

South Gloucestershire Core Strategy

North Fringe Transport Review

Client: South Gloucestershire Council

May 2012

ATKINS

Plan Design Enable

Table of contents

Chapter	Pages
1. Introduction	3
Background	3
Purpose of this Document	3
Contents of this Document	4
2. Core Strategy Policies	5
3. Transport Issues	7
Existing Travel Demand	7
Future Travel Demand	8
Key Transport Issues	9
4. North Fringe Transport Package	13
Introduction	13
Transport Objectives	13
Development of the Transport Package	13
Elements of the Transport Package	14
5. Assessment of Impacts	20
Introduction	20
Strategic Fit	20
Future Travel Demand and Transport Network Conditions	20
6. Delivery	24
Introduction	24
Affordability of Package: Financial Case	24
Feasibility of Package: Delivery Case	25
Delivery Programme	27
7. Conclusions	28
 Tables	
Table 1. Forecast Mode Share for future travel to, from and within the North Fringe	21
Table 2. Impacts of Each Element of The North Fringe Transport Package	23

1. Introduction

Background

- 1.1. Policy CS25 (Communities of the North Fringe of the Bristol Urban Area) of the South Gloucestershire Core Strategy¹ makes provision for the development of the North Fringe² of the Bristol Urban Area.
- 1.2. CS25 provides for the development of two strategic sites. The Cribbs/Patchway New Neighbourhood (CPNN) is defined further in Policy CS26 and is planned as a mixed use development comprising 5,700 new dwellings and around 50ha of employment land, with a greater diversity of commercial uses around Cribbs Causeway. The East of Harry Stoke New Neighbourhood (EHSNN) is defined further in Policy CS27 and is planned as a mixed use development of 2,000 dwellings.
- 1.3. In addition, other development comprises: the expansion of the University of West of England (Policy CS27); the redevelopment of Southmead Hospital and Frenchay Hospital; and committed development at Charlton Hayes (Filton Northfield), Harry Stoke, East of Coldharbour Lane and Cheswick/Wallscourt Farm. The locations of future development, including the CPNN and EHSNN, are shown in Figure 1.

Figure 5 – The North Fringe of Bristol urban area
(for illustrative purposes only)

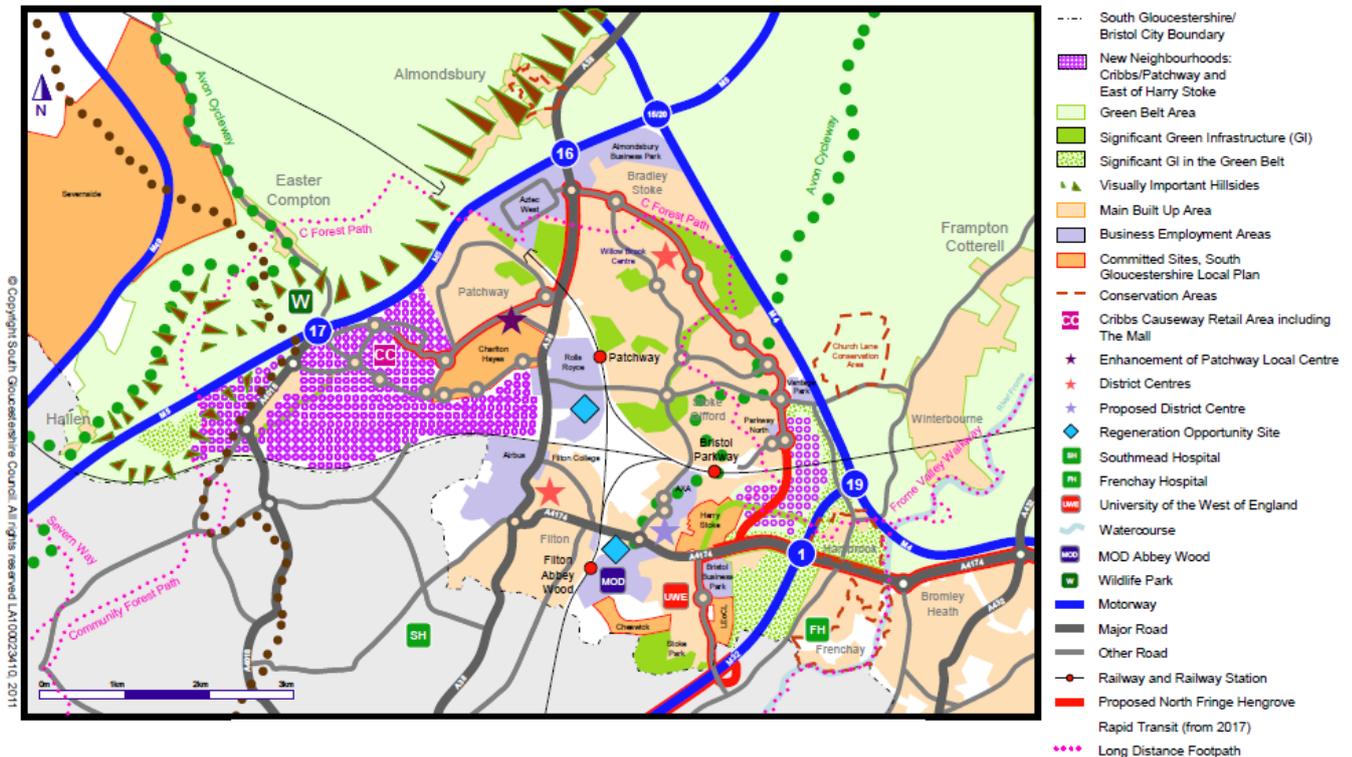


Figure 1 – Location of CPNN and EHSNN in the North Fringe of the Bristol Urban Area

Purpose of this Document

- 1.4. South Gloucestershire Council (SGC) has commissioned Atkins to undertake an independent review of the soundness of the transport case for development in the North Fringe. This document presents the conclusions. The review has considered the following:

¹ South Gloucestershire Core Strategy: December 2011. Core Strategy incorporating Post-Submission Changes.

² Defined as the Communities of Filton, Patchway, Bradley Stoke, Stoke Gifford, Harry Stoke and Frenchay

- Current and future transport problems and issues in the North Fringe area, including the additional travel demand that will be generated by the CPNN, EHSNN and other developments, and the potential impacts this could have on the transport network, comprising the transport network within the North Fringe and the local and strategic network that links the North Fringe to the rest of the West of England and the UK;
- The transport measures that would be required to mitigate the transport impacts of the proposed development on the transport network;
- Whether the Core Strategy's general and area specific policies related to transport are sufficient and appropriate to ensure delivery of the transport measures required; and
- The mechanisms by which the required transport measures can be funded and delivered.

1.5. The review has drawn upon a range of supporting evidence including the use of a computer-based multi-modal transport model – termed the Core Strategy Model³ – of the North Fringe area.

1.6. A separate document (the **Review of Strategic Transport Case**) discusses the appraisal of alternative locations for development and demonstrates the relative strengths, in transport terms, of development at the CPNN and EHSNN.

Contents of this Document

1.7. The remainder of this document sets out the evidence on the soundness of the transport case for development in the North Fringe. The document is structured as follows:

- Chapter 2 summarises the transport-related policies in the Core Strategy relevant to the North Fringe;
- Chapter 3 presents an assessment of the key transport issues associated with the delivery of the North Fringe developments;
- Chapter 4 presents evidence on the transport measures that would be required to mitigate the transport problems and issues associated with the development of the North Fringe;
- Chapter 5 presents evidence on the ability of the transport measures to mitigate the impacts of the new development in the North Fringe;
- Chapter 6 presents evidence on the affordability and deliverability of the package of transport measures; and
- Chapter 7 sets out the conclusions of the review.

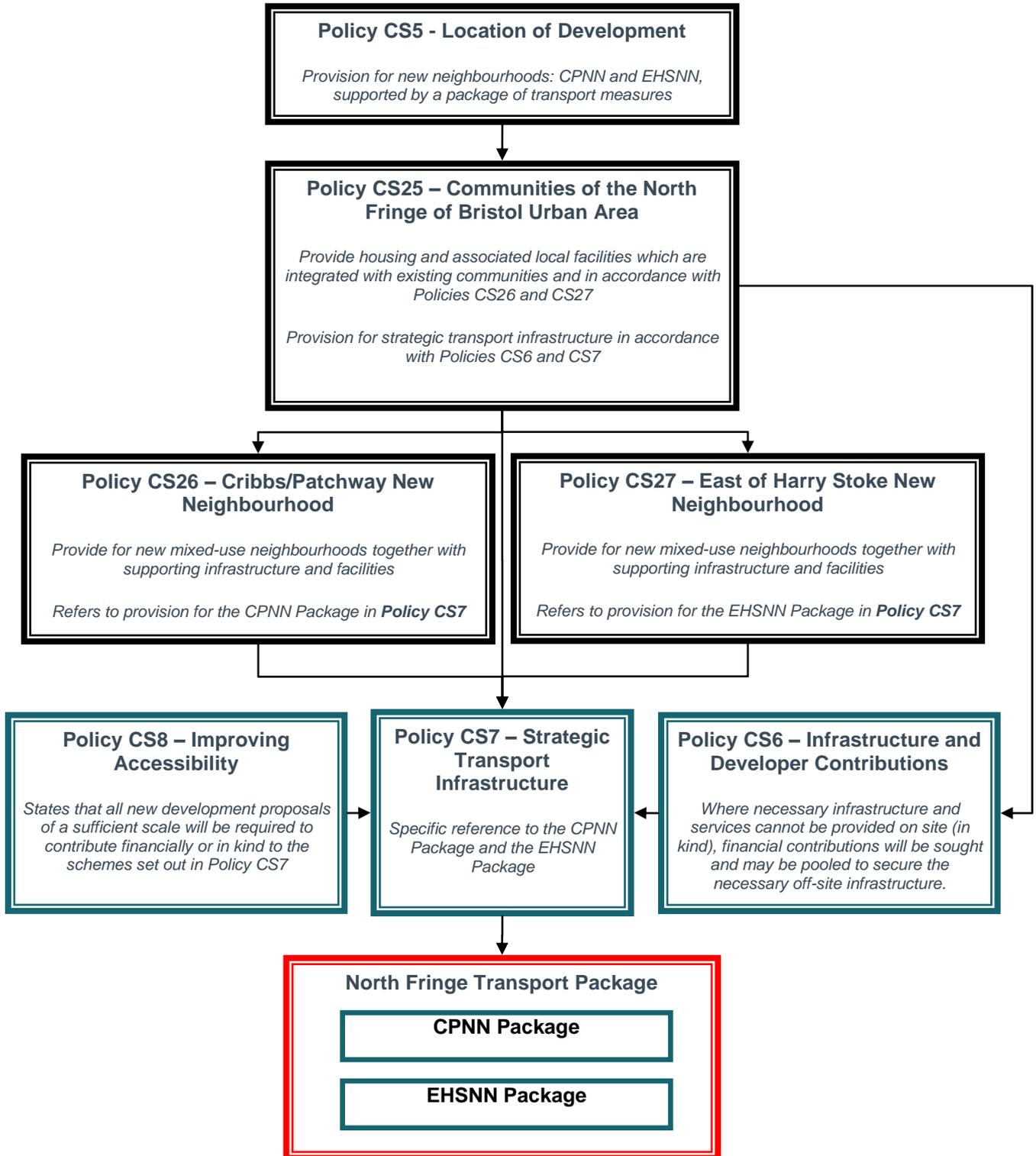
³ South Gloucestershire Core Strategy Local Model Validation Report, May 2012

2. Core Strategy Policies

- 2.1. The Core Strategy defines policies related to transport that will enable the Council's spatial strategy to be delivered and strategic objectives to be met. The Core Strategy operates alongside other plans, including the Third Joint Local Transport Plan (JLTP3) for the West of England⁴.
- 2.2. The Core Strategy sets out the following policies relevant to the North Fringe, CPNN and EHSNN:
- North Fringe (Chapter 12 of Core Strategy):
 - **Policy CS25:** Communities of the North Fringe of Bristol Urban Area (which refers to Policies **CS6** and **CS7**);
 - **Policy CS26:** Cribbs/Patchway New Neighbourhood (which refers to the Cribbs/Patchway New Neighbourhoods Package in Policy **CS7**); and
 - **Policy CS27:** East of Harry Stoke New Neighbourhood (which refers to East of Harry Stoke New Neighbourhood Package in Policy **CS7**).
 - Transport (Chapter 7 of Core Strategy):
 - Chapter 7 focuses on addressing the challenges associated with tackling congestion and improving accessibility and contains Policies **CS7** and **CS8**;
 - **Policy CS7: Strategic Transport Infrastructure** includes specific reference to major infrastructure projects in the North Fringe and transport packages for both New Neighbourhoods; and
 - **Policy CS8: Improving Accessibility** refers to accessibility, off-site mitigation, provision and promotion of sustainable travel options and parking. It states that all new development proposals of a sufficient scale will be required to contribute financially or in kind to the schemes set out in Policy CS7.
- 2.3. This Transport Review describes the detail of a series of transport measures that support the delivery of the CPNN and EHSNN. These measures form part of the CPNN Package and EHSNN Package that are summarised in Policy CS7.
- 2.4. The relationships between these policies are presented below.

⁴ West of England JLTP3 <http://travelplus.org.uk/media/205985/jltp3%20march%202011.pdf>

Figure 2 – Key Policies



3. Transport Issues

- 3.1. Transport issues have been considered in relation to the New Neighbourhood sites, connectivity to the immediate transport network, and linkages to the North Fringe and to central Bristol. In developing the evidence base, extensive use has been made of the South Gloucestershire Core Strategy Model (CSM), a highway and public transport model that estimates current and future travel demand across the Greater Bristol area, with a particular focus on the North Fringe⁵.

Existing Travel Demand

- 3.2. There are a number of major employers in the area, including:
- Ministry of Defence (at Abbey Wood);
 - Rolls Royce, Airbus, BAe Systems and GKN (Filton);
 - UWE, Axa Life and Hewlett Packard (Stoke Gifford);
 - RAC Motoring Services (Almondsbury);
 - Business parks at Aztec West and Woodlands Lane; and
 - Major retail activity at Cribbs Causeway, including retail parks, car showrooms and The Mall Regional Shopping Centre.
- 3.3. There are a wide range of travel movements to, from and within the North Fringe. Short-distance movements take place between places such as Filton, Little Stoke, Patchway, Cribbs Causeway, Bradley Stoke and Stoke Gifford, together with movements between the North Fringe and the northern areas of Bristol, including Horfield, Southmead and Westbury-on-Trym. In addition, reflecting the importance of the North Fringe as a major employment location, there are longer-distance commuting movements from places including Bath, Gloucestershire and South Wales.
- 3.4. The mode of travel varies between different areas, with higher levels of bus use in corridors that are better served by buses or in areas of lower car ownership. The numbers of trips made by rail depend on the locations of stations. Snapshot surveys of mode used to travel to work were undertaken during the development of the North Fringe Area Travel Plan⁶, which indicated that there are low levels of walking to work, but high levels of cycling.
- 3.5. The North Fringe area is bounded by the M5, M4 and M32 motorways, which form important strategic access routes. The main road corridors through the area include:
- A4018 between M5 Junction 17 (Cribbs Causeway) and Bristol City Centre, via Henbury and Westbury-on-Trym;
 - A38 between M5 Junction 16 (Aztec West) and Bristol City Centre, via Patchway, Filton and Horfield;
 - A4174 Ring Road between the A38 (at Air Balloon Roundabout) and M32 Junction 1;
 - B4057 Gypsy Patch Lane / Winterbourne Road between the A38 at Patchway and B4427 Old Gloucester Road;
 - B4427 Old Gloucester Road, skirting the eastern edge of the North Fringe from north to south;
 - Bradley Stoke Way / Great Stoke Way, an unclassified north-south route through Bradley Stoke;

⁵ South Gloucestershire Core Strategy Local Model Validation Report, May 2012

⁶ Source: North Fringe Area Travel Plan

- Little Stoke Lane / Hatchet Road / Brierley Furlong / New Road, an unclassified north-south route that provides access to Bristol Parkway station and the Stoke Gifford area; and
- Lysander Road / Merlin Road / Hayes Way, an unclassified east-west route connecting Cribbs Causeway (and M5 Junction 17) to the A38 at Filton.

- 3.6. The high traffic flows on the A4018, A38 and A4174 reflect the importance of these routes in connecting key centres of activity in the North Fringe, and the other routes listed above also play a significant role as traffic routes in the area. Traffic congestion occurs at junctions and on route sections during the weekday morning and evening peak periods. Congestion is also experienced at weekends around and on the approaches to Cribbs Causeway.
- 3.7. There are a wide range of bus routes in the area, with frequent services operating along the radial corridors towards Bristol City Centre, including the A4018, A38 and Bradley Stoke Way / Stoke Lane, Hatchet Road / Great Stoke Way via Bristol Parkway Station. There are also a number of routes that connect individual communities or form orbital services around the northern edge of Bristol, including connections to Frenchay and Southmead hospitals. However, the frequencies of these services (and patronage) are lower than the radial routes.
- 3.8. Rail plays an important role in catering for longer distance journeys, with three stations in the North Fringe. Bristol Parkway station is a major rail hub for the West of England, with people using train services to London, the Midlands and the North, together with use of local services to/from Cardiff, Gloucester and Westbury. Filton Abbeywood station plays an important role in catering for travel to employment at Abbey Wood. Patchway station is served by local stopping trains and currently has lower levels of patronage.
- 3.9. Whilst walking plays an important role for many journeys within residential areas, evidence from snapshot surveys in developing the North Fringe Area Travel Plan suggests there is limited walking to employment in the North Fringe. However, cycling is a popular travel choice in the area, with a higher than average mode share for journeys to work, which has been supported by the development of workplace travel plans and capital investment in the cycling network through the recent Cycling City programme.

Future Travel Demand

- 3.10. Future travel demand in the North Fringe has been forecast using the South Gloucestershire Core Strategy Model (CSM). This includes the two New Neighbourhoods in the North Fringe and factors travel demand using Department for Transport (DfT) TEMPRO data.
- 3.11. The base year of the CSM is 2011 and the forecast year is 2031, i.e. five years beyond the 2026 Plan Year. This ensures that a robust approach is taken to the assessment of the future travel issues in the North Fringe area, and it enables the development of a transport package that will improve accessibility, reduce car use and tackle congestion.
- 3.12. The CSM has been developed in line with the Department for Transport's guidance on requirements for transport models and takes into account the trip generation, distribution, mode split and assignment of travel demand to/from the New Neighbourhoods and other development in South Gloucestershire.
- 3.13. An initial 2031 model run was undertaken without mitigation measures to identify the issues on the transport network that would need to be addressed.
- 3.14. The analyses demonstrate that the following issues need to be taken into account in assessing future travel demand generated by the new neighbourhoods:
- Walking – promoting investment in safe, attractive and convenient pedestrian routes, particularly to local services and facilities within and beyond the New Neighbourhoods, will result in an increased number of journeys by foot;
 - Cycling – promoting investment in safe, attractive, and convenient cycle routes to key destinations, both within the New Neighbourhoods and further afield, will result in an increased number of journeys by bicycle;

- Bus / Rapid Transit – the CSM indicates that there will be demand for travel by bus to/from the New Neighbourhoods. Usage will be higher in those corridors that are served by an attractive and reliable service, in particular frequent services on the A4018 and A38 Corridors;
- Rail – without the provision of new rail infrastructure, there will be limited rail travel to/from the New Neighbourhoods, reflecting their distance from existing stations and the limited quality pedestrian and cycle links between them.

Key Transport Issues

3.15. Audits of the transport networks have been undertaken, which have established that there are both challenges to be addressed and opportunities to make the best use of existing transport infrastructure in the North Fringe. These issues can be summarised under three themes:

- Current travel choices for users of the transport network in the North Fringe;
- Maximising opportunities for sustainable travel choices for the New Neighbourhoods; and
- Tackling traffic congestion.

Current Travel Choices

Walking and Cycling

3.16. Evidence suggests that most walking journeys are less than one mile in length: above this distance walking is unlikely to be attractive to most people making day-to-day journeys. Many of the residential areas are located more than one mile from key destinations (such as major employers and retail facilities) and walking therefore has a limited role in catering for travel needs beyond journeys to local shops and schools.

3.17. Cycling can play an important role in catering for medium-length journeys, including journeys in the North Fringe. Many parts of the North Fringe benefit from on-road and segregated off-road cycle infrastructure, particularly in the Bradley Stoke area. Recent investment in cycling through the Cycling City project has improved the quality of cycling infrastructure and the attractiveness of cycling in the North Fringe. The current Local Sustainable Transport Fund project is building on this base through continued investment in further improving cycling infrastructure in the area.

3.18. There are, however, specific issues that impact on the attractiveness of cycling as a viable option for travel in the North Fringe. These include:

- Limited and unattractive opportunities to cross major roads such as the A38 and A4018;
- Railway under bridges, where the road narrows and cyclists are required to share space with other users. At Hatchet Road, there is a narrow shared-use path with pedestrians and at Gypsy Patch Lane cyclists must cycle on a narrow carriageway where there is limited space for vehicles to pass;
- Filton Airfield currently acts as a barrier to movement between Southmead and Patchway, increasing the distance that must be travelled between the two areas (*the development of the New Neighbourhood at Cribbs/Patchway offers the opportunity to tackle this barrier to movement*);
- Cycling infrastructure on the road network is of a variable standard. Whilst many corridors benefit from direct routes and segregated infrastructure, there are gaps in provision on some corridors, including the A38 and Gypsy Patch Lane.

3.19. There is scope to encourage more cycling in the North Fringe through marketing and other smarter travel choices measures. The infrastructure issues described above will be factors in influencing people's travel choices in the area. Measures to address these challenges should play a key role in helping to promote increased levels of cycling in the area, reducing dependence on the car for local journeys.

Bus and Rail

- 3.20. The North Fringe benefits from a number of high frequency bus services that connect to the northern suburbs of Bristol and Bristol City Centre. These bus services play an important role in enabling residents of the North Fringe to commute to job opportunities in the Bristol urban area. Buses are also used to travel to major destinations in the North Fringe, including Cribbs Causeway and Bristol Parkway Station.
- 3.21. Again, however, there are specific issues that need to be addressed for bus travel in the North Fringe:
- Orbital bus services are limited and it is difficult to make journeys by bus to certain destinations. Many services are indirect, and require changes between buses; and
 - Buses are affected by congestion in the North Fringe, including the area around Bristol Parkway, which impacts on reliability and punctuality. In some cases, services have been shortened or re-routed due to severe regular traffic delays.
- 3.22. In the case of the rail network, there are three railway stations, at Bristol Parkway (inter-city, regional and local services), Filton Abbey Wood (regional and local services) and Patchway (limited regional and local services). However, there are a number of issues:
- There is constrained track capacity at Bristol Parkway and on Filton Bank;
 - There is overcrowding on local services during peak periods; and
 - The station at Patchway has relatively infrequent services and poor access.
- 3.23. Measures to address the challenges highlighted above will help to improve the attractiveness of bus and rail services for journeys in the Bristol North Fringe in particular, which will help reduce dependence on the car for these journeys, and reduce congestion on key routes.

Maximising Opportunities for Sustainable Travel Choices

- 3.24. As noted previously, the New Neighbourhoods will generate additional travel in the North Fringe and it is important that the opportunity is taken to maximise accessibility by sustainable travel choices.
- 3.25. Furthermore, the development of the New Neighbourhoods will provide the opportunity to improve connectivity for walking, cycling and public transport in the surrounding areas. Effective masterplanning will ensure permeability for walking and cycling and will maximise accessibility to public transport services. The New Neighbourhoods will provide funding contributions to support the delivery of sustainable transport initiatives and new transport infrastructure, which will reduce single car occupancy from both existing users of the network and residents and employees in the New Neighbourhoods.
- 3.26. In the case of CPNN, the development of the Airfield site will provide the opportunity to improve walking, cycling and public transport links between Cribbs Causeway and Brentry and Southmead in north Bristol. In the case of EHSNN, improved links will be provided to Bristol Parkway and the Abbey Wood area.

Walking and Cycling

- 3.27. In future, the development of the New Neighbourhoods will create the opportunity to deliver a new model of mobility based on sustainable travel choices. High quality walking and cycling links and wayfinding should be provided from the New Neighbourhoods to surrounding destinations and the wider North Fringe area.
- 3.28. Action should be focused on providing and improving pedestrian facilities within one mile of key destinations, including bus and rail stops/ stations, and tackling the gaps in cycling infrastructure connecting key parts of the North Fringe, particularly in terms of connections across Filton Airfield and along the A38 Corridor. This should include the provision of new links to Charlton Road and Fishpool Hill connecting to Southmead, improvements at key places along the A38 and measures to address the problems faced by cyclists (and pedestrians) at the narrow rail bridges at Hatchet Road and Gypsy Patch Lane. Increased traffic in the area could impact negatively on the

attractiveness of walking and cycling for local journeys in the area. It will therefore be necessary to ensure that the problems faced by pedestrians and cyclists are addressed.

Bus and Rail

- 3.29. Given the projected population of the New Neighbourhoods in the North Fringe, there is the opportunity to deliver improved bus services. It will be necessary to provide new bus services adjacent to and within the New Neighbourhoods: new bus services will be required to both address future latent demand and to cater for the travel needs of residents of the New Neighbourhoods. Both of the New Neighbourhoods are located on the North Fringe Bus Rapid Transit (BRT) Corridor, which is part of the North Fringe to Hengrove Package (NFHP), a major transport scheme that secured Programme Entry (approval in principle) from the Department for Transport in December 2011.
- 3.30. It will also be important to tackle the adverse effects of congestion on buses / BRT, for example through bus priority where this is needed, including the A38 north-south corridor. This will help to improve existing journey quality for existing users and encourage mode shift from the car.
- 3.31. The rail network could play a greater role in meeting the wider travel needs of the North Fringe. There is scope to improve station facilities and service frequencies at Patchway, and increase rolling stock capacity at Filton Abbeywood.
- 3.32. Furthermore, there is scope to reintroduce passenger services on the Henbury line and to provide new stations on the southern side of the Cribbs / Patchway New Neighbourhood. A separate technical report describes the scope to introduce new services on the Henbury Line⁷.
- 3.33. There could, therefore, be scope to improve station facilities, improve service frequencies, increase capacity and consider the re-opening of lines and stations to accommodate future travel demand in the North Fringe area.

Tackling Traffic Congestion

- 3.34. Traffic congestion currently occurs in the North Fringe during the morning and evening peak periods. This includes the following locations:
- A4018, at the Crow Lane roundabout;
 - A38, particularly at the Aztec West Roundabout (immediately adjacent to M5 Junction 16) and the Air Balloon Roundabout at the junction with the A4174 Ring Road;
 - A4174 Ring Road, between the Air Balloon Roundabout and M32 Junction 1, with hotspots at the Filton Avenue signals, Abbey Wood Roundabout and Coldharbour Lane signals;
 - B4057 Gypsy Patch Lane, at the junction with the A38 by Rolls Royce, and Winterbourne Road, at the roundabout with Hatchet Road;
 - B4056 Southmead Road, caused by heavy traffic movements at Pen Park Road / Monks Park Avenue in Bristol; and
 - Hatchet Road / Brierley Furlong / New Road, including the junction providing access to Bristol Parkway station.
- 3.35. These congestion hotspots result in increased journey times for cars, goods vehicles and buses, and impact on the reliability of bus services across the North Fringe area. The heavy flows of traffic in these areas also affect the quality of journeys made by pedestrians (with severance of local communities) and cyclists (who are forced to share roadspace and manoeuvre within the general traffic flow).
- 3.36. The Core Strategy Model forecasts increased traffic flows across the North Fringe. In the absence of improvements, there would be increases in traffic queuing and delays across the North Fringe. This would include the locations listed above, together with new congestion hotspots on the network.

⁷ Source: South Gloucestershire Core Strategy: Henbury Rail Study, Halcrow, May 2012

- 3.37. In the case of CPNN, access to the road network will be provided via new junctions on the A4018 at Wick Beck Road and Cribbs Causeway, Lysander Road and the A38 at Filton. Analyses indicate that there will be localised queuing and delays at certain junctions.
- 3.38. In the case of EHSNN, access to the road network will be provided via Great Stoke Way and Old Gloucester Road to the north, Hambrook Lane and the A4174 Avon Ring Road to the south.
- 3.39. These analyses demonstrate the importance of mitigating the impacts of future increases in traffic, both resulting from increased propensity to travel from existing activity in the area and from the New Neighbourhoods.

4. North Fringe Transport Package

Introduction

- 4.1. The North Fringe transport package has been developed specifically to support the proposed developments at CPNN and EHSNN, and comprises the CPNN Package and EHSNN Package described in Policy CS7. This takes into account the transport issues identified across the North Fringe which are of relevance to CPNN and EHSNN, as discussed in the previous chapter.
- 4.2. This chapter describes the objectives that have informed the development of the package of measures, the key principles and elements of the package.

Transport Objectives

- 4.3. The transport package has been developed to meet the following objectives. These draw on the objectives identified within the Strategic Transport Review and the issues discussed in the preceding chapter:
- Objective A: Maximise opportunities to improve connectivity and accessibility by sustainable modes in the Cribbs/Patchway and East of Harry Stoke New Neighbourhoods, focusing particularly on movements between Cribbs Causeway, Patchway and North Bristol and between Bradley Stoke, Harry Stoke and Bristol City Centre;
 - Objective B: Provide high quality links and wayfinding for walking and cycling from the New Neighbourhoods to surrounding destinations and the wider North Fringe area;
 - Objective C: Reduce severance caused by traffic and infrastructure to facilitate journeys by walking and cycling;
 - Objective D: Provide high quality direct public transport links from the New Neighbourhoods to key destinations in Greater Bristol, particularly the North Fringe;
 - Objective E: Reduce delays to buses and improve reliability of bus services to improve journey quality for existing users and to encourage mode shift from the car in the North Fringe of Bristol; and
 - Objective F: Minimise the wider transport impacts of development on key traffic routes in the North Fringe (e.g. M5, M4, M32, A38, A4018, and A4174).

Development of the Transport Package

- 4.4. The issues described in the previous chapter and objectives described above have been used to inform the development of the transport package. The package has been designed to:
- Be consistent with the goals of the JLTP3 and Core Strategy;
 - Help tackle the challenges and address the objectives described above; and
 - Ensure that the two New Neighbourhoods can be accommodated sustainably.
- 4.5. Transport issues in the North Fringe resulting from future development, including CPNN and EHSNN, will be addressed through:
- Improving travel choices for current users of the network;
 - Maximising opportunities for sustainable travel in the New Neighbourhoods; and
 - Tackling the effects of additional traffic on the network.
- 4.6. The transport package has been designed so that the measures to maximise sustainable travel choices for the CPNN and EHSNN will also play a major part in helping to improve travel choices for current users of the network. These will include:
- 'Smarter choices' measures to encourage new residents and employees to travel by walking,

- cycling or public transport;
- Improvements to the walking and cycling network, including links to the existing network;
- Improvements to bus services and extension of Bus Rapid Transit (BRT) in the North Fringe;
- Improvements to local rail services; and
- Highway infrastructure, to provide access to CPNN and EHSNN and to mitigate the impacts of additional traffic generated by the New Neighbourhoods.

4.7. These elements are described in more detail in the following section.

Elements of the Transport Package

Smarter Choices

4.8. The smarter choices elements will comprise:

- Travel plans for the residential and employment elements of the New Neighbourhoods. Residential travel plans will set out measures to be offered to new occupants of housing including discounted bus travel, secure cycle parking, walking and cycling maps, car clubs, car share schemes and promoting the health benefits of cycling and walking;
- Information will be made available to homebuyers through a pack showing integrated options for travel (e.g. walking/cycling to bus stops), locations of cycle parking, bus stops etc;
- Travel plans for the proposed on-site primary schools, including promotional and educational measures allied to a good network of walking and cycling routes;
- Personalised travel planning for residents of the New Neighbourhoods;
- Provision and promotion of sustainable transport options;
- Incentives to encourage residents at CPNN and EHSNN, and employees at CPNN, to join the South Gloucestershire car share scheme; and
- Provision of appropriate telecommunications infrastructure to promote home working.

4.9. These measures are designed to encourage sustainable travel behaviour and complement the capital investment in walking, cycling and public transport described below. The programme will draw on the good practice developed in the national Sustainable Travel Demonstration Towns and the Cycling City programme pioneered in South Gloucestershire and Bristol, together with the Local Sustainable Transport Fund project that is currently being implemented in the area.

Walking and Cycling Links

4.10. All streets within CPNN and EHSNN will be designed to facilitate direct, safe and comfortable movement by pedestrians and cyclists. These streets will adopt a Homezone approach by providing social space and regulating vehicles speeds (10mph in residential areas, 20mph elsewhere). Secure cycle parking will be provided at key places throughout each New Neighbourhood and in surrounding areas, building on the recent Cycling City Project and current Local Sustainable Transport Fund Project.

CPNN

4.11. Links will be provided to the adjacent walking and cycling network at Cribbs Causeway and to routes along the A38 and A4018. Connections will be made to the local road network in Southmead / Brentry (in Bristol) via Fishpool Hill (for pedestrians and cyclists only) and Charlton Road (pedestrians, cyclists and buses). Walking and cycling could therefore become more attractive options for local journeys between the New Neighbourhood, Brentry / Southmead and Cribbs Causeway.

4.12. Improvements will be made to cycling infrastructure along both the A38 and A4018 and new pedestrian crossing facilities will help to address the severance currently experienced on both

roads. Improved cycling links will be provided to Parkway Station, including measures to improve provision at the junction between the A38 and B4057 Gypsy Patch Lane.

EHSNN

- 4.13. Links will be provided to the Harry Stoke development, Bristol Parkway and the existing cycling network in the Stoke Gifford area. Links will also be provided to (and across) the A4174 Avon Ring Road, providing connections to UWE and the proposed District Centre at Abbey Wood and east to Hambrook. The Great Western Main Line railway currently acts as a significant barrier to north-south movement in this area, including walking and cycling. The provision of the Stoke Gifford Transport Link (refer to the section on highway infrastructure) will play an important role in enabling people to cycle between the New Neighbourhood and Bradley Stoke.
- 4.14. These measures will be complemented by improvements to the wider walking and cycling network in the North Fringe, tackling current gaps in provision and building on recent and current investment through the Cycling City and Local Sustainable Transport Fund Projects. These will include:
- Improving legibility of existing walking and cycling networks to improve ease of navigation to key destinations;
 - Work with employers, retailers and community facilities to deliver continued improvements to provision of cycle parking at key destinations across the North Fringe; and
 - Measures to tackle severance caused by the railway lines, including works to improve pedestrian and cycling provision at Gypsy Patch Lane and Hatchet Road bridges.

Bus Services and BRT

- 4.15. The two New Neighbourhoods will be served by frequent bus and Bus Rapid Transit (BRT) services that provide direct access to a range of destinations in the North Fringe.

CPNN

- 4.16. High frequency bus services already operate along the A38 and A4018 corridors between Cribbs Causeway and Bristol city centre. 'Orbital' services also skirt the south-east side of the neighbourhood, connecting Avonmouth and Southmead Hospital with Bristol Parkway and Emersons Green via the A38 and Gypsy Patch Lane. The North Fringe Hengrove Package will, in future, also provide frequent BRT services between Cribbs Causeway and Bristol Parkway Station via Bradley Stoke Way.
- 4.17. However, these existing routes will not be sufficient to meet the needs of the New Neighbourhood, which will extend over 3km from east to west. This means that dedicated new bus services will be required to accommodate the demand for travel generated by the new neighbourhood.
- 4.18. Forecasting using the CSM indicates that there is likely to be strong demand for travel from the housing to the employment and retail at Cribbs Causeway, together with other employment areas in the North Fringe and Bristol city centre. With this in mind, potential new bus services have been identified, which would follow a circuit through the New Neighbourhood and a circular route along Gypsy Patch Lane, Hatchet Road (serving Bristol Parkway Station), continuing along New Road, Great Stoke Way, A4174 Station Road and A38 Gloucester Road back to the New Neighbourhood. Services would operate both clockwise and anti-clockwise, with a frequency sufficient to cater for demand and to be attractive to potential users.
- 4.19. There would also be scope to provide new services using the A4018 to cater for travel into Bristol city centre from the western side of the New Neighbourhood. The A38 is also served by high frequency services into Bristol: these would be supplemented by new services that would be routed into the eastern side of the New Neighbourhood to provide links to Bristol.
- 4.20. The development of the New Neighbourhood gives the opportunity to improve public transport connections between Cribbs Causeway and Southmead. The Route 20 currently terminates on Charlton Road (within the Bristol boundary) at the gate to one of the access points to the airfield. In future, there will be the opportunity to run bus services along Charlton Road to extend into CPNN, improving connectivity between Southmead (and Brentry and Westbury-on-Trym) and the New Neighbourhood.
- 4.21. The New Neighbourhood will therefore be served by a range of direct, high frequency bus

services connecting to a range of destinations across the North Fringe and Bristol.

- 4.22. In addition, it is proposed to extend the alignment of the North Fringe BRT route (which is currently being progressed through the North Fringe to Hengrove Package) through the New Neighbourhood to Bristol Parkway station, creating a high quality public transport loop through the North Fringe. This is discussed below under Bus Rapid Transit.

EHSNN

- 4.23. There are currently a number of bus services operating on adjacent roads, including Great Stoke Way and the A4174 Avon Ring Road. Again, however, large parts of the New Neighbourhood will not be accessible to existing routes and it will be necessary to introduce dedicated bus services to provide adequate public transport penetration of the development.
- 4.24. As well as local bus services, the North Fringe BRT (see Paragraph 4.31 below) would play an important role in providing public transport connections through the New Neighbourhood to other parts of the North Fringe and Bristol. This will require the Stoke Gifford Transport Link, which will bridge the Great Western Main Line railway and provide direct connections to Bradley Stoke, Aztec West and Cribbs Causeway. The corridor will then continue into Bristol City Centre via the A4174 Avon Ring Road, Coldharbour Lane and the M32 to the south

Infrastructure for Buses

- 4.25. The transport package incorporates improvements to highway infrastructure that will benefit both existing and new bus / BRT services. This will build on the current investment programme in the Greater Bristol Bus Network (GBBN), which was completed in 2012. GBBN has included the M32 Corridor into Bristol (completed in 2008), the A4018 from Cribbs Causeway to Bristol via Henbury and Westbury-on-Trym and Cribbs Causeway to Bristol via Bradley Stoke, Abbey Wood and Horfield.
- 4.26. Building on this investment, the transport package will include further bus priority measures between the North Fringe and Bristol, which will help buses serving CPNN and EHSNN.
- 4.27. On the A4018, bus priority measures will be focused on the section between Lysander Road and Crow Lane, which will include localised widening for bus lanes, bus gates and improvements at the Crow Lane Roundabout. The package of measures on this Corridor will include improved pedestrian crossing facilities to enable connections between the new areas of housing on the east and west sides of the A4018.
- 4.28. On the A38, there will be improvements to the roundabouts at M5 Junction 16 and Aztec West. Bus priority will be provided on the southbound approach to M5 Junction 16 from Almondsbury. As part of these improvements conditions for cyclists using the Junction 16 Roundabout between Almondsbury and Aztec West will also be enhanced.
- 4.29. On the section of A38 between Filton Avenue and the A4174 Air Balloon Roundabout, an integrated approach will be taken to the management of roadspace. This section of the A38 will also be provided with improved pedestrian crossings to tackle the severance effects of this road in Filton.
- 4.30. It is also important to provide a range of flexible ticketing options for people using the bus network. South Gloucestershire Council will therefore seek financial contributions towards the expansion of smart ticketing opportunities for buses.

Bus Rapid Transit Network

- 4.31. The West of England (WoE) authorities are promoting the development of a Bus Rapid Transit (BRT) network, which comprises the North Fringe to Hengrove Package (NFHP), Ashton Vale to Temple Meads, and the South Bristol Link. BRT offers quality benefits over conventional buses whilst retaining the inherent flexibility of bus-based travel.
- 4.32. All three schemes have secured Programme Entry status and the authorities are now in the process of progressing the planning of the schemes, which are expected to be completed in 2017.
- 4.33. The North Fringe element of NFHP will connect Cribbs Causeway, Aztec West, Bradley Stoke, Parkway Station, Harry Stoke and UWE with the city centre and South Bristol: there is also a spur serving the East Fringe. Both of the New Neighbourhoods will be designed to facilitate the

delivery of the NFHP, including financial contributions to the scheme.

- 4.34. In addition, it is proposed to extend the BRT route from Cribbs Causeway, through CPNN and along Gypsy Patch Lane and Hatchet Road to Bristol Parkway Station. This will create a BRT loop through the North Fringe. High frequency BRT services will be provided in both clockwise and anti-clockwise directions on this loop, providing fast, direct access to key destinations in the North Fringe and Bristol City Centre.
- 4.35. As part of this BRT extension, it will be necessary to address problems caused by the narrow rail bridge on Gypsy Patch Lane. Options include replacing the rail bridge to provide sufficient space for BRT vehicles and general traffic, or traffic management on the approaches to provide priority to buses and BRT vehicles. Given the potential costs of replacing rail bridges, it is likely that the preferred option would be traffic management on the approaches to the bridge.

EHSNN

- 4.36. BRT would supplement local bus services; a large proportion of the homes within the New Neighbourhood will be located on the Stoke Gifford Transport Link, within walking distance of the BRT stops.

CPNN

- 4.37. The NFHP will be extended from its current terminus at The Mall through the New Neighbourhood eastwards towards Bristol Parkway Station. This will provide a high quality travel option for people wishing to travel to Bradley Stoke, Parkway and Bristol City Centre. This could potentially include the relocation of the existing bus station from the north side of The Mall to the south side, which would act as a hub for BRT and bus services in the New Neighbourhood. BRT infrastructure will be shared with other bus services, maximising the value of capital investment.

Rail

- 4.38. Electrification of the Great Western Main Line is due to take place by 2017, with new inter-city rolling stock. This will deliver shorter journey times on long-distance journeys. As part of this programme, Network Rail is proposing improvements to Bristol Parkway station, which will increase capacity.
- 4.39. Bristol Parkway Station is served by a number of different bus routes serving the North Fringe, including the GBBN showcase Route 73 to the City Centre and orbital services connecting Southmead Hospital and Emersons Green. As part of the station scheme, interchange facilities will be improved, including provision for the BRT.
- 4.40. South Gloucestershire Council is committed to improvements to rail services serving the North Fringe as part of the Greater Bristol Metro Project, which is prioritised in the JLTP3 for securing major scheme funding in the next Spending Review period (post 2015/16). The Greater Bristol Metro Project includes a local network of services linking Yate, Bristol Parkway, Filton Abbey Wood, Bristol Temple Meads, Weston-super-Mare and Bath, longer trains and new infrastructure.
- 4.41. South Gloucestershire Council will seek improvements to rail stations and services in the North Fringe, which will include improved capacity on local train services and specific improvements at Filton Abbeywood (improved access) and Patchway (improved access and improved services). These schemes will play an important role in catering for travel needs in the North Fringe. South Gloucestershire Council will seek financial contributions to these schemes from the two New Neighbourhoods. A separate technical report describes the scope to improve rail services in the Greater Bristol area⁸.

CPNN

- 4.42. There is scope to provide new stations at Henbury (adjacent to the A4018) and Filton North (adjacent to the A38), which would be served by passenger services to be introduced on the Hallen line. These services would run to Bristol Temple Meads, calling at Filton Abbey Wood and local stations within Bristol. A separate technical report describes the feasibility of introducing these new services⁹. The construction of these stations and re-introduction of services along the line would be subject to demonstrating a satisfactory business case.

⁸ Source: West of England Rail Studies Final Report, Halcrow, March 2012

⁹ Source: South Gloucestershire Core Strategy: Henbury Rail Study, Halcrow, May 2012

Highway Infrastructure

Access to CPNN

4.43. Access arrangements are shown in the 'Cribbs/Patchway New Neighbourhood Framework Diagram' (Figure 6 of the Core Strategy with Post Submission Changes). Four Indicative Character Areas within the New Neighbourhood have been identified in the Core Strategy, with the following access arrangements:

- **1. New Charlton** (*area currently occupied by the western part of Filton Airfield*):
 - A4018 Wick Beck Road;
 - A4018 Cribbs Causeway – via existing access at The Laurels;
 - Merlin Road, between the San Andreas Roundabout and Merlin Road/Lysander Road roundabout;
 - Merlin Road at the San Andreas Roundabout; and
 - Charlton Road (bus only access);
- **2. Haw Wood** (*area west of the A4018*):
 - Creation of a 4th arm on the A4018/B4055 Roundabout;
 - A4018 Cribbs Causeway – 4th Arm on the A4018/The Laurels junction.
- **3. Filton Aerospace Cluster** (*area currently occupied by the eastern part of Filton Airfield*):
 - Access onto Hayes Way at the three existing roundabouts (known as Blenheim, Brabazon and Concorde);
 - A38, just north of the Hallen Freight Line; and
 - West Way (internal connection, between new Aerospace cluster and existing BAe site).
- **4. Cribbs Causeway:**
 - Remodelling of existing road network to support future town centre activities and new residential development on site of existing Patchway Trading Estate.

Access to EHSNN

4.44. New site accesses will be provided from the A4174 Avon Ring Road, Hambrook Lane, Great Stoke Way (at Parkway North Roundabout) and B4427 Old Gloucester Road.

Stoke Gifford Transport Link

4.45. The Stoke Gifford Transport Link (SGTL) will be a single carriageway highway between the A4174 Avon Ring Road and the Parkway North Roundabout on Great Stoke Way; it will provide a new route connecting Bradley Stoke to the Ring Road and provide relief to congested routes in the Stoke Gifford area, including Hatchet Road on the approaches to Parkway Station. It would also improve access to/from the EHSNN, be used by the North Fringe BRT and enable pedestrians and cyclists to cross the railway line.

4.46. The SGTL is important in addressing the current and future transport challenges in the North Fringe. It will provide access to blocks of development in EHSNN. It will also enable pedestrians and cyclists to cross the railway line, and will form one of the key elements of the BRT corridor in the North Fringe – Hengrove Package.

Highway Capacity Improvements

4.47. Having maximised travel by walking, cycling and public transport, highway improvements will tackle the residual impacts of the CPNN and EHSNN developments. Highway mitigation measures have been identified for the following junctions:

- M5 Junction 17;
- A4018 Cribbs Causeway / Lysander Road Roundabout (south west of Junction 17);
- A4018 Crow Lane Roundabout (within the Bristol City Council boundary);
- M5 Junction 16;
- A38 / Aztec West Roundabout (just south of Junction 16);
- A38 / Gypsy Patch Lane Junction;

- A38 / A4174 Air Balloon Roundabout; and
- B4057 Winterbourne Road / Great Stoke Way Roundabout.

- 4.48. These improvements will include widening of specific approaches to each junction. In certain cases, more significant improvements are identified, including the A4018 / Crow Lane Roundabout, where the potential for conversion to traffic signals has been identified.
- 4.49. In addition, it will be necessary to improve the management of traffic on the approaches to the existing rail bridges at Gypsy Patch Lane and Hatchet Road. Gypsy Patch Lane narrows to less than two traffic lanes width and vehicles are required to wait for oncoming vehicles passing through the bridge. This route is important for cyclists and current conditions are unattractive. This also causes delays to traffic. In future, the importance of this route for cycling and public transport will increase, as it has been identified as the most feasible route for the extension of BRT services in the North Fringe. It will therefore be important to improve the management of traffic on the approaches to the bridge. This will include the provision of bus priority and a new crossing under the railway for pedestrians and cyclists.
- 4.50. Hatchet Lane also narrows under the bridge by Bristol Parkway Station. Footways are narrow and there are delays to traffic entering / leaving the Station, including buses. Opportunities will therefore be investigated to improve the management of traffic on the approaches to the bridge, together with new crossings under the railway for pedestrians and cyclists.
- 4.51. The improvements described above will also address the quality of public realm across the North Fringe, in order to improve the safety, attractiveness and comfort of walking and cycling facilities.

5. Assessment of Impacts

Introduction

- 5.1. This chapter first assesses the extent to which each of the measures in the package address the objectives that were defined in the previous chapter. It then provides an assessment of the extent to which the package would mitigate the impact of new traffic generated by the CPNN and EHSNN developments.

Strategic Fit

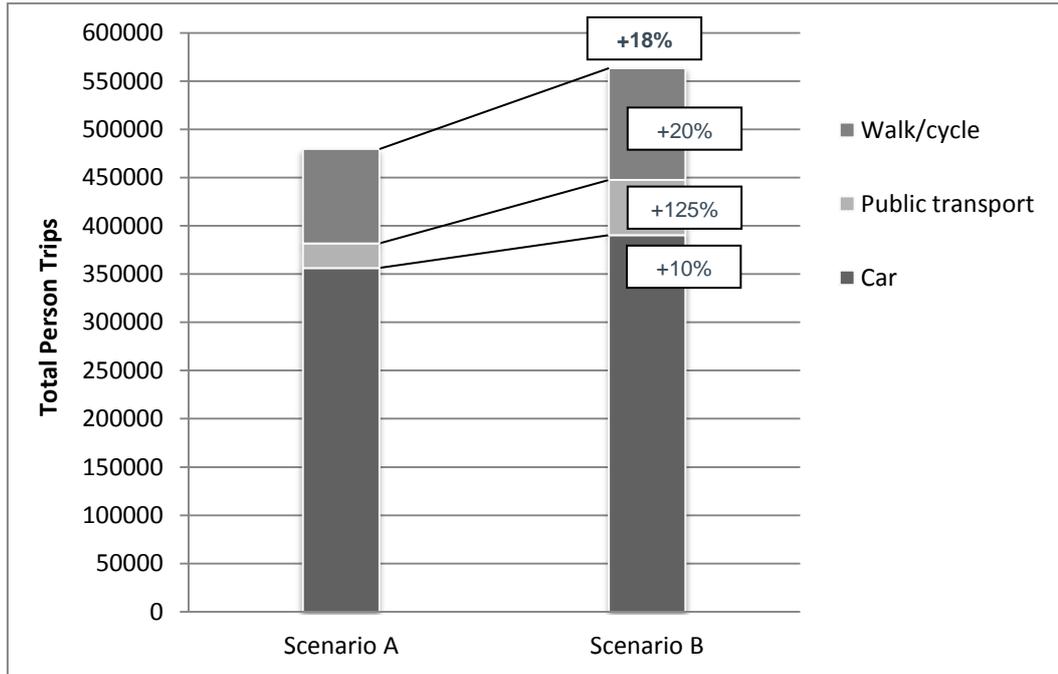
- 5.2. Table 2 (see Page 23) describes how the measures will address each of the transport objectives that were developed in the preceding chapter. The symbols indicate the extent to which each element of the package will help to address each of the objectives.
- 5.3. This demonstrates that the North Fringe transport package as a whole will address all of the objectives that were identified in the previous chapter. Smarter choices will play a key role in encouraging behaviour change, whilst infrastructure and service improvements will ensure that the right conditions are in place to encourage sustainable travel choices from the outset.
- 5.4. This also demonstrates that smarter choices, walking and cycling facilities, improvements to the bus network, BRT and highway improvements will be essential for the delivery of the two New Neighbourhoods. Improvements to the rail network are not, however, essential.

Future Travel Demand and Transport Network Conditions

- 5.5. The Core Strategy Model (CSM) has been used to estimate forecasts of travel demand and transport network conditions in the North Fringe for the following two scenarios¹⁰:
- Scenario A – assuming that the CPNN and EHSNN are not developed; and
 - Scenario B – assuming that the CPNN and EHSNN are developed in line with the Core Strategy with the North Fringe transport package, together with the strategic transport infrastructure defined in Policy CS7.
- 5.6. Scenario B includes the new development at CPNN and EHSNN, whereas development is excluded from Scenario A: as a result more travel is forecast to, from and within the North Fringe by 2031.
- 5.7. The total estimated numbers of trips made (during a 12-hour weekday period) for the two scenarios are shown in Figure 3 overleaf.

¹⁰ Forecasts are for 2031. Details of the Forecasting process are provided in the Core Strategy Model Forecasting Report, May 2012

Figure 3 – Forecast (12-hour weekday) Person trips to, from and within the North Fringe



- 5.8. Figure 3 shows that, as a result of development at the two New Neighbourhoods, the total number of trips is forecast to increase by around 18%. However, the total number of trips made by car is forecast to increase by only 10%. In contrast, the forecast number of walking and cycling trips would increase by approximately 20% and public transport trips would increase by more than 100%. This is due to the effectiveness of the transport package in encouraging a shift from car to public transport, both for the new developments and for other people living and working in the North Fringe.
- 5.9. The predicted impact of the transport package can also be assessed by examining the proportion of total travel made by car. Table 1 below shows the estimated future car mode share¹¹ for trips to, from and within the North Fringe in each scenario.

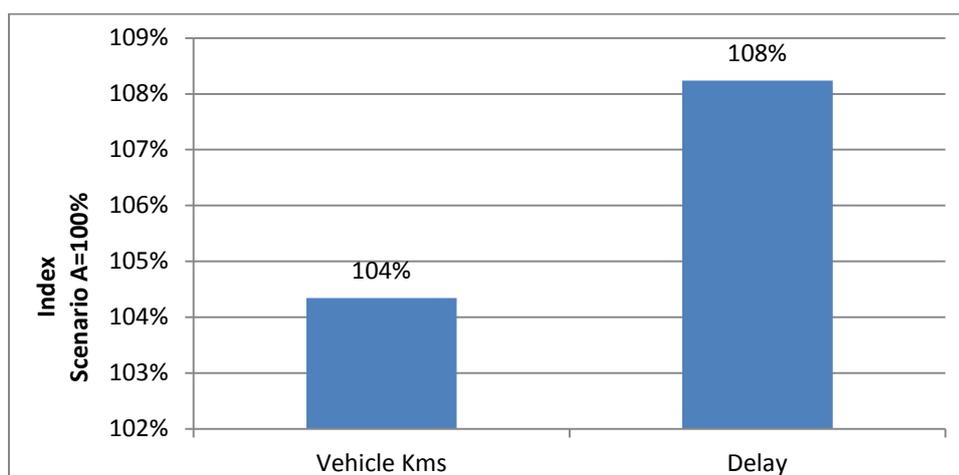
Table 1. Forecast Mode Share for future travel to, from and within the North Fringe

Scenario	Forecast Car Mode Share – trips to, from and within North Fringe
A – without CPNN and EHSNN	74.6%
B – with CPNN and EHSNN	69.1%
Change	-5.5%

- 5.10. This demonstrates that the package of transport measures will make a significant contribution to reducing the proportion of travel by car within the North Fringe. In the case of the two New Neighbourhoods themselves, the forecast car mode share would be just over 50%, reflecting the very good public transport accessibility to other parts of the North Fringe and Bristol.
- 5.11. Figure 4 shows the proportionate increase in total distance travelled and total network delay between the two scenarios in 2031, based on forecasts from the CSM.

¹¹ Car Mode share is the proportion of total travel by all modes including car, public transport, walking and cycling, estimated using outputs from a computer based transport model of the North Fringe.

Figure 4 – Forecast performance of the North Fringe highway network between Scenario B and Scenario A



- 5.12. This shows that traffic levels – in terms of the number of vehicle kilometres on the network – are forecast to be 4% greater in Scenario B compared to Scenario A. Total delay¹² – as a measure of congestion – is forecast to be 8% greater in Scenario B. In Scenario A there is less development in the North Fringe area, because CPNN and EHSNN are assumed not to have been developed.
- 5.13. In Figure 3 it was shown that there would be a 10% increase in car trips on the network between Scenarios A and B. The increase in total distance travelled on the network would therefore be lower than the total increase in car trips: the average distance per journey in the North Fringe would reduce from 14.4km to 13.8km. This is because housing in the New Neighbourhoods will be located close to employment, reducing distances travelled on the network.
- 5.14. The total increase in delay would also be less than the increase in the number of car trips, which would result in a small reduction in the average delay experienced for journeys in the North Fringe. Again, this is due to shorter distances travelled and the benefits of the package in helping tackle congestion through promoting a shift to public transport, together with targeted measures to tackle delays at key junctions.
- 5.15. Overall, the incremental impact on highway network performance of the additional traffic arising from the development of the new neighbourhoods is forecast to be neutral, provided that an appropriate package of transport measures is implemented.
- 5.16. These analyses demonstrate that, by locating new development in the North Fringe, it is possible to maximise the potential scope for travel by sustainable modes, reduce travel distances and minimise the potential impacts on the highway network.

¹² Vehicle delay is defined as the total time spent in traffic queues.

Table 2. Impacts of Each Element of The North Fringe Transport Package

North Fringe Objectives	Smarter Choices	Walking & Cycling Facilities	Bus Network & Infrastructure	Rapid Transit Network	Rail	Highway Infrastructure
Objective A: Maximise opportunities to improve connectivity and accessibility by sustainable modes in the Cribbs/Patchway and East of Harry Stoke New Neighbourhoods, focusing particularly on movements between Cribbs Causeway, Patchway and North Bristol and between Bradley Stoke, Harry Stoke and Bristol City Centre.	++ (encourage positive attitudes, complementing provision of sustainable travel choices)	++ (new connections serving wide areas for each neighbourhood)	+++ (opportunity to re-cast bus network and introduce new services to meet local need)	++ (RT serving EHSNN and extension into CPNN integrated with local bus proposals)	+ (improved services from existing stations, new stations serving CPNN)	
Objective B: Provide high quality links and wayfinding for walking and cycling from the New Neighbourhoods to surrounding destinations and the wider North Fringe area.		+++ (step-change in quality of provision)				
Objective C: Reduce severance caused by traffic and infrastructure to facilitate journeys by walking and cycling.		++ (improved treatment of major roads)				++ (improved treatment of major roads)
Objective D: Provide high quality direct public transport links from the New Neighbourhoods to key destinations in Greater Bristol, particularly the North Fringe.		++ (high quality access to bus stops & local journeys)	+++ (new services will tackle many existing gaps)	++ (new journey opportunities with rapid transit from both n/hoods)	+ (locations and access to new stations in CPNN)	
Objective E: Reduce delays to buses and improve reliability of bus services to improve journey quality for existing users and to encourage mode shift from the car in the North Fringe of Bristol.			++ (design facilities to mitigate traffic effects)	++ (RT will also assist other local bus services)		++ (improvements will also reduce delay to bus services)
Objective F: Minimise the wider transport impacts of development on key traffic routes in the North Fringe (e.g. M5, M4, M32, A38, A4018, and A4174).	+ (mitigate demand for travel by car from new devt)	+ (mitigate demand for travel by car from new devt)	++ (mitigate demand for travel by car from new devt)	++ (mitigate demand for travel by car from new devt)	+ (new stations catering for some devt demand)	+++ (mitigates residual impacts of car travel)
Importance of element of package to delivery of development at CPNN and EHSNN	Essential	Essential	Essential	Essential	Beneficial	Essential

(Note: + = slightly beneficial impact, ++ = moderately beneficial impact, +++ = strongly beneficial impact)

6. Delivery

Introduction

- 6.1. Chapter 4 identified a potential package of transport measures that are considered to be required to support the sustainable development of the proposed new neighbourhoods in the North Fringe. A review of the deliverability of the package has been undertaken to assess how realistic it is to implement the transport measures within the Core Strategy plan period.
- 6.2. Certain elements of the package will be essential to ensure sustainable transport behaviours in the New Neighbourhoods, and other elements will be desirable. The essential elements include the smarter choices programme, walking and cycling improvements, improvements to bus services, BRT proposals and highway improvements. Improvements to rail services and new rail stations will be desirable but not essential.
- 6.3. This chapter sets out the issues associated with the delivery of the different elements of the package, including the affordability of the package, the feasibility of the measures and the potential timescales for their delivery.

Affordability of Package: Financial Case

- 6.4. An assessment has been made of the realism of delivering the essential components of transport package (described in Chapter 4) within the Core Strategy plan period given the current financial climate. The cost of the package, excluding those on-site and site access components that would be expected to be provided by the developer, has been estimated as part of the overall review, drawing upon cost data from a range of sources including schemes delivered in the West of England.
- 6.5. Delivery of the package would require drawing upon funding from a number of sources, as follows:
 - Developer contributions - through the use of Section 106 planning obligations and/or a Community Infrastructure Levy (CIL);
 - Major scheme funding; and
 - Other financial resources available to South Gloucestershire Council.
- 6.6. The review has concluded that there is a sufficient level of confidence that funding will be available from these sources to enable the delivery of the package during the plan period. The basis of this conclusion is set out below.

Developer Contributions

- 6.7. In addition to the costs of on-site and infrastructure and any infrastructure required to connect the development sites to the local network, developers will be expected to make financial contributions to the cost of the package. The level of contribution likely to be required from developers has been estimated taking a reasonable view of the funding that could be assumed available from other sources (described below). On this basis, the level of contribution expected from developers is considered affordable when benchmarked against developer contributions secured in relation to other sites in South Gloucestershire. The projected level of contribution would not therefore impact on the viability of development in the two New Neighbourhoods.

Major Scheme Funding from Department for Transport

- 6.8. A proportion of funding for major schemes is provided by central government, with the remainder made up from a local contribution from the local authority. Major scheme funding has already been secured for the North Fringe Hengrove package subject to securing permissions required to build the scheme. No further central government funding of major schemes can be expected to be available during the Current Spending Review period (up to and including 2014/15).

- 6.9. Additional funding is expected to be available for major schemes to be delivered in the next funding review period, from 2015/16 onwards which would enable delivery in the plan period. The DfT recently completed consultation on its proposals for the devolution of funding for local major transport schemes¹³. It is highly likely that the Government will devolve funding to local transport bodies, which will be responsible for establishing a programme of local major scheme priorities for delivery beyond 2015. Funding is expected to be devolved on a formulaic basis (potentially population or other measures) which will provide a high level of certainty, avoiding the resource-intensive bidding processes that characterised major scheme development in the past.
- 6.10. In the case of South Gloucestershire, the local transport body is expected to comprise the four Unitary Authorities in the West of England: alongside South Gloucestershire these include Bristol, North Somerset and Bath & North East Somerset. The West of England Local Enterprise Partnership (LEP) is also likely to play a key role and will seek to direct funding towards projects that support sustainable economic growth. On this basis an element of government funding to support components of the transport package is considered realistic.

Other Financial Resources

- 6.11. South Gloucestershire could also draw on other resources, which include Integrated Transport Block funding, as well as the Local Sustainable Transport Fund and the application of the Council's own resources for the delivery of transport improvements. Future funding through the New Homes Bonus could also be used to support the delivery of improved transport infrastructure in the North Fringe. SGC has confirmed that a contribution to the cost of the package could be made from its own resources.

Feasibility of Package: Delivery Case

- 6.12. In assessing the ability to deliver the transport package, it is important to take into account the following factors:
- Technical issues associated with delivering each element of the package;
 - Public acceptability of the different elements;
 - Complexity of the package; and
 - The ability of different agencies to deliver each element of the package.

Technical Issues

- 6.13. There are no specific technical challenges that have been highlighted with any of the schemes included in the transport package.
- 6.14. South Gloucestershire Council will draw on expertise gained from the Cycling City and Local Sustainable Transport Fund projects in delivering improvements to walking and cycling facilities in the North Fringe. The construction of new pedestrian/cycle subways under the railway embankments at Gypsy Patch Lane and Hatchet Road will require approval by Network Rail but there is no evidence that this approval would not be forthcoming.
- 6.15. The North Fringe Hengrove Package has already been subject to extensive technical review and specific technical risks have been addressed and mitigation measures developed. The extension of rapid transit along Gypsy Patch Lane can be delivered by on-line widening using the existing verge, which lies within the existing highway boundary. In most cases, highway improvements at key junctions could be delivered within the existing highway boundary. In some localised cases, some land acquisition may be required, but no demolition of properties would be required.

Public Acceptability

- 6.16. There is no evidence to suggest that the proposed measures would attract strong opposition from the general public.

¹³Consultation Paper: Devolving local major transport schemes, Department for Transport, 31 January 2012 (consultation closed 2nd April 2012).

- 6.17. Extensive consultation will shortly commence for the North Fringe Hengrove Package in advance of the public inquiry that is scheduled to take place in autumn/winter 2012/13. The extension of rapid transit along Gypsy Patch Lane could be delivered within the highway boundary: whilst this would involve use of existing highway verges, this would improve accessibility for local residents.
- 6.18. It is possible that there could be some opposition to highway improvements proposed at the Air Balloon Roundabout and Crow Lane junction. The delivery agencies would need to consult closely with local residents and stakeholders to take into account specific concerns and to develop acceptable solutions.
- 6.19. There is strong support from a wide range of groups for rail improvements in the Greater Bristol area. Whilst there may be issues associated with infrastructure in particular areas, it is considered that there will, overall, be strong support for the project.

Complexity of the Package

- 6.20. The transport package comprises a number of different elements that will be required to mitigate the impacts of development of the New Neighbourhoods. Whilst these will work together to encourage sustainable forms of travel, they can be delivered as discrete elements. Smarter choices activity would commence immediately prior to occupation of new homes and business floorspace, and planning obligations would be used to ensure that critical infrastructure is in place to encourage sustainable travel options from the outset.
- 6.21. The EHSNN would be developed following the completion of the North Fringe Hengrove Package: rapid transit services will operate along the Stoke Gifford Transport Link before development takes place. Comprehensive masterplanning should ensure that walking and cycling routes are provided within the New Neighbourhood and connections are provided to adjacent destinations.
- 6.22. The CPNN would also be developed following completion of the North Fringe Hengrove Package. Comprehensive masterplanning of the New Neighbourhood would ensure that infrastructure is provided for new public transport services as development takes place. Off-site BRT infrastructure and highway improvements could be delivered as separate projects. Rail improvements would likewise be delivered as separate projects.
- 6.23. The transport package can therefore be introduced as discrete elements. Whilst the North Fringe Hengrove Package forms the foundation, there is otherwise no evidence that failure to deliver certain schemes would undermine the viability of the remainder of the package.

Delivery Agencies

- 6.24. The transport package would be delivered through a number of different agencies. The developers of the two New Neighbourhoods will be responsible for the provision of on-site infrastructure, which would be adopted by South Gloucestershire Council.
- 6.25. Off-site infrastructure improvements would be delivered by South Gloucestershire Council, Bristol City Council (improvements to Crow Lane junction) and the Highways Agency (improvements to M5 Junctions 16 and 17) or by the Developers through appropriate contractual mechanisms.
- 6.26. BRT services would be delivered through a Statutory Quality Partnership Scheme with one or more operators, which will provide the overarching standards for the operation of services, including service frequencies, vehicle qualities and fares. Other bus routes serving the New Neighbourhoods would initially be delivered as subsidised services, supported by pump-priming delivered through planning obligations, following which services will operate on a commercial basis.
- 6.27. The proposals for the Greater Bristol Metro have been included in the response by the West of England authorities to the recent DfT consultation on the Great Western Franchise. Improvements to rail services would be delivered by the future operator of the Great Western franchise, working with Network Rail and with support from the West of England Partnership.
- 6.28. There is, therefore, strong evidence that the proposed elements of the package can feasibly be delivered by the different agencies noting the strong evidence of co-operation between the various parties in planning and delivering schemes.

Delivery Programme

- 6.29. The transport package can be delivered within the plan period. A phased approach could be taken to the delivery of the different elements of the package, in line with development at the two New Neighbourhoods. Planning obligations could be used to ensure that appropriate measures are in place as development comes forward.
- 6.30. The North Fringe Hengrove Package is planned to be complete by December 2016. The delivery programme for this major scheme is already well developed, with the public inquiry scheduled to take place in autumn/winter 2013/14, and construction due to commence in December 2013.
- 6.31. The delivery of other major elements of infrastructure, including the extension of BRT and the Greater Bristol Metro, will be subject to prioritisation by stakeholders in the West of England. However, regional partners have signalled a high level of commitment to the Greater Bristol Metro and there is a shared commitment to the delivery of Phase 1 between 2013 and 2018 and Phase 2 between 2019 and 2023. South Gloucestershire Council will, meanwhile, seek funding for the completion of the extension of BRT in the North Fringe between 2016 and 2020.

7. Conclusions

- 7.1. The review has concluded that the development in the North Fringe can be delivered in a way that is consistent with SGC's sustainable transport policies and plans, as set out in the Core Strategy and the Third Joint Local Transport Plan (JLTP3) for the West of England.
- 7.2. The additional travel demand generated by proposed development in the North Fringe can reasonably be accommodated by the transport network without adversely impacting on the local economy, the environment, road safety and quality of life, provided that:
- The CPNN and EHSNN are planned and designed with an appropriate balance of housing, shops, services and employment to minimise the need for travel by car;
 - The CPNN and EHSNN are planned and designed in accordance with Policy CS1 (High Quality Design) with density and overall layout that is well integrated with existing adjacent development and connected to the wider network of foot, cycle and public transport links;
 - Certain components of the strategic transport infrastructure measures (as defined in Policy CS7) are delivered, specifically:
 - (a) For the CPNN and the EHSNN, the Bristol city centre to Parkway and Cribbs Causeway component of the North Fringe to Hengrove Package (NFHP) is delivered. For CPNN this will enable rapid transit services to be extended from Cribbs Causeway to other parts of the CPNN. For EHSNN this will enable Bus Rapid Transit to serve the new neighbourhood directly with services running on the SGT;
 - (b) For the CPNN, a set of measures is delivered through the CPNN Package, including measures to encourage and maximise opportunities for walking, cycling and public transport use to, from and within the North Fringe. This will comprise:
 - new and improved strategic pedestrian and cycling routes to ensure high quality links, extending the recently developed Cycling City network;
 - delivery of a package of bus measures integrated with existing bus services to, from and within the North Fringe, including those that are part of the now secured Greater Bristol Bus Network (GBBN);
 - extension of the BRT network, planned as part of NFHP (see above), to serve CPNN and EHSNN via Winterbourne Road and Bristol Parkway Station; and
 - highway improvements comprising additional junction capacity at key locations on the local highway network in the vicinity of the development site where the additional traffic associated with the CPNN would otherwise result in unacceptable increases in congestion and pollution;
 - (c) For the EHSNN, a set of measures is delivered through the EHSNN Package, including measures to encourage and maximise opportunities for walking, cycling and public transport use to, from and within the North Fringe. This will comprise:
 - connections and improvements to the pedestrian and cycling network to ensure high quality links to local facilities, extending the recently developed Cycling City network; and
 - provision of stops for BRT services on the corridor of the North Fringe Hengrove Package (NFHP) with good quality access from surrounding residential areas.
- 7.3. The evidence, including model-based forecasts of the impact of the above measures on future traffic levels, indicates that the above measures are a requirement for the proposed development in the North Fringe. These measures will provide the necessary level of mitigation (in terms of

infrastructure, new public transport services and changes in travel patterns and travel behaviours). The measures are required to ensure that the additional travel generated by the CPNN and the EHSNN can be accommodated by the North Fringe transport network and the West of England's wider local and strategic transport network.

- 7.4. The review has concluded that the above measures can be delivered within the timescale of the Core Strategy plan period through existing delivery and funding mechanisms, including contribution from the developers of the CPNN and EHSNN sites via Section 106 payments and/or a future Community Infrastructure Levy. The review has also concluded that the likely costs of the Package measures are realistic and affordable within the scale of contribution that could reasonably be expected from developers.
- 7.5. For the strategic transport infrastructure components, although there are a wide set of stakeholders and an increased level of complexity in securing funding and planning approvals, the review has concluded that the programme of delivery is feasible. There is also an appropriate degree of flexibility in scheme scope and timescale priorities to enable SGC's wider sustainable transport objectives to be achieved. This view is emphasised by the confirmation from the Department for Transport to SGC in December 2011 of Programme Entry (which is a commitment to provide a funding contribution subject to conditions) for the North Fringe to Hengrove Package. On this basis there is a clear case for the CPNN and EHSNN to contribute to funding for the programme of strategic transport infrastructure delivery defined in Policy CS7.
- 7.6. The measures defined above will make a significant impact in providing for more sustainable travel choices and reducing car use. Nevertheless, in peak periods on certain parts of the North Fringe and on the West of England's wider local and strategic highway network, traffic flows are forecast to be higher than at present due to the combined effects of general growth in traffic and the additional traffic generated by the developments. However, subject to improvements at key junctions, these are not considered to have a significantly adverse effect on the local economy, environment, road safety and quality of life.
- 7.7. Delivery of other strategic transport infrastructure measures included in CS7 (over and above the components defined above) will make a significant contribution to further improving network performance but are not considered pre-requisites to enable CPNN and EHSNN to proceed. The review has concluded that the following CS7 components would also be beneficial in helping to further improve network performance. These are as follows:
- Bus Rapid Transit link from North Fringe to Emersons Green (component of the NFHP) which would provide additional public transport connectivity and travel options for CPNN and EHSNN;
 - The Greater Bristol Metro Project, which would, in conjunction with the electrification of the Great Western Main Line, enable substantially improved rail services from Bristol Parkway to other parts of the West of England and thereby benefit the entire North Fringe; and
 - The re-introduction of passenger services on the Hallen Line/ Henbury Loop – which would provide for rail services to/from CPNN and central Bristol. The CPNN should therefore safeguard land for station sites for this to be delivered.

Atkins
The Hub
500 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4RZ



© Atkins Ltd except where stated otherwise.

The Atkins logo, 'Carbon Critical Design' and the strapline 'Plan Design Enable' are trademarks of Atkins Ltd.