APPENDIX 7

JCS TRANSPORT STRATEGY EVIDENCE BASE

JCS Transport Strategy Evidence Base

Version	**2.0**
Last Revised	**May 2017**

JCS – Transport Evidence Base

This transport evidence base has informed the development of the Joint Core Strategy (Gloucester City, Cheltenham Borough and Tewkesbury Borough councils).

The production of the evidence base has been managed by the JCS Transport Evidence Working Group which consists of officers and their appointed consultants from Gloucestershire County Council, Highways England and the Joint Core Strategy authorities.

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Signed
0.1		Final Draft circulated for discussion	22/07/16	BW
1.0		Transport Strategy supporting Pre-Submission Joint Core Strategy	06/10/16	BW
2.0		Transport Strategy supporting JCS Proposed Main Modifications	25/05/17	BW

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JCS Transport Strategy

The JCS Transport Strategy has identified a six point plan to enable the delivery of the JCS development proposals. This will strengthen local and regional connectivity and improve the desirability of the JCS area as a destination.

The six point plan emphasises the importance of minimising the impact of development to ensure an efficient, safe and resilient transport network. It recognises the role of 'place' and the need to remove strategic or 'through' traffic from local environments. It also strongly supports walking, cycling and public transport use, with the long-term aim of reducing reliance on the car for short and longer distance trips.

The improvements summarised in this strategy will be instrumental in creating high quality, vibrant and successful communities. Planned highway capacity improvements will separate local and through traffic to ensure it can move with fewer journey delays and without undermining high quality passenger transport networks. In addition, attractive pedestrian and cycle infrastructure will be integral to highway networks to enable sustainable travel choice. A key focus of the JCS Transport strategy is to create the opportunity and environment to enable real change in travel behaviours and modal shift.

JCS Transport Strategy - Six point plan

1. Provide an efficient, safe and resilient transport network which enables the delivery of residential and employment growth by minimising its impacts on the transport network.
2. Deliver new, and enhance existing, sections of highway where required across the whole of the JCS area, to improve the quality of place; reduce community severance; facilitate the principle of orbital vehicle movements by separating local and 'through' traffic; and enable economic growth.
3. Remove pinch points on the local highway network, prioritising those on radial routes served by key bus corridors including the 10, 41/42, 94, 97/98 bus services.
4. Encourage public transport providers (bus and rail) to increase service frequencies along strategic corridors and review service coverage where there are gaps serving development sites
5. Provide coherent cycle and pedestrian linkages which connect development sites to adjacent land uses through permeable site layouts and the provision of new infrastructure;
6. Optimise the smart operation and management of the transport network through increased use of technology and travel information to provide multi-modal travel information

The strategy includes a number of large infrastructure schemes including:

- M5 Junction 10 - conversion to a full-movements junction and providing access to the West of Cheltenham strategic allocation
- Grade separated junction improvement at Cole Avenue to ensure Gloucester's South West Bypass functions to its maximum capacity
- A46 offline improvement which will bring about significant upgrade to the existing A46 route, encouraging walking, cycling and public transport use

- New junction on the A40 Gloucester Northern Bypass and new link road with the A38 Tewkesbury Road. This improvement will enable changes to be made to the existing A40 Longford Roundabout junction including and downgrading of the existing A38 Tewkesbury Road link north of the junction in Longford to encourage walking, cycling and public transport use

The outcomes of this strategy include:

- Minimising the increase in travel demand derived from the scale of growth outlined in the JCS. The highway network will be busier, but it will continue to operate in a safe and efficient manner. The network will also be more resilient as pinch points within the existing network are removed improving radial route options.

- Delivering the large infrastructure schemes listed above enables the separation of local and strategic or 'through' traffic. This removal of non-local traffic will significantly improve the quality of place and reduce community severance.

- Providing additional bus priority measures, including both new highway capacity and signal optimisation on existing high frequency routes will aid the bus operation within the JCS area. If delays do persist then, as part of the traffic signal optimisation, further bus priority measures could be further incorporated to reduce journey time uncertainty.

- Providing increased journey time reliability on the highway network will encourage public transport operators to continue to provide high frequency services. This will ensure a high quality customer experience and help increase the attractiveness of public transport for more people for more of their trips.

- Removing traffic from the A38 in Longford and A46 in Ashchurch, along with new walking and cycling infrastructure between Bishops Cleeve and Cheltenham and Arle Court Park and Ride, will increase the ease and desirability of walking and cycling within the JCS area.

- Using smart technology; traffic signal replacement, travel information and Smart Motorway running will to further maximise network efficiencies and support the delivery of the JCS Transport Strategy's Six Point Plan.

Conclusion

The schemes identified as part of the JCS Transport Strategy represent an effective and viable transport mitigation package which successfully supports the delivery of the JCS growth proposals and complies with the JCS Transport Strategy.

Despite the many benefits provided by the transport strategy there remain several unresolved issues which would require further mitigation. These are not viewed as being fundamental to the operation of the transport network. These issues are likely to be resolved through further detailed junction modelling and iterative design resulting in increased efficiencies being achieved.

It should be noted that the schemes identified as part of the JCS Transport Strategy represent one of many possible methods to manage the impact on the transport network of the growth proposals included in the JCS.

1.0 JCS Transport Evidence Base

1.1 Introduction

1.1.1 Gloucestershire County Council in partnership with Highways England (as highway authorities) and Amey as the appointed consultants, has supported the Joint Core Strategy Authorities (Gloucester City, Cheltenham Borough and Tewkesbury Borough councils) with the production of a transport evidence base and transport strategy, to support the adoption of the Joint Core Strategy (JCS).

1.1.2 Transport Evidence has been provided to support the JCS throughout the plan making process. The transport schemes outlined within the mitigation scenarios have been identified on the basis of compliance with the JCS Transport Strategy and the delivery of the development proposals outlined in the JCS. This ensures the cumulative impacts of the growth proposals could be assessed, understood and mitigated.

1.1.3 The evidence base is compliant with guidance in the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG) 'Transport evidence bases in plan making and decision taking' and Circular 02/2013.

1.1.4 The production of the evidence base has been managed by the JCS Transport Evidence Working Group. This consists of officers and their appointed consultants from GCC, Highways England and the JCS authorities. The Working Group, in various forms, has met for several years. In September 2015 these arrangements were formalised, and regular meetings were held to progress and agree parts of the evidence base as completed. Notes of the meetings (progress and decisions) were circulated to all members for formal agreement at the subsequent meeting.

1.1.5 The mitigation package identified within this document (**Section 6**) represent an effective and viable transport mitigation package which successfully supports the delivery of the JCS growth proposals and complies with the JCS Transport Strategy. However, it should be noted that it is one of many possible methods to manage the impact on the transport network of the growth proposals included in the JCS.

1.2 Roles and responsibilities

1.2.1 The production of the JCS transport evidence base is a JCS-directed process supported by GCC as the local transport authority, and Highways England as the strategic road authority. It has been used to inform the JCS transport strategy, which will require endorsement by the District Authorities (as the local planning authority) as part of the local plan making process.

1.2.2 GCC and Highways England have been fully consulted and have provided input throughout the process via the JCS Transport Evidence Working Group. GCC has commissioned Amey, on behalf of JCS authorities, to manage the production of the evidence base and inform the transport strategy.

1.2.3 Two separate GCC teams which have advised on the process. Officers within the Transport Planning Team have led on commissioning Amey and have assisted in presenting outputs

from the model within this document. Officers within the Highways Development Team have assessed the outputs provided at each stage of the process, and provided feedback on the impacts on the local highways network. Officers from Highways England have a similar role, providing feedback based on the impacts on the strategic highway network.

1.2.4 Despite input throughout the process, the JCS Evidence Base and the JCS Transport Strategy is not formally endorsed by GCC or Highways England at this stage. Once the JCS is formally adopted the JCS Transport Strategy will need to be considered through the Gloucestershire Local Transport Plan (LTP) process for adoption. Any formal changes to the LTP will be made following GCC Lead Cabinet Member and/or County Council approval as appropriate.

1.2.5 Where the JCS Transport Strategy is considered to be significantly different from GCC's current LTP any updates to the LTP will require a targeted consultation with the local community.

1.3 The assessment process

1.3.1 The 2013 GCC and Highways England-owned Central Severn Vale (CSV) SATURN traffic model was finalised in March 2017. A 'Three Stage' assessment process has been agreed to inform the production of the JCS Transport Strategy. This approach comprises of:

- **Stage 1: The JCS 'Do nothing' scenario** – constructed using the following assumptions:
    - Constructed using the 2013 base
    - Committed approved JCS growth, including Strategic Allocations with planning permissions
    - TEMPRO growth for those areas outside the JCS area
    - Committed / delivered transport schemes
- **Stage 2: The JCS 'Do minimum' scenario** – constructed using the following assumptions:
    - Using the 'Do nothing' scenario
    - The JCS proposed Strategic Allocations
    - All unallocated Objectively Assessed Need JCS growth
    - 'Do minimum' transport package (where funding has been allocated but not committed)
- **Stage 3: The JCS 'Do something' scenarios** – constructed using the following assumptions:
    - Using the 'Do minimum' scenario
    - Transport mitigation scenarios

1.3.2 Copies of the 2013 Central Severn Vale (CSV) SATURN traffic model Local Modal Validation Report (LMVR) for the CSV SATURN model can be provided upon request.

1.4 The purpose of the evidence base

1.4.1 The purpose of the JCS Transport Evidence Base assessment is to demonstrate that the process used to inform the JCS Transport Strategy is fully compliant with national guidance. The following objectives have been identified to guide this work:

- To provide a robust transport evidence to facilitate the approval of the Joint Core Strategy;
- To facilitate the promotion and use of sustainable modes of transport from development proposals outlined in the Joint Core Strategy;
- To assess the quality and capacity of existing transport infrastructure to meet forecasted travel demands (derived from development proposals outlined in the Joint Core Strategy);
- To identify a cost-effective transport strategy which seeks to reduce the cumulative impact of increased travel demand resulting from the development proposals outlined within the Joint Core Strategy.

1.4.2 No definition of 'severe' shall be provided within this assessment. Its application depends on context. For example, an additional 15 vehicles added to a highway link already experiencing delay may be undesirable, but unlikely to be classed as 'severe'. Whereas a new queue of 15 vehicles at a junction with light traffic flows, or where emerging drivers may take risks as a consequence of the change, might be considered 'severe'.

1.4.3 Eleven strategic travel corridors were identified to assess the strategic impacts of the land use scenario outlined within the JCS. These corridors were identified on the basis of their importance to support national and local economic growth.

1.4.4 The routes were informed by the 'Link and Place' Spectrum outlined within Gloucestershire's Local Transport Plan (2015-2031). The routes typically experience high volumes of traffic and interact with the strategic bus corridors. The performance of the corridors in relation to junction performance provides a good proxy to the impact of journey time delays.

2.0 Policy context

2.1 National Planning Policy Framework

2.1.1 The National Planning Policy Framework (NPPF) sets out how it expects the government's planning policies for England to be applied. It outlines the role of planning to achieve sustainable development. Within this context *sustainable* means ensuring that better lives for ourselves do not mean worse lives for future generations and *development* means growth.

2.1.2 Achieving this balance is the primary challenge of the JCS Transport Strategy. The scale of growth outlined within the JCS will result in a significant increase in travel demand. How these additional trips can be accommodated by the transport network, whilst still enabling it to function, requires a balancing act between affordability, new infrastructure and the promotion of travel choice.

2.1.3 Access to transport networks is a key determinant of the quality of place for people to live and work. Gloucestershire is at a cross roads both in terms of transport pressures, and in terms of its location. It connects with strategic rail and road networks and is a hinge point between Birmingham, Bristol, Cardiff and London.

2.1.4 The NPPF states that the transport system needs to be balanced in favour of sustainable transport (walking, cycling, bus and rail) modes, giving people a real choice about how they travel. The successful outcome of this approach will be the reduced need for major transport infrastructure in the long-term, reduced transport derived emissions impacting air quality and less congestion, leading to better social, economic and environmental conditions. However it also recognises that opportunities for travel choice vary between urban and rural areas.

2.1.5 The urban nature of much of the JCS area is reflected by its highly accessible transport network which provides the greatest choice of travel options within Gloucestershire. High quality, high frequency bus services support access across the area. For longer distance trips there are two railway stations located in Cheltenham and Gloucester which provide regular services to London, Bristol, Cardiff, Birmingham and Swindon. A third station is also located in Ashchurch, but this station is served by an infrequent rail service.

2.1.6 Despite the availability of travel choice, car use continues to dominate in the JCS area. The combination of already heavily trafficked routes and historic street patterns has resulted in Air Quality Management Areas (AQMAs) being declared at several location. Mitigating the transport impact of the JCS development in these areas will be vital to demonstrating a sustainable transport strategy.

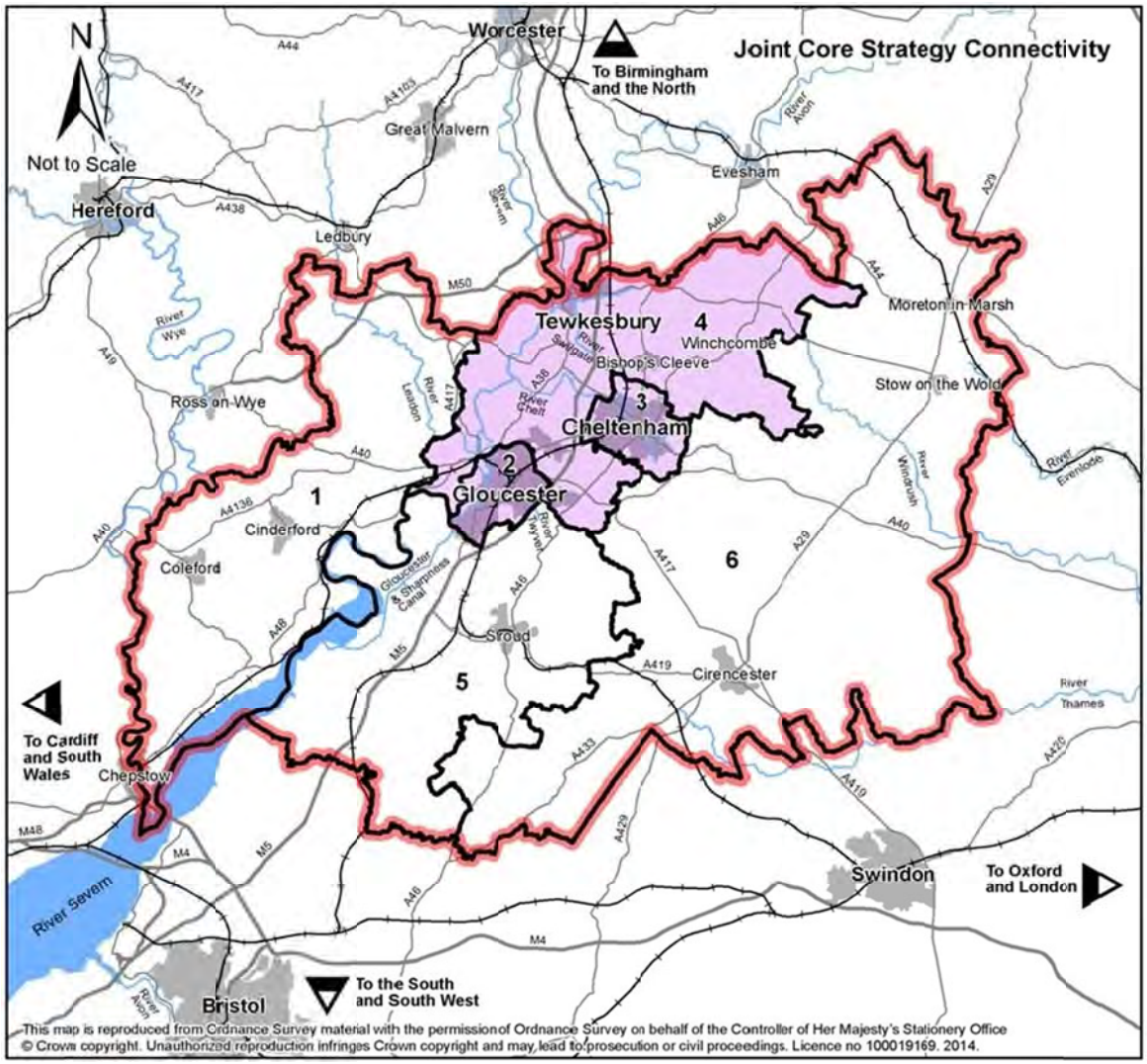
2.1.7 The NPPF confirms that development should only be prevented or refused on transport grounds where the residual cumulative impacts of development will be severe.

2.2 Joint Core Strategy

2.2.1 The JCS is an important part of the development plan for Gloucester, Cheltenham and Tewkesbury and covers the area shown in **Figure 1**. It has been prepared within the context of national policy, and having regard to the diverse aspirations and local characteristics that make up the area.

2.2.2 There are strong linkages between the three local authority areas, with Cheltenham Borough and Gloucester City being the main economic drivers for Gloucestershire. The majority of people live and work in the JCS area, and have a choice of access to leisure and health facilities, amenities and countryside from a variety of locations.

Figure1– Geographic extent of the JCS area



2.2.3 Transport has a key role in enabling the delivery of the JCS vision by supporting the development of the area as a highly attractive and accessible location. The JCS vision quantifies this role by stating that all residents and businesses (existing and new) will benefit from improved infrastructure including roads and public transport.

2.2.4 All development influences travel patterns either through new trips on the network or the re-routing of existing trips. This may occur on a micro-level by providing a single access point onto the highway network, or the macro-level where a range of infrastructure improvements are required to extend travel choices.

2.2.5 For Gloucester the JCS vision, in terms of transport, will aim to provide a well-connected and resilient city centre, along with accessible high-quality business parks. It also identifies the A40 corridor as being essential to attract visitors.

2.2.6 For Cheltenham the JCS vision, in terms of transport, will aim to continue to support the town's vibrancy and role as a sub-regional focal point for economic and cultural activity. As with Gloucester, accessible high-quality business parks will be dependant on transport connections. Two trip types were also identified in terms of promoting Cheltenham's retail and tourism offer.

2.2.7 For Tewkesbury the JCS vision, in terms of transport, will aim to strengthen the town's role as a desirable place to visit, supporting a thriving day and night-time economy. As a rural authority the bus is identified as an important enabler for rural communities to benefit from connectivity between Tewkesbury, Cheltenham and Gloucester.

2.2.8 A key challenge identified by the JCS is in relation to the area's disproportionately aging population, due to the migration of retired people from other parts of the country. This is an important consideration in relation to the transport strategy as it will need to consider day time public transport activity along with peak travel impacts associated with work based trips. The importance of walking and cycle links for health is also a consideration.

2.2.9 **Figure 2** identifies the JCS ambitions and strategic objectives that the transport strategy will support. Transport's role in supporting these objectives will be in terms of connectivity from the strategic allocations to the existing transport network. This is to enable travel choice opportunities and awareness of the local environmental impacts to be identified. It allows suitable mitigation measures to be determined in terms transport externalities (including visual impact, noise and air pollution).

Figure 2 – The JCS Transport Strategy will help support the following JCS objectives

Ambition	Strategic Objective
A thriving economy	1) Building a strong and competitive urban economy 2) Ensuring vitality of town centres
A sustainable natural and built environment	4) Conserving and enhancing the environment 5) Delivering excellent design in new developments 6) Meeting the challenges of climate change
A healthy, safe and inclusive community	7) Promoting sustainable transport 9) Promoting healthy communities

2.2.10 The JCS states that successful and sustainable communities depend upon physical, green, and social and community infrastructure to meet the needs of residents and businesses. Strategic Objective 7 states the JCS objective to promote sustainable transport use and

reduce reliance on the car. The wording of this objective is outlined in **Figure 3**. This objective underpins the JCS transport strategy.

Figure 3 – JCS Strategic Objective 7 – Promoting sustainable transport

Strategic Objective 7 – Promoting sustainable transport

Reduce the need to travel and the reliance on the car by:

- Improving opportunities for public transport, walking and cycling by making routes more convenient, safe and attractive.
- Improving existing, and providing new, frequent public transport links and safe walking and cycling routes in all new developments.
- Improving access to services in rural and urban areas through new development, improved integrated transport links and supporting local and community led transport initiatives in the Local Transport Plan throughout the JCS area
- Promoting bus priority on key public transport corridors identified in the Local Transport Plan throughout the JCS area.

2.2.11 The planning authority cannot allow development to take place that will have an unacceptable impact on the existing transport network. The JCS recognises this and the limitations of what a developer can reasonably be expected to financially contribute towards without jeopardising the economic viability of the development proposal.

2.2.12 For this reason, the JCS transport strategy will consider infrastructure provision 'in the round' and not look at items in isolation. It will also consider the use of funding from government and other public sources as the strategy will not be affordable if it is reliant on developer contributions alone. This approach is consistent with the NPPF.

2.3 Gloucestershire's Local Transport Plan (2015 -2031)

2.3.1 Gloucestershire's Local Transport Plan (LTP) sets out the transport issues and priorities for the county for the period 2015 – 2031. It outlines the county council's approach to managing the increased transport demand, which will go hand in hand with projected housing development and accelerated economic growth.

2.3.2 The car will always have a vital role to play in Gloucestershire – especially within more rural areas. However, the marketing and provision of attractive and viable alternatives, 'smarter choices', will be instrumental in ensuring genuine travel choice, which in the long-term will reduce actual and perceived reliance on the car.

2.3.3 The aim of the LTP is to influence how and when individuals choose to travel so that individual travel decisions do not cumulatively result in the failure of the transport network. Failure in the context of the LTP signifies dangerous travel conditions, prolonged travel delay (congestion) and ultimately network gridlock.

2.3.4 It is a statutory requirement under the Local Transport Act 2008 for Local Authorities to have a LTP. However, the plans role has changed. It no longer provides the basis of a financial

allocation from the Department for Transport. Instead, it sets out the long term policy structure for local transport delivery, including a set of scheme priorities

2.3.5 The transport priorities identified in the LTP have been included on the basis of compliance with the overarching LTP objectives. They do not represent a commitment by the county council for funding, but they reflect the county's transport priorities.

2.3.6 The LTP's role is to set out the long-term strategy for transport within the county, agreed by the county council as Local Highway and Transport Authority. The county council then actively seeks funding to deliver transport schemes identified within the LTP.

2.3.9 In recent years, a large proportion of the capital funding for transport improvements in Gloucestershire have come through the Local Growth Deal. Thorough Local Growth Deals, Government provides funds to Local Enterprise Partnerships or LEPs for projects that benefit the local area and economy. The Local Enterprise Partnership for Gloucestershire is the G-first LEP.

2.3.10 Ad-hoc bidding opportunities may also arise. The county council will exploit all opportunities for additional funding where the criteria of the fund support the delivery of the LTP objectives. An example of such bidding opportunities includes the Department for Transport's National Productivity Investment Fund which is intended to improve roads, cut congestion and improve journey times.

2.3.11 Funding for schemes to mitigate the impact of development are provided through individual planning obligation agreements inline with the policies outlined in the NPPF.

2.3.12 Central Government also allocates funding to the Strategic Road Network (SRN), which is the network of Motorways and Trunk Roads within the county. This network is managed by Highways England, on behalf of the Government. Highways England bids for capital funding to improve these roads as part of the Road Investment Strategy (RIS) process. RIS 1 has been allocated for the period up to March 2021. The RIS 2 bidding process is underway and Highways England will be allocating capital for the period April 2021 to March 2026.

2.3.13 To identify transport priorities in the county the LTP considers transport in separate travel corridors, defined within the LTP as "Connecting Places Strategies" (CPS). Each CPS characterises the distinctive transport issues affecting that area of Gloucestershire. They identify the challenges faced over the next 15 years and propose transport priorities for that area to support the delivery of LTP objectives.

2.3.14 Two CPS documents cover the JCS area; the Central Severn Vale CPS and Tewkesbury CPS. The LTP delivery priorities will be updated to reflect the JCS Transport Strategy (where compliant with LTP policy) during the lifetime of the LTP as new evidence emerges. The schemes outlined in the two CPS documents will provide the basis of the JCS Transport Strategy.

2.4 Enhancing Connectivity

2.4.1 An underpinning reason for allocating the bulk of the county's projected development needs in association with existing towns within the Severn Vale is the potential for enhanced

transport connectivity. Not only are these sites closer to strategic and public transport networks, they also offer greater opportunities for people to make more trips – particularly local trips – on foot or by cycle.

2.4.2 The transference of more of these local trips to walking and cycling (active travel modes) will be instrumental in creating high quality, vibrant and successful communities, and in ensuring the whole transport network operates efficiently and optimally.

2.4.3 An 'active travel' network' may be defined and reinforced through development within the JCS area if it is considered early in the master planning process and at a strategic level. The network should connect within and between new developments and existing settlements. It may reflect opportunities to 'shorten' travel distances and serve new desire lines.

2.4.4 However, the JCS development sites are on the edges of existing settlements. This means they may be further away from the centres of the towns that they are juxtaposed to than is much of the existing fabric of those towns, and more proximal to other settlements and/ or JCS sites.

2.4.5 Further compounding this, existing settlements may be ringed by heavily trafficked roads, closed development layouts or natural features which act as barriers to ease of movement between the new development site and existing settlements. In these instances walking and cycling conditions (the existence and attractiveness of routes) will be a greater factor in determining the potential for take up of these modes than simply spatial proximities and distances.

2.4.6 The need to facilitate walk and cycle trips will be in relation to a wide range of trip attractants, especially within a 1 – 5 km distance of the development site.

2.4.7 Some quietly trafficked lanes, public footpaths and bridleways could offer high quality intuitive pedestrian and cycle routes. Safeguarding them may enable active travel networks to be established at low cost and with less dedicated infrastructure provision than by imposing more rigid walk and cycle specific infrastructure.

2.4.8 Walk and cycle corridors across the JCS area will reflect not only an existing potential active travel network, but a new web of emerging movement desire lines that will embed as new development is implemented.

2.4.9 A challenge will be to safeguard the qualities of some of these links especially as motorised trip levels increase in association with the planned growth in JCS area.

2.4.10 There may be no need to build shared use foot and cycle ways within the new developments, although some may propose to incorporate core networks of traffic-free 'greenway' arrangements where these offer higher levels of permeability to pedestrians and cyclists than to motorised vehicles. Providing for active travel modes within the development will not be based on providing cycle-specific infrastructure as much as providing simple pedestrian and cycle-friendly environments around fine grain development layouts which limit speed through design.

2.4.11 As part of the JCS appraisal process or the Transport Assessments for the JCS sites, cycle and walking route barriers and improvements should be identified through clear audits.

2.5 JCS Transport Strategy Objectives and Outcomes

2.5.1 In line with the aims and objectives of the policy documents summarised in the previous section **Figure 4** outlines a set of transport objectives. **Figure 5** outlines the six fundamental points of the JCS Transport Strategy which will be used to inform the identification of the preferred mitigation strategy and **Figure 6** sets out the expected transport outcomes.

Figure 4 –JCS Transport Strategy Objectives

JCS Transport Strategy Objectives

- Require new developments to be supported by transport infrastructure measures which offset any unacceptable impacts.
- Prioritise investment in transport infrastructure to reduce the cumulative impact of new development where it affects the safe and expeditious movement of traffic on the local and strategic highway networks.
- Promote sustainable travel choice (walking, cycling, bus and rail) where it is realistic and safe to provide, ensuring new developments enjoy multi-modal connectivity with existing communities, employment, services and transport infrastructure.
- Identify, protect and enhance strategic and local quiet lanes, public rights of way and green corridors to reinforce walk and cycle desire lines within and between existing settlements, new development sites and key trip attractants
- Limit the negative externalities of the transport strategy on air quality and noise pollution
- Design transport schemes to minimise their visual impact on the environment

Figure 5 – JCS Transport Strategy's Six Point Plan

JCS Transport Strategy's Six Point Plan

1. Provide an efficient, safe and resilient transport network which enables the delivery of residential and employment growth by minimising its impacts on the transport network.
2. Deliver new, and enhance existing, sections of highway where required across the whole of the JCS area, to improve the quality of place; reduce community severance; facilitate the principle of orbital vehicle movements by separating local and 'through' traffic; and enable economic growth.
3. Remove pinch points on the local highway network, prioritising those on radial routes served by key bus corridors including the 10, 41/42, 94, 97/98 bus services.
4. Encourage public transport providers (bus and rail) to increase service frequencies along strategic corridors and review service coverage where there are gaps serving development sites
5. Provide coherent cycle and pedestrian linkages which connect development sites to adjacent land uses through permeable site layouts and the provision of new infrastructure;
6. Optimise the smart operation and management of the transport network through increased use of technology and travel information to provide multi-modal travel information

Figure 6 –JCS Transport Strategy Outcomes

Transport Strategy Outcomes

- Managed vehicle movements on strategic highway corridors to improve access and journey time reliability between Gloucester, Cheltenham and Tewkesbury
- Improved multi-modal travel access to Gloucester, Cheltenham and Tewkesbury urban centres and proposed development areas
- The move to a low carbon transport network where individuals are encouraged to walk or cycle for appropriate short distance trips or use passenger transport for some longer distance trips

3.0 Baseline site assessments of strategic allocations

3.1 Introduction

3.1.1 The Main Modifications to the Pre-Submission JCS Document (February 2017) states that during the plan period, provision will be made to meet the need for approximately 35,175 new homes and a minimum of 192 hectares of B-class employment land to support approximately 39,500 new jobs.

3.1.2 This will be delivered by development within existing urban areas through district plans, existing commitments, urban extensions to Cheltenham and Gloucester, and the provision of Strategic Allocations at Ashchurch. The JCS aims to locate jobs near to the economically active population, reducing out-commuting and thereby reducing carbon emissions from unsustainable car use.

3.1.3 **Figure 7** summarises the apportionment of the strategic allocation by sub area highlighting the status of sites within the JCS Transport Assessment. Evidence will be presented within this section for the following strategic allocations A1, A1a, A3, A5 and A11.

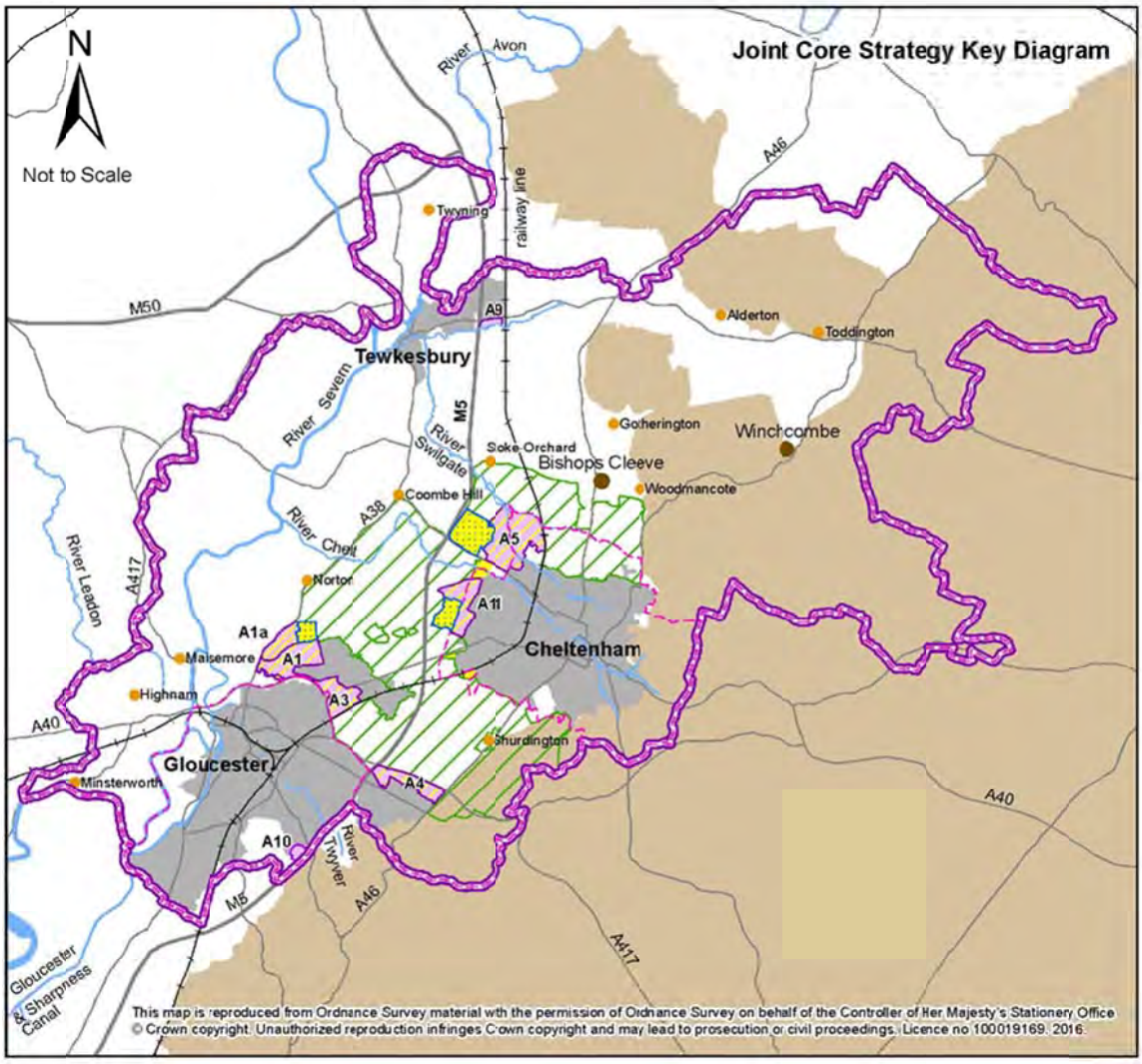
Figure 7 – JCS Strategic Allocation

Sub Area	Area	Indicative Housing to be delivered up 2031	Hectares of Employment Land to be delivered up 2031	Status of allocation within JCS Transport Assessment
Gloucester City supply	Gloucester City Urban Capacity	7,532		Included as Objectively Assessed Need (OAN) growth and is not site specific
	Winnycroft	620		450 – Committed development remaining included as OAN growth and is non site specific
	A1 Innsworth	1,300	9.1	Strategic Allocation
	A1a Twigworth	995		Strategic Allocation
	A3 South Churchdown	1,100	17.4	Strategic Allocation
	A4 North Brockworth	1,500	3	Committed development
Cheltenham Borough supply	Cheltenham District Capacity	5,611		Included as OAN growth and is not site specific
	A5 North West Cheltenham Urban Extension	4,285	23.4	Strategic Allocation
	A11 West of Cheltenham urban extension	1,100	45	Strategic Allocation
Tewkesbury Borough Supply	Tewkesbury Borough District Capacity	6,557		Included as OAN growth and is not site specific
	A9 - Ashchurch		14.3	Committed development
	Mitton (Wychavon)	500		Included as OAN growth and is not site specific

*Figures correct as of the Housing Implementation Strategy (January 2017)

3.1.4 **Figure 8** illustrates the location of the strategic allocation within the wider JCS area.

Figure 8 – Map of JCS Strategic Allocations

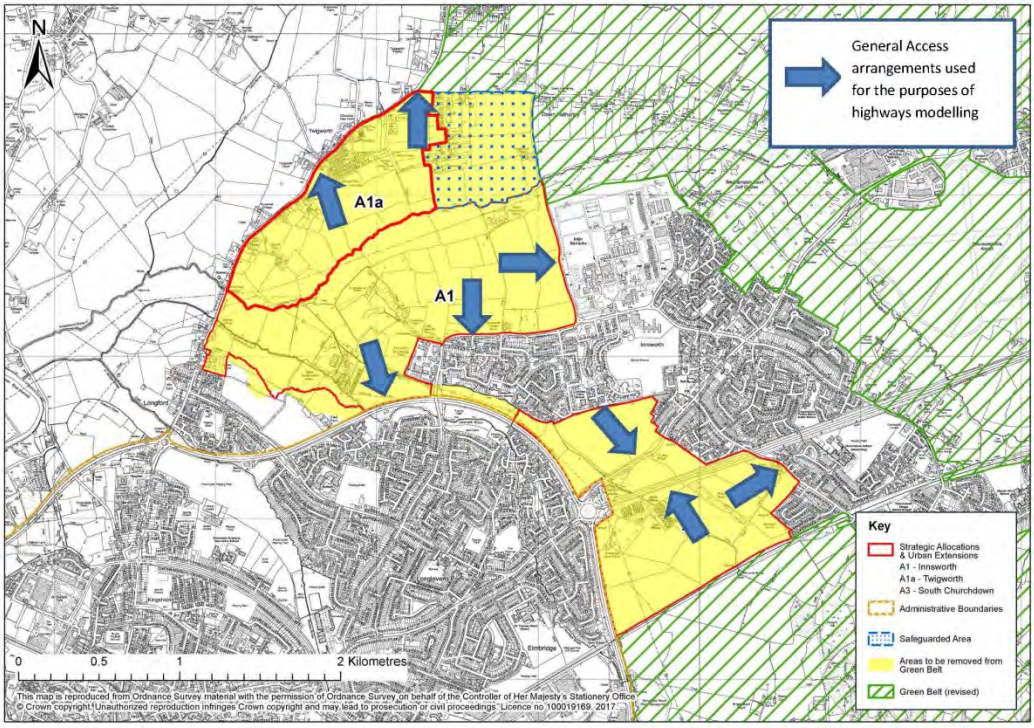


3.2 A1 Innsworth & A1a Twigworth

3.2.1 For the purposes of this assessment the baseline transport assessment considers these sites as one strategic allocation.

3.2.2 This strategic allocation is located to the north of Gloucester and borders the communities of Longford and Innsworth to the south, Twigworth to the north-west and buffers Imjin Barracks to the east. Access from the site will be provided onto the Strategic Road Network via a new junction on the A40 between the A38 Longford roundabout and the Innsworth Lane Bridge. In addition, access to the local highway network will be provided onto Innsworth Lane, Frog Furlong Lane, Down Hatherley lane and the A38 Tewkesbury Road. **Figure 9** illustrates the extent of the site and illustrates the access point assumptions used for the purposes of this assessment.

Figure 9 – Location and access points for site A1 - Innsworth and Twigworth



3.2.3 There are no major trip attractors within the vicinity of the site.

3.2.4 Trip data captured by the 2011 Census provides a useful proxy for likely trip patterns in terms of work based destination and method of transport used. **Appendix A** provides more information on the methodology used in this analysis.

3.2.5 **Figure 10** documents the main method of travel used by existing residents within the vicinity of this site. The table also includes data from Central Severn Vale (CSV) Gloucester and Cheltenham and countywide as a comparison. As is shown, the methods of travel used are highly consistent with the trip patterns across the CSV area, with 70% of work based trips

using the car either as a driver or a passenger, 20% either walk or cycle and 7% using the bus. This demonstrates that this site has a high propensity for sustainable travel use and, with suitable investment linking the site into the existing network, this trend should continue.

Figure 10 - Typical method of transport used when travelling to work destination from Site A1 – Innsworth and A1a Twigworth (2011 Census)

	Site A1 – Innsworth and A1a - Twigworth	Central Severn Vale	Gloucestershire
Driving a car or van	65%	63%	69%
Passenger in a car or van	5%	6%	6%
Motorcycle, scooter or moped	1%	1%	1%
On foot	14%	15%	13%
Bicycle	6%	6%	5%
Bus, minibus or coach	7%	7%	5%
Train	1%	1%	1%

3.2.6 **Figure 11** documents the primary work based destinations of existing residents within the vicinity of this site. As the site is to the north of Gloucester it is not surprising 46% of work trips are Gloucester based. The site also has good access via Churchdown (B4063) to Cheltenham and 16% work trips based there. This high level of local trips indicates the potential for sustainable transport use.

3.2.7 19% of trips are to locations south of Gloucester in Stroud, Bristol or the south west. To access these sites vehicles are likely to use the A40 either travelling east and accessing the M5 and junction 11 or to the west and the A430 South West Bypass. As this site is an urban extension to Gloucester with good access to the strategic highway network it is likely that these long-distance trips will remain as the employment offer provided by Bristol continues to grow.

Figure 11 - Work based destinations from Site A1 – Innsworth and Twigworth (2011 Census)

	Site A1& A1a – Innsworth and Twigworth
Tewkesbury and surrounding areas	6%
Cheltenham and surrounding areas	16%
Gloucester and surrounding areas	46%
Winchcombe and rural Tewkesbury	1%
West Midlands	5%
Forest of Dean, Hereford and Wales	3%
Cotswolds, Swindon, London and South East	4%
Stroud, Bristol and South West	19%

Highway access

3.2.8 The Link and Place spectrum (**Appendix B**) included in Gloucestershire's LTP identifies the A40 as a National Link which is critical for the national economy with limited community interaction. The route links the Forest of Dean with the M5 at junction 11 and junction 12 via Gloucester's south west bypass. This section of highway is one of the busiest in the county and has an average daily vehicle flow of between 20,000 and 30,000 vehicles (**Appendix C**).

3.2.9 The spectrum also identifies the A38 as a Primary Link which, as a mix of urban through routes and rural routes with minimal community interaction, is critical for the local economy. The route links Gloucester to Tewkesbury. It typically has an average daily vehicle flow of between 10,000 and 15,000 vehicles. Innsworth Lane is classified as a Suburban Link where moderate delays are to be expected as it forms part of the built form with significant interactions between highway users and journey end points. It has an average daily vehicle flow of between 6,000 and 10,000 vehicles. Frog Furlong Land is classified as a Local Link, which is not suitable for strategic vehicle flows and, typically, has low vehicle numbers suitable for cycle use.

3.1.10 Average vehicle speeds in the vicinity of the site are mixed (**Appendix D**). The A40 is a fast moving road with queuing traffic at the Longford and Elmbridge Court roundabouts. As to be expected the degree of queuing traffic is dependant on the time of travel. Vehicles can expect to experience long delays travelling west during the PM peak. Delays on the A38 during the AM peak are typical with slow southbound traffic sometimes queuing for several kilometres.

3.2.11 The increase in vehicle demand from this site will need to be mitigated to ensure the highway network can function. A suitable mitigation package to alleviate Longford Roundabout will be required as a minimum.

3.2.12 When reviewing highway collision data from the past five years in the vicinity of the site (**Appendix E**) there have been several serious incidents at the junctions of the A38 between Twigworth and the A40 Longford roundabout. A fatal incident occurred to the north of the Twigworth site on the A38. With the additional traffic generated from the site likely to impact this section of highway will get busier which may reduce speeds, however there is likely to be an increase in conflicts between different modes of transport. Managing vehicle speeds while ensuring the needs of vulnerable road users are considered will need to be part of the mitigation strategy for this site. The same approach also needs to be applied to Innsworth Lane where a series incident also occurred very close to the proposed access arrangements for the site.

3.2.13 Although not part of this assessment emergency access arrangements do need to be considered.

3.2.14 There are no Air Quality Management Areas within the vicinity of the site (**Appendix F**). It is also unlikely that the increase in traffic generated by the site will trigger any designations,

subject to a successful mitigation package being provided to reduce the occurrence of slow moving traffic.

3.2.15 There are three small noise important areas within the vicinity of the site (**Appendix I**). Two are located on the A38 and one on the A40. It is not known how this site will impact these areas.

Bus Access

3.2.16 The site is generally well served by bus and **Figure 12** summarises the bus services that can be accessed.

3.2.17 The Innsworth part of the site can access Cheltenham and Gloucester using the 97 / 98 including Gloucestershire Royal Hospital. Other than re-routing of the service through the site and providing Bus priority measures on Innsworth Lane including a bus gate from the site no further improvements are likely to be required.

3.2.18 The Twigworth part of the site can access Gloucester and Tewkesbury using the 71. Subject to cost and demand it may be appropriate to extend this service into the evening and re-route the service through the site.

Figure 12 - Existing bus accessible from site A1 & A1– Innsworth & A1a Twigworth

Service No.	Point of access	Route	Operator	Mon-Fri	Sat	Sun
71	A38 Tewkesbury Road	Gloucester to Tewkesbury	Stagecoach West	60 mins (6-18) No evening service	60 mins (7-18) No evening service	No service
97 / 98	Innsworth Lane	Gloucester – Churchdown Village - Cheltenham	Stagecoach West	30 mins (6-18) 3 evening services	30 mins (6-18) 3 evening services	Hourly (9-17)
353	Innsworth Lane – Frog Furlong Lane	Gloucester - Sandhurst - Longlevens - St Oswalds - Gloucester	Swanbrook Coaches	1 service a day	1 service a day	No service

3.2.19 Vehicle delay on the A38 at Longford and Innsworth Lane may impact the operation of bus services in the area. It is essential these impacts are minimised to maintain service frequency and reliability. The upgrade of bus stop facilities including Real Time Passenger Information would support bus use from this site.

Rail Access

3.2.20 The nearest station is Gloucester with direct services to London, south Wales, Birmingham and local services to Bristol. Residents requiring direct services to the North and South West may travel to Cheltenham instead.

3.2.21 Access is provided by bus to the station, but the relatively infrequent service may deter potential passengers to access Gloucester station. The station is also too far to walk and it would seem likely that most people would drive or cycle.

Cycle and walk access

3.2.23 The site abuts Innsworth to its east and is spatially close to Gloucester City. One of the justifications for this location is that it is in proximity to Gloucester City as well as Innsworth and Churchdown. Therefore, improving non-motorised connectivity to Gloucester will be a key aim of the development. Opportunities for this will be in association with the A38, Innsworth Lane over the A40, the pedestrian bridge over the A40 between Innsworth and Longlevens, and quiet linkages through Innsworth.

3.2.24 Cycling and walking levels are good in Innsworth at around 20% of trips, and especially in a location that is peripheral and north of the A40. Spatially, distances are well within walking and cycling range between the site and destinations within Gloucester City. There are also close employment and educational facilities within Innsworth and Churchdown to the east. It will be key to ensure that current connections are safeguarded and improved, and new ones are identified and installed.

3.2.25 The public footpath network provides a useful basis for internal and external connectivity both to Innsworth and across the A40. There are no formal cycle routes within or serving the site. Most of the site is bounded by fields and a stream; only a small part of its border, to the east, connects with the settlement of Innsworth.

3.1.26 The qualities of Innsworth Lane, Frog Furlong Lane and Longford Lane are generally adequate for cycling, and Innsworth itself offers opportunities for soft pedestrian and cycling linkages and quiet routes

3.2.27 Detailed pedestrian and cycle audit of Churchdown and Innsworth, including sites A1 and A3, will be needed to understand new and existing walk and cycle desire lines, existing barriers to active travel and barriers which will need to be mitigated through site layouts. This should include the routes crossing Innsworth Lane, the A40 and Longford Lane (as well as the A38 if new or existing desire lines are identified north eastwards).

3.2.28 This audit should also identify measures to improve 4 way junction at intersection between Innsworth Lane and the B4063 for vulnerable road users. Install improvements in tandem with requirements of site A3. Innsworth Lane has the potential to represent an important cycling desire line through from Longford Lane where it intersects with public footpath 'Innsworth 7A' and the B4063. This corridor could significantly determine cycling levels in association with the new development. New desire lines will include radial as well as edge to (City) centre flows. Sources of information include the 'Churchdown and Innsworth Movement of People by Active Travel Study (2016)' which forms part of the Neighbourhood Development Plan for this area.

3.2.29 Key barriers to pedestrian and cycling movement include the A40 to the south which severs site A1 from Gloucester City; open fields with no foot or cycle ways across them, and which border most of the site; Innsworth Lane, and especially without traffic management. Increased traffic flows due to site development will erode the cycling qualities of Innsworth Lane and Frogfurlong Lane without mitigation. Innsworth Lane has no footway on its edge abutting the site, whilst Frogfurlong Lane has no footways on either side of its length where

it abuts the site; similarly unclassified roads to the north of the site currently offer opportunities for non-motorised connectivity with settlements and locations in the Vale towards west Cheltenham and Twigworth. These will be compromised by increased motorised traffic on the local network; the Roundabout at the south west apex of the site offers a poor environment for pedestrians and cyclists; and the A38 is unpleasant to cycle; the footway is narrow, as is the carriageway. Increased traffic flows here will cause the pedestrian and cycling environment to deteriorate further.

3.2.30 **Appendix H** identifies a list of walking and cycling improvements to maintain and increase walking and cycling from this site.

Thinktravel promotions

3.2.31 'Thinktravel' is the brand name for Gloucestershire's smarter choices programme, designed to help people consider their travel choices and encourage use of more sustainable modes of transport. This encompasses behavioural and transport operational initiatives to encourage and support a smarter approach to journey decision making, planning and undertaking. The outcomes of this behavioural change are a reduction in the number of single occupancy car trips, along with a greater awareness of travel choices and promotion of the 4Rs (Reduce, Retime, Reroute, Remode) to journeys to avoid the most congested times and locations on Gloucestershire's transport network.

3.2.32 Thinktravel initiatives that could be applied to this development include:

- New street signs to aid navigability
- Travel Planning advice targeting
    - New householders
    - Local employers
    - Local schools

3.2.33 **Figure 13** summarises the types of investments required to reach the optimum level of sustainable transport use for this site and **Figure 14** provides a summary of the baseline transport assessment of this site.

Figure 13 Types of sustainable initiatives to be delivered from investment

Types of Improvements			
Bus	**Rail**	**Cycle**	**Walk**
• Bus stops • RTPI • Lighting • curbs • Signing routes • Rerouting • Signal priorities • Physical priority measures	• Promotion • Cycle parking	• Promotion / cycle parking • Lighting • Signing routes • dropped curbs • Point closures - traffic restrictions • Short length of shared use paths • Minor junctions improvements • New crossing points	• Resurfacing of footway • Promotion • Lighting • Signing routes • Short length of shared use paths • Minor junctions improvements • New crossing points

Figure 14 – A1 - Innsworth & A1a Twigworth baseline transport summary

A1 & A1a - Innsworth & Twigworth – baseline transport summary

- Long-distance travel likely to remain due to ease of access to SRN
- New A40 junction (if linked to the existing network outside the site) will have a significant change on traffic movements in this area
- Need a solution for Longford Roundabout
- Review 97/98 bus route corridor for vehicle delay pinchpoints
- Rerouting of 97/98 into site and possible service improvements to 71 for evening service
- Improving non motorised connectivity to Gloucester is important
- Innsworth lane has an important function as a multimodal corridor
- Pedestrian improvements will be required to the network surrounding the site
- Walking and cycling improvements need to be considered as part of a package also benefiting site A3 (Churchdown)

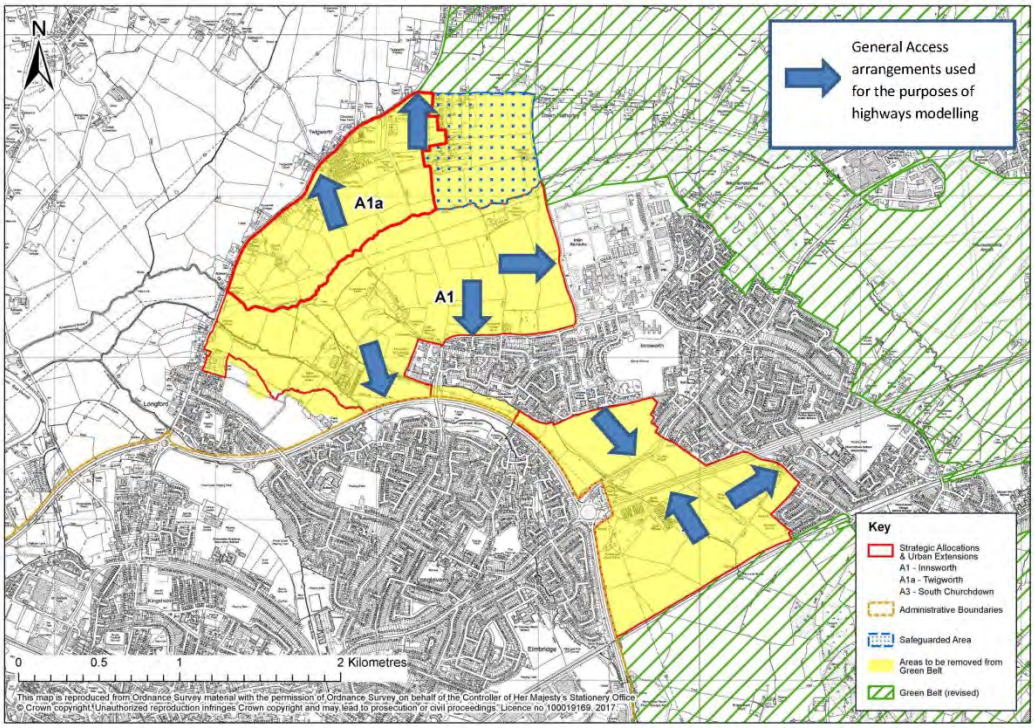
Transport mitigation considerations:

- Improved highway access via new A40 junction to relieve pressure on Longford Roundabout
- Improved walking and cycling links
- Re-routing of 97/98 bus service with necessary bus priority measures
- Promotion of alternatives to car use for local trips

3.3 A3 – South Churchdown

3.3.1 This strategic allocation is located to the north-east of Gloucester. The site will buffer the communities of Innsworth, Longlevens and Churchdown. It is divided into two parts with the B4603 bisecting the site. Residential access will be provided by a new access point onto the B4063 Cheltenham Road East to the north-east of Elmbridge Court roundabout and via extensions to residential roads linking to Pirton Lane in Churchdown. Employment Access from the site will be provided onto the Strategic Road Network via a new junction on the A40 close to the Elmbridge Court roundabout. **Figure 15** illustrates the extent of the site and illustrates the access point assumptions used for the purposes of this assessment.

Figure 15 – Location and access points for site A3 – South Churchdown



3.3.2 Trip data captured by the 2011 Census provides a useful proxy for likely trip patterns in terms of work based destination and method of transport used. **Appendix A** provides more information on the methodology used in this analysis.

3.3.3 **Figure 16** documents the main method of travel used by existing residents within the vicinity of this site. The table also includes data from Central Severn Vale (CSV) Gloucester and Cheltenham)) and county wide as a comparison. With 75% of work based trips using the car as either a driver or passenger this is more consistent with the county as rather than the Central Severn Vale area (CSV).

3.3.4 The proportion of trips walked is significantly lower than the CSV average and this is a consequence of the site being located in a predominately residential area with no major employers in close proximity. The proportion of cycle use (7%) and bus use (8%) is above

the CSV average. The community of Churchdown is well serviced with high frequency bus routes and good cycle facilities providing good connections from the site to these networks. This will ensure a high propensity of use from this development.

Figure 16 - Typical method of transport used when travelling to work destination from Site A3 – South Churchdown (2011 Census)

	A3 – South Churchdown	Central Severn Vale	Gloucestershire
Driving a car or van	69%	63%	69%
Passenger in a car or van	5%	6%	6%
Motorcycle, scooter or moped	2%	1%	1%
On foot	9%	15%	13%
Bicycle	7%	6%	5%
Bus, minibus or coach	8%	7%	5%
Train	0%	1%	1%

3.3.5 **Figure 17** documents the primary work based destinations of existing residents within the vicinity of this site. As the site is located between Cheltenham and Gloucester it is not surprising 77% of work trips are based in these locations. This high level of local trips indicates the potential for sustainable transport use.

3.3.6 11% of trips are to locations south of Gloucester in Stroud, Bristol or the south west. To access these sites vehicles are likely to use the A40 either travelling east and accessing the M5 and junction 11. As this site is located in close proximity to the strategic highway network it is likely that these long-distance trips will remain as the employment offer provided by Bristol continues to grow.

Figure 17 - Work based destinations from Site A3 – South Churchdown (2011 Census)

	A3 – South Churchdown
Tewkesbury and surrounding areas	1%
Cheltenham and surrounding areas	25%
Gloucester and surrounding areas	52%
Winchcombe and rural Tewkesbury	1%
West Midlands	2%
Forest of Dean, Hereford and Wales	3%
Cotswolds, Swindon, London and South East	5%
Stroud, Bristol and South West	11%

Highway access

3.3.7 The Link and Place spectrum (**Appendix B**) included in Gloucestershire's LTP identifies the B4603 as a Suburban Link which provides residential and commercial areas. The route provides access to Churchdown and Staverton Airport; it also provides an alternative link between Cheltenham and Gloucester avoiding the A40. The route is also used to access the North West Cheltenham avoiding large vehicle flows in the west of Cheltenham. This section

of highway has an average daily vehicle flow of between 10,000 and 15,000 vehicles (**Appendix C**).

3.3.8 The spectrum also identifies the A40 as a National Link which is critical for the nation economy with limited community interaction. The A40 links Gloucester to the M5 at junction 11. This section of highway is one of the busiest in the county and has an average daily vehicle flow of between 30,000 and 50,000 vehicles.

3.3.9 During peak travel times delays on the A4063 are common with slow moving traffic impacted by the dominant flow of the A40 at Elmbridge Court Roundabout and at the intersection with the B4634 at Staverton Crossroads. Delays on the A40 accessing Elmbridge Court Roundabout are also typical during peak travel times (**Appendix D**).

3.3.10 The increase in vehicle demand from this site will need to be mitigated to ensure the highway network can function. The planned Elmbridge transport scheme should alleviate much of the existing vehicle delay, but a suitable mitigation package to alleviate vehicle demand for this site will be required. In addition the Staverton crossroads junction of the A4063 and A4634 will need to be managed to ensure it can function with the increase in vehicle demand likely to use this section of highway both from this site and the proposed North West Cheltenham site as more vehicles will seek to avoid travel delay in Cheltenham.

3.3.11 When reviewing highway collision data from the past five years in the vicinity of the site (**Appendix E**) there have been two serious incidents along Pirton Lane. Additional traffic will use this lane and any mitigation will need to consider the potential increase in road user conflicts resulting from this increased in vehicle access. A number of incidents also occurred on the A40 at Elmbridge Court roundabout. The proposed Elmbridge transport scheme when built should reduce the risk of highway incident at this junction.

3.3.12 Although not part of this assessment emergency access arrangements do need to be considered.

3.3.13 There are no Air Quality Management Areas within the vicinity of the site (**Appendix F**). It is also unlikely that the increase in traffic generated by the site will trigger any designations, subject to a successful mitigation package being provided to reduce the occurrence of slow moving traffic.

3.3.14 There are three noise important areas within the vicinity of the site (**Appendix G**). Two are located on the A40 and one on the A417. It is not known how this site will impact these areas. However there is a risk that the residential properties build in proximity to the A40 between M5 junction 11 and Elmbridge Court Roundabout may be impacted by increased vehicle and rail noise.

Bus access

3.3.15 The site is highly accessible by bus and **Figure 18** summarises the bus services that can be accessed.

3.3.16 There are two access points: Cheltenham Road East - served by the high frequency 94 which provides access Cheltenham and Gloucester via Churchdown including access to Gloucestershire Royal Hospital; Pirton Lane – served by the 98 which also provides access to Cheltenham and Gloucester via Churchdown similar to the 94 provides but on a less frequent basis. No improvements are required in terms of bus service provision on the 94 however bus priority may need to be considered along the route. If there is sufficient demand it may also be appropriate to improve the frequency of the 98.

Figure 18 - Existing bus accessible from site A3 – South Churchdown

Service No.	Point of access	Route	Operator	Mon-Fri	Sat	Sun
94	Cheltenham Road East	Gloucester - Longlevens - Churchdown - Cheltenham	Stagecoach West	10 mins (6-18) 20 mins (18-20) 30 mins (20-00)	10 mins (6-18) 20 mins (18-00)	20 mins (8-11) 15 mins (11-19) 30 mins (20-00)
N94	Cheltenham Road East	Gloucester - Longlevens - Churchdown - Benhall - Cheltenham	Stagecoach West	Fridays only 30 mins (00-03)	30 mins (00-03)	No service
98	Pirton Lane	Gloucester – Churchdown Village - Cheltenham	Stagecoach West	60 mins (6-18) 3 evening services	60 mins (6-18) 3 evening services	4 services (9-17)

3.3.17 There is the potential for vehicle delays on this route particularly at Elmbridge Court and Arle Court Roundabouts. It is essential these impacts are minimised to maintain service frequency and reliability along this corridor.

Rail Access

3.3.18 The nearest station is Gloucester with direct services to London, south Wales, Birmingham and local services to Bristol. Residents requiring direct services to the North and South West may travel to Cheltenham instead.

3.3.19 The 94 bus route runs through the northern part of the site providing good connectivity with Gloucester station. The southern part of the site appears to be truncated by the A40 thus drastically reducing access to Gloucester station.

Cycle and walk access

3.3.20 A key challenge is that the site is bisected by the B4063 and A40 creating three lobes, north of the B4063, between the B4063 and A40, and south of the A40. Each have different and contrasting baseline conditions in terms of cycle and walk access, and potential. They need to be considered separately as each offers different potentials to connect with either Gloucester City or the adjacent settlements of Churchdown and Innsworth. The following descriptions refer to A3 (i) – north of the B4063, A3 (ii) – between B4063 and A40 l, A3 (iii) – south of A40.

A3 (i) – northern lobe

3.3.21 This section is not served by public rights of way, but encompasses a segregated pedestrian and cycle link (National Cycle Network route 41) linking Gloucester with Churchdown which is integral to facilitating direct and high cycle flows in the area. Although it is bound on its south western edge by the A40, the other edges are soft and offer potential, not just for walk and cycle permeability, but to improve non-motorised connectivity with adjacent built areas. The development of the site provides the opportunity to unlock access between Innsworth, Churchdown and Gloucester, by creating new pedestrian and cycle routes through the site itself which better meet some area wide walk and cycle desire lines.

3.3.22 Key barriers which will need to be addressed through mitigation include the A40, Increased traffic movements and turnings onto the B4063 (strategic walk and cycle route); and the capacity and condition of the pedestrian bridge over the A40.

A3 (ii) Central Lobe

3.3.23 There is no public footpath, road or cycle route within the site. The site is in proximity to Gloucester and, due to the pedestrian and cycle facilities on the B4063 and the pedestrian and cycle underpass on Elmbridge roundabout, it has strong connectivity to Gloucester City and Churchdown.

3.3.24 Key Barriers include the A40, the B4063 due to increased traffic volumes and due to the development facing the road on the side of the highway without shared use cycle track facility, and increased traffic onto Pirton Lane which is part of Nation Cycle Network and offers tolerable cycling conditions despite carriageway widths, but which may become compromised if motorised flows increase here. An additional barrier may arise through the detailed 'fit' of the development within the site, whereby it does not directly abut Elmbridge Court Roundabout thereby not optimising possible city connectivity via active modes.

A3 (iii) Southern Lobe

3.3.25 This section contains no existing cycle route access. It has a poor, fragmented public footpath network which as been severed through previous surrounding land uses and there are no public roads. Existing access to this section of the site is provided via a minor road into a Business Park adjacent to Elmbridge Court roundabout.

3.3.26 The southern lobe is greatly constrained by the A40, the A417 and the railway lines which bound around 80% of its perimeter. Mitigation needs to be extensive to enable optimal levels of walking and cycling. The site is in proximity to Gloucester and Churchdown but pedestrian and cycle access is extremely poor. Travelling distances far exceed actual proximity to local destinations – such as schools – in Gloucester.

3.3.27 Key barriers to walk and cycle movement are extensive: The site is hemmed in on all sides by the highway network and the railway line; the proposed highway access point at John Daniels Way at the north-east point furthest away from key pedestrian and cycle trip draw which is Gloucester City. Propensity for walk and cycle trips which match those of adjacent area of Longlevens is low due to topographical, development and transport infrastructure

barriers; and Pirton Lane – which is adequate for cycling only because it exhibits low traffic flows - will lose that quality due to traffic arising from new development.

Thinktravel promotions

3.3.28 'Thinktravel' is the brand name for Gloucestershire's smarter choices programme, designed to help people consider their travel choices and encourage use of more sustainable modes of transport.

3.3.29 Thinktravel initiatives that could be applied to this development include:

- Street signs to aid navigability;
- Personal Transport Planning (TPP) based on mosaic analysis or applying understanding that people may be most likely to walk and cycle when they are first, changing travel habits due to house move, and second, moving house to be in better proximity to employment or education.
- Target groups will include
  - New householders;
  - Local employers;
  - Local schools
- Consult Sustrans for advice on promoting higher use of National Cycle Network (NCN) and improvements to its alignment through development.

3.3.32 **Figure 19** summarises the types of investments required to reach the optimum level of sustainable transport use for this site and **Figure 20** provides a summary of the baseline transport assessment of this site.

Figure 19 Types of sustainable initiatives to be delivered from investment

Types of Improvements			
Bus	**Rail**	**Cycle**	**Walk**
• RTPI • Signal priorities • Physical priority measures	• Cycle parking • Small Car parking improvements	• Promotion / cycle parking • Lighting • Signing routes • dropped curbs • Short length of shared use paths • Minor junctions improvements • New crossing points • Strategic greenways and cycle routes • Bridges / underpasses	• Resurfacing of footway • Promotion • Lighting • Signing routes • Dropped curbs • Short length of shared use paths • Minor junctions improvements • New crossing points • Strategic route improvements • Bridges / underpasses

Figure 20 – A3 – South Churchdown baseline transport summary

A3 – South Churchdown– baseline transport summary

- The Elmbridge transport scheme should alleviate much of the existing vehicle delay although additional access onto the A40 may be required
- Need a solution for Staverton crossroads
- Travel demand from North West Cheltenham will impact the surrounding area with vehicles seeking to avoid travel delay in Cheltenham
- Vehicle noise will impact the site
- Highly accessible by bus – but vehicle delays at Elmbridge Court and Arle Court Roundabouts needs to be minimised to maintain service frequency and reliability along this corridor
- Review 94 bus route corridor for vehicle delay pinchpoints
- Consider frequency improvements for 98 bus service
- Provide easy connectivity with the shared use walk and cycle facility on the B4063 and upgrade the existing A40 pedestrian bridge to carry higher pedestrian flows and cyclists
- Optimise non-motorised connectivity with Churchdown
- Upgrade Pirton Lane to safeguard and enhance it as a pedestrian and cycle environment
- Need to active travel access Elmbridge Court subway
- Consider the Neighbourhood Development Plan commissioned 'Churchdown Movement of People Study' which has considered some of the walk and cycle routes within the locality

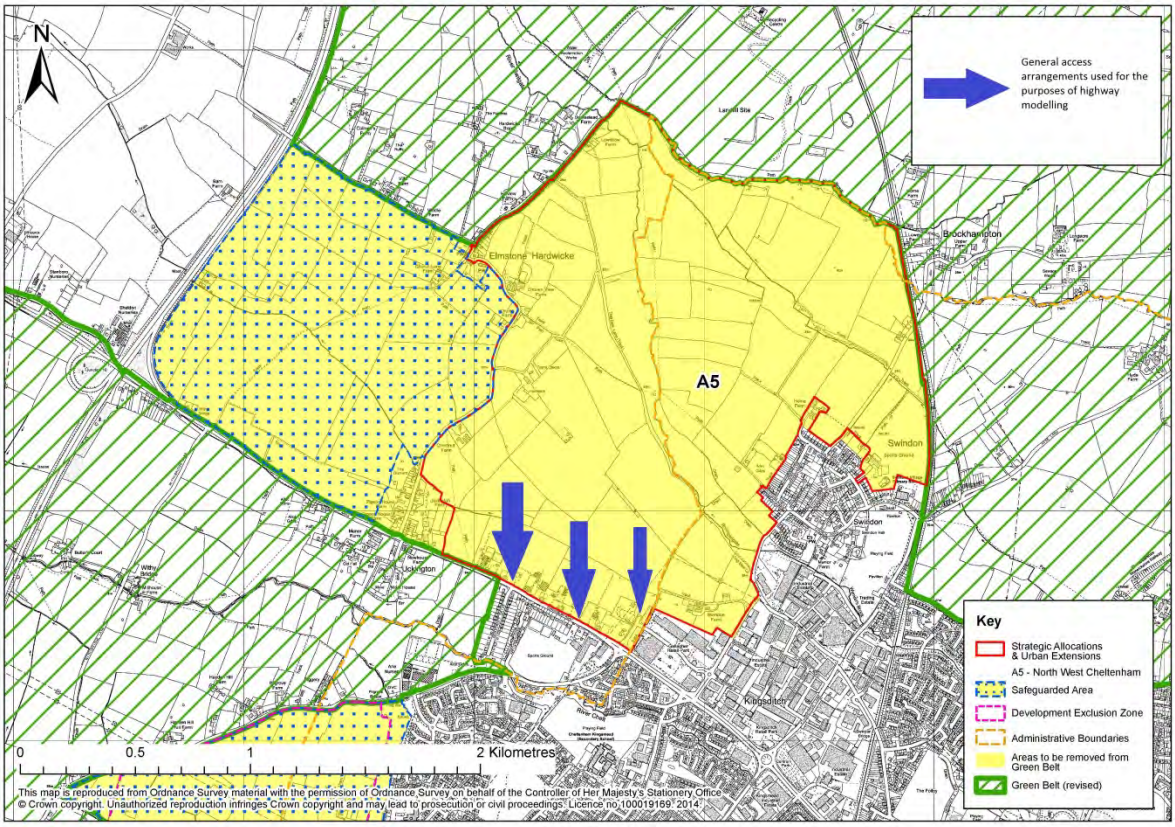
Transport mitigation considerations:

- Need a solution for Staverton crossroads – (B4063 and B4064)
- Bus priority measures for Elmbridge Court and Arle Court roundabouts
- Significant investment to enable improved walking and cycling links
- Promotion of alternatives to car use for local trips
- The role of park and ride to serve the site
- Improved access on to the A40

3.4 A5 – North West Cheltenham

3.4.1 This Strategic Allocation is located adjacent to the north-western edge of Cheltenham, north of the A4019 Tewkesbury Road and west of the Gallagher Retail Park and, Kingsditch Industrial Estate. The M5 Junction 10 is also in close proximity. The main site access points will be via the A4019 Tewkesbury Road. **Figure 21** illustrates the extent of the site and illustrates the access point assumptions used for the purposes of this assessment.

Figure 21 – Location and access points for site A5 – North West Cheltenham



3.4.2 Both Gallagher and Kingsditch retail parks are in close proximity of the site.

3.4.3 Trip data captured by the 2011 Census provides a useful proxy for likely trip patterns in terms of work based destination and method of transport used. **Appendix A** provides more information on the methodology used in this analysis.

3.4.4 **Figure 22** documents the main method of travel used by existing residents within the vicinity of this site. The table also includes data from Central Severn Vale (CSV) Gloucester and Cheltenham) and county wide as a comparison. With 71% of work based trips using the car as either a driver or passenger is highly comparable with the CSV average and below the county average.

3.4.5 The proportion of trips walked and cycled trips are consistent with the CSV average. Bus use accounts for 9% of trips. This is the highest proportion of bus use from any of the JCS strategic allocations and it will be important to maintain this level of service to maintain this level of use.

Figure 22 - Typical method of transport used when travelling to work destination from A5 – North West Cheltenham (2011 Census)

	A5 – North West Cheltenham	Central Severn Vale	Gloucestershire
Driving a car or van	65%	63%	69%
Passenger in a car or van	6%	6%	6%
Motorcycle, scooter or moped	1%	1%	1%
On foot	13%	15%	13%
Bicycle	6%	6%	5%
Bus, minibus or coach	9%	7%	5%
Train	1%	1%	1%

3.4.6 **Figure 23** documents the primary work based destinations of existing residents within the vicinity of this site. 63% of work based trips are to Cheltenham and surrounding areas demonstrating the potential for short distance sustainable transport use. 13% of trips are work based trips are to Gloucester. The comparatively low figure is linked to the limited access issues from the site.

3.4.7 With no southbound access onto the M5 at junction 10 only 7% of trips are to locations south of Cheltenham. Although not significant 12% of trips are to the north of the site either to Tewkesbury or the West Midlands. As this site is located close to M5 Junction 10 with access no southbound access it is likely that these long-distance trips will grow as the employment offer provided by Worcester and Birmingham continues to grow. Should M5 Junction 10 become a full movement junction this trip patterns is likely to change significantly.

Figure 23 - Work based destinations from Site A5 – North West Cheltenham (2011 Census)

	A5 – North West Cheltenham
Tewkesbury and surrounding areas	4%
Cheltenham and surrounding areas	63%
Gloucester and surrounding areas	13%
Winchcombe and rural Tewkesbury	3%
West Midlands	4%
Forest of Dean, Hereford and Wales	1%
Cotswolds, Swindon, London and South East	5%
Stroud, Bristol and South West	7%

Highway access

3.4.8 The Link and Place spectrum (**Appendix B**) included in Gloucestershire's LTP identifies the A4019 (Tewkesbury Road) as a Primary Link which provides strategic access which is critical for the local economy. The route provides access to M5 junction 10 and Cheltenham Town centre. This section of highway has an average daily vehicle flow of between 20,000 and 30,000 vehicles (**Appendix C**).

3.4.9 Despite the high vehicle flows there is no significant travel time delays experienced on the highway network within the vicinity of the site (**Appendix D**). The increase in vehicle demand from this site will need to be managed to not significantly increase vehicle delay in area.

3.4.10 When reviewing highway collision data from the past five years in the vicinity of the site (**Appendix E**) there has been two series incidents within close proximity to M5 Junction 10. For the Tewkesbury Road corridor there have been a number of slight incidents. The largest concentration of incidents is the junction with Old Gloucester Road (B4634) and the link into the retail park. It is important to understand the reason for these conflicts as the site will generate additional travel demand at this junction. An improved junction arrangement may need to be provided as part of the site mitigation package.

3.4.11 Although not part of this assessment emergency access arrangements do need to be considered.

3.4.12 The full extent of administrative boundary of Cheltenham Borough has been declared an Air Quality Management Area (**Appendix F**). Unless a successful mitigation package is provided the traffic generated from this site will impact the A4109 corridor and Princess Elizabeth Way and it is likely to further deteriorate air quality in the area.

3.4.13 There are several noise important areas declared along the A4019 corridor (**Appendix G**). It is not known how this site will impact these areas. There is a risk that properties located to the south of the site adjacent to the A4019 may be impacted by noise and if unmitigated the extent of the noise important areas may be increased.

Bus access

3.4.14 This large site is accessible by bus at multiple locations and **Figure 24** summarises those services that can be accessed.

3.4.15 Access from the site would provided from multiple locations on the Tewkesbury Road (A4019).

3.4.16 The main long distance service accessing the site is the 41/42 which links Tewkesbury and Cheltenham is accessible from Tewkesbury Road. The two town centre services can be accessed at Kingsditch Retail Park and Swindon Village. The later will only be possible should pedestrian access be provided as no highway access is proposed from the site linking Swindon Village.

Figure 24 - Existing bus accessible from site A5 – North West Cheltenham

Service No.	Point of access	Route	Operator	Mon-Fri	Sat	Sun
41	Tewkesbury Road (Uckington)	Cheltenham - Uckington - Tewkesbury - Northway	Stagecoach West	20 mins (6-18) 30 mins (18-20) 60 mins (20-22)	20 mins (6-18) 30 mins (18-20) 60 mins (20-22)	60 mins (10-19)
42 / 42A	Tewkesbury Road (Uckington)	Cheltenham - Walton Cardiff - Tewkesbury	Stagecoach West	30 mins (6-19) 60 min (19-23)	30 mins (6-19) 60 min (19-23)	60 mins (9-17)
650	The Green	Rural Rover: Bamfurlong or Tredington to Cheltenham	Community Connexions	2 services per day Wed and Thurs only Demand Responsive Service	No service	No service
41	Kingsditch	Cheltenham - Uckington - Tewkesbury - Northway	Stagecoach West	20 mins (6-18) 30 mins (18-20) 60 mins (20-22)	20 mins (6-18) 30 mins (18-20) 60 mins (20-22)	60 mins (10-19)
42 / 42A	Kingsditch	Cheltenham - Walton Cardiff - Tewkesbury	Stagecoach West	30 mins (6-19) 60 min (19-23)	30 mins (6-19) 60 min (19-23)	60 mins (9-17)
C	Kingsditch – Hayden Road	Hester's Way - Fiddler's Green - Arle - Cheltenham	Stagecoach West	15 mins (7-19) 30 mins (19-22)	15 mins (7-19) 30 mins (19-22)	20 mins (9-18)
B	Swindon Village	Charlton Kings - Cheltenham - Wyman's Brook - Swindon Village - Pilgrove Way	Stagecoach West	30 mins (7-18)	30 mins (7-18)	60 mins (9-17)
41	Tewkesbury Road (Uckington)	Cheltenham - Uckington - Tewkesbury - Northway	Stagecoach West	20 mins (6-18) 30 mins (18-20) 60 mins (20-22)	20 mins (6-18) 30 mins (18-20) 60 mins (20-22)	60 mins (10-19)
42 / 42A	Tewkesbury Road (Uckington)	Cheltenham - Walton Cardiff - Tewkesbury	Stagecoach West	30 mins (6-19) 60 min (19-23)	30 mins (6-19) 60 min (19-23)	60 mins (9-17)
650	The Green	Rural Rover: Bamfurlong or Tredington to Cheltenham	Community Connexions	2 services per day Wed and Thurs only Demand Responsive Service	No service	No service

3.4.17 Due to the scale of development proposed for this site there is significant potential for public transport use, subject to service delays being reduced along the primary Tewkesbury Road corridor. The frequency of the 41/42 could be increased to become a 10 minute service with the potential for a Park and Ride service. The value of this facility would increase significantly should M5 Junction 10 become a full movement's junction. The B service could be rerouted into the site and the service frequency improved. Cheltenham General Hospital can be accessed using the B, but there is no direct access. The lack of access to Gloucester is an issue as are the lack of direct linkages to Bishops Cleeve and Ashchurch. There may be merit in exploring a possible loop service with the 41 / 42.

3.4.18 Significant bus priority is required for Tewkesbury Road including signals and bus lane allocation where this can be provided without the reduction in highway capacity. A bus gate should also be considered to access the site.

Rail access

3.4.19 The nearest stations are Cheltenham Spa followed by Ashchurch for Tewkesbury. Ashchurch has two hourly GWR local services north to Worcester and south to Bristol and the south coast, with occasional Cross Country Services to Nottingham and South Wales. Cheltenham has good connectivity to the north and south west.

3.4.20 The limited service at Ashchurch for Tewkesbury is unlikely to attract many users although it is relatively easily accessible via the M5 and parking is currently free. Access to Ashchurch for Tewkesbury is also possible via the 41/42 Stagecoach service. Car parking at Cheltenham Spa is at capacity although there are plans to increase spaces as part of a wider redevelopment scheme for the station.

3.4.21 A direct bus link to Cheltenham Spa station would improve connectivity and provide an attractive option for residents

Cycle and walk access

3.4.22 The scale and extent of this development means that the Masterplan and delivery plan cover the entire strategic allocation including land beyond their control. This will be vital to ensuring understanding of adjacent land uses and movement patterns and to delivering local connectivity.

3.4.23 The proposal may be considered as a 'new settlement' in transport terms. It will strongly influence future travel patterns and impacts within and in association with it. The scale of the proposal will be a key factor in shaping new local travel patterns particularly around Cheltenham, Tewkesbury, Bishops Cleeve and other proposed development sites within the JCS. Local connectivity between Bishops Cleeve, North West Cheltenham and west Cheltenham will require that radial pedestrian and cycle routes receive as much attention as edge to centre ones.

3.4.24 In terms of distance alone the site is as close to Bishops Cleeve as it is to Cheltenham town centre. Local trips will be made to either destination depending on their directness, pleasantness and ease. Whilst Cheltenham exhibits cycling levels of 6% the areas of Swindon and Kingsditch have a levels of around 4%. This reflects the challenging walking and cycling conditions in association with the retail park, roundabouts and traffic flows.

3.4.25 Tewkesbury and Bishops Cleeve are easy cycling distances from the site. As referred to in **Section 2.4** this is where it will be cost effective to identify a quiet lane network – possibly to include public rights of way upgrades – which will enable relaxed cycle flows between these settlements. In parts this will tie into Sustrans National Cycle Network (NCN). New local routes should augment this to allow greater fluidity of non-car based movement.

3.4.26 Site A5 public rights of way network affects 3 corridors and offers elements of a useful pedestrian network. One public right of bridle way (Dog Bark Lane) introduces an important piece of pedestrian and cycle network which corresponds to the diagonal course of Wyman's Brook through the site.

3.4.27 There is no formal cycle network across the site and poor provision in terms of routes in its vicinity. The quiet lane network to its north and east offer some opportunities to safeguard non-motorised connectivity across the vale which is accommodating the JCS development allocations.

3.4.28 Only a small section of development edge adjoins Cheltenham town offering weak natural linkages with existing residential or other quietly trafficked streets;

3.4.29 Where the site does abut Cheltenham's urban fabric, conditions for walking and cycling are hostile due to retail development layouts at Gallagher Retail Park; a further barrier arises from the railway line, and there are few routes into Cheltenham town and all carrying high traffic flows and design constraints. The Tewkesbury Road (A4019) defines the main transport corridor serving the site transport with Cheltenham. This also is heavily trafficked and includes two large roundabouts which are highly congested at peak flow.

3.4.30 Without careful mitigation conditions will deteriorate further and the local transport relationship between the new site and Cheltenham town will be unsuccessful by active travel modes.

3.4.31 In addition to providing walk and cycle connectivity and integration between the site and Cheltenham it will be a challenge to overcome barriers to other settlements in the Vale. All roads serving settlements such as Bishop's Cleeve will carry higher flows of traffic.

3.4.32 Proximity and distance is optimal; however barriers to ease of movement will require considerable mitigation.

Thinktravel promotions

3.4.33 'Thinktravel' is the brand name for Gloucestershire's smarter choices programme, designed to help people consider their travel choices and encourage use of more sustainable modes of transport. Thinktravel initiatives that will apply to this development include:

- Site Travel Plan with extended area of interest to include Bishop's Cleeve, Cheltenham and West Cheltenham;
- Update local map to new residents which shows walk and cycle routes to destinations within Cheltenham, Bishops Cleeve and Tewkesbury / Ashchurch;
- Street signs to aid navigability;
- Personalised Travel Planning targeting the following groups:
  - New householders;
  - Local employers;
  - Local schools

3.4.34 **Figure 25** summarises the types of investments required to reach the optimum level of sustainable transport use for this site and **Figure 26** provides a summary of the baseline transport assessment of this site.

Figure 25 Types of sustainable initiatives to be delivered from investment

Types of Improvements			
Bus	**Rail**	**Cycle**	**Walk**
• Bus stops • RTPI • Lighting • curbs • Signing routes • Rerouting • Signal priorities • Additions to fleet • Physical priority measures	• Promotion • Signing routes • Cycle parking • Small Car parking improvements • Rail service improvements (Ashchurch)	• Promotion / cycle parking • Lighting • Signing routes • dropped curbs • Point closures - traffic restrictions • Greenlane networks (rumble strips / chicanes • Short length of shared use paths • Minor junctions improvements • New crossing points • Strategic greenways and cycle routes • Bridges / underpasses	• Resurfacing of footway • Promotion • Lighting • Signing routes • Dropped curbs • Gateway - traffic restrictions • Short length of shared use paths • Minor junctions improvements • New crossing points • Strategic route improvements • Bridges / underpasses

Figure 26 – A5 – North West Cheltenham baseline transport summary

A5 – North West Cheltenham – baseline transport summary

- The proposal may be considered as a 'new settlement' in transport terms
- Increased vehicle use for Tewkesbury Road and Princess Elizabeth Way needs to managed to reduce risk of vehicle delay
- A long-term solution to serve southbound M5 use and reduce the impact on Princess Elizabeth Way and Arle Court Roundabout (A40) must be access improvements to M5 junction 10
- There are likely to be decline of noise and air quality for existing communities within the vicinity of this site
- Tewkesbury Road has an important role as a multimodal corridor which will require significant bus priority enhancements to enable it to function and the provision of shared use cycle footway
- Review 41/42 bus route corridors for vehicle delay pinchpoints
- There is no formal cycle network across the site and poor provision in terms of routes in its vicinity
- Local connectivity between Bishops Cleeve, north west Cheltenham and west Cheltenham will require that radial pedestrian and cycle routes receive as much attention as edge to centre ones this includes soft links to Bishops Cleeve and the Honeybourne cycle track north of Cheltenham

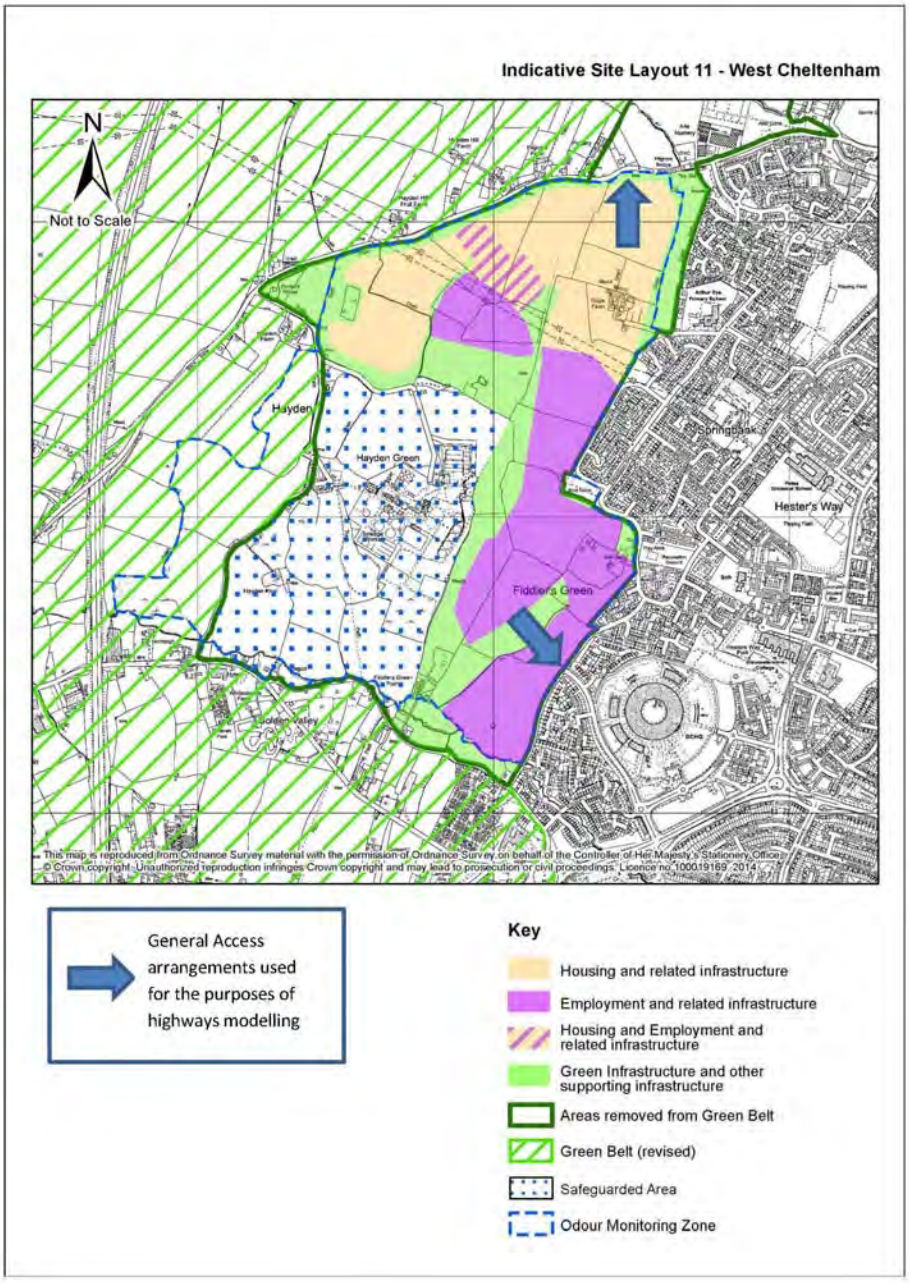
Transport mitigation considerations:

- The additional vehicle demand will significantly impact Tewkesbury Road (A4019), Princess Elizabeth Way and the Arle Court roundabouts
- Need for significant public transport investment
- Need for significant cycling investment
- Rail services can be accessed from Cheltenham and Ashchurch for Tewkesbury stations
- Promotion of alternatives to car use for local trips

3.5 A11 - West of Cheltenham

3.5.1 This Strategic Allocation is located to the west of Cheltenham. The site is bounded by Fiddlers Green Lane to the east, Pheasant Lane to the south, Hayden Lane to west and the Old Gloucester Road (B4634) to the north. The focus of development will be to the west of the site. The main site access points will be via a junction accessing Telstar Way and Arle Court on the A40 and the Old Gloucester Road. **Figure 27** illustrates the extent of the site and illustrates the access point assumptions used for the purposes of this assessment.

Figure 27 – Location and access points for A11 – West of Cheltenham



3.5.2 The Government's Communications Head Quarters and the Arle Court Park and Ride service are located within the vicinity of the site.

3.5.3 Trip data captured by the 2011 Census provides a useful proxy for likely trip patterns in terms of work based destination and method of transport used. **Appendix A** provides more information on the methodology used in this analysis.

3.5.4 **Figure 28** documents the main method of travel used by existing residents within the vicinity of this site. The table also includes data from Central Severn Vale (CSV) Gloucester and Cheltenham)) and county wide as a comparison. With 70% of work based trips using the car as either a driver or passenger this is consistent with the CSV average (69%) and below the county average (75%).

3.5.5 The proportion of trips walked and cycled trips accounts for 20% of trips which is consistent with the CSV average. Bus use accounts for 8% which is above the CSV average and reflects the ease of access from the site to high frequency services accessing both Cheltenham and Gloucester. Ensuring the site is well connected into the existing walking and cycling network to provide ease of access to the bus network should help maintain the level of sustainable transport use.

Figure 28 - Typical method of transport used when travelling to work destination from A11 – West of Cheltenham (2011 Census)

	New Site – West of Cheltenham	Central Severn Vale	Gloucestershire
Driving a car or van	64%	63%	69%
Passenger in a car or van	6%	6%	6%
Motorcycle, scooter or moped	1%	1%	1%
On foot	13%	15%	13%
Bicycle	7%	6%	5%
Bus, minibus or coach	8%	7%	5%
Train	1%	1%	1%

3.5.6 **Figure 29** documents the primary work based destinations of existing residents within the vicinity of this site. 66% of work based trips are to Cheltenham and surrounding areas demonstrating the potential for short distance sustainable transport use. 17% of trips are work based trips are to Gloucester with access provided the A40.

3.5.7 With only 13% of trips to locations outside the JCS area this is potentially the most self-contained site. A possible reason for this is the cost of housing when compared to other locations. It may not therefore be desirable for people to locate to and travel longer distances.

Table 29 - Work based destinations from A11 – West of Cheltenham (2011 Census)

	A11 – West of Cheltenham
Tewkesbury and surrounding areas	3%
Cheltenham and surrounding areas	66%
Gloucester and surrounding areas	17%
Winchcombe and rural Tewkesbury	0%
West Midlands	2%
Forest of Dean, Hereford and Wales	1%
Cotswolds, Swindon, London and South East	6%
Stroud, Bristol and South West	4%

Highway access

3.5.8 The Link and Place spectrum (**Appendix B**) included in Gloucestershire's LTP identifies the primary access points of this site as being local links that provide residential access. The links interact provide access to the A40 at Arle Court on the A40 and the Old Gloucester Road (B4634) which is classified as a local link.

3.5.9 The A40 between M5 junction 10 and Cheltenham Town Centre is classified as Primary Link which provides strategic access that is critical for the local economy. This section of highway is one of the busiest in the county and has an average daily vehicle flow of between 20,000 and 30,000 vehicles (**Appendix C**).

3.5.10 The A40 between M5 junction 10, Arle Court and Benhall Roundabouts experience significant delays during periods of peak travel (**Appendix D**). The increase in vehicle demand from this site will need to be mitigated to ensure the highway network can function. A suitable mitigation package to alleviate Arle Court Roundabout and the link with Benhall Roundabout will be required as a minimum.

3.5.11 When reviewing highway collision data from the past five years in the vicinity of the site (**Appendix E**) two serous have occurred to the south and west of the site on Pheasant Land and Fiddler's Green Lane both involving driver error. Two slight and one serious incident occurred to the north of the site on the Old Gloucester Road (B4634) as a result of drivers loosing control on the bendy section of highway. Demand for using highway link will increase as a result of this site and the strategic allocation at North West Cheltenham. Safety improvements along this road may ned to be considered as part of the site mitigation package.

3.5.12 Although not part of this assessment emergency access arrangements do need to be considered.

3.5.13 The full extent of administrative boundary of Cheltenham Borough has been declared an Air Quality Management Area (**Appendix F**). Unless a successful mitigation package is provided the traffic generated from this site will impact the A40 corridor and it is likely to further deteriorate air quality in the area.

3.5.14 There are no noise important areas within the vicinity of the site (**Appendix G**). It is not known how this site will impact noise.

Bus access

3.5.15 The site is accessible by bus and is in walking distance from Arle Court Park and Ride. **Figure 30** summarises the bus services that can be accessed.

3.5.16 There are no direct access points from the site so bus services will need to be accessed primarily at Gloucester Road (A40) which is approximately 800m from the edge of the site. From the A40 the high frequency 94 can be accessed which accesses Cheltenham and Gloucester.

3.5.17 The C town service is accessible from Fiddler's Green and this could be extended into the site to provide local access to the site. Altering this service into a town centre loop using the A40 into the Town Centre may be worth consideration to maximise local access. Bus priority measures are a key consideration in this area and suitable measures should be provided to maintain bus service frequencies especially for the A40 corridor.

Figure 30 - Existing bus accessible from site New Site - West of Cheltenham

Service No.	Point of access	Route	Operator	Mon-Fri	Sat	Sun
C	Fiddlers Green Lane	Hester's Way - Fiddler's Green - Arle - Cheltenham	Stagecoach West	15 mins (7-19) 30 mins (19-22)	15 mins (7-19) 30 mins (19-22)	20 mins (9-18)
94	Arle Court (Cheltenham Road)	Gloucester - Longlevens - Churchdown - Cheltenham	Stagecoach West	10 mins (6-18) 20 mins (18-20) 30 mins (20-00)	10 mins (6-18) 20 mins (18-00)	20 mins (8-11) 15 mins (11-19) 30 mins (20-00)
N94	Arle Court (Cheltenham Road)	Gloucester - Longlevens - Churchdown - Benhall - Cheltenham	Stagecoach West	Fridays only 30 mins (00-03)	30 mins (00-03)	No service
B	Pilgrim Way	Charlton Kings - Cheltenham - Wyman's Brook - Swindon Village - Pilgrove Way	Stagecoach West	30 mins (7-18)	30 mins (7-18)	60 mins (9-17)

Rail access

3.5.18 Cheltenham station with good connectivity to the national rail network is the nearest railhead to the site. There are regular direct services to Manchester, the North East, South West, South Wales and London.

3.5.19 The site is adjacent to a number of bus routes although none appear to currently serve the station. There is potential for some of these services to be rerouted via the rail station. The A40 runs parallel to the southern boundary of the site which carries the 94, 94U and 94X services but none of which pass the station. However, Great Western Railway are developing plans for the station which include creating a cycle/pedestrian link between the station and the A40 which would facilitate greater bus use.

3.5.20 Given the close proximity of the site to the station direct pedestrian and cycle routes could be created along with an amended/enhanced bus service.

Cycle and walk access

3.5.21 The new development site comprises open land well served by the public rights of way (PRoW) network. There are opportunities for good walk linkages into the western edge of Cheltenham, and the site is walking distance from key employment and education trip attractants. There is no bespoke cycle route within the site. However, the PRoW network offers a useful walk and cycle framework, and provides well for north-south directional flows which will be as important to secure as those serving trips between Cheltenham and Churchdown.

3.5.22 Within the site the PRoW network will help form a traffic free movement framework connecting through and to the development. The development closes distances between existing and proposed sites identified through the core strategy in the Severn Vale.

3.5.23 The site is proximate to Cheltenham, Churchdown, Staverton and the proposed JCS site at north-west Cheltenham. Its implementation will reduce the travel distance between a 'new' edge of Cheltenham and these other settlements. It is within easy walking and cycling distance of key employment, education and shopping facilities to its east predominantly and also to its north and west.

3.5.24 Cheltenham town offers a highly permeable network of footpaths, cycle paths and quiet roads. It is a compact and walkable town which exhibits higher than national average cycle to work levels. 6% of all commute trips in Springbank and the Reddings adjacent to the development site are by cycle, as is Churchdown to the west of the site. The new development should seek to emulate or exceed these levels. It sits at the north east of the A40 corridor between Gloucester and Cheltenham where higher cycling levels are supressed by traffic conditions and the lack of direct routes. The development should seek to improve conditions within its area of influence to enable more cycle movement to its east.

3.5.25 As proximity is good, key determinants of levels of walking and cycling will be the grain of new and existing development layout, levels of permeability and the extent to which opportunities to access adjacent streets, paths and cut-throughs are identified and enabled. Walkers and cyclists, particularly cyclists, do not necessarily need heavily engineered or highly evident routes so much as quietly trafficked streets, slow traffic, cut throughs and softly engineered solutions which this development has the potential to achieve.

Thinktravel promotions

3.5.26 Thinktravel' is the brand name for Gloucestershire's smarter choices programme, designed to help people consider their travel choices and encourage use of more sustainable modes of transport. Thinktravel initiatives that could be applied to this development include:

- New street signs to aid navigability
- Travel Planning advice targeting
    - New householders

- Local employers

3.5.27 **Figure 31** summarises the types of investments required to reach the optimum level of sustainable transport use for this site and **Figure 32** provides a summary of the baseline transport assessment of this site.

Figure 31 Types of sustainable initiatives to be delivered from investment

Types of Improvements			
Bus	**Rail**	**Cycle**	**Walk**
• Bus stops • Lighting • curbs • Signing routes • Rerouting • Signal priorities	• Promotion • Signing routes • Cycle parking	• Promotion / cycle parking • Lighting • Signing routes • dropped curbs • Short length of shared use paths • Minor junctions improvements • Strategic greenways and cycle routes	• Promotion • Lighting • Signing routes • Dropped curbs • Short length of shared use paths • Minor junctions improvements

Figure 32 –West of Cheltenham baseline transport summary

West of Cheltenham baseline transport summary

- Primary access with be onto the local highway network, but the A40 is a short distance away. Arle Court and Benhall Roundabouts experience significant delays during periods of peak travel.
- The high frequency 94 can be accessed from the A40 which is approximately 800m from the edge of the site.
- Town centre bus services may need to be rerouted to serve the site
- The development should seek to improve conditions within its area of influence to enable more cycle movement to its east.
- There will be a strong link for pedestrians and cyclists between the West Cheltenham site and the North-west Cheltenham site i.e. clear radial links as well as edge to centre
- Ensure new junction arrangements – especially if they include new roundabouts – do not create new barriers to walking and cycling movement.

Transport mitigation considerations:

- Improved access to M5
- Junction improvements at A40 Arle Court roundabout and /or M5 Junction 10
- Corridor Improvements for A4019 Tewkesbury Road
- Junction improvements for B4063 / B4064 Staverton crossroads
- Aid access from Cheltenham Station
- Need for strategic walking and cycling links providing north / south access linking to North West Cheltenham
- Promotion of alternatives to car use for local trips