

# Stroud Sustainable Transport Strategy

Stroud District Council

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# 1. Introduction

## Introduction

This Sustainable Transport Strategy (STS) has been developed to form part of the evidence base for Stroud District Council's Local Plan Review. The Draft Stroud District Local Plan identifies the housing, employment, retail and community development that is required to meet local needs up until 2040. It sets out the strategy for distributing development within the District, and policies for protecting and conserving the natural and built environment. This STS will play a key role in setting out plans for achieving the connectivity and mobility needed to support growth, in as sustainable a manner as possible.

## What is a Sustainable Transport Strategy?

A Sustainable Transport Strategy provides an important opportunity to tackle issues such as congestion, accessibility, air quality, public health and safety whilst supporting the District in delivering mobility for inclusive growth. It is underpinned by extensive research into local and national policy context, cutting edge research and guidance, and the District's transport network and demographics. This has been summarised into a series of challenges and opportunities, which set the framework for the development of a bespoke STS for Stroud District.

The STS is informed by a vision (see box), reflecting the overarching goal which the STS aims to achieve, supported by a series of objectives to guide the development of interventions and packages to deliver the vision.

**Stroud Sustainable Transport Strategy Vision:**  
*Enable mobility for all, prioritising sustainable and low carbon modes of transport, allowing healthy and prosperous communities and economy to thrive, whilst continuing to be an environmentally responsible district*

The STS has been developed by Stroud District Council (SDC) and stakeholder engagement has been fundamental to its creation. A wide range of views have been gathered, from those responsible for setting policy and with stewardship of the transport network, to local representatives, transport interest groups, transport operators, and those bringing forward development and growth through the Local Plan. Options and interventions gathered through this process have been appraised against the objectives, grouped into themes, and refined to packages which form the STS.

The STS has a number of functions.

- It sets SDC's position on a range of transport related issues and guides the formulation of updated Local Plan Policy.
- It provides direction on the provision of transport measures which will be required to support new development.
- It sets priorities and focus for transport investment in the District.
- It sets the framework for delivery.

## Why do we need a Sustainable Transport Strategy?

In December 2018, SDC declared a Climate Emergency and made a commitment to carbon neutrality by 2030. Reducing the environmental impact of transport is critical to achieving this aim, and SDC has a strong ambition for this STS to be a transformative force which drives forward its sustainability agenda. We are in the midst of both a Housing Crisis and a Climate Emergency, and in order to address both issues we need to place accessible, sustainable transport at the heart of planning for growth and recognise it as fundamental to policy-shaping and decision-making.

In a national context, the Government recognises that air pollution is the top environmental risk to human health in the UK and that transport is a significant contributor (The Clean Air Strategy (DEFRA, 2019)). Furthermore, transport is now the largest carbon emitting sector of the UK economy, accounting for an increasing proportion of UK greenhouse gas emissions. The Government's Clean Growth Strategy (2017) seeks to

promote opportunities to reduce the demand for travel in addition to accelerating a behavioural shift to low-carbon transport.

The health benefits of active travel are clear: a former chief medical officer noted *“The potential benefits of physical activity to health are huge. If a medication existed which had a similar effect, it would be regarded as a ‘wonder drug’ or ‘miracle cure’.”* (Public Health England 2016, Working Together to Promote Active Travel). Significant health benefits have been reported by the Department for Health (2011, StartActive, Stay Active) as being strongly-linked to physical activity:

- Overall death rate: approximately 30% risk reduction for the most active compared with the least active.
- Cardiovascular health: 20% to 35% lower risk of cardiovascular disease, coronary heart disease and stroke.
- Metabolic health: 30% to 40% lower risk of type 2 diabetes in at least moderately active people compared with those who are sedentary.

## Delivering on Local Plan Objectives

SDC’s Vision to 2040 in the Draft Local Plan (Nov 2019) includes, “Our rural District is living, modern and innovative. We have responded to climate change, becoming carbon neutral by 2030 and continuing to adapt our lifestyles to live within our environmental limits, including travelling in sustainable ways.” This vision sets the tone for the development of the Local Plan, including the STS.

SDC’s Draft Local Plan (November 2019) includes six principal objectives to provide a tangible way of taking forward the overall vision for the District. These are:

### Strategic Objective SO1: Accessible communities

Maintaining and improving accessibility to services and amenities, with:

- Affordable and quality housing for local needs
- Healthcare for all residents
- Active social, leisure and recreation opportunities
- Youth and adult learning opportunities

### Strategic Objective SO1a: Healthy, inclusive and safe communities

Developing communities that enable healthy lifestyles, promote social interaction, support the elderly, the young and the vulnerable, ensure public safety and reduce the fear of crime

### Strategic Objective SO2: Local economy and jobs

Providing for a strong, diverse, vibrant local economy that supports existing businesses and encourages new enterprise - enabling balanced economic growth, coupled with enhancing skills and job opportunities across the District

### Strategic Objective SO3: Town centres and rural hinterlands

Improving the safety, vitality and viability of our town centres, which link to and support the needs of their rural hinterlands

### Strategic Objective SO4: Transport and travel

Promoting healthier alternatives to the use of the private car and seeking to reduce CO<sub>2</sub> emissions by using new technologies, active travel and/or smarter choices, working towards a more integrated transport system to improve access to local goods and services

### Strategic Objective SO5: Climate Change and environmental limits

Promoting a development strategy that reduces our District’s carbon footprint, adapts to climate change and respects our environmental limits by:

- Securing zero carbon development through building design
- Maximising the re-use of buildings and recycling of building materials
- Minimising the amount of waste produced and seeking to recover energy
- Promoting the use of appropriately located brownfield land
- Supporting a pattern of development that facilitates the use of sustainable modes of transport
- Minimising and mitigating against future flood risks, recycling water resources and protecting and enhancing the quality of our District’s surface and groundwater resources

### Strategic Objective SO6: Our District’s distinctive qualities

Conserving and enhancing Stroud District’s distinctive qualities, based on landscape, heritage, townscape and biodiversity.

## STS Contribution to Strategic Objectives

The STS contributes to achieving each of the Strategic Objectives and therefore is fundamental to the successful delivery of the Local Plan. It will assist communities in maintaining accessibility to services and amenities, and support healthy lifestyles in line with SO1 and SO1a. It will provide for access to jobs and town centres to deliver on SO2 and SO3. In supporting sustainable transport and sustainable growth, it is integral to achieving SO4 and SO5. In providing tools to reduce car dominance, it can play a role in achieving SO6 through lessening the impact of motor vehicles on our landscape, heritage, townscape and biodiversity. A strong and ambitious STS is vital to the success of the Local Plan.

## Strategy structure

The STS is set out in the following sections:

- Section 2 highlights the challenges and opportunities for the STS to address;
- Section 3 sets out the vision and objectives;
- Section 4 describes the development of the Strategy;
- Section 5 outlines the Strategy itself;
- Section 6 applies the STS principles and packages to the Strategic Sites; and
- Section 7 describes the traffic modelling of the STS Mitigation Scenario.

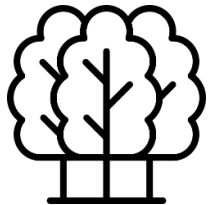
The Strategy has resulted from a significant amount of evidential work, which is presented in the Appendices.



## 2. Challenges & Opportunities

Looking to 2040, transport and movement in the Stroud District will have to respond to many challenges and capitalise on many opportunities. An evidence base has been collated, detailed in Appendix A, to provide an understanding of the key issues across the area.

### Much of the area falls within the Cotswolds AONB



Stroud is an attractive place to live, with the Cotswolds Area of Outstanding Natural Beauty (AONB) right on its doorstep. The sparsity of roads, and the hilly topography of the area presents a greater range of challenges when trying to improve the transport network. It is important that we work with, not against the environment, and promote green corridors that maximise the natural beauty of the area. Damage or loss to, natural habitats must be minimised.

### 50% of the district's population live in the main towns



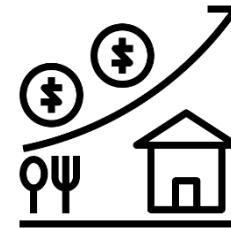
Car travel is still the most dominant form of transport for local trips and although there are good local services within the towns, walking should be encouraged as the first mode of travel.



### 86% people own at least one car

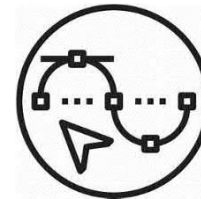
This highlights the heavy car reliance and dominance of the car in the area. Stroud District ranks in the top 25 local authorities in the country for owning 3 or more cars.

### 12,800 new homes and between 2,300 and 6,300 new jobs by 2040



Growth will lead to demand for more movement, more trips on the transport network and contribute to congestion. More people will need to walk, cycle or travel by public transport and significant upgrades to the sustainable transport networks will be needed to unlock growth areas without potentially substantial environmental impacts. The rural nature of the Stroud District will make it more challenging for new development to not rely on the private car, and careful consideration must be taken to enable sustainable travel to key destinations within the District.

### Spatial Growth Strategy



The scale of growth required will rely on a range of spatial solutions. The emerging growth strategy of the Local Plan will concentrate housing growth on the main towns of Cam and Dursley, Stonehouse and Stroud and through extensions to Gloucester. Housing and employment growth will also be centre at two new settlements at Sharpness and Wisloe within the Severn Vale where there is the potential to create new sustainable communities along garden village principles. Further strategic employment growth will also be concentrated at accessible locations within the A38/M5 corridor.

### Access to jobs



Two thirds of the population are of working age, and the District has low levels of unemployment. Opportunities to access to jobs and training by sustainable means will be a priority.

**50% of people leave the district to go to work**



Access to skills and markets in the local area needs to be improved to reduce out-commuting to competing areas. 20% of commuters travel to Bristol and the surrounding areas. Enabling access to opportunities within the District by sustainable transport is desirable, however there must also be recognition that there is high demand for longer distance travel which needs high quality public transport options to meet this demand.

**Ageing Population**

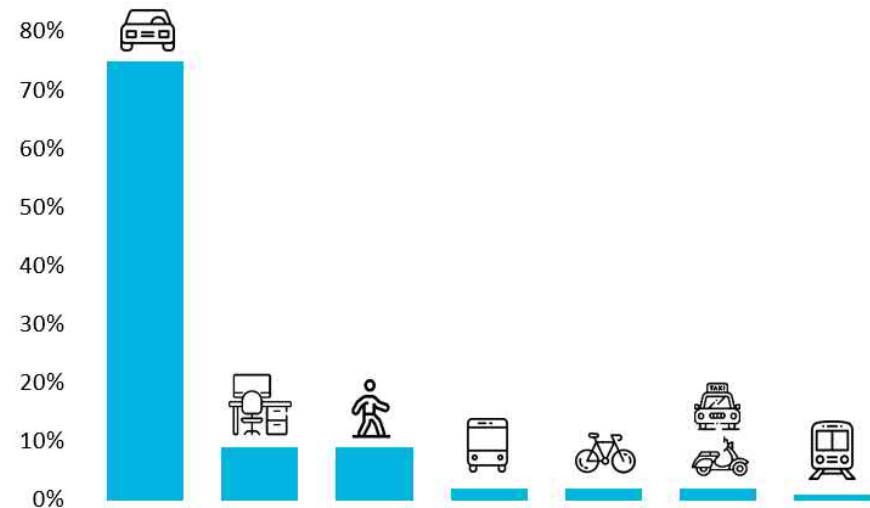


Like many places in the UK, the population is ageing, and the transport network needs to adapt to reflect the changes in ages groups, providing sustainable alternatives to the car.

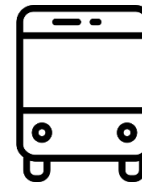
**Majority of people travel to work by car.**



75% of commuters in the Stroud District travel to work by car. The average distance travelled to work is 17km, sometimes to areas outside of the district, meaning that demand for motorised transport is high. However, 27% of people travel less than 5km to work, of which two thirds of these people travel by car. These shorter commutes could be encouraged to take active and sustainable mode of transport as their first choice.



**Sparse, subsidised bus network**



Journey time reliability on our roads and on public transport is essential. Currently, the bus services are unreliable and infrequent, making it difficult to make a whole journey by sustainable travel and unattractive in comparison with private car use. There is a lack of services that run into the evening and service information is not always readily available to everyone. A lack of rural bus services connecting to the main towns can lead to social exclusion for those who do not have access to a car.

### 22% growth in rail users since 2010/11



The number of people using trains is growing in the District. This is both an opportunity and a challenge to keep up with demand. Higher frequency services will become increasingly important to meet growing demand, and access to rail stations by sustainable modes will need to be improved.

more attractive and work for people will provide economic benefits to the town centre.

### Disconnected cycle network



Stroud District has good access to the canal network, providing a pleasant greenway for active travel journeys. The route surface varies in quality and parts of the routes are not well connected to each other. The remaining cycle network is not coherent and does not align well with natural desire lines to enable people to get to key destinations. The area provides challenging topography, and it is recognised that not everyone is able to walk and cycle, and therefore a reliable and accessible public transport service is required.

### Inclusive society



Stroud District is generally prosperous, and the least deprived in Gloucestershire. However, there is large variance within the District, illustrated by Stroud town centre. This area has the lowest car ownership in the District and the relatively compact nature of the town and sustainable travel options allow people to move within the town centre without the need for a car. However, difficulties arise when people try to travel further afield to access employment and education, or wider service and retail opportunities. Roads within Stroud town centre are focused around the car, creating an unfavourable experience for non-car users. Making streets and places

### 3. Vision and objectives

Through analysis of the evidence base, understanding of the challenges and opportunities, and discussions with stakeholders, we present a vision that reflects Stroud District Council’s commitment to sustainability and seeks to redress the balance between people and vehicles, to:

*Enable mobility for all, prioritising sustainable and low carbon modes of transport, allowing healthy and prosperous communities and economy to thrive, whilst continuing to be an environmentally responsible District*

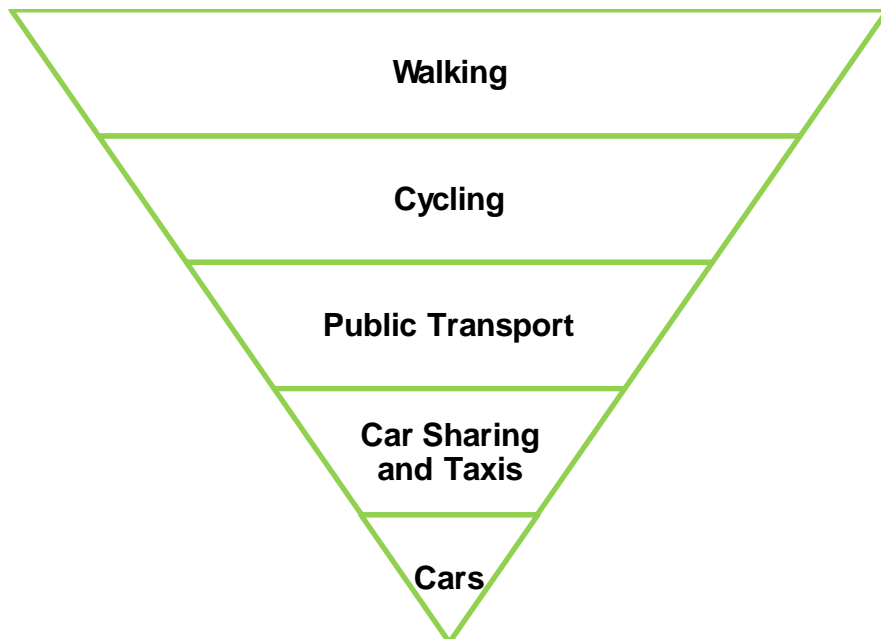
The **objectives** of the Sustainable Transport Strategy expand on the vision and respond to the challenges the District faces. The objectives are to:

- ▶ Improve community health and wellbeing by promoting and prioritising active travel modes
- ▶ Improve accessibility and connectivity via sustainable mode choices
- ▶ Promote a sustainable travel hierarchy which prioritises sustainable modes and reduces the need travel
- ▶ Protect and extend existing active travel infrastructure
- ▶ Improve the safety of people travelling around the district, in particular pedestrians, cyclists and public transport users.
- ▶ Support sustainable economic activity
- ▶ Encourage innovative and technological mobility solutions to support the Council’s ambition to become carbon neutral by

### Prioritising transport modes

Adopting a Transport Hierarchy will help emphasise the priorities of this vision, demonstrating SDC’s commitment to promoting sustainable travel. The hierarchy puts pedestrians, cyclists and public transport users’ needs above those of vehicles, including in terms of safety and quality of provision. It ensures preference in design and investment is given to those travelling by sustainable and active means to create better places that serve all users in a balanced way. The hierarchy recognises the benefits that shared mobility can provide in terms of increasing car occupancy levels, reducing overall number of car trips, and providing alternatives to car ownership.

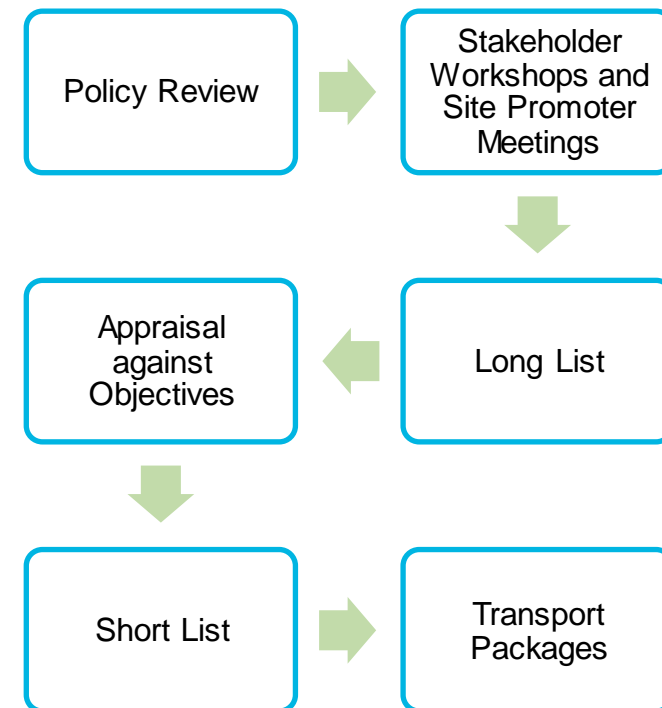
The STS recognises the role of Electric Vehicle (EV) uptake in reducing emissions from cars at the point of use. Despite this, an EV is still a car and as such, places at the bottom of the hierarchy, where opportunities to increase vehicle occupancy or transfer journeys to public transport or active travel modes remains preferable to a car with a single occupant with associated impacts in terms of congestion.



## 4. Strategy Development

### Summary of Strategy Development Process

Initiatives for the Sustainable Transport Strategy have been identified and considered through a review of local, regional and national policies, plus engagement with key local stakeholders and promoters of strategic development sites. This has enabled the collation of a long list of options and potential interventions which can be appraised against the objectives of the STS. Appraisal has allowed a short list to be developed, with measures grouped into themes. The resulting measures have then been critically reviewed and refined into the transport packages which make up the Sustainable Transport Strategy. The process is summarised below:



## Policy Review

A review of existing and emerging planning and transport policy and guidance was undertaken to identify relevant measures for inclusion in the long list of interventions, and for potential inclusion in updated Local Plan Policy. This included a range of research, guidance and policy which has been published since the original Local Plan was adopted in 2015. Details of documents reviewed are included in Appendix A.

## Stakeholder Engagement

We have engaged with three categories of stakeholders as part of the strategy development:

- Transport-related stakeholders, through a stakeholder workshop;
- Strategic site promotion teams, through site-specific meetings and information exchange; and
- Statutory consultees, i.e. Gloucestershire County Council and Highways England, through steering meetings and content review.

The **stakeholder workshop** was held with participants from local authorities, transport operators and transport interest groups. Stakeholders were given the opportunity to highlight and discuss some of the key transport-related issues across the District, and also to identify potential options for resolving these whilst seeking to deliver greater growth and sustainable mobility.

This exercise emphasised the limited travel options in the District, evidenced by the dominance of private cars as the main travel mode. It also highlighted the appetite to improve the quality and frequency of bus services and increase the availability and quality of walking and cycling infrastructure.

Engagement with the **strategic site promotion teams** was undertaken through site-specific meetings to understand the transport work undertaken to date on each site, discuss key issues and opportunities and review emerging transport strategies where available. Opportunities to reduce the need to travel, achieve modal shift, and promote sustainable travel for each strategic site were discussed, contributing to the long list of measures. A summary of the key measures specific to each site is shown in Chapter 6.

Regular engagement has been undertaken with Gloucestershire County Council and Highways England to inform the direction of the STS and ensure that it meets the needs of the transport-related **Statutory Consultees**.

The ideas generated through this process have led to the development of a long list of potential initiatives which cover a broad range of topics across all modes of transport, encompassing:

- User Behaviour;
- Connectivity;
- Infrastructure and Resilience;
- Active Travel;
- Public Transport;
- Technology; and
- Policy.

The long list is provided in full in Appendix C.

### Prioritising strategy initiatives

To reduce the size of the long list into a more targeted and prioritised list of possible interventions, an initial sift by two independent assessors was undertaken. Initiatives were considered and scored against how well they meet the objectives of the STS.

A seven-point scale was used, ranging from -3 to +3, providing a measurable assessment and an overall score for each intervention. As there are seven objectives, the maximum available score is 21.

### Appraisal scoring

Appraisal Score						
-3	-2	-1	0	1	2	3
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Strongly Agree	Moderately Agree	Slightly Agree

The overall scores from both assessors were averaged to give a final assessment score. These were then ranked in descending order to highlight the best scoring interventions, shown in Appendix C. In general, interventions relating to active travel and public transport scored the highest, with road user charging and parking charging schemes scoring poorly.

Further refinement to develop packages involved removing the lower-scoring interventions (those that scored 6 or below).

The interventions were grouped based on similarities, either by geography, by mode, or whether their delivery could be achieved through Policy. This refined and grouped list of interventions can be seen in Appendix D. This formed the basis of the development of packages that reflect the vision, represent the objectives and adhered to the Sustainable Transport Hierarchy.

## 5. Sustainable Transport Strategy

The Sustainable Transport Strategy comprises packages of initiatives that have been developed to meet the movement challenges and the objectives of the Vision. They will enable and support the growth and development of the District and refocus investment towards active, sustainable mobility.

For new developments to thrive, it is essential that forward-planning of mobility takes place, creating a viable sustainable and active transport network that links to key destinations and services without the reliance on car-based travel. Interventions that would benefit such developments, both housing and employment, have been included into the packages. How STS initiatives should be applied to each site is set out in Chapter 6.

We envisage a re-balancing of our transport network in favour of sustainable transport. People's travel decisions are about the relative attractiveness of different options, and for too long we have under-invested in sustainable transport. As a society we have planned and provided for car-based travel, enabling the car to dominate.

It is important to be explicit that, in delivering some of the measures and initiatives set out in this section, there may be instances where road space or capacity will be reallocated to sustainable modes from private cars. There will be other instances where investment decisions will be made in favour of sustainable modes whereas previously funds would be used to provide increased vehicle capacity. Notwithstanding this, road safety is paramount, and any scheme will need to be reviewed to ensure that road safety is not prejudiced. This will include ensuring that schemes which reduce traffic capacity will not in themselves impact on slip road queuing on the Strategic Road Network.

## Local Plan Making

The Local Plan is the means by which SDC can embed sustainability into spatial decision making. It forms the basis for determining the acceptability of development proposals and exerts influence on the types of proposals that are brought forward. In that respect, it provides officers of the local planning and transport authorities with the basis to require development proposals to deliver sustainable transport in accordance with Stroud's ambitious sustainability agenda. The STS work has identified a number of interventions which can be carried through into planning policy. Appendix E presents the proposed revisions to Local Plan Policy advocated by the STS. The principles of these revisions are summarised as follows:

### Policy Interventions

- Give weight to the STS in requiring developers to take account of its proposals.
- Decision making on transport mitigation to prioritise sustainable transport enhancements above provision of additional highways capacity.
- Strengthen requirements to deliver sustainable transport opportunities at an early stage in the development build out and ensure that developers see that such investment is fundamental to the development of a site.
- Strengthen requirements to embed sustainability through design, including:
  - Maximise opportunities to reduce the need to travel
  - Locate developments to capitalise on existing public transport and walking/cycling networks
  - Develop Masterplans to prioritise sustainable modes in line with the Sustainable Transport Hierarchy.
  - Deliver opportunities for shared mobility.
- Strengthen highways safety, particularly linked to the Sustainable Transport Hierarchy, in Development Management policy.
- Introduce electric vehicle parking requirements into policy.



- Remove car parking standards from Local Plan Policy and set the principles for parking levels to be determined based on site-specific requirements with a presumption in favour of using restrained parking provision as a measure to discourage unnecessary car usage. Place the onus on the developer to justify any parking provision.
- Establish a policy basis to invest in the development of District Wide specific strategies. Including:
  - Active Travel (Walking and cycling) Strategy for Stroud District, including maintenance, signage, safety and suggested infrastructure improvements;
  - Shared Mobility Strategy with a goal of enabling a transition to a shared mobility transport system, supporting a shift to reduced individual vehicle ownership and shared access to a cleaner, lower carbon, vehicle fleet and other sustainable transport options;
  - Interchange Strategy, to investigate the potential for Interchange Hubs to provide seamless multi-modal connectivity, facilitated by technology;
  - Parking Strategy with the objective of using parking as a policy lever to discourage car trips where viable sustainable targets exist; and
  - Public Transport Corridor Strategy to will identify and prioritise express bus corridors to deliver direct and attractive, limited stop services to key destinations, including rail stations.

## Mobility Behaviours

Small changes in people's travel behaviours can have a big impact on an individual's health and well-being, and can also have a positive impact on the environment they live in.

Places with fewer cars and higher numbers of people moving on foot and by bicycle, have been shown to have economic, social and environmental benefits. Improving places for pedestrians can boost footfall and trading by up to 40%.<sup>1</sup>

Integrating public transport and providing subsidies and grants to businesses makes travelling by sustainable transport easy and efficient. Transforming places to benefit users at the top of the hierarchy helps make sustainable travel people's first mode choice.

These interventions focus on providing people with the tools, including knowledge of the opportunities available to them, to make sustainable choices in line with the sustainable transport hierarchy. They will contribute to reducing the need to travel and making sustainable transport modes the easiest and natural transport choice.

### Interventions

- Culturally embedding Travel Planning into new developments, e.g. combining sustainable travel events into wider welcome parties.
- Personalised Travel Planning for key corridors and for residents in new developments.
- 'Drop the pace' campaigns to reduce conflicts between pedestrians and cyclists in shared space environments.
- Daily walking clubs. Walks in small and large communities (and cycle clubs for different age groups).
- Measures to improve passenger experiences on public transport, such as improvements to waiting environments including real time information and Wi-Fi, quality of vehicles, ticketing, timetabling and interchange.

<sup>1</sup> Lawlor, E. (2013.) The Pedestrian Pound: The Business Case for Better Streets & Places. United Kingdom: Living Streets & Just Economics Report.

- Promotion of car share with benefits dedicated to car share users, to integrate with the development of a wider Shared Mobility Strategy.
- Electric Vehicle (EV) fleet for public and private organisations.
- Encouraging the development of Last Mile delivery schemes (at suitable locations).
- Ongoing support for Thinktravel branding, including positivity campaigning to promote public transport, active travel and road user awareness.
- Real Time travel information for all modes on social media/ app.
- High speed broadband, encouraging home/community working.
- Consulting with communities, improving opportunities for partnership working towards developing sustainable transport measures which are targeted towards the needs of the local area.
- Business engagement with Gloucestershire County Council to promote and encourage sustainable travel.

## Active Travel

Incorporating active travel into everyday routines is the best way to get people moving and keeping communities healthy. Walking and cycling has been shown to reduce the risk of illness and improve mental health. By changing the hierarchy of movement to favour active travel; people, rather than cars, will be put back at the heart of the transport system.

The rural and hilly nature of the District will always present a challenge. Despite this, making the local environment more appealing for active travel users enhances the travel experience and will encourage and support new people to walk and cycle for a greater number of journeys. Well-designed infrastructure will benefit all ages and abilities, allowing people to move freely without restriction.

### Interventions

- Improvement of existing active travel infrastructure in the District through the development of a District Walking and Cycling Strategy, including active travel audits. This should include consideration of the opportunities which can be realised by new technologies and services,

such as e-bikes, which can significantly reduce barrier effects of distance and topography.

- Provision of active travel infrastructure to follow the hierarchy where possible and appropriate to the context:
  - Segregated route away from road network;
  - Segregated route adjacent to the road network;
  - Shared cycle/pedestrian path adjacent to the road network; and
  - On-street provision as a last resort.
- Targeted measures to join up the walking and cycling network and address local barriers to longer distance movement. to include measures such as:
  - Extension of Cam and Dursley Greenway;
  - Improvements to Gloucester & Sharpness Canal towpath, including access;
  - Cycle access improvements at Multi-Use Track - B4008 between Little Haresfield and Stonehouse;
  - Cycle access improvements for Stroud town centre; and
  - Pedestrian improvements to Market Street, Nailsworth.
- Strategic development sites to link into, and enhance, the cycling network.
- Attractive, safe and direct active travel routes to local facilities and town centres.

- Increased pedestrianisation and use of modal filters<sup>2</sup> in towns. To include opportunities to introduce pedestrian-only restrictions at off-peak times.
- Hire Bike Scheme, including hire of pedal and e-bikes, for residents, schools/colleges and businesses. To include e-bike charging and secure cycle parking facilities.
- Secure cycle parking at key destinations.
- Improved access to free cycle training for all ages and abilities.

## Bus

Bus travel is important in a rural district to help people travel distances that are too far by walking or cycling. This is particularly important as the average distance a Stroud resident travels to work is 17km. Buses are a lifeline for people with mobility issues and those without access to a car. These interventions aim to fill in the gaps in the bus network, as well as connections to new places that will be developed through the Local Plan.

It is important that the people in future developments are not limited by their choice of sustainable travel modes and can connect to the key centres in the District with ease. Upgrading the infrastructure, both physical and digital, will improve the user experience and reduce some of the existing barriers to public transport.

The UK Government has released “A better deal for bus users” (September 2019)<sup>3</sup>. This sets out its approach to investing in the national bus network to drive up patronage and make travelling by bus an even more attractive option. The interventions set out below, whilst developed independently, are in line with the Government’s approach.

### Interventions

- Investment into strategic bus corridors, in line with the corridor strategy, with linkages to strategic development sites. This will be in line with the UK Government’s “superbus” network principles.

<sup>2</sup> Modal filters are features used to limit access by certain modes of transport. They are commonly used to filter out private cars or other vehicles to make routes attractive to sustainable transport users, or make an overall journey shorter by sustainable transport compared to private cars.

- New bus services connecting rural areas and shuttle buses for commuters, to include demand responsive community transport services.
- Extension of bus routes to link into new development sites
- Ongoing bus stop improvement programme to include shelters, Real Time Information (RTI), 4G connectivity, seating and mobility access, raising the quality of bus stop infrastructure to a consistent high standard across the District. Where there is demand, e.g. where a bus stop serves a dispersed community, this should include cycle parking.
- Using Technology to improve the quality of the bus services, such as RTI and smartcards/integrated ticketing.
- Promotion of opportunities available to passengers to reduce the cost of bus travel, such as season tickets and other available discounts.
- Cycle racks for buses.

## Rail

Stroud District has the potential to be better connected within the District, and with the wider network including Gloucester and Bristol. This will require partnership working with Network Rail and the Train Operating Companies (TOCs).

Safeguarding land for infrastructure, including stations, and reopening existing lines could strengthen rail travel in the future.

Simple improvements to access at all the stations opens up the possibility for rail users to travel the ‘first and last mile’ of their journeys by sustainable transport. This in turn can unlock the opportunity for longer distance trips to be undertaken by rail rather than car, where access to the station itself is a barrier to rail travel.

<sup>3</sup> <https://www.gov.uk/government/publications/a-better-deal-for-bus-users/a-better-deal-for-bus-users>

## Interventions

- Improvements to pedestrian, cyclist and bus access and facilities at Stroud station, investigating the potential for an integrated transport hub
- Improvements to pedestrian, cyclist and bus access and facilities at Cam and Dursley Railway Station
- Improvements to pedestrian, cyclist and bus access and facilities at Stonehouse Railway Station
- Rail service frequency improvement, particularly on the Bristol-Birmingham line.
- Railway Station Travel Plans
- Rail Junction and Capacity improvements (dynamic loops) to rail lines
- A new railway station(s) south of Gloucester, north of Bristol. The exact location will need to be determined through feasibility analysis, and could include a station south of Stonehouse on the Bristol-Birmingham Line, which would greatly improve access to Bristol from the Stonehouse/Stroud area.
- Utilisation of existing rail line at Sharpness for passenger travel
- Opening of rail halts as central hubs in new developments, where applicable

## Movement Corridor Packages

The topography and settlement pattern of Stroud District results in high levels of travel demand being funnelled along key movement corridors. Additional to the measures set out in the preceding sections, it is important to focus limited resources where the greatest benefits can be achieved.

Three main movement corridors have been identified in the District where integrated packages of initiatives can be delivered, which can showcase multimodal use with a focus on sustainable travel modes. Measures which improve sustainable access to corridors from nearby areas will also be supported, as well as enhancing the corridor itself. These corridor packages enable movement by all modes, in all directions and, with interchanges, provide connections to other destinations. A map showing the corridors can be found at the end of this section.

Delivered together, interventions as part of a corridor package have the potential to make a real difference to enable more journeys by sustainable modes. The corridor packages will need to integrate with other strategies being recommended, such as the Interchange Strategy. The STS sets the principles for encouraging movement and targeting investment in each of the corridors.

The corridors deliver sustainable transport opportunities linking up the District as a whole, and key destinations further afield. The A38 forms a north south spine and serves population centres along its length and is anticipated to attract trips from strategic development sites such as at Sharpness and Wisloe. The A419/B4008 and A4135 carry local trips within these corridors, as well as linking with the A38 and outside the District to the A417. In addition to these three corridors, trips between Stroud and Bristol are also considered, as this is an important connection which is not currently well served by sustainable transport. The function of the A46 is also discussed.

## A38

The A38 is an important corridor for connecting the Stroud district to Gloucester to the north and South Gloucestershire and Bristol to the south. It runs broadly parallel to the M5 along much of its length through Stroud

District. Using the corridor as a multi-modal corridor will provide additional benefit to the economy and new developments off the A38.

There are relatively few settlements along the route of the A38 itself, with towns and villages such as Berkeley, Cam and Stonehouse accessed via secondary routes such as the B4066 to Berkeley and Sharpness. This lends itself to providing express movements for public transport, with relatively few stops focused on points where people from nearby settlements access the A38. Investment should therefore be focused on direct services at high frequency which can compete with private car usage in terms of journey times and flexibility. The approach to this corridor should ensure that surrounding settlements, such as Whitminster, Eastington and Berkeley, can access these express services by sustainable modes if possible and ensure that they do not compromise the express nature of the service.

The distances between destinations and reasonably high speeds of motor vehicles means that the A38 is unlikely to be an attractive option to less experienced cyclists. There is a network of routes which are more attractive to many cyclists, notably NCN41, which perform a similar, albeit less direct, function to the A38 in accommodating north-south cycle movement through the District. The STS therefore recommends that the approach to active travel in the A38 corridor focuses on access to alternative more attractive routes, access to public transport services, ensuring that the A38 does not form a barrier to cross movement, and addressing localised road safety issues.

### Interventions

Interventions in line with this approach to the corridor could include:

- Use of modal filters onto the A38 benefit sustainable travel modes.
- Rapid bus/coach services to key destinations such as Bristol
- Improved frequencies of bus services, improvements in bus stop infrastructure, and where appropriate, bus priority
- Northern Metrobus extension
- B4066 corridor improvements, Berkeley
- Safety improvements for pedestrians and cyclists at Cross Keys Roundabout

- Water taxi between Sharpness and Gloucester

## A419/B4008

The A419 / B4008 corridor is an essential corridor connecting Stonehouse to Stroud and to other towns and villages in the District and also to the strategic transport network. The topography in the local area can be challenging to those with mobility issues and therefore many shorter distance trips are made by motorised transport.

The access provided to the M5 has previously seen the focus of this corridor to be dominated by car-based travel. A high level of development is coming forward in the Stonehouse and Stroud area and is likely to use the A419 for travel. This presents both a need for sustainable transport enhancements along this corridor, and an opportunity for investment into measures to deliver this.

In the vicinity of Stonehouse, a reasonable level of housing and employment can be accessed from the A419. However, this is often offset a short distance from the road, with little active frontage on the road itself. The Great Oldbury development is due to provide a spine road alternative to the A419. This road will provide a focus for public transport services in the Stonehouse area as it will be better accessible to a wider residential catchment and less constrained by congestion on the A419. However, the A419 will still form a bus movement function, particularly for services travelling between Stroud and the A38. A joined-up approach to bus movement will need to balance the relative functions of the A419 and the Great Oldbury spine road to ensure that as many people in the Stroud and Stonehouse area as possible have access to public transport services which are attractive in comparison to car usage. This should include a good coverage of services as well as direct services, efficient access for buses to and from the A419 corridor itself, potentially including targeted bus priority and modal filters, and investment in the overall number and frequency of bus services, harnessing the potential demand generated by development in the area.

National Cycle Route 45 accommodates cycle movements alongside the A419 for much of its length. Investment will need to focus on making this route as attractive as possible, improving cycle access to the route itself, and targeted cycle improvements to the local road network.

## Interventions

Interventions in line with this approach to the corridor could include:

- Cycle Access improvements between Eastington and Chalford
- Cycle Access improvements to National Cycle Route 45, Stroud
- Cycle Access improvements for Cainscross roundabout, Stroud
- Improved provision for pedestrians and cyclists on the A419 Ebley Road corridor
- Improved frequencies of bus services on A419/B4008 between Stroud, Stonehouse and Gloucester, including improvements in bus stop infrastructure, and where appropriate, bus priority
- A419 corridor – Chipman’s Platt Roundabout upgrade

## A4135

The focus on this corridor is between the A38 and Cam and Dursley, where a larger proportion of the population will benefit from the interventions. The intention is for this route to form a sustainable 'Spine' through Wisloe - Cam - Dursley. The A4135 runs through the heart of these settlements and there are a high number of short distance trips being made from/to local origins and destinations in addition to longer distance strategic movements. To the east of Cam and Dursley, the A4135 connects with the A46 and onwards towards Tetbury. The topography in the local area can be challenging to those with mobility issues and therefore many shorter distance trips are made by motorised transport.

Thus, there needs to be a dual focus to the approach to this corridor to accommodate both short and long-distance trips. Movement along the corridor will need to connect efficiently with longer distance public transport providing a more strategic movement function at Cam and Dursley Station and the A38, potentially at Wisloe. Smooth interchange between modes will be critical in these locations to make multi-modal trips attractive in comparison with car usage.

Along the corridor itself, there needs to be a micro-focus on safe movement of pedestrians and cyclists, addressing local barriers, as a high level of trips have the potential to be made by active modes. Dense coverage of bus

stops with short walking distances to the stops and high frequency services will be important to making public transport attractive for local trips. Measures to address localised congestion and to provide bus priority along this route would assist in combating the journey time disbenefits of regular stops, as would smart ticketing to reduce the length of time buses spend at stops themselves.

### Interventions

Interventions in line with this approach to the corridor could include:

- Completion of Cam – Dursley – Uley Greenway
- Removing pedestrian and cycle pinch points along the full length of the corridor, such as:
  - Dedicated pedestrian and cycle provision at railway pinch-point
  - Improved pedestrian and cyclist access over A4135/Box Road junction
- Increase in bus service frequency and bus stop infrastructure, with improved connections to Cam and Dursley railway station.
- Bus priority measures along the corridor where possible and where they can provide tangible benefits.
- Multi-modal interchange facilities at the A38 and Cam and Dursley Station.

## Stroud/Stonehouse – Bristol

Improving sustainable transport opportunities between Stroud/Stonehouse and Bristol is a key priority for the LHA, and the STS seeks to identify how this will be achieved. At present, there are no direct and attractive public transport options between these locations. There are a number of interventions in the STS which will contribute to addressing this, either in isolation or combination.

### Interventions

Interventions to improve public transport connectivity between these locations are likely to come forward in the following order.

- Improved public transport services between Stroud, Stonehouse and Cam and Dursley Station. This will improve access to direct rail services stopping at Yate, Bristol Parkway and Bristol Temple Meads. This forms part of the bus improvement packages.
- Express bus services between Stroud and Bristol, potentially with an interchange point in the vicinity of the M5 Junction 13. This will provide attractive bus service linkages between the two destinations via a combination of the bus corridor packages and interchange strategy which form part of this STS.
- New Rail Station south of Stonehouse on the Bristol to Birmingham line. This represents an aspiration to provide a new station on this line south of Gloucester and north of Bristol; this is one of a number of locations being considered and further work is being undertaken on the optimal location for such a station.

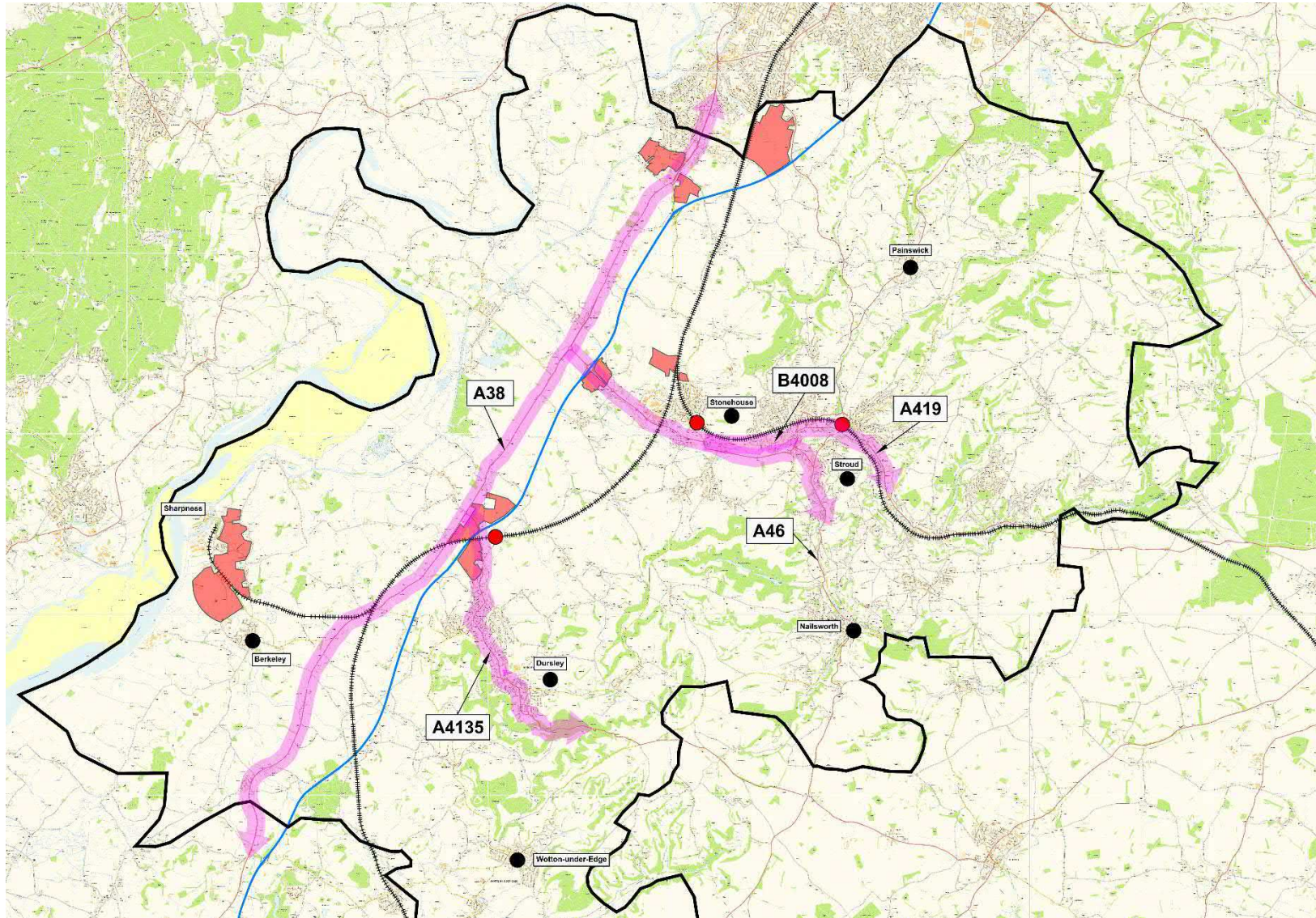
## A46

The A46 is a key strategic north-south movement corridor within the Stroud District. It links Stroud and the Stroud Valleys to the north, with Nailsworth, the A4135 (linking Cam and Dursley with Tetbury), and ultimately the M4 to the south. As with the A38, it on occasions it provides an alternative resilience route to the M5/M4 in the event of significant incidents on the SRN.

There is off-road, segregated cycle provision running parallel to the A46 between Stroud and Nailsworth, and also public transport services linking these settlements. To the south of Nailsworth, sustainable transport opportunities are limited.

The nature of the road, topography and relative sparseness of population along the route, as well as lack of “place” destinations south of Nailsworth means that travel along this road is dominated by vehicular traffic moving at up to the national speed limit. Attractive alternative routes exist for walking and cycling, and the A46 offers limited realistic opportunities for walking and cycling trips along its length. For these reasons, the A46 has not been selected as a sustainable transport corridor for investment in the STS.

Figure 1 Movement Corridors





## 6. Approach to Strategic Sites

### Introduction

This Section sets out a summary of issues, opportunities and key measures for improving the sustainability of each of the proposed strategic sites. It is necessarily high level for a Local Plan, with further detail on the requirements for each site to be established through Transport Assessment work by site promoters. This is not an exhaustive list, and further measures may be required as the Sustainable Transport Strategy and Local Plan evolve, or through more detailed assessment work as part of planning applications for each site.

### Land at Whaddon - 2,500 Dwellings (Gloucester Fringe)

#### Site Overview

The proposed strategic site consists primarily of 2,500 residential dwellings and is located approximately 5km south of Gloucester, east of Quedgeley and adjacent to Whaddon. This site falls within the 'Gloucester Fringe' cluster and is bordered to the north by Grange Road, to the east by the A4173, to the south by the M5 and to the west by the Swindon-Gloucester 'Golden Valley' railway line.

#### Key Opportunities

- Strategically positioned on Gloucester's urban fringe, offering convenience for people working in Gloucester. The vast majority of the site is located within a 25-minute cycle of Gloucester city centre and approximately 2.5km from the Kingsway and Waterwells employment area to the west.
- The site is located adjacent to bus stops on Stroud Road which are served by a high speed, direct service between Stroud and Gloucester.

#### Key Issues

- Existing level of walking accessibility to local facilities is limited, with a range of land uses beyond acceptable walking distance, although many of these land uses are within cycling distance.
- Relative proximity to the Strategic Road Network risks the car becoming the dominant mode of transport.

#### Transport Sustainability Measures Required

- Provision of a range of on-site facilities, including primary school, secondary school, local centre and other sustainable uses, to provide sustainable access for residents of the site and maximise trip internalisation.
- Modal filter for access onto Naas Lane, allowing sustainable transport modes only, including non-motorised users, creating a clear advantage for sustainable modes for travel to areas such as Waterwells Business park to the west. This filter also reduces the ease of access to the M5 by private car.
- Enhanced pedestrian links to connect with the wider network, including appropriate infrastructure and crossing facilities.
- Masterplan to align with the sustainable mobility hierarchy, so that the needs of pedestrians and cyclists are prioritised over the needs of private vehicle drivers.
- Masterplan to be permeable to bus services, including providing a link through the site between Naas Lane and Grange Road. Bus Strategy to be produced with improved frequency of service which balances directness of service to key destinations and walkability to bus stops.
- Provision of a multi-modal transport hub adjacent to the A4173, to allow for interchange for sustainable modes including bus, bicycle, walking and car sharing.
- Electric vehicle charging points to be provided in accordance with local standards.
- A network of internal walking and cycle routes that are shorter in distance than the highway network to provide greater convenience than the private car, in accordance with Manual for Streets.

- Behavioural change measures such as high-speed internet connections, car clubs, bicycle hire, and lift share facilities will be operational on site to minimise single-occupancy vehicle use.
- Safeguarded land for a future rail halt if deemed to be appropriate through feasibility studies.

## South of Hardwicke – 1,200 Dwellings (Gloucester Fringe)

### Site Overview

This site is for 1,200 residential dwellings and is located in Hardwicke, north of Quedgeley West Business Park and approximately 7km southwest of Gloucester. It is bordered to the north by Green Lane, to the east by the A38, to the south by Pound Lane and Stank Lane and to the west by the Gloucester and Sharpness canal. The site forms part of the 'Gloucester Fringe' cluster.

### Key Opportunities

- The site lies in close proximity to National Cycle Route (NCR) 41.
- Located close to large areas of employment, such as Quedgeley West Business Park.
- A network of footpaths cross the site connecting Pound Lane, Church Lane, Green Lane and Sticky Lane with the B4008 Bristol Road and the A38.

### Key Issues

- Close proximity to M5 Junction 12 could generate a pattern of car-borne commuting.

### Sustainability Measures Required

- Inclusion of a local centre with associated ancillary uses to contribute to a greater proportion of internalised trips.
- Masterplan to be designed to prioritise sustainable travel and provide sustainable transport links to local facilities and Quedgeley West

Business Park, including enhancements to off-site walking and cycling routes.

- Electric vehicle charging in accordance with local parking standards.
- Public transport permeability through the provision of a new local bus route through the site, or extension of an existing service.
- Contributions to sustainable transport measures on the A38 corridor, including improvements to strategic bus services.
- A network of internal walking and cycle routes that are shorter in distance than the highway network to provide greater convenience than the private car, in accordance with Manual for Streets.
- Behavioural change measures to encourage sustainable travel by way of new and improved infrastructure and implementation of a Travel Plan.

## Eco Park M5 Junction 13 – 10ha (Stonehouse cluster)

### Site Overview

This site has proposals for 10 hectares of employment space, located adjacent to M5 Junction 13, approximately 3km northwest of Stonehouse. The north-western boundary of the site is the M5 motorway, whilst the A419 bisects the site in a northwest-southeast alignment. Grove Lane forms the north-eastern boundary of the site, whilst an unnamed track borders the site to the southeast. This site falls within the 'Stonehouse' cluster.

### Key Opportunities

- National Cycle Route 45 is directly accessible from the northern border of the site, which provides cycle access into Stonehouse and Stroud town centres.

### Key Issues

- The site is in close proximity to Junction 13 of the M5 motorway and also the A419 which intersects the site. This high level of accessibility to the Strategic Road Network will make the development attractive to car borne commuting.

- Limited levels of housing within active travel distances of the proposed site.
- Potential severance issue related to the intersection of the site by the A419.
- Lack of connectivity between Stonehouse and Bristol via rail.

### Sustainability Measures Required

- Masterplan proposals to integrate all sections of the site through safe and secure pedestrian connections.
- Robust car parking provision and management to provide a level of constraint to unnecessary car usage.
- Contributions and support to sustainable transport measures on the A38 and A419 sustainable transport corridors.
- Safe pedestrian and cycle connectivity needs to be provided between the site and NCR 45. This will need to be coupled with improvements to NCR 45 between the site and Stroud.
- Dedicated shuttle bus service between site and Cam and Dursley and Stonehouse rail stations.
- Improvements to bus services to connect the site with Stonehouse, Stroud, Gloucester and other destinations as deemed necessary through transport assessment work.
- Site to be designed to accommodate permeability by bus services including interchange facilities.
- Robust Travel Plan to include car park management measures.

## Stonehouse North West (Standish within Stonehouse cluster) – 650 Dwellings

### Site Overview

The site proposals are for 650 residential dwellings, located approximately 2km north of Stonehouse. The Great Oldbury strategic site is located directly to the south, meaning that the proposed site will represent a northwards

extension of housing at the time at which it is brought forwards. The proposed site is located directly to the west of the Bristol-Birmingham railway line and is largely surrounded by agricultural land and rural roads to the north and west. The site falls within the 'Stonehouse' cluster.

### Key Opportunities

- Proximity to employment at Stroudwater Business Park, which is easily accessible from the site.
- Provision of a primary school within the site and proximity to the local centre and other supporting facilities to be provided by the Great Oldbury strategic site.
- The site is well positioned to benefit from capacity improvements resulting from the A419 Corridor Improvements Plan.
- An existing network of footpaths intersect the site.

### Key Issues

- Lack of connectivity between Stonehouse and Bristol via rail.

### Sustainability Measures Required

- Masterplan to ensure connectivity through the site by sustainable modes to maintain Public Rights of Way.
- Masterplan to connect into the Great Oldbury strategic allocation and provide walking and cycling routes to local facilities, including local centre, bus routes, employment and education.
- Contributions and support to sustainable transport measures on the A38 and A419 sustainable transport corridors.
- Contributions to enhanced bus service frequencies to key destinations including Stroud, Stonehouse, Gloucester, and Cam and Dursley Station. This should include service diversions into the site itself.
- Enhancements to off-site pedestrian and cycle routes to key destinations including Maidenhill School, Stonehouse Town Centre, Stonehouse Railway Station and cycle routes to Stroud.
- Provision of electric vehicle charging points in accordance with local parking standards.

## New settlement at Wisloe, Slimbridge – 1,500 Dwellings & 5ha (Berkeley cluster)

### Site Overview

The site proposals are for 1,500 residential dwellings and 5 hectares of employment space, located approximately 2km northwest of Cam and 5km northwest of Dursley in the 'Berkeley' cluster. The A38 borders the north west of the site, with the M5 forming the south eastern border. The railway line borders the south of the site. The A4135 intersects the site and provides access to Cam and Dursley.

### Key Opportunities

- Opportunity to comprehensively provide a new settlement around Garden City principles, including a mix of land uses and prioritising sustainable modes.
- Proximity to Cam and Dursley railway station.
- The site is well located to take advantage of the existing bus network and services on the A38 and A4135 as there are reasonable links to Gloucester, Stroud, Cam, Dursley, Stonehouse and Bristol.

### Key Issues

- The M5 borders the site in a northeast-southwest alignment, which, coupled with the railway line, presents severance issues between the site, Cam & Dursley Station and Cam.
- Lack of existing walking accessibility to nearby town centre / secondary educational facilities in Cam and Dursley.
- Lack of car parking at Cam & Dursley Station, as well as an overall need to improve station facilities and capacity.

### Sustainability Measures Required

- Provision of a primary school, local centre and employment space to increase the proportion of internalised trips.
- Masterplan layout that prioritises pedestrian and cycle movements and provides a walkable/cyclable neighbourhood.

- Contributions and support to sustainable transport measures on the A38 and A4135 sustainable transport corridors.
- Contributions and support to link the site to the wider pedestrian and cycle network, including to Cam and Dursley Greenway to the south and to NCR 41 to the north.
- Improvements required to pedestrian and cycle accessibility between the site and facilities in Draycott and Lower Cam, as well as to Cam & Dursley Railway Station to the south of the site, increasing the attractiveness of rail as a potential mode of transport.
- Connect with and enhance the nearby bus network through increasing service frequency as well as seeking to diverting some services through the site in order to provide a viable alternative to the private car. This should include both longer distance services along the A38, and connections with Cam and Dursley.

## Cam North West – 700 Dwellings (Cam & Dursley cluster)

### Site Overview

The site proposals are for 700 residential dwellings located in the 'Cam & Dursley' cluster. The site is located adjacent to Draycott, approximately 4km northwest of Dursley and immediately southwest of Cam & Dursley railway station. The site is bordered to the north by the railway line, to the east by the A4135, to the south and southwest by Everside Lane and to the west by the M5.

### Key Opportunities

- There are opportunities to integrate the development into the existing settlement and provide access to local facilities including education, leisure, health, retail and employment on foot, by bicycle or by bus.
- The site is well placed to benefit from enhancements to bus services along the A4135 corridor and enhanced rail services at Cam & Dursley railway station.
- Proximity to Cam and Dursley railway station.

- Inclusion of a primary school within the development proposals would contribute to increasing the proportion of internalised trips.
- The site is adjacent to Draycott Business Park and Draycott Mills, a large employment area on the east side of the A4135.
- There is an existing network of public footpaths that intersect the site.
- National Cycle Route 43 routes along Moorend Lane and St John's Road to the north of the A38 through the village of Slimbridge approximately 1.5km north of the site.

### Key Issues

- Lack of car parking at Cam & Dursley Station, as well as an overall need to improve station facilities and capacity.

### Sustainability Measures Required

- Masterplan design to give pedestrians/cyclists highest priority within the proposed development through a comprehensive network of local and strategic footpaths/cycleways that connect to existing facilities on the surrounding highway network.
- Active Travel Links into Draycott Business Park and Draycott Mills
- Contributions and support to sustainable transport measures on the A38 and A4135 sustainable transport corridors.
- Pedestrian and cycle crossing on the A4135 for safer access to/ from Cam and Dursley station and Cam local centre.
- Active Travel connections to the Cam and Dursley Greenway
- Existing footpaths to be retained and/or diverted as necessary.
- Emerging road layout to accommodate a potential bus loop through the site.
- Improvements to bus services, particularly those on the A4135 linking to wider destinations including Gloucester and Stroud.

## New settlement at Sharpness – 2,400 Dwellings & 10ha (Berkeley cluster)

### Site Overview

The site proposals are for 2,400 residential dwellings by 2040 (5,000 by 2050) with 10 hectares of employment to create a new garden village between Berkeley and Sharpness. The B4066 intersects the site in a northwest-southeast alignment, alongside the Sharpness Docks railway branchline, which no longer serves Berkeley. Station Road borders the site to the east in a north-south alignment.

### Key Opportunities

- Opportunity to comprehensively provide a new settlement around Garden City principles, including a mix of land uses and prioritising sustainable modes.
- Scale of development has the potential to deliver major sustainable transport opportunities.
- Sharpness railway branchline is currently not used for passenger traffic, but it could be brought back into use with a new station(s), signalling changes and operational arrangements.
- National Cycle Route 41 is directly accessible from the eastern border of the site and routes through Berkeley to the south.
- A number of Public Rights of Way are present in and around the site.

### Key Issues

- Sharpness has an issue of relative remoteness, particularly in public transport terms, although this could assist with internal self-containment. The nearest railway station is at Cam & Dursley, approximately 12km from the site. There is a lack of regular public bus services.
- Capacity issues relating to Junction 14 of the M5.
- There is a lack of some strategic facilities/services in Berkeley.

### Sustainability Measures Required

- A comprehensive provision of facilities on site will lead to a greater amount of trip internalisation, which will increase the sustainability of the site through a reduced number of external trips to/from the site. This will need to include primary and secondary education, employment, shops, leisure and community facilities.
- Masterplan principles to prioritise sustainable transport movements over vehicle movements and provides a series of walkable/cyclable neighbourhoods linked by direct and high-quality cycle and walking routes.
- Direct and attractive public transport services will be needed to key destinations, including Bristol and Gloucester. This will need to link the site with employment nodes. Services will be needed from very early in the development phasing to ensure that sustainable travel patterns can be established for new residents. Services will need to be more attractive than the use of private car for comparable trips.
- The applicant has advised that the re-opening of the Sharpness railway branchline for passenger services is feasible and can deliver an attractive train service to Gloucester. In advance of this, or if this is not feasible, express bus/coach services to Bristol and Gloucester will be needed to fulfil this demand.
- Measures to reduce car ownership, as well as car usage, including Mobility-as-a-Service (MaaS) systems to provide occasional access to vehicles rather than car ownership being the default option. This should be integrated with other modes of travel to provide sustainable alternatives to car trips, including bike hire and public transport.
- Electric vehicle charging points to be provided in accordance with local standards.
- Pedestrian and cycle linkages to connect the site with existing residential and employment areas, and the canal network.
- Opportunities for behavioural change via sustainable measures to reduce car use, such as public transport vouchers/incentives.

## 7. Strategic Modelling

### Introduction

Strategic 'SATURN' modelling has been undertaken by Mott MacDonald to assess the transport impact of the Stroud District Council Local Plan across the region with reference to a 2040 future year. This represents the end of the Local Plan period. The SATURN model has assessed two scenarios without mitigation. These are:

- 2040 "Do Minimum" – which includes background traffic growth across the network up to 2040 and additional traffic forecast to be generated by a range of committed developments. This scenario also accounts for committed highway schemes which may have a positive impact on network operation. This does not include Local Plan development and forms the future year reference case.
- 2040 "Do Something: Unmitigated" – represents an extension to the "Do Minimum" scenario and includes forecast traffic associated with a range of strategic sites contained in the Local Plan (and referred to in this report).

The results of the SATURN modelling for these scenarios shows that, without mitigation, there are forecast to be a number of "pinch points" and areas across the network that are likely to experience material negative traffic impacts, including delays and congestion, through the implementation of the Local Plan.

The modelling results are considered here primarily in terms of the ratio of Vehicles to Capacity (V/C) at junctions. The full modelling results, including other metrics, and detailed analysis is available in the modelling report produced by Mott MacDonald. In the 2040 "Do Minimum" AM peak, three junctions will have at least one approach arm exceeding 100% V/C. This includes the St Barnabas Roundabout, A419/Bath Road and the eastern part of the M5 Junction 14. A further five junctions will experience an approach arm over 90% V/C. The addition of the SLP growth will result in a total of 19 junctions with an approach arm exceeding 100% V/C, and five junctions with an approach arm exceeding 90% V/C. The situation is similar in the 2040 PM peak, with two and four junctions with an approach arm exceeding 100% and 90% V/C respectively in the "Do Minimum", rising to

15 and seven junctions with an approach arm exceeding 100% and 90% V/C respectively with the addition of SLP growth.

It is clear that a package of mitigation measures will be required in order to reduce the impact of strategic growth across the region associated with the Local Plan. The purpose of this section is to seek to quantify the potential contribution of sustainable travel measures contained in this strategy towards reducing traffic impact. Effectively, this scenario is designed to address congestion by reducing traffic through mode shift. The outcome of this process has been used to inform the development of a “with STS mitigation” modelling scenario. The STS sets out a strategic approach to achieving mode shift, with detailed measures to be developed by sites through the planning application process.

## Methodology:

A framework has been developed to assess the potential mode shift that could be achieved by the main interventions included in this strategy. The framework includes the following parameters, which are described in the following paragraphs:

- Indicative scale of cost of implementation;
- Description of the trips and routes that will be influenced by the intervention (i.e. trips generated by strategic sites and origin-destination trips of background traffic); and
- Forecast percentage reduction in car trips attributed to each intervention.

A copy of the framework is provided for reference at **Appendix E**. The framework of potential mode shift has been proposed by AECOM and developed in an iterative process through reviews by Mott MacDonald, GCC, Highways England and Stroud DC, prior to approval by all parties for inclusion within the SATURN modelling.

In developing this framework, there is clearly a balance to be struck between the robustness of traffic generation reductions that can be achieved, along with the risks of under-assessing traffic impacts, and the strong focus on sustainable transport needed to address the Climate Emergency. There is a shared vision with the Highways Authorities that the STS Strategy needs to be ambitious and maximise investment in sustainable travel. GCC and

Highways England consider that the STS Mitigation scenario includes aspirational targets for mode shift and that the results should be considered in that context.

### Scale of cost

An indicative cost level has been assigned to each intervention, from 1 – Lowest to 5 – Highest. The purpose of this is to provide a high-level appreciation of the likely cost of implementation, relative to the other interventions. For example, the construction of a new railway station will be significantly more expensive than localised improvements to cycle routes. This is based on professional judgment at this stage of strategy development rather than design development or a costing exercise.

### Trip types

Interventions are targeted towards a specific development or key movement corridor (e.g. A38). Therefore, each intervention will yield reductions in car trips along those specific routes and between destinations. The exception to this is a “blanket” 6% reduction in all development trips. This will be achieved through a combination of Travel Planning, internalisation, reducing the need to travel and facilitating home working. The combination of these measures will differ between sites, with each site expected to demonstrate through the planning process how they will achieve a blanket mode shift/traffic reduction in addition to targeted measures as set out within the Framework.

The routes affected directly by each intervention have been defined. Buffers (e.g. 800m, 2km) have been included along each route to account for an appropriate catchment area, and this has been used to define zones within the SATURN model where reductions have been applied. For some zones where population centres fall partly within and partly outside of a buffer zone, half of the car trip reduction has been applied. Again, zones where reductions are applied have been agreed with all parties.

### Forecast mode shift

Percentage reductions are based on professional knowledge and experience of the development and implementation of sustainable travel measures, and have been agreed with the Highways Authorities. For some interventions, a two-tier percentage reduction has been defined. A robust, i.e. lower level, assumption has been made for the purposes of the “STS mitigation” modelling scenario to avoid the risk of over-assessing mode shift,

and a maximum reduction has been defined which represents a higher level mode shift target for the intervention.

It is recognised that some interventions that are related to a specific development are likely to contribute towards a reduction in background car traffic for similar trips. In these cases, two distinct percentage reductions have been defined (i.e. development trips and background traffic). Where there is overlap on the effect of development measures on background trips, e.g. multiple developments contributing to improvements to sustainable transport on particular corridors, a single percentage reduction is applied in one row to avoid double counting. Considering the high level of development trips likely to be funnelled along each corridor due to the situation of major development sites, and the ambition for sustainable mitigation, a “high investment” scenario has been modelled along each corridor reflecting opportunity for significant cumulative investment.

The success of interventions will also be influenced by disincentives to driving, such as congestion, parking availability and charges.

### Application to SATURN model

The trip type / description for each intervention has been referenced against zones contained in the SATURN model. This has enabled a straightforward application of the percentage reduction associated with each intervention. The modelled trip reductions in the STS Scenario can be seen in Table 1.

**Table 1: Reduction in Car Trips associated with STS**

Trip Type	AM Peak Hour	PM Peak Hour
Local Plan Development Trips	743	717
Background Trips	508	550
Total Reduction	1,251	1,267

## Modelling Results

As referenced above, the SATURN modelling has shown that there will be congestion issues in the 2040 “Do Minimum” scenario, and that congestion will increase in 2040 “Do Something – unmitigated”. Two mitigation

scenarios have been modelled, as follows, with results presented in full in the modelling report which forms part of the Local Plan Evidence Base:

- Preferred Highways Mitigation; and
- Preferred Highways Mitigation plus STS Mitigation.

### 2040 AM Peak

As set out above, without mitigation 19 junctions will experience an approach arm exceeding 100% V/C in the 2040 AM peak with SLP, with a further five junctions with an approach arm exceeding 90%. The Preferred Highways Mitigation package in isolation reduces that to eight junctions exceeding 100% V/C and five junctions exceeding 90% V/C. The STS Mitigation package reduces the impact further to six junctions exceeding 100% and five junctions exceeding 90%. The A38/Epney Road junction and A38 at Stone are forecast to go from exceeding 100% V/C to operating below 100% V/C, and the Dudbridge Hill Roundabout is forecast to reduce below 90% V/C, both as a result of the STS measures.

The STS will reduce V/C by 2-7 percentage points in 13 of the 30 junction locations in the study area. The greatest improvements in V/C will be at the A38/ B4066 Berkeley Road and B4066/Alkington Lane junctions, with 7% reductions to V/C at each location.

### 2040 PM Peak

As set out above, without mitigation 15 junctions will experience an approach arm exceeding 100% V/C in the 2040 AM peak with SLP, with a further seven junctions with an approach arm exceeding 90%. The Preferred Highways Mitigation package in isolation reduces that to six junctions exceeding 100% V/C and four junctions exceeding 90% V/C. The STS Mitigation package reduces the impact further to four junctions exceeding 100% and five junctions exceeding 90%. The A4173/Brookthorpe and A38/Breadstone junctions are forecast to go from exceeding 100% V/C to operating below 100% V/C as a result of the STS measures. No junctions are forecast to reduce below 90% V/C as a result of the STS.

The STS will reduce V/C by 2-8 percentage points in 14 of the 30 junction locations in the study area. The greatest improvements in V/C will be at the Bath Road/Peter’s Street (Frocester) and A38/Breadstone junctions, with 8% and 6% reductions to V/C respectively.



## Summary

In purely traffic modelling terms, the STS makes a positive contribution to the operation of the traffic network through reducing traffic levels. This is forecast to have the effect of reducing V/C below 100% in two further junction locations, in addition to that achieved by the Preferred Highways Mitigation, in each peak. It is considered that the STS has greater potential to achieve mode shift than that which has been modelled for this Scenario due to the need to ensure a robust highways assessment. It also has significant value in terms of offering enhanced attractive travel choices to users of the network, improving accessibility for all and contributing to reducing carbon emissions in line with the Climate Emergency.

[REDACTED]  
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