COTSWOLD DISTRICT COUNCIL

Transport Decarbonisation Study:

Final Report

CITY SCIENCE
delivering decarbonisation

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Prepared by:

Aoife Dudley BA MTPS	Transport Consultant
Bob Hickish BSc PhD	Principal Transport Consultant

Reviewed by:

Heather Watkinson BA	Associate Net Zero Transport

Approved by:

Simon Drake BA ACA BFP	Director

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Executive Summary

Overview

Cotswold District Council (CDC) declared a climate emergency in July 2019 and made a commitment to reduce carbon emissions to net zero by 2045. This Study will provide an evidence base to support the identification and development of a range of interventions that support transport decarbonisation, and will inform revisions to the Local Plan.

Context

Analysis of current transport emissions shows that:

- Cars: The majority of transport emissions come from cars, and relates to the high levels of car ownership and reliance on private rather than public transport which is typical for a largely rural area
- Freight: Despite making up just 1% of the fleet in the District, Heavy Goods Vehicles (HGVs) make the second greatest contribution to emissions, followed by Light Goods Vehicles (LGVs)
- Public transport: Bus and rail have a relatively low emissions output as there are only two rail lines and stations in the District, and bus services are largely infrequent due to the rural nature of the area
- Trip length: analysis of the proportion of a journey completed within Cotswold District shows that the greatest level of emissions arise from trips between 10 and 25 miles

Key Findings

- A Do Everything Approach: There is no single solution or combination of interventions which can deliver on CDC's net zero ambitions by 2045 - all modes and options need to be considered
- Place-Based Solutions: This Study highlights the characteristics of different place types, and the importance of delivering solutions which are sensitive to the needs of different communities and the ways they engage with the transport network
- Pace of Change: If current behaviours and levels of action continue, forecasts show that CDC will miss its net zero target in 2045. This emphasises that the pace of decarbonisation efforts must increase significantly, and quick wins must be prioritised in the short term to kickstart the transition
- Transport Hierarchy: Electrification and the transition to zero emissions vehicles is part of the solution, but options which avoid the need to travel entirely, and those which encourage people to shift to more sustainable modes, must be prioritised
- Broader Considerations: While barriers exist around policy gaps and funding, there are many benefits to decarbonising transport including public health, air quality and biodiversity net gain which can be publicised alongside the carbon impacts

Next Steps

It is recommended that the following areas are prioritised:

- Local Plan and Local Transport Plan: Low carbon planning presents a priority for reducing transport carbon emissions. This includes ensuring that developments are located close to essential services or frequent public transport corridors, reducing the need for car travel. These principles should be embedded in CDC's and Gloucestershire County Council (GCC's) forthcoming plans
- Rural Accessibility: Baseline work has identified that poor access to services is driving high car use in rural areas. Rural accessibility, while a challenge, should therefore be an area of future focus
- Targeted Infrastructure and Improvements: Improvements to public transport services, walking and cycling links are amongst the most effective potential interventions and require on-going co-ordination with GCC
- Zero Emission Vehicles: Private vehicle journeys will form a significant part of our future travel requirements. Development of an electric vehicle strategy will help accelerate the switch
- Behaviour Change: Considerable behavioural change from residents, business and visitors is required to meet net zero by 2045. To support the shift a greater understanding of the attitudes, barriers and opportunities driving transport behaviour as well as direct engagement is required

1 Introduction

CDC declared a climate emergency in July 2019 and made a commitment to reduce carbon emissions to net zero by 2045. Like many rural regions, Cotswold District has high levels of transport-related carbon emissions, which are around 60% higher, per person, than England's average. This Transport Decarbonisation Study will provide an evidence base to support the identification and development of a range of interventions that support transport decarbonisation. CDC will also use key findings from the Transport Decarbonisation Study to inform revisions to the Local Plan which is in preparation.

1.1 Background, Scope & Context

Cotswold District is one of the six districts that make up the county of Gloucestershire. It is a largely rural district, the largest settlement of which is the market town of Cirencester. Cirencester is the focus for a significant amount of development and population growth and is the main economic hub within the district. Other notable larger settlements in the district include Tetbury, Moreton-in-Marsh, Stow-on-the-Wold and Bourton-on-the-Water.

Cotswold District has a high proportion of elderly people, and the District continues to see a decline in young residents. It is generally an affluent area with significant natural and heritage assets, including the Cotswolds Area of Outstanding Natural Beauty. Tourism is a key pillar of the district's economy and has major implications for its transport system.

GCC is the transport authority for CDC and is responsible for regulating and administering transport related matters across the county. The key transport issues outlined in GCC's Connecting Places Strategy include inadequate pedestrian access to local centres, congestion and road safety concerns, lack of suitable mass transit and poor connectivity between villages and key local hubs.

1.2 Place Types

We have worked closely with CDC to define three place types which are representative of the different types of locations which make up Cotswold District. The purpose of developing these place types is to aid the development and analysis of a range of transport interventions, recognising that different solutions may be appropriate for rural areas compared to better-connected urban areas.

Based on locational analysis of different places using data taken from the National Audit Office's journey time tool, we have defined the following place types (see Figure 1-1):

- Cirencester Central: Lower Layer Super Output Areas (LSOAs) where access to all services is at least as good as the UK average. The only location in this category is central Cirencester
- Local Hubs: LSOAs with below-average accessibility to between two and five services, such as Tetbury, Moreton-in-Marsh, Fairford and South Cerney
- Rural Settlements: LSOAs with below-average accessibility to six or more services, which covers most of the district

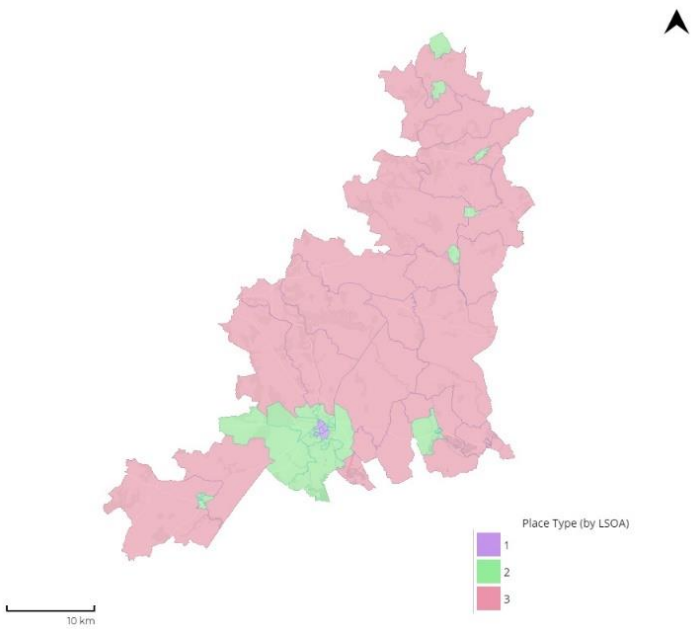

Figure 1-1: Map of Three Place Types in Cotswold District

The average person in Cotswold District emits nearly

1.7 times as much CO_2

each year than the average person in the UK

44% of carbon emissions in Cotswold District are from transport

There are three place types based on sustainable access to services in the Cotswolds

- Cirencester Central
- Local Hubs
- Rural Settlements

To reach net zero

100%

of the vehicle fleet must be zero emissions

> The Net Zero Pathways illustrate that no single solution or combination of measures will deliver...net zero carbon emissions by 2045. Instead...we require a 'do everything' approach.

In a Do Nothing scenario, Cotswold District will exceed its indicative carbon budget in

2029

Annual mileage reduction target of **26%** per person across the district

2019 ↓ 2045

Public transport increase target of **112%** across the district

The greatest level of car and LGV emissions are produced from trips between

10 miles ↓ 25 miles

The emissions gap between net zero and the Do Nothing scenario in 2045 is

171kT CO_2

> CDC's net zero target requires a transformational change which **embeds decarbonisation at the heart of decision making**...into the planning process, into funding decisions and enabling the delivery of interventions which accelerate carbon reductions.

2 Current State of Play

Chapter at a Glance

This Chapter sets out the broader context within which this Transport Decarbonisation Study has been developed, identifies the key sources of transport emissions within Cotswold District, and identifies the gap between CDC's current carbon trajectory and its net zero ambitions.

2.1 Overview of Methodology

Data relating to historical, current and forecast emissions by different transport sources within Cotswold District is not readily available. Consequently, a modelling approach was developed to combine and process existing data sets. The datasets used included Department for Business, Energy and Industrial Strategy local authority emissions data, population estimates, data from the National Trip End Model, the National Travel Survey, and the Gloucestershire Carbon Model.

2.2 Emissions Profiles

The majority of transport emissions in Cotswold District come from cars, which is unsurprising given the high levels of car ownership and reliance on private rather than public transport (Figure 2-1), which is typical for a largely rural area. Despite making up just 1% of the fleet in the District, HGVs make the second greatest contribution to emissions, followed by LGVs. This highlights the importance of a coherent freight decarbonisation strategy for the District. Bus and rail have a relatively low emissions output as there are only two rail lines in the District, with one station on each, and bus services are largely infrequent due to the rural nature of the area. In general, car journey emissions are highest for journey types other than business or commuting, for example through leisure activities. Business trips generate the highest level of emissions overall, with the largest contribution from HGVs travelling through the District. Commuting has the lowest levels of emissions.

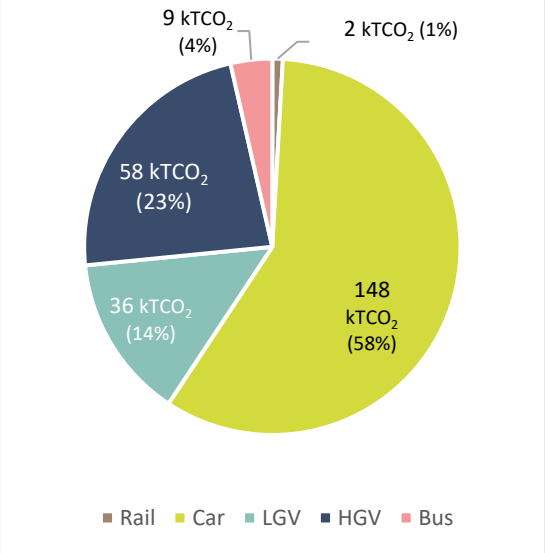

Figure 2-1: Emissions by Source Mode

Trip length analysis (for the proportion of a journey completed within Cotswold District) shows that the greatest level of emissions arise from trips between 10 and 25 miles. Figure 2-2 shows that most medium and longer trips are taken by car which emphasises the need to find solutions which avoid longer trips or shift them to lower carbon modes.

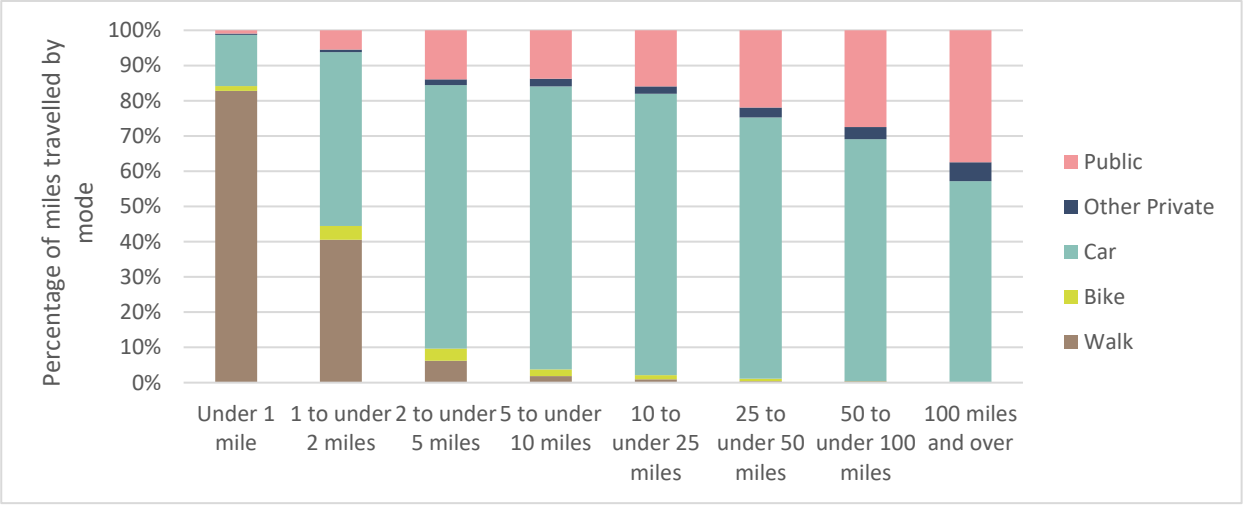

Figure 2-2: Proportion of Mileage by Mode Type by Trip Length (Source: National Travel Survey Table NTS0105)

2.3 Summary of Key Finding

The key findings set the context for developing a transport decarbonisation pathway for Cotswold District. Table 2-1 summarises these findings.

Theme	Findings
Transport-related carbon emissions 	Transport is a key source of emissions, responsible for 45.4% of emissions. This is much higher than the UK average and demonstrates the fundamental role that transport decarbonisation will play in achieving net zero within the district. 95% of transport emissions come from cars, vans and LGVs which shows the need for interventions which target these vehicles. The greatest single contributor to car emissions come from leisure trips.
Car dependency 	Like many rural areas the majority of households have access to a car. Private vehicles are an important means of connectivity, especially for those living in isolated areas. High car ownership results in the average person in Cotswold District emitting 1.3 tonnes (68%) more CO2 per year than the average person in Great Britain.
Electric vehicles 	The number of licensed Ultra Low Emissions Vehicles (ULEVs) has stayed consistent over time. Given the Government's 2030 ban on the sale of new Internal Combustion Engine (ICE) cars and LGVs we expect ULEV uptake to increase over the coming years. At present, the provision of council-owned, publicly accessible charge points is poor, but projects are underway to increase coverage.
Trip lengths 	The average trip length is 31% greater than the UK average, which presents a challenge as longer trips tend to be more difficult to address via mode shift (particularly in rural locations). This Study has focused on solutions which either avoid longer trips or shift them to lower carbon modes such as public transport or Electric Vehicles (EVs).
Freight 	Despite making up just 1% of the fleet in the District, HGVs contribute 23% of transport emissions. This highlights the importance of a coherent freight decarbonisation strategy.
Public transport 	Public transport provision is predominantly arterial, resulting in poor connectivity in rural areas of the District. There are two railway stations, at Kemble and Moreton-in-Marsh, and a lack of bus network coverage in rural areas with high frequency routes focused between major settlements.
Active travel provision 	Cirencester has the highest level of walking as a means of commuting, with up to 30% of commuters travelling by foot. The Local Hubs show levels of walking around 15%. There is varied provision of cycle infrastructure within Cotswold District, with the greatest density of cycle lanes focused in Cirencester and Tetbury and limited infrastructure in e rural areas. Cycleways are not well-connected with each other.
Place-based approach 	The findings point to the importance of the three place types set out in Section 1.2. Interventions which may be appropriate to more densely populated areas such as Cirencester (which benefits from good sustainable transport options and therefore has lower car ownership rates), are unlikely to work in the more sparsely populated and less connected rural areas of the District (which have higher car dependency).

Table 2-1: Key Findings from the Baseline Data Analysis

3 Net Zero Pathways

Chapter at a Glance

This chapter sets out the Do Nothing Scenario (where things continue as they are) and outlines the various future emissions reduction scenarios (potential future routes) that were developed for Cotswold District. We have also introduced place type-specific pathways to net zero by 2045 to highlight how different place types require different approaches.

3.1 Baseline Pathway Summary

3.1.1 Do Nothing Scenario

This scenario is useful for illustrating the future impact of continuing our current behaviours. It assumes there are no direct CDC interventions to tackle carbon reduction but recognises the impact of wider (national or regional) interventions on Cotswold District. Of these, only interventions which are pledged or funded are included.

Figure 3-1 shows the emissions forecasts for Cotswold District according to three different (national and regional) data sources (see Section 2.1) for the Do Nothing Scenario. All three forecasts indicate that the Do Nothing scenario will lead to Cotswold District not achieving net zero by 2050, with the average prediction of the emissions gap in 2050 being 154 kTCO2.per annum. For the remainder of the report we adopt the Do Nothing – Western Gateway Carbon Model as representing the Do Nothing scenario.

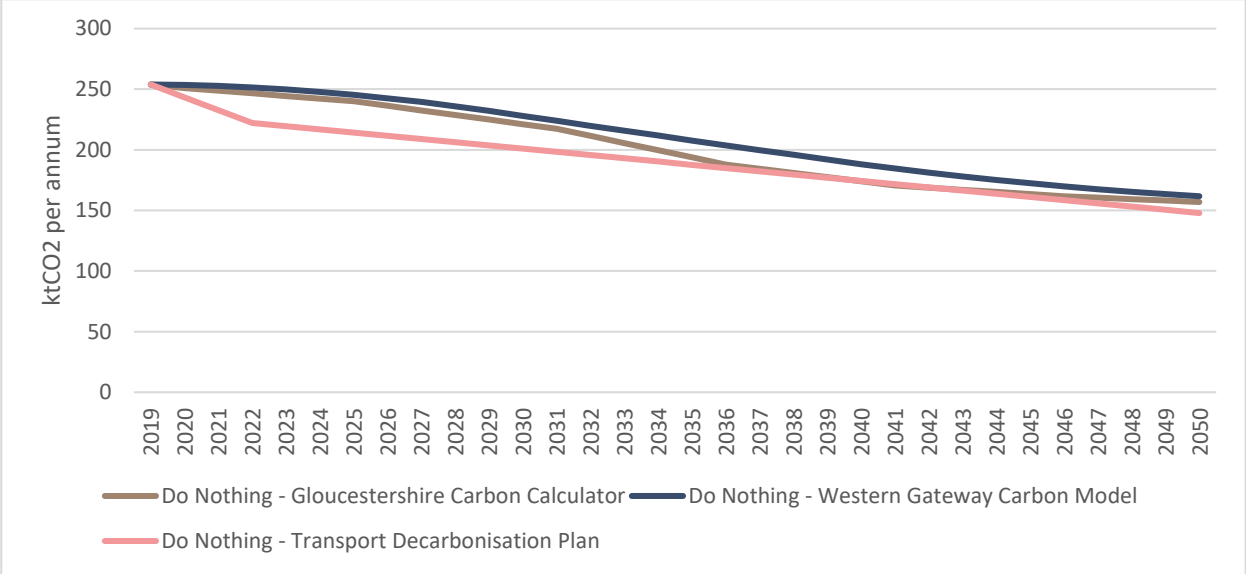

Figure 3-1: Do Nothing Emissions Forecasts for Cotswold District

3.1.2 Indicative Pathways to Net Zero

Figure 3-2 highlights the gap between current emissions and the level required to reach net zero in 2045. Both of these figures emphasise the need for timely action to decarbonise transport within Cotswold District if net zero by 2045 is to be achieved. The Net Zero 2045 pathway aligns with the ambition of CDC and hence is adopted as the indicative target pathway for Cotswold District for the remainder of this Report.

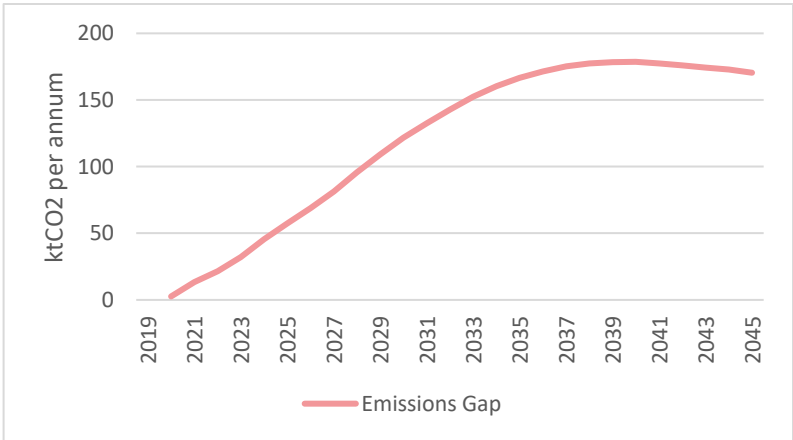

Figure 3-2: Annual Gap Between Do Nothing Forecast & Net Zero 2045 Pathway

3.2 Future Emissions Reduction Scenarios

Given the future uncertainty in travel behaviour when looking forward we have developed scenarios which support different plausible futures, taking into consideration a range of external factors. These scenarios are summarised in Table 3-1. We have used 2030 and 2045 as key years for each of the scenarios, as 2030 aligns with GCC's 80% emissions reduction threshold, and 2045 is CDC's own net zero target year.

Scenario	Description
1. High Zero Emission Vehicle (ZEV)	Demand management and mode shift interventions are implemented at the maximum level observed historically. Emissions remaining are eliminated through high levels of uptake of ZEVs. This scenario aligns with both; 80% reduction in emissions by 2030[1], and CDC's ambition of net zero by 2045
2. Lifestyle Change	Demand management and mode shift interventions are implemented at a more ambitious level so that lesser uptake of ZEVs is required. This scenario aligns with both; 80% reduction in emissions by 2030[1], and CDC's ambition of net zero by 2045
3. Balanced	A mixture between High ZEV and Lifestyle Change. This scenario aligns with both; 80% reduction in emissions by 2030, and CDC's ambition of net zero by 2045
4. Likely Best Case Ambition	The outcome if currently proposed strategy and objectives are implemented. This scenario does not align with an 80% reduction in emissions by 2030[1], but does align with CDC's ambition of net zero by 2045

Table 3-1: Summary of Future Emissions Scenarios for Cotswold District

The Balanced Scenario is the preferred target pathway because it adheres to the transport hierarchy's approach. This involves prioritising measures which avoid the need to travel entirely, then encouraging shifting to lower carbon modes such as active travel and public transport, and finally improving vehicle fuel types to ZEVs, and is the approach adopted by GCC in their emerging Transport Decarbonisation Study. This pathway also aligns with Cotswold District, GCC and UK Government net zero ambitions. However, we acknowledge the challenging nature of adhering to this pathway, therefore the Likely Best Case Ambition has been developed as an alternative (and the most realistic) scenario. While it may not meet CDC's target of 80% reduction of emissions by 2030 against the Do Nothing baseline, is still sufficiently ambitious to deliver net zero by 2045.

Figure 3-3 to Figure 3-6 illustrate the emissions reductions in the Balanced Scenario, demonstrating that as place types become more rural, fewer trips are substituted and shifted to active travel and public transport modes. For instance, as journey distances are generally longer from rural areas, it restricts the proportion of trips which can be shifted to active travel. It also acknowledges that encouraging public transport use in rural areas is inherently challenging. As a result, higher uptake of ZEVs are required for more rural areas, while acknowledging that EVs are only truly zero carbon if the electricity generated to power them uses renewable sources.

It should be noted that the scale of each graph is different due to the relative contribution of each place type to overall emissions. Emissions are highest across the whole of Cotswold District, and lowest in Cirencester due to better local access to amenities, services and public transport.

[1] Compared to forecast emissions for 2030

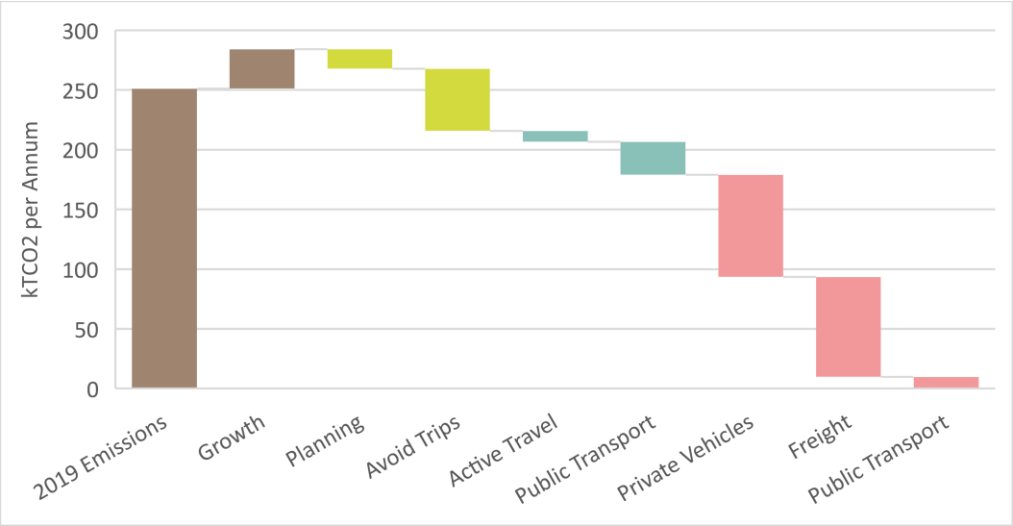

Figure 3-3: Likely Best Case Ambition Scenario Emissions Reductions for Cotswold District in 2045

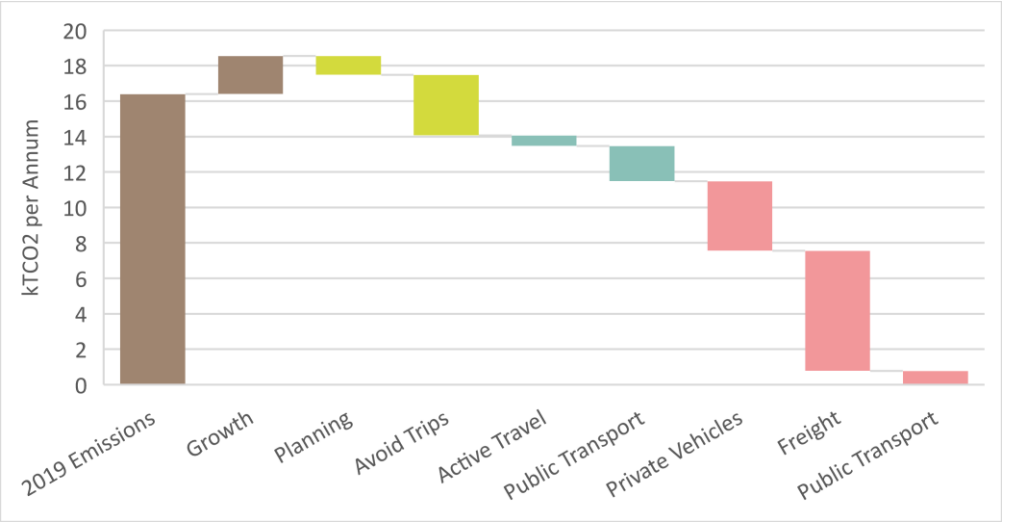

Figure 3-4: Likely Best Case Ambition Scenario Emissions Reductions for Cirencester Central in 2045

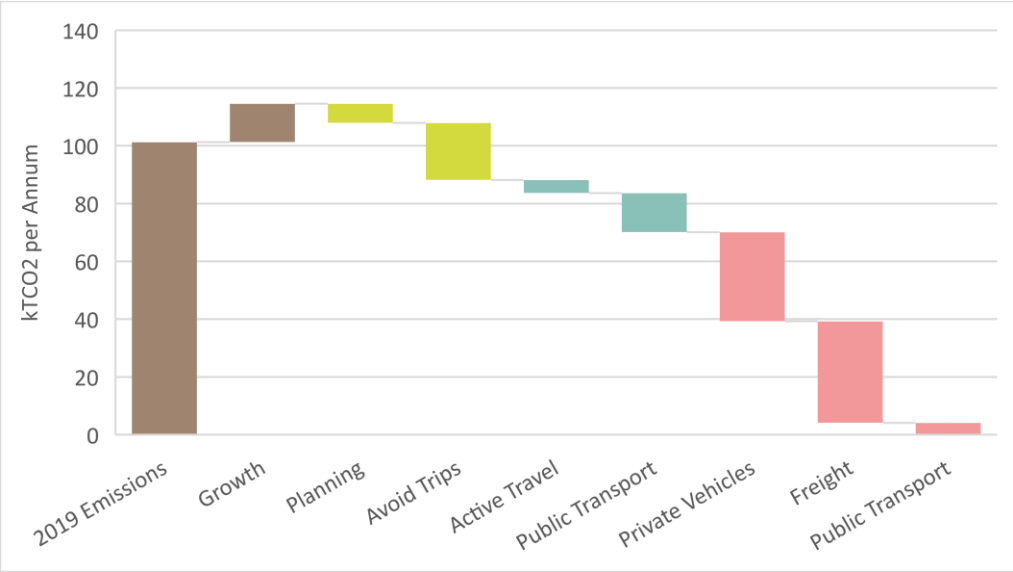

Figure 3-5: Likely Best Case Ambition Scenario Emissions Reductions for Local Hubs in 2045

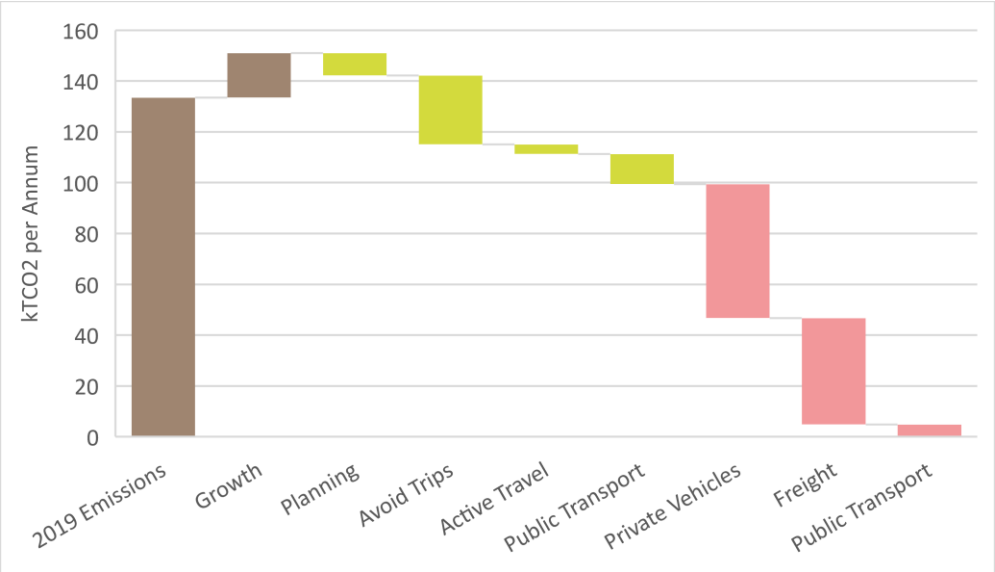

Figure 3-6: Likely Best Case Ambition Scenario Emissions Reductions for Rural Settlements in 2045

4 Net Zero Route Map

Chapter at a Glance

This chapter develops a set of clear targets using the avoid-shift-improve framework (aligning with the transport hierarchy) for each of the place types to communicate the pace of activity required to reach net zero by 2045. These targets are integrated into a high level, visual route map for the wider Cotswold District providing a consolidated overview of the net zero targets.

4.1 Cotswold District Net Zero Route Maps

CDC's 2045 net zero target might feel distant. However, by deconstructing goals into a clear trajectory of emissions, a pathway to success can be presented. The route map provides an overview of CDC's net zero vision to 2045, supported by clear interim mileage, modal share and fleet electrification targets. The District-wide policy landscape is shown in Figure 4-1 to provide context for the place type targets and the transport decarbonisation interventions discussed in Chapter 5.

4.2 Place Type Targets

We have developed place type targets to provide clarity on the scale of change that is required in each of the three place types. As with the rest of this Study, the targets align with the avoid-shift-improve framework and encompass the overall mileage per person in the District, the choice of transport mode and the level of electrification within the wider fleet.

The difference in the targets between the place types generally relates to the baseline situation. Rural areas have higher baseline person mileages and therefore have more generous targets – although the targeted decrease is similar in proportion (e.g. within 10 percentage points of each other) between the place types. Similarly, more rural place types currently have a greater reliance on the car and therefore the target mode share for cars is also more generous.

The greatest change in mileage and mode share happens between 2019 and 2030, indicating the need for rapid application of avoid and shift interventions to meet these targets. The remaining change between 2030 and 2045 is smaller, however these remaining trips are likely to be more challenging to decarbonisation through avoiding the need for travel or shifting to an alternative mode. The role of electrification becomes more important over time, aligning with the Government's 2030 ban on ICE vehicles, and as avoiding and shifting the remaining trips becomes less effective.

Figure 4-2 to Figure 4-5 break down the targets by overall mileage, mode and proportion of the fleet electrified. These align with applying the high-level targets, shown in Figure 4-1, and align with the avoid-shift-improve framework. The district-level targets take into account the mix of place types and their associated travel patterns. Consequently, there may be differences with targets which do not take account of this, e.g. those presented in our Net Zero Pathways Report.

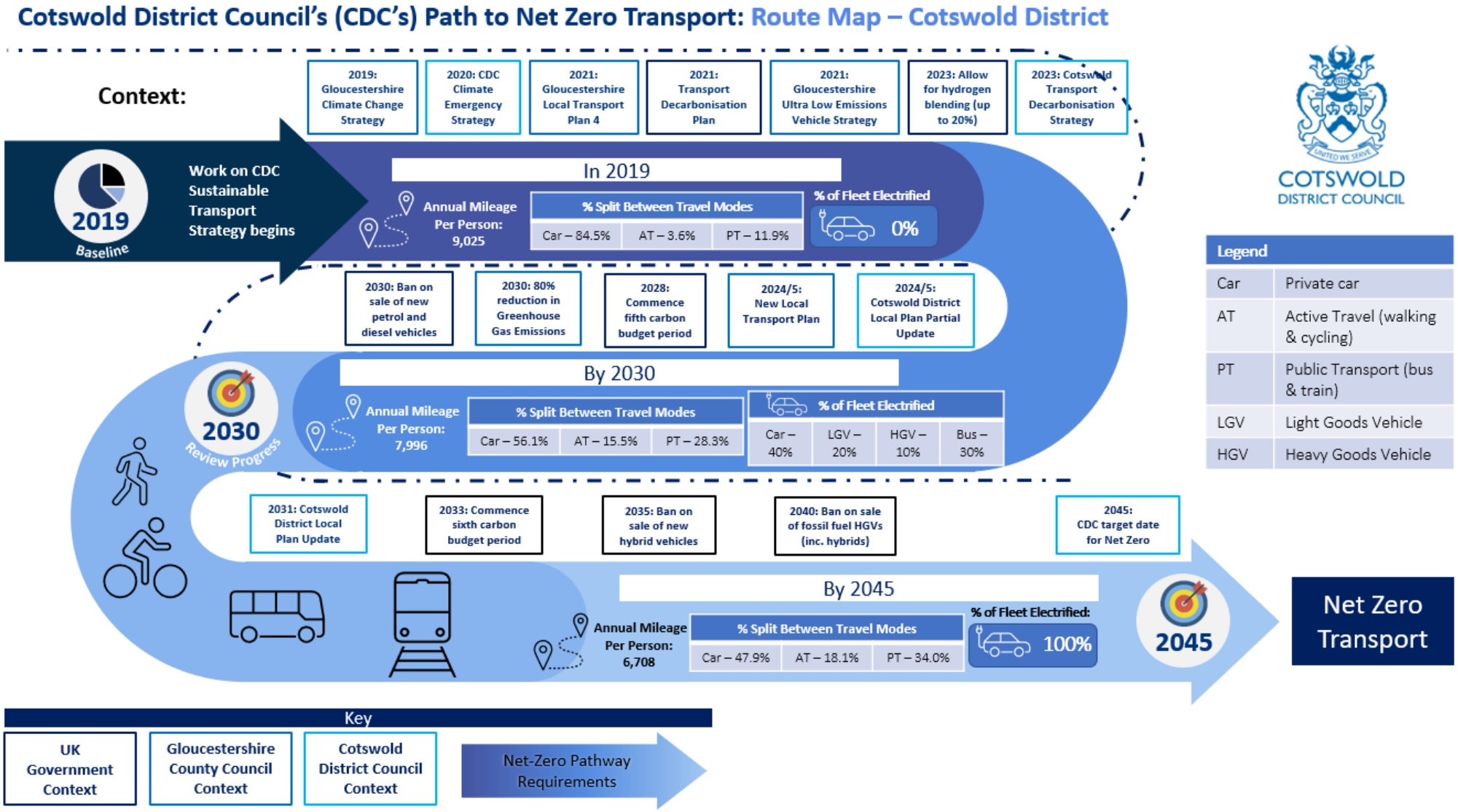

Figure 4-1: Cotswold District Net Zero Route Map

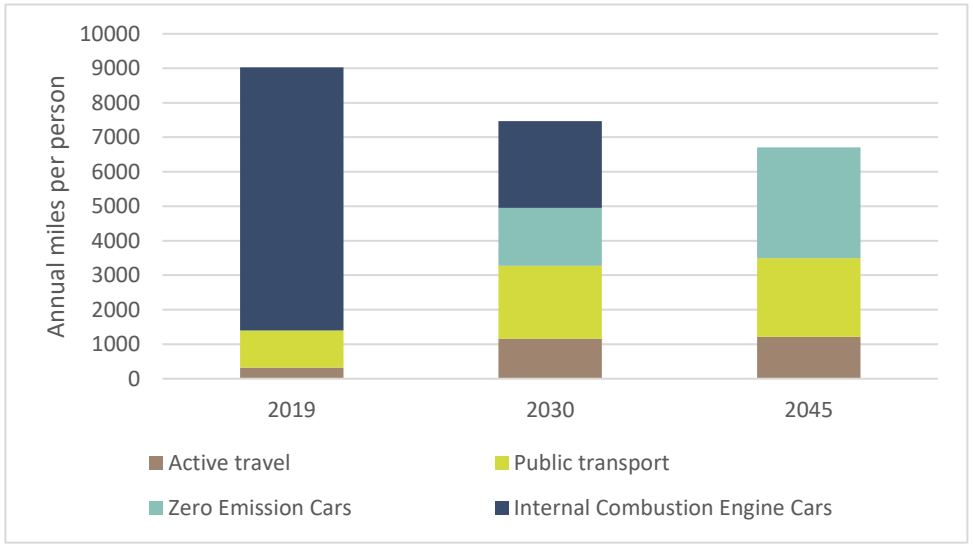

Figure 4-2: Cotswold District Targets by Mileage, Mode and Fleet Improvements

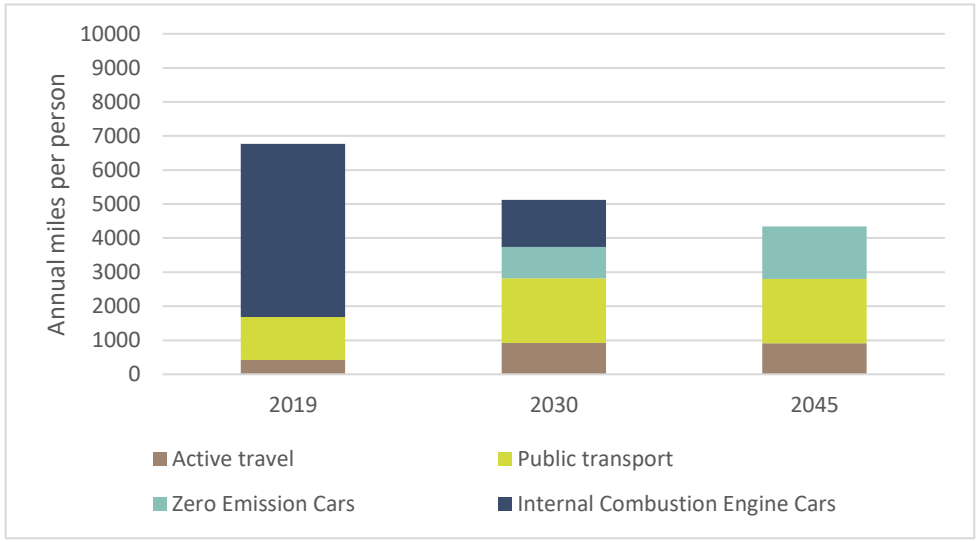

Figure 4-3: Cirencester Central Targets by Mileage, Mode and Fleet Improvements

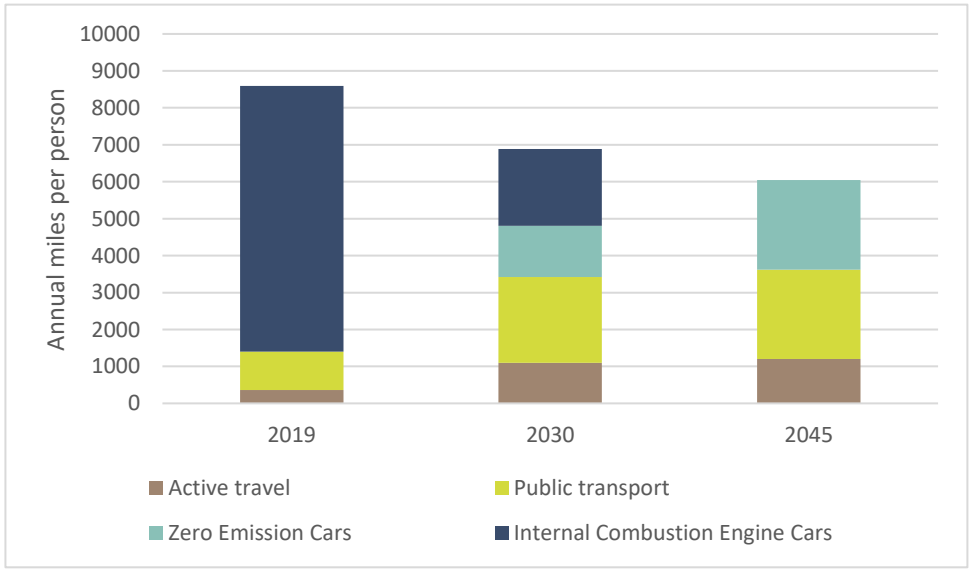

Figure 4-4: Local Hubs Targets by Mileage, Mode and Fleet Improvements

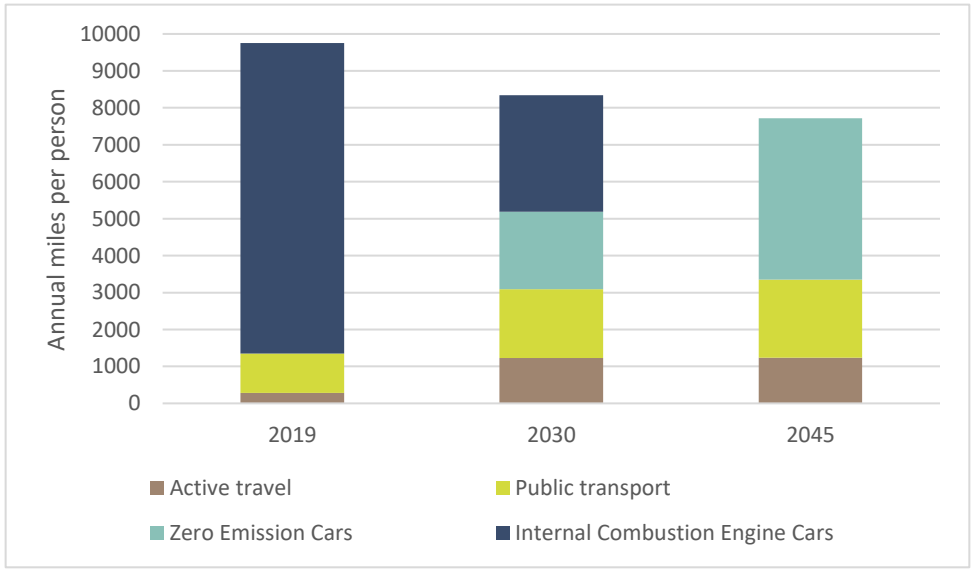

Figure 4-5: Rural Settlements Targets by Mileage, Mode and Fleet Improvements

5 Decarbonisation Interventions

Chapter at a Glance

This chapter outlines the solutions which we refer to as interventions that will support delivery of the transport decarbonisation scenarios outlined in Chapter 3. The top 30 best performing interventions are discussed, and those with the highest decarbonisation impact highlighted. This chapter also takes into account broader considerations for instance the challenges and co-benefits of implementing these interventions.

5.1 Transport Interventions

In order to deliver on the transport decarbonisation targets set out in Chapter 4, a long list of transport interventions was developed through a process that included, a research and policy review, internal workshop with specialists from a range of disciplines, and discussion with CDC officers. These interventions follow the avoid-shift-improve framework, as outlined in Section 3.2 and adopted by GCC in the emerging Transport Decarbonisation Study, and apply learnings from the RTPI's Net Zero Transport Report.

We then assessed the long list of interventions by applying criteria agreed with CDC and GCC officers. The deliverability of each option was also assessed. We also assessed which place types each intervention was applicable to. Through this process we identified the top 30 prioritised interventions for each place type. The results for Cirencester Central and Local Hubs were very similar, and have therefore been combined in Figure 5-1.

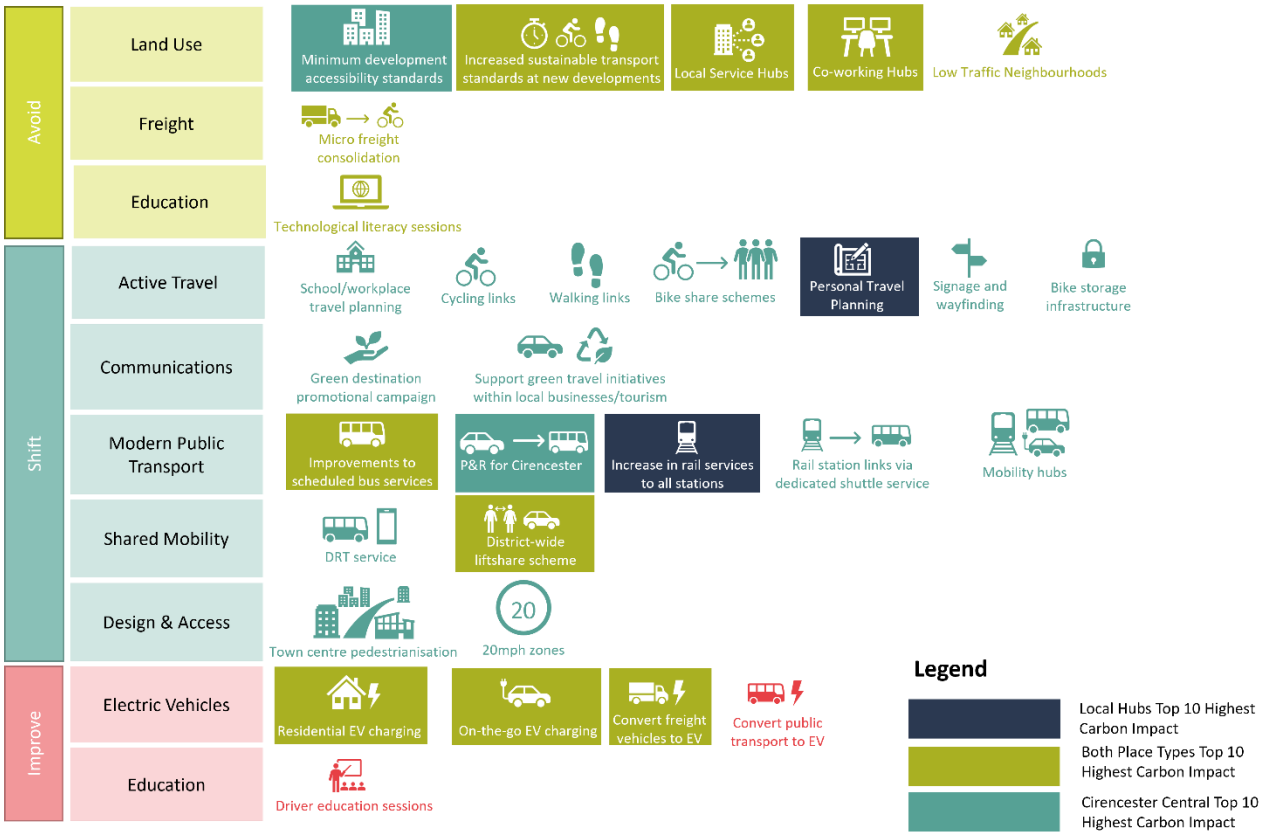

Figure 5-1: Top 30 Options & Top 10 Greatest Carbon Reduction - Cirencester Central & Local Hubs

Figure 5-2 shows the results for the Rural Settlements place type.

Figure 5-2: Top 30 Options & Top 10 Greatest Carbon Reduction - Rural Settlements

There are extensive commonalities between the Cirencester and Local Hubs place types, which focus on improvements in active travel and public transport. The results for the Rural Settlements place type however, highlights the change in emphasis which is required to decarbonise rural areas. The lack of services (e.g. shops) and longer distances between homes and key local hubs makes it difficult to encourage active travel as a viable option. However, there may be opportunities to leverage e-mobility (such as e-bikes) and micro-mobility solutions to bridge this gap. More EV and zero emission vehicle infrastructure also falls within the top 30 for Rural Settlements, demonstrating its importance in delivering emissions reductions (while acknowledging that this does not account for non-renewable electricity that is used for charging the vehicles).

Figure 5-1 and Figure 5-2 also show the 10 most high impact interventions in terms of carbon emission reductions. We have calculated the carbon emissions reduction using a combination of local and national data, prior case studies and experience. This is then scaled to a quantifiable target (which was agreed with CDC), which varies by place type. The full methodology and detail of this carbon analysis can be found in the **Net Zero Route Map Report**. Across all three place types, there is a large variation in the impact of interventions ranging from approximately 0.05% to 30% carbon reduction compared to the 2045 Do Nothing scenario. Most interventions result in a relatively modest decarbonisation effect, however there are some substantially higher impact options, such as grants to trade in ICE vehicles as part of the switch to EVs for Rural Settlements (31% reduction), and improvements to scheduled bus services in Cirencester Central and Local Hubs (9%). The results of the carbon analysis generally reflect the key transport barriers and opportunities experienced by each of the place types – the reliance on private vehicles in rural communities, and the need for effective, low carbon public transport in more urban or semi-urban areas.

5.2 Broader Considerations

While the role of transport decarbonisation in reaching net zero is undisputed, and there is a broad level of commitment to decarbonisation at every level of government, there are a range of other factors at play which can support or impede its delivery. Table 5-1 summarises the challenges and co-benefits of transport decarbonisation.

Challenge	Co-Benefit
Pace of Change: The current pace of change is too slow to support delivery of net zero	**Public Health:** There are a number of related public health benefits, including cleaner air, greater uptake of active travel, better road safety and more attractive local environments
Technology: While technology will be instrumental, vehicle electrification alone cannot delivery net zero and key gaps in the technological response remain an issue e.g. zero emissions HGVs	**Social Inclusion:** Reliance on cars, particularly in rural communities, can lead to social isolation for those who cannot or do not drive. Improved public transport and active travel provides better connectivity and links to local hubs and services for people in rural communities.
Financial: The 'do everything' approach recommended by this Study requires substantial funding to enable delivery, which is a significant constraint at Local Authority level	**Green Economy & Resilience:** Investment into a more productive, cleaner and healthier low carbon transport model will enable places to become more efficient, to attract and retain the best talent and investment, and be more resilient to future economic or climate shocks
Policy & Regulation: There are clear gaps in UK Government policy and regulation that do not align with the Government's own net zero commitments	**Biodiversity:** Biodiversity net gain is an important approach to new development which aims to provide an increase in natural habitat and ecological features. There is an opportunity to combine the positive benefits of transport decarbonisation and support an increase biodiversity in Cotswold District
Societal Change: At present, most people are unaware of the scale of action required which poses a significant issues to the transformational change needed to meet net zero	
Embodied Carbon: Embodied carbon is an important net zero consideration, especially when considering the energy required to create and install new infrastructure	

Table 5-1: Challenges & Co-Benefits of Transport Decarbonisation

6 Conclusions & Next Steps

6.1 Conclusions

This Study has brought together a range of evidence to support the decarbonisation of the transport system within Cotswold District. Baseline data was analysed to understand the current level of transport emissions within the district, and a pathway to net zero was calculated based on CDC's net zero date of 2045. Various transport interventions were analysed using the avoid-shift-improve framework, and their efficacy in delivering a reduction in carbon emissions was calculated.

6.1.1 Do Everything Approach

There is no single solution which will deliver net zero transport in Cotswold District. The approach should therefore consider all options across all modes to ensure that progress is made towards reducing milage, encouraging low carbon transport choices, and switching to zero emission fuels.

6.1.2 Place-Based Solutions

There is no 'one size fits all' approach. The different place types have their own individual characteristics such as population density and access to services which change the way people engage with the transport network. The proposed solutions must therefore reflect these differences and be sensitive to the needs of the communities.

6.1.3 Pace of Change

The decarbonisation pathways show that under a 'do nothing' scenario CDC will miss its net zero target by 170 ktCO2 in 2045. The current pace of change is not compatible with delivery of net zero, and CDC needs to prioritise quick wins and embed decarbonisation into all decision-making in order to have a chance of meeting its net zero 2045 target.

6.1.4 Transport Hierarchy

The transport hierarchy (avoiding travel, shifting to more efficient modes, and improving vehicle fuels) has been integrated into this Study from the beginning. A range of options across the transport hierarchy must be delivered in order to achieve a net zero transport system, with priority given to options which reduce the need to travel overall.

6.1.5 Broader Considerations

There are a number of wider factors which must be taken into account. This includes the limits of CDC's sphere of influence, financial and policy gaps, the need for societal change and accounting for embodied carbon. There are also associated benefits to decarbonisation, including public health benefits, inclusivity, and integration of biodiversity net gain into new schemes.

6.2 Next Steps

The technical work for CDC's Transport Decarbonisation Study identifies several key sources of transport carbon emissions alongside opportunities to reduce those emissions. It is recommended that the following areas form priority considerations for subsequent development of interventions:

- Local Plan and Local Transport Plan: Low carbon planning has been identified as a priority opportunity for reducing transport carbon emissions at all place types within Cotswold District. Developments that are located close to essential services or frequent public transport corridors, that provide quick and efficient sustainable transport connections to these services and that prioritise movement by sustainable modes through their design will all contribute to a reduction in the need for car travel. CDC are currently updating their Local Plan and GCC will shortly be reviewing their Local Transport Plan. It is important that these principles and supporting infrastructure requirements are captured in these, and other, strategic plans
- Rural Accessibility: Baseline work has identified that poor access to services is driving high car use in rural areas. Rural accessibility, while a challenge, should therefore be an area of future focus.
- Leisure and Tourism: Leisure travel - which includes internal local leisure trips and external tourist and day visitor travel - is vital to the economy of Cotswold District, but is currently the greatest contributor (by

travel purpose) to transport carbon emissions in the district. A focussed study of leisure and tourism travel to identify opportunities to reduce private vehicle travel while maintaining an appropriate level and spread of access is therefore recommended. A trigger point for this work will be any future updates to key tourism strategies and /or a Full Local Plan update.

- Targeted Infrastructure and Improvements: Improvements to scheduled public transport services, walking and cycling links were all identified as amongst the most effective potential interventions. Infrastructure and service interventions can be costly, so a clear process for identifying, assessing and prioritising potential schemes should be developed and additional delivery opportunities (e.g. funding applications or developer contributions) explored for the top priority schemes. The District and County Councils should work together closely on this workstream, reflecting their spheres of influence. An update to the Gloucestershire Local Transport Plan and the drafting of a new Gloucestershire Infrastructure Plan will provide useful trigger points within which to identify and co-ordinate long term priorities.
- EV and Other Low Carbon Fuels: The net zero scenarios show that private vehicle journeys are likely to form a significant part of our future travel requirements, particularly in rural areas. Bus services will also need to increase to accommodate increased patronage and HGV demand is likely to remain high. All of these point to a need to decrease the carbon impact of these vehicle trips through a switch to electric or other zero carbon fuels. Development of an electric vehicle strategy and action plan is recommended, considering both residential and localised charging infrastructure and en-route charging requirements on the major and strategic road networks (including alternative fuels for freight). The latter is likely to require cooperative work with National Highways, the sub-national transport board and GCC, reflecting this regional geography.
- Behaviour Change: The pace of decarbonisation and behaviour change required to meet CDC's Net Zero by 2045 target means it is unlikely that the authorities will be able to deliver significant infrastructure and service improvements across the entire district within the required timeframe. We will encourage and support residents, businesses and visitors to make changes to their travel behaviour. This requires a greater understanding of the attitudes, barriers and opportunities driving transport behaviour as well as engagement with potential travellers to help them identify and use alternatives when available. This is likely to incorporate elements of attitudinal research and social marketing, as well as direct engagement and support via development of a sustainable travel campaign that supports school and workplace travel planning, promotes journey planning tools, and provides training and information.