details in the established travel plans, potentially producing a small reduction in emissions of CO ₂ arising from the transport network	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use should travel plans be successfully implemented and followed	1	✓	Medium	Low

		across SE Wales				
		Noise arising from the transport network might decline to some extent should sufficient people alter their travel behaviours due to the introduction of green travel plans	3	✓	Medium	Low
		Incidences of land and water related contamination arising from road network could be reduced should people be persuaded to make fewer unnecessary trips by private vehicles across SE Wales due to the introduction of travel plans	11, 12	✓	Medium	Low
SCA3: Sewta will assist, coordinate and monitor travel plan development and implementation	Road vehicle miles driven across SE Wales could be marginally reduced should companies successfully encourage their employees to reduce the use of their cars in favour of public transport, car sharing, walking, or cycling.	There could be a small reduction in the use of private vehicles across SE Wales, as people fully the details in the established travel plans, potentially producing a small reduction in emissions of CO ₂ arising from the transport network	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use should travel plans be successfully implemented and followed across SE Wales	1	✓	Medium	Low
		Noise arising from the transport network might decline to some extent should sufficient people alter their travel behaviours due to the introduction of green travel plans	3	✓	Medium	Low
		Incidences of land and water related contamination arising from road network could be reduced should people be persuaded to make fewer unnecessary trips by private vehicles across SE Wales due to the introduction of travel plans	11, 12	✓	Medium	Low
SCA4: Sewta councils will each develop, implement and monitor organisational travel plans for staff and visitors	Road vehicle miles driven across SE Wales could be affected. The effect on road vehicle miles driven across SE Wales would vary from place to place	There could be a small reduction in the use of private vehicles across SE Wales, as people fully the details in the established travel plans, potentially producing a small reduction in emissions of CO ₂ arising from the transport network	2	✓ / 0	Medium	Low
		Air quality could be improved through a reduction in car use should travel plans be successfully implemented and followed across SE Wales	1	✓ / 0	Medium	Low
		Noise arising from the transport network	3	✓ / 0	Medium	Low

		might decline to some extent should sufficient people alter their travel behaviours due to the introduction of green travel plans				
		Incidences of land and water related contamination arising from road network could be reduced should people be persuaded to make fewer unnecessary trips by private vehicles across SE Wales due to the introduction of travel plans	11, 12	✓ / 0	Medium	Low
SCA5: Sewta will promote regional travel planning best practice advice and guidance	Road vehicle miles driven across SE Wales	There could be a small reduction in the use of private vehicles across SE Wales, reducing the total quantum of CO ₂ emissions emitted.	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use although benefits are likely to be location dependent	1	✓ / 0	Medium	Low
		Noise impacts arising from transport network might be reduced due to reduced road congestion although all benefits are likely to be location dependent	3	✓ / 0	Medium	Low
RAPI: Sewta supports improvements and further extensions to the regional rail system	Road vehicle miles driven across SE Wales would be reduced should the capacity improvements across the rail system encourage greater use of rail travel	Emissions of CO ₂ could be reduced should a sufficient number of people substitute away from car use to rail use	2	✓	Medium	Low
		Local air quality across SE Wales could improve should a sufficient number of people substitute away from car use to rail use, although benefits would be location dependent (i.e. routes for which rail could substitute for road)	1	✓	Medium	Medium
		Noise impacts arising from the transport network could decrease across particular locations in SE Wales, should a sufficient number of people substitute away from car use to rail use. It is likely that all benefits would arise across locations where rail is a realistic substitute for car use	3	✓ / 0	Medium	Medium
		Land and water related contamination arising from the road network might decrease should a sufficient number of people substitute away from car use to rail use. All benefits would be location dependent	11, 12	✓ / 0	Medium	Low

	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society due to the enhancements made to the capacity and accessibility of public transport across SE Wales	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations should rail services be accessible from such locations	6, 9	✓	Medium	Medium
	With the increased use of the rail system relative to roads, green open spaces across SE Wales might benefit from reduced pollution from the transport network	Biodiversity and wildlife habitats could be better protected as there could be less incidence of pollution (noise and air quality pollutants), and more intensive use of rail infrastructure would obviate need to construct new roads which would adversely affect open spaces	4, 5	✓	Low	Low
RAP2: Sewta supports capacity improvements to facilitate increase movement of freight by rail	Road vehicle miles driven across SE Wales	There could be a small reduction in the use of private vehicles across SE Wales, reducing the total quantum of CO ₂ emissions emitted	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use although benefits would be location dependent (i.e. routes for which rail could substitute for road) and new rail lines would generate additional emissions of air quality pollutants in areas where before there were no emissions of local air pollutants	1	✓/✗	Medium	Medium
		Noise impacts arising from transport network might be reduced should a sufficient number of people substitute away from car use to rail use; although benefits would be location dependent (i.e. on routes for which rail could substitute for road). Construction of new rail lines would generate new sources of noise in areas surrounding new rail corridors	3	✓/✗	Medium	Medium
		Incidents of land and water related contamination arising from the road network might be reduced should a sufficient number of people substitute away from using cars to using rail, although there may be a subsequent increase in land and water contamination arising from the rail network, although impacts would be location dependent	11, 12	✓/0	Medium	Low
		Accessibility to public services and community facilities could be improved for the more	Access to healthcare and public services could be enhanced for vulnerable people	6, 7, 9	✓/0	Medium

	vulnerable and isolated members of society	residing in more rural locations, although any benefits would be reserved for those locations benefiting from the enhanced rail services which are made available				
	With the increased use of the rail system relative to roads, green open spaces across SE Wales might benefit from reduced pollution from the transport network although new lines and stations could influence extent of habitats	Biodiversity and wildlife habitats could be better protected as there could be less incidence of pollution (noise, air quality pollutants), and more intensive use of rail infrastructure would obviate need to construct new roads which would affect open spaces. However, the development of new lines and stations could impact upon existing habitats. All impacts would be location dependent	4, 5	✓ / ✗	Medium	Medium
	Lighting provision and design across the SE Wales transport network	Extent of light pollution, which might worsen in areas affected by new rail track openings unless new lighting is designed to mitigate such pollution	17	✗ / 0	Low	Low
	The enhancement of the rail network and development of new rail stations and lines could impact upon existing sites of heritage and landscape value	New rail transport infrastructure could impact upon local heritage and landscapes of value and could possibly be at risk of flooding although all impacts would be location dependent	15, 16	✗ / 0	Low	Low
RAAI: Sewta will develop plans to improve the regional rail system, including plans for train / platform lengthening, line speed increases, frequency improvements, rolling stock improvements, station upgrades, capacity enhancements and to make services more accessible	Road vehicle miles driven across SE Wales	There could be a small reduction in the use of private vehicles across SE Wales as people are encouraged to substitute to using rail, potentially reducing the total quantum of CO ₂ emissions emitted although benefits would be small as greater rail use will also generate CO ₂ emissions	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use as more people substitute to using rail, although benefits would be location dependent (i.e. routes for which rail could substitute for road)	1	✓ / 0	Medium	Medium
		Noise impacts arising from transport network might decrease over particular routes (i.e. on routes for which rail could substitute for road) should a sufficient number of people substitute away from car use to rail use	3	✓ / 0	Medium	Medium
		Incidents of land and water contamination arising from the road network might	11, 12	✓ / 0	Medium	Low

		decrease should a sufficient number of people substitute away from car use to rail use, although benefits would be location dependent, as only certain routes would benefit from enhanced rail services				
	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations	6, 9	✓	Medium	Medium
	With the increased use of the rail system relative to roads, green open spaces across SE Wales might benefit from reduced pollution from the transport network	Biodiversity and wildlife habitats could be better protected as there could be less incidence of pollution (noise and emissions of local air quality pollutants), and more intensive use of rail infrastructure would obviate the need to construct new roads which would affect open spaces.	4, 5	✓ / 0	Medium	Low
	The enhanced use of the rail network could impact upon existing sites of heritage and landscape value	Should sufficient number of people be encouraged to increase their use of rail in favour of the private car across SE Wales, then the level of environmental impact arising from the transport network on areas of local heritage and landscape value would be reduced. All benefits however are likely to be location dependent	15, 16	✓ / 0	Low	Low
RAA2: Sewta will develop plans to extend the rail system through line and station re-openings	Road vehicle miles driven across SE Wales	There could be a small reduction in the quantity of freight carried across roads in SE Wales in favour of rail, potentially reducing the quantity of CO ₂ emissions emitted from the transport network	2	✓	High	Low
		Air quality could be improved through a reduction in lorries carrying freight on roads although the switch to the rail system would still generate some emissions of local air quality pollutants, there would be an overall net decrease, although impacts would be location dependent	1	✓ / ✗	Medium	Low
		Noise impacts arising from transport network might be reduced due to reduced road congestion, although the increased use of rail to carry freight could simply translocate the noise impact to another location	3	✓ / ✗	Medium	Low
		It is unlikely that increased use of rail	11, 12	✓ / 0	Medium	Low

		system for the carrying of freight would significantly lead to an increase in land and water related contamination. However all benefits which might arise from any reduction in land and water related contamination which arises from a reduction in the volume of road based freight traffic would be location dependent				
	With the increased use of the rail system relative to roads, green open spaces across SE Wales might benefit from reduced pollution from the transport network	Biodiversity and wildlife habitats could be better protected as there could be less incidence of pollution (noise and emissions of local air quality pollutants), and more intensive use of rail infrastructure to transport freight would obviate the need to construct new roads which could adversely affect open spaces	4	✓ / 0	Medium	Low
	The enhanced use of the rail network to carry freight could impact upon existing sites of heritage and landscape value	Increased use of the rail network to transport freight across SE Wales is expected to reduce the environmental impact arising from the transport of freight by road on areas of local heritage and landscape value across SE Wales	15, 16	✓ / 0	Medium	Low
BUPI: Sewta supports further improvements to the regional bus network	Road vehicle miles driven across SE Wales	Emissions of CO ₂ could be reduced should a sufficient number of people substitute away from car use to bus use	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use should sufficient people substitute to bus use. However, all benefits would be location dependent as people can only substitute to bus use in areas where bus services are available. Other areas may suffer from an increase in car use	1	✓ / ✗	Medium	Low
		Noise impacts arising from the transport network might be reduced across certain locations in SE Wales where people substitute away from car use to bus use, but it might increase in other areas where bus services are not as widely available	3	✓ / ✗	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease overall through the increased use of buses relative to cars. However, all benefits	11, 12	✓ / 0	Medium	Low

		would be location dependent				
	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations should the bus network be significantly enhanced, although benefits would only arise in those areas well served by a bus service	6, 7, 9	✓ / 0	Medium	Medium
	With the increased use of the bus system relative to roads, green open spaces across SE Wales might benefit from reduced pollution from the transport network	Biodiversity and wildlife habitats could be better protected as there could be less incidence of pollution (noise, and emissions of local air quality pollutants), due to a reduction in the use of cars hence road congestion could be reduced	4, 5	✓	Medium	Low
	The enhanced use of the buses relative to private vehicles could reduce the impact upon the existing sites of heritage and landscape value	The increased use of buses across SE Wales is expected to reduce the use of private cars and assist with reducing road congestion and hence emissions of pollutants associated with heavy car use, possibly reducing the environmental impacts on areas of local heritage and landscape value. Benefits are likely to be location dependent on where bus services are introduced	15, 16	✓ / 0	Medium	Low
BUP2: Sewta supports the introduction of a more efficient and effective bus regulatory system	Road vehicle miles driven across SE Wales	CO ₂ emissions arising from the transport network could be reduced should a sufficient number of people substitute away from car use to bus use, although any outcome is uncertain	2	✓	Medium	Low
		Air quality across SE Wales could be improved in particular locations should a sufficient number of people substitute away from car use to bus use	1	✓ / 0	Medium	Low
		Noise impacts arising from transport network might be reduced should sufficient numbers of people substitute away from car use to bus use, although any outcome is uncertain, and would be location dependent	3	✓ / 0	Medium	Low
	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations where bus services are provided	6, 7, 9	✓	Medium	Low

BUP3: Sewta supports regional quality standards for all bus services and the associated infrastructure	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations should the common standards in public transport encourage a greater demand for its use	6, 7, 9	✓	Low	Low
BUA1: Sewta will develop measures that aim to reduce bus journey times and their variability, including the reallocation of road space, bus lanes, junction priority measures and civil parking enforcement	Road vehicle miles driven across SE Wales	Emissions of CO ₂ could be reduced should a sufficient number of people substitute away from car use to bus use	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use should sufficient people substitute to bus use. However, all benefits would be location dependent as people can only substitute to bus use in areas where bus services are available. Other areas may suffer from an increase in car use	1	✓ / ✗	Medium	Low
		Noise impacts arising from the transport network might be reduced across certain locations in SE Wales where people substitute away from car use to bus use, but it might increase in other areas where bus services are not as widely available	3	✓ / ✗	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease overall through the increased use of buses relative to cars. However, all benefits would be location dependent	11, 12	✓ / 0	Medium	Low
	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations should the bus network be significantly enhanced, although benefits would only arise in those areas well served by a bus service	6, 7, 9	✓ / 0	Medium	Medium
	With the increased use of the bus system relative to roads, green open spaces across SE Wales might benefit from reduced pollution from the transport network	Biodiversity and wildlife habitats could be better protected as there could be less incidence of pollution (noise, and emissions of local air quality pollutants), due to a reduction in the use of cars hence road congestion could be reduced	4, 5	✓	Medium	Low
	The enhanced use of the buses relative to private vehicles could reduce the impact upon the existing sites of heritage and landscape value	The increased use of buses across SE Wales is expected to reduce the use of private cars and assist with reducing road congestion and hence emissions of	15, 16	✓ / 0	Medium	Low

		pollutants associated with heavy car use, possibly reducing the environmental impacts on areas of local heritage and landscape value. Benefits are likely to be location dependent on where bus services are introduced				
BUA2: Sewta will work with operators to improve the reliability, frequency and timetabling between services, and the quality of vehicles including proposals to reduce vehicle emissions.	Road vehicle miles driven across SE Wales	Emissions of CO ₂ could be reduced should a sufficient number of people substitute away from car use to bus use	2	✓	Medium	Low
		Air quality could be improved through a reduction in car use should sufficient people substitute to bus use. However, all benefits would be location dependent as people can only substitute to bus use in areas where bus services are available. Other areas may suffer from an increase in car use	1	✓/x	Medium	Low
		Noise impacts arising from the transport network might be reduced across certain locations in SE Wales where people substitute away from car use to bus use, but it might increase in other areas where bus services are not as widely available	3	✓/x	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease overall through the increased use of buses relative to cars. However, all benefits would be location dependent	11, 12	✓/0	Medium	Low
	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations should the bus network be significantly enhanced, although benefits would only arise in those areas well served by a bus service	6, 7, 9	✓/0	Medium	Medium
	With the increased use of the bus system relative to roads, green open spaces across SE Wales might benefit from reduced pollution from the transport network	Biodiversity and wildlife habitats could be better protected as there could be less incidence of pollution (noise, and emissions of local air quality pollutants), due to a reduction in the use of cars hence road congestion could be reduced	4, 5	✓	Medium	Low
	The enhanced use of the buses relative to private vehicles could reduce the impact upon the existing sites of heritage and landscape value	The increased use of buses across SE Wales is expected to reduce the use of private cars and assist with reducing road	15, 16	✓/0	Medium	Low

		congestion and hence emissions of pollutants associated with heavy car use, possibly reducing the environmental impacts on areas of local heritage and landscape value. Benefits are likely to be location dependent on where bus services are introduced				
BUA3: Sewta will develop measures to improve accessibility to services, vehicles and infrastructure, and to enhance the safety and security of users.	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society given wider availability of concessionary passes	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations and in town centres with the greater availability of concessionary passes	6, 7, 9	✓	Medium	Medium
BUA4: Sewta will develop regional standards to ensure concessionary passes are issued in a fair, timely, and efficient manner, including a consistent approach to eligibility assessment and the retention of a common approach to operator reimbursement.	The level of security and safety measures applied across the transport network	Security across the public transport network should be sufficiently enhanced given the proposed measures and technologies which are to be implemented	10	✓✓	High	High
FTP1: Sewta supports flexible transport services, including Demand Responsive Transport and Voluntary and Community Transport services that complement and enhance the mainstream transport system	Road vehicle miles driven across SE Wales	There could be a small reduction in the use of private vehicles across SE Wales, reducing the total quantum of CO ₂ emissions emitted although the use of DRT or CT services could generate new trips which might not have otherwise have been undertaken. The overall net effect is likely to be beneficial in terms of a slight reduction in CO ₂ emissions	2	0	Medium	Low
		Air quality could be improved through a reduction in car use brought about the use of DRT and CT services, although such services may generate new trips which might not have otherwise have been undertaken. The overall net effect is likely to be neutral or very slightly beneficial, as very few emissions of local air quality pollutants are likely to be saved	1	0	Medium	Low
		Noise impacts arising from transport network could be reduced from a reduction in road transport brought about	3	0	Medium	Low

		by the use of DRT and CT services, although such services may generate new trips which might not have otherwise have been undertaken. It is likely therefore that there will be no net benefit arising due to this policy initiative				
	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	The use of DRT and CT services would significantly benefit elderly members of society with accessibility problems	6, 7, 9	✓✓✓	High	High
FTA1: Sewta will develop flexible transport initiatives that complement and add to the mainstream transport system through an enhancement programme	Road vehicle miles driven across SE Wales	There could be a small reduction in the use of private vehicles across SE Wales, reducing the total quantum of CO ₂ emissions emitted although the use of DRT or CT services could generate new trips which might not have otherwise have been undertaken. The overall net effect is likely to be beneficial in terms of a slight reduction in CO ₂ emissions	2	0	Medium	Low
		Air quality could be improved through a reduction in car use brought about the use of DRT and CT services, although such services may generate new trips which might not have otherwise have been undertaken. The overall net effect is likely to be neutral or very slightly beneficial, as very few emissions of local air quality pollutants are likely to be saved	1	0	Medium	Low
		Noise impacts arising from transport network could be reduced from a reduction in road transport brought about by the use of DRT and CT services, although such services may generate new trips which might not have otherwise have been undertaken. It is likely therefore that there will be no net benefit arising due to this policy initiative	3	0	Medium	Low
		Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	6, 7, 9	✓✓✓	High	High
IIP1: Sewta supports further improvements and expansion of public transport interchanges and Park & Ride facilities	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations should modal interchanges be significantly enhanced	6, 7, 9	✓✓	Medium	Medium

IIP2: Sewta supports a single integrated ticketing system for the regional public transport network.	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations and in town centres with the greater flexibility in ticket use. There could also be encouragement for people to use public transport instead of cars	7	✓✓	Medium	High
IIP3: Sewta supports consistent high quality standards for public transport information provision across the region	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Enhancing the signage and quality of modal interchange facilities would increase the ease in which people can use public transport and hence boost accessibility to community facilities	6, 7, 9	✓	Medium	Low
IIA1: Sewta will develop plans for public transport interchanges at the 14 key settlements and other appropriate locations.	Road vehicle miles driven across SE Wales	There could be a small reduction in the use of private vehicles across SE Wales, reducing the total quantum of CO ₂ emissions emitted should people utilise park and ride facilities to access town centres in favour of car use	2	✓	Medium	Low
		Emissions of local air quality pollutants could reduce to some extent across SE Wales should a sufficient number of people be persuaded to use public transport in favour of cars due to the development of enhanced park and ride facilities. However, benefits are likely to be location dependent, dependent on where the park and ride facilities are located	1	✓ / ✗	Medium	Low
		Noise impacts arising from transport network might be reduced in those locations where people substitute away from car use to using public transport via park and ride services. However the extent of substitution will be constrained to those locations where such facilities or services are supplied, so some areas, due to the forecast growth in car use, could suffer from increased noise	3	✓ / ✗	Medium	Low
		Land and water related contamination arising from road network might decrease should people substitute away from car use to park and ride services	11, 12	✓	Medium	Low

	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	The greater use of park and ride facilities, coupled with other improvements to public transport across SE Wales would significantly enhance the accessibility to community services	6, 7, 9	✓✓	Medium	High
	The use of a park and ride service could reduce car use and could reduce the impact upon the existing sites of heritage and landscape value	The use of park and ride services across SE Wales would reduce the use of private cars and assist with reducing road congestion and pollutants associated with heavy car use, roads possibly reducing impacts on areas of local heritage and landscape value although benefits would be location dependent	15, 16	✓/0	Medium	Low
IIA2: Sewta will develop consistent high quality criteria for interchange facilities to enable consistency across the region e.g. for signage, information and waiting facilities.	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Enhancing the signage and quality of modal interchange facilities would increase the ease in which people can use public transport and hence boost accessibility to community facilities	6, 7, 9	✓	Medium	Low
IIA3: Sewta will develop plans for Park & Ride and Park & Share facilities across the region.	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations should modal interchanges be significantly enhanced	6, 7, 9	✓✓	Medium	Medium
IIA4: Sewta will develop plans for integrated ticketing across the region, including consideration for smart-card based schemes, for cash-less ticketing and for off-vehicle purchase.	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations and in town centres with the greater flexibility in ticket use. There could also be encouragement for people to use public transport instead of cars	7	✓✓	Medium	High
IIA5: Sewta will develop a public transport information programme	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Access to healthcare and public services could be enhanced for vulnerable people residing in more rural locations and in town centres with the greater flexibility in ticket use. There could also be encouragement for people to use public transport instead of cars	7	✓✓	Medium	High
HIP1: Sewta supports the management and maintenance of the regional road network to a uniform high standard.	Flood mitigation measures applied to protect the transport network across SE Wales	Flooding could be mitigated across parts of the transport network should sufficient flood protection measures be developed, although this outcome is uncertain and is dependent on the work of the Environment	13	✓	Low	Medium

		Agency				
HIP2: Sewta supports control of access to the regional roads network in the interests of highway safety and capacity.	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Transport related community severance could be reduced, and accessibility to community facilities in town centres should be significantly enhanced	7	✓	Medium	Low
HIP3: Sewta supports selective improvements to the regional highway system through make-better-use proposals.	Accessibility to public services and community facilities via the road network	Transport related community severance could be reduced, and accessibility to community facilities in town centres should be significantly enhanced should access to the strategic road network be managed in such a way as to enable easier access for vulnerable members of society to access local places	7	✓/0	Low	Low
HIP4: Sewta supports selective improvements to the national highway system where they are to the overall benefit to RTP objectives.	Road vehicle miles driven across SE Wales	Managing the transport network to support strategic developments through the land use planning system could encourage a reduction in the use of private vehicles in favour of public transport or walking and cycling. This could reduce the future emissions of CO ₂ , although any outcome is uncertain	2	✓	Low	Low
		Air quality could be improved should new developments be strategically located in areas highly accessible by public transport, although any benefit is likely to be limited, location dependent, and highly uncertain	1	✓/x	Low	Low
		Noise impacts arising from transport network might be reduced in areas surrounding new strategic developments should they be located in areas highly accessible by public transport. However, benefits would be location dependent, and with the general trend of increasing road traffic across SE Wales, noise impacts could worsen elsewhere	3	✓/x	Low	Low
		Land and water related contamination arising from the road network might be reduced in areas surrounding strategic developments should they be developed in areas of high accessibility by public transport encouraging people to substitute away from car use	11, 12	✓	Low	Low
		Accessibility to public services and community facilities could be improved for the more	It is possible that the strategic development of community facilities be	6, 7, 8, 9	✓✓	Medium

	vulnerable and isolated members of society	undertaken in locations suitable to be accessed by public transport, close to park and ride facilities, or intermodal interchange locations, which would significantly enhance accessibility to these facilities, enabling greater social and economic objectives to be achieved				
	The location of strategic developments in relation to wildlife habitats, and the proximity of the transport network to these habitats	Biodiversity and wildlife habitats could be better protected if strategic developments complement the existing transport network and thus reduce the need to travel by car or cause any significant loss of sites of biodiversity value across SE Wales	4, 5	✓	Medium	Low
	Lighting provision and design across the SE Wales transport network	The location of new strategic developments could influence the growth of lighting fixtures across SE Wales. It will be necessary for such lighting to be appropriately designed so as to minimise light pollution	17	0	High	Low
	Sites of heritage and landscape value may be affected by the inappropriate locating of new strategic developments	Sites of heritage and landscape value across SE Wales could be protected by locating strategic developments in locations which allow easy access by the transport network which minimises the impacts (such as noise and emissions of local air pollutants) to sites endowed with cultural heritage and landscapes of value	13, 15, 16	✓ / 0	Low	Low
	Relative price and availability of primary, secondary, and recycled aggregates	Allowing secondary and recycled aggregates to be utilised to a greater extent as building materials in new strategic developments will assist with conserving virgin materials across Wales. However, this outcome will be dependent on the policies adopted by local authorities, and how contracts between road maintenance contractors and government are specified	14	✓	Low	Low
HIP5: Sewta supports measures to ensure that the transport system is more resilient and less susceptible to the influences of climate change.	Flood mitigation measures applied to protect the transport network across SE Wales	By designing and maintaining the transport system so that it is less susceptible to the influences of climate change will enable flood protection measures to be employed across the transport network. This would mitigate the potential significant future risks flooding poses to the economy of SE Wales	13	✓✓✓	High	High

HIA1: Sewta will work with highway authorities to ensure highways are maintained and improved with minimum impact on the built, natural, and historic environment.	Road surface run off of pollutants through improved design of road network	Land and water related contamination arising from the road network might be reduced due to the improved enhancements to the road network design, particularly with regards to drainage	11, 12	✓✓	Medium	Medium
	Location of green open spaces across SE Wales relative to the transport network	By maintaining the road network across SE Wales to a high standard, green open spaces should be retained and maintained to a high standard enabling existing wildlife habitats to be maintained, particularly road verges	5	✓	Medium	Low
	Proximity of waterways to key transport corridors	The road network should be maintained to ensure that the extent of flood protection is cost effective and suitable to mitigate all but the rarest of floods. In addition, future flood protection of the road network should be sufficient to mitigate the risk climate change poses	13	✓	Medium	Medium
	Proximity of new and existing transport infrastructure to sites of cultural value or sites of landscape or townscape value across SE Wales	The maintenance regime of the road network is unlikely to cause any impact on the sites of cultural value or sites with landscape or townscape value beyond temporary impacts during the undertaking of the physical maintenance of the road	15, 16	0	Low	Low
	Relative price and availability of primary, secondary, and recycled aggregates	The use of recycled and secondary aggregates in new transport network related construction projects will assist with conserving the existing supplies of primary aggregates across Wales, should government specify the required use of such resources in contracts with road maintenance contractors	14	✓	Low	Low
HIA2: Sewta will work with highway maintenance authorities to implement the highway asset management plan as required by the Traffic Management Act to a uniform high standard.	Flood mitigation measures applied to protect the transport network across SE Wales	Employing standardised measures in the maintenance of the transport network will reduce the risk of flooding at appropriate locations, better protecting against environmental threats to the operation of the economy of SE Wales	13	✓	Low	Low
HIA3: Sewta will develop a model traffic order, together with examples.	The security and safety of the transport network across SE Wales	By producing a model road traffic order, the production of traffic orders will be made easier, which could enable the easier imposition of road safety measures across the transport network in SE Wales, such as	10	✓	Low	Medium

		new speed limits, or reallocated road space				
HIA4: Sewta will develop a make-better-use programme to improve journey time reliability, reduce congestion, keep traffic moving, reduce the negative impact of traffic on people and the environment, and support public transport proposals.	Road surface run off of pollutants through improved design of road network	Land and water related contamination arising from the road network might be reduced due to the improved enhancements to the road network design, particularly with regards to drainage	11, 12	✓✓	Medium	Medium
	Location of green open spaces across SE Wales relative to the transport network	By maintaining the road network across SE Wales to a high standard, green open spaces should be retained and maintained to a high standard enabling existing wildlife habitats to be maintained, particularly road verges	5	✓	Medium	Low
	Proximity of waterways to key transport corridors	The road network should be maintained to ensure that the extent of flood protection is cost effective and suitable to mitigate all but the rarest of floods. In addition, future flood protection of the road network should be sufficient to mitigate the risk climate change poses	13	✓	Medium	Medium
	Proximity of new and existing transport infrastructure to sites of cultural value or sites of landscape or townscape value across SE Wales	The maintenance regime of the road network is unlikely to cause any impact on the sites of cultural value or sites with landscape or townscape value beyond temporary impacts during the undertaking of the physical maintenance of the road	15, 16	0	Low	Low
	Relative price and availability of primary, secondary, and recycled aggregates	The use of recycled and secondary aggregates in new transport network related construction projects will assist with conserving the existing supplies of primary aggregates across Wales, should government specify the required use of such resources in contracts with road maintenance contractors	14	✓	Low	Low
DMP1: Sewta supports demand management schemes such as road user charging or workplace parking levies, to reduce the demand for travel by car and to avoid increases in traffic that might otherwise occur.	The demand for the use of private vehicles on the road network across SE Wales, is expected to be influenced by the introduction of road user charging across parts of the road network in SE Wales	The introduction of road user charging should, if set at an appropriate level, encourage the marginal car journey not to be undertaken and hence significantly reduce CO ₂ emissions arising from the road network across SE Wales	2	✓✓✓	Medium	High
		The road user charge is expected to reduce road traffic volume and hence reduce sources of local air quality pollutants across SE Wales. Thus there could be an improvement in air quality across SE	1	✓✓/0	Medium	High

		Wales relative to present baseline trends				
		The road user charge is likely to reduce car use across SE Wales and therefore assist to some extent with reducing the incidence of noise in areas surrounding those roads subject to the user charge	3	✓✓ / 0	Medium	High
		Land and water related contamination arising from the road network might reduce should road traffic volumes decrease overall on those roads subject to the road user charge. The extent of land and water related contamination arising from roads not subject to the charge is likely to remain or increase from its current level, as people alter their journeys to avoid roads subject to the charge	11, 12	✓✓ / *	Medium	High
	Location of green open spaces across SE Wales relative to the transport network	The introduction of the road user charge should reduce the number of road journeys made on roads on the road network subject to the charge. This would reduce the level of pollution affecting those wildlife sites in areas surrounding such roads. However, people could alter the travel routes they take to access particular locations to avoid the charge, and hence road congestion could increase across particular parts of SE Wales, increasing noise and emissions of local air pollutants in such areas to the detriment of local biodiversity and habitats	4, 5	✓ / *	Medium	Low
RSP1: Sewta supports measures to reduce the number and severity of road traffic collisions and to improve road safety levels.	The level of security and safety measures applied across the transport network	Implementing measures to reduce road traffic accidents would significantly assist in improving the general level of safety across the road network	10	✓✓	High	High
RSA1: Sewta will develop a road safety strategic framework to enhance performance and achieve a greater consistency in delivery of road safety measures across the region.	The level of security and safety measures applied across the transport network	Implementing measures to reduce road traffic accidents would significantly assist in improving the general level of safety across the road network	10	✓✓	High	High
RSA2: Sewta will develop a road safety improvement programme for the region (if	The level of security and safety measures applied across the transport network	Implementing measures to reduce road traffic accidents would significantly assist in improving the general level of safety	10	✓✓	High	High

Road Safety Grant funding is devolved to Sewta).		across the road network				
RSA3: Sewta will develop a Safe Routes in Communities programme for the region (if Safe Routes in Communities funding is devolved to Sewta).	The level of security and safety measures applied across the transport network	Implementing measures to reduce road traffic accidents would significantly assist in improving the general level of safety across the road network	10	✓✓	High	High
CPP1: Sewta supports a consistent approach to car parking standards across the region.	Accessibility to public services and community facilities could be improved with certainty of some car park provision with new developments	Such plans would be beneficial for all members of society, as it would enable flexibility in transport use, and boost public transport use should car parking be integrated into public transport interchange systems.	6, 7, 9	✓✓	Medium	Medium
CPP2: Sewta supports the development of a regional car parking strategic framework and local car parking policies by member councils.	Accessibility to public services and community facilities could be improved with certainty of some car park provision with new developments	Such plans would be beneficial for all members of society, as it would enable flexibility in transport use, and boost public transport use should car parking be integrated into public transport interchange systems.	6, 7, 9	✓✓	Medium	Medium
CPA1: Sewta will develop a regional car parking strategic framework.	Accessibility to public services and community facilities could be improved with certainty of some car park provision with new developments	Such plans would be beneficial for all members of society, as it would enable flexibility in transport use, and boost public transport use should car parking be integrated into public transport interchange systems.	6, 7, 9	✓✓	Medium	Medium
AEP1: Sewta will take account of the needs of people or groups that experience difficulties more than most when using the transport system when developing plans, programmes, or projects.	Accessibility to public services and community facilities could be improved for the more vulnerable and isolated members of society	Such plans could significantly benefit elderly or other members of society with accessibility problems	6, 7, 9	✓✓✓	High	High
AEA1: Sewta will develop an Equality Impact Assessment of the RTP.	n/a	n/a	n/a	n/a	n/a	n/a
ECPI1: Sewta supports improved links between South East Wales and other parts of Wales and the UK, in particular by rail, coach and sea.	Reduced road congestion: arising from people increasingly substituting away from using private vehicles to making more use of public transport	There could be a small reduction in the use of private vehicles to access SE Wales, reducing the total quantum of CO ₂ emissions emitted	2	✓	Low	Low
		Air quality could be improved in those corridors connecting SE Wales and the wider areas, through a reduction in car use should people substitute to making greater use of public transport, although other	1	✓/x	Medium	Low

		areas may not benefit				
		Noise impacts arising from transport network might be reduced due to reduced road congestion as more people substitute away from car use to public transport use. Such benefits might only arise however in those transport corridors linking the key settlements and their hinterlands	3	✓/✗	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease overall	11, 12	✓	Low	Low
ECP2: Sewta supports improved sustainable access to Cardiff International Airport.	Demand for use of private vehicles on the road network across SE Wales	There could be a small reduction in the use of private vehicles to access Cardiff airport, reducing the total quantum of CO ₂ emissions emitted	2	✓	Low	Low
		Air quality could be improved in those corridors to Cardiff airport due to a reduction in car use should people substitute to making greater use of public transport, although other areas may not benefit	1	✓/✗	Medium	Low
		Noise impacts arising from transport network might be reduced due to reduced road congestion as more people substitute away from car use to public transport use. Such benefits might only arise however in those transport corridors linking the key settlements and their hinterlands	3	✓/✗	Medium	Low
		Land and water related contamination arising from road network might reduce should road traffic volume decrease overall	11, 12	✓	Low	Low
FRP1: Sewta supports measures to improve the sustainability, efficiency and effectiveness of the transport of freight, including the transfer to rail and water where practical.	Demand for use of private vehicles on the road network across SE Wales	Should rail freight be expanded, then road congestion could be dramatically reduced with the removal of lorries from the road network. This would assist with reducing CO ₂ emissions across SE Wales	2	✓✓	High	High
		Removing freight from roads and transporting it by rail would significantly reduce local air quality pollutants emitted across the road network in SE Wales, although impacts would be location dependent	1	✓✓/0	High	High

		The noise generated by the road network across SE Wales could be reduced should freight be moved by rail instead of road, although benefits would be location dependent	3	✓✓/0	High	High
		Land and water based contamination arising from the road network should be reduced should freight be moved by rail instead of road across SE Wales, although benefits would be location dependent, based on those routes where road based freight is no longer transported	11, 12	✓✓/0	High	High
FRP2: Sewta supports improve access to key destinations such as major industrial sites, seaports, airports, rail hubs and freight interchanges, in particular, by rail and water.	Proximity of waterways to key transport corridors across SE Wales	Improving access to seaports is likely to increase the level of water contamination arising from the transport network unless suitable mitigation measures are implemented alongside the enhanced access routes to the seaports. All impacts would be location dependent	12	✗/0	Low	Low
FRP3: Sewta supports provision of secure freight interchange sites and lorry parking sites, including overnight lorry parking.	Location of green open spaces across SE Wales relative to the transport network	Locating lorry parks next to sensitive wildlife habitats or sites known for their biodiversity value could have a negative impact. Any impacts would be location dependent and at this stage any assessment of an impact is highly uncertain	4, 5	✗/0	Low	Low
	Proximity of waterways to key transport corridors across SE Wales	Water related contamination arising from the road network might increase due to the increase in the rate of movement of lorries across SE Wales to the parking sites, although all impacts would be location dependent	12	✗/0	Low	Low
	Lighting provision and design across the SE Wales transport network	Light pollution may increase in areas in the vicinity of new lorry parks unless the new lighting fixtures are designed in such a way as to mitigate any would be impact	17	✗/0	Low	Low
FRP4: Sewta supports signing of the regional road network to assist effective and sustainable movement of freight across the region.	Access to community facilities	Accessibility may be enhanced across the SE Wales area with an increase in the connectivity of the transport network due to a general decline in road congestion, through the more efficient movement of road based freight	7	✓	Medium	Low
FRA1: Sewta will develop plans to support the freight	n/a	n/a	n/a	n/a	n/a	n/a

policies within the Wales Freight Strategy and the RTP.						
TOP1: Sewta supports measures to improve access to tourism and leisure sites in South East Wales, especially by walking, cycling, and public transport.	Demand for use of private vehicles on the road network across SE Wales	Managing the transport network to support tourist developments through the land use planning system could encourage a reduction in the use of private vehicles in favour of public transport or walking and cycling. This could reduce the future emissions of CO ₂ , although any outcome is uncertain	2	✓	Low	Low
		Air quality could be improved should new tourist attractions be strategically located in areas highly accessible by public transport, although any benefit is likely to be limited, location dependent, and highly uncertain	1	✓/✗	Low	Low
		Noise impacts arising from transport network might be reduced in areas surrounding new tourism developments should they be located in areas highly accessible by public transport. However, benefits would be location dependent, and with the general trend of increasing road traffic across SE Wales, noise impacts could worsen elsewhere	3	✓/✗	Low	Low
		Land and water related contamination arising from the road network might be reduced in areas surrounding tourism developments should they be developed in areas of high accessibility by public transport encouraging people to substitute away from car use	11, 12	✓	Low	Low
TOA1: Sewta will work with tourism and visitor organisations to encourage the development and marketing of sustainable forms of access to tourism sites, including promotion of cycling opportunities such as cycle hire facilities for tourists.	Demand for use of private vehicles on the road network across SE Wales	Managing the transport network to support tourist developments through the land use planning system could encourage a reduction in the use of private vehicles in favour of public transport or walking and cycling. This could reduce the future emissions of CO ₂ , although any outcome is uncertain	2	✓	Low	Low
		Air quality could be improved should new tourist attractions be strategically located in areas highly accessible by public transport, although any benefit is likely to	1	✓/✗	Low	Low

		be limited, location dependent, and highly uncertain				
		Noise impacts arising from transport network might be reduced in areas surrounding new tourism developments should they be located in areas highly accessible by public transport. However, benefits would be location dependent, and with the general trend of increasing road traffic across SE Wales, noise impacts could worsen elsewhere	3	✓/✗	Low	Low
		Land and water related contamination arising from the road network might be reduced in areas surrounding tourism developments should they be developed in areas of high accessibility by public transport encouraging people to substitute away from car use	11, 12	✓	Low	Low

Source: Capita Symonds