

**Oxfordshire County Council**

Southern Central Oxfordshire Transport Strategy

Final Report

October 2008

**Halcrow Group Limited**

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# **Oxfordshire County Council**

## **Southern Central Oxfordshire Transport Strategy**

### **Final Report**

### **Contents Amendment Record**

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Signed
1	0	DRAFT Final Strategy for Officer Comment	15/8/08	LJ
1	1	Final Draft Strategy incorporating comments from Officer Working Group	25/9/08	LJ/COB
1	2	Final Report	30/10/08	LJ/COB

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# 1 Introduction

## 1.1 *Purpose*

1.1.1 The purpose of this Report is to set out the comprehensive transport strategy for the Southern Central Oxfordshire Transport Strategy (SCOTS) area, which focuses on providing a package of transport measures to support housing and employment growth to 2026. The Strategy builds on National, Regional, County and District policies, and supports South Oxfordshire and the Vale of White Horse District Council's Core Strategies and site allocation documents.

1.1.2 The core team involved in developing the strategy included:

- Oxfordshire County Council Transport Strategy, Public Transport Development and Development Control Officers;
- Vale of White Horse and South Oxfordshire District Council's Planning Policy/Strategy Officers;
- Halcrow policy, public transport and modelling specialists; and
- The Highways Agency.

1.1.3 In addition, Local Members from both Districts and Portfolio holders were presented with the overall findings, firstly setting out the highway issues identified and secondly the results of the testing of various transport network improvement measures.

## 1.2 *Background*

1.2.1 It is intended that this Study draws on previous work, and updates and develops that work, to prepare a comprehensive transport strategy for the Southern Central Oxfordshire area.

1.2.2 This Study provides the transport evidence base to underpin the proposals for this area in the South Oxfordshire and Vale of White Horse District Councils' Core Strategies and subsequent plans and site allocation documents.

1.2.3 The measures set out in this Strategy are considered to be essential to ensure that the SCOTS area can support the growth planned. The County Council's mechanism for delivering its transport investment programmes is primarily through the LTP and developer contributions. However, given the significance of

the economic growth proposed for this area and the importance of delivering the South East housing growth, investment in transport improvements to support this growth has already been promoted by the County Council. An RFA bid has been submitted to Government for funding towards a package of measures. This comprises a new strategic link road between Chilton and Milton and the removal of congestion bottlenecks around Rowstock roundabout.

1.2.4 In addition to the identification of new major schemes, it has been recognised through this work that there are existing issues at specific locations which relate to road safety, congestion and accessibility, which will require further attention.

### 1.3 ***Structure of this Report***

1.3.1 The remainder of this Report is set out as follows.

- Chapter 2 sets out the **Study Approach**;
- Chapter 3 provides the **Evidence Base** which underpins the strategy proposals;
- Chapter 4 sets out the recommended **Highway Strategy**;
- Chapter 5 sets out the recommended **Public Transport Strategy**;
- Chapter 6 sets out the recommended **Cycling Strategy**;
- Chapter 7 sets out the **Safety Strategy**; and
- Chapter 8 considers **Managing the Demand for Travel** and the importance of the use of alternative modes.

## 2 Study Approach

### 2.1 *Introduction*

2.1.1 This Chapter sets out the overall approach that has been taken in developing the Southern Central Oxfordshire Transport Strategy (SCOTS). SCOTS was split into a number of stages of technical work spanning two years, with this Report representing the final stage. The purpose of the Study was to identify the most sustainable location for additional dwellings in the SCOTS area in transport terms. In addition, there was a need to understand associated infrastructure requirements and public transport/cycle/safety improvements.

### 2.2 *Project definition*

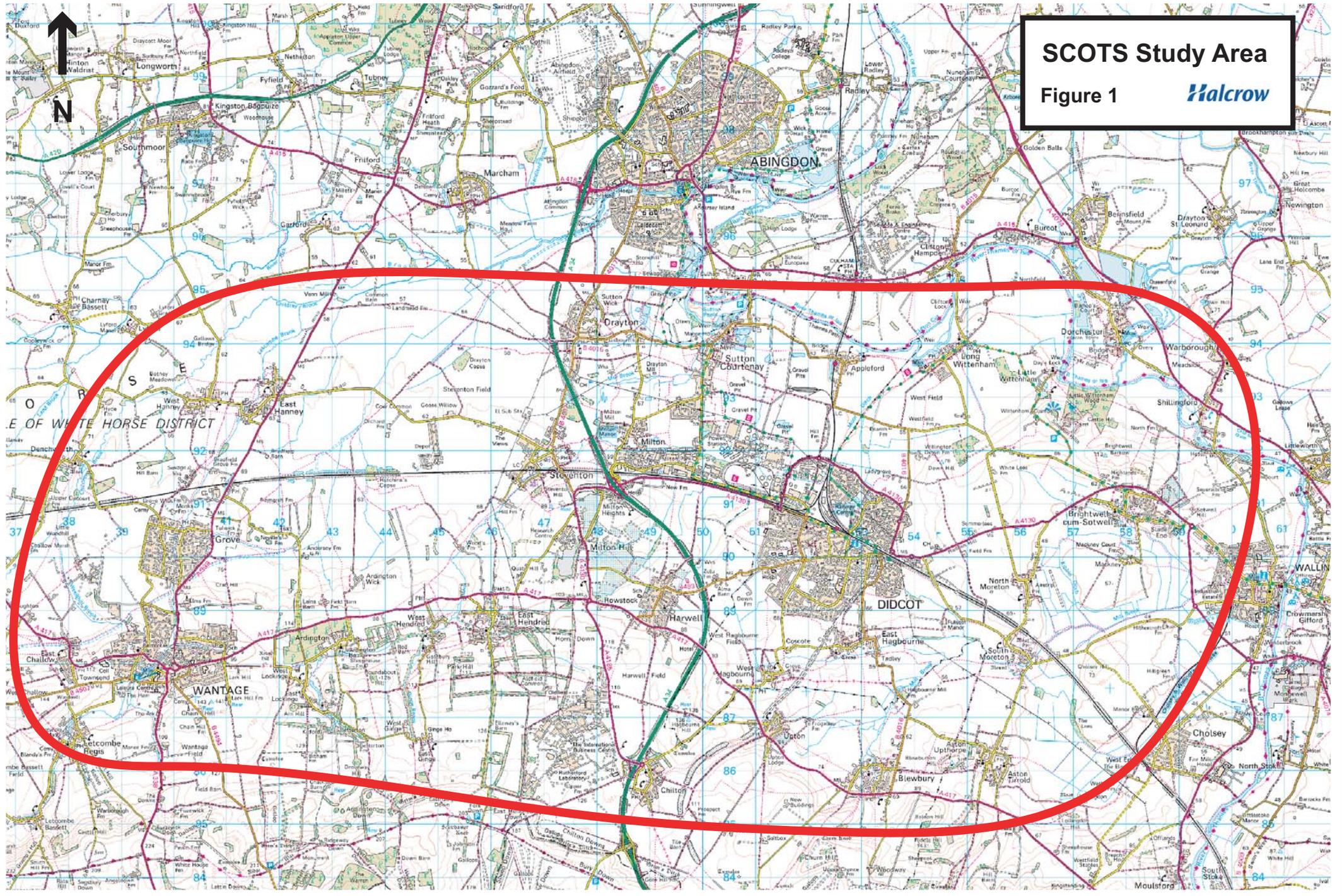
2.2.1 The over-arching Study objectives are based on the Local Transport Plan 2 shared priorities:

- Tackling congestion;
- Delivering accessibility;
- Safer roads;
- Better air quality; and
- Improving the street environment.

2.2.2 The over-arching policy direction for SCOTS is referenced in Chapter 3 of this document. This review highlighted the importance of the employment sites of Milton Park and Harwell SIC on both a strategic (national/regional) and local level. The importance of these sites is recognised not only in transport terms, but in other high-level policies for the County and District, such as those related to economic development. As a result of this policy direction the ability to access Milton Park and Harwell SIC, particularly by sustainable modes, is an important consideration for SCOTS.

2.2.3 The Study area is shown in Figure 1. The focus of SCOTS is Wantage, Grove and Didcot and the links between these settlements. The focus has been on East-West movements because there is a desire to increase levels of containment in the area and promote sustainable travel on this axis. However, it should be recognised that there has also been a need to consider the potential knock-on impacts of any schemes proposed to address travel movement east-west on the wider area, particularly to the north of the Study area, towards Abingdon and Oxford. Follow

**SCOTS Study Area**  
Figure 1 



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on work is currently taking place now the County Council has completed the building of a multi-modal model covering the whole of the Central Oxfordshire Sub-Region. A Technical Note will be issued setting out any network issues to the north of the Study area. The Technical Note will detail any additional mitigation measures that may be required to the north of the study area as a consequence of the planned growth at Wantage/Grove and Didcot.

2.2.4 The desired outcome of SCOTS is a robust strategy which identifies transport infrastructure and public transport enhancements required to facilitate sustainable development in the area up to and beyond 2026. There is a need to consider key pieces of infrastructure necessary to accommodate growth, ensuring they contribute towards meeting the LTP2 shared priorities.

2.2.5 SCOTS considers the time period up to 2026, taking into account the Structure Plan period (up to 2016) and the South East Plan period (up to 2026). In addition, consideration is given to the New Growth Point allocation for Didcot, which is required to be built by 2016. To coincide with the Plan periods, a focus has been put on seeking to understand the performance of the transport network in 2006, 2016 and 2026.

2.2.6 The requirement is for 6400 dwellings to be built in the SCOTS area up to 2026 on top of the growth already approved to 2016. These dwellings are to be built in both Didcot and Wantage/Grove. In the Didcot area, South Oxfordshire and the Vale of White Horse District Councils have agreed that the proposed 4500 dwellings should be evenly split between the two Districts, i.e. 2250 in South Oxfordshire and 2250 in the Vale of White Horse. In the Wantage/Grove area, it has been assumed that there will be 1900 dwellings built between 2016 and 2026. The methodology adopted, as set out below, has been developed in order to enable the identification of the most sustainable location, in transport terms, for these dwellings to be located. A summary of the housing and infrastructure to 2026 is set out in Table 1.

<b>Table 1: Housing and infrastructure in 2016 and 2026</b>		
	<b>Location</b>	<b>Housing number</b>
Committed housing (2016)	Great Western Park	3,300
	Ladygrove East	670
	Grove Airfield	1,500
Allocated housing to 2026	Didcot	4,500
	Wantage	900
	Grove Airfield	1,000
	<b>Description</b>	
Committed infrastructure (2016)	Great Western Park link road	
	Didcot Northern Perimeter Road Phase 3 (NPR3)	
	Milton Interchange improvements	
	Rowstock Roundabout improvements	
	Power Station Roundabout improvements	
	Manor Bridge Roundabout improvements	
A4130/B4016 Junction improvements		

### 2.3

#### 2.3.1

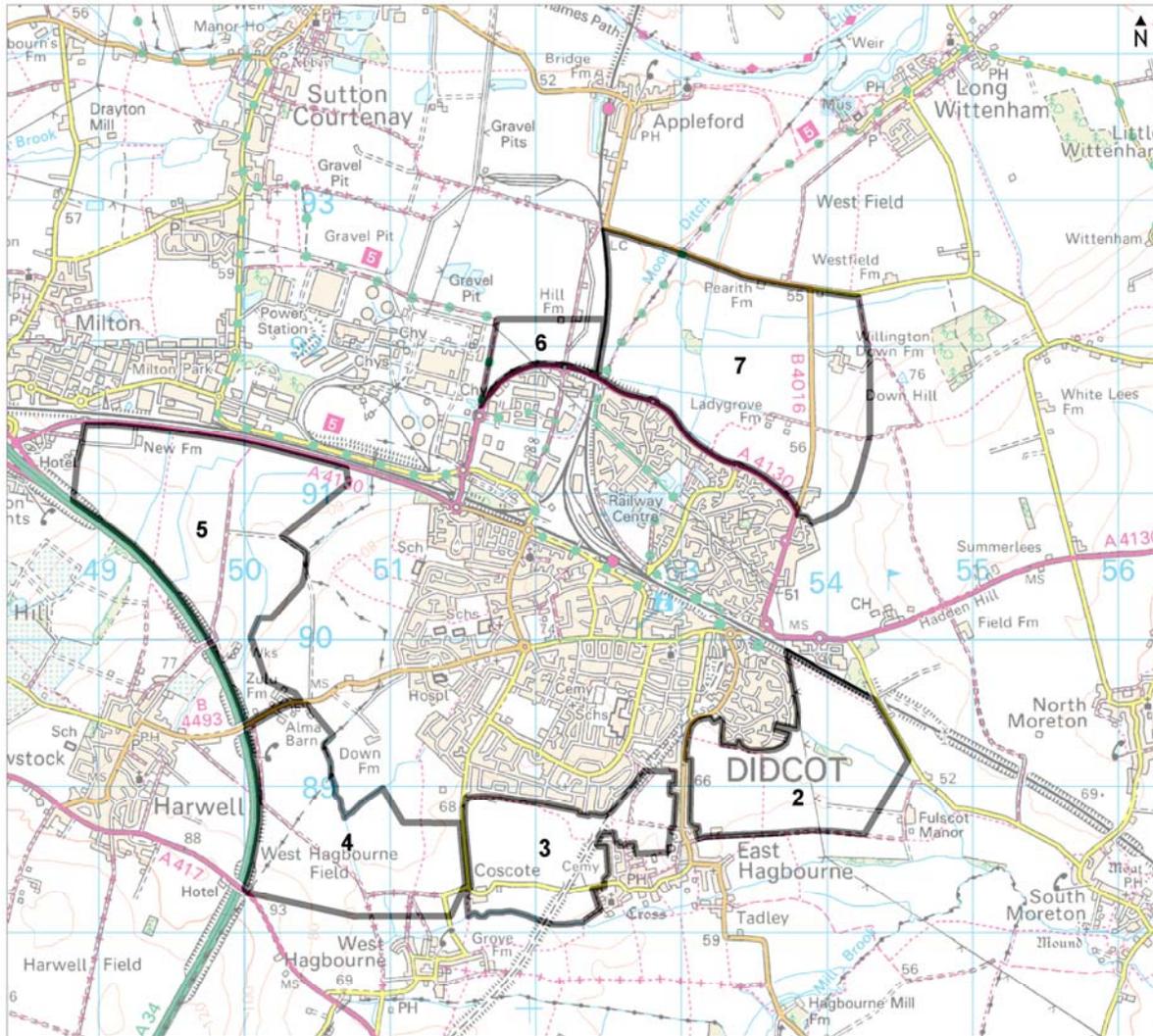
#### *Housing Site Option Testing*

For the Didcot area, **six potential development sites were identified through the LDF process**, as shown in Figure 2. The sites on the figure are those remaining from a longer list of potential sites, of which some have been eliminated as the Study has progressed. Previous Technical Notes set out the site sifting process that has been undertaken. The varying capacity of these sites, and the need for the dwellings to be split equally between two District Councils, has required the identification of a number of 'housing scenarios'. 16 different scenarios were originally identified for the Didcot area. The impact of locating dwellings on different development sites on the transport network needed to be understood in order for the most sustainable combination of development sites to be identified. Furthermore, there was a need to understand the impact of different transport schemes/measures with each of the different development locations.

#### 2.3.2

In order to test the impact of the additional trips generated by the dwellings around both Didcot and Wantage/Grove on the highway network in the SCOTS area, it was agreed that a SATURN traffic model should be built. The model can be used to test the trips generated by the additional dwellings and their impact on the network, and also test potential infrastructure measures that could be implemented and the impact they have on network performance. To reflect committed developments expected during the Structure Plan and South East Plan periods, it was agreed a model should be built for 2016 and 2026, in addition to the 2006 base year model (reflection of present day).

- 2.3.3 The SATURN model enables the assessment of highway issues. That is, it considers the movement of vehicles and does not reflect the pedestrian/cycle network. Throughout the SATURN modelling, a focus was maintained on the movement of vehicles in the SCOTS area, but a focus was not put on the movement/delay associated with public transport vehicles. It is considered that as a public transport vehicle uses the same highway network as private and commercial vehicles, any public transport vehicle would experience the same problems as being identified on the network as a whole.
- 2.3.4 Additional studies have taken place which focus on public transport in the SCOTS area. The findings of this work are fed into this final report, as appropriate, with strategies relating to cycling and safety.
- 2.3.5 In addition to the SATURN model, Accessibility Planning has been undertaken using an Accession model. The assessment considered the potential development sites individually, and assessed their relative accessibility by public transport to an identified list of services.



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Project:  
**Southern Central Oxfordshire  
Transport Study**

Figure Title:  
**Potential Housing Sites**

Figure Number: **Figure 2** Revision: **-**

### 2.3.6

The Accession and initial SATURN modelling results have been used to identify network issues. These issues were reported on through the Stage 1 work, and are set out in the Final Stage 1 Technical Report. Transport schemes and measures were identified to mitigate against these impacts, and the results of the testing of these schemes with the development scenarios was reported through Stage 2 work, in the Final Stage 2 Technical Report. These two stages of work have formed the evidence base for schemes identified for the study area. This evidence base, and other technical background, is set out in the following chapter.

## 3 Evidence Base

### 3.1 *Introduction*

3.1.1 This chapter sets out the evidence base behind the development of this Southern Central Oxfordshire Transport Strategy. There are a number of technical reports that have been written during the course of this Study, which this Chapter refers to. These technical reports are available separately and are listed in Annex 1. These documents have been used to set out the evidence underlying the strategy proposals.

### 3.2 *Initial technical work – focussed on Wantage/Grove future development*

3.2.1 Work related to the impact of development across the SCOTS area started in 2006. Early work was focused on assessing the impact of housing growth at the proposed Grove Airfield site on the surrounding area. Table 2 lists the SATURN tests that were originally undertaken in 2006 to start to understand changes in routing and performance on the local and strategic transport network in 2016 and 2026 in the Wantage/Grove area. As part of this work it was recommended that the Northern Link Road be included as part of any development on Grove airfield.

<b>Table 2: SATURN tests undertaken for 2016 and 2026 future year scenarios</b>
<b>Tests at 2016</b>
2016 without Development at Grove
2016 with phase 1 development at Grove with proposed Northern Link Road (referred to as the 'Base year 2016' for all other tests at 2016)
Base year 2016 without proposed Northern Link Road
Base Year 2016 and eastern Wantage relief road
Base Year 2016 and western Wantage relief road
Base Year 2016 and full Wantage relief road
Base Year 2016 and full Wantage relief road and closure of Market Square
Base Year 2016 and eastern Wantage relief road and restraint to Charlton Village Road
<b>Tests at 2026</b>
Base Year 2026 BUT without Grove development
Base Year 2026
Base Year 2026 BUT without Northern Link Road
Base Year 2026 with eastern Wantage relief road
Base Year 2026 with eastern Wantage relief road and restraint to Charlton Village Road.
Base Year 2026 with western Wantage relief road
Base Year 2026 with full Wantage relief road
Base Year 2026 and full Wantage relief road and closure of Market Square
<b>Tests with potential Steventon Link</b>
Base Year 2026 with 'rural link (50kph)' to north of railway
Base Year 2026 with 'strategic link (80kph)' to north of railway
Base Year 2026 with 'rural link (50kph)' to south of railway
Base Year 2026 with 'strategic link (80kph)' to south of railway
Base Year 2026 with 'rural link (50kph)' to north of railway without Northern Link Road
Base Year 2026 with 'strategic link (80kph)' to north of railway without Northern Link Road
Base Year 2026 with 'rural link (50kph)' to south of railway without Northern Link Road
Base Year 2026 with 'strategic link (80kph)' to south of railway without Northern Link Road

#### Highway issues in Wantage and Grove in 2016

##### 3.2.2

The results of work at this Stage of the Study can be referenced in full in the Working Document South Central Oxfordshire Transport Study, March 2007. The Working Document identified that there are three main locations in 2016 where the existing highway arrangement in the Wantage/Grove area is unable to meet demand for some movements. These three locations are:

- Junction of Wallingford Street/Seesen Way which is nearing capacity without development but with development is at capacity;
- B4507 junction with the A338 (Port Way with Newbury Street) which is at capacity with and without development at 2016; and
- The length of A417 from Seesen Way, Wallingford Street through to Charlton Village Road junction.

#### Highway issues in Wantage and Grove in 2026

##### 3.2.3

The highway network in 2026 is considerably more congested and the modelling work has identified the following locations to be at capacity:

- Junction of Mably Way/Denchworth Road (the key arm from the proposed Grove development site is at capacity);
- Denchworth Road / A417 junction;
- Wallingford Street/Seesen Way junction;
- Charlton Village Road access onto A417;
- The length of A417 from Seesen Way, Wallingford Street through to Charlton Village Road junction.
- B4507 junction with the A338 (Port Way with Newbury Street); and
- A338 approach to the Oxford Lane junction in north Grove.

##### 3.2.4

The situation in 2026 also suggests that buses will be significantly affected on the main routes and thus there will be an increasing need over time to 'protect' bus routes to ensure that the bus can maintain an attractive level of service and frequency at affordable costs. Further work will be required at a later date to prepare a detailed action plan to ensure that bus movements are protected and enhanced in association with development in the town.

#### West-East issues (associated with development at Grove)

##### 3.2.5

The initial modelling work showed that by 2026 the three key junctions on the network that cater for west-east movements are at capacity. This means that a significant number of trips cannot complete their demanded journey in the morning peak hour. The consequence is that people will choose to travel earlier or later (thus extending the peak) or people will travel longer distances on inappropriate roads to avoid the queues. The three key junctions are:

- Rowstock junction – which has exceeded capacity in 2016 and 2026 even with improvements to that junction to maximise its capacity through signalisation;
- Frilford junction – exceeds capacity in 2016 and 2026; and

- Steventon Road junction with the rural East Hanney to Steventon link – which is at capacity in 2026 due to the increased number of vehicles seeking to avoid Rowstock and Frilford junctions.

Inappropriate re-routing (associated with development at Grove)

3.2.6

The analysis of the network around Wantage / Grove (as reported in March 2007) also highlighted that as the network becomes more congested both within Wantage and Grove and in the immediate environs, significant numbers of vehicles choose to travel on routes which were arguably never intended to form part of the ‘main’ highway network.

- Featherbed Lane – this rat-run is being used heavily in 2016 to avoid Rowstock junction and is considered inappropriate on safety grounds for the volume of traffic using it;
- Grove Park Drive – by 2026 this rural link is being used to avoid Seesen Way and other routes within Wantage as an alternative route to access the A417;
- Charlton Village Road – in 2016 the model shows a significant increase in traffic using the route in the morning peak hour and by 2026 this has increased still further to avoid the increasing congestion on the main network through Wantage and to the east on the A417. It is suggested that this routing is inappropriate due to the fact that this is a residential road with a school. It is not intended that this route forms part of the main road network.
- Winchester Way – similar to the reasons above, by 2026 there is a significant increase in traffic travelling southbound to avoid congestion on the main route through the town. As a residential road the increase is considered inappropriate for its character.

3.3

3.3.1

***Towards a Strategy for the whole SCOTS area***

Following the initial work associated with identifying highway issues in the Wantage/Grove area associated with development at Grove, **three further stages of work were then undertaken which focussed more on the issues associated with the proposed development at Didcot. However, at all times the highway network in Wantage and Grove has been reviewed to establish what the impact of development at Didcot has on Wantage/Grove.** All the technical work has contributed towards the development of this final strategy for SCOTS. In terms of the highway strategy all development proposed in the

Grove/Wantage area to 2026 as well as proposed growth at Didcot (including the Growth Point housing) was assessed together. The three stages of work were:

- Stage 1 – Identification of network issues;
- Stage 2 – Scheme testing; and
- Stage 3 – Final strategy development.

Stage 1 (incorporating all development across the whole SCOTS area)

3.3.2

Stage 1 focussed on setting out the existing situation, understanding the model requirements and seeking to understand network issues. A series of Technical Notes were issued as part of the Stage 1 work. The findings of these were then culminated in a Stage 1 Technical Report (July 2008). The purpose of the Stage 1 Technical Notes were to:

- Technical Note 1: Existing Situation (February 2008) – summarise the existing scheme proposals and strategy objectives across the Study area;
- Technical Note 2: Key Considerations (January 2008) – understand the considerations that would guide the development of the model assumptions, providing a focus for this Study in terms of a series of social, economic and environmental outcomes;
- Technical Note 3: Model Assumptions (February 2008) – the committed development and infrastructure to be fed into the periods to be modelled (i.e. 2006, 2016 and 2026); and
- Technical Note 4: Appraisal Framework (February 2008) – a list of agreed criteria, stemming from the social, economic and environmental outcomes, against which the model outputs could be assessed.

3.3.3

The **Existing Situation Technical Note** was based on a policy review. It highlighted that the sustainability agenda should underpin all transport decisions. **Implicit in all of the documents reviewed was an underlying theme of reducing the demand/need for travel, by seeking to locate development where it provided the greatest opportunity to use sustainable modes.** A series of clear and tangible transport statements were identified to maximise the contribution that transport could make towards the delivery of the outcomes being sought in the Study area. Table 3 below sets out the outcomes and transport statements used for SCOTS following discussions with Officers at the County and District Councils.

### 3.3.4

It is recommended that a series of indicators be developed to enable the successful delivery of each of the outcomes to be measured. These could form part of a more detailed action plan as the development sites come forward.

<b>Table 3: Outcomes and Transport Statements for SCOTS</b>	
<b>Outcome</b>	<b>Transport Statements</b>
<b>Social</b>	
Improving access to key services	To identify the sites with best access, which enable people to get to: <ul style="list-style-type: none"> <li>• Education – secondary schools, training and life-long learning;</li> <li>• Health care – District and Specialist hospital facilities;</li> <li>• Shopping and leisure facilities;</li> </ul> at the times they need to do so, and thereby to reduce social exclusion, particularly for the most disadvantaged groups.
Improving the actual and perceived safety of travel	To reduce injury accident rates, particularly for the most vulnerable road users, as well as addressing perceived safety concerns.
<b>Economic</b>	
Improving connectivity within the Study area, to enable the efficient and reliable movement of people	To support economic prosperity by developing improved transport networks and provide greater opportunity for people to travel more sustainably, between: <ul style="list-style-type: none"> <li>• Housing and the major employment sites at Harwell SIC and Milton Park;</li> <li>• Housing and Didcot town centre; and</li> <li>• Housing and Wantage town centre.</li> </ul>
Improving connectivity within the wider area, to enable the efficient and reliable movement of people	To support economic prosperity by developing improved transport networks and provide greater opportunity for people to travel more sustainably (i.e. access to Didcot Parkway Station and Premium Route bus network) between: <ul style="list-style-type: none"> <li>• The SCOTS area and major employment sites in the wider region; and</li> <li>• The SCOTS area and commercial centres in the wider region.</li> </ul>
To minimise the impact of traffic related to the housing development on the local and strategic routeing of freight	To consider whether the function of the freight network is compromised as a result of the location of new housing development.
<b>Environment</b>	
Reducing the contribution of transport to greenhouse gas emissions	To promote the use of transport measures and initiatives that reduce the contribution that transport makes to greenhouse gas emissions.
Consider the impact of transport on the local environment	To consider the impacts of all transport measures on: <p>Local air quality;</p> <p>Townscape/landscape;</p> <p>Biodiversity;</p> <p>Noise; and</p> <p>Community severance.</p>

- 3.3.5 A **'route hierarchy'** was developed as part of the Key Considerations Technical Note. The SATURN model provides detail on the performance of the highway network, in that it can identify junctions which are likely to be over capacity and areas where delay could be experienced. However, it does not provide a clear indication of how the impact of additional trips on the network will impact on quality of life, with the exception of the time it takes to undertake a journey.
- 3.3.6 The route hierarchy methodology was developed in order to better assess the parts of the local road network which require mitigation from additional traffic growth related to housing development planned in the area, and particularly where traffic flow increases are considered to be unacceptable. As such, routes throughout the SCOTS area were allocated a category, based upon the current classification of roads and their rural or urban nature.
- 3.3.7 As stated above, this methodology is inextricably linked to quality of life issues. That is, there could be two highway links classed as residential, one currently taking 75 vehicles per hour, the other taking 300 per hour. On either of these routes, an increase will be seen by those affected most directly as deterioration in their quality of life. This is notwithstanding the fact that the two routes already have differing levels of traffic on them.
- 3.3.8 Thus, the methodology was focussed on revealing change as a result of perceptions. This is opposed to a more traditional approach which is based on the consideration of the total capacity of the link regardless of the changing levels of traffic volume.
- 3.3.9 The **Model Assumptions Technical Note** set out specific requirements to be included in the model related to:
- Employment and modal split assumptions;
  - Additional retail/ leisure and commercial development in Didcot town centre;
  - Site options (around Didcot); and
  - Agreed new infrastructure to be included at 2016 and 2026.
- 3.3.10 This information was used to form the basis of the future year models (i.e. 2016 and 2026), into which the additional dwellings and schemes identified for testing could be modelled.

### 3.3.11

The **Appraisal Framework** developed was based on the social, economic and environmental outcomes identified as a result of the policy review. In addition, the Technical Note recognised that the appraisal process needed to incorporate a series of ‘deliverability’ outcomes and associated appraisal criteria. That is, it set out that any transport measure must:

- Consider the implications of transport schemes on local air quality, townscape/landscape, biodiversity, noise and community severance;
- Ensure perceived/actual safety is maintained/improved;
- Be acceptable/supported by the public/key stakeholders;
- Have a reasonable prospect of full funding identified for implementation; and
- Be deliverable within the required timescale to mitigate the issue to be addressed.

### 3.3.12

In addition to reflecting the findings of the Technical Notes listed above, the Stage 1 Report included a section on **accessibility planning**. Accessibility planning was undertaken at this stage to understand the relative accessibility of different development sites (around Didcot) to a list of identified services, by public transport. This testing was based on the existing bus services and existing location of services.

### 3.3.13

In line with the Technical Notes issued, **the SATURN model** was developed to reflect the changes set out in the Model Assumptions Technical Note for 2016 and 2026. In line with the appraisal framework, the impact of the different Didcot housing scenarios on the highway network was assessed, prior to the addition of any infrastructure, to identify network issues that are likely to arise both around Didcot and in the Wantage/Grove area. The identification of issues was based on considering the following outputs for the AM and PM peak periods:

- Network performance (total distance travelled and time spent on the network by vehicles);
- Journey times;
- Link flows; and
- Junction capacities.

### 3.3.14

Due to the varied nature of the area included in SCOTS, the identification of issues on specific links was refined to focus on the A34, the villages surrounding Didcot and between Didcot and Wantage/Grove and the local road network.

Junctions across the network as a whole were considered if they were over capacity. In line with policies to ensure good accessibility to Milton Park and Harwell SIC, the journey time surveys focussed on the time to access these sites from different locations.

3.3.15 Through the accessibility planning work undertaken, it was possible to identify the potential housing locations where best accessibility could be gained to the identified existing key services. As set out in the Didcot Housing Accessibility Appraisal Technical Note (February 2008), **the accessibility planning work set out that for best accessibility, housing should be located in areas to the South or West of Didcot.**

3.3.16 Through the analysis of **the results of the SATURN model**, it became clear that **the overall performance of the network is generally the same no matter where the housing is located.**

Problems/issues identified on the highway network

3.3.17 A detailed analysis of the issues identified on the highway network is provided in the Stage 1 Technical Report (July 2008). It is not intended that this Final Report sets out all the issues highlighted. Rather, it is intended that it provides a short summary of the key trends identified.

3.3.18 The analysis was based on the appraisal framework issued as part of Stage 1 (February 2008). The summary below sets out the main findings with relation to the following across the SCOTS study area:

- Network performance;
- Junction capacities; and
- Link flows.

3.3.19 The analysis shows that the **performance of the network worsens significantly** between 2006 and 2026, in terms of time spent travelling and total distance travelled on the network, during the AM Peak. Total time spent on the network increases by 50% between 2006 and 2026, and total distance travelled on the network increases by 64% in the same period.

3.3.20 **In 2006, all junctions are operating below capacity except Frilford Lights and Steventon Lights**, which are at capacity. In 2016, the following junctions are operating at capacity:

- Rowstock junction;
- Charlton Village Road (West);
- Featherbed Lane (North and South);
- Steventon Lights and Milton Interchange;
- Harwell Business Park Entrance;
- Junctions in Didcot;
- Frilford but it is no worse than in 2006; and
- Junctions in Wantage/Grove as listed in paragraph 3.2.2.

3.3.21 **In 2026** (prior to the proposed development between 2016 and 2026 being tested, and without any additional infrastructure in addition to that included in 2016) **existing problems are exacerbated**, with issues arising at previously unidentified junctions.

3.3.22 An analysis of the traffic flows has shown an **increase in vehicle flows in the villages** by both 2016 and 2026, as a result of housing and employment growth, and some of these are significant.

3.3.23 In summary, the network issues identified through the SATURN model in the SCOTS area in 2026 are:

- Large increases in overall time taken to complete a journey and distance travelled;
- Critical junctions operating at or above capacity in 2026 include:
  - Rowstock junction;
  - Charlton Village Road;
  - Featherbed Lane (North and South);
  - Frilford Lights;
  - Steventon Lights;
  - Milton Interchange;
  - Harwell Business Park Entrance;
  - Junctions in Didcot;
  - Increases in traffic through villages due to displacement; and
  - Increased traffic flows through Didcot town centre.
  - Junctions listed in paragraph 3.2.3 for Wantage/Grove; and
- An increase in trips towards Abingdon and Oxford direction.

3.3.24 The issues identified as a result of the initial model testing were discussed with Officers prior to progressing with Stage 2 of SCOTS. This was in order to present

the identified issues on the highway network that would need addressing if additional dwellings are to be sustainably located, and also to discuss the schemes to be tested in Stage 2 as potential mitigation for these problems.

#### Stage 2

3.3.25 Numerous schemes were identified to mitigate against the highway network issues identified during Stage 1. These schemes were combined into packages for testing in the model, so the cumulative impact of the schemes could be understood.

3.3.26 In line with the policies identified in Stage 1, and as a result of seeking to meet the overall objectives of this strategy, **the schemes identified focus on east-west movement through the study area and on key routes and junctions linking Didcot and Wantage/Grove to employment sites at Milton Park and Harwell SIC.** In order to achieve sustainable travel in the area, it has been identified that there needs to be a focus on containment. This vision is being supported by investment in Didcot Town Centre and around Didcot Parkway railway station. The vision also seeks to encourage movement outside of the area to be undertaken predominantly by public transport in the medium to longer term.

3.3.27 As part of the development of scheme packages, consideration has been given to the practicality of delivering the schemes and the costs of implementation. Therefore, the analysis has been undertaken to enable the comparison of the relative benefits gained in network performance for different scheme packages. I.e. the analysis enables the relative benefits to be understood in relation to larger and more expensive scheme packages.

3.3.28 The Stage 1 and Stage 2 Reports (July 2008) set out all the various schemes tests that were undertaken, in order to identify a series of packages. The schemes included in the tests were:

- A Rowstock Bypass, including 3 new high capacity roundabouts;
- Junction improvements at both ends of Featherbed Lane (roundabout at the south and traffic signals at the north);
- Didcot Harwell Strategic Link from the A4130 to the A417;
- Improvements to the link south of Chilton;
- Didcot Southern Perimeter Road, extent determined by location of housing (either to Park Road or New Road);
- Eastern Wantage Relief Road;
- A link over the railway line from the A4130 north to Milton Park;

- A Thames Crossing;
- A full Wantage Relief Road; and
- Chilton Slips.

3.3.29 During the identification of the network issues stage of work, **the location on the network that caused most concern was Rowstock junction.** This junction forms part of the strategic network in the area and hence is important not just in terms of enabling local movements but on a regional level acts as a gateway to accessing major employment in the area. These issues occur due to a number of conflicting flows. The conflicting flows occur as several large trip attractors are located close to the junction, i.e. Milton Park (North) and Harwell SIC (South). In addition, the junction is also on the main link between Didcot (East) and Wantage (West).

3.3.30 As a result of these movements, the junction is shown to be operating over capacity in 2026, despite the signalisation of the junction in this modelled period. Hence, there is a need to identify additional highway infrastructure improvements to the junction and/or network improvements in the proximity of the junction to improve the performance of the network in this area. These improvements are critical to ensure the local and ‘strategic’ access to the employment sites of Milton Park and Harwell SIC.

3.3.31 Traffic negotiating the Rowstock junction encounters delays due to the conflicting traffic flow patterns at the junction. Model analysis has identified traffic flows from the west (i.e. along the A417 from Wantage/Grove) using Rowstock to travel north and east towards the A34 and Didcot, and also south towards Harwell SIC. Harwell SIC also draws traffic from Milton Interchange and Didcot, which passes north to south through the Rowstock junction. With the completion of the first stage of the Didcot Harwell Strategic Link (from the A4130 to the A417) assumed for 2026, some of the traffic passing north to south through the Rowstock Bypass will in fact move from East to South through the junction. Model analysis has never shown there to be a high movement of trips from North to East.

3.3.32 **Based on the traffic flow patterns through the Rowstock junction two main packages of measures were identified, the first focussing on an improvement to the junction itself in terms of a southern bypass, and secondly improvements to Featherbed Lane.** A northern bypass was considered but construction of this link from the North of the Rowstock Roundabout to the East would not be required as this is not a movement across

the junction which attracts many trips. Also an improvement of the junctions at either end of Featherbed Lane would provide the same relief to the network as construction of a new North West Bypass of Rowstock. In comparison, a Rowstock Bypass to the South of the junction will provide relief due to the increased number of trips coming westbound along the A417 from Didcot with Harwell as the destination. Traffic travelling eastbound along the A417 will benefit from a southern bypass when travelling south towards Harwell SIC.

*3.3.33* When testing a Rowstock Bypass, the following schemes were also included:

- No change to Featherbed Lane; and
- Didcot Harwell Strategic Link from the A417 to the A4130.

*3.3.34* The scheme package that included junction improvements at both ends of Featherbed Lane also included:

- Rowstock Roundabout becomes a Traffic Signal Junction; and
- Didcot Harwell Strategic Link from the A417 to the A4130 and improvements to the link south to Chilton.

*3.3.35* In addition to the schemes set out above, both potential improvement schemes to the Rowstock junction were tested with:

- Southern Perimeter Road, extent determined by location of housing (either to Park Road or New Road);
- An Eastern Wantage Relief Road;
- A full Wantage Relief Road;
- Chilton Slips; and
- A Thames Crossing.

*3.3.36* The full results of the scheme testing in the SATURN model is set out in the Stage 2 Technical Report, September 2008.

*3.3.37* It should be noted at this stage that with regards to housing locations, two of the housing scenarios identified in Stage 1 for locations around Didcot were used to test the impact of the schemes of the network. That is, a housing scenario where the trips from the development all load onto a similar point on the network (for example from sites 3, 4 and 5 on the south/western side of the town - see Figure 2) and a housing scenario where the trips onto the network load at different points

(for example from sites 5 and 7, one site to the north western side and the other to the north of the town - see Figure 2). Testing these two different scenarios enabled the impact of the housing location/load point onto the network to be understood. Furthermore, it provided the opportunity to seek to understand whether certain schemes had a more significant impact on the network when housing was located in different areas. The results of this testing did not provide any clear indication of where housing would be best located in transport terms.

3.3.38 It should also be noted that the extent of the Southern Link Road in the model depends on which housing scenario is being tested. The longer length of the Link Road, from the Didcot Harwell Strategic Link to New Road, is not likely to be required if 4500 dwellings are located to the West/North of Didcot. However, if development is located on the site to the South/West side of the town, there would be benefit from extending the Southern Link Road to New Road.

3.3.39 **Analysis of the SATURN model and consideration of the Appraisal Framework shows that the following schemes, when implemented together, have a positive impact on overall network performance:**

- Eastern Wantage Relief Road;
- Didcot Harwell Strategic Link from A417 to A4130;
- Didcot Southern Perimeter Road from Didcot Harwell Strategic Link to Park Road or New Road (depending on housing location); and
- Improvements to either:
  - Featherbed Lane (roundabout at southern end and signalised junction at north) and improvements to link from the A417 to Chilton, east of the A34; or
  - Rowstock Roundabout (Bypass including 3 additional roundabouts)

3.3.40 These schemes are considered further in Chapter 4 – Highway Strategy.

3.3.41 Similarly, the analysis of the SATURN model has shown that the following schemes do not bring significant benefits to network performance in terms of cost benefit and achievability:

- Didcot Harwell Strategic Link extension from A4130 over railway line, linking to Milton Park;
- An all movement junction at Chilton Slips; and

- Full Wantage Relief Road (based on current housing growth assumptions for Wantage/Grove).

3.3.42 With regards to a Thames Crossing, further analysis of this link is required to understand the impact of the scheme on the wider area. Current analysis suggests that environmental and financial costs, plus wider impacts, lessen its achievability.

3.3.43 In analysing the impact of the different schemes on the highway network in the SCOTS area, **it became clear that some schemes had a more significant benefit in terms of mitigating issues than others. The full analysis of the model testing is set out in the Stage 2 Technical Report (September 2008).** The schemes that it has been considered provide the most significant benefits to the highway network in the SCOTS area are set out in Chapter 4 – Highway Strategy.

#### Cow Lane Tunnel

3.3.44 Some additional SATURN tests have been undertaken with regards to the Cow Lane Tunnel. These results, and the associated interpretation of the findings, are set out in the Technical Note – Cow Lane Tunnel. The focus for the analysis has been based upon the consideration of link flows in the villages and Didcot town centre. A comparison has been made between the link flows recorded with these options in 2026 and those in 2006 and 2016.

3.3.45 The modelling included three tests:

- Option 1: As is – the Cow Lane Tunnel operating as a southbound link only;
- Option 2: Shuttle working – traffic signals at either end of the existing tunnel, enabling northbound and southbound traffic to use the existing link alternately; and
- Option 3: A new two-way link allowing northbound and southbound movement of vehicles simultaneously.

3.3.46 The three options have been modelled with the two housing scenarios as used in the scheme option testing. However, they have been tested without any of the other potential highway schemes. That is, they have been tested on the 2026 Do Minimum network.

3.3.47

In summary, analysis of scheme options for the Cow Lane Tunnel in 2026 has the following conclusions:

- In both peak hour periods (AM and PM) and with both housing scenarios, Options 2 and 3 have the same impact when compared to Option 1. That being, there is no significant benefit brought about by implementing a simultaneous two-way link ahead of converting the existing southbound link to a two-way shuttle system;
- In both peak periods, southbound traffic on Cow Lane is reduced with a displacement of traffic onto Abingdon Road and the A4130 bypass. The northbound use of Cow Lane reduces traffic flows eastbound on Hitchcock Way and northbound on Tamar Drive;
- Changes in traffic flows result south of the town centre, namely on Newlands Avenue and Foxhall Road, in the AM peak, but not significantly in the PM peak; and
- There are no significant changes on traffic flows with any of the scheme options in the surrounding villages.

3.3.48

Note: none of the scheme testing for Cow Lane incorporated improvements to junctions adjoining Cow Lane and in the surrounding area. Improving the performance of these junctions, particularly the signalised junction where Cow Lane meets Station Road/Hitchcock Way, may indeed show greater benefits of routing northbound traffic through the Cow Lane Tunnel.

### Stage 3

3.3.49

As set out in the introduction, this Report forms Stage 3 of SCOTS. It discusses the findings of the Stage 1 and 2 technical work and, as a result, identifies a strategy and package of measures required to ensure the sustainable accommodation of trips related to the additional dwellings in the SCOTS area on the highway network. The Highway Strategy is set out in Chapter 4.

3.4

### ***Public transport***

3.4.1

A series of studies have been undertaken with regards to public transport in the SCOTS area. As with the work related to the highway network, it has been important to consider the policy direction for transport in the study area. That is, there is a need to increase the use of sustainable modes and provide good access to key services, including the employment sites of Harwell SIC and Milton Park.

3.4.2 The Public Transport Strategy is set out in Chapter 5. This strategy has been developed based on work undertaken in the following studies:

- Wantage and Grove-Didcot and Abingdon Public Transport Study (January 2007);
- SCOTS Stage 1 Working Document – Chapter 2 (June 2007);
- Oxfordshire County Council Local Transport Plan 2 – 2006-2011 - Bus Strategy;
- Wantage and Grove Area Strategic Transport Study Final Report (WAGASTS) (May 2005); and
- Didcot Integrated Transport Strategy (DidITS) – Phase 2 Assessment of Schemes (August 2004).

3.4.3 As previously set out, the public transport network, in terms of buses, relies on the highway network. That is, by improving journey times and reliability on the highway network, public transport should become more attractive. The Public Transport Strategy for SCOTS includes further schemes and measures that should be considered in order for the objectives of this strategy to be met.

3.4.4 The re-opening of the railway station at Grove has not been considered as a scheme through SCOTS. This was following advice from the County Council that this scheme is a long-term aspiration and is hence not likely to be in place at 2026. However, access to Didcot Parkway Station has been considered through the Accessibility Planning work undertaken for each of the potential development sites.

### 3.5 ***Cycling***

3.5.1 As with the highway and public transport strategies, there is a need for cycling to contribute towards the meeting of the SCOTS objectives. That is, cycling could provide an alternative to some trips currently made by private car to locations within Didcot and Wantage/Grove, to local services and to Milton Park and Harwell SIC.

3.5.2 The cycling strategy set out in Chapter 6 identifies and prioritises the key links that need to be funded. The strategy has been developed by reviewing existing work and checking the applicableness of previously proposed schemes. The schemes considered are those included in:

- Didcot Integrated Transport Strategy (DidITS) Phase 1 Final Report (March 2004); and
- Wantage and Grove Area Strategic Transport Study (WAGASTS) Final Report (May 2005).

3.5.3 In addition to the schemes previously identified, the cycling strategy gives consideration to opening a potential link under the railway in Didcot, to provide pedestrian/cycle access.

### 3.6 **Safety**

3.6.1 Chapter 7 sets out the SCOTS safety strategy. It considers issues raised through DidITS and WAGASTS, whilst also building on the approach being undertaken on a national and county level to address concerns related to safety and locations where there are safety problems.

3.6.2 The safety strategy does not identify a list of schemes to address safety problems in the SCOTS area, as such schemes are funded by the County Council. However, it sets out the need to consider the future function of any link prior to the implementation of any accident mitigation measures on the existing network. The strategy identifies a list of principles which should guide future thinking related to road safety in the SCOTS area.

### 3.7 **Summary**

3.7.1 This chapter has set out the evidence base used in order to develop this final draft Strategy. As set out through the chapter, the next four chapters set out the different strategy elements:

- Chapter 4 – Highway Strategy;
- Chapter 5 – Public Transport Strategy;
- Chapter 6 – Cycling Strategy; and
- Chapter 7 – Safety Strategy.

## 4 Highway Strategy

### 4.1 *Introduction*

4.1.1 This chapter sets out the highway strategy aspect of SCOTS. It sets out the findings of the model testing with the schemes that have the most significant benefit in mitigating highway network issues in the SCOTS area.

### 4.2 *Highway schemes*

4.2.1 The schemes identified as having a positive impact on overall network performance as a 'package' are:

- Wantage Eastern Relief Road;
- Grove Northern Link Road;
- Didcot Harwell Strategic Link from A417 to A4130;
- Didcot Southern Perimeter Road from Didcot Harwell Strategic Link to Park Road or New Road (depending on housing location); and
- Rowstock bypass or Featherbed Lane and Chilton Link improvements.

#### Wantage Eastern Relief Road

4.2.2 The SATURN model has been run both with and without the Wantage Eastern Relief Road (ERR) and with the housing scenarios and schemes identified above.

4.2.3 In 2026, link flows are higher without the ERR in place than when it is in place. This is because the provision of the ERR reduces congestion on the internal roads of Wantage, particularly by providing an alternative to traffic coming from the East of the town travelling North towards Grove.

4.2.4 Links on which flows decrease include:

- Grove Street (A338);
- Seesen Way;
- Charlton Road; and
- Harcourt Road/Charlton Village Road.

4.2.5 For example, the impact of the ERR on Harcourt Road/Charlton Village Road is a notable decrease in traffic. This is particularly important due to the residential nature of this road and the location of the primary school. As such, the ERR

would have a significant impact on the quality of life of residents in this area, which is an important consideration, as set out in the Route Hierarchy.

4.2.6 The analysis of the SATURN model has shown that the ERR brings about benefits no matter where the housing is located around Wantage and Grove.

Additional tests for Wantage/ Grove

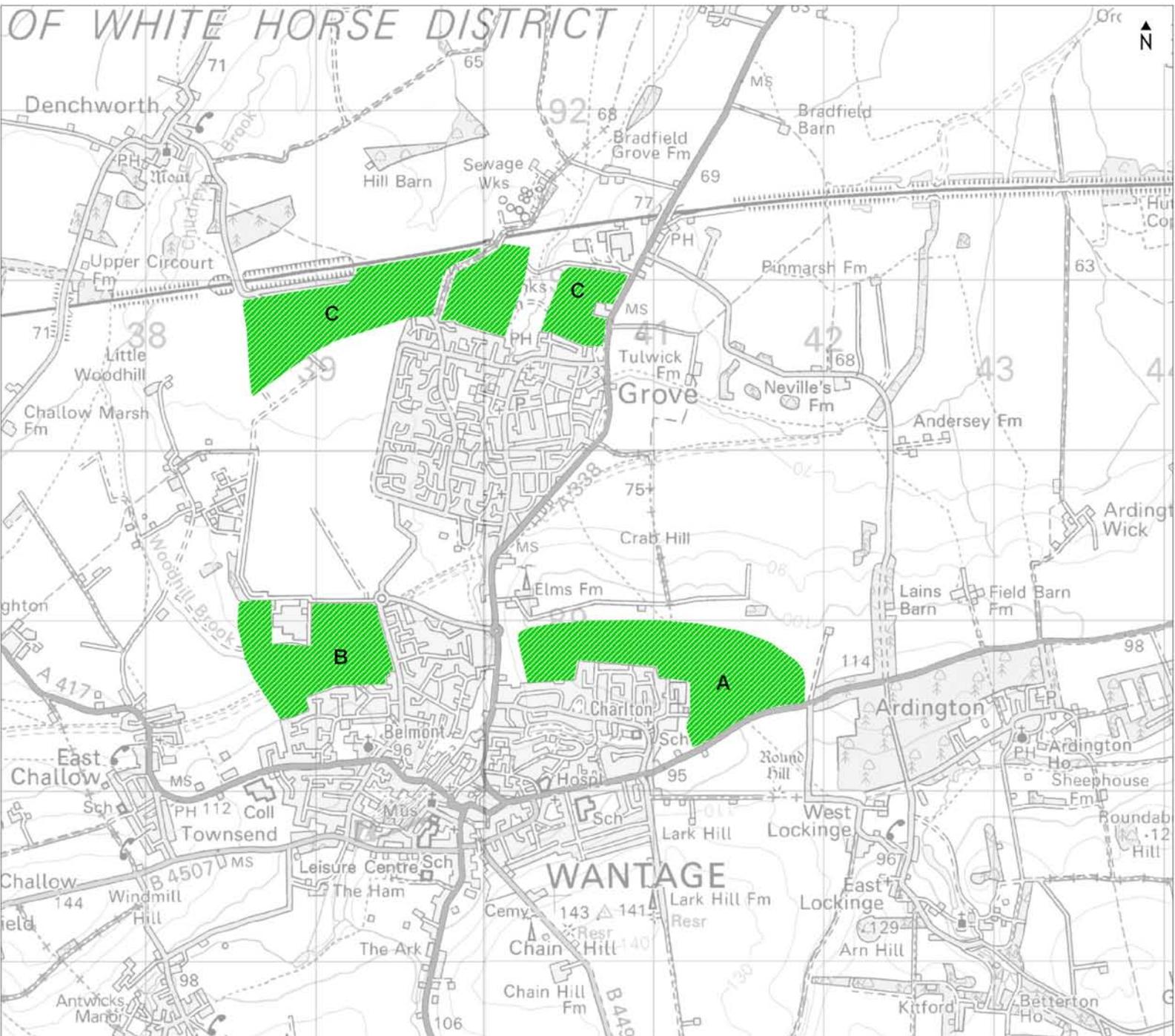
4.2.7 In all tests up to August 2008, the additional housing allocated to Wantage/Grove over that identified for Grove airfield has been included in all the scheme option testing completed. These trips have been spread across the highway network in the SATURN model covering Wantage and Grove as site locations had not been identified.

4.2.8 Figure 3 sets out a series of tests undertaken in September 2008, as advised by the District Council, to assess the comparative impact on the highway network of locating the remaining housing to specific sites. The tests undertaken were as follows:

- Test 1 – 1300 houses located within Site A;
- Test 2 – 1300 houses located within Site B;
- Test 3 – 1000 houses spread across Site C;
- Test 4 – 750 houses spread across Site C;
- Test 5 – 750 houses located within Site B; and
- Test 6 – 1500 houses (a combination of tests 4 and 5).

4.2.9 These development sites and the associated number of dwellings are shown on the attached plan. These housing development sites replace the trips originally sourcing from the original 500 dwellings in Grove and 400 in Wantage included in the model. The results of these additional tests, with no additional highway infrastructure, show that wherever the housing is located there is increased pressure on Grove Road, Grove Street, Seesen Way (A338), Wallingford Street, Charlton Village Road and Charlton Road (A417). These increased flows also result in the adjoining junctions performing either at or above capacity, therefore causing congestion throughout the key routes in the town.

4.2.10 Due to the trip attractors in the model, from Wantage/Grove there is a general movement of traffic north up the A338 towards Oxford and Abingdon via Frilford lights, or east along the A417 towards Didcot, A34 and Harwell SIC the links which are impacted on are predominantly those described above. There is little



**Proposed additional housing locations in Wantage**

**Legend**

 **Housing location**

**Test 1 - 1300 houses located within site A**

**Test 2 - 1300 houses located within site B**

**Test 3 - 1000 houses spread across site C**

**Test 4 - 750 houses spread across site C**

**Test 5 - 750 houses located within site B**

**Test 6 - 1500 houses (A combination of tests 4 and 5)**

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Drawn by: Will Saltmarsh  
 Checked by: Tom Metcalfe  
 Approved by: Leanne Jones  
 Scale: Not to Scale      Date: September 2008

Project: **SCOTS**

Figure Number: **Figure 3**      Revision: -

opportunity for this traffic to route via alternative routes. With development located to the north of Grove, the option of travelling via Grove Park Drive towards Didcot etc becomes more attractive but still loads extra trips onto the route via the A338 and A417.

4.2.11 By providing a Wantage Eastern Relief Road the links through the town linking the A338 from Grove with the A417 become less congested as the traffic re-routes via the bypass.

Didcot Harwell Strategic Link from A417 to A4130

4.2.12 This link has been assumed as in place by 2026. Contributions have already been taken for the link from the A417 to the B4493 from the Great Western Park development. The purpose of this section of the link is to remove Great Western Park traffic, travelling west, from Harwell village. It will also provide an alternative route to Milton Interchange.

4.2.13 The link from the B4493 to the A4130 will serve two purposes, depending on whether Site 5 in the Didcot area is developed (see Figure 2). If Site 5 is developed, this link will form the function of both a local and primary distributor road. However, if Site 5 is not developed, the link would still be required, but provide the function of primary distributor road. This would enable the avoidance of overloading the proposed 'traffic calmed' through route through Great Western Park, and Foxhall Road.

Didcot Southern Perimeter Road

4.2.14 It has been assumed that a link would be required to the South of Didcot linking the Didcot Harwell Strategic Link with either Park Road or New Road. **This link would connect potential new development sites towards the South/West of Didcot with the town centre and the wider highway network.**

4.2.15 The extent of the link is dependant on the specific housing locations. That is, if development is located to the South/West of the town, the eastern extent (Park Road to New Road) is required to act as a distributor road. However, if the housing is split between the West/North of Didcot, the eastern section of the link would not be necessary as there is no additional development in proximity to this area.

Rowstock Bypass and Featherbed Lane

4.2.16 As previously set out, two alternative options were considered to address the issues at Rowstock junction:

- Rowstock Bypass; or
- Featherbed Lane improvements.

- 4.2.17 A **Rowstock Bypass** has been considered to relieve the pressure at the existing junction. There is limited scope to increase the capacity of the existing junction due to space constraints. The bypass will consist of three high capacity roundabouts in addition to the existing junction. These additional roundabouts will be located to the West, South and East of the junction. The bypass is located to the South of the existing junction on the A417. The bypass would not provide sufficient relief to the existing junction if it was located to the North, as the western section would replicate the existing link provided by Featherbed Lane. The eastern section is not a desirable link due to the location of the main trip attractors at Milton Park and Harwell SIC.
- 4.2.18 By providing a Rowstock Bypass, the number of conflicting movements at the existing junction is reduced. This is because the traffic is spread over a further three high capacity roundabouts.
- 4.2.19 The improvements to **Featherbed Lane** include a roundabout at the southern end of the link and a signalised junction at the northern end. The testing of these junctions has not included consideration of improvements to the link itself, such as improvements to the alignment or other measures to improve safety on the link. It is recommended that, no matter which package of measures/improvements are implemented, the strategy should include safety improvements to the Featherbed Lane link.
- 4.2.20 The scheme for Featherbed Lane has been modelled with the **improved link from the Didcot Harwell Strategic Link to Chilton**. This is because the Featherbed Lane improvements would not provide sufficient relief to Rowstock junction as a standalone scheme, due to the trip attractor at Harwell SIC. Without the improvements Chilton link, traffic travelling to Harwell SIC from both Wantage and Didcot would still be drawn via the Rowstock junction. By providing the improved link to Chilton, the model shows that traffic travelling to Harwell SIC from Didcot would use this link as opposed to the route via Rowstock junction. **Therefore, the Featherbed Lane and improved Chilton link schemes combined would provide sufficient relief to the junction without the need for a Rowstock Bypass.**

#### Summary of scheme testing

4.2.21

The summaries set out below are based on the scheme package measures, with either Rowstock Bypass or Featherbed Lane improvements. Both packages of scheme measures are shown in Figures 4 and 5. Figure 4 shows the scheme packages with Rowstock Bypass, and Figure 5 shows the scheme packages with Featherbed Lane/Chilton link improvement

4.2.22

The outputs from the SATURN model include:

- Network performance;
- Junction capacities; and
- Traffic flows.

4.2.23

The results are presented in the context of the schemes set out above, with either Rowstock Bypass or Featherbed Lane junction improvements. **Note: It should be noted that the figures presented are to be used for comparative purposes only, rather than being taken out of context and quoted independently as absolute figures.**

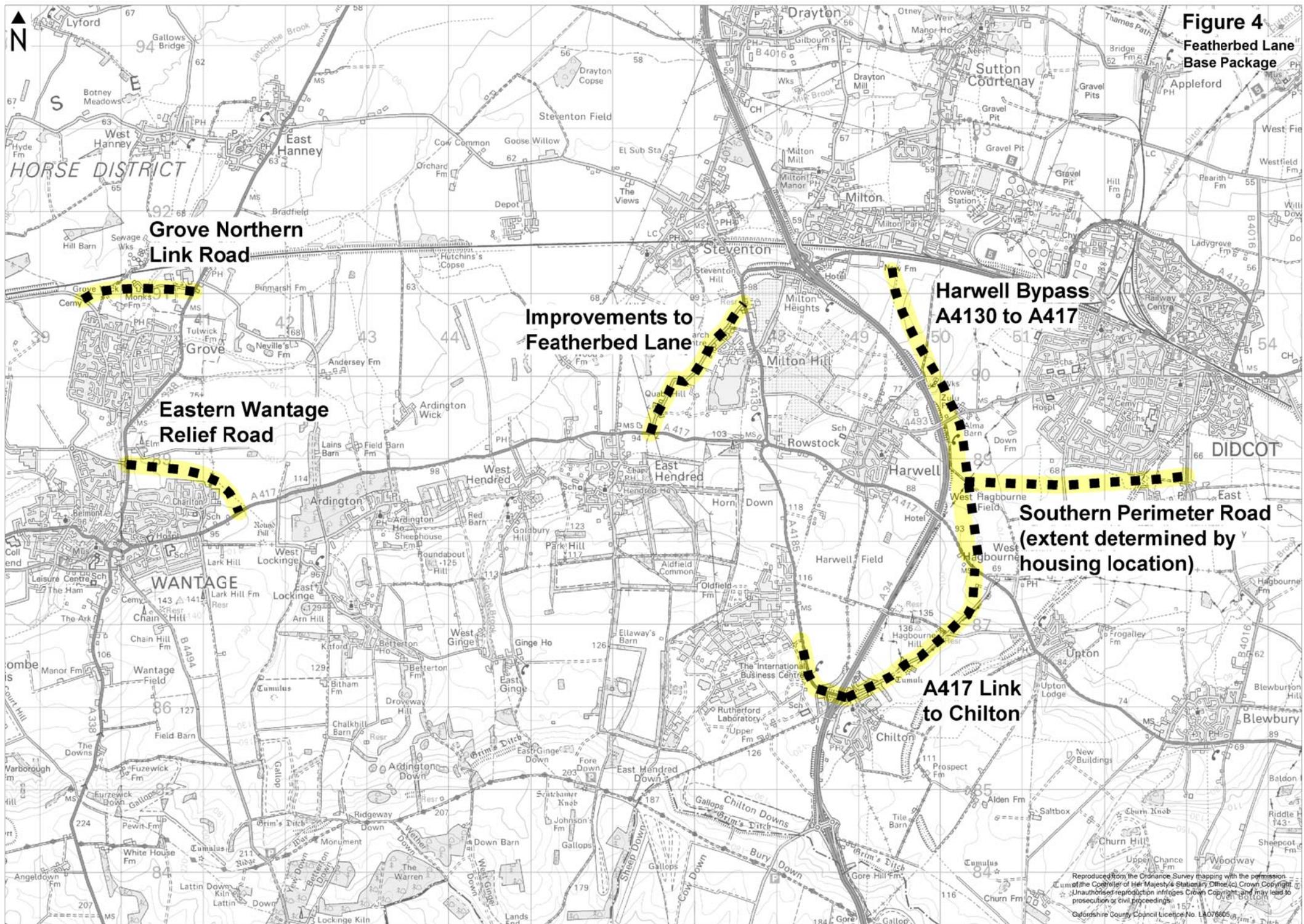
4.3

#### ***Network Performance***

4.3.1

The network performance for the scheme packages tested, compared to the performance of the network in 2006 and 2016 is shown in Table 4 below. The table refers to PCU hours and PCU KMs. When considering the volume of traffic using a road, the passenger car is adopted as the standard unit and other vehicles are assessed in terms of these passenger car units (PCU). A car is considered with a value of 1, where as a Heavy Goods Vehicle would be generally be defined with a value of 2. Therefore PCU hours refers to a value of the sum of the total time spent in a modelled period of all the PCUs on the network and the PCU kms refers to a value of the sum of the total distance travelled in a modelled period of all the PCUs on the network.

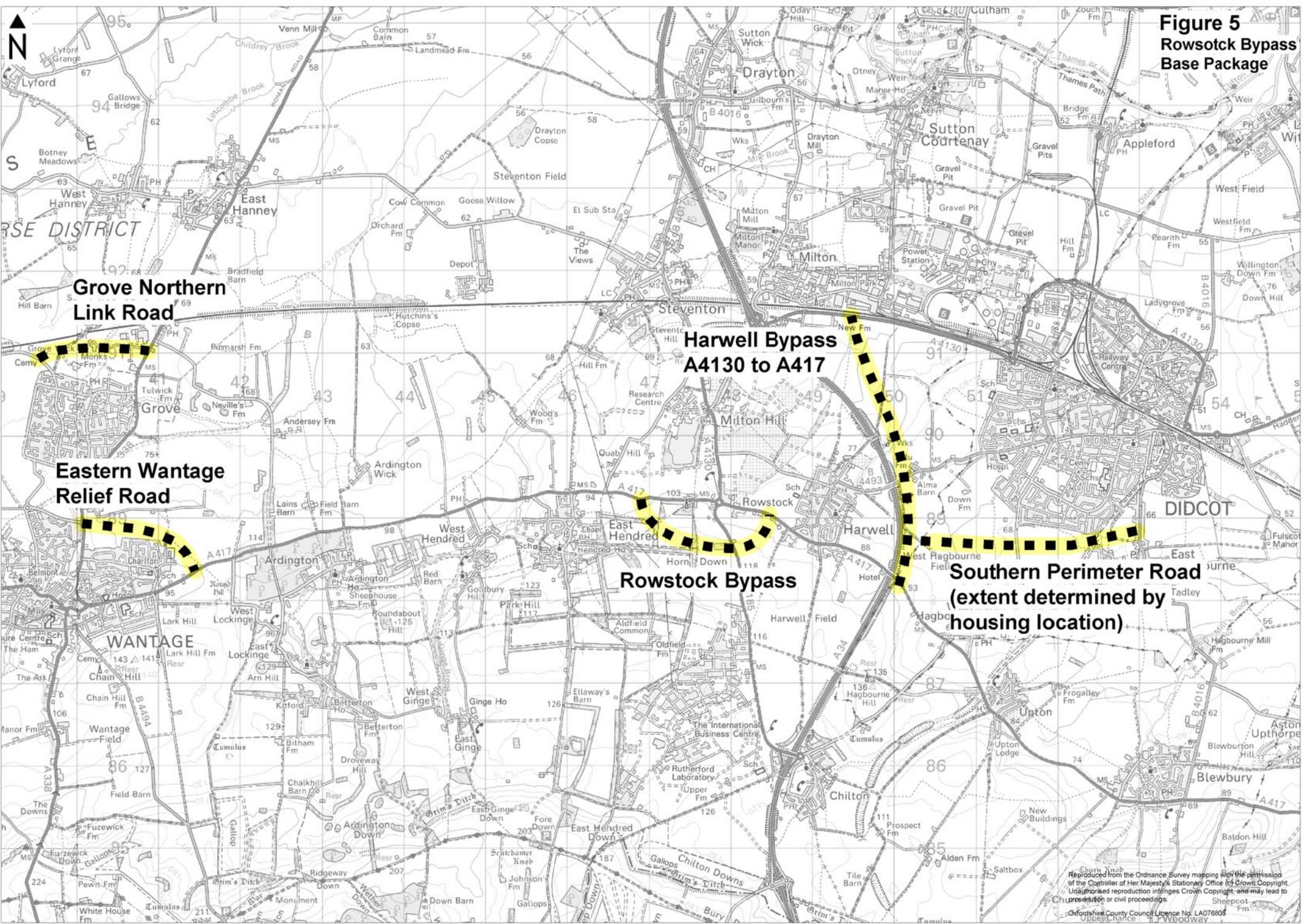
<b>Network Performance (AM Peak)</b>	<b>PCU Hours</b>	<b>PCU KMs</b>
2006	8,700	443,000
2016	11,700	528,000
2026	17,400	696,000
2026 with Rowstock Bypass	13,400	583,700
2026 with Featherbed Lane Improvements	13,300	582,500
Note: It should be noted that the figures presented are to be used for comparative purposes only, rather than being taken out of context and quoted independently as absolute figures.		



**Figure 4**  
**Featherbed Lane**  
**Base Package**

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**Figure 5**  
**Rowstock Bypass**  
**Base Package**



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4.3.2 Both Rowstock Bypass and Featherbed Lane improvements lead to a significant improvement in both time and distance travelled on the network compared to 2026 with no additional highway infrastructure. **However, the time and distance travelled on the network is still higher than that recorded in both 2006 and 2016.**

4.3.3 When considering network performance, it can be seen that there is not a significant difference in performance between choosing either the scheme package that includes Rowstock Bypass or that which includes Featherbed Lane improvements. Although with the Rowstock scheme you still get the benefit of being able to use Featherbed Lane anyway.

#### 4.4 *Junction capacities*

4.4.1 The capacity of junctions is analysed by considering the volume/capacity. A junction with capacity of 90% or above is considered to be approaching or exceeding capacity. The performance of some key junctions, with scheme packages including Rowstock Bypass and Featherbed Lane junction improvements, are set out in Table 5.

<b>Junction</b>	<b>2006 – Do nothing</b>	<b>2016 – Do nothing</b>	<b>2026 – Do nothing</b>	<b>2026 all schemes but with Rowstock Bypass</b>	<b>2026 all schemes but with F/bed Lane</b>
Charlton Village Road W Lights (East to North)	30%	40%	95%	60%	55%
Frilford Lights (East to North)	105%	110%	125%	115%	115%
Harwell Entrance (North to West)	65%	80%	60%	70%	55%
Milton Interchange (SE Corner-Didcot-Interchange)	65%	85%	115%	35%	35%
Power Station Roundabout (North to South)	15%	20%	55%	20%	20%
Steventon Lights (North to South)	105%	110%	120%	110%	115%
Note: It should be noted that the figures presented are to be used for comparative purposes only, rather than being taken out of context and quoted independently as absolute figures.					

4.4.2 Both Rowstock Bypass and improvements to the junctions at either end of Featherbed Lane lead to improvements in the performance of key junctions when

compared to the 2026 do minimum (no additional infrastructure). Featherbed Lane and the link south to Chilton improves the performance of the Harwell Entrance more than Rowstock Bypass. However, as with the network performance results, the junctions perform similarly with both scheme packages.

4.4.3 Frilford Lights and Steventon Lights remain over capacity with both Rowstock Bypass and Featherbed Lane junction improvements, but both schemes provide some improvement.

Rowstock junction

4.4.4 When analysing the impact of the scheme packages on the performance of Rowstock junction, it can be seen that the most significant benefits are realised with a Rowstock Bypass. The performance of the junction can be seen in Table 6.

<b>Direction</b>	<b>2006 – Do nothing</b>	<b>2016 – Do nothing</b>	<b>2026 – Do nothing</b>	<b>2026 all schemes but with Rowstock Bypass</b>	<b>2026 all schemes but with F/bed Lane</b>
North to East	20%	125%	125%	20%	60%
North to South	60%	125%	125%	80%	95%
North to West	0%	125%	125%	10%	0%
East to North	45%	80%	125%	85%	105%
East to South	50%	120%	125%	15%	40%
East to West	45%	120%	125%	80%	85%
South to North	15%	25%	35%	30%	100%
South to East	5%	15%	5%	0%	15%
South to West	5%	25%	20%	10%	100%
West to North	5%	105%	100%	35%	80%
West to East	40%	105%	100%	45%	95%
West to South	40%	140%	100%	25%	95%

Note: It should be noted that the figures presented are to be used for comparative purposes only, rather than being taken out of context and quoted independently as absolute figures.

Featherbed Lane North and South Junctions

4.4.5 Overall, improvements to the junctions at either end of Featherbed Lane do not bring significant improvements to its overall performance. That is, the same level of performance is recorded with both Featherbed Lane improvements and Rowstock Bypass on all arms of the junction, with the exception of West to North at the North junction and North to West at the South junction. The results of the junction performance with the scheme packages can be seen in Table 7 and 8.

<b>Table 7: Comparison of Featherbed South junction performance with scheme packages</b>					
<b>Direction (South junction)</b>	<b>2006 – Do nothing</b>	<b>2016 – Do nothing</b>	<b>2026 – Do nothing</b>	<b>2026 all schemes but with Rowstock Bypass</b>	<b>2026 all schemes but with F/bed Lane</b>
North to West	60%	95%	110%	15%	95%
North to East	0%	0%	90%	0%	0%
West to North	75%	105%	115%	110%	115%
West to East	75%	105%	115%	110%	115%
East to West	20%	10%	25%	20%	25%
East to North	0%	0%	0%	0%	0%

Note: It should be noted that the figures presented are to be used for comparative purposes only, rather than being taken out of context and quoted independently as absolute figures.

<b>Table 8: Comparison of Featherbed North junction performance with scheme packages</b>					
<b>Direction (North junction)</b>	<b>2006 – Do nothing</b>	<b>2016 – Do nothing</b>	<b>2026 – Do nothing</b>	<b>2026 all schemes but with Rowstock Bypass</b>	<b>2026 all schemes but with F/bed Lane</b>
North to South	45%	55%	60%	55%	55%
North to West	30%	45%	100%	20%	40%
South to North	25%	40%	45%	65%	60%
South to West	0%	5%	0%	0%	0%
West to North	90%	110%	105%	60%	105%
West to South	0%	35%	5%	0%	30%

Note: It should be noted that the figures presented are to be used for comparative purposes only, rather than being taken out of context and quoted independently as absolute figures.

#### 4.5

#### *Traffic flows*

##### 4.5.1

This section is based on considering traffic flows on the A34, in the villages in the SCOTS area and flows within Didcot town centre.

#### A34

##### 4.5.2

The traffic flows on the A34 are set out in Table 9. This provides a comparison between the two scheme packages and with 2006 and 2016.

<b>Table 9: Comparisons of link flows on the A34</b>						
		<b>2006 – Do nothing</b>	<b>2016 – Do nothing</b>	<b>2026 – Do nothing</b>	<b>2026 all schemes but with Rowstock Bypass</b>	<b>2026 all schemes but with F/bed Lane</b>
A417 N Screenline (E of Harwell Village)	NB	2280	2620	2820	2730	2800
A417 N Screenline (E of Harwell Village)	SB	2030	2360	2640	2540	2490
Railway (in vicinity of Milton Interchange)	NB	1780	2030	2190	2150	2180
Railway (in vicinity of Milton Interchange)	SB	1690	1960	2100	2100	2060
Note: It should be noted that the figures presented are to be used for comparative purposes only, rather than being taken out of context and quoted independently as absolute figures.						

#### 4.5.3

Some differences in traffic flows are recorded on the A34 with the schemes in place. However, these are positive when compared to the 2026 do minimum traffic flows (no schemes in place). The Rowstock Bypass and Featherbed Lane schemes have little impact on traffic flows on the A34.

#### Villages

#### 4.5.4

The traffic flows in the villages are set out in Table 10 below. It shows that both Rowstock Bypass and Featherbed Lane improvements reduce traffic flows in the villages from the 2026 do minimum. Specifically, West Hagbourne performs much better with the Featherbed Lane junction improvements. Overall, for all villages, the difference in performance of Rowstock Bypass and Featherbed Lane on traffic flows on links within the villages is minimal

<b>Table 10: Comparison of link flows in the villages</b>						
<b>Village</b>	<b>Street/Direction</b>	<b>2006 – Do nothing</b>	<b>2016 – Do nothing</b>	<b>2026 – Do nothing</b>	<b>2026 all schemes but with Rowstock Bypass</b>	<b>2026 all schemes but with F/bed Lane</b>
Appleford	Main Road E, WB	140	180	410	260	280
Blewbury	Bessels Way B4016, SB	60	70	290	90	80
Clifton Hampden	Abingdon Road, EB	220	300	550	330	330
Culham	Tollgate Road N, NB	540	600	690	630	630
Drayton	High Street, WB	120	170	520	440	430
East Hagbourne	Main Road, EB	120	210	320	50	50
East Hanney	Steventon Road, WB	100	170	340	180	160
Harwell	Grove Road, WB	170	190	140	80	50
Long Wittenham	High Street, EB	450	600	880	700	740
Marcham	A415, EB	920	1150	1260	1230	1180
Steventon	Abingdon Road, NB	340	930	1140	1060	1020
Sutton Courtenay	Drayton Road, EB	140	300	730	580	530
West Hagbourne	Main Street, WB	400	770	790	440	50
Note: It should be noted that the figures presented are to be used for comparative purposes only, rather than being taken out of context and quoted independently as absolute figures.						

#### Town Centre

4.5.5

The traffic flows in Didcot town centre are set out in Table 11. This provides a comparison between the two scheme packages and with 2006 and 2016.

<b>Table 11: Comparison of link flows in Didcot Town Centre</b>					
<b>Street</b>	<b>2006 – Do nothing</b>	<b>2016 – Do nothing</b>	<b>2026 – Do nothing</b>	<b>2026 all schemes but with Rowstock Bypass</b>	<b>2026 all schemes but with F/bed Lane</b>
A4130 NPR EB	300	290	580	330	320
A4130 NPR WB	650	970	1720	1090	1090
Broadway EB	670	710	790	620	620
Broadway WB	490	510	680	540	540
Foxhall Road NB	960	1010	1120	1070	1070
Foxhall Road SB	350	320	590	260	250
Hagbourne Road NB	80	80	320	320	320
Hagbourne Road SB	80	90	110	100	90
Haydon Road NB	400	550	710	600	620
Haydon Road SB	250	280	210	290	290
Jubilee Way NB	650	700	800	920	920
Jubilee Way SB	300	550	630	720	720
Mereland Road SB	350	380	530	410	480
Newlands Avenue NB	430	470	620	490	520
Newlands Avenue SB	80	70	100	50	50
Park Road NB	420	370	320	410	360
Park Road SB	270	200	170	170	120
Wantage Road EB	460	700	830	660	660
Wantage Road WB	480	710	1010	730	740
Note: It should be noted that the figures presented are to be used for comparative purposes only, rather than being taken out of context and quoted independently as absolute figures.					

4.5.6

Both Rowstock Bypass and Featherbed Lane improvements reduce traffic flows from the 2026 do minimum. The traffic flows on some links are reduced to the same levels as recorded in 2016. The difference between the performance of Rowstock Bypass and Featherbed Lane on traffic flows is minimal.

4.6

#### ***Highway schemes recommended in the SCOTS area***

4.6.1

The sections above provide a summary of the findings set out in the Stage 2 Technical Report, where further detailed analysis can be found. **As a result of the SATURN model tests undertaken as part of SCOTS, it is recommended that the following major improvements are needed in the SCOTS area to accommodate the proposed dwellings in 2026.** Where available the outline estimated costs of scheme implementation are included for reference. However, please see the fully costed assumptions in the relevant Route Assessment Reports, September 2008.

- Eastern Wantage Relief Road (est. £6.5m);
- Grove Northern Link Road;
- Didcot Harwell Strategic Link from A417 to A4130 (est. £6.5m);
- Didcot Southern Perimeter Road from Didcot Harwell Strategic Link to Park Road (est. £6m); and
- **Rowstock Bypass including 3 additional roundabouts** (est. £6m).
- Featherbed Lane safety improvements (est. cost £4.7 m)

4.6.2 Rowstock Bypass is recommended in preference to the scheme package including the Featherbed Lane and Chilton link improvements. Although the performance of the network is generally comparable with both packages, most significant relief is bought to the Rowstock junction with the Rowstock Bypass in place. Rowstock junction is key to accessing Harwell SIC, Didcot and Milton Park and hence the package which brings most significant relief to this junction is preferred.

4.6.3 In some locations, with the above schemes in place, performance of the highway network could be returned to the same level as that seen in 2006 or 2016. However, **in the majority of locations, the schemes listed above will allow the network to operate at the same level as that seen between 2016 and 2026 without the proposed development in place.** As part of further work required to develop a detailed action plan, attention will need to be drawn to the required phasing of these schemes.

4.6.4 Feasibility, alignment design and cost estimates of potential SCOTS schemes  
In addition to the work being undertaken in the SATURN model, technical investigation has taken place into the feasibility of the potential SCOTS schemes. As a result, a series of Technical Notes have been compiled setting out the potential alignment and associated cost estimates of the recommended schemes:

- Eastern Relief Road (titled Grove Airfield Development, Mably Way to A417 Link, TN2, 24<sup>th</sup> October 2007))
- Chilton Link (September 2008);
- Didcot Southern Relief Road (September 2008) ;
- Rowstock Bypass (September 2008);
- Featherbed Lane (September 2008); and
- Milton Park under bridge (September 2008).

4.6.5 The findings of these Technical Notes should be referenced and incorporated alongside the recommendations set out in this Report. It should be noted that if

there are any difficulties in delivering any of the recommended schemes in the future, alternative schemes will be required to ensure that the area can accommodate the planned growth.

#### 4.7

##### 4.7.1

#### ***Summary***

This Highway Strategy has set out the recommended schemes for the SCOTS area to 2026. However, it also illustrates the need for more than just a highway solution, due to it not being possible to create infinite capacity on the highway network. As such, **it re-emphasises the importance of an overall strategy for the SCOTS area that not only recognises highway network improvements, but also encourages public transport, cycle use and other sustainable travel patterns.**

## 5 Public Transport Strategy

### 5.1 *Introduction*

5.1.1 This chapter sets out the public transport strategy for SCOTS. As discussed earlier in this document, in considering the public transport strategy the highway strategy should also be reviewed. This is as the bus services use the existing highway network, therefore **any improvements that can be brought about to improve the reliability and performance of the highway network will result in improvements to public transport.**

5.1.2 The Strategy does not consider rail in the SCOTS area. As previously set out, advice from the County Council has set out that the re-opening of a rail station at Grove is a much longer term aspiration, it is not feasible by 2026, and hence is not considered as part of this Study. However, throughout the work undertaken in SCOTS, consideration has been given to access to Didcot Parkway rail station, particularly by sustainable modes and from the ‘strategic’ network.

5.1.3 As set out in Chapter 3 – Evidence Base, a series of studies have previously been undertaken related to public transport in the SCOTS area. These include:

- Oxfordshire County Council Local Transport Plan 2 – 2006-2011 - Bus Strategy;
- Didcot Integrated Transport Strategy (DidITS) – Phase 2 Assessment of Schemes (August 2004);
- Wantage and Grove-Didcot and Abingdon Public Transport Study (January 2007);
- Wantage and Grove Area Strategic Transport Study Final Report (WAGASTS) (May 2005); and
- SCOTS Stage 1 Working Document – Chapter 2 (June 2007).

5.1.4 It is not intended that this bus strategy reiterates all the findings of these studies. However, the measures previously identified through this earlier public transport work that align with the objectives of SCOTS have been identified.

5.2

***Policy context***

5.2.1

The South East Regional Transport Strategy envisages ‘a high quality transport system to act as a catalyst for continued economic growth and provide for an improved quality of life for all in a sustainable and socially inclusive manner’.

5.2.2

This vision is reflected in County Council policies. Indeed, Local Transport Plan 2 (LTP2) sets out that ‘buses are at the heart of the County Council’s second Local Transport Plan’. In addition, the County Council has prepared a Bus Strategy to sit alongside LTP2, which ‘builds upon the past success of Oxfordshire in enabling and encouraging a growth in bus use’.

5.2.3

**The County Council’s Bus Strategy is aimed at creating conditions in which commercial bus services can thrive.** It also seeks to ensure that subsidised services are provided, where necessary, to supplement the commercial network, where this would best meet local needs and provide value for money. It identifies the following hierarchy of services:

- ‘Premium’ Routes, running without subsidy at ‘Turn up and go’ frequencies with high quality infrastructure;
- Hourly/half hourly services (‘Interlink’ Routes), some running commercially and some with subsidy, with selected infrastructure enhancements to improve attractiveness and viability; and
- Local services, provided in a variety of ways to serve the lightly populated areas off main routes.

5.2.4

Within the SCOTS area public transport has been identified as a key concern. The Didcot Integrated Transport Strategy vision makes reference to public transport, in that **‘Public transport (rail and bus based) will be of a high quality with easy access to services that are fully accessible for people with mobility impairments’**. Indeed, most of the transport objectives have direct implications for public transport.

5.2.5

Similarly, the Vale of White Horse Community Strategy identifies nine priorities, including:

- Bus services and linkages with community transport services;
- Traffic congestion; and
- Greater consultation to ensure a more systematic and co-ordinated transport system.

- 5.3 ***Existing public transport provision in the SCOTS area***
- 5.3.1 The current pattern of bus services was primarily determined by the Transport Act 1985, where the onus was put on bus companies to plan and operate services on a commercial basis, with the highway authority (Oxfordshire County Council) having powers to secure uneconomic services to complement and supplement commercial services.
- 5.3.2 Most subsidies come directly from the County Council's revenue budget, which is constantly under pressure. Other sources include specific developer funding (e.g. Section 106) and Government Grants.
- 5.3.3 As the Highway Authority, Oxfordshire County Council has worked closely with local bus companies, some of which have been highly innovative, to build a comprehensive and successful network of commercial and tendered services. In 2003/4 there were 57.42 bus journeys per head of population. Of the 34 shire counties this was only beaten by Derbyshire (59.43) and was well above the average of 30.98.
- 5.3.4 Despite Oxfordshire's reputation as a good county for public transport, and clear policies recognising the strategic importance of local bus services, **the SCOTS area is one of the weaker parts of Oxfordshire for bus use.** This is primarily due to the predominantly rural nature of the area. Didcot and Wantage/Grove are all relatively small and lack the critical mass for a network of high quality, high frequency bus services. There are a large number of bus services in the area, most are not particularly frequent and operate for social necessity rather than as a serious alternative to the private car (car ownership is high, with 45% of households in South Oxfordshire having 2 or more cars in 2001).
- 5.3.5 Indeed, this is reflected in that only one service in the SCOTS area (Service 31 Oxford – Wantage) operates as frequently as half hourly. Buses between Grove/Wantage and Didcot/Abingdon run hourly.
- 5.3.6 Other hourly services are those between Oxford and Didcot (the equivalent rail service is 2 per hour), Wallingford and Didcot and some Didcot and Wantage town services.
- 5.3.7 In the Vale of White Horse (including Wantage and Grove) in 2001, public transport (including rail) only accounted for around 5% of the journey to work

modal share. The only significant bus flows are from Wantage/Grove to Oxford, the Harwell SIC and Milton Park, which unsurprisingly corresponds with the core bus routes. The diversity of destinations that need to be reached makes the provision of services to meet everyone's needs difficult.

5.3.8 Recent improvements include increased, regular services to Harwell SIC and Milton Park. In 2001, 8% of the journeys to work from the Grove/Wantage areas to these locations were by bus.

5.3.9 Much of the network receives revenue support from Oxfordshire County Council and in some cases neighbouring authorities.

#### 5.4 ***Future bus service proposals***

5.4.1 The unprecedented increase in fuel prices in the first half of 2008, growing public awareness of the negative aspects of global warming and investment in vehicles, infrastructure, information technology and marketing, means **public transport should have an increasing role in the SCOTS area. The growth anticipated for Wantage/Grove, Didcot and Harwell SIC and Milton Park brings considerable opportunities, which in turn should lead to bus travel becoming more financially sustainable.**

5.4.2 There has been a two phased investigation of potential bus services in the future. Phase 1 took place in 2006, and Phase 2 in 2007.

5.4.3 Only the key existing corridors have been considered. A wider approach is not realistic given the low overall modal share of buses and that they are only effective and sustainable for corridors where there are (relatively) high flows.

##### Phase 1 (2006)

5.4.4 Phase 1 identified route options and broad-brush costs for public transport services linking Grove and Wantage with Oxford and Didcot, and with Harwell SIC and Milton Park, and having regard to an optimum route network designed to serve the existing village of Grove and the proposed development on the former airfield site. As there is only one significant railway station within the SCOTS study area, at Didcot Parkway, the bus is the only major public transport mode that can currently link these locations. As previously set out, it should be noted that the prospects for a proposed railway station at Grove are uncertain.

5.4.5 Following the identification of existing and potential route alignments, and determination of the relative advantages and disadvantages of each alignment when considered against key criteria including route length, journey time and Peak Vehicle Requirement, the focus was on estimating operating costs associated with each option. Consideration was given to the likely level of demand required for services on each route to enable financial break-even, as significantly increasing subsidies from the County Council is not realistic.

5.4.6 Discussions with County Council officers enabled further refinements of the route options and costs. It was agreed to test a shortlist of scenarios for the period up to 2016 and from 2016 to 2026.

5.4.7 A number of options and sub-options were generated for the following corridors:

- **Wantage/Grove to Oxford;**
- **Wantage/Grove to Didcot (encompassing Harwell Chilton Campus and Milton Park); and**
- **Route options to serve the existing settlement and proposed development at Grove.**

#### Phase 2 (2007)

5.4.8 The analysis of the options is discussed fully in the previously issued public transport reports. This section of the strategy sets out an overview of the recommended scenarios and a comparison between the recommended scenarios and the alternatives put forward.

#### Wantage/Grove – Oxford Corridor - Medium-term to 2016

5.4.9 Scenario (2) (recommended) would see the adaptation of the designated 'Premium' Route to operate from Wantage via the A338 and Mably Way westbound, before serving the proposed new district centre. It would rejoin the established corridor at the confluence of Oxford Lane and Main Street in Grove village, where there would be potential to develop a high-quality on-street 'bus port' to serve the established settlement. Similar high-quality facilities could be developed at Mably Way (Health Centre) and at Wantage Market Place, to improve conditions for intending customers and make it more conducive to interchange between services.

5.4.10 In addition, it would see a 20 minute service operating via the principal corridor through Cumnor and Botley, as opposed to the 15 minute envisaged under Scenario (1). Again these journeys would be augmented by an hourly service via

Abingdon, meaning that four journeys would operate each hour between Wantage/Grove and Oxford, albeit not all via the same route.

5.4.11 Scenario (2) represents the optimum operational scenario for the period up to 2016 when compared to Scenario (1) due to:

- The comparatively lower operating costs of £1.16 million as opposed to £1.41 million;
- Fewer trips required each weekday to achieve break-even;
- The scenario would still enable the operation of four services per hour between Wantage/Grove and Oxford;
- The scope to retain an hourly service not only linking Wantage and Grove with Abingdon, but also serving the residential area of Belmont in Wantage and Brereton Drive in Grove; and
- The interchange opportunities available en route.

#### Wantage/Grove – Oxford Corridor - Longer-term to 2026

5.4.12 Scenario (1) (recommended) envisages the principal route continuing to operate from Wantage via Mably Way, the new Grove district centre, Denchworth Road and Oxford Lane eastbound, before deviating from A338 to use a proposed new alignment constructed north of the Great Western Main Line between A338 and Steventon village.

5.4.13 For modelling purposes, the morning peak period single journey time on the complementary, hourly frequency service via East Hanney, Marcham and Abingdon was kept at the 60 minutes envisaged under the 2016 scenarios. The round trip journey time would be 125 minutes.

5.4.14 When compared to Scenario (2), Scenario (1) is favourable due to:

- The slightly lower operating costs of £1.67 million as opposed to £1.76 million;
- An average of 1,457 trips being required each weekday to achieve break-even;
- The scenario would still enable the operation of four services per hour between Wantage/Grove and Oxford;
- The scope to retain an hourly service not only linking Wantage and Grove with Abingdon but also serving the residential area of Belmont in Wantage and Brereton Drive in Grove; and

- The interchange opportunities available en route.

Wantage/Grove – Didcot Corridor - Medium-term to 2016

- 5.4.15 Scenario (1) would witness adaptation of the existing secondary ‘Interlink’ Route to operate from Wantage via A338 and Mably Way westbound, before serving the proposed new district centre. It would rejoin the established route on Denchworth Road, before returning to Wantage via Mayfield Avenue, Main Street and A338. Interchange with the Wantage-Oxford Premium Route and with the hourly frequency service via Abingdon could be made easier by the development of high-quality interchanges in Wantage Market Place and at the confluence of Oxford Lane and Main Street in Grove village. Interchange with Premium Route services to Oxford could also take place at stops on the common sector of route between Wantage Market Place and Oxford Lane/Main Street.
- 5.4.16 The route would extend eastwards from Wantage via A417, Rowstock Roundabout and A4130 to connect Wantage and Grove with the employment centre at Milton Park, continuing from Milton Park via B4493 North Road to the rail interchange at Didcot Parkway Station and the Orchard Centre. The route length in a single direction would be 25 kilometres.
- 5.4.17 Delays would still be experienced en route in Wantage town centre, on the approaches to Rowstock roundabout and at Milton Interchange, pending any future signalisation and provision of bus priority measures.
- 5.4.18 Concept 1 for this scenario (recommended) envisages services operating over this core corridor hourly in the core operating period 07.00 - 22.00 on weekdays and Saturdays, in line with the Council’s ‘Interlink’ concept for secondary routes.
- 5.4.19 Services on the core corridor would be complemented by an hourly peak-period only variation linking Wantage and Grove with Harwell SIC between 0600 and 0800 on Mondays to Fridays, with equivalent westbound journeys between 0630 and 0900 also designed to provide a service for students travelling to school and college in Wantage. Return journeys would also be provided in the evening peak between Harwell SIC and Grove from 1600 to 1900 on weekdays.
- 5.4.20 In the event that additional peak period bus services are provided to link Didcot town centre with Harwell SIC in conjunction with the Great Western Park residential development, it would also be possible to promote interchange between the core Wantage-Milton Park-Didcot corridor and the Didcot-Great Western

Park-Harwell SIC route in the vicinity of Rowstock Roundabout. This would further increase the public transport options available to those wishing to travel between Grove, Wantage and Harwell SIC. Ideally a clearly demarcated, suitably configured facility would be developed on the roundabout to permit interchange between services with a minimum of walking and waiting time.

5.4.21 Scope has also been discerned to provide a socially-necessary service every two hours, using one of the two buses used to operate the main Wantage/Grove-Didcot corridor, that will connect the villages south of A417 with Wantage and Didcot, augmenting the more direct journeys following the core corridor.

5.4.22 The single journey time on the core corridor from Wantage via Grove and Milton Park to Didcot in the morning peak is estimated to be 40 minutes.

5.4.23 Concept 1 for Scenario (1) is favoured because:

- The Wantage/Grove-Didcot axis is identified in the County Council's adopted Bus Strategy as a secondary 'Interlink' route warranting a 60 minute frequency service;
- Comparatively lower operating costs of £533,520 for a 60-minute frequency core service as opposed to £887,760 for a 30-minute frequency core service;
- Comparatively fewer trips – 514 - required each weekday to achieve break-even;
- The scope to reduce journey times between Wantage/Grove, Milton Park and Didcot – particularly if additional bus priority measures were to be implemented at Rowstock Roundabout, at the A4130/B4017 Steventon junction and on the approach to Milton Interchange - thereby making bus a more attractive mode option;
- The scope to provide complementary peak-period services to and from Harwell SIC and a two-hourly village-link service using existing resources; and
- The interchange opportunities available at the western end of the route between the Wantage/Grove-Didcot and Wantage/Grove-Oxford/Abingdon corridors and – subject to the introduction of additional Didcot-Harwell services, funded through the Great Western Park development – at Rowstock Roundabout;

#### Wantage/Grove – Didcot Corridor - Longer-term to 2026

5.4.24

For the period 2016 to 2026, Scenario (1) would see the route at the western end of the corridor adapted, with buses operating from Wantage via Mably Way, the new Grove district centre, Denchworth Road and Oxford Lane eastbound. Rather than returning from Grove to Wantage and using A417, as envisaged under the shorter-term scenarios, buses would travel north from Grove on A338 before deviating to use the proposed new alignment paralleling the Great Western Main Line between A338 and Steventon village. The route would then follow B4017 south, A4130 and Milton Road east to serve Milton Park, Didcot Parkway station and Didcot town centre. A significant proportion of the route, between Wantage and Steventon, could be shared with Wantage-Oxford services assuming adoption of Scenario (1) for this axis, as outlined above.

5.4.25

Scenario (2) envisages construction of the proposed new alignment replacing the submerged Hanney/Steventon Road south of the Great Western Main Line, as opposed to north of the railway under Scenario (1). From Wantage town centre, services would operate via A338, Mably Way, the proposed new district centre, Denchworth Road and Oxford Lane through the existing Grove village, before deviating from A338 onto the new alignment in the vicinity of the Williams F1 factory.

5.4.26

At its eastern end, the new alignment would ascend to join A4130 at Milton Hill. Core services from Wantage and Grove would continue east on A4130 through Milton Interchange, ideally benefiting from priority measures on approach to this identified congestion hotspot. Such measures could also benefit Wantage-Oxford services if these were also routed via Milton Interchange before joining A34 northbound, as detailed above.

5.4.27

When comparing Scenarios (1) and (2), the following conclusions can be drawn.

- The comparable operating costs of £684,000 per annum for each Scenario, on the basis of a 60-minute frequency over the core corridor;
- A comparable average of 586 trips being required each weekday to achieve break-even;
- The scope to retain a complementary peak-period service to Harwell Chilton Campus, coupled with a low-frequency off-peak village link / school service for Ardington and the Hendreds; and
- The scope to realise synergies by operating both the Wantage/Grove-Oxford and Wantage/Grove-Didcot services over the new alignment.

5.4.28 It is feasible to consider either Scenario (1) or Scenario (2) for the period 2016-2026. It should however be emphasised that both Scenarios are contingent upon construction of the new road alignment in lieu of the existing Hanney/Steventon Road to an appropriate standard to enable it to provide a strategic east-west link. The reliance upon construction of the reservoir and attendant new road alignment, which may not happen in a comparable timescale, represents a significant risk to implementation of this scenario. On the basis that it is proposed to construct the reservoir to the north of the Great Western Main Line, that the existing Hanney/Steventon Road also runs north of the railway and that land ownership issues are likely to prove more difficult to address, it is suggested that an alignment north of the railway, in line with Scenario (1), is more realistic.

5.4.29 In the event of the County Council opting to introduce an enhanced half hourly service over the Wantage-Didcot axis via the new alignment, following the routes identified in either Scenarios (1) or (2), to take account of potential further residential and commercial development in the Wantage and Grove area in the period up to 2026, total vehicle hours would rise to 18,500 per annum with costs.

## 5.5 ***Recent Developments***

5.5.1 Subsequent to the analysis set out above there have been developments in the provision of local bus services, moving the provision towards the 2016 scenario.

5.5.2 In June 2008 the services along the Wantage – Didcot corridor (primarily the A417) were simplified and a new weekday peak period service, supported by the Milton Park Section 106 agreement, was introduced. Service 36 is operated by RH Transport Services at a cost of £41,600 per annum. It provides three morning peak journeys from Wantage to Didcot Broadway via Grove, East Hanney, Steventon, Milton Park and Didcot Parkway, with two return journeys in the evening. It gives very significant journey time reductions for travellers between Grove and Milton Park/Didcot (for example up to 47 minutes for Grove to Milton Park) compared with Service 32. It can therefore be seen as a precursor to the proposed hourly service for the post 2026 period.

## 5.6 ***Conclusions***

5.6.1 This chapter has set out the recommended bus strategy for the SCOTS area to both 2016 and 2026 on the links from Wantage/Grove to Oxford and to Didcot. This clearly links to the two timeframes considered through the SATURN testing and links to the time period for the high-level housing policies.

In summary, the routes recommended are outlined below and highlighted on Figures 6 and 7:

**Wantage/Grove – Oxford Corridor**

- To 2016 – **Scenario 2: adaptation of the designated ‘Premium’ Route to operate from Wantage via the A338 and Mably Way westbound, the proposed new district centre, Grove village, Cumnor and Botley.** Again these journeys would be augmented by an hourly service via Abingdon, meaning that four journeys would operate each hour between Wantage/Grove and Oxford, albeit not all via the same route.
- To 2026 – **Scenario 1: envisages the principal route continuing to operate from Wantage via Mably Way, the new Grove district centre, Denchworth Road and Oxford Lane eastbound, before deviating from A338 to use a proposed new alignment constructed north of the Great Western Main Line between A338 and Steventon village.**

**Wantage/Grove – Didcot Corridor**

- To 2016 – **Scenario 1: would witness adaptation of the existing secondary ‘Interlink’ Route to operate from Wantage via A338 and Mably Way westbound, new district centre, Denchworth Road, Mayfield Avenue, Main Street and A338. The route would extend eastwards from Wantage via A417, Rowstock Roundabout and A4130 to connect Wantage and Grove with the employment centre at Milton Park, B4493 North Road to the rail interchange at Didcot Parkway Station and the Orchard Centre.** Concept 1 for this scenario envisages services operating over this core corridor hourly in the core operating period 07.00 - 22.00 on weekdays and Saturdays, in line with the Council’s ‘Interlink’ concept for secondary routes. Services on the core corridor would be complemented by an hourly peak-period only variation linking Wantage and Grove with Harwell SIC between 0600 and 0800 on Mondays to Fridays, with equivalent westbound journeys between 0630 and 0900 also designed to provide a service for students travelling to school and college in Wantage.
- To 2026 – **Scenario 1: the route at the western end of the corridor would be adapted, with buses operating from Wantage via Mably Way, the new Grove district centre, Denchworth Road, Oxford Lane, north from Grove on A338 before deviating to use the proposed new alignment paralleling the Great Western Main Line between A338 and Steventon village. The route would then follow**

**B4017 south, A4130 and Milton Road east to serve Milton Park, Didcot Parkway station and Didcot town centre.**

- **To 2026 - Scenario 2: construction of the proposed new alignment replacing the submerged Hanney/Steventon Road south of the Great Western Main Line. From Wantage town centre, services would operate via A338, Mably Way, the proposed new district centre, Denchworth Road and Oxford Lane through the existing Grove village, before deviating from A338 onto the new alignment in the vicinity of the Williams F1 factory. At its eastern end, the new alignment would ascend to join A4130 at Milton Hill. Core services from Wantage and Grove would continue east on A4130 through Milton Interchange.**

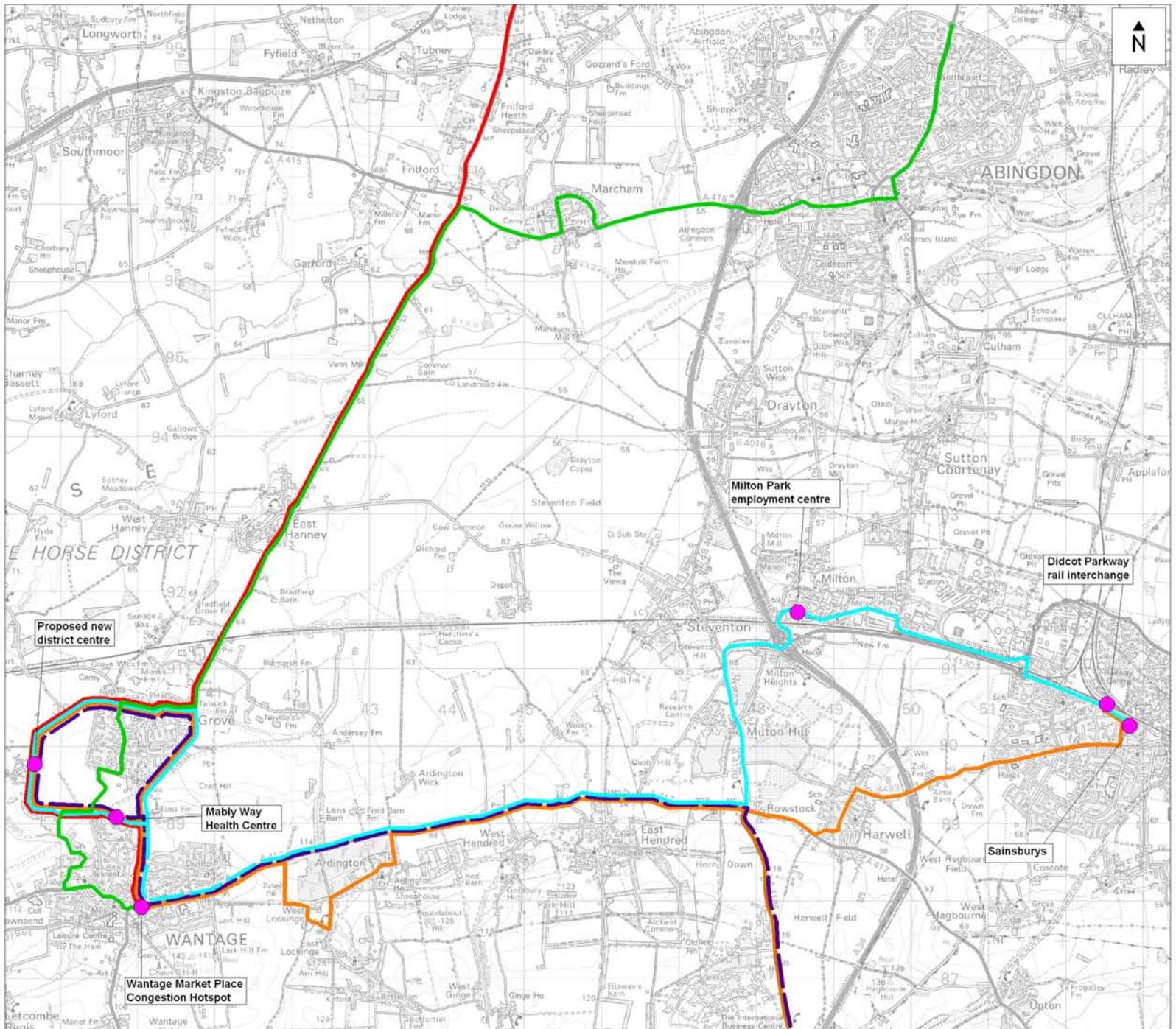
5.6.3 As set out through this Final Report, it is necessary to consider potential highway network improvements, as these could have a significant impact on the journey time, journey reliability, and hence attractiveness of bus services across the Study area.

5.6.4 **The proposed networks build on the existing situation to provide a sound framework to allow for the expected growth and changes in travel patterns in the area, enable buses to take a larger modal share and be ultimately sustainable.** There is also a key focus on sustainable access to Milton Park and Harwell SIC, the main ‘strategic’ trip attractors in the study area. Thus, this bus strategy forms a key aspect of achieving the objectives of SCOTS.

NOTE

5.6.5 Tests were undertaken using the SATURN model to understand the impact on Milton Interchange if one of the three lanes is converted to bus only. The conclusions of this test suggest that the impacts on the highway are too significant to warrant any bus lane until such time as public transport usage is significantly greater. In 2016 the model shows a reduction of eastbound traffic through Milton travelling in the general direction of Wantage to Didcot. Traffic is re-routing through Harwell Village. Westbound traffic travelling in the general direction of Didcot to Wantage/Harwell re-routes away from Milton and via Harwell Village and West Hagbourne. There is a slight increase on the route from the A417 to Chilton. By 2026 the model continues to show a reduction of eastbound traffic through Milton. Trips increase on the eastbound A417 through Harwell and into Didcot via the southern perimeter road as a result. Westbound trips from Didcot

towards Wantage and Harwell route away from Milton and filter westbound on the A417 through Harwell Village and via the link road from the A417 to Chilton.



**Proposed bus routes for 2016 to be considered for SCOTS final strategy**

**Legend**

- Wantage-Oxford (Enhanced) Premium Route (3 Journeys per hour)
- Wantage-Oxford via Abingdon (Existing) Non-core Route (1 Journey per hour)
- Wantage-Didcot (Enhanced) Interlink Route (1-2 Journeys per hour)
- Village link service (Enhanced) 120 minute frequency (off peak only)
- Peak period service (Proposed) to Harwell Chilton Campus
- Key Nodes

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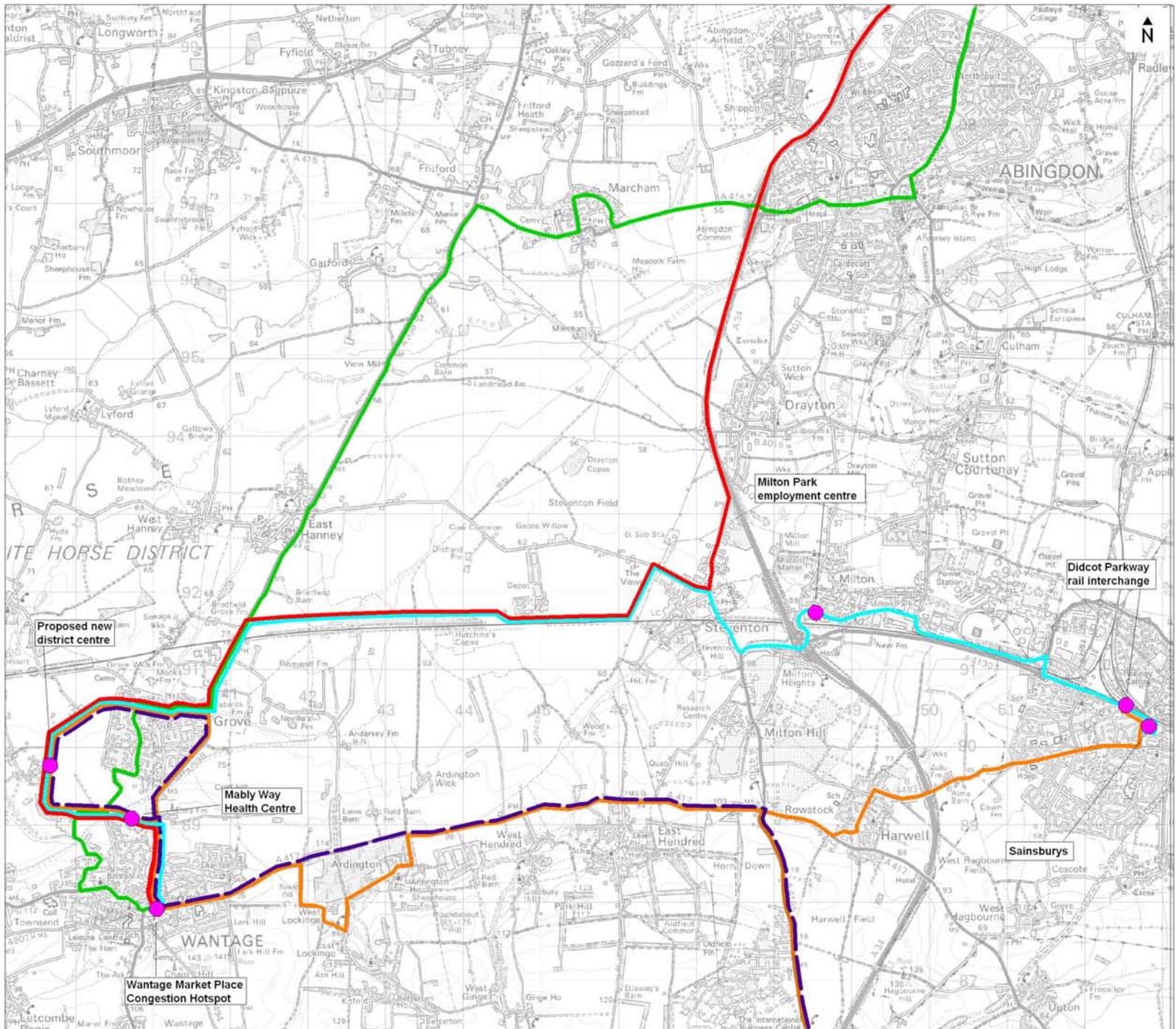
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 Scale: Not to Scale      Date: September 2008

Project: **SCOTS**

Figure Number: **Figure 6**      Revision: -



## 2026 Proposed bus routes to be considered for SCOTS final strategy

### Legend

- Wantage-Oxford (Enhanced) Premium Route (3 Journeys per hour)
- Wantage-Oxford via Abingdon (Existing) Non-core Route (1 Journey per hour)
- Wantage-Didcot (Enhanced) Interlink Route (1-2 Journeys per hour)
- Village link service (Existing) 120 minute frequency (off peak only)
- Peak period service (Existing) to Harwell Chilton Campus
- Key Nodes

\* bus routes are classified as either enhanced, existing or proposed compared against the 2016 services

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Figure Number:      Revision: -

**Figure 7**

## 6 Cycle Strategy

### 6.1 *Introduction*

6.1.1 A cycle strategy has been developed as part of SCOTS in recognition of the need to encourage more sustainable modes of travel, relieve the pressure of vehicles on the highway network and promote strategic links in the SCOTS area, particularly to access Milton Park and Harwell SIC.

6.1.2 The main focus in developing this strategy has been on reviewing schemes previously identified through both the Didcot Integrated Transport Strategy (DidITS) and Wantage and Grove Area Strategic Transport Strategy (WAGASTS). It is not intended that this chapter reviews all cycle schemes identified in these strategies, but rather it reviews the status of, and re-considers the appropriateness of, schemes that will have an impact on the 'strategic network', i.e. links to Milton Park, Harwell SIC and Didcot Parkway rail station. It should be noted that a comprehensive study is currently being undertaken to review the existing and potential cycle network for Wantage and Grove. Once this work has been completed, the recommendations from this Study will form part of this overall strategy for the area.

### 6.2 *Existing cycle strategies*

6.2.1 The Department for Transport's (DfT's) guidelines for improving the cycle environment are based on the following hierarchical approach:

- Priority 1: Traffic Reduction;
- Priority 2: Traffic Calming;
- Priority 3: Junction Treatment and Traffic Management;
- Priority 4: Reallocation of the Carriageway; and
- Priority 5: Off-road cycle routes.

6.2.2 As can be seen from this prioritised list, the desire is to make the highway network attractive for cyclists to use without the addition of specific cycle measures. Traffic management schemes have a benefit for cyclists by improving safety and the perception of safety on links by slowing vehicle speeds. Research has suggested that cyclists would prefer to use the highway network as opposed to being segregated, and as a result the provision of dedicated cycle infrastructure is at the bottom of the hierarchy.

6.2.3 The County Council has a requirement to reflect the priorities set out by the DfT. However, in addition to this and in line with other modes of transport, the County Council has a Cycle Strategy which sets out the criteria to be used when considering potential cycle infrastructure for funding. These criteria are as follows:

- Population in origin of the settlement (2001+ excellent: less than 500 poor);
- Distance of cycle route (less than 1km excellent: 4km+ poor);
- Potential increase in 'journey to work' trips (direct to site excellent; between villages poor); and
- Hilliness of route (less than 0.8 contour crossing per km excellent; more than 2.0 poor).

6.2.4 The Cycle Strategy forms part of LTP2 (2006-2011). Cycle schemes included in DidITS and WAGASTS were put forward for inclusion in the second LTP submission. As previously set out, the five priority areas of the second round of LTPs were:

- Tackling Congestion;
- Delivering Accessibility;
- Safer Roads;
- Better Air Quality; and
- Improving the Street Environment.

6.2.5 The cycling schemes proposed for Didcot and Wantage did not score as favourably as other proposed schemes in Oxfordshire when considered against these criteria. Although the town based schemes scored well on accessibility, improving road safety and the street environment, the rural schemes and town centre packages were not included in the final LTP 2 document.

6.2.6 As a result of the LTP2 process, and the lack of alternative opportunities to fund cycle schemes, no funding has been made available to improve local cycle routes in and around Didcot and Wantage since the prioritised list of schemes were identified in the transport strategies.

6.2.7 There are some National Cycle Network links within the SCOTS area. These links undergo a separate prioritisation and funding process from that included in LTP2, and hence strategic improvements have been realised independent to the LTP. The

following section provides a summary of the schemes identified/recognised in the transport strategies and provides an update on the status of these.

### 6.3

#### ***Previously identified schemes***

#### 6.3.1

As set out above, DidITS and WAGASTS both identified cycle schemes that could be implemented in the area to enhance the existing cycle network, with the aim of increasing cycle patronage.

#### 6.3.2

A full list of the schemes identified in these transport strategies is not included in this document. However, a summary of the main findings of these studies is set out below.

#### DidITS 2004

#### 6.3.3

DidITS compared the schemes proposed in the area in terms of the following factors:

- Cost (at 2004 prices);
- The time scale for implementation; and
- A ranking relating to how each scheme scored against the OCC Cycle Strategy criteria.

#### 6.3.4

The two best performing ‘strategic’ schemes in terms of cost, timescale and meeting the criteria were in the north west of Didcot:

- An on-road route from Milton Park to Drayton; and
- An advisory on-road cycle route through Drayton and Steventon, linking Abingdon with Steventon.

#### 6.3.5

The majority of the schemes were ranked as ‘medium-term’ schemes which meant that they could be considered for implementation as part of the County Council’s LTP2 submission.

#### 6.3.6

In addition to ‘strategic’ schemes, a series of proposals were identified for Didcot town centre. These schemes were grouped into ‘packages’, reflecting traffic management and the opportunity to improve both pedestrian and cyclist safety within Didcot. The majority of links included in these packages would not contribute to the development of the ‘strategic’ network in the SCOTS area, and are hence not considered further in this Report.

### WAGASTS 2005

6.3.7

The WAGASTS report highlighted four key improvements to the cycle network that were designed to provide cycle access to and from Wantage to the key employment areas of Abingdon, Milton Park and Harwell Science and Innovation Centre (SIC). The schemes put forward were:

- Create a high quality cycle link between Grove and Wantage due to the housing development at Grove either by Denchworth Road or a cycle path on the A338 corridor;
- Creation of a cycle link between Wantage and Abingdon along Letcombe Brook (a historic canal route);
- Promotion of NCN 44 that links Wantage to Didcot via Harwell IBC as a commuter cycle route; and
- Create a new link from NCN 44 to Milton Park.

6.3.8

The WAGASTS report concluded that the cycle link between Wantage and Abingdon should be considered as a leisure route only, as it would not receive enough trips to be viable as a commuter route. The promotion of NCN 44 and the new link to Milton Park could be developed by 2011 in line with the development taking place in the area. The cycle link between Grove and Wantage was also suggested to be completed 2011, again in line with the housing development taking place at Grove Airfield.

6.3.9

The remainder of this chapter will therefore outline the current status of the schemes proposed in both DidITS and WAGASTS, the potential for implementing these schemes through other sources of funding and a new scheme hierarchy for consideration as part of the SCOTS final strategy development.

6.4

### ***Current Status of Cycling Schemes***

6.4.1

As set out above, the proposed cycle schemes in Didcot and Wantage recommended in DidITS and WAGASTS have not been taken forward due to the schemes not being included in LTP2. Therefore, only the committed schemes highlighted in DidITS have been implemented in the area since 2004. This includes the completion of the off-road section of NCN 44 between Didcot and Upton, to the south of the town, by Sustrans in 2004. It is also understood that other committed schemes highlighted in the transport strategies that have been completed in the area include:

- An off road cycle link between the villages of Burcot and Clifton Hampton to Culham station along the A415 corridor;
- An off road cycle link between the south of Abingdon and Drayton along the B4107 corridor; and
- An on road cycle lane on the A4130 between the Milton Interchange and the junction with the B4493 in Didcot.

6.4.2 A potential housing development to the west of Didcot could provide the opportunity to implement previously identified cycle schemes that would improve access to both Milton Park and Harwell SIC from Didcot. The use of Section 106 money could be used to develop cycle links within the area. Similarly, for the Wantage/Grove housing development, developer contributions could be used to provide cycle access to Wantage and the promotion of NCN44 as a commuter route to Harwell SIC, as outlined in WAGASTS.

#### 6.5 ***Strategic schemes to form part of the cycle strategy for SCOTS***

6.5.1 As a result of the findings set out above, and considering the purpose of this strategy to encourage the use of sustainable modes of travel and promote strategic links to Milton Park, Harwell SIC and Didcot Parkway railway station, a series of strategic schemes are set out below to form part of the cycle strategy.

6.5.2 The two key employment sites within Didcot and the surrounding area are Milton Park and Harwell SIC. South Oxfordshire District Council's 2006 report '*Didcot – New growth points submission*' states that there are currently 8,500 people employed at these two sites and this is expected to increase by 6,500 to 15,000 by 2016. Increasing the percentage of trips to these sites by sustainable means is vital in ensuring that each site is able to develop without increasing the number of car trips significantly.

6.5.3 **The schemes set out are primarily focussed on those included in DidITS and WAGASTS.** That is, consideration has not been given to new schemes in the area, but a review has been undertaken on the appropriateness of previously identified schemes.

6.5.4 However, one new scheme has been considered as part of this strategy. The scheme has been identified by the County Council as **a potential pedestrian/cycle link under the railway as an access into Milton Park, using Milton Field under bridge.** A feasibility study is currently being undertaken, and site meetings and further correspondence has been carried out with Network Rail.

- 6.5.5 There is a need for the scheme to be considered through an internal Network Rail clearance procedure (an internal stakeholder consultation), which will be held to establish any constraints. In addition to consideration being given by Network Rail to the suitability to the use of the structure by pedestrians/cyclists, an appreciation of safety and security issues will also need to be gained.
- 6.5.6 With regards to the previously identified schemes, a ranking system has been used to assess their performance. The ranking system was based on criteria used in DidITS and WAGASTS, however new criteria have been included that focus on access to three key sites in the study area:
- Access to Milton Park;
  - Access to Harwell IBC; and
  - Access to Didcot Parkway station.
- 6.5.7 Within the study area Didcot currently has the highest level of commuter trips to these sites, so the highest ranking has been given to schemes that link Didcot with these sites. The second area that it may be possible to commute from is Wantage, although the commuting distance is longer than from Didcot so the schemes on this link will not score as well as routes from Didcot.
- 6.5.8 Table 12 details the new criteria and scoring system that have been used as part of the assessment process.

<b>Table 12 – SCOTS assessment criteria for cycle schemes identified in DidITS and WAGSTS reports</b>	
<b>Criteria</b>	<b>Scoring system</b>
Direct link from Didcot	10
Direct link from Wantage	6
Direct link from Abingdon	6
Indirect link from Didcot	4
Indirect link from Wantage	2
Indirect link from Abingdon	2
No link	0
<b>DidITS Didcot cycle scheme/WAGSTS score</b>	<b>Scoring system</b>
Short term	8
Medium term	6
Long term	4
<b>Overall Score bands (SCOTS)</b>	<b>Scoring system</b>
Excellent	17-20
Very Good	13-16
Good	9-12
Fair	5-8
Poor	0-4

6.5.9

DidITS included costs for the implementation of the cycle priority schemes. The original costs have been factored to 2008 prices using DfT scheme implementation guidance from *'The Estimation and Treatment of Scheme Costs'* (Webtag unit 3.5.9 para 2.1.2, 2006) that states:

“Construction cost inflation often ranges between 5% and 7%”.

6.5.10

For the purposes of the SCOTS final strategy development this has been assumed at 6% for the implementation of these schemes.

6.5.11

As previously set out in this chapter, a focus has been put on schemes that will have an impact on the ‘strategic’ network. Table 13 sets out the results of the analysis for the performance of ‘strategic’ schemes against the identified criteria.

<b>Table 13: Results of the performance of 'strategic' cycle schemes against the identified criteria</b>					
<b>Scheme</b>	<b>Scheme Description</b>	<b>2008 Scheme Costs (£)</b>	<b>Access to Didcot Parkway, Harwell IBC or Milton Park</b>	<b>Timescale</b>	<b>Ranking</b>
<b>In the rural areas around Didcot</b>					
Harwell village to Harwell SIC, via the Winnaway	To provide an off-road route (on road through village)	£124,985	Direct link - Didcot 10	Medium-term 6	Very Good <b>16</b>
A417 at Harwell village	Lit refuge pedestrian/cycle crossing and associated warning sign	£8,837	Direct link - Didcot 10	Medium-term 6	Very Good <b>16</b>
Harwell village to Didcot (through GWP and along B4493)	To provide an off road route	£300,470	Direct link - Didcot 10	Medium-term (to implement with Wantage Rd cycle scheme in Didcot) 6	Very Good <b>16</b>
Milton Hill Research Centre to A4130	To provide an on-road route	£3,787	Link from Wantage 6	Longer-term 4	Good <b>10</b>
A4130 at Milton Hill	To provide junction improvements	£8,837	Link from Wantage 6	Longer-term 4	Good <b>10</b>
A417 at East Hendred	Lit refuge pedestrian/cycle crossing and associated warning sign and a short section of footpath upgrade to create a shared pedestrian/cycle route	£8,837	Indirect link from Wantage 2	Longer-term 4	Fair <b>6</b>
Milton Hill to Harwell SIC	Road used as footpath upgrade to create a shared pedestrian/cycle route	£304,257	Indirect link - Didcot to Harwell Direct Link from Wantage to Milton Park 10	Longer-term 4	Very Good <b>14</b>
<b>Within Didcot</b>					
Package S - Cow Lane ped/cycle subway	New subway at Cow Lane. Scheme approved by Executive committee and Transport Implementation Committee	Unknown	Direct link - Didcot	Short term	Excellent

<b>Table 13: Results of the performance of 'strategic' cycle schemes against the identified criteria</b>					
<b>Scheme</b>	<b>Scheme Description</b>	<b>2008 Scheme Costs (£)</b>	<b>Access to Didcot Parkway, Harwell IBC or Milton Park</b>	<b>Timescale</b>	<b>Ranking</b>
			10	8	<b>18</b>
Package M - Promotion of cycle and pedestrian routes	Promotion, destination signing on all routes. Cost dependent on number of signs required Cycle Map	Unknown £37,874 £37,874	Provide information on Direct Links to employment sites Provide information on Direct Links to employment sites 10	Medium term  Medium term  6	Very Good   <b>16</b>
<b>In and around Wantage</b>					
Promotion of NCN 44	Promotion of NCN 44 as a viable route from Wantage to Harwell SIC		Link From Wantage  6	Short-term  8	Very Good  <b>14</b>
Create a new link between NCN 44 and Milton Park	Road used as footpath upgrade to create a shared pedestrian/cycle route. Lit refuge pedestrian/cycle crossing and associated warning sign. To provide junction improvements. Contra flow cycle lanes plus a new St Andrews off-road cycle route		Link From Wantage  6	Short-term  8	Very Good  <b>14</b>

6.6

6.6.1

**Recommended schemes to be included in SCOTS**

The assessment highlighted the schemes that best fit the revised cycle scheme criteria. Table 14 below show the schemes that have been rated as excellent and very good in terms of meeting the revised criteria. It should be noted that at the time of undertaking the cycle study work, a proposal to open up the Milton Park underbridge as a cycle link into the business park was not a consideration. A study is ongoing and discussions are taking place with Network Rail at present to determine the feasibility and approval for opening up this strategic link. This Strategy should reference the accompanying report that sets out the findings of this work. It is considered, that if approval is gained, that this scheme would be one of the recommended priorities for implementation.

<b>Table 14: Recommended schemes</b>		
<b>Scheme Name</b>	<b>Type</b>	<b>Ranking</b>
Package S - Cow Lane ped/cycle subway	Didcot	Excellent
Harwell village to Didcot (through GWP and along B4493)	Rural	Very Good
Milton Park to Drayton	Rural	Very Good
Abingdon to Steventon	Rural	Very Good
Harwell village to Harwell SIC, via the Winnaway	Rural	Very Good
A417 at Harwell village	Rural	Very Good
Milton Hill to Harwell IBC	Rural	Very Good
Package B - Edinburgh Drive Cycle Scheme	Didcot	Very Good
Package I - Cycle parking rolling programme per year	Didcot	Very Good
Package K - Contra flow cycle lanes	Didcot	Very Good
Package M - Promotion of cycle and pedestrian routes	Didcot	Very Good
Package N - West Didcot cycle link at Mendip Heights	Didcot	Very Good
Package P - Wantage Road cycle scheme and traffic management	Didcot	Very Good
Package R - Slade Rd/ Brasenose Rd traffic calming scheme with pedestrian/ cycle links to GWP	Didcot	Very Good
Promotion of NCN 44	Wantage	Very Good
Create a new link between NCN 44 and Milton Park	Wantage	Very Good

6.6.2

Figure 8 highlights the schemes recommended for inclusion in this Strategy.

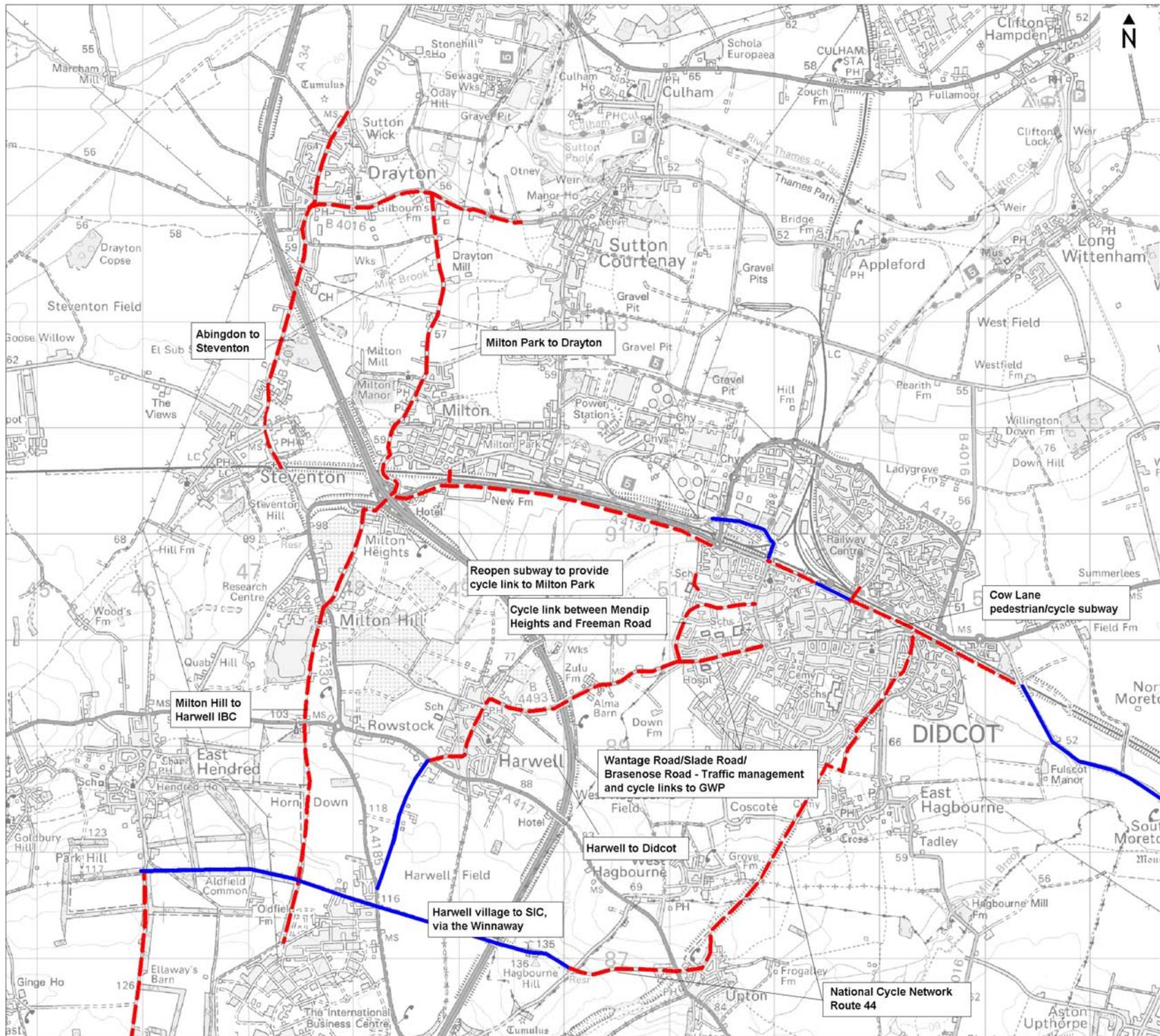
6.6.3

The best performing schemes are predominantly located to the west of Didcot, as they provide access to both Milton Park and Harwell SIC. Consideration may need to be given to additional links within the town centre in the future to either help

create links to the external cycle paths, or enhance the route to Didcot Parkway railway station.

*6.6.4* The idea to create a link between NCN 44 and Milton Park was highlighted in WAGASTS and could be incorporated with other schemes to provide a direct route and enhance the opportunity to cycle from Wantage. However this is approximately 12 km so would deter all but the most committed cyclists. Harwell SIC is just 7 km from Wantage, so the promotion of this route from Wantage via NCN 44 is a realistic option.

*6.6.5* It should be noted that the schemes that involve maintenance and promotion of the cycle network have not been included in Table 13, but are important for improving the level of cycling for commuter trips in this area.



# Proposed cycle schemes as part of the Southern Central Oxfordshire Transport Strategy

## Legend

- Off road cycle schemes
- - - - On road cycle schemes

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**Figure 8**

# 7 Safety Strategy

## 7.1 *Introduction*

7.1.1 The Government's Road Safety Strategy (2000) provides the framework for improving road safety, and includes casualty reduction targets to be achieved by 2010. The cost placed on accidents that occur on Oxfordshire's roads each year is estimated to be around £200 million, showing the extent of the current road safety problem in the county.

7.1.2 The current aims of the programmes to improve the overall safety of travel in Oxfordshire (as set out in the emerging Local Transport Plan) include:

- Working towards achieving challenging national casualty reduction targets set for 2010 - placing particular emphasis on reducing road deaths and serious injuries, especially those to children;
- Improving quality of life in our communities where fear of road accidents, in particular the dangers posed by excessive vehicle speeds, has been shown to be a major concern; and
- Extending freedom of choice of travel modes by reducing the fear of injury, especially for vulnerable road users such as pedestrians and pedal cyclists.

7.1.3 The purpose of this chapter is to identify a series of principles for road safety. That is, when new developments that will generate trips onto the network are planned, or when mitigation measures are being considered, there will be a series of guiding principles to ensure the objectives of the SCOTS area are being met. The guiding principles have been developed based on consideration of various aspects of this strategy, plus previously issued policies and existing processes.

7.1.4 The following sections highlight both national and local policy. They also set out underlying principles associated with improving road safety. The sections that make up this chapter are as follows:

- Oxfordshire County Council Road Safety Team;
- Links with high accident frequencies in the SCOTS area;
- Route hierarchy;
- Department for Transport - Guidance on Transport Assessments; and

- Road Safety Principles.

## 7.2 ***Oxfordshire County Council Road Safety Team***

7.2.1 Oxfordshire County Council, in partnership with Thames Valley Police, record and plot every injury accident that occurs within the county. These accidents are then transferred to mapping, usually on a fortnightly basis, showing the location to within approximately 5m of the incident.

7.2.2 Oxfordshire County Council considers the causes of the accidents, and puts a focus on assessing accident clusters. Although guidance sets out that accident clusters should be investigated, it does not provide specific guidance on how many injury accidents must occur at a certain junction/within a specific distance on a link for it to be identified as an accident cluster. Thus, the County Council has responsibility for identifying accident clusters.

7.2.3 In considering accident causation and the location of accidents, the County Council focuses on:

- The number of serious or fatal accidents at any particular location;
- The classification of the link;
- Pedestrian usage; and
- The speed limit of the link.

7.2.4 These points are considered in line with the Department for Transport document 'Setting Local Speed Limits', published in 2006. This sets the national guidance for the number of accidents 'acceptable' on particular roads, before further investigation is required.

7.2.5 There are two categories of **rural roads**, and further consideration will be given to these when the following thresholds are reached:

- Upper tier roads ('A' and 'B' classified roads) - 35 injury accidents per 100 million vehicle kilometres; and
- Lower tier roads ('C' classified and unclassified) - 60 injury accidents per 100 million vehicle kilometres.

7.2.6 When a road has consistently higher accident frequencies than the guidelines set by the Department for Transport, it can be placed under investigation or monitored. Links under investigation are not necessarily referred to as a 'cluster', because the

accidents could be spread along a stretch of the link and hence may not have all occurred in one location.

7.2.7 In terms of **urban roads**, the UK average for injury accidents is approximately 60 injury accidents per 100 million vehicle kilometres. The Department for Transport has no specific guidelines for how many injury accidents must occur on a road before it is investigated, but any road with approximately 100 injury accidents per 100 million vehicle kilometres is likely to be investigated further by the County Council.

7.2.8 The list of identified problem sites and routes is regularly reviewed. Each year the Road Safety Team seeks to identify a package of measures taking account of the specific accident history and site constraints. Recently, mitigation measures have tended to focus on route or 'mass action' treatments on rural roads (where the majority of KSIs are sustained). In addition, a smaller number of targeted schemes have been introduced in built up areas, generally a mixture of standard AIP (Accident Investigation and Prevention) techniques and contributions to larger multi-objective schemes.

### 7.3 ***Links with high accident frequencies in the SCOTS area***

7.3.1 Information has been provided by the Road Safety Team at the County Council with regards to links in the SCOTS area with high accident frequencies. That is, the links in the area which are being investigated or monitored.

7.3.2 Previous work undertaken in the Wantage and Grove Area Strategic Transport Study (WAGASTS) highlighted several key routes within the study area which had a particularly high accident rate between 2000 and 2004.

- A417 (A420 - West Hagbourne) - 208 accidents (30 serious, 4 fatal);
- A338 (A420 - CB) - 171 accidents (31 serious, 2 fatal);
- Steventon Road - 22 accidents (3 serious, 1 fatal);
- Denchworth Road - 10 accidents (2 serious); and
- Grove Park Drive - 7 accidents (1 serious).

7.3.3 The County Council provided an updated set of accident data, covering the period 2004 to June 2008. This data shows that the A417 and A338 have both seen reductions in the number of injury accidents recorded since 2004. The number of injury accidents recorded on an annual basis has dropped by approximately 33% on both routes since 2000. On the smaller urban routes, despite the total number

of injury accidents remaining similar, there is some fluctuation from year to year. On Steventon Road there has been just one serious injury accident recorded since 2003 and on Grove Park Road there have been no serious injury accidents recorded since 2002.

7.3.4 Information has also been provided by the Road Safety Team at the County Council with regards to links within Didcot itself. The links and junctions below are those which have higher than expected accident frequencies:

- A4130 Didcot Northern perimeter road j/w B4016 Abingdon Road;
- A4130 at Power Station roundabout;
- A4130 Didcot Northern perimeter road j/w Avon Way; and
- Station Road between junction with Haydon Road and rail station;

7.3.5 The A4130 Didcot Northern Perimeter Road has higher than expected accident rates at a number of junctions between 2003 and 2007. The junction with the B4016 Abingdon Road has seen three accidents, one of which was serious, all recorded in an 18 month period between March 2006 and September 2007. Five accidents have been recorded at Power Station roundabout between 2004 and 2007, with one of these serious. It is important to note that three of these accidents occurred in November and December. The third location of accident clusters on the A4130 is at the junction with Avon Way. At this location there have been five recorded accidents since 2003, although three of these were in 2004.

7.3.6 Station Road, between the junction with Haydon Road and the rail station, also experiences a higher than average accident rate. Eight accidents were recorded at this location between 2003 and 2007. Three of these were recorded in 2005, and all eight accidents were recorded between January and June. Two of the recorded accidents involved cyclists and one involved a pedestrian

#### 7.4 ***Route hierarchy***

7.4.1 In order to analyse the outputs of the SATURN model in line with the Appraisal Framework, a route hierarchy has been developed and approved by the County Council, as discussed earlier in this Report.

7.4.2 The appropriateness of the route hierarchy when considering safety can be linked to quality of life and additional trips on links to a level which may be considered unacceptable.

7.4.3 In addition, the ‘function’ of a link may determine the type of mitigation measure that would be suitable. For example, it may not be appropriate to implement a horizontal traffic calming measure to slow speeds on a local distributor road which will provide the main link road into a new development site.

7.4.4 Further detail on the route hierarchy can be found in Technical Note 2 – Key Considerations, issued with the Stage 1 Report in May 2008.

7.5 ***Department for Transport - Guidance on Transport Assessments (2007)***

7.5.1 A review has been undertaken of the Department for Transport guidance on Transport Assessments (TA). The guidance sets out the main aspects that should be considered as part of a TA. For the purpose of SCOTS, it is important to understand what is set out regarding safety in TAs, in order to enable the inclusion of any relevant aspects in the safety guiding principles for the SCOTS area.

7.5.2 A TA identifies what measures will be taken to deal with the anticipated transport impacts of the scheme, and to improve accessibility and safety for all modes of travel. In preparing a TA, the following considerations will therefore be relevant:

- Encouraging environmental sustainability;
- Managing the existing network; and
- Mitigating residual impacts.

7.5.3 There are some key safety considerations which should be adhered to for any Transport Assessment for a new development:

- The assessment should identify any highway safety issues and provide an analysis of recent accident history of the study area. The extent of the assessment will depend on the scale and location of the proposed development;
- The need to minimise conflicts between vehicles and other road-user groups should be adequately addressed;
- Critical locations on the road network with poor accident records should be identified, to determine if a proposed development will exacerbate any existing problems or whether highway mitigation or traffic management could alleviate the problems;
- The accident rates should be considered against a local average; and
- Site inspections should be conducted to determine any potential increase in accidents.

7.5.4 The considerations set out in the TA are reflected in the road safety principles.

7.6 ***Road safety principles***

7.6.1 An understanding has been gained about current processes involved in addressing existing road safety issues and preventing future problems. In considering the additional trips that will be on the network as a result of the new housing/employment development, a series of high level principles have been identified to guide future thinking related to road safety in the SCOTS area. In addition to the documents already mentioned, a series of documents have been reviewed in developing these principles:

National

- Department for Transport (DfT) - Tomorrow's roads: safer for everyone (2000);
- Department for Transport (DfT) - Setting Local Speed Limits (2006); and
- Department for Transport (DfT) - Guidance on Transport Assessment (2007).

County

- Oxfordshire County Council - Road Safety Strategy & Plan (2007/08);
- Transport Networks Review (2004);
- Local Transport Plan 2 (2006-2011); and
- Oxfordshire County Council - Design Guide (2006).

Local

- Wantage and Grove Area Strategic Transport Study (WAGASTS) (2005);
- Didcot Integrated Transport Strategy (DidITS) (2004); and
- SCOTS - Technical Note 2: Key Considerations (Route Hierarchy) (2008).

7.6.2 The principles are based on those identified through the Oxfordshire County Council Road Safety Strategy and Plan to 2010. The purpose of the principles is to ensure the objectives of the SCOTS area are being met when new developments that will generate trips onto the network are planned, or when mitigation measures are being considered.

Principle 1: Measure and understand the road safety problem

7.6.3 It is important to understand the current road network and any potential safety issues in the local area. In terms of the monitoring of accidents, casualty reports

are based on information recorded by the police at the scene of a crash. The core resources responsible in the process of reporting accidents are as follows:

- Thames Valley Police (responsible for compiling the accidents);
- Department for Transport (national accident reporting system);
- Oxfordshire County Council (responsible for entering and validating police reports); and
- Thames Valley Safer Roads Partnership (in-depth analysis of the data).

7.6.4 Oxfordshire County Council has put in place two main mechanisms (Transport Networks Review and Integrated Transport Strategies) for ensuring measures developed in response to the problems are considered as strategic elements of an integrated package wherever appropriate, rather than in isolation.

7.6.5 The Transport Networks Review has helped to guide the County Council's longer-term transport objectives and strategy. Integrated Transport Strategies have three key functions:

- Ensuring transport problems in larger urban areas are addressed in an integrated way, recognising the complex inter-relationships that often exist between different parts of an urban transport network;
- Providing an established structure for consultation with local communities, stakeholders and local government partners; and
- Providing a framework for integration between transport and land use planning.

7.6.6 An understanding should be gained about the road safety problem in the wider area around any potential developments through the means identified above. Depending on the trip generation and the location of the development to any existing accident clusters or links with recognised problems, mitigation measures may need to be considered through a TA.

Principal 2: Achieve a safer road environment through planning

7.6.7 The overall approach to safety planning has changed, with the old emphasis on addressing accident hot spots giving way to whole route and area treatments, and this should be reflected in TAs. Local Authorities are producing five year Local Transport Plan's (LTP) which form the basis for government capital funding. To encourage a safer road environment, it is important that the following criteria are met:

- Encourage increased walking and cycling with the provision of cycle ways and walkways;
- Ensure that maintenance works target safety related problems;
- Continue the implementation of road safety engineering measures, to address accident problem sites, routes and areas;
- Undertake safety audits/checks of all new highway schemes to achieve the best possible safety performance;
- Implement further strategies, such as directing education, training and publicity measures to more disadvantaged areas; and
- The location of any new bus stop should not be detrimental to road safety, particularly with regard to junction visibility and disruption to other traffic.

7.6.8

The proportion of journey's made by foot or by cycle has fallen in recent years. It will be challenging to increase levels and reduce casualties simultaneously. The national strategy for cyclists revolves around safety, including the promotion of protective clothing, cycle helmets and training courses (for both cyclists and car users). Practical guidance has been published on the measures that should be considered for pedestrian safety, which again should be reflected in new schemes/the upgrade of existing links:

- Well planned pedestrian routes;
- Pedestrianisation within town centres;
- Adequate lighting;
- Well designed and positioned crossings;
- Improved signal controlled junctions; and
- Traffic calming to reduce vehicle speeds in key areas.

Principal 3: Create a safer road environment for Children

7.6.9

Oxfordshire County Council's Travel Planning team is aiming to achieve improved levels of walking and cycling to school. This will not only be beneficial to the health of children, but will help ease congestion and emissions from the road network. It is important that any TA should reference relevant school travel plans.

7.6.10

School crossing patrols provide a safer place for children to cross busy roads, and therefore Oxfordshire County Council will continue to provide these patrols at sites assessed to require them, as well as the continued assessment of new sites. The County Council's Integrated Transport Unit will continue to monitor and ensure high safety standards in the transport of children to and from school, and on school trips.

Principal 4: Tackle high risk behaviour and actions

7.6.11

Research has shown that the vast majority of accidents involve a behavioural failure on the part of at least one of the parties involved. Oxfordshire County Council's Road Safety Team will continue to:

- Raise awareness of the dangers posed by specific behaviours and the consequences of a severe accident; and
- Identify sites and routes with Thames Valley Police where there is a history of accidents caused by traffic offences.

Principal 5: Encourage safer speeds

7.6.12

Research has shown that excess speed is a major contributory factor in approximately one third of all road accidents. The national speed strategy is as follows:

- Publicise widely the risks of speed and the reasons for limits;
- Develop a national framework for determining appropriate vehicle speeds on all roads;
- Research a number of speed management problems; and
- Take into account economic, environmental and social effects of policies when assessing their ability to reduce casualties. OCC will continue to analyse accident records to identify where revised speed limits may be helpful, given the character of the road.

7.6.13

Oxfordshire County Council has identified several measures to go alongside the National Speed Strategy. The County Council will:

- Continue to identify roads where physical traffic calming measures may be appropriate, subject to extensive consultation;
- Continue to support speed reduction measures; and
- Continue to participate in the Thames Valley Safer Roads Partnership, and ensure roadside equipment and signing is maintained.

7.6.14

It is considered that the principles set out above form the Safety Strategy for SCOTS. That is, the principles can be used in identifying mitigation measures and be considered in the development of TAs to ensure safer roads for everyone in the SCOTS area.

## 8 Managing the demand for travel

### 8.1 *Introduction*

8.1.1 This final report for SCOTS has set out the highway, public transport, cycle and safety strategies for the area that should be considered alongside the proposed development of 6400 dwellings between 2016 and 2026. The underlying themes of the strategies are related to the Study objectives, and hence recognise the need to increase the use of sustainable modes of travel across the study area. They also recognise the need to consider the strategic network, with a particular focus on access to Milton Park and Harwell SIC for employees both within and outside of the Study area.

### 8.2 *The demand for travel*

8.2.1 The evidence base for this Study clearly sets out that **the demand for travel will increase through to 2026, and that the number of trips on the network will further increase with the additional dwellings/employment proposed in the SCOTS area.**

8.2.2 The primary focus of the SATURN model has been to understand the impact of the additional trips on the highway network. This has highlighted that in order for the network to ‘function’ in 2026, substantial pieces of highway infrastructure will be required.

8.2.3 In order to deliver a sustainable transport package for this area it is essential that all elements of the Strategy are given equal weight. There is a risk in providing additional highway infrastructure without the other measures (i.e. public transport, cycle and travel management elements). If improvements to alternative modes of travel are not developed to the same extent/at the same time as the highway infrastructure, it is highly likely that travel by private vehicle will remain the most attractive option. As it is not possible to create infinite capacity on the highway network, this will not deliver a long-term solution.

8.2.4 It has been assumed in the SATURN model that the usage of public transport (primarily bus) will remain at a similar proportion of trips as at present. However, it is an aim of this Strategy to recognise that as the demand for travel increases, there will be a growing need to increase funding available for the delivery of alternative modes of transport to encourage more trips to take place by bus or

cycle. As part of encouraging this shift in travel behaviour over time, it will be of paramount importance to consider a range of demand management measures such as parking policies to further encourage a shift in travel behaviours.

### 8.3

#### ***Achieving a balanced approach***

#### 8.3.1

All elements of this Southern Central Oxfordshire Transport Strategy recognise the importance of achieving improvements to the highway network in order for the objectives of the SCOTS area to be achieved. **That is, provision needs to be made available for the use of more sustainable modes of travel, as well as achieving an improvement in the overall performance of the highway network. Indeed highway improvements are required in order to improve conditions for other modes.**

#### 8.3.2

The Transport Networks Review set out a long-term strategy and recommendations for the transport network in Oxfordshire. As set out in the Stage 3 Final Report (2004), there are a series of key principles identified under the headings of Influencing Travel Behaviour, Public Transport and Roads and Routeing. The strategy also identified a number of key challenges in delivering the strategy, where competing pressures tend to pull in opposite directions.

#### 8.3.3

The Transport Networks Review recognises the need for a balanced approach. As a result, it identifies a series of key measures, as set out below, that make up the strategy:

- **Influencing Travel Behaviour:** encouraging walking, cycling, public transport and car sharing, influencing the planning process, providing high quality information, considering demand management measures, use of technology.
- **Public Transport:** Developing 'Expressway' services on key corridors, an enhanced bus network throughout the County, working towards improved information and ticketing.
- **Roads and Routeing:** Focusing on key congestion 'bottlenecks', improvements at locations of key environmental sensitivity, traffic management measures in villages, link roads in conjunction with development, and further work to consider options in three areas.

#### 8.3.4

The themes identified through the Transport Networks Review are replicated in SCOTS. **The challenge in the SCOTS area will be to achieve a 'balance' of the themes/measures set out in the highway, public transport, cycle and**

**safety strategies. These themes/measures should provide benefits across a range of areas and all sectors of society, and minimise any adverse impacts.** That is, it is not recommended that, for example, the whole Highway Strategy is implemented without improvements to public transport or cycling measures.

8.3.5

This Final Strategy clearly identifies that in order to achieve the objectives of the SCOTS area there is a need for a balanced approach to be adopted. A balanced approach is required to ensure the quality of life of residents in the area is maintained. Consideration should also be given to the planning/implementation of any schemes/measures. These considerations should include reference to the prospect of having funding available for full implementation of any scheme/measure, as well as the deliverability of any scheme within the required timescale.

## Annex 1

<b>Annex 1, Table 1 – Supporting Documents to this SCOTS Final Report</b>	
<b>Document Title</b>	<b>Date Issued</b>
Wantage and Grove-Didcot and Abingdon Area Public Transport Strategy	January 2007
SCOTS Stage 1 Working Document (Wantage and Grove)	June 2007
Stage 1, Technical Note 1 – Existing Situation	February 2008
Stage 1, Technical Note 2 – Route Hierarchy	January 2008
Stage 1, Technical Note 3 – Model Assumptions	February 2008
Stage 1, Technical Note 4 – Appraisal Framework	February 2008
Didcot Housing Accessibility Appraisal	February 2008
Final Stage 1 Technical Report (Didcot)	July 2008
Final Stage 2 Technical Report (Didcot)	June 2008
Cow Lane Option Testing	August 2008
Chilton Link Initial Route Assessment	August 2008
Milton Park Railway Underpass Initial Assessment	August 2008
Didcot Southern Relief Road Initial Route Assessment	September 2008
Featherbed Lane Initial Route Assessment	September 2008
Rowstock Bypass Initial Route Assessment	September 2008

