Cambridgeshire County Council

Cambridgeshire Transport Innovation Fund

Package and Funding Proposition

October 2009

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Executive Summary

This document sets out Cambridgeshire's vision for major transport improvements in and around Cambridge under the Government's Transport Innovation Fund (TIF). It builds on the Outline Proposal that was submitted to Government in October 2007, and takes forward the recommendations from the Independent Transport Commission and public consultation.

The County Council's Package and Funding Proposition totalling some £520 million, seeks to set out the necessary step-change in the quality and availability of alternative modes to enable the economy, the environment and local people to prosper.

To bring about these essential, radical improvements to the transport network, the Package includes:

- A new rail station at Chesterton, open by 2013
- Cycle facilities comparable with the best in Europe
- A network of fast, frequent and reliable bus services
- Information available in different formats, at more locations and utilising cutting edge technologies
- Wider availability of car clubs, incentives to use sustainable modes and improved journey planning tools
- Traffic management measures to ensure smooth flowing traffic
- Developing and agreeing with DfT and our local stakeholders and public a measure of transport congestion that when reached would trigger the need for a Congestion Charging Scheme.

In short, we believe that if funding is forthcoming and implementation of our proposals takes place, we will revolutionise transport provision in and around Cambridge and address some of the most pressing issues that we face.

Context for the Proposition

The Cambridge area is at the centre of the UK's high tech, research and education industries and is one of the fastest growing counties in the UK. As such, the area has a key role to play in the economy of the wider south-east as an 'engine room' of employment growth in high-value sectors. This, however, is at risk from issues such as housing affordability and the ability to recruit key workers.

To address this, the East of England Plan requires the creation of 73,300 new homes in Cambridgeshire between 2001 and 2021. Together with a predicted increase of approximately 50,000 new jobs in the County, this growth will bring with it a range of other issues and most particularly, significant transport challenges. There will be a significant increase in trips in Cambridge above today's levels (in the AM peak hour) and congestion and pollution will increase. A step change in the provision of transport, and specifically alternatives to the car, is therefore necessary if we are to maintain the economy, viability and quality of Cambridge and its surrounding areas.

Purpose of the Proposition

This Package and Funding Proposition proposes an ambitious, integrated Package of measures to encourage a shift from the private car to alternative, more sustainable transport modes. The physical measures proposed are supported by an intensive smarter choices programme and by a Congestion Charging Scheme when this is required.

The strategy is critical on three fronts: firstly, in safeguarding Cambridge's unique historic and environmental assets; secondly, in supporting Cambridge's reputation as a centre for innovation – on which the city has built its economic success – and thirdly in maintaining and enhancing the area's high quality of life and keeping it a place where people want to live, work and conduct business. Cambridge will be a city where transport is seen as a catalyst to sustainable growth rather than an inhibitor and the ease by which people can move around is seen as a major attribute of life here.

Our Proposition

The Cambridgeshire Proposition consists of three stages. The first is a **Full Business Case** Submission for the Chesterton Station and we are seeking **Programme Entry** for this scheme by the end of 2009. The second stage is an outline bid for the balance required to deliver the rest of the Transport Investment Package. We are seeking development costs and **Partnership Status** with DfT to enable this work to continue with a full business case and Programme Entry submission to be made by the end of 2010. The third stage, which will be completed over the next 15 months, will be developing with the DfT and our local stakeholders and public, a measure of transport congestion that when reached would trigger the need for a Congestion Charging Scheme.

The Transport Improvements seek to enhance all three major alternative modes to car transport (public transport, walk and cycle) and comprises the creation of:

- a high quality public transport network (HQPT) - The backbone of the Transport Improvements is a High Quality Public Transport (HQPT) network, to encourage people out of their cars. Alongside this high quality network, city, inter-urban and rural services will be strengthened, along with enhancements to public transport information, interchange facilities, fares and ticketing and the quality of vehicles.
- a comprehensive cycling network - Cycling proposals seek to provide a comprehensive off-road network across Cambridge as well as links to the surrounding villages so that cyclists have the option of off-road and quiet road routes to all key destinations. In addition, on-road improvements are proposed on key corridors into Cambridge to provide better facilities for cyclists who wish to use direct on-road routes.
- significant walking enhancements - The quality of the walking environment will be improved along main walking routes. The combined effects of the Package will also give more pedestrian priority within the historic core.
- extensive traffic management measures - Highways and traffic management proposals have been developed to link new development areas to the local and strategic network, as well as to integrate with, and respond to, public transport proposals – ensuring that general traffic is directed away from priority public transport corridors and can move efficiently.
- Rail Improvements - Enhanced access to rail services will also be provided, through a new station in north Cambridge (Chesterton) as well as better public transport and car access.

- an intensive programme of "Smarter Choices" - To support the introduction of the Transport Improvements an extensively marketed and promoted, comprehensive and intensive Smarter Choices programme will effectively provide all travellers in Cambridgeshire with information and awareness about the availability of non-car modes, and provide active encouragement for their uptake.

Work to refine this will take place with partners through the next 12-15 months to form part of our full Business Case submission as will work on the trigger points for a Congestion Charging Scheme.

The Transport Improvements require an overall investment of around £500 million including risk but excluding optimism bias. Over the next 12-15 months as the package is developed further with stakeholders and Government as part of the Partnership Agreement we will be able to firm up on the total sum being sought through the Transport Innovation Fund. This will be set out in our Programme Entry bid document which will be submitted at that time.

For the purposes of this submission, an economic analysis of the proposed package has been undertaken. This, however, is only to give an indication that the overall proposition is a viable one.

Delivery and Timescale

The Transport Improvements proposals must be in place prior to the implementation of any Congestion Charging Scheme. The reasons for this are two-fold. Firstly, because such a scheme would be designed to encourage use of the Transport Improvements and, secondly, because the public must be convinced, and have seen, that the Transport Improvements have been delivered and real, viable alternatives to the private car are available for travel into/around Cambridge.

The Council has extensive experience of delivering schemes across the full spectrum of the Transport Improvements. To facilitate quick and efficient development and implementation of the Transport Improvements we have two key contracts in place; one covering design and supervision and one covering major scheme delivery.

Notwithstanding this, programming work has demonstrated that delivery of the Transport Improvement schemes within the Package will need to take place between 2011 and 2017 and, therefore, the earliest the Congestion Charging Scheme could be introduced is 2017.

Next Steps & Summary

It is anticipated that developing and agreeing the terms of the **Partnership Status** agreement, along with suitable trigger points, would lead to submission of a Business Case seeking **Programme Entry** status for the full TIF Package by the end of 2010.

A **Programme Entry** decision for Chesterton Station now would enable the scheme to progress over the next 24 months through railway approval stages for delivery to commence in 2012 with opening in 2013.

Both the TIF Package and the Chesterton Station scheme represent excellent value for money, the Package with a Benefit Cost Ratio (BCR) of greater than 4 and Chesterton Station with a BCR of 3.

Delivery of both provide a sustainable way forward and are essential to help the county support the economic growth of the Cambridge area and ensure that increases in housing and employment can be delivered and do not compromise quality of life and quality of environment.

PART A: TIF Package

1. Introduction

ORIGINS OF THE PACKAGE

1.1 Prompted by the scale of growth set out in the Cambridgeshire and Peterborough Structure Plan 2003, Cambridgeshire County Council (the Council) in partnership with the district councils, developed a Long Term Transport Strategy (LTTS) for the county. The High Level LTTS was adopted in the second Local Transport Plan in 2006. The single overarching aim of the LTTS is to provide a transport system that supports economic growth and enables development to take place in a sustainable way to 2021. The LTTS tested a range of scenarios in order to identify a viable solution to the existing congestion problems, and to cater for the transport demand from approximately 73,300 new homes across Cambridgeshire. In Cambridge where congestion levels are very significant, the LTTS concluded that in order to constrain car trips in the area to current day levels, a comprehensive Package of measures would be needed. It should include significant improvements to public transport and walking and cycling infrastructure and services, some limited highway provision where no viable alternative existed, and some form of increased demand management. The LTTS demonstrated that transport improvements coupled with demand management was the key to the success of the Package.

1.2 The advent of the Transport Innovation Fund (TIF), and the opportunity to bid for pump-priming funds, allowed the Council to continue its work to investigate the form of the Package of measures needed to tackle congestion. The Outline Proposal for Funding (OPF) submitted in October 2007, and the work undertaken since then, has informed this Package and Funding Proposition. This document sets out the Council's current proposal to manage congestion and follows consultation on the original proposition and the outcome of the Independent Transport Commission.

1.3 As the development of the Package is a direct response to the demands of the growth agenda, there is a clear link between the growth which the County has been asked to deliver by Government, and the need for Government to support its delivery through such mechanisms as the Transport Innovation Fund.

NEED FOR THE PACKAGE

1.4 The transport challenge facing Cambridgeshire is to accommodate the proposed employment and housing growth in a sustainable manner, and to achieve a reduction in traffic congestion.

1.5 Since 1990, as a result of rapid economic and housing growth, the use of motorised transport in Cambridgeshire has increased at more than twice the national rate. However, a long-standing transport policy of restraining car traffic and promoting alternative modes has succeeded in holding back traffic growth within Cambridge city centre. Traffic levels entering Cambridge have remained steady and traffic entering the historic core reduced by about 18%, over the past ten years, whilst population and employment have grown significantly. The increased demand for travel as a result of this economic growth has been met in particular by growth and improvements in public transport services (especially Park & Ride and City services) and cycling.

1.6 The proposed creation of 73,300 new homes between 2001 and 2021 in the Cambridge Sub-Region[1], together with 70,000 new jobs represents further significant growth. To help ensure continued economic vibrancy against this backdrop of growth, car use must be managed, and a step change in the delivery of pedestrian, cycling and public transport infrastructure and services is needed. Work on the Long Term Transport Strategy for Cambridgeshire concluded that investment in transport measures alone would not achieve the desired objectives and that more demand management would also be required. However, a prerequisite for effective demand management will be the availability of high quality alternatives.

1.7 This Package and Funding Proposition and the strategy behind it, seeks to set out the necessary step-change in the quality and availability of alternative modes to enable the transport network to cope with the growth agenda. It does this by proposing an ambitious, integrated package of measures comprising the creation of a high quality public transport network, a comprehensive cycling network, walking enhancements, and traffic management, all brought together through an intensive programme of "Smarter Choices" to promote these sustainable travel choices.

1.8 Such a comprehensive package has never been implemented before in one urban area over such a condensed time period. Because of this there is no clear evidence base on which to understand the exact extent of mode switch or traffic reduction impacts these measures will have on their own. Our strategy is therefore based on understanding the impacts the Transport Improvements have on meeting agreed traffic/congestion targets, with an agreed trigger in place to implement a Congestion Charging scheme when it proves necessary to do so.

1.9 The Package thereby provides for, and encourages, the use of alternative modes, ultimately reinforced through the introduction of a Congestion Charging Scheme which gives clear pricing signals to dissuade car usage and encourage alternatives.

1.10 The implementation of this strategy would provide Cambridgeshire with a first class public transport system, and would continue to mark Cambridge as the best cycling city in the country – and one of the best in Europe. Cambridgeshire would be a showcase to the rest of the country to demonstrate how a sustainable urban transport policy can be successfully implemented.

1.11 The strategy is critical in safeguarding Cambridgeshire's unique historic and environmental assets. At the same time, the strategy marks out the Cambridge sub-region as a centre for innovation – on which Cambridgeshire has built its economic success – and defends the area's high quality of life, making it a place where people want to live, work and conduct business.

1.12 Furthermore, the Cambridge sub-region has a key role to play in the economy of the wider south-east and the Country, both as an 'engine room' of employment growth in high-value sectors and as a designated growth area. Across the whole county, housing growth is needed if we are to avoid problems of housing affordability and the ability to recruit key workers, but it is essential that we have a transport system that can support it.

[1] East of England Plan (2008)

THE DEVELOPMENT JOURNEY

1.13 The following issues have led the development of this Package and Funding Proposition:

- The need for long term planning for sustainable economic growth
- The need for congestion reduction
- The need to secure high quality alternatives to the car in advance of the introduction of a Congestion Charging Scheme
- The response to the OPF, since its submission in October 2007
- Work with stakeholders and widespread public consultation
- The views of Members/Joint Transport Forum
- The findings of the Independent Transport Commission

1.14 Since submission of the OPF, significant additional consultation and work with stakeholders has been undertaken. In broad terms this has included comprehensive public consultation spanning four months and a business and economic impact study, working closely with the business sector. Further detail on these and their specific findings are contained in Chapter 4. In addition, package development and ongoing liaison with Members of the County, Cambridge City and South Cambridgeshire District Council's has been conducted through the Joint Transport Forum.

1.15 The public consultation demonstrated an acceptance that congestion in and around Cambridge was a serious issue but also raised a number of concerns. In response to these the Council established an Independent Transport Commission to review the Council's OPF and make suggestions for how, and if, the proposals should be modified and also to assess if there were any other ways of tackling the transport problems. A key part of the Commission's work was to seek and understand the views of the public, key organisations and groups and this was fulfilled through a call for written evidence followed by a series of 15 public hearings.

1.16 The Commission published its final report in July 2009 and DfT have received a copy of this. In summary, the Commission noted that there was general support from witnesses for the TIF investments and recommended that a business case bid be made to Government and that the Transport Improvements are fully implemented.

1.17 The Commission stressed that the existing proposals for Transport Improvements are the very least that could be delivered so as to have any hope of convincing the residents of Cambridgeshire that they might, in the longer-term, accept a congestion charge.

1.18 They have made clear that when the impacts of the Transport Improvements are effective and understood, it would be possible to move on to some form of congestion charging if congestion targets had not been achieved. However, given the realistic timescales for delivery of the Transport Improvements, they suggested that this was unlikely to be practical before 2017.

1.19 The findings of the Commission, that have been widely welcomed amongst stakeholders, have shaped the Council's thinking, which is outlined in Chapter 3, and have led to this submission.

STRUCTURE OF THE PACKAGE AND FUNDING PROPOSITION

1.20 This Package and Funding Proposition is structured in two distinct parts:

1.21 Part A, comprising Chapters 1 – 8, covers the overall Package, and the strategic case for it, and is structured as follows.

- Chapter 2 sets the context for the development of the Package.
- Chapter 3 outlines the proposition being put forward by the County Council.
- Chapter 4 provides a more detailed description of the Package elements, including both the Transport Improvements Strategy and a Congestion Charging Scheme, along with scheme costing and finance information.
- Chapter 5 considers issues of delivery and implementation.
- Chapter 6 illustrates the modelling and forecasting work.
- Chapter 7 contains an appraisal of the Package against Government criteria and an assessment of value for money.
- Chapter 8 reports on the Social and Economic Impacts of the Package.

1.22 We are asking Government to accept the overall package proposition in principle and award Cambridgeshire *Partnership Status,* along with TIF pump priming funding, to take forward development of a full TIF business case in conjunction with DfT.

1.23 Part B, Chapters 9 onwards, comprises a Major Scheme Business Case Bid for Chesterton Station for which we are seeking a *Programme Entry* decision and up front funding to allow its further development, through railway processes, and implementation.

"We are asking Government to accept the overall package proposition in principle and award Cambridgeshire Partnership Status, along with TIF pump priming funding, to take forward development of a full TIF business case in conjunction with DfT.

For Chesterton Station we are seeking a Programme Entry decision and up front funding to allow its' further development, through railway processes, and implementation."

MOVING FORWARD

1.24 We fully understand that DfT has set criteria for assessing the appropriateness of a TIF bid, as with any bid they receive. These include:

- The value for money of the overall investment package, with and without road pricing;
- The value for money and deliverability of the road pricing component; and
- Our proposals for delivery and governance of the investment package.

1.25 These issues are addressed in later chapters of this Package and Funding Proposition which seeks *Partnership Status*.

1.26 Looking beyond the Partnership bid, to the work envisaged during 2010, the Council accepts that DfT will wish to rigorously test and challenge our proposition. This is likely to include:

- Any congestion trigger – in particular to ensure that it is fit for purpose, both in the value set and the robustness of the methodology for measurement;
- The extent to which the Council is inextricably locked in to its commitment to introduce a Congestion Charging Scheme if the trigger point is reached;
- The extent to which DfT's funding contribution precedes or is linked to the Council's definitive commitment to a Congestion Charging Scheme;
- The scale of DfT's funding contribution, both in absolute terms and relative to other funding pressures facing DfT; and
- The size of the local contribution to the overall funding package.

1.27 We acknowledge that DfT will wish to discuss these issues and fully expect negotiations to be demanding for all concerned. Both parties have key outcomes they wish to secure from the TIF bid. At the same time, the Council believes that through a process of negotiation, with give and take on both sides, it will be possible to arrive at a mutually acceptable way forward. The Council's submission is being made with that expectation.

2. Context

PROBLEMS, ISSUES AND OPPORTUNITIES

2.1 Cambridgeshire is a very diverse county with many different transport needs. To the north of the county, economic regeneration and accessibility to key services are important. In the south, congestion is an issue in the Cambridge sub-region which is one of the fastest growing parts of the UK and, arguably, the economic hub of the East of England. Growth to date has already placed a considerable strain on existing infrastructure. In order to deliver further housing and economic growth, whilst protecting the environment and quality of life and ensuring that the benefits of growth are shared, it is essential that travel demand arising from future growth is effectively managed. This has clear implications for transport, both in tackling current problems and in providing the transport system necessary to enable future growth.

2.2 Furthermore, Cambridgeshire is also important in the national and international context. The Government's 'Delivering a Sustainable Transport System' (DaSTS) strategy places Cambridgeshire within two of the Strategic National Corridors and the county is significantly influenced by two of the International Gateways; Stansted airport and the Haven ports (Harwich and Felixstowe). These gateways contribute significantly to the heavy burden placed on the transport network in Cambridgeshire, particularly the A14 and M11 corridors.

2.3 Greater Cambridge itself is the scientific and research capital of Great Britain, with around 1,500 businesses and 40,000 jobs in this sector – proportionately there are five times more R&D jobs in the area than in the UK as a whole. Around one third of all businesses are knowledge-based and 8% of the UK's venture capital investment happens in this area, despite it having only 1% of the total UK population.

2.4 Given this, this Chapter provides an overview of:

- recent transport-related trends;
- the growth context;
- the implications of this for transport in the county;
- the challenge facing the Council;
- the objectives of the Package;
- the strategic fit of the Package against TIF criteria and national, regional and local priorities.

Recent Trends

2.5 The problems currently experienced on the transport network in Cambridgeshire are well documented in the second Local Transport Plan (LTP2). This document highlights issues relating to:

- Rising traffic levels;
- Accessibility and the economy;

- Air quality;
- Road safety.

Rising Traffic Levels

2.6 Traffic flows in the county are 90% higher than the national average on trunk roads and 40% higher on principal roads.

2.7 The two main factors that have led to this rapid growth in traffic are:

- the high level of economic growth particularly around Cambridge, focused on education and research, and
- the increase in through traffic on the M11 corridor to London, and the A14 corridor from the Midlands to the east coast ports.

2.8 Congestion is the visible manifestation of other problems on the road network and the cause of the congestion is likely to be the result of several factors acting together, including:

- Increased demand for travel;
- Lack of viable or attractive alternatives to travelling by car; and
- Insufficient road capacity to cater for the level of demand.

2.9 In Cambridgeshire, localised congestion is particularly associated with the journey to work and is therefore exacerbated during peak hours, when large volumes of traffic travel into the county's urban centres. Cambridge, being the largest urban area in the county and the largest employment centre, also has to cope with the largest flow of commuters.

Accessibility and the Economy

2.10 Congestion can also have a negative impact on accessibility; the ability of people to get to key services at a reasonable cost, in reasonable time and with reasonable ease. While the transport system in Cambridgeshire is not significantly more expensive than in many other places, it is not affordable to many for the following reasons[2]:

- 10% of the Cambridgeshire population earn less than £210 a week and a further 9% earn between £210 and £250, compared to the county average of £453; and
- in the north of the county, economic activity is lower than in the rest of the county, at 66.1% compared with 70.1% countywide.

2.11 Whilst earnings in Cambridgeshire overall are higher than the national average, a study undertaken to inform the LTP2 process showed that 80% of employers in the area have problems recruiting staff, and 50% have problems with retaining staff. With increasing house prices forcing people to live further from their employment, employers are likely to experience greater recruitment and retention problems, especially for key workers such as teachers, social workers and police officers. Fundamentally, this reflects the imbalance between jobs and housing stock, with high

[2] Source: Cambridgeshire LTP 2006-2011

house prices and resultant levels of in-commuting to the Cambridge area. At 14.5 miles, the average distance commuted to work in the county is more than twice the national average. Whilst this may temporarily have been affected by the current recession, the trend is unlikely to change.

2.12 This situation is also putting pressure on the surrounding market towns, which are experiencing problems with high levels of out-commuting. Ely is a prime example, where recent surveys of those moving to new estates have shown that over half of these people are commuting to work in Cambridge or South Cambridgeshire district, with others commuting further afield. Across the county, employers are reporting problems with recruitment and staff retention as a direct result of a lack of affordable housing.

2.13 The patterns of commuting in Cambridgeshire are summarised in Table 2.1.

Table 2.1 - Commuting in Cambridgeshire

Commuting between Districts	District of Workplace								
	Cambridge	East Cambs	Fenland	Hunts	Peterboro'	South Cambs	London	Elsewhere	Total Res. Pop'n
District of Residence									
Cambridge	35360	533	68	657	238	7888	1541	2936	49221
East Cambs	6227	18836	314	689	279	4147	670	6010	37172
Fenland	893	796	23811	2157	5150	785	454	3668	37714
Huntingdonshire	4248	426	935	53295	6089	5065	2784	9426	82268
Peterborough	575	101	1497	2525	60152	401	1625	6461	73337
South Cambs	20727	871	161	2014	409	34194	2285	8462	69123
London	642	88	30	262	199	440			
Elsewhere	10005	3232	4974	7357	18094	11228			
Total Workplace Population	78677	24883	31790	68956	90610	64148			348835

Source: 2001 Census Origin-Destination Table W107. Base: all people aged 16-74 in employment

2.14 Overall, whilst there is cross boundary movement, particularly from St Edmundsbury (Suffolk), Uttlesford (Essex) and North Hertfordshire, into Cambridgeshire, most people living in Cambridgeshire tend to work within the County. However, the table shows some important principles in terms of commuting patterns:

- Cambridge and Peterborough play dominant roles as employment centres with substantially higher workforces than resident working populations.
- Most working people living in Cambridge also work in Cambridge, with a small proportion commuting out into South Cambridgeshire, but some 1,500 commuting to London. Comparatively few commute out to the north of the county.
- Only half of the working residents in South Cambridgeshire remain in the district to work, with a substantial proportion commuting into Cambridge[3], and some 2,300 commuting to London.
- Similarly, in the case of East Cambridgeshire, only half the number of working residents remain in the District to work, with substantial proportions commuting into Cambridge and South Cambridgeshire. Some 3,700 (not shown in the table) cross the border into Forest Heath (Suffolk) and some 700 commute to London.

[3] This is due to the fact that Cambridge is effectively surrounded by South Cambridgeshire, with Cambridge being in very close proximity to large parts of the District.

- Most working people living in Huntingdonshire also work in the District, but there are also strong commuting flows into Peterborough, South Cambridgeshire and Cambridge. Some 2,800 people commute from Huntingdonshire to London.
- The size of the county and therefore the distance between Fenland District (in the north) and the south of the County is reflected by the low numbers of commuters to East Cambridgeshire, South Cambridgeshire and Cambridge City. Whilst there is some commuting to Huntingdonshire, most working residents of Fenland also work in the District, with significant cross-border travel into Peterborough, as well as adjacent King's Lynn and West Norfolk (some 1,600, not shown in the table).

2.15 In summary, it can be seen that the north and south of the County exhibit very different commuting patterns, with a strong relationship between Cambridge and South and East Cambridgeshire, but with much of Fenland's commuting occurring within the district. Huntingdonshire District's position with good strategic transport links is reflected in the significant commuting to other parts of the County.

Air Quality

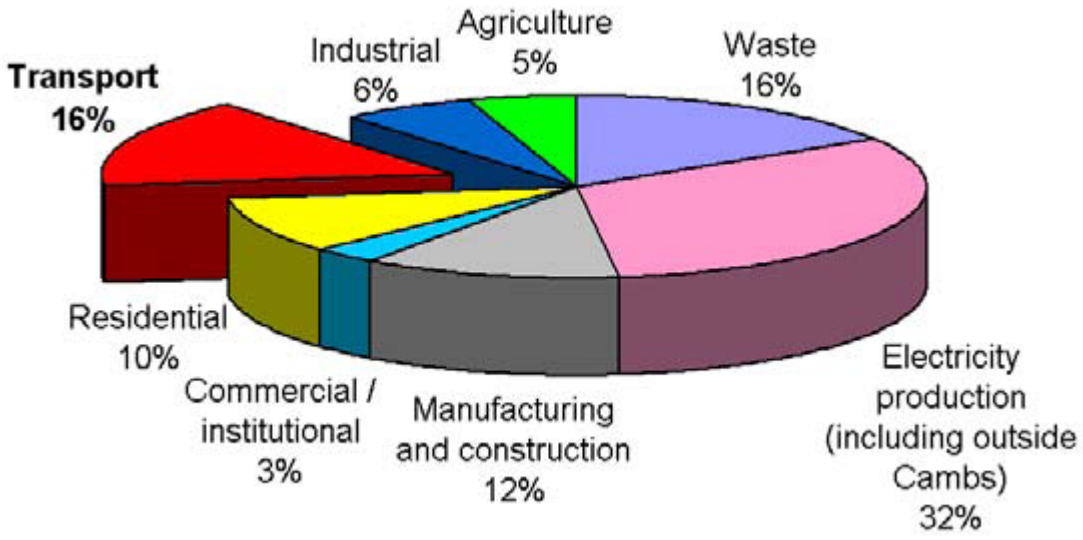
2.16 Road transport is the main source of local air pollution in Cambridgeshire. Since 1990, as a result of rapid economic and housing growth, the use of motorised transport in Cambridgeshire has increased at more than twice the national rate. The resulting increase in transport related emissions has had a substantial impact on air quality, particularly in urban areas, and primarily with concentrations of nitrogen dioxide (NO_2) and, to a lesser extent, fine particles (PM_{10}).

2.17 As a result of transport emissions, several areas in the county are exceeding National Air Quality objective levels for NO_2. An Air Quality Management Area (AQMA) was designated in Cambridge City in 2004 to tackle levels of NO_2. However, forecast population and traffic growth will make it increasingly challenging to meet local air quality objectives.

2.18 Similarly transport sector emissions have continued to add to national air quality problems, contributing 16% of total greenhouse gas emissions (as CO_2 equivalents), which are now widely accepted as a key factor contributing to climate change. Between 1992 and 2002, against a backdrop of declining emissions from all other sources (as a result of changing techniques, increased efficiency and a decline in manufacturing), road transport emissions increased by over 10%. This is despite technological changes that have increased fuel efficiency, and reflects the increased volume of road transport.

2.19 Figure 2.1 shows the sources of greenhouse gases (as CO_2 equivalents) in Cambridgeshire, and shows that transport contributes 16% of the total emissions.

Figure 2.1 - Greenhouse Gas Emissions in Cambridgeshire



Road Safety

2.20 Increased traffic volumes can also have a detrimental impact on road safety and accidents cost Cambridgeshire and Peterborough combined some £274million per annum. Between 1996 and 2006, in Cambridgeshire, the number of deaths and serious injuries fell by 20%. This is against a backdrop of a 30% increase in traffic over the same period. In 2008 the number of deaths and serious injuries (combined) was 38% less than the 1994-98 average, and the number of slight injuries was 15% lower. Furthermore, over this period child deaths and serious injuries have reduced by 60%.

2.21 The number of casualties per million vehicle kilometres (an indicator of risk) on the main rural and urban roads in Cambridgeshire in 2007 showed that the roads are slightly less dangerous than the national average. Whilst it is recognised that above average traffic density on rural roads is a significant factor in Cambridgeshire's high per capita casualty rate, growth in traffic volumes will make meeting national targets for casualty reduction even more challenging.

Bus Patronage

2.22 Bus patronage in Cambridge grew by 100% between 2001 and 2008. The expansion of the Cambridge Park and Ride system, the introduction of the 'Citi' network, with increased service frequency and new vehicles from Stagecoach combined to markedly improve the service on offer. Countywide, growth has also been strong, with patronage rising from 15.1 million boardings a year in 2001 to 24.3 million boardings a year in 2008, a rise of 61%. The opening of the Cambridgeshire Guided Busway in November 2009 will help maintain this strong growth in patronage.

Rail Patronage

2.23 The rail corridor on which Cambridge sits is one of the fastest-growing in the country. As well as Cambridge itself, the main markets are for commuter travel to London (especially to the city and Docklands), and leisure travel (particularly to Stansted airport).

2.24 Cambridge station is well used and in 2007, had just over 12,000 daily boarders and alighters[4]. The station forecourt, which acts as an interchange with local buses and taxis as well as kiss and ride, is subject to local congestion problems. Network Rail are planning to install an island platform by 2012 to help overcome operational constraints whilst the provision of a new station to the north of Cambridge at Chesterton, as proposed in this document, will significantly ease congestion issues at the main railway station and on the highway network through Cambridge.

Growth Context

2.25 In May 2008 the Regional Spatial Strategy (RSS) (East of England Plan) was published covering the period up to 2021. Shortly after (Autumn 2008) the Regional Economic Strategy (covering the period 2008-2031) was also published.

2.26 Both of these documents place a strong emphasis on promoting sustainable development, with a focus on growth within urban centres (based on key sectors and clusters) promoting social inclusion, ensuring the highest standards of environmental protection, and ensuring that transport supports these wider objectives. Both of the documents carry forward the aim of the Cambridgeshire and Peterborough Structure Plan 2003, to provide for a sustainable pattern of development whilst accommodating growth and maintaining a better balance between employment and housing.

2.27 The East of England Plan (2008) sets out growth targets to cater for large increases in housing and employment. Table 2.2 summarises the targets for net growth in jobs in Cambridgeshire and Peterborough and Table 2.3 summarises the target levels of dwelling provision in Cambridgeshire through to 2021.

Table 2.2 - Targets for Net Growth in Jobs

	Net Growth in Jobs
Cambridgeshire (Cambridge/South Cambs/East Cambs/Huntingdon/Fenland)	50,000
Peterborough UA	20,000
Total	**70,000**

[4] Network Rail Counts January 2007

Table 2.3 - Proposed Dwelling Provision

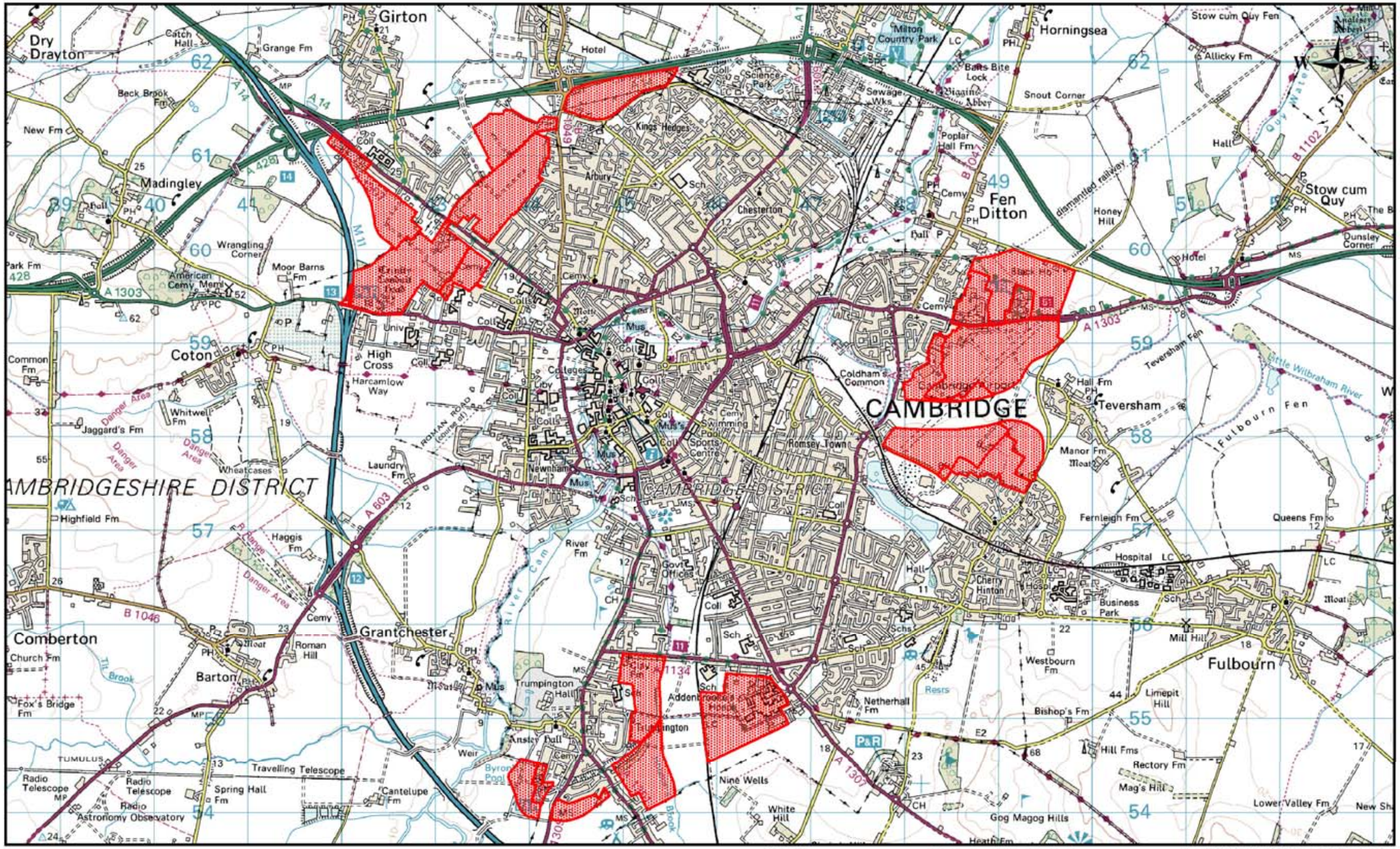
Area/District	Minimum Dwelling Provision, 2001 to 2021		
	Total to build	*Of which already built*	Minimum still to build
	April 2001 to March 2021	*April 2001 – March 09*	April 2009 to March 2021
Cambridge	19,000	4,107	14,893
East Cambs	8,600	5,108	3,492
Fenland	11,000	5,352	5,648
Huntingdonshire	11,200	5,133	6,067
South Cambs	23,500	6,431	17,069
Cambridgeshire	**73,300**	**26,131**	**47,169**

2.28 The East of England Plan identifies the need for a comprehensive approach to securing the necessary infrastructure to support the development strategy for the sub-region, noting that Local Development Documents (LDDs) should provide for development in the sub-region focused on making the most of potential in the following order of preference:

- in the built-up area of Cambridge, subject to considerations of environmental capacity;
- on the periphery of the built-up area of Cambridge, on land released from the Green Belt following the Cambridgeshire and Peterborough Structure Plan 2003 and through the Cambridge Local Plan and LDDs prepared by the local planning authorities;
- at the new settlement of Northstowe, linked to the guided busway; and
- on land within or on the peripheries of the sub-region's market towns and within key service centres (or on the peripheries of key service centres, mainly limited to existing commitments), where such development would contribute to the social and economic needs of the community and good public transport exists or can be provided.

2.29 The scale of growth proposed is significant with over a third of dwellings proposed for development sites in and around Cambridge as shown on Figure 2.2.

Figure 2.2 - Development Sites around Cambridge



2.30 The importance of Cambridge and the Cambridge sub-region[5] in delivering housing growth in the East of England should not be underestimated. This is reflected in the East of England Plan where the area is identified as:

- Part of the London-Stansted-Cambridge-Peterborough growth area;
- A Key Centre for Development and Change;
- A Regionally Strategic Employment Location;
- A Cluster Development site for a life-science regional super-cluster;
- A city of strategic importance for retail and other town centre activities;
- An historic tourist attraction whose character should be protected and enhanced;
- A Regional Transport Node; and
- An area likely to come under increasing transport pressure as a result of underlying traffic growth and the development strategy of the RSS.

Implications for Transport

2.31 It is the scale of the transport pressure for which the Council must now forward plan. Through the development of the LTTS, work was undertaken to assess the impacts of forecast growth on the transport network. This forecasting work took account of schemes which are already committed e.g. Cambridgeshire Guided Busway, as well as long-term proposals such as the A14 widening between Ellington and Fen Ditton. Even with these schemes in place, by 2021 the modelling work at that time demonstrated that there will be significant increases in, and unacceptable levels of congestion on, the network in and around Cambridge. Key impacts are summarised below.

In the Cambridge Urban Area

- a minimum of 32,500 extra inbound trips to the city in the morning peak period;
- a 46% increase in total travel time in the Cambridge urban area, with significantly higher increases on individual roads;
- an 11% reduction in average speeds;
- an 84% increase in delay at junctions.

Within the City boundary

- a 12% increase in transport related CO_2 emissions.

In the Wider Cambridge Sub-Region

- a 23% increase in travel time;
- a 16% increase in distance travelled.

2.32 These figures represent a comparison with the current day network which is already congested. Many people consider present day travel conditions unacceptable despite peak hour and daily movements in Cambridge (entering and leaving the city)

[5] The Cambridge sub-region comprises Cambridge and the surrounding area as far as and including the ring of market towns of Chatteris, Ely, Haverhill, Huntingdon, Newmarket, Royston, St Neots, St Ives and Saffron Walden.

having remained static in the last 10 years. This success has been achieved through a variety of measures, including:

- the implementation of the Cambridge Core Traffic Scheme;
- the implementation and upgrade of the five urban Park & Ride sites serving Cambridge; and
- the extension of retail opportunities at weekends, extended shop opening hours and expanded convenience shopping opportunities within Cambridge.

2.33 Although the development pressures will result in general increases in traffic across the network, an analysis of forecast highway conditions in 2021 shows that whilst most of the links operate within capacity[6], at the junctions themselves there will be significant congestion. There are specific locations where additional traffic loading results in large increases in congestion and delay, and more detailed analysis demonstrates that sections of the network will be operating well in excess of capacity. The most significant of these include:

- junctions within Cambridge city;
- A10 Ely to Milton Interchange;
- sections of radial routes into Cambridge;
- A428 St. Neots to Caxton Common; and
- A505 to the east of M11 (Junction 10) at Duxford.

2.34 In reality, however, the effects would be much wider with increases in journey times, decreasing journey time reliability and the ability of small scale incidents to have a disproportionate effect on network performance (as is the case on the A14 now). With Cambridge the largest employment attractor in the county, increased congestion would equally affect residents in the rural areas, who would face difficulty in accessing the city by public or private transport.

2.35 Increases in traffic volumes and decreasing vehicle speeds are also likely to result in increased pollution and an associated worsening in local air quality.

2.36 Since the submission of the OPF, significant work has taken place to develop an enhanced integrated model known as the Cambridge Sub Regional Model (CSRM). This allows stand-alone testing of road, public transport, cycle and walking schemes, as well as complex tests of strategic policy options incorporating land use responses.

2.37 The updated modelling work has supported the findings of the earlier modelling conducted for the OPF but demonstrated that the earlier work had underestimated the scale of these issues. The 2021 Do-Minimum scenario (i.e. future year with no Package) would result in a significant increase in highway trips (compared to the Base Scenario) in Cambridge city. Within the City Boundary this means greater distance travelled by car, greater delay in hours, and consequently an increase in CO_2 emissions. This information is summarised in Table 2.4 below and discussed in further detail in Chapter 6 of this report.

[6] Capacity relates to the hourly traffic flow which a road of a given type is conventionally assumed to accommodate without undue delay to drivers.

Table 2.4 - Effects of a Do-Minimum Future Year Scenario

Indicator	Comparison 2006 Base Year and 2021 DM
Change in highway trips	+48%
Distance travelled by car	+36%
Delay (hours)	+67%
Transport related CO_2 emissions	+8%
Overall time spent on highway in Cambridge	+37%

Rail Demand Forecast

2.38 For the rail network, the Greater Anglia Route Utilisation Strategy (RUS) is forecasting that the West Anglia zone, which includes Cambridge station, will have between 13% and 19% more passengers by 2021.

2.39 To cope with the forecast increase in passengers, the Government's DaSTS strategy suggests that train and platform lengthening are required on the Stansted corridor to provide 12-car operations by 2014. In the longer-term, there are plans to further enhance services on the West Anglia Main Line.

The Challenge

2.40 Looking to the future, the challenge for the county is how to support the economic growth of Cambridgeshire, using spatial and transport strategies and available funding mechanisms, to ensure that increases in housing and employment can be delivered and do not compromise quality of life and quality of environment. In order to do this, the Council and its partners must find a way to manage demand and provide attractive and viable alternatives to private car travel. The challenges are recognised consistently at the local and national level. The Government's DaSTS strategy demonstrates that the goals of Cambridgeshire to achieve a sustainable transport system are equally shared by central government.

2.41 The challenge is recognised in Policy CSR4 (Transport Infrastructure) of the East of England Plan which notes that

"New transport infrastructure requirements arising from development in the Cambridge sub-region should build upon the existing high quality public transport systems, high levels of cycling and demand management measures. The aim should be to reduce the need to travel, especially by car and secure the fullest possible use of public transport, cycling and walking. Strategic transport provision should take into account Cambridge's position at the junction of major east-west and north-south routes."

2.42 The East of England Plan goes on to identify the integration of development with new and upgraded transport infrastructure as key to the successful implementation of the strategy for the Cambridge sub-region.

"New transport infrastructure requirements arising from development in the Cambridge sub-region should build upon the existing high quality public transport systems, high levels of cycling and demand management measures".

2.43 Therefore, as well as addressing local objectives, the proposed Package of Transport Improvements must also seek to meet the requirements of the East of England Plan and those of DaSTS. These challenges are reflected in the Package objectives described below.

PACKAGE OBJECTIVES

2.44 Addressing the challenges noted above in terms of transport provision and supporting growth is the key objective of the revised TIF proposition.

2.45 At the highest level a series of issues have guided the principles on which the components of the Package have been developed:

- The need for long term planning for sustainable economic growth;
- The need for congestion reduction;
- The need to secure high quality alternatives to the car.

2.46 These strategic aims are supported by specific local objectives which were identified in the LTTS, reflecting as they do the Local Transport Plan objectives, and which set out the framework for the Package development. These are:

- Providing high quality, safe and realistic travel choices;
- Improving accessibility for all;
- Creating a transport system that is fair and equitable;
- Reducing transport related CO_2 emissions and addressing specific air quality issues caused by transport;
- Improving road safety; and
- Promoting the economy of Cambridgeshire.

2.47 The following chapter sets out the detail of our bid under TIF and how this differs from our Outline Proposal for Funding that was submitted to Government in 2007.

STRATEGIC FIT OF THE TIF PACKAGE

2.48 The remainder of this Chapter illustrates how the Council's TIF Package helps deliver and complies with national priorities, including meeting Congestion TIF criteria, and regional and local priorities.

Assessment Against National Priorities

2.49 Since the publication of the OPF in 2007, the Government has set out a new framework for its national transport strategy, building on the Government's 'Towards a Sustainable Transport System' Report. The principles of the new strategy are strongly influenced by the conclusions from both the Stern Review on Climate Change (October 2006) and Eddington Report on the linkage between transport and the economy (June 2007).

2.50 Stern concluded that catastrophic Climate Change would have a huge economic cost if not ameliorated. This report was the main proponent of the Government's subsequent Climate Change Bill.

2.51 The Eddington study concluded that transport was vital to the economy of the UK and suggested a high-level strategy of focussing efforts on targeting the most seriously congested parts of the urban, national and international transport networks. The strategy would necessitate not only new transport infrastructure, but also to make the most out of existing networks with good regulation.

2.52 There is therefore a necessity to explore how the TIF Package is framed by the most up to date Government Policy. Due consideration has therefore been taken of DaSTS.

2.53 Within DaSTS, the Government has set five high level transport goals:

- to support national economic competitiveness and growth, by delivering reliable and efficient transport networks;
- to reduce emissions of carbon dioxide and other greenhouse gases from transport, with the desired outcome of tackling climate change;
- to contribute to better safety, security and health and longer life expectancy by reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health;
- to promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society; and
- to improve quality of life for transport users and non-transport users, and to promote a healthy natural environment.

2.54 These Government goals are consistent with Cambridgeshire's Transport Objectives, as illustrated in Table 2.5.

Table 2.5 – Comparison of DaSTS Goals with Cambridgeshire's Transport Objectives

Cambridgeshire Transport Objectives	DaSTS Transport Goals				
	1. Support economic competitiveness & growth	2. Tackle climate change	3. Better safety, security & health	4. Equality of opportunity	5. Improve quality of life/promote a healthy natural environment
Tackle Congestion	✓✓	✓✓	✓		✓
Provide high quality, safe and realistic travel choices	✓	✓	✓✓	✓	✓
Improve accessibility for all	✓		✓	✓✓	✓✓
Create a transport system that is fair and equitable				✓✓	✓✓
Reduce transport related CO_2		✓✓	✓✓		✓✓

Cambridgeshire Transport Objectives	DaSTS Transport Goals				
	1. Support economic competitiveness & growth	2. Tackle climate change	3. Better safety, security & health	4. Equality of opportunity	5. Improve quality of life/promote a healthy natural environment
emissions and address specific air quality issues caused by transport					
Improve road safety			✓✓	✓	✓
Promote the economy of Cambridgeshire.	✓✓				

Key: ✓✓ Consistent ✓ Broadly Consistent

Assessment Against TIF Objectives

2.55 The "TIF Guidance on Business Case Requirements for Programme Entry" requires schemes applying for funding to "contribute towards the Government's overall objectives on road pricing" by informing "work to develop more sophisticated and widespread Road Pricing Schemes". TIF bids are assessed against the following objectives:

- their potential to be effective in tackling a current or emerging congestion problem, so that transport can promote wider economic growth, social inclusion and environmental objectives, in a sustainable way;
- the extent to which the scheme fits with the Government's strategic aims and objectives for road pricing, through improved understanding of scheme design, technology, implementation and operation;
- the extent to which they combine effective demand management with better public transport, especially bus service improvements, in mutually supportive packages;
- the potential of ideas/approaches to be transferred elsewhere;
- the potential for public transport patronage growth;
- the extent of coverage of the scheme proposed. We expect to give greater weight to schemes where the impact of the scheme could bring benefits across a wide geographical area;
- the long term financial impacts of the scheme.

2.56 Table 2.6 below sets out how the Cambridgeshire TIF Package meets the DfT's Congestion TIF Objectives based on the Congestion Charging Scheme in the OPF. However, as noted elsewhere in this document, the nature of the Congestion Charging Scheme will be reviewed and developed over the next 12-15 months.

Table 2.6 – Comparison of Package with TIF Objectives

Congestion TIF Objective	Compliance
Potential to be an effective way of addressing a current or emerging local congestion problem, so that transport can promote economic growth, social inclusion and environmental objectives in a sustainable way.	The results set out in Chapter 6 illustrate the impacts of the Package and its ability to contribute to the amelioration of the congestion problems which are forecast to occur across the transport network without the Package in place. By reducing congestion on our roads, more employees will spend less time commuting to and from work and less time travelling on business. This will assist economic growth through greater productivity during the working day. Transport has a fundamental role to play in promoting social inclusion by improving accessibility to key services. Congestion can inhibit the effective working of the transport network and so hinder people's ability to access the services and facilities they need. By tackling the congestion problem, in turn, social inclusion issues may be addressed. In addition, through increases in public transport network coverage and service frequency, the Package will help to provide better links between residential areas and key employment and service locations. The Package seeks to significantly reduce vehicle kilometres which will contribute to overall reductions in CO_2 emissions and improvements in the environment of a number of streets within Cambridge.
The extent to which the scheme fits with the Government's strategic aims and objectives for road pricing, through improved understanding of scheme design, technology, implementation and operation;	Regular consultation with DfT officers during the design of the Congestion Charging Scheme developed for the OPF and presented in this document has ensured that the scheme architecture and associated assumptions embraced the principles of interoperability. The Council has played an active role in the Interoperability Forum. In developing the Congestion Charging Scheme further in the next 12-15 months, continued liaison and joint working through *Partnership Status* will ensure that these same principles are adhered to.
The extent to which they combine effective demand management with better public transport, especially bus service improvements, in mutually supportive packages;	The Package is made up of two key components, the Transport Improvements Strategy to be implemented first followed by a Congestion Charging Scheme when that is needed. The focus of the Transport Improvements Strategy is to provide a comprehensive network of viable alternatives to private car travel. This encompasses all modes but is centred on the provision of a High Quality Public Transport network which is supported by dedicated infrastructure improvements and frequency enhancements, service improvements to the wider bus network, an integrated network of Park & Ride sites and services, and enhancements to the rail network through the provision of a new station at Chesterton supported by additional services.

Congestion TIF Objective	Compliance
	The elements within the overall package are mutually supportive; the Transport Improvements will be in place before the implementation of a Congestion Charging Scheme. This is critical in ensuring that people have a viable alternative to using their car for journeys made during the morning peak.
The potential of ideas/approaches to be transferred elsewhere;	The detailed analysis and testing that was carried out and documented for the proposed Cambridgeshire Congestion Charging Scheme design (i.e. the volume, cost, functional models, and the associated procurement and governance proposals) contained in the OPF and work with DfT since then provides a benchmark reference case for other small and medium size city scheme proposals to follow. Further development work will be undertaken over the next 12-15 months to firm up the Council's proposals.
The potential for public transport patronage growth;	Under the two hypothetical scenarios tested, demand for bus and HQPT increases significantly as a result of the combination of the Congestion Charge and the Public Transport Improvements element of the Package, as Chapter 6 demonstrates. A substantial increase in the number of passengers boarding buses is anticipated.
The extent of coverage of the scheme proposed. We expect to give greater weight to schemes where the impact of the scheme could bring benefits across a wide geographical area;	The extent of the Congestion Charging Scheme proposed in the OPF remains unchanged for this submission but will be reviewed over the next 12-15 months. In brief, the OPF charging area was largely bound by the A14 to the north, the M11 to the west and by the edge of the built up area of Cambridge to the south and east (including Trumpington and Shelford to the south, and Cherry Hinton and the proposed new development 'Cambridge East' to the east). Existing and proposed Park and Ride sites and the proposed Chesterton Station all lay just outside of the proposed zone. This will encourage a switch to public transport modes, even for those people where public transport from their origin is not viable.
The long term financial impacts of the scheme	The scale of investment required from central Government represents high value for money. Revenues from the Congestion Charging Scheme will be used to off-set the operating costs of the scheme. The annual operating costs will not exceed the target of 25% of the revenues. It is not anticipated that on-going revenue support will be required from Government, in fact a surplus of revenue is forecast.

Assessment Against Regional and Local Priorities

2.57 Within Cambridgeshire, the main planning policy documents which affect the implementation and delivery of the Package are:

- Regional Spatial Strategy (East of England Plan) including the Regional Transport Strategy;
- Regional Economic Strategy;
- Cambridgeshire and Peterborough Structure Plan (2003);

- Local Plans and Development Frameworks and Area Action Plans; and,
- Long Term Transport Strategy and Local Transport Plan.

Regional Spatial Strategy (East of England Plan) and Regional Transport Strategy (RTS)

2.58 The East of England Plan is the Regional Spatial Strategy (RSS) for the East of England and sets the framework within which Local Development Documents should be brought forward. The Plan outlines a strategy for the development of the region to 2021. The strategy covers Cambridgeshire, Hertfordshire, Essex, Norfolk, Suffolk and the unitary authorities of Bedford, Central Bedfordshire, Luton, Peterborough, Southend-on-Sea, and Thurrock. A key influence on the Plan has been the Government's Sustainable Communities Plan (2003).

2.59 There are a number of key policy objectives within the Plan which are relevant to the implementation of the Package. All of these objectives are further reinforced by the Regional Transport Strategy (RTS - a key element of the East of England Plan). The key objectives of this RTS are to widen travel choice and to promote opportunities for mode shift away from private car use. In particular walking, cycling and public transport are identified as integral to the delivery of sustainable communities, especially in areas of proposed housing growth.

2.60 Table 2.7 below sets out how the TIF Package complies with the key objectives in the East of England Plan / Regional Transport Strategy.

Table 2.7 - Compliance of TIF Package with the East of England Plan and Regional Transport Strategy Objectives

Key Objective	Compliance
Deliver integrated transport systems, relating closely to development patterns	Implementation of the Package will provide public transport, walking and cycling links to, and within, all new developments within Cambridge. Public transport improvements will be centred around the HQPT network which will directly serve the proposed development sites at Cambridge East, Cambridge North West (University and NIAB sites), Cambridge Southern Fringe and Cambridge Northern Fringe. Improvements to the public transport network will be reinforced and supported by the Smarter Choices Strategy.
Improve social inclusion, access to employment, services, leisure and tourist facilities	Through increases in network coverage and service frequency enhancements the Package will help to tackle social inclusion, providing better links between residential areas and key employment and service locations. In line with DfT guidance, particular emphasis will be placed upon improving access to health services, supermarkets, schools, other educational institutions and local centres.
Improve air quality through better controlled and managed traffic flows	With the Package in place there will be a significant reduction in vehicle kilometres in Cambridge. This reduction will be achieved through the combined effects of the Transport Improvements and the Congestion Charging Scheme when it is needed. The reduction in vehicle kilometres will contribute to overall reductions in CO_2 emissions.

Key Objective	Compliance
Protect and enhance the historic character and the setting of Cambridge	The forecast reduction in car trips across the network in the city will contribute to an improvement in the general townscape, lessening the intrusive impact of motor vehicles and giving rise to a more pleasant environment for travel by non-motorised modes. Proposed Public realm improvements will improve key walking routes and crossing facilities within the city centre which will help to protect and enhance the historic character of Cambridge. Development of the Transport Improvements will be undertaken in conjunction with stakeholders, along with public consultation.
Cater for growth in the Cambridge area	The implementation of the Package will directly facilitate the delivery of the growth agenda. Without the extensive network of Transport Improvements, supported when needed by a Congestion Charging Scheme, the growth identified for Cambridge could not be accommodated on the transport network.

Regional Economic Strategy

2.61 A Shared Vision - The Regional Economic Strategy for the East of England (RES) sets the long-term vision for the sustainable economic development of the East of England. The strategy provides a framework within which organisations can work together to improve the region's economic performance and the quality of life for those who live and work here. The RES strives to ensure a suitable supply of homes to support economic growth within the region whilst also ensuring the provision of a sustainable network which can both support and provide for the growth. The RES promotes the delivery of strategic road, rail and public transport priorities and fully supports the implementation of the RTS. Two of the RES 'Goals' are of specific relevance to the delivery of the Package. Table 2.8 below sets out how the TIF Package is consistent with these two RES Goals.

Table 2.8 - Compliance of TIF Package with the Regional Economic Strategy Goals

RES Goal	Compliance
RES Goal 4 – high quality places to live, work and visit	Primarily this objective seeks to ensure adequate housing supply, supply of business land and premises and social and transport infrastructure. Implementation of the Package will support delivery of this objective in a number of ways. The Package will: Facilitate the planned growth in housing and employment within the Cambridge sub-region and the subsequent demand for travel through the introduction of the proposed Transport Improvements to provide alternative travel choices, and when needed the Congestion Charging Scheme to encourage mode shift away from private car use. Deliver significant enhancements to social and transport infrastructure within Cambridgeshire. Given their significant and wide ranging nature, the proposed Transport Improvements will enhance the transport network. However, whilst the Congestion Charging Scheme will only be operational in the AM peak period, the Transport Improvements will remain in place throughout the day providing improved travel choices for all trip purposes across all time periods.

RES Goal	Compliance
Goal 5 – social exclusion and broad participation in the regional economy	This objective places a strong emphasis on promoting social inclusion, tackling barriers to participation and providing better access to services. The Package will support the delivery of this objective through: Development of an extensive public transport network, with enhanced service frequencies and, where necessary, dedicated infrastructure to deliver quicker and reliable journey times. Development of an extensive cycle network, with a combination of on and off road routes, catering for different types of journey and linking key destinations within Cambridge city and the surrounding villages. Provision of comprehensive information about travel choices and initiatives to promote alternative modes through the Smarter Choices Strategy

Local Plans and Development Frameworks

2.62 Local Plans are currently under review as Local Development Frameworks are developed for each district.

2.63 The existing Cambridge Local Plan sets out policies and proposals for future development and land use to 2016 which are in line with those identified in the Structure Plan.

2.64 Walking and cycling measures are given a high priority within the Plan and it is clearly acknowledged that one of the best ways to encourage these modes is to include them at the planning stages of any new developments, business or residential. The Plan is keen to enhance existing pedestrian and cycle routes throughout Cambridge as well as safeguard land in new development proposals that link into the existing network.

2.65 In the same way that the Package contributes to the delivery of the Cambridgeshire and Peterborough Structure Plan objectives, it will also contribute to those of the local planning documents.

Cambridgeshire Local Transport Plan (LTP) and Cambridgeshire Long Term Transport Strategy (LTTS)

2.66 Cambridgeshire's Second Local Transport Plan (LTP2) sets out the vision and detailed proposals for the Cambridge Sub Region for the period 2006-2011. LTP2 identifies several strategic corridors where the growth of trips will be concentrated and where transport improvements should be implemented. LTP2 also includes individual strategies for each mode, which set out in greater detail specific proposals and how these will contribute to achieving the objectives set within the document. The six key objectives of LTP2 are integral to achieving sustainable growth whilst also meeting specific local needs.

2.67 Cambridgeshire, as part of a growth area, has transport needs far greater than those that can be dealt with within the scope of LTP guidance. The Council has therefore developed a Long Term Transport Strategy (LTTS) for Cambridgeshire.

2.68 The strategy identifies future issues linked to the substantial growth planned for the Cambridgeshire sub-region and proposes strategies to provide "a transport system that supports economic growth, enabling development to take place in a sustainable way". Themes of the strategy include smarter choices, better conditions for walking and cycling, better public transport, and highway management. An integral component is the inclusion of demand management to ensure successful delivery of the strategy.

2.69 The Package objectives closely reflect those of the LTP and the Package itself has been developed in the context of the recommendations set out in the LTTS. It therefore incorporates all of the components identified for the successful delivery of the strategy.

2.70 By March 2011 the third Cambridgeshire Local Transport Plan (LTP3) will have been adopted. The principles that underpin the strategy contained in LTP2 and informed the development of the Proposals will continue to underpin LTP3.

STAKEHOLDER MANAGEMENT

2.71 As part of the OPF, a wide range of consultation and assessment of stakeholder views was undertaken. This consisted of:

- Media relations, advertising and direct mail to raise awareness of the Council's proposals for tackling congestion
- New web pages with information about the proposals
- 37 public roadshows across Cambridgeshire giving people the opportunity to find out more about the proposals
- An online survey which generated 3,200 responses
- Face-to-face surveys conducted by an independent research company, mruk research, with 676 attendees at the roadshows and with 1,100 residents of Cambridgeshire in their homes
- 9 Facilitated workshops attended by representatives of 173 local businesses, organisations and groups
- Presentations and meetings with local businesses, organisations and groups

2.72 Three reports which set out the detail and outcome of the engagement and communications programme have previously been supplied to DfT and are available on the Council's website.

2.73 The key findings arising from the random, in-house surveys with 1,100 residents of Cambridgeshire included:

- Nearly all respondents (82%) thought congestion was a serious problem in Cambridge with 40% stating it was a very serious problem
- Respondents said the main ways to reduce congestion were cheaper fares on public transport, more frequent public transport and more reliable public transport

- Three quarters of respondents said they would use their car less if there were suitable alternative ways to travel (76%)

- Half the respondents said they could be persuaded to reduce their car use if it helped ease congestion in Cambridge (50%). Online respondents were less likely to say they could be persuaded to reduce their car use

- A third of respondents supported the principle of congestion charging (32%) and half (49%) opposed the principle. Two thirds of online respondents (67%) opposed the principle of congestion charging.

- Over half the respondents (55%) would support congestion charging if all revenues raised were spent on improving transport in Cambridgeshire. A similar percentage of road show respondents would support congestion charging under this scenario (60%), whilst only two fifths of online respondents (41%) would support congestion charging under this scenario.

- Two fifths of respondents (44%) would support congestion charging if it was only introduced between 7.30-9.30 am, Monday to Friday. Again, a similar number of road show respondents would support congestion charging under this scenario (45%), but fewer online respondents (28%) would support congestion charging under this scenario.

- Nearly two thirds of respondents (59%) would support congestion charging if attractive alternatives were in place for travelling in Cambridge. Road show respondents were most likely to support congestion charging under this scenario (66%) and 50% of online respondents would support congestion charging under this scenario.

2.74 During the process stakeholders and the public raised a number of key issues including the need for:-

- details/specifics about the public transport, cycling, walking and other improvements that will be made before a congestion charge is introduced.

- innovative school travel solutions (e.g. yellow buses and P&R for schools).

- cheaper bus travel.

- significant improvements to rural bus services.

- increased parking charges to dissuade more people from driving into the city.

- extra roads in the City (e.g. an inner ring road).

- consideration of the impact of additional bus services in the City Centre.

- discounts and exemptions from the congestion charge. Suggestions made included City residents, Emergency Services, Blue Badge holders, patients, staff and visitors to Addenbrooke's Hospital and utility companies.

2.75 These issues will be addressed as part of the full business case submission planned by the end of 2010.

2.76 In addition to the 2008 public consultation work considerable engagement has taken place more recently with the business community and wider stakeholders and public through a business and economic impact study and via the work of the Cambridgeshire Independent Transport Commission.

Business and Economic Impacts Study

2.77 The Business and Economic Impact study looked at the potential business and economic impacts of the TIF package to identify the likely impacts of the package of transport improvements on the local businesses and the economy. The question at the heart of the study was, 'If the package goes ahead as outlined in the TIF proposal, how might this affect local businesses and thereby the local economy?' utilising three research methods:

Business Surveys

2.78 The main quantitative part of the research was a telephone survey of over 800 businesses based in Cambridge City, South Cambridgeshire, East Cambridgeshire and selected market towns.

2.79 The survey sample was designed to provide a representative sample of businesses based on geographic location and business sector. The survey data was weighted to ensure the sample represented the total business population by geographic area, business sector and size of business (number of employees). The survey covered the following topics:

- Company information, including:
  - Staff travel to work
  - Visitors and deliveries
  - financial performance
  - current transport patterns
- Perceptions of congestion
- Knowledge of transport proposals
- Opinion of transport proposals

Workshops

2.80 Four workshops were held, involving a range of organisations representing different aspects of a particular sector of the local economy. The workshops were designed to explore the potential impacts of the transport proposals on business and employees in each sector. Each workshop lasted 3 ½ hours and involved the following sectors:

Workshop 1 - High Tech industry, Manufacturing, Construction

Workshop 2 - Financial & Business Services, Property

Workshop 3 - Transport & distribution, Retail

Workshop 4 - Public administration, Health & Education

2.81 The purpose of the workshops was to gain in-depth qualitative information from participants, to supplement that gained from the business survey. In addition, they provided an opportunity for the County Council to describe the TIF Package and individual schemes in detail so that participants had an accurate and comprehensive picture of them. The workshops were also used to explore issues in detail and discuss and challenge opinions.

Case Studies and Market Studies

2.82 The sectors which were explored in detail in the case study and market study work include:

- Manufacturing companies
- Health sector
- Retailers
- Distribution / logistics businesses
- High tech. industry
- Public sector administration
- Education sector
- Tourism

2.83 The case study work was designed to explore, for a small number of organisations in each sector, how individual businesses might adapt to the proposed transport proposals. This work included how they expected to mitigate the costs of the Congestion Charging Scheme while taking advantage of the benefits of reduced congestion, improved public transport and more attractive urban realm. In total 25 case studies were conducted.

2.84 Overall, the study demonstrated that the need to tackle congestion is widely recognised amongst business.

2.85 Looking at the specific TIF package proposals over 60% of businesses surveyed based in Cambridge thought that the transport proposals would definitely or possibly reduce congestion. A sizeable majority thought that the proposals would definitely or possibly encourage use of public transport, more walking and cycling.

2.86 Based on the business survey, just over a quarter of businesses in Cambridge showed support for the transport proposals while over half opposed the proposals to some extent. Participants in the business workshops exhibited more positive views after the workshop sessions with 45% of business supporting the proposals and 20% opposing the proposals to some extent.

2.87 Statistical analysis of the business survey showed that businesses would support the proposals if they believed that they would improve Cambridge as a place to

live/work/visit, reduce congestion and not have an effect on business competitiveness.

2.88 The study identified a number of risks to business of a Congestion Charging Scheme but concluded that if these risks can be sufficiently reduced (it suggested it is not realistic to expect them to be eliminated entirely) the overall package would have a positive impact on the local economy as a whole.

The Cambridgeshire Independent Transport Commission

2.89 In January 2009 an Independent Transport Commission, chaired by Sir Brian Briscoe, was set up to review the Council's OPF and make suggestions for how, and if, the proposals should be modified and also to assess if there were any other ways of tackling the transport problems. A key part of the Commission's work was to seek and understand the views of the public, key organisations and groups and this was achieved through a call for evidence running from 27 January 2009 through to 13 March and by a series of 15 public hearings held between April and July.

2.90 During the call for evidence period, an online survey was conducted along with substantial publicity around the Commission and the evidence call. In total 1000 responses to the online survey were received along with around 130 individual letters or emails to the Commission. At the 15 public hearings the Commission heard from 53 different organisations and 119 witnesses.

2.91 The Commission published its final report in July 2009 and DfT have received a copy of this. In summary, the Commission noted that there was general support from witnesses for the TIF investments and recommended that this business case bid be made to Government and that the Transport Improvements are fully implemented.

2.92 The Commission stressed that Government need to be aware that the existing proposals for Transport Improvements are the very least that could be delivered so as to have any hope of convincing the residents of Cambridgeshire that they might, in the longer-term, accept a congestion charge.

2.93 They suggested that when the impacts of the Transport Improvements are effective and understood, it would be possible to move on to some form of congestion charging if congestion targets had not been achieved but this was unlikely to be practical before 2017 given the timescales necessary to deliver the Transport Improvements.

2.94 The Commission also suggested that it is not appropriate at this stage – several years before possible implementation – to make specific proposals for a congestion charge regime. However, their view was that if the Congestion Charging Scheme is to achieve its maximum effect as a demand management measure, exemptions and discounts should be restricted to a minimum and should contribute to the success of the scheme.

CONCLUSIONS

2.95 The Cambridge area is widely regarded as the economic hub of the East of England and plays an important national role as the scientific and research capital of Great Britain. In the Cambridge sub-region, growth to date has placed a considerable strain on transport infrastructure. In order to deliver further housing and economic growth, whilst protecting the environment, quality of life and ensuring that the benefits of

growth are shared, it is essential that travel demand arising from future growth is effectively managed.

2.96 Current transport trends demonstrate that whilst much has been achieved, if the scale of growth envisaged is to be accommodated, a step change in transport infrastructure provision will be needed, coupled with a significant mode shift away from the private car.

2.97 Looking to the future, the East of England Plan sets the context for substantial housing and employment growth in the county. This is driven by the high level of economic growth particularly around Cambridge, focused on education and research, and the increase in through traffic on the M11 corridor to London, and the A14 corridor from the Midlands to the Haven ports. The challenge for the county is therefore how it will support this economic growth.

2.98 The TIF Package, which is fully compliant with national, regional and local policy frameworks, contains objectives and proposals which will help to ameliorate these issues and ensure that Cambridgeshire grows in a sustainable way, to ensure that quality of life and quality of the environment is not compromised.

3. The Cambridgeshire Proposition

INTRODUCTION

3.1 Since submission of the Outline Proposal for Funding (OPF) in 2007 there has been extensive discussion around the Council's TIF proposals. Much of this was as a result of the comprehensive public consultation that was undertaken during late 2007 and early 2008 and the subsequent work of the Cambridgeshire Independent Transport Commission. Members of the Council and of Cambridge City and South Cambridgeshire District Councils have also taken a leading role in challenging and testing the Transport Improvements through the Joint Transport Forum.

3.2 The Independent Transport Commission findings, published in July 2009, demonstrated general support for the proposed Transport Improvements which were contained in the OPF and are outlined in this submission. The findings also acknowledge that, following implementation of the Transport Improvements, a Congestion Charging Scheme will be required unless people significantly change their travel behaviour.

3.3 The Independent Transport Commission findings found a fair degree of support locally and there is general consensus (although not universal support) for the need to act now to address traffic congestion in the interests of the local environment and economy. This revised Cambridgeshire proposition is therefore based on the findings of the Commission in both the scale and nature of the proposed investment package, and the proposals that a trigger should be established and agreed with local stakeholders and the DfT, and that trigger would be used to demonstrate when a Congestion Charging Scheme is needed. In taking this forward, the Council remains committed to continue to work with DfT to secure transport investment through the TIF process that will support growth and the economy in Cambridgeshire.

THE PROPOSITION

3.4 In summary, the revised Cambridgeshire Proposition consists of three stages, the first two of which are contained in this submission. This is based on the premise that substantial transport investment is needed in the area but also that a charge will be needed at some point, although not before the transport investment has been made and a trigger point/s reached.

- Stage 1 - this element is a detailed bid for funding of the Chesterton Rail Station project and Programme Entry is sought for this by the end of 2009. It is intended that this element will unlock early funding for, and delivery of, the Chesterton Station project;
- Stage 2 - this element is an outline bid for the balance of the Transport Investment package with a full business case and Programme Entry submission to be made by the end of 2010. At this stage, *Partnership Status*, along with TIP pump priming funding, is sought to enable this work to continue and to show the commitment of DfT to continued joint working.
- Stage 3 - in parallel with the preparation of the stage 2 full business case, Cambridgeshire will develop with the DfT and our local stakeholders and public, a measure(s) of transport congestion that when reached would trigger the need for a Congestion Charging Scheme in order to allow sustainable growth to

continue and to protect and enhance the local environment and economy. When submitted and approved, it is intended that this element will unlock the balance of the TIF funding that is being sought.

3.5 In more detail, the rationale for this revised proposition is that the cumulative Transport Improvements will help to stem the increase in traffic congestion within Cambridge and, through provision of enhanced segregated infrastructure and the concentrated application of Smarter Choices measures, will facilitate modal switch to public transport, walking and cycling. The extent to which this is the case, however, is yet to be determined as such a comprehensive package of investment has never been implemented before in one urban area over such a condensed time period. Because of this there is no clear evidence on which to understand the exact extent of mode switch or traffic reduction impacts the Transport Improvements will achieve on their own. More time, therefore, is needed to develop at what point a charge would be needed and how it would be triggered.

3.6 It has always been, and remains, Cambridgeshire's position that implementation of the Transport Improvements must precede any form of Congestion Charging Scheme. The reasons for this are two fold. Firstly, a Congestion Charging Scheme should maximise and capitalise on the benefits derived from the Transport Improvements by making their utilisation even more attractive than they would be without a congestion charge in place. Secondly, the public must be convinced, and have seen, that the Transport Improvements have been delivered and real, viable alternatives to the private car are available for travel into and within Cambridge before it would be reasonable to implement a Congestion Charging Scheme. Our programming work suggests that it is unrealistic for the full range of Transport Improvements to be in place before 2017 and so that is the earliest point at which a charge could come in, as suggested by the Independent Transport Commission.

3.7 We are therefore proposing that once the Transport Improvements have been implemented the success of these at reducing congestion, and facilitating mode switch, would be monitored against an agreed set of trigger points. If an agreed level of congestion or traffic reduction is not achieved the Council will introduce a Congestion Charging Scheme to help manage network demand.

3.8 The Council wishes to work with stakeholders locally and with Government, as part of a Partnership Agreement, to determine and agree a set of trigger points, culminating in an agreed trigger at which a Congestion Charging Scheme will be introduced. The actual date of any Congestion Charging Scheme being introduced will be dependent on the success of the Transport Improvement measures in reducing traffic levels and congestion.

3.9 The precise nature of the metrics that would be monitored and the means of monitoring will be determined during the proposed period of *Partnership Status*. Any measure will, however, need to be sufficiently sophisticated to satisfy both the Council and the DfT, and it is likely that this will be based around journey times and calculated delays.

3.10 The Transport Investment Package, which is currently costed at £520M, is submitted to DfT for information and no decision on investment is being sought for either the overall Transport Improvements or the Congestion Charging Scheme at this stage.

3.11 What is being sought is agreement from Government to enter into a Partnership Agreement with the Council to develop and agree the series of triggers, along with

necessary monitoring arrangements and a review of the investment package needed. It is envisaged that a number of triggers will be discussed and agreed, some procedural to ensure the process moves along and some more fundamental such as the trigger for introduction of the Congestion Charging Scheme itself. For example, it is likely that completing the Partnership Agreement would be one trigger and submission of a full business case seeking Programme Entry status for the TIF Package would be another.

3.12 Once Programme Entry for the overall package has been received TIF investment would be used to implement the Transport Improvements. This will include the equipment to monitor traffic flows, journey times or whatever congestion/traffic triggers are agreed. The equipment could subsequently be used as the basis for the Congestion Charging Scheme when the trigger point determines that such a scheme is needed.

3.13 To substantiate the Council's case for major investment in the area, this proposition contains an outline business case based on the newly enhanced integrated model known as the Cambridge Sub Regional Model (CSRM) which has been used to demonstrate that the Package satisfies the Governments appraisal criteria. The scenarios presented in later Chapters are hypothetical and their presentation does not suggest that a Congestion Charging Scheme will be introduced in either 2017 or 2021. They have been developed merely to give Government a feel for the benefits of the package of investment and the impacts of implementing a Congestion Charging Scheme at different points in time and that there is a viable case for investment in Cambridgeshire. As highlighted above, it is proposed that the actual date on which the Congestion Charging Scheme would be introduced will be dependent on performance of the Transport Improvements in containing congestion/traffic growth below the trigger points, which will be agreed.

3.14 The hypothetical scenarios tested are as follows:

- introduction of all Transport Improvements by 2016 with a Congestion Charging Scheme introduced in 2017; and
- introduction of all Transport Improvements by 2016 with a Congestion Charging Scheme introduced in 2021.

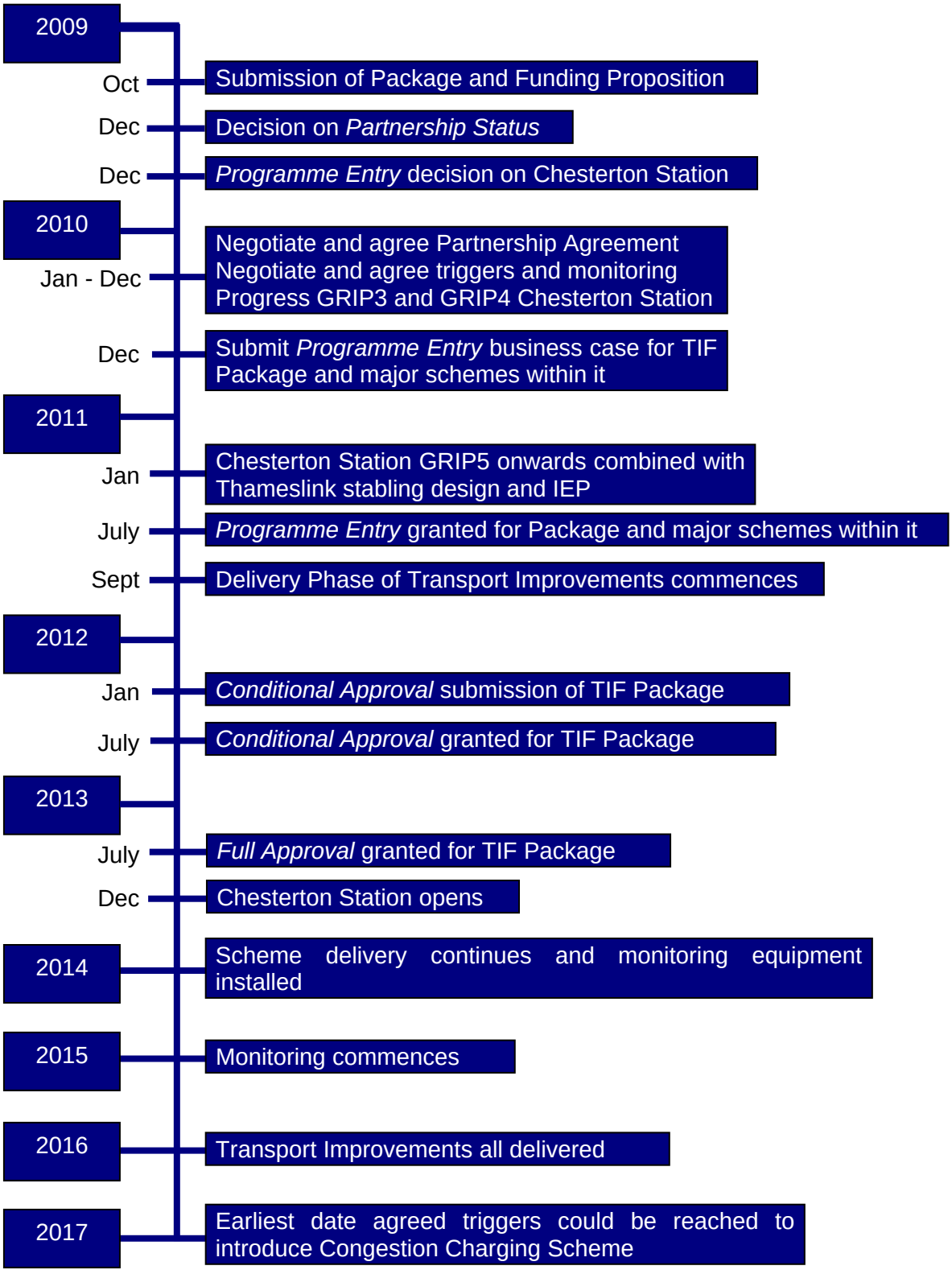
3.15 In addition to seeking a Partnership Agreement, the Council is seeking a Programme Entry decision for Chesterton Station along with up front funding to allow the scheme's further development, through railway processes, and implementation. A Major Scheme Business Case bid was submitted in 2007, and updated in late 2008, and is included within the latter chapters of this document. The scheme enjoys widespread support locally and ranked very highly in the RFA, with opening earmarked for 2016. Its development and implementation earlier than this is fully supported and encouraged by Network Rail to tie in with development and delivery of Thameslink and Intercity Express Programme (IEP) stabling at Chesterton by 2013.

TIMESCALE AND WAY FORWARD

3.16 It is anticipated that developing and agreeing the terms of the Partnership Agreement, along with suitable trigger points, would lead to submission of a Business Case seeking Programme Entry status for the full TIF Package by the end of 2010. A possible timeline under the revised proposition is shown on Figure 3.1.

3.17 A Programme Entry decision for Chesterton Station now would enable the scheme to progress over the next 12 months through Network Rail's Guide to Railway Investment Projects (GRIP) stages 3 and 4. This would enable development to take place in tandem with the Thameslink and IEP stabling schemes and for the detailed design and delivery to be undertaken as part of the same contract. It is expected that delivery would commence in 2012 with opening in 2013.

Figure 3.1 – Possible Timeline – Revised TIF Proposition



4. The Cambridgeshire Proposition - Description and Finance

4.1 The proposals contained within this Package have been developed in line with the findings of the Council's Long Term Transport Strategy (LTTS). This recommended that a comprehensive range of measures would be needed; including significant improvements to public transport, walking and cycling infrastructure, limited highway provision where no viable alternative existed and some form of increased demand management. The LTTS also recognised the importance of Smarter Choices in changing behaviour and choice of travel mode.

4.2 The Proposition contained within this document consists of two key elements:

- A detailed business case for the Chesterton station;
- An integrated package of Transport Improvements with provision for a Congestion Charging Scheme to be introduced when a trigger point, still to be agreed, is reached.

4.3 The detailed business case for the Chesterton station is set down in chapters 9-22 and early *Programme Entry* is now being sought. Details of the Transport Improvements Strategy are contained in this chapter as well as outline proposals for a Congestion Charging Scheme. Both of these are only presented in outline here and much further development and joint working will be required with DfT, local stakeholders and the public over the next 12-15 months to refine the proposals and particularly the trigger point at which a Congestion Charging Scheme would be implemented. The product of that work will form the basis of a full Programme Entry business case submission by the end of 2010.

OVERVIEW OF TRANSPORT IMPROVEMENTS STRATEGY

4.4 The Transport Improvements Strategy seeks to enhance three major transport modes (public transport, walk and cycle); these enhancements are supported and promoted through a comprehensive Smarter Choices Strategy; and on each corridor and in each area of the City, traffic management, public transport, walking and cycling proposals have been developed in an integrated manner. The Transport Improvements Strategy is built upon the contents of the OPF and reflects changes made to the proposals since the OPF was submitted as a result of the discussions of the Joint Transport Forum and other partners. This work will continue over the next 12-15 months in partnership with key stakeholders and it is expected that the Package will evolve further.

4.5 The backbone of the strategy has been the development of the High Quality Public Transport (HQPT) network, as the principal recipient of users switching mode from car. This seeks to incorporate all Park & Ride sites and planned development areas into a network of segregated, HQPT routes. Significant road space reallocation or the creation of new segregated busways is proposed here to deliver the increased frequency, reliability, quality, journey time benefits and capacity required for this network to achieve its full potential. Alongside this high quality network, city, inter-urban and rural services will be strengthened. Enhancements to public transport information, interchange facilities, fares and ticketing and the quality of vehicles will ensure the highest quality public transport service.

4.6 Enhanced access to rail services will also be provided, through a new station in north Cambridge (Chesterton) as well as better public transport and car access to stations, and more car parking at suitable locations where parking is a constraint on future use of rail.

4.7 Highways and traffic management proposals have been developed to link new development areas to the local and strategic network, as well as to integrate with and respond to public transport proposals – ensuring that general traffic is directed away from priority public transport corridors. Highway capacity enhancements and junction improvements are proposed in order to ensure that traffic can move efficiently in appropriate locations without interfering with public transport corridors.

4.8 Cycling proposals seek to provide a comprehensive off-road network across Cambridge as well as links to the surrounding villages so that cyclists have the option of off-road and quiet road routes to all key destinations, which will enable and encourage uptake of cycling across the population, including new residents moving into the new development areas. In addition, on-road enhancements are proposed on key corridors into Cambridge to provide better facilities for cyclists who wish to use direct on-road routes. It is likely that these facilities will be of particular appeal to cyclist commuters. These schemes have been developed in conjunction with public transport and traffic management proposals on these corridors.

4.9 The quality of the walking environment will be enhanced on these major corridors via comprehensive corridor treatments. The combined effects of the Package will also enable the centre of Cambridge to be further de-trafficked, allowing more pedestrian priority within the historic core.

4.10 An extensively marketed and promoted, comprehensive and intensive Smarter Choices Strategy will effectively provide all travellers in Cambridgeshire with information and awareness about the availability of non-car modes, and provide active encouragement for their uptake. The Smarter Choices Strategy is designed to support introduction of the Transport Improvements, through the promotion of alternatives to the private car and by providing existing car users with information about alternative travel options.

4.11 Figure 4.1 provides a summary of the major physical elements of the Package.

DESCRIPTION OF TRANSPORT IMPROVEMENTS STRATEGY – BY MODE

4.12 This section provides details of the elements of the Transport Improvements Strategy by each transport mode – public transport, rail, cycling, walking, and highways and traffic management. A description of the vision, network interventions and service enhancements, and supportive ancillary measures are provided for each component. Finally, the Smarter Choices Strategy, which integrates and builds on these modal measures, is introduced.

Public Transport

Challenge/Vision/Objectives

4.13 The key challenge facing public transport is to provide an attractive and realistic alternative to car travel for those journeys where other alternatives such as walking or cycling are not realistic. In particular, public transport needs to provide a good alternative for people travelling into Cambridge from outside, for journeys within

Cambridge, for people using the main inter-urban corridors and for people travelling by car to the edge of the City to transfer onto Park & Ride services. Additionally, the opportunity and need exists to provide the highest quality facilities for the new development areas to be incorporated into the network.

4.14 The vision for public transport within this future strategy is to deliver a step-change in the quality, availability and reliability of public transport services to and within the city so that public transport is the motorised first mode of choice. In so doing, it is intended to make Cambridge a city leading the way in first class public transport provision for a freestanding city sub-region in the UK.

4.15 To deliver this vision, proposals have been developed to create a network of high quality, fast and frequent services to and within the city.

4.16 The backbone is a network of HQPT routes that will serve major new developments and Park & Ride sites. The Cambridgeshire Guided Busway from St Ives to Trumpington and the Addenbrooke's Hospital site represents the first of these routes. The routes will be created by reallocating roadspace to enable segregation. This segregation is vital to deliver fast journey times and absolute reliability in service provision and to transform the image of bus services, making it more attractive than travel by car for most journeys. All Park & Ride sites will be integrated into this network and will offer fast and frequent services from the edge of the charging zone. Proposals to expand Park & Ride capacity on the main corridors are incorporated into the strategy.

4.17 The existing city network (currently marketed as "Citi" services) and inter-urban network will be strengthened to ensure that all key areas of the city and surrounding corridors have a basic 'turn up and go' frequency.

4.18 These improvements to physical infrastructure and service provision will be complemented by quality, ancillary facilities – better waiting and interchange facilities to provide passengers with comfort and reassurance on their trips, up-to-date reliable information available across the network, integrated ticketing to enable seamless interchange between services and provide good value fares, and a high quality of vehicles in terms of comfort, noise and emissions. A well-structured operational regime will ensure the network runs efficiently.

4.19 In developing the Transport Improvements Strategy and calculating operational costs, significant enhancements to off-peak, evening and weekend service levels have also been assumed, as a key element of improving the public transport service, especially when the Congestion Charging Scheme proves necessary.

Network and Service Enhancement Proposals

High Quality Public Transport and Park & Ride Network

4.20 The HQPT Network will encompass segregated busways, links from the new developments and the existing and planned Park & Ride sites. It will provide a turn up and go frequency of fast, limited stop services on each corridor. These services will run via segregated routes in order to guarantee reliability, speed and quality of service.

Figure 4.1 – Major Physical Elements of the Package (Subject to further development)

4.21 The network comprises of the following services (further details can be found in the Transport Improvements Report previously submitted):

- Cambridgeshire Guided Busway from Huntingdon, St Ives and Northstowe to Cambridge city centre and Trumpington Park & Ride and Addenbrooke's Hospital
- Hauxton Park & Ride to city centre
- Route from Histon Road and Madingley Road Park & Ride to city centre, via Huntingdon Road
- Route from Cambridge East and Newmarket Road Park & Ride to city centre
- Babraham Road Park & Ride and Hills Road:
- Milton Park & Ride to Cambridge Northern Fringe East and city centre
- Addenbrooke's Hospital to Cambridge East via Outer Ring Road
- Northern Orbital link from Cambridge East to Cambridge North West via Chesterton Station and Science Park

4.22 The planned public transport enhancements allow for significant growth in demand for Park & Ride. This will necessitate expanding Park & Ride site capacities and service enhancements. Further site specific details are given later on in this Chapter on an area by area basis.

Table 4.1 - Proposed Park & Ride Capacity Enhancements

Site	Current Spaces (2009)	Future Requirement (by 2021)	Proposals
Milton	750	2,000	Expansion of developing site
Newmarket Road	1,000	2,500	Relocation of existing site (post 2016)
Babraham Road	1,000	2,500	Expansion of existing site
Trumpington/ Hauxton	1,500	3,000	Creation of an additional new site at Hauxton/M11 junction
Madingley Road	1,000	2,750	Expansion of existing site
Northstowe	350	2,000	Creation of a new site on guided bus route
St. Ives	500	2,000	Expansion of developing site on guided bus route
Total	**6,100**	**16,750**	

City Network

4.23 The city network will be strengthened by enhanced frequencies. All services will run at 10 minute frequencies and, where demand is greater, higher frequencies will be implemented. Two additional city services (C8, C9) will

provide links to new developments to Cambridge East and Cambridge North West.

4.24 It is proposed that many of these services will benefit from the priorities developed for the HQPT network (e.g. Newmarket Road, Hills Road, and Huntingdon Road). A range of local junction improvements together with enhanced priority and provision in the city centre will also aid operation of this network.

Inter-Urban and Rural network

4.25 The Transport Improvements Strategy also proposes strengthening of inter-urban trunk routes between Cambridgeshire's market towns and Cambridge itself to provide a uniform minimum frequency of 15 minutes on the key corridors, namely Ely, Newmarket, Haverhill, Royston and St Neots. This is in addition to the much enhanced service level to St Ives / Huntingdon provided by the Cambridgeshire Guided Busway. Also, many villages surrounding Cambridge are already incorporated into the city network (e.g. Cambourne, Bar Hill, Cottenham, and the Shelfords). Localised improvements to rural services will provide better interchange with trunk inter-urban routes. Enhancements to interchange facilities in the market towns and key villages on the inter-urban network, such as the roll out of real time information across the network, waiting facilities and integrated ticketing will ensure this part of the network is user-friendly and offers good value for money. In addition, express service interchange points on the outskirts of villages, including parking facilities where appropriate and 'limited stops' services will maximise accessibility for residents without inconveniencing wider users.

Ancillary Measures

4.26 To support the network and service enhancements, a comprehensive range of ancillary measures is proposed to ensure that the best possible service quality is achieved to encourage and assist patronage growth. These include an information strategy, fares and ticketing strategy, interchange enhancements, vehicle improvements and an enhanced operational management regime.

4.27 The key elements of these are outlined below, with further details provided in the Transport Improvements report, which was published with the OPF.

- **Information**: A comprehensive information strategy is proposed so that information is easy to obtain, easy to understand, reliable and available in a number of different formats at a number of different locations, enabling users to make informed decisions about their travel options;
- **Ticketing**: The fares and ticketing strategy will ensure that good value fares are available for all trips on the network and fares and ticketing processes are easy to understand. By simplifying these processes, the strategy will also help to reduce boarding delays, improve journey times and address capacity constraints – particularly in urban centres;
- **Interchange**: The quality of interchanges will be raised across the network. The interchange strategy proposes standards for waiting, boarding and information provision according to a hierarchy of stops, incorporating high quality bespoke designs in keeping with Cambridge's environmental and historic status, and to further promote and brand the network;

- **Vehicles**: An integral part of the strategy is to provide a quality of vehicle and comfort of ride that reflects the vision for a world class passenger transport service;
- **Operational Management**: An overarching Quality Partnership Agreement that establishes commitments and service standards by all partners will be developed in collaboration with the operators, addressing issues such as operational practices, customer care, multi-operator ticketing, vehicle standards, sharing of data and monitoring of customer satisfaction. Further details on the manner in which this will be achieved are set out in Chapter 5.

Rail

Challenge/Vision/Objectives

4.28 The challenge is to ensure that access to rail services is maintained and enhanced in relation to recent and projected significant growth in demand for rail travel, which reflects Cambridge's economic growth and regional interchange status. The proposals for the rail network, both in terms of infrastructure and services must support the main package objectives and help facilitate a switch from private car.

4.29 The vision is for a high quality rail network that provides fast and reliable local services and good connectivity regionally and nationally, and can accommodate growing demand for rail use.

4.30 Cambridge currently enjoys an excellent level of service to London and good local and regional connectivity. There has been a 50% patronage growth over the last seven years and a similar scale of growth is anticipated over the next ten years. There is over-crowding on some peak services and the size of station facilities and car parking at Cambridge are under strain. Car parking availability is also under pressure at several other stations, such as Ely.

4.31 The objectives of this Package for rail are to:

- Enhance access to rail services for both out-bound passengers travelling from Cambridge and for in-bound passengers travelling to Cambridge.
- Work with the rail industry to support its initiatives to enhance capacity and reliability on the routes serving Cambridgeshire, as well as to improve customer provision. The rail industry has plans for lengthening trains and platforms as part of the Thameslink programme and for improving Cambridge Rail Station as part of the Station Redevelopment Area Plan.

Strategy Proposals

4.32 The following rail-related Transport Improvements are proposed within the strategy:

- Creation of a new station at Chesterton in the north of Cambridge, to provide enhanced access to the rail network and reduce pressure on Cambridge city station. A Major Scheme bid is included within this document for this scheme.
- Enhancements to the level of rail services: all fast London services will either start at or call at Chesterton and there will be an additional service between Ely and Cambridge every hour.

- To provide car and public transport access to the new Chesterton Station. The station will be accessible by car without entering the Congestion Charging Zone and have 400 parking spaces. The station will be served by High Quality Public Transport network linking to Science Park / Northstowe / St Ives via the Cambridgeshire Guided Busway and onwards to the city centre and southern fringe via fully segregated busways to Newmarket Road and onwards.
- Enhanced access to, and facilities at Cambridge Rail Station. The Rail Station will be upgraded as part of the Station Area Redevelopment and as part of these proposals provision for bus and cycle interchange will be significantly enhanced. The Station Redevelopment is being pursued separately, and is not included in the TIF Package.
- Enhanced access to rail services across the sub-region with additional parking to be provided at Ely, Royston and Foxton stations.

Cycling

Challenge/Vision/Objectives

4.33 The challenge for cycling is first to maintain and increase its current high mode share and second, to ensure this level of demand can be accommodated on the network.

4.34 The vision for cycling is to make cycling an attractive, safe travel option for all sections of the population by building on existing infrastructure to provide a continuous, comprehensive, high quality network of routes across the city, and connecting to the surrounding villages and countryside.

4.35 Growth in cycling trips and mode share will require existing 'occasional' users to become 'regular users' and some non-users to start cycling, including residents who are new to the area. Improvements to the cycle network will help to encourage mode shift.

4.36 This is to be achieved by the development of a comprehensive network of off-road/quiet road routes, as well as significant on-road enhancements to give better provision for cyclists already using the main road network. 180km of upgrades are planned, including 90km of off-road / off-carriageway routes, 20km of on-road routes, 40km of quiet routes and 30km of village links.

4.37 The strategy is supported by a number of ancillary measures including cycle parking across the network, comprehensive signage and marketing and promotion through the Smarter Choices Strategy.

4.38 Cambridge is already the leading UK city in terms of levels of cycling and has developed an extensive network of on and off-road provision. Recent infrastructure upgrades have shown the ability to significantly expand the level of cycling – the widening and resurfacing of the towpath on the River Cam north of the city for example led to an 89% increase in cycling over a year (and a 251% increase in walking levels). Evidence from broader research suggests that to grow the market by expanding the percentage of the population who will cycle, it is necessary to provide a good network of off-road facilities for those more concerned about safety.

Network Proposals

4.39 The Cycle Strategy proposes a range of physical measures including:

- A network of off-road / quiet road routes to provide segregated cycling access that is usable by the whole population, connecting all major areas of Cambridge;
- Localised links onto this network from key community facilities such as schools;
- Enhanced on-road facilities on major corridors for cyclists who are happy to travel on major traffic routes;
- Links from this network to the villages and to recreational routes;
- Works at major conflict points (such as junctions, inner ring road, river crossings) to provide assistance to cyclists at these locations; and
- New developments to be integrated into the above network through provision of high quality segregated routes connecting to the network and through ensuring low traffic speeds are built into the designs.

4.40 During the preparation of the Transport Improvements Strategy, the cycle network has been audited to identify missing links, sub-standard sections of provision and how the planned new developments can be effectively integrated into the network. From this, a proposed cycle network comprising off-road, on-road and quiet routes has been developed, as shown in Figure 4.2. This network has been examined and specific proposals for enhancements along current links which are either sub-standard or have no cycling provision have been developed. Each of these infrastructure proposals has been costed within the Package.

Ancillary Measures

4.41 To support the significant planned physical enhancements to the network, a range of supportive measures are also planned, including:

- Cycle parking across the network:
  - new developments to be built in respect of Cambridge City Council Supplementary Planning Guidance standards for cycle parking provision;
  - enhanced cycle parking to be provided in the city centre, at the Rail Station and at other key destinations (hospitals, district centres, schools etc.);
  - enhanced cycle parking to be provided within existing residential areas where a lack of secure cycle parking is currently a deterrent to having a readily available bike.
- Comprehensive signage
- Marketing and promotion (through Smarter Choices Strategy detailed below)

Figure 4.2 - Proposed Cycle Network

Walking and Public Realm

Challenge/Vision/Objectives

4.42 Walking is the most inclusive transport mode and tops the hierarchy of modes in local transport policy. The key challenge for walking is to maintain and improve conditions for walking and ensuring that traffic levels and congestion do not adversely impact on the walking experience. Equally important and inherently linked to walking is the quality of the public realm, especially given Cambridge's unique environmental and historic assets. A high quality public realm is vital to the visitor industry, but also to the quality of life in Cambridge that is a main attractor of economic growth.

4.43 The vision here is to provide a quality walking environment, providing pedestrians with direct, safe, comfortable and convenient routes, whilst supporting and enhancing Cambridge's built and natural environment.

Strategy

4.44 The walking and public realm strategy to be pursued as a part of this Transport Improvements Strategy – together with broader local transport strategy – consists of eight themes.

(i) Enhanced pedestrian priority and public realm within the city centre: greater restriction on traffic movements within the historic core, together with a consolidation of public transport routes will enable further pedestrian priority to be implemented at key locations within the city centre.

(ii) Enhanced pedestrian provision and public realm on key corridors, as part of a "Comprehensive Corridor Treatment": complete corridor redesigns are proposed for Hills Road (Station Road to city centre), Huntingdon Road (Storey's Way to Bridge Street), Newmarket Road (railway to Elizabeth Way) which will incorporate high quality pedestrian provision and improved public realm.

(iii) Enhanced provision on the off-road and shared surface network, and reduced conflict with cyclists through improvements to cycling facilities, as outlined in the Cycling component of the Transport Improvements Strategy. This includes widening shared surface routes to enhanced minimum width standards and converting some shared surface routes to segregated walking/cycling routes. In addition, the Cycling proposals include the creation of several new routes, which will equally serve as walking routes.

(iv) Enhanced crossing facilities: the public transport and cycling proposals will involve redesign of several junctions across the network, and will incorporate enhanced provision for pedestrians, improving safety and increasing connectivity of the walking network.

(v) Enhancements to the rights of way network: greater level of maintenance of the existing rights of way network and the expansion of the network in relation to the planned new developments around Cambridge.

(vi) Ensuring good quality provision within the new development areas through adoption of contemporary standards and guidance in the planning process.

(vii) Local improvements through existing Safer Routes to School and local Safety Schemes.

(viii) Promotion of walking through the Smarter Choices Strategy (below).

Highways and Traffic Management

Challenge/Vision/Objectives

4.45 The key challenge for highway and traffic management is to keep traffic flowing within the context of growing population and employment levels, and the resulting demand for travel. The proposed highways and traffic management measures assume that planned improvements will take place as currently programmed; the most notable of these being the proposals for upgrading of the A14 between Ellington and Fen Ditton.

4.46 Policies pursued by the Council for more than a decade to promote alternative modes and to restrain car access have shown that this is achievable. Improvements to bus services and cycling facilities, coupled with traffic management restrictions in the historic centre have succeeded in reducing traffic levels by 18% within the inner ring road. The above, coupled with the large scale expansion and investment in Park & Ride have also succeeded in holding traffic levels entering Cambridge. However, the scale of planned future growth needs a step-change in the quality and capacity of alternatives to maintain this.

4.47 The vision for highways and traffic management in Cambridge is to maintain a free-flowing network by maximising network efficiency and ensuring that people have a range of travel choices available to them.

4.48 The objectives are to:

- Ensure the new developments are appropriately linked into the local and strategic network without having a negative impact on the surrounding network;
- Reduce congestion by accommodating planned growth without a worsening in network performance;
- Actively manage traffic flows in order to keep the network working efficiently, and to ensure that traffic does not interfere with the operation of public transport and cycling routes.

Strategy

4.49 The strategy for highways and traffic management has been developed in conjunction with proposals for public transport and cycling enhancements. It seeks to support public transport priority schemes by reallocating roadspace on key public transport corridors to enable segregated running, whilst enhancing traffic capacity on key links and at key junctions to facilitate efficient flow away from these areas. At the same time, links are provided to the new areas of development.

4.50 Various schemes are proposed in this Package and these are listed under the following four headings:

1) Linking major new developments to the local and strategic network:

- Southern Fringe: Addenbrooke's Access Road (already programmed and funded outside of this Package);

- Cambridge East: Fen Ditton link road from A14 to Airport Way; dualling of the Newmarket Road from Quy junction on A14 to Airport Way; dualling of Airport Way;
- Cambridge North West: Madingley Road to Huntingdon Road orbital route and Huntingdon Road to Histon Road orbital route.

2) Traffic management to assist public transport priority schemes:

- Huntingdon Road one-way car access to enable bus priority scheme;
- Hills Road access restriction north of Station Road to enable bus priority between the Rail Station and city centre;
- Segregated car access into Park & Ride sites to enable Park & Ride users to avoid congestion on approaches to Cambridge;
- One-way bus-only circulation in city centre, assisted by new rising bollards/restricted access on Victoria Avenue and new westbound bus lane on Chesterton Road and restricted access to Castle Street at the Castle Street / Chesterton Road junction.

3) Network improvements to enhance traffic flow at existing or predicted congestion points:

- Madingley Road capacity enhancements (to enable traffic flow from south Cambridge to north Cambridge to be directed away from public transport priority routes on Hills Road and Huntingdon Road).

4) Junction improvements:

- On the inner-ring road at Elizabeth Way (Newmarket Road), Mill Road, Lensfield Road/Trumpington Road and Madingley Road/Queen's Road.

4.51 The proposed Package of Transport Improvements (including comprehensive highways, traffic management and public transport schemes), coupled with the level of growth proposed which will place greater demands on the transport network as a whole will necessitate more active management of the highway network. Because the strategy seeks to reduce congestion without significantly increasing new highway capacity, there is also a need to maximise efficiency of the network.

4.52 Therefore, it is proposed to fast-track the Council's plans to develop a Traffic Management Centre to carry out this function. Signalised junctions will be incorporated within an urban traffic control system so that signals can be effectively co-ordinated to maximise system throughput. This function could be extended to managing bus services, by enabling buses to be prioritised through signals. The Cambridgeshire Guided Busway system will require its own Control Centre and there is an option to incorporate this within a broader Traffic Management Control Centre.

Smarter Choices

Challenge/Vision/Objectives

4.53 Investment in infrastructure is not in itself sufficient to affect a significant change in travel behaviour. The ability to influence behaviour and develop a cultural shift in attitudes towards travel, by developing an understanding of the need for change and at the same time providing people with sufficient information regarding the range of travel options available to them, is essential. This cultural shift is implicit in the level of mode shift which the Package is seeking to deliver.

4.54 Equally, an integral part of the ethos of the Transport Improvements Strategy is the adoption of a customer-oriented approach to transport provision where the primary role of the strategy is to make travel easier and better for transport users in the Cambridge sub-region.

4.55 The Smarter Choices Strategy performs this function. Specifically its objectives are to:

- Raise awareness of the positive impacts on society, the environment, the economy, safety, health and accessibility of using alternatives to the private car;
- Ensure that individuals and organisations are sufficiently well informed about the range of options available to them when considering how and indeed whether to undertake a particular journey;
- Co-ordinate the deployment of smarter choice activity with the availability of high quality alternatives to the private car – be they existing or planned;
- Deliver a dynamic response mechanism whereby customer feedback on barriers to use of alternatives is requested, collated, responded to and used to inform delivery going forward.

4.56 The Smarter Choices Strategy is central to the Transport Improvements Strategy. By providing clear information and help, users will have the confidence to change modes and use the enhanced public transport, walking and cycling network in place of the car.

Strategy

4.57 A comprehensive Smarter Choices Strategy comprises six main elements.

- Marketing and information will ensure that all individuals across the area are fully aware of the overall objectives of the transport strategy for the area and furthermore that they understand the impacts of the travel decisions that they make. This will be vital in the period after the Transport Improvements have been implemented to maximise mode switch and limit congestion and traffic levels in advance of a Congestion Charging Scheme. Specifically this will include the development of a marketing strategy and the delivery of area wide travel awareness activities and events.
- Information services will be provided to ensure that individuals across that area receive accurate and effective information regarding all aspects of the transport network and the travel choices available to them and that this is provided in a co-ordinated manner. Specifically this will entail the development of a 'Transport Network Information Strategy' and the deployment of a central 'Travel Demand Management Centre' providing travel and transport information and advice.
- Organisations across the area are to be provided with an effective and co-ordinated advice and support service for developing travel plans for their establishments that encourage greater use of alternatives to the car. This will cover both workplace and school travel planning, as well as travel planning for local rail stations and for 'other' trip generators and attractors.
- Personalised travel planning programmes will be rolled out to ensure that individuals across the area have access to travel and transport advice and information that is tailored to their circumstances. This initiative will cover both workplace and household based programmes, particularly targeted at residents of new developments and will be accompanied by appropriate supporting offers

such as cycle training, cycle loans and discount vouchers for public transport season tickets.

- In recognition that the private car will continue to have a role to play as part of any transport strategy it is important that those requiring the use of a car are provided with realistic alternatives. The existing CAMSHARE car sharing scheme will be actively promoted and expanded, together with the expansion of the city wide car club.
- The guiding principle for the smarter living and working activity is to ensure individuals have access to, and are aware of, a range of options which reduce the need to travel. This includes the development of an 'Information and Communication Technology Strategy' for the area where technological innovations to enable more flexible working and living patterns that reduce the individual's need to travel will be piloted and potentially rolled out.

TRANSPORT IMPROVEMENTS STRATEGY BY AREA: NORTH, EAST, SOUTH, WEST AND CITY CENTRE

4.58 The measures identified within the Transport Improvements Strategy, and outlined earlier in this Chapter on a modal basis, have been grouped into five geographic areas of the Cambridge urban area. This enables the Transport Improvements to be illustrated as area Packages, covering quadrants of the city, plus an area focusing on the city centre. As has been highlighted earlier, the proposals will be subject to further development over the next 12-15 months.

North

4.59 The Transport Improvement proposals for the northern quadrant are illustrated in Figure 4.3. Central to this is expansion of the Park & Ride site at Milton to accommodate growth in demand (the Transport Improvements Strategy envisages the Park & Ride expanding to 2,000 spaces), as well as reducing the volume of traffic that crosses the A10/A14 Milton Interchange junction to reach it. Public transport segregation along the A10 across the A10/A14 junction and down Milton Road to then connect to Chesterton Station and Newmarket Road segregated routes will provide segregated access to the city centre for Park & Ride services.

4.60 Rail passengers from the north of the city will be able to access rail services at the new Chesterton Station from where all fast services to London will start or call. The station will also have regular stopping services from Ely, increasing access to the north of the City for workers travelling from Ely and beyond. New road access will be provided to Chesterton Station, together with parking, to enable passengers to access services here without having to enter the centre of Cambridge or the area covered by the Congestion Charge.

4.61 Chesterton Station will be integrated with the public transport system with segregated busways from Milton Road to the new Station and then onwards to Newmarket Road, to enable a wide range of destinations to be accessible from the station.

4.62 The northern sector will also benefit from wide-ranging and significant enhancements to the cycle network. Milton will have a direct off-road facility to the Regional College / Science Park. An off-road facility will be provided along the length of the guided busway from St Ives, Northstowe and Histon to the Science Park and onwards to Chesterton Station and Newmarket Road, using a new river crossing.

East

4.63 The east area Package focuses particularly on the need to provide high quality public transport access between the city centre and the Cambridge East development and beyond to a new Park & Ride site on Newmarket Road.

4.64 Access to/from the strategic road network will be provided by a new link road from Airport Way to the Fen Ditton A14 interchange. For traffic approaching from the east, there will be dualling and improvement of the Newmarket Road from Quy Interchange to Airport Way.

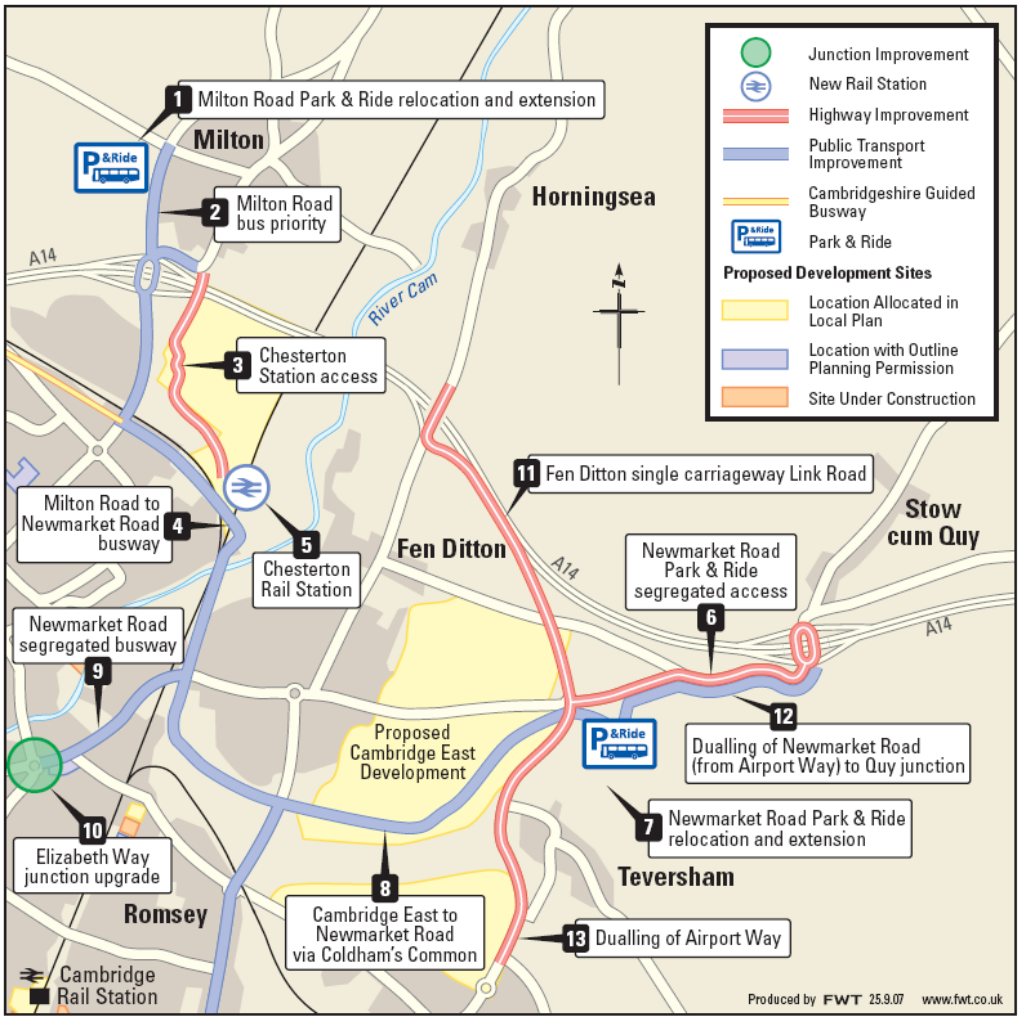
4.65 A new Park & Ride site will be located adjacent to Airport Way, to free-up the existing site for a part of the Cambridge East development, and to provide adequate capacity of 2,500 parking spaces for anticipated future demand. Segregated car access will be provided into the Park & Ride site to enable users to bypass any congestion.

4.66 Segregated bus access will then be provided from the Park & Ride site through the heart of the Cambridge East development and then along the edge of Coldham's Common before joining Newmarket Road adjacent to the railway. From there, it will continue via an entirely segregated busway to the Elizabeth Way junction, which will be modified to improve traffic flow and provide public transport priority to Maid's Causeway, which is within the city centre core traffic management area. Thus, entirely segregated bus access will be provided from this part of the city to the city centre. To provide further network enhancements, a link will be provided to Chesterton Station from Newmarket Road, to enable cross-town movements and access to the Rail Station. A bus priority scheme will also link Cambridge East to Addenbrooke's and the Southern Fringe via the Outer Ring Road.

4.67 Again, wide-ranging cycling improvements are proposed. Internal routes through the new Cambridge East development will link up to enhanced routes to the city centre via the Jubilee Path (along the river for Cambridge East northern sector), Coldham's Common (for Cambridge East central sector) and Tin's Path (Cambridge East southern sector). New links will be provided across the river to Chesterton to link Cambridge East to northern Cambridge and south across the Ipswich Railway to link Cambridge East to south Cambridge and the Southern Fringe. Enhancements to village links will integrate the villages of Fen Ditton, Teversham and Fulbourn into the network.

4.68 Figure 4.3 summarises the major scheme proposals for the northern and eastern quadrants.

Figure 4.3 - Key Transport Improvements Proposed for Northern and Eastern Sectors (subject to further stakeholder consultation and scheme development)



South

4.69 The Transport Improvements within the south area Package focus on improvements to the public transport network, in association with the Southern Fringe growth areas.

4.70 Park & Ride capacity will be increased by expanding Babraham Park & Ride to 2,500 spaces. Segregated car access will be provided here to enable Park & Ride users to bypass any congestion on the approaches to Cambridge. Demand for the Park & Ride at Trumpington is anticipated to reach 3,000 spaces, but due to the inability to expand the existing site, a new additional site will be created adjacent to the M11 junction at Hauxton.

4.71 The Guided Busway will provide segregated public transport access from Addenbrooke's and Trumpington Park & Ride to the Rail Station. The Transport Improvements Strategy will enable complete public transport segregation by extending the bus priority measures to the new Park & Ride site at Hauxton adjacent to the M11 and by a bus priority scheme on Hills Road from the Rail Station into the

city centre. A further bus priority scheme is proposed for Hills Road south to ensure that Babraham Park & Ride and Hills Road corridor also offer bus priority.

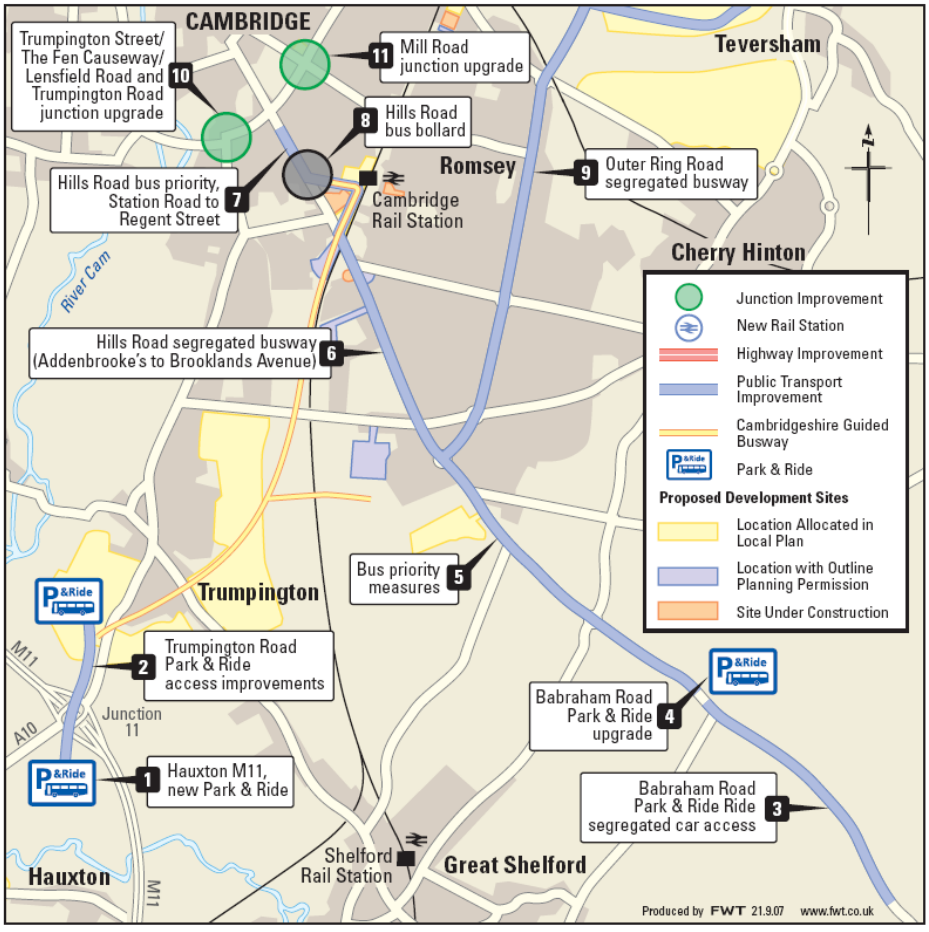
4.72 As Cambridge East is developed, a bus priority scheme will be added from Addenbrooke's to Cambridge East via the Outer Ring Road. Ultimately, this enables segregated or bus priority running from Newmarket Road Park & Ride through Cambridge East, to Addenbrooke's and onwards to Trumpington/Hauxton Park & Rides, enabling a network of segregated public transport routes to be available.

4.73 Significant enhancements to the cycling network will also be delivered. New developments at Trumpington Meadows, Clay Farm and Addenbrooke's will allow a new network of high quality segregated cycle routes to be linked into the existing network, together with the cycle link along the Cambridgeshire Guided Busway alignment. Village links from Haslingfield, Hauxton, Grantchester and the Shelfords will also be improved. The public transport priority measures on the Hills Road corridor will enable improvements to be made on-road.

4.74 To improve traffic flow in this quadrant, improvements to the Lensfield/Trumpington Road junction and Mill Road junction on the inner ring road are proposed.

4.75 Figure 4.4 summarises the major scheme proposals for the southern quadrant.

Figure 4.4 - Key Transport Improvements Proposed for Southern Sector (subject to further stakeholder consultation and scheme development)



West

4.76 In the west quadrant, there is significant development planned between Madingley Road and Huntingdon Road (Cambridge University), and Huntingdon Road and Histon Road (National Institute of Agriculture and Botany land (NIAB)). To enable these developments to be served efficiently, whilst at the same time seeking to address a major existing congestion problem on the inner-ring road, it is proposed to promote public transport priority on Huntingdon Road. It is proposed that this is achieved via west-bound car restrictions on Huntingdon Road while allowing two-way car access on Madingley Road, supported by orbital car movements through the Cambridge University development site.

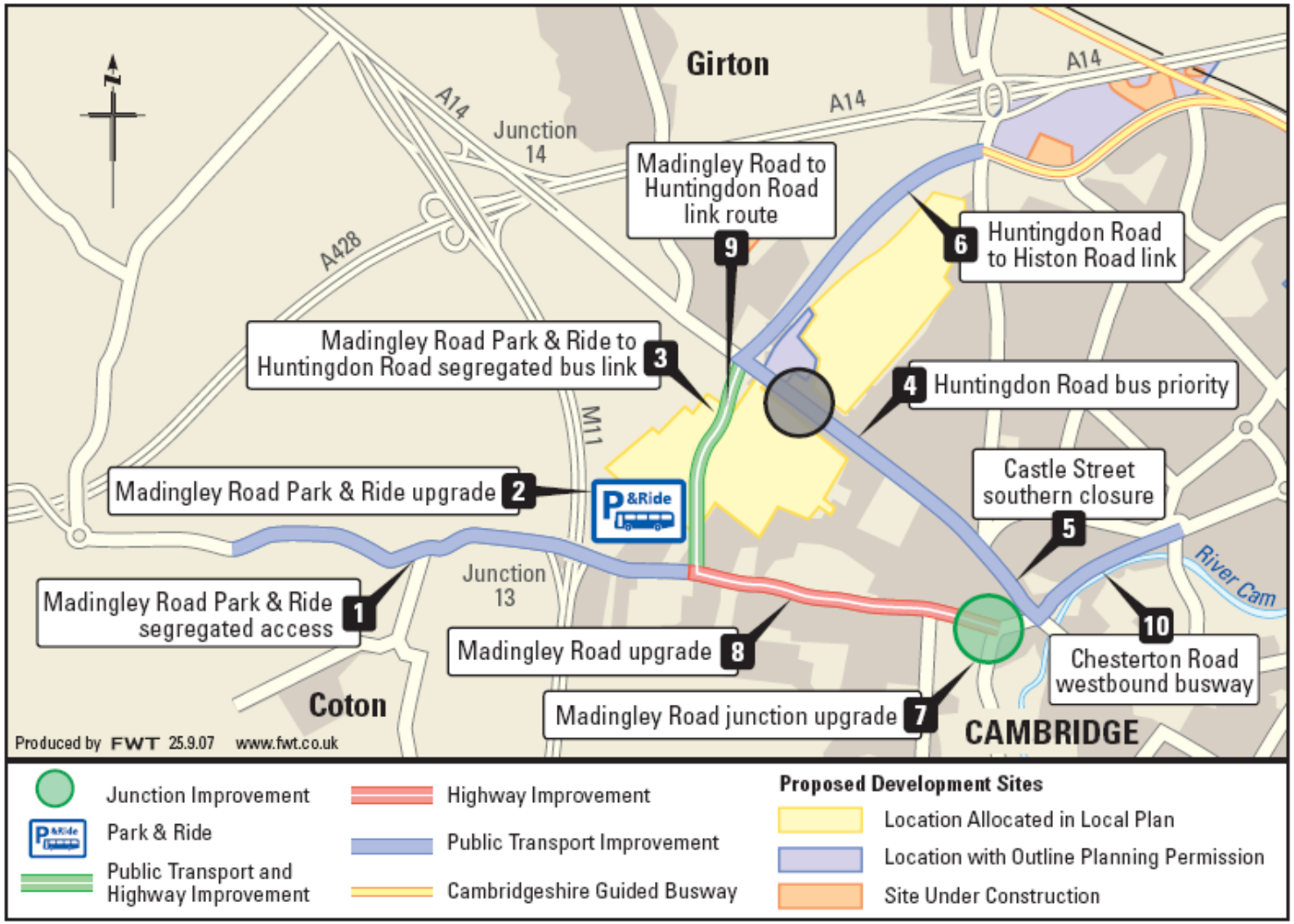
4.77 Traffic capacity will be enhanced at the Madingley Road / Queen's Road junction and along Madingley Road to enable the Huntingdon Road bus priority scheme to be implemented and to address congestion problems associated with the existing inner-ring road traffic circulation from Queen's Road to Madingley Road to Huntingdon Road / Histon Road junction. Car access will be provided from Madingley Road to Huntingdon Road and from Huntingdon Road to Histon Road to enable north-south car movement and access to these development sites. These routes will have parallel segregated public transport running, to provide the movement through the development sites, and offer the opportunity for orbital movements from Madingley Park & Ride through the sites to join the Guided Busway at Arbury Park and onwards to the Science Park / Chesterton station.

4.78 Cycle improvements will be provided with the new developments offering the opportunity to develop useful orbital routes linking residential areas with these new work destinations. Enhanced or new village links to Histon, Girton, Madingley, Bar Hill and Coton will improve opportunities for cycling from these villages.

4.79 Madingley Road Park & Ride will be expanded to 2,750 spaces to accommodate new demand and services will run via segregated facilities through the University North West development to Huntingdon Road where they will enjoy priority to the city centre. It is proposed that there would be segregated access for cars wishing to access Madingley Road Park and Ride site from the west.

4.80 Figure 4.5 summarises the major scheme proposals for the western quadrant.

Figure 4.5 - Key Transport Improvements Proposed for Western Sector (subject to further consultation and scheme Development)



City Centre

4.81 The Package also includes an element for improvements within Cambridge city centre. However, the timescales for development of the Package have not permitted sufficient engagement with those partners who would need to be involved in any design beyond a conceptual stage. Furthermore, the Council's desire to enhance and protect the social, historic and environmental characteristics of the city centre means that any proposals will be the subject of detailed public consultation. Therefore specific Transport Improvements are not proposed at this stage in the city centre, but may include some or all of the following:

- Public realm enhancements;
- Improvements to city centre bus facilities e.g. a new high quality bus interchange incorporating facilities for ticketing, waiting, cycling, staff, indicator boards and toilets;
- One-way bus circulation loop for northern entrance to city to reduce levels of bus intrusion and to improve flows;
- Traffic management initiatives to support the delivery of the wider strategy across the city, including extensions of the core scheme principles;
- Improvements to aid pedestrian movement, including crossing facilities; and
- Improved and new cycle parking facilities.

4.82 It is proposed that development of a detailed city centre strategy will be one of the key work areas over the next 12-15 months.

CONGESTION CHARGING SCHEME

Possible Scheme

4.83 For the purposes of the modelling contained within this submission, assumptions have had to be made around the form that a Congestion Charging Scheme could take when the trigger points indicate this is necessary. For simplicity, the same assumptions as in the OPF have been used.

4.84 To recap, the details contained in the OPF were for:

- Implementation of an Area Licence Charge developed around the Cambridge city administrative boundary, extending into part of the South Cambridgeshire administrative area;
- A charged period of 2 hours in the AM Peak (07:30 – 09:30) Monday to Friday only;
- A likely charge in the region of £4 per user per day irrespective of the number of trips or distance travelled; and
- No type of vehicle exempt from charge

4.85 It is clear that these and all the other elements of the package will be fundamentally reviewed in the preparation of the detailed business case. In relation to the charge in particular, issues such as the area of coverage, the effective time period, the level of the charge and the potential need for discounts and exemptions have all been raised

by stakeholders and must be considered and addressed in a comprehensive manner as part of the full submission to Government planned for the end of 2010.

OPTION ASSESSMENT

4.86 Preparation of a full business case requires option assessment to demonstrate that the chosen solution is the most appropriate one. Although no details of this work are contained in this submission, this work was an integral part of their development in the original Outline Proposal for Funding.

4.87 The assessment of different demand management options was also described in the Options Assessment Report, submitted with the OPF. In identifying the preferred option, this process gave consideration to a range of solutions including:

- Expansion of the core scheme (current demand management controls restricting access to central Cambridge)
- Expansion of the Controlled Parking Zone (CPZ)
- Introduction of a Work Place Parking levy
- Introduction of a Congestion Charging Scheme
- Cordon charge
- Distance charge
- Area Licence charge

4.88 It is expected that these points will be revisited as part of the development of the full business case submission planned for the end of 2010.

PACKAGE AND SCHEME COSTS

4.89 The Transport Improvements, as currently proposed, require an overall investment of around £502M including risk but excluding optimism bias. In addition, the Congestion Charging Scheme will cost about £18M to introduce. The costs are broken down by geographic area in Table 4.2 and by mode in Table 4.3.

4.90 These costs have been revisited and refined since publication of the OPF but will be kept under review as scheme and Package development continues. Once the Transport Improvements are in place, it is proposed that progress against any agreed indicators will be monitored, potentially using equipment which could form the basis of the Congestion Charging Scheme. The exact form and detail of the monitoring arrangements will be agreed with DfT as part of the Partnership Agreement. Accordingly, at this point in time, we have not sought to quantify the likely costs of such a monitoring regime although this will need to be funded from TIF investment.

Table 4.2 – Transport Improvements by Area – Total Public Sector Capital Investment

Investment Area	£ m
North Cambridge	149.1
West Cambridge	42.5
East Cambridge	93.5
South Cambridge	61.1
City Centre Initiatives	27.2
Other	63.0
Cycling strategy	54.5
Walking strategy	11.4
Total	**502.2**
Congestion Charging Scheme	18.4
Combined Total	**520.6**

Costs are in 2008 prices.

Table 4.3 – Transport Improvements by Mode – Total Public Sector Capital Investment

Investment Area	£ m
Highway Improvements	118.6
Public Transport	290.6
City Centre Initiatives	27.2
Cycling strategy	54.5
Walking strategy	11.4
Congestion Charging Scheme	18.4
Total	**520.6**

Costs are in 2008 prices.

4.91 Over the next 12-15 months, as the package is developed further with stakeholders and Government as part of the Partnership Agreement, we will be able to firm up on the total sum being sought through the Transport Innovation Fund. This will be set out in our Programme Entry bid document which will be submitted by the end of 2010.

4.92 However, to provide an indication of the likely level of bid Table 4.4 details the split between central Government and local Government funding requirements based on current package costs. This would represent a bid for a capital investment of £468.6m. This represents 90% of the public sector investment that will be required to support the implementation of the Package. The remaining 10% will be funded through local contributions. It is anticipated the local contribution will be secured from developers as part of the planning process.

Table 4.4 – Public Sector Capital Investment Costs

	Central Government 90%	Local Government 10%	Total
Transport Improvements	452.0	50.2	502.2
Congestion Charging Scheme	16.6	1.8	18.4
Total	**468.6**	**52.0**	**520.6**

4.93 Tables 4.5 and 4.6 show the operating costs and financial aspects of the Congestion Charging Scheme during the set-up period and potential early years of operation. These are based on the original cost model and will be updated to reflect the new cost model being developed in conjunction with DfT for use in the Programme Entry business case submission, which will be submitted by the end of 2010. The different figures, depending on when the Congestion Charging Scheme is introduced reflect that there would be a different number of users per day.

4.94 It should be noted that at this stage no allowance has been made for any costs required to set up and operate a suitable monitoring regime, potentially using the Congestion Charging Scheme equipment to gauge performance of the network against agreed indicators and triggers. These costs will be developed further and firmed up once the trigger points have been agreed and there is clarity on the exact monitoring requirements. However, they will need to be met from the initial capital investment award.

Table 4.5 – Congestion Charging Scheme Operating Costs Congestion Charging Scheme Introduced 2017 (Early Years)

	Year							
	-2	-1	Opening Year	+1	+2	+3	+4	+5
Revenues	-	-	34,308	34,948	35,605	36,263	36,937	37,620
Operating Costs	-	-	9,818	5,780	5,924	6,077	6,221	6,382
Operating Surplus	-	-	24,489	29,168	29,681	30,186	30,717	31,238
Costs/Revenue	-	-	29%	17%	17%	17%	17%	17%

Values are in £'000s and are in current year pricing for each year. There is no discounting. For the purposes of this example the opening year is assumed to be 2017.

Table 4.6 – Congestion Charging Scheme Operating Costs Congestion Charging Scheme Introduced 2021 (Early Years)

	Year							
	-2	-1	Opening Year	+1	+2	+3	+4	+5
Revenues	-	-	37,665	38,368	39,090	39,812	40,553	41,303
Operating Costs	-	-	10,455	6,162	6,316	6,479	6,632	6,805
Operating Surplus	-	-	27,210	32,206	32,774	33,333	33,921	34,498
Costs/Revenue	-	-	28%	16%	16%	16%	16%	16%

Values are in £'000s and are in current year pricing for each year. There is no discounting. For the purposes of this example the opening year is assumed to be 2021.

Developer Funding

4.95 At present it has been assumed that the 10% local contribution will be met through developer contributions secured through appropriate Section 106 agreements, or emerging mechanisms such as the Community Infrastructure Levy (CIL), linked to the delivery of the new development sites around Cambridge. Although, for the purposes of the economic appraisal, the local contribution has been assumed to apply equally across each of the Transport Improvements, in reality this is unlikely to be the case. However, because many of the development sites are at an early stage in the planning process, there is currently a degree of uncertainty regarding the likely level of developer funding which may be achieved.

OPERATING AND MAINTENANCE COSTS

Transport Improvements

4.96 Both the economic and financial appraisals have taken account of the whole life capital costs of the large scale Transport Improvements schemes. Whilst these costs are attributed to Local Government, it is anticipated that they would be off-set by an increase in central Government funding in the normal way through the LTP block allocation for maintenance.

REVENUE FROM CONGESTION CHARGING SCHEME

4.97 The Council has identified three key areas for the investment of Congestion Charging revenues. In the first instance it is assumed that the revenues will be used to cover the on-going operating and maintenance costs of the Congestion Charging Scheme itself. This will include capital renewal costs.

4.98 Secondly, the revenues could be used as a 'risk' management pot; as a source of funding which would be available to off-set the 'optimism-bias' element of the cost estimates and potentially form part of the local contribution.

4.99 The third area to which Congestion Charging Scheme revenues would be allocated is the delivery of other local transport schemes which meet the wider aims of the Council's Long Term Transport Strategy and Local Transport Plan. This will include support for delivery of key capital programmes including:

- Accessibility Strategy and Area Action Plans
- Wider Pedestrian and Cycling Strategies
- Public transport strategies
- Bus Strategy
- Bus Information Strategy
- Rail Strategy
- Road Safety Strategy and
- Market Town Transport Strategies

5. Delivery and Implementation

5.1 This Chapter provides information on the delivery and implementation of the Package setting out:

- governance arrangements, including political processes;
- project and programme management arrangements;
- implementation timescales;
- delivery mechanisms;
- specific risk management arrangements;
- Stakeholder engagement; and
- Monitoring and evaluation arrangements.

GOVERNANCE

5.2 Successful delivery of the Package, given its scale and importance, will require clear and well-structured governance arrangements. The Council has wide experience of developing and implementing significant programmes across a range of sectors and recognises the role that clear governance arrangements have in successful delivery. Central to this is a well structured political process focused to help enable swift, local and relevant political decisions to be made.

5.3 At the heart of the Council's Executive arrangements are a Cabinet comprising ten County Councillors. The Cabinet are responsible for making recommendations to the Council on the Council's budget, the Council Tax and major service policies. The Cabinet has the power to decide any issue which falls within the overall policy framework, once agreed by the Council.

5.4 The Cabinet is led by the *Leader of Council* who is appointed by the full Council from amongst its membership. The other members of the Cabinet are appointed by the Leader of Council.

5.5 *Members of the Cabinet* have specific areas of responsibility. Cabinet members may also be referred to as "portfolio holders", indicating their responsibility for particular aspects of the Council's services. This includes responsibility for the Council's main services as well as for thematic and cross-cutting issues.

5.6 Whilst most issues will be decided by the Cabinet collectively, individual cabinet members may also take decisions on other issues delegated to them within their areas of responsibility. Decisions may also be delegated to Cabinet Sub-Committees comprising two or more portfolio holders.

5.7 To facilitate local and relevant decision making, certain of the Council's environment and transport related functions are delegated to area joint committees covering each of the five district Council areas of the County (Cambridge City, East Cambridgeshire, Fenland, Huntingdonshire and South Cambridgeshire). The membership of each of

these committees includes representatives of both the County and relevant district/city council, and in the district areas representatives from parish councils. The Committees operate within an overall policy framework and scheme of delegation set by the County Council and Cabinet with their meetings open to the public, and the public able to speak on matters having given prior notification. These committees oversee scheme development and approval for schemes in their area up to £0.5M in value but are also often used to shape schemes with values greater than this and so ensure that local perspectives are fully considered. Schemes over £0.5M are considered and approved by the County Council's Cabinet.

5.8 Schemes within the Council's TIF package have been developed and will continue to be developed through an advisory Joint Transport Forum comprising County Council, Cambridge City Council and South Cambridgeshire District Council Members which has met on a regular basis, generally monthly.

5.9 However, as development of the Package moves forward it will be important that business stakeholders have had the opportunity to input into and shape the final Package. Accordingly, it is envisaged that, in line with one of the recommendations of the Cambridgeshire Independent Transport Commission, a further group comprising Members and representatives of the Greater Cambridge Partnership will be established. It is likely that this will operate in an advisory capacity feeding input to the Joint Transport Forum.

5.10 The Council has been, and will continue to, work closely with the DfT to develop detailed governance arrangements as the process comes forward. At the current time the Council envisages that the following arrangements will support the formal Member processes:-

Governance Structure

Programme Delivery Board

5.11 This will provide clear and strong leadership and democratic accountability, providing strategic and political oversight of the programme. The board will steer key programme issues, including procurement, funding arrangements, phasing of Transport Improvements and communications.

5.12 The function of the board is:

- To make high-level decisions about key programme issues, including procurement, funding arrangements, phasing of Transport Improvements and communications
- To provide guidance on decision making processes to the Programme Director and Programme Manager
- To make appropriate recommendations to Cabinet

5.13 The Programme Delivery Board will be made up of senior Members and Officers as follows:

- The Leader of the Council
- The Deputy Leader of the Council and Cabinet Member for Highways and Access

- Cabinet Member for Growth, Infrastructure and Strategic Planning
- Executive Director, Environment and Community Services (likely to be Senior Responsible Officer)
- Director of Growth and Infrastructure
- Director of Highways and Access
- Corporate Director, Finance, Property and Performance
- Head of Communications
- TIF Programme Manager

5.14 Direct senior Member representation on the Programme Delivery Board will help to provide strong leadership for the project and will ensure that Members are fully aware of key project issues. It will also help to facilitate democratic accountability for the Package of Transport Improvements, as senior Members have a key role to play steering the development of the programme.

5.15 The Programme Director and Programme Manager report directly to the board, updating them on progress and seeking advice and decisions on key issues and important matters as appropriate. The board will meet once a month, with more frequent meetings held if necessary.

Programme Management Team

5.16 The Programme Director and Programme Manager will be responsible for the day to day management and governance of the overall TIF programme and will lead the programme management team. Details on the structure and composition of this are contained in the Project and Programme management section below. The Programme Management team will meet fortnightly and will be the formal conduit and forum for the resolving of issues, developing schemes, formulating and agreeing papers and recommendations and for agreeing issues that need to be elevated to the Programme Delivery Board.

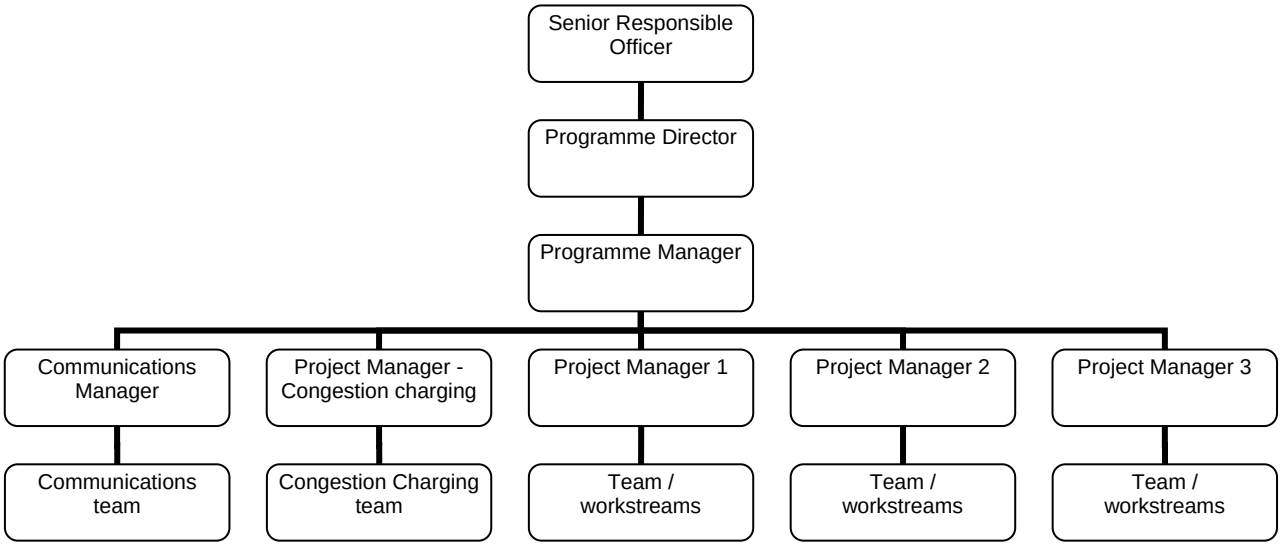
Project and Programme Management

5.17 The Council will utilise formal project management methodology, structures and processes to manage the development and delivery of the Package throughout the various stages of implementation.

5.18 Central to this will be the Programme Director and the Programme Manager roles. These individuals will be responsible for the day-to-day management and advancement of the overall TIF programme. The Programme Manager will manage the Project Managers and their teams who are tasked with delivering individual workstreams or groups of schemes and will be supported by a communications manager and their team who will coordinate all communication functions involved in advancement and delivery of the Programme. The Programme Manager will report to the Programme Director who in turn will report to the Senior Responsible Officer and the Programme Delivery Board. It is expected that the Programme Director and Programme Manager will meet formally on a weekly basis.

5.19 The possible role structure, described above, is illustrated on Figure 4.1 below but is subject to further development.

Figure 5.1 - TIF Delivery Project Management Hierarchy Structure (subject to further development)



Gateway Reviews

5.20 The Council is committed to the process of Gateway Reviews and has embedded their use in its major project delivery on schemes such as Cambridgeshire Guided Busway. For the TIF Package Programme the Council recognises that timely independent external peer review is an essential part of ensuring successful delivery. Accordingly gateway reviews will be initiated and held at appropriate points during development and delivery of the overall Package programme.

IMPLEMENTATION TIMESCALES

5.21 The Transport Improvements proposals must be in place prior to the implementation of any Congestion Charging Scheme. The reasons for this have been set out in Chapter 3, but in summary are two-fold. Firstly, because the Congestion Charging Scheme is designed to encourage use of the Transport Improvements and, secondly, because the public must be convinced, and have seen, that the Transport Improvements have been delivered and real, viable alternatives to the private car are available for travel into/around Cambridge. This assumption underpins all of the programming, demand forecasting and economic appraisal work supporting the Package and Funding Proposition and also underpins all elected member discussions, debate and endorsement around the Council's TIF package proposals.

5.22 It is recognised that some of the Transport Improvements will have a long lead time owing to the need for further detailed development and design processes, and the need to undertake statutory processes and approvals.

5.23 We would expect Government to recognise this and would want to receive any necessary business case approvals in good time along with the required level of funding. Furthermore, we would wish to discuss and agree the coordination of Public

Inquiry and other statutory procedures to ensure that delivery of the Transport Improvements can come forward quickly and effectively.

5.24 A detailed delivery programme for each of the schemes within the package has previously been supplied to DfT following discussions after submission of the OPF. Table 5.1 summarises this programme, albeit slightly modified to reflect timescales have now moved on and that, given this, a Congestion Charging Scheme could not be implemented before 2017.

5.25 Cycling and Walking measures will be implemented in conjunction with other infrastructure schemes across each area. The Smarter Choices Initiatives will be implemented year on year commencing as soon as capital funding enables and continuing throughout the TIF delivery programme and indeed beyond to establish and embed travel considerations into individuals and business's everyday life.

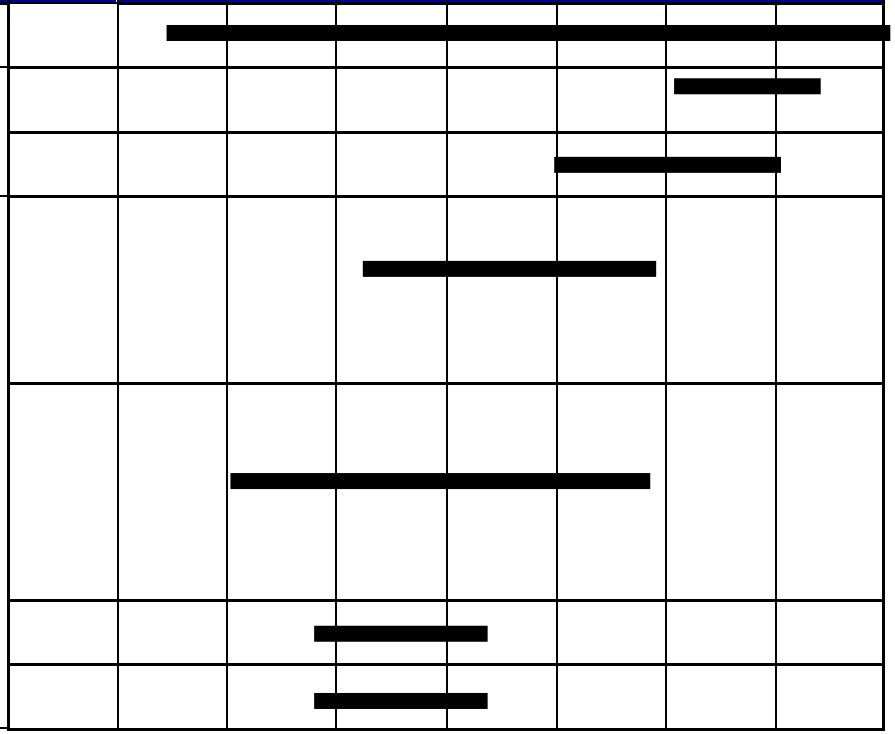
Table 5.1 - Draft Implementation Programme for Package Components

Project Delivery Area/Corridor	Likely Schemes		Task Programme
			2010/11 2011/12 2012/13 2013/14 2014/15 2015/16 2016/17 2017/18
Charging Scheme	Congestion Charging Scheme		
North	North Cambridge Busway	Elizabeth Way junction upgrade	
		Chesterton Station	
		Chesterton Station access	
		Newmarket Rd Segregated busway	
		Milton Rd to Newmarket Rd busway	
	North Cambridge Access	Milton Rd bus priority	
		Milton Park & Ride upgrade	
		Milton Rd P&R bus priority	
West	West Cambridge Busway	Madingley Road junction upgrade	
		Madingley Road upgrade	
		Huntingdon Road to Madingley Road link	
		Castle Street southern closure	
		Bridge Street one-way, buses only	
		Victoria Avenue bus bollard	
		Chesterton Rd westbound busway	

Project Delivery Area/Corridor	Likely Schemes		Task Programme 2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
		Madingley Rd P&R segregated car access								
		Madingley Rd P&R to Huntingdon Rd segregated bus link								
		Huntingdon Rd bus priority								
	West Cambridge Access	Huntington Road to Histon Road link								
		Madingley Park & Ride upgrade								
East	East Cambridge Busway	Newmarket Road P&R segregated car access								
		Cambridge East to Newmarket Rd via Coldham's Common								
		Newmarket Rd new Park & Ride (inc interim bus lane along Newmarket Road from Quy)								
	East Cambridge Access	Fen Ditton Link Road								
		Dualling of Airport Way								
		Airport Way to Quy intersection dualling								
		Outer ring road segregated busway								
South	Hills Road	Hills Road bus bollard								
		Hills Rd bus priority								
		Station Road to Regent Street.								
		Babraham Road P&R segregated car access								

Project Delivery Area/Corridor	Likely Schemes		Task Programme							
			2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
		Hills Rd segregated busway (Brooklands Av to Addenbrooke's)								
	South Cambridge Access	Hauxton M11 P&R access improvements								
		Babraham Rd Park & Ride upgrade (inc upgrade to Cherry Hinton Rd)								
		Trumpington new P&R at Hauxton								
City Centre Initiatives	City Centre Access	PT access improvements and highway junction improvements								
		Access restrictions to central area								
		Traffic management								
		UTC infrastructure upgrade								
		Operation of bus services (HQPT, P&R and conventional bus)								
		New hybrid buses								
		Bus ticketing (Smartcards)								
		Bus ancillary measures								
		PT interchange and stops and ancillary measures)								
Smarter Choices		Smarter choices (travel planning, car clubs)								
Cycling Strategy		Comprehensive cycle network								

Project Delivery Area/Corridor	Likely Schemes		Task Programme
			2010/11 2011/12 2012/13 2013/14 2014/15 2015/16 2016/17 2017/18
Walking Strategy		Comprehensive walking schemes	
Other	Railway Improvements	Rail services	
		Expand Station Car parks (Ely etc)	
	Enhancements to CGB	Huntingdon to St Ives guided bus related priority improvements (inc enhanced bus stops and ticket machines)	
		Other guided busway improvements (Dedicated CGB stops in Cambridge, cycleway lighting, P&R expansion, feeder services)	
		Northstowe Park & Ride extension	
		St Ives Park & Ride extension	



DELIVERY MECHANISMS

Infrastructure Delivery

5.26 The County Council currently has two key contracts in place. We will build on these arrangements to help ensure robust but accelerated delivery of the Transport Improvements elements of the overall TIF package.

5.27 Firstly, for scheme design and supervision there is a "Cambridgeshire Highways Partnership" contract signed in 2006 which will run for up to ten years. This is a partnership between Cambridgeshire County Council and Atkins, supported by supply chain partners, to form a single provider for the highway network management service in the county. The key objective for Cambridgeshire Highways is to work as a single and seamless organisation. It delivers work in a number of areas: highway maintenance, transport asset management, traffic management, street lighting and bridge maintenance as well as the design of major transport infrastructure and transport planning advice.

5.28 The contract provides for joint agreement of target costs prior to commencing work. Once a target cost is set for a job this will be the amount that the County Council expects to pay. Obviously, unforeseen aspects may arise from time to time which will require the target cost to be adjusted through negotiation. A pain/gain mechanism has been developed which means that if Atkins and the supply chain partners deliver a job for less than the target cost, they then share in the savings made. This is balanced with a 'pain' element whereby if the job costs more, Atkins or the supply chain partners meet the majority of the additional cost.

5.29 For project construction, the Council retains two contractors under a Major Scheme Framework contract which uses NEC contract Option D and covers work between £0.5M and £30M. The contract requires both contractors to provide permanent dedicated teams to undertake work in the County. The contract results in significant time savings on major schemes as contractors can play an integral role to scheme design with works not held up by procurement processes.

5.30 The Council recognises that, certainly for scheme development, additional advice and assistance will be required. At the appropriate time, once Programme Entry status is granted, the Council will establish a number of framework contracts to enable it to call on a variety of specialist services (likely areas include legal, land and property, transport consultancy, project management) on an ongoing and ad-hoc basis to ensure prompt development and delivery of the TIF proposals.

5.31 With regard to the Congestion Charging Scheme, a number of delivery mechanisms which could be utilised have been considered and these will be kept under review, in consultation with DfT, as the Congestion Charging Scheme is advanced. However, the Council's current view is that a Single Business Process Outsourced (SBPO) contract appears to offer the Council the best balance of delivering the scheme objectives whilst transferring an appropriate and significant proportion of risk to the provider. Under this scenario the Council would appoint a single contractor for all/most of the systems and operation of the service.

5.32 The potential to use existing contractual arrangements is seen as a positive advantage in achieving a challenging delivery timetable. Delivery management of each of the Transport Improvements would be the responsibility of the Project Teams overseen by the Programme Management Team.

Bus Service Delivery

5.33 Chapter 4 of this document sets out the public transport improvements proposed as part of the TIF package. The Transport Improvements include ambitious proposals to enhance the bus network through

- provision of new, and expansion of existing, High Quality Public Transport infrastructure and services (guided bus and park and ride); and
- significant improvements to the existing Citi network and increases in rural and inter-urban frequency.

5.34 Integral to these will be high quality standards of vehicles, much improved provision of information and a comprehensive fare strategy in order to help deliver the anticipated increase in patronage and mode shift from the private car.

5.35 Taken as a whole, these improvements will provide a step-change in the quality and quantity of public transport available within the Cambridge sub-region. In doing so, they aspire to make Cambridge the best in class for public transport provision and to significantly increase public transport usage in the sub-region.

5.36 To achieve this it will be essential that the County Council works closely with the bus operators and that there is some form of "regulatory" process in place to secure the following:-

- minimum frequency provision;
- Some form of fare control, to ensure public transport use remains accessible and affordable;
- Widespread usage of smartcards/integrated ticketing to make public transport use easy for passengers and assist operators to run efficient, reliable services;
- Some level of control over service levels (ensuring over bussing does not occur);
- High quality vehicles; and
- High quality information provision.

5.37 The Council has an excellent track record of working with the local operators to deliver service improvements and increases in public transport usage. We have, through pro-active close partnership working with Stagecoach, helped to drive up bus patronage by over 100% between 2001 and 2008 and the operators themselves have strongly advocated partnership working as the most successful mechanism to deliver real improvements in public transport services and patronage. Furthermore, through the same working we have arguably the most successful park and ride system in the country, which operates commercially without subsidy and carries over 4 million passengers a year.

5.38 Both Stagecoach and Whippet will run services on the Guided Busway and have signed up to agreements covering service provision, vehicle standards and ticketing. In addition both operators have invested in new high quality vehicles.

5.39 The quality standards already achieved on the Citi network, Cambridge Park and Ride and the investment and commitment of operators to the Guided Busway demonstrate that they are committed to working with the Council to improve the quality of bus service provision in Cambridgeshire.

5.40 The experience we have gained from the procurement of bus services for the Guided Busway between Cambridge and St. Ives has proved invaluable, both in terms of a clear understanding of what can and cannot be achieved and in complex negotiations with the local bus operators. We have had a number of open sessions with local operators to understand their perspective on the various options open to the Council under existing legislation, including the Local Transport Act 2008, to deliver the service improvements required as part of the Transport Improvements.

5.41 Based on these, and the Council's view of the mechanisms available, the preferred approach would involve utilising Voluntary Partnership Agreements (VPA) as the main basis for moving forward with the backing of Quality Partnership Scheme's (QPS's) on selected corridors where infrastructure improvements have been made.

5.42 The VPA could, potentially, be wide ranging and include agreement on:

- Vehicle standards – including emission levels
- Operational standards – for example punctuality
- Allocation of services between participating operators, together with co-ordinated timetables on common corridors
- Minimum service frequencies
- First and last buses
- Service routing
- Maximum fares

5.43 In principle it seems feasible that such agreements could include revenue or profit sharing arrangements between individual operators and CCC.

5.44 To ensure non-signatory operators are excluded it is proposed that QPS, with similar service standards to those agreed in the VPA, are made on selected corridors where investment has been made.

5.45 Discussions with operators to date have demonstrated they are enthusiastic and supportive of the Transport Improvements contained in the Council's TIF Package. Furthermore, they have indicated that such an approach, subject to detailed negotiations, would be likely to prove acceptable. The Council will continue to work, on an open and non-exclusive basis, with operators in Cambridgeshire and DfT to develop the approach and mechanisms in more detail. This will give confidence that the public transport services and benefits envisaged as part of the Transport Improvements will be delivered.

RISK MANAGEMENT

5.46 A comprehensive approach to risk management of the TIF Package Programme and its component parts has been undertaken. A detailed risk assessment report and risk mitigation strategy document have been previously submitted to DfT in response to queries arising from the Outline Proposal for Funding (OPF).

5.47 In summary, a quantified risk register is in place for the whole package. This contains:

- potential risks for the large scale (cost) infrastructure Transport Improvements

- potential risks for the Congestion Charging Scheme
- Assessment of the potential impacts of the risk
- Assessment of 'likelihood' of the identified risks occurring
- Identification of risk owners
- Preliminary risk allowance

5.48 The activities undertaken to date reflect the development of the Package and the preliminary design status (in engineering terms) of the Transport Improvements. The risk register is a live document, which will be continuously revised as the Package is developed, and decisions relating to the responses to risks become better informed. Risks will be added or removed from the register, through a process of management and mitigation, with the aim of reducing the risk adjusted costs of the Package. Since submission of the OPF the risk register has been reviewed and updated alongside the review and updating of all schemes and scheme costings. Moving forward the following activities will need to be undertaken:

- Review need for risk assessment of non-infrastructure Transport Improvements
- Review generic risk allowance for small scale infrastructure Transport Improvements
- Develop treatment of Congestion Charging Scheme risks in conjunction with the procurement process
- Develop risk management strategies for individual components of the package e.g. will the identified risks be tolerated, treated, transferred or terminated and how will this be achieved.

5.49 Ongoing risk management will take place throughout the development of the TIF Package and during individual scheme delivery. The Council will utilise the risk register, reviewing it on a frequent basis. It will be a key reportable to the Programme Delivery Board and will be considered on a fortnightly basis by the Programme Management Team.

MONITORING AND EVALUATION

5.50 Once the Transport Improvements are in place, it is proposed that progress against any agreed indicators will be monitored, potentially using equipment which could form the basis of the Congestion Charging Scheme. It will be important that the methodology for measurement ensures monitoring is undertaken in a robust and consistent way.

5.51 In addition, it is envisaged that we would utilise the existing data collection programme already in place in Cambridge for wider monitoring and as part of the LTP. This would include manual classified traffic counts, automatic counts and electronic ticket machine (ETM) data from public transport operators.

5.52 The exact form and detail of the monitoring arrangements will be agreed with DfT as part of the Partnership Agreement. Accordingly, at this point in time, we have not sought to quantify the likely costs of such a monitoring regime although this will need to be funded from TIF investment.

6. Modelling and Forecast of Package Impacts

6.1 This Chapter provides an overview of the demand modelling process used to forecast the impacts of the Package along with a summary of the key findings.

MODELLING OVERVIEW

6.2 Since the submission of the OPF significant work has taken place to develop an enhanced integrated modelling system known as the Cambridge Sub Regional Model (CSRM).

6.3 The CSRM allows stand-alone testing of road, public transport, cycle, pedestrian schemes, standard economic benefit tests using the highway and demand model with fixed trip ends, as well as complex tests of strategic policy options incorporating land use responses. The essential features of the CSRM model structure are:

- A linked land use model to generate trip ends from forecast planning data and travel accessibilities.
- A detailed Transport Demand Model (TDM), using *MEPLAN* software. It includes traveller responses including choice of mode/sub-mode, change of (macro) time day of travel, and trip redistribution among destinations. Travellers are segmented by income, trip purpose and car ownership. This model is compliant with current Department for Transport guidance for variable demand modelling including the assessment of road pricing schemes.
- A public transport, walk and cycle assignment sub-model (PT-Walk-Cycle) also implemented in *MEPLAN*.
- A highway assignment sub-model (LHM) using SATURN software for light (LGV) and heavy good vehicle (HGV) assignment.

6.4 Model Validation reports for both CSRM and the LHM have been provided to DfT.

Scenario Analysis

6.5 The appraisal presented in this Package and Funding Proposition is based on our proposition that substantial transport investment is made and that triggers will be established which will determine when a Congestion Charging Scheme is introduced. For the purposes of modelling and appraisal, however, two hypothetical scenarios have been developed to give Government a better understanding of the benefits of the Package of investment and the impacts of implementing a Congestion Charging Scheme at different points in time:

- firstly, introduction of all Transport Improvements by 2016 with a Congestion Charging Scheme introduced in 2017; and
- secondly, introduction of all Transport Improvements by 2016 with a Congestion Charging Scheme introduced in 2021.

6.6 It is important to note that this is not suggesting a Congestion Charging Scheme will be introduced in either 2017 or 2021 but merely to demonstrate that there is a viable case for investment in Cambridgeshire. As highlighted previously, it is proposed that

the actual date on which the Congestion Charging Scheme would be introduced will be dependent on performance of the Transport Improvements in containing congestion/traffic growth below the trigger points which will be agreed.

OVERALL PACKAGE IMPACTS

Demand Impacts

6.7 Table 6.1 shows the impacts on travel demand by different modes for the base year (2006), 2016 Do-Minimum and 2021 Do-Minimum and the two Do-Something scenarios. The AM peak hour trips have at least one trip end in Cambridge.

6.8 The Table demonstrates that compared to the base year (2006), which can be considered the current position on the network:

- In 2017, highway trips will reduce by 21% if a Congestion Charging Scheme is introduced in that year.
- If a Congestion Charging Scheme was not introduced until 2021, highway trips would be 13% less than in the 2006 base year.

6.9 The actual level of reduction is actually greater than this because between 2006 and 2021 the number of highway trips is predicted to grow by 48%, as a result of background growth and significant growth in housing numbers and jobs.

6.10 Table 6.1 illustrates that the main switch in trip numbers is to public transport with overall public transport trips (HQPT, P&R and PT) up 66% from the base year with the Congestion Charging Scheme introduced in 2017 and by 85% if the Congestion Charging Scheme is introduced in 2021. The greatest increase is seen in HQPT and Park and Ride trips which rise significantly from the 2006 base by 147% if the Congestion Charging Scheme introduced in 2017 and by 186% if the Congestion Charging Scheme is introduced in 2021. Trips by sustainable modes increase by 34% and 47% respectively over the 2006 base trip numbers.

Table 6.1 Package Impacts on Trip Demand During AM Peak Hour

Year		2006 (Base)	2016 Do Minimum	2021 Do Minimum	2017	2021
Transport Improvements (year of introduction)		✖	✖	✖	**2016**	**2016**
Congestion Charging Scheme (year of introduction)		✖	✖	✖	**2017**	**2021**
Highway	**No. of Trips**	21,260	28,335	31,448	16,856	18,550
	Change from 2006 Base	-	+33%	+48%	**-21%**	**-13%**
	Change from 2016DM	-	-	-	-41%	-35%
	Change from 2021DM	-	-	-	-	-41%
HQPT & P&R	**No. of Trips**	2,764	3,459	3,645	6,840	7,916
	Change from 2006 Base	-	+25%	+32%	**+147%**	**+186%**
	Change from 2016DM	-	-	-	+98%	+129%
	Change from 2021DM	-	-	-	-	+117%
PT	**No. of Trips**	4,508	4,986	5,333	5,217	5,566
	Change from 2006 Base	-	+11%	+18%	**+16%**	**+23%**
	Change from 2016DM	-	-	-	+5%	+12%
	Change from 2021DM	-	-	-	-	+4%
Sustainable Modes	**No. of Trips**	26,670	33,544	36,929	35,735	39,253
	Change from 2006 Base	-	+26%	+38%	**+34%**	**+47%**
	Change from 2016DM	-	-	-	+7%	+17%
	Change from 2021DM	-	-	-	-	+6%
TOTAL Across all Modes	**No. of Trips**	**55,202**	**70,324**	**77,355**	**64,649**	**71,285**
	Change from 2006 Base	**-**	+27%	+40%	**+17%**	**+29%**
	Change from 2016DM	-	-	-	-8%	+1.5%
	Change from 2021DM	-	-	-	-	-8%

Strategic Outcomes

6.11 Table 6.2 presents a set of key highway indicators demonstrating the impact of the two tested scenarios in 2017 and 2021 with the 2006 base and 2016 and 2021 Do-Minimum scenarios for the AM peak period. The figures are presented for the City boundary area.

6.12 Under both scenarios traffic congestion, delays and overall travel time within the City is significantly reduced.

6.13 Table 6.2 shows that with the Transport Improvements in place and a Congestion Charging Scheme introduced in 2017 that compared with the base year, which approximates to the current conditions on the network, vehicle km's will be reduced by 23%, delays will reduce substantially by 43% and overall travel time will be reduced by 31%.

6.14 With the Transport Improvements in place and a Congestion Charging Scheme introduced in 2021 vehicle km's will be reduced by 15%, delays will reduce substantially by 33% and overall travel time will be reduced by nearly 23% compared with the 2006 base year.

6.15 Both scenarios also result in a substantial reduction in carbon emissions compared to the 2006 base.

Table 6.2 Package Impacts on Highway Performance Demand during AM Peak Hour within City Boundary

Year		2006 (Base)	2016 Do Minimum	2021 Do Minimum	2017	2021
Transport Improvements (year of introduction)		✖	✖	✖	**2016**	**2016**
Congestion Charging Scheme (year of introduction)		✖	✖	✖	**2017**	**2021**
Travel distance	**Vehicle km**	75,634	94,782	102,790	58,578	64,474
	Change from 2006 Base	-	+25%	+36%	**-23%**	**-15%**
	Change from 2016DM	-	-	-	-38%	-32%
	Change from 2021DM	-	-	-	-	-37%
Delay	**Hrs**	1,006	1,306	1,683	575	670
	Change from 2006 Base	-	+30%	+67%	**-43%**	**-33.5%**
	Change from 2016DM	-	-	-	-66%	-49%
	Change from 2021DM	-	-	-	-	-60%
CO_2 Emissions (including vehicle efficiency savings)	**Kg**	4,631	4,877	5,004	2,940	3,037
	Change from 2006 Base	-	+5%	+8%	**-37%**	**-34.5%**
	Change from 2016DM	-	-	-	-46%	-39%
	Change from 2021DM	-	-	-	-	-48.5%
Overall Travel Time	**Hours**	2,872	3,653	4,237	1,986	2,226
	Change from 2006 Base	-	+27%	+47.5%	**-31%**	**-22.5%**
	Change from 2016DM	-	-	-	-46%	-39%
	Change from 2021DM	-	-	-	-	-48.5%

Bus/HQPT Impacts

6.16 Table 6.3 shows the public transport vehicle kilometres operated per peak hour in the Do-Minimum and Do-Something scenarios broken down by type of public transport service.

6.17 All service types show increased veh-km with the largest percentage increase on HQPT. Overall, public transport vehicle kilometres rise by between 138% and 165% compared with the 2006 base.

Table 6.3 Public Transport Vehicle-Kilometres Operated per AM Peak Hour

Year		2006 (Base)	2016 Do Minimum	2021 Do Minimum	2017	2021
Transport Improvements (year of introduction)		✖	✖	✖	**2016**	**2016**
Congestion Charging Scheme (year of introduction)		✖	✖	✖	**2017**	**2021**
HQPT (two way)	**Vehicle km**	0	568	568	2257	2786
	Change from 2006 Base	-	-	-	-	-
	Change from 2016DM	-	-	-	297%	390%
	Change from 2021DM	-	-	-	-	390%
P&R (two way)	**Vehicle km**	275	295	295	493	576
	Change from 2006 Base	-	7%	7%	79%	109%
	Change from 2016DM	-	-	-	67%	95%
	Change from 2021DM	-	-	-	-	95%
City Service (two way)	**Vehicle km**	814	835	835	1450	1742
	Change from 2006 Base	-	3%%	3%%	78%	114%
	Change from 2016DM	-	-	-	74%	109%
	Change from 2021DM	-	-	-	-	109%
Other Services to/from Cambridge	**Vehicle km**	2143	2391	2391	3476	3476
	Change from 2006 Base	-	12%	12%	62%	62%
	Change from 2016DM	-	-	-	45%	45%
	Change from 2021DM	-	-	-	-	45%
TOTALS	**Vehicle km**	3,232	4,089	4,089	7,676	8,580
	Change from 2006 Base	-	+27%	+27%	+138%	+165%
	Change from 2016DM	-	-	-	+88%	+110%
	Change from 2021DM	-	-	-	-	+110%

Journey Time Impacts

6.18 Table 6.4 presents the changes between the Do-Minimum and Do-Something scenarios for bus and HQPT journey times for some of the key movements going to the city centre. Journey times from Milton to the City centre and from Cambridge East to the city centre reduce significantly as a result of the segregation that will be provided.

Table 6.4 Bus and HQPT journey time for Key Sample Movements (AM peak hour)

Year			2016	2017	2021
Transport Improvements (year of introduction)			×	2016	2016
Congestion Charging Scheme (year of introduction)			×	2017	2021
Journey	Huntingdon - Drummer St.	Minutes	46.7	43.0	43.0
		Change from DM	-	-8%	-8%
	Papworth Everard - Drummer St. (via A428)	Minutes	37.3	36.4	36.9
		Change from DM	-	-2.5%	-1%
	Harston - Drummer St. (via Hauxton Road)	Minutes	21.8	23.2	23.9
		Change from DM	-	+6%	+10%
	Haverhill - Drummer St. (via A1307)	Minutes	62.9	62.4	62.5
		Change from DM	-	-1%	-1%
	Cambridge East - Drummer Str.	Minutes	9.5	7.9	7.9
		Change from DM	-	-17%	-17%
	Milton - Drummer St.	Minutes	27.6	16.2	16.2
		Change from DM	-	-41%	-41%
	Histon - Drummer St.	Minutes	15.6	15	15
		Change from DM	-	-4%	-4%

Demand Impacts

6.19 Demand for public transport services increases significantly as a result of the proposed TIF Package. Table 6.5 provides data showing the impacts of the Package on public transport demand in the base year (equivalent to current day), Do-Minimum and the two Do-Something scenarios.

6.20 There are substantial increases in segregated bus patronage and Park & Ride patronage following the introduction of the Transport Improvements and either of the two Congestion Charging Scheme scenarios. City services also see a large increase over current day levels. Consequently, overall bus patronage rises significantly, at between 48% and 62% higher than current patronage levels.

6.21 Whilst superficially from the table it appears that rural boardings are decreasing this is primarily as a result of some (2006) rural services becoming guided busway services in the future years in the Huntingdon corridor, although there is a limited amount of abstraction to Park & Ride. Overall, rural service patronage sees a very low level of growth between the 2016 and 2021 do minimum compared with the two Congestion Charging Scheme scenarios. This can be attributed to the increasing cost of bus travel compared with car, based on the assumption of growth in fares of RPI+2%. This effect is particularly felt on the rural services due to the longer trip length, lower congestion levels and higher car ownership.

Table 6.5 Number of Passenger AM Peak Hour Boardings for Bus based Public Transport

Year		2006 (Base)	2016 Do Minimum	2021 Do Minimum	2017	2021
Transport Improvements (year of introduction)		✖	✖	✖	**2016**	**2016**
Congestion Charging Scheme (year of introduction)		✖	✖	✖	**2017**	**2021**
Segregated Bus	**Passenger Boardings**	0	1,613	1,874	3,417	4,461
	Change from 2006 Base	-	-	-	-	-
	Change from 2016DM	-	-	+16%	+112%	+177%
	Change from 2021DM	-	-	-	-	+138%
P&R	**Passenger Boardings**	1,523	1,494	1,466	3,790	4,240
	Change from 2006 Base	-	-2%	-4%	+149%	+178%
	Change from 2016DM	-	-	-2%	+154%	+184%
	Change from 2021DM	-	-	-	-	+189%
City Services	**Passenger Boardings**	2,815	3,373	3,822	3,615	4,042
	Change from 2006 Base	-	+20%	+36%	+28%	+44%
	Change from 2016DM	-	-	+13%	+7%	+20%
	Change from 2021DM	-	-	-	-	+6%
Rural services	**Passenger Boardings**	8,110	7,471	7,410	7,573	7,431
	Change from 2006 Base	-	-8%	-8.5%	-7%	-8%
	Change from 2016DM	-	-	-1%	+1%	-0.5%
	Change from 2021DM	-	-	-	-	0%
TOTAL	**Total Boardings**	12,448	13,951	14,572	18,395	20,174
	Change from 2006 Base	-	+12%	+17%	+48%	+62%
	Change from 2016DM	-	-	+4%	+32%	+45%
	Change from 2021DM	-	-	-	-	+38%

Financial Impacts

6.22 Table 6.6 shows the change in vehicle-kilometres operated in the AM peak hour by public transport services between the 2021 Do-Minimum and the scenario whereby a Congestion Charging Scheme is introduced in 2021. It also illustrates forecast operating costs and revenues for the services at 2021 and hence the net impact on operators when revenues are offset against operating costs.

Table 6.6 Public Transport Modes – Financial Impacts (£m 2021)

Public transport mode	Change in route veh-km (RP in 2021)	Additional operating cost Maintenance (£m)	Additional operating cost Operations (£m)	Incremental revenue (£m)	Operating deficit / surplus (£m)
Segregated Bus	2,218	113	19,987	6,758	-13,342
P&R	281	126	6,096	11,891	5,669
Bus	1,991	0	-3,828	802	4,630
TOTAL	**4,197**	**239**	**22,255**	**19,451**	**-3,043**

6.23 It can be seen that initially, in this first year, there is an operating deficit forecast for the operators. This is a reflection of the additional operating costs and investment incurred by them to enhance service frequencies and vehicles upon introduction of a Congestion Charging Scheme. The full 60 year appraisal, see Private Sector Providers in Chapter 7, has demonstrated that overall there is a net surplus for operators. However, it is recognised that over the next 12-15 months, as we work towards a Programme Entry business case by the end of 2010, further work will be required to optimise operating costs and revenues on an annual basis.

WALKING, CYCLING, SMARTER CHOICES

6.24 The benefits of the walking, cycling and smarter choices measures have not been re-assessed for the purposes of this proposition and remain as submitted in the OPF.

6.25 Benefits associated with improvements in walking and cycling were assessed in line with DfT guidance. The proposed cycling and walking measures for Cambridge represent a step change in the facilities and are expected to deliver ambience, health and absenteeism benefits.

6.26 Benefits were calculated in accordance with guidance, for the 60 year appraisal period, and are included in the Package economics. Table 6.7 below summarises the benefits associated with walking and cycling and include consumer user benefits and business user benefits.

Table 6.7 Walking and Cycling Benefits

PV £m	Travel Time / Ambience (Consumer)	Health (Consumer)	Absenteeism (Business)	Decongestion (Consumer)	TOTAL
Walking	68.8	66.3	42.4	0.0	177.6
Cycling	355.8	52.4	18.2	0.0	406.5
Total	404.6	118.8	60.6	0.0	584.1

6.27 The Smarter Choices Strategy aims to bring about a behavioural change in travellers in favour of sustainable and soft modes. The modelling framework does not capture the mode shift attributable to a smarter choice strategy and hence DfT's published evidence on impacts of similar strategies was reviewed. After considering the current high level of cycle use in Cambridge, a 5% shift in car trips in the Central Cambridge area is expected from the Smarter Choice strategy. The calculation behind this work

has previously been supplied to DfT and remains, for the purposes of this submission, unchanged.

6.28 The reduction in car-miles from the mode shift was combined with the WebTAG guidance on estimating external costs of car use to provide the expected benefits from implementing the smarter choice strategy.

6.29 Table 6.8 summarises the benefits forecast to arise from the Smarter Choices Strategy, over the 60 year appraisal period. **However, it should noted that as a conservative estimate the Smarter Choices benefits have not been included in the overall economic appraisal.**

Table 6.8 Smarter Choices Benefits

PV £m	Travel Time / Ambience (Consumer)	Health (Consumer)	Absenteeism (Business)	Decongestion (Consumer)	TOTAL
Smarter Choices	0.0	0.0	0.0	116.1	116.1

7. Appraisal and Value for Money

OVERVIEW

7.1 This Chapter provides some background material to the appraisal process, specifically the assumptions underpinning the economic appraisal. It then sets out the appraisal of the Package and the two hypothetical Congestion Charging Scheme scenarios.

7.2 The assessment has been undertaken using the latest version 1.7b of DfT's Transport User Benefit Analysis (TUBA) software for a 60 year appraisal period, in accordance with current guidance.

Scenario Analysis

7.3 The scenarios appraised were as set out in Chapter 6.

ECONOMIC APPRAISAL ASSUMPTIONS

7.4 The scheme appraised is for a £4 area licence (with no reduction for residents) applied between 07:30 and 09:30 for all vehicles. The charge area, and scheme costs are all as documented for the Central Case in the TIF Outline Proposal for Funding (OPF) submitted in 2007, with the following exceptions:

- Optimism Bias for the congestion charging scheme is reduced to 65%-75%[7];
- The assumed opening year has been delayed from 2011 until either 2017 or 2021 for the Congestion Charging Scheme;
- Public transport operating costs and fares are forecast to grow at 2% per annum from the base year[8];
- Congestion charges are modelled in 2006 prices and are forecast to increase at 2% per annum after the opening year of 2017 or 2021.

Risk Assessment

7.5 A description of the risk management process and how this will be integrated into the development and delivery of the Package is dealt with in Chapter 5.

7.6 Within the economic appraisal, construction and operational risk has been treated in two different ways:

- For key components within the Package a Quantified Risk Analysis has been undertaken.
- For smaller scale Transport Improvements generic assumptions have been made regarding the risk adjusted cost to be included.

[7] On the basis of figures from the DfT's feasibility study into local road user charging schemes, Optimism Bias (OB) assumptions were revised as follows:
- CAPEX OB reduced from 95% to 75%;
- OPEX OB reduced from 95% to 65%.

[8] Note that the congestion charge of £4 is modelled in 2006 prices at the scheme opening of 2017, and only assumed to increase in real terms *after* 2017.

7.7 So as not to 'double count' risk costs, the risk assessment process reflects the proposed delivery and implementation structure described in Chapter 5. Where individual measures are identified as part of a delivery Package, the risks for the Package as a whole are considered together. Where measures do not fit readily into one of the potential delivery Packages, risk costs are identified separately.

7.8 The risk adjusted costs for the Package components have, for the purposes of this appraisal, remained unchanged from the OPF submission and are presented in Table 7.2. This is because in moving forward towards a Programme Entry business case submission by the end of 2010 the Package composition along with the costs will continue to be revisited. Work updating the costs of the current package to date has indicated they have not, at this point in time, changed substantially from the OPF submission.

Optimism Bias

7.9 Within the economic appraisal, optimism bias has been applied to each of the risk adjusted capital cost components in accordance with DfT guidance. All of the measures within the Package have been categorised as Stage 1, Local Authority and Public Transport schemes, in accordance with the current status of these proposals.

7.10 The levels of Optimism Bias Uplifts that have been applied are summarised in Table 7.1.

Table 7.1 - Optimism Bias

Type of intervention	Optimism Bias Applied
Road Schemes	
Local Roads	44%
Bicycle facilities	
Pedestrian facilities	
Park & Ride	
Bus Lane Schemes	
Guided Bus	
Rail	
Conventional Rail	66%
Congestion Charging Scheme	65-75%

7.11 Optimism Bias uplifts have not been applied to operating costs associated with public transport services improvements. It is considered that the degree of uncertainty associated with operational bus costs is not significant in the context of the wider scheme.

Capital Costs

7.12 Table 7.2 summarises the capital costs associated with each of the Package components. These are grouped by potential geographic delivery area (as described in Chapter 4) and include those elements of the Transport Improvements Strategy which will be implemented across the network. As highlighted earlier in this Chapter these remain unchanged from the OPF for the reasons stated.

Table 7.2 – Summary of Capital Costs

Ref	Short Description	Total Base Cost	Preparation	Supervision	Construction	Land and property	Risk Allowance	OB Adjusted Cost
N	**North**	**130,000,000**	**35,000,000**	**5,100,000**	**75,000,000**	**18,000,000**	**16,000,000**	**220,000,000**
W	**West**	**33,000,000**	**3,300,000**	**2,100,000**	**27,000,000**	**400,000**	**9,200,000**	**61,000,000**
E	**East**	**75,000,000**	**17,000,000**	**3,600,000**	**49,000,000**	**5,400,000**	**19,000,000**	**140,000,000**
S	**South**	**50,000,000**	**8,100,000**	**2,800,000**	**37,000,000**	**1,800,000**	**11,000,000**	**92,000,000**
CS	**Cycling strategy**	**46,000,000**	**6,000,000**	**3,500,000**	**32,000,000**	**3,700,000**	**8,900,000**	**78,000,000**
WS	**Walking strategy**	**9,700,000**	**830,000**	**620,000**	**8,300,000**	**0**	**1,700,000**	**16,000,000**
C	**City Centre Initiatives**	**24,000,000**	**2,600,000**	**1,800,000**	**18,000,000**	**1,600,000**	**2,900,000**	**41,000,000**
O	**Other**	**170,000,000**	**4,100,000**	**2,600,000**	**160,000,000**	**1,000,000**	**3,500,000**	**250,000,000**
CC	**Congestion Charging**	**14,000,000**	**3,500,000**	**0**	**10,000,000**	**0**	**4,400,000**	**36,000,000**
	Total	**£551,700,000**	**£80,430,000**	**£22,120,000**	**£416,300,000**	**£31,900,000**	**£76,600,000**	**£934,000,000**

Operating Costs

7.13 Table 7.3 provides a summary of annual operating costs for the Transport Improvements measures in the forecast years of 2016, 2021, 2026 and 2031. These costs reflect the operating costs associated with the Transport Improvements by mode, assuming a 2016 opening. The maintenance costs include whole life renewal costs as well as annual maintenance.

Table 7.3 - Summary of Operating Costs – Transport Improvements

Year	Maintenance (£K)	Operations (£K)
2016	£1,167.77	£ 8,031.88
2021	£1,361.19	£24,449.49
2026	£1,845.02	£28,472.15
2031	£8,424.92	£30,047.99

Costs are in 2007 prices.

7.14 The operating and maintenance costs include the following key elements:

- Bus operating costs incorporate the provision of a hybrid fleet;
- Road operating costs are associated with the proposals for Urban Traffic Control and the Traffic Management Centre;
- Road maintenance costs have been calculated in accordance with the COBA manual; and
- Rail operating costs are associated with increased service provision.

7.15 Table 7.4 provides a summary of annual operating costs for the Congestion Charging Scheme in the forecast years of 2017, 2021, 2026 and 2031. The maintenance costs include whole life renewal costs as well as annual maintenance.

Table 7.4 – Summary of Operating Costs – Congestion Charging Scheme

Year	Maintenance (£K)	Operations (£K)
2017	£343.73	£9,534.60
2021	£343.73	£5,339.76
2026	£343.73	£5,339.76
2031	£343.73	£5,339.76

Costs are in 2007 prices

7.16 Note that, as reported in the OPF, these figures exclude Optimism Bias[9]. If the Congestion Charging Scheme were to open in a different year (i.e. 2021 instead of 2017), the larger opening year operating cost would be incurred in that year instead,

[9] Note that for the opening year Operations costs used in the appraisal still retain the 95% OB assumed at OPF. This erroneously adds approaching £3m of costs, which should be subtracted from PVC and added to NPV.

with Operating costs (Opex) for the other years in this table unaffected. Note that the appraisal does include replacement costs every seven years, but that none of these costs are incurred in any of the years shown in Table 7.4[10].

7.17 Assumptions regarding the treatment of costs within the economic appraisal are presented below.

Treatment of Costs within the Economic Appraisal

7.18 The appraisal reported here includes costs for all components of the Package.

7.19 It has been assumed that 10% of the Package schemes' investment costs are paid through developer contributions, via Local Government, with the remainder funded by Central Government. All Congestion Charging scheme operating costs are borne by Local Government and PT scheme operating costs borne by the operators. Central Government is assumed to fund the pump-priming costs of the smart-ticketing scheme, which are defined as operating costs.

7.20 The temporal profile of scheme costs has been assumed to be that required to allow the Transport Improvements to be implemented in 2016 and the Congestion Charging Scheme to open either in 2017 or in 2021.

7.21 Values have been calculated and input as 2007 prices with a conversion to 2002 prices undertaken within TUBA.

7.22 The most significant ongoing cost is the replacement cost of the Congestion Charge technology. This has been assumed to be replaced every seven years, which when combined with other operating costs for the Package of schemes gives operating costs which are slightly greater than the initial investment costs for the Package.

7.23 Assumptions regarding the treatment of costs within TUBA were summarised in the OPF Economic Appraisal Report. There are two material changes from previous assumptions:

- the Optimism Bias assumed for the Congestion Charging Scheme has been revised[11] from the previously assumed 95% to:

  75% for set up and Capital costs;

  65% for Operating costs.

- PT Opex (along with fares and congestion charges) are assumed to increase at 2%p.a. in real terms, to 2031 - the final forecast year, after which modelled impacts (such as user benefits) are assumed constant over time, so costs are fixed too, for consistency.

[10] as no year in the table is a multiple of 7 years after the year of construction completion, irrespective of whether this is assumed to be 2017 or 2021.

[11] These figures have been taken from the DfT's Feasibility Study on National Road Pricing (local schemes)

User Benefit Assumptions

7.24 The assumed traffic mix has been based on data collected in Cambridge in 2006 for this study, including RSI surveys and traffic counts. These assumptions include the observed purpose types and car occupancies for direct input to TUBA, and the proportion of light vehicles in each traffic model 'user class' that are cars and LGVs.

7.25 A HGV vehicle is assumed to be 2.3 pcu and the input matrices are factored accordingly by dividing the pcu matrix by 2.3.

7.26 The default person factors for HGVs in the economic input file have all been set to 1.0, reflecting the presence of a driver only. For all light vehicle purposes, it is possible to define user classes based on the default zero person type, recognised as driver and passenger by TUBA. For these user classes, occupancies have been defined for each vehicle type, purpose and time period in the default person factors section of the economics parameter file.

7.27 Person factors do not change over the appraisal period.

7.28 The value of time used is the same within each consumer journey purpose, regardless of whether they are car or LGV users. For Business purposes, values of time differ between car drivers, car passengers and occupants of LGVs, in accordance with Guidance.

7.29 The public transport model provides demand matrices by mode. However, for the purposes of calculating PT user benefits, travel times/costs are first aggregated across modes and then results for unreasonably large changes are discarded before conducting the appraisal. The aggregation uses the commonly used logsum formulation. The aggregation and the discarding of extreme costs/benefits prevent erroneous modelling results from affecting the appraisal[12].

User Charge Assumptions

7.30 The charge has been input in current prices, or rather those prevailing in the model base year of 2006. It is therefore interpreted by TUBA as a perceived £4 charge in 2006 prices. Within TUBA it is assumed that VAT is not to be levied on the charges. Consequently, charge revenues are automatically uplifted by the average rate of indirect taxation (20.9%) to translate them into market prices, to the benefit of Local Government, with a commensurate indirect tax impact on Central Government.

7.31 Passengers do not pay any charges.

7.32 The charges applied generate local government revenue, not central government revenue.

[12] For instance, problems can legitimately arise where a new service is provided to an area not previously served by that mode. Missing costs for the 'without-scheme' case will invalidate the comparison between 'with-' and 'without-' cases. Aggregating across modes minimises the instance of such problems as there should always be a valid 'without-scheme' cost against which to compare 'with-scheme' costs.

Annualisation Assumptions

7.33 For highway appraisal, the AM peak has been assumed to be two hours (representing 1.85 times the demand in the peak hour), for 253 days per year. For PT appraisal the AM peak has been assumed to be 2/3 of the three hour AM peak period modelled in the CSRM, again for 253 days per year.

7.34 To reflect the fact that some users make more than one journey in the morning peak period (accounting for an estimated 15% of trips) and will only pay the area licence once, all input toll matrix files are factored by 0.85.

7.35 The inter-peak has been assumed to represent the balance of the nine hours between 07:00 and the beginning of the PM peak period at 16:00, excluding the two hour AM peak period during which charges are levied. For the highway appraisal the calculation is demand normalised; rather than simply multiplying inter-peak model outputs by seven hours per day, results are factored by 7.04. For the PT appraisal the inter-peak period is taken to be 7/6 of the six hour period inter-peak period modelled in the CSRM. Again, there are assumed to be 253 days per year. There are no tolls applied within the inter-peak model.

7.36 For highway appraisal, the PM peak has been assumed to be three hours (representing 2.70 times the demand in the peak hour), for 253 days per year. For PT appraisal the PM peak has been taken directly (without factoring) from the three hour PM peak period modelled in the CSRM, again for 253 days per year.

Park & Ride Assumptions

7.37 Several assumptions are made when dealing with the Park & Ride (P&R) car leg trips as addressed below.

- The vehicles in the demand matrix for the Park & Ride car leg are only cars. Therefore the occupancy is not a weighted average of car and LGV; it is taken from the 2006 RSI data on car occupancy.
- The VOT and VOC for the Park & Ride car leg are the same as for car.
- The Park & Ride car leg time and distance matrices are the same as for car.

7.38 It is assumed that Park & Ride users do not incur charges to access the sites.

Safety

Accidents

7.39 As TUBA does not calculate accident savings, the impact of the Package on the number of accidents in the study area was estimated separately using the CHUMMS spreadsheet safety model (updated for use on this study). This spreadsheet is based on the COBA11[13] recommended methodology for calculating road accident numbers and costs (updated to include the 2003 revised rates and 2004 revised costs). Default COBA accident and casualty rates, in terms of accidents per million vehicle kilometres and casualties per accident, and average costs were used for all roads within the study area. This includes an assumed general decline in the incidence and severity of accidents, in line with recent trends, and an assumed growth in value, in line with the growth in incomes.

[13] COBA Manual: *DMRB, Volume 13*, Section 1, Part 4, Highways Agency 2004.

7.40 The accident cost savings associated with each of the options were estimated by comparing the total Package[14] costs (DS) with the Reference Case (DM) costs as shown Table 7.5.

7.41 It should be noted that the offline calculation of accident benefits has not been updated from the OPF. This is because accident evaluation needs to be re-calculated on a link by link basis related to flow and link classification. Given the changes in vehicle kilometre predictions in the Cambridge urban area are similar to the previous OPF assessment there is a strong likelihood that the scale of the accidents benefits will be of similar magnitude.

Table 7.5 - Summary of accident/casualty rates by modelled year

	Casualty Costs £m*	Accident Costs £m*	PIA Casualties & Accidents (numbers)					Damage Only Accidents	Total Accidents	Network Vehicle km (millions)
			Fatalities	Serious	Slight	PIA Casualties	PIA Accidents			
2011 - DM	112	51	27	224	2,392	2,643	1,760	22,219	23,979	5,938
2011 – DS	110	50	26	220	2,340	2,586	1,720	21,647	23,367	5,843
2011 - Diff	2	1	1	5	52	58	40	572	611	95
2016 - DM	128	58	27	232	2,492	2,751	1,830	23,117	24,947	6,434
2016 - DS	124	57	27	225	2,422	2,674	1,778	22,446	24,223	6,272
2016 - Diff	4	2	1	7	70	77	52	672	724	163
2021 - DM	145	66	28	238	2,576	2,842	1,888	23,830	25,718	6,920
2021 - DS	142	65	28	234	2,534	2,796	1,856	23,401	25,257	6,836
2021 - Diff	3	1	1	4	42	47	32	430	461	84
60 Yr - DM	12908	5911	1,677	14,214	153,591	169,482	112,582	1,421,427	1,534,009	n/a
60 Yr - DS	12680	5805	1,647	13,946	150,910	166,503	110,563	1,394,001	1,504,564	n/a
60 Yr - Diff	228	106	30	268	2,681	2,979	2,019	27,426	29,445	n/a

7.42 These calculations were repeated for each of the three forecast years and were converted into an estimated Net Present Value (NPV) in 2002 prices and values, shown below (Table 7.6) of accident savings over a 60 year appraisal period (2011 – 2070) using the same principles as applied in TUBA, that is;

- The estimated savings for the three modelled years were used to produce estimated savings in each of the 60 years using linear interpolation between the modelled years and an assumption of no change in savings beyond the final forecast year (2021) (apart from the increase due to the rise in the real value of accident costs due to growth of GDP);
- The stream of benefits over the 60 years was represented in terms of 2002 values by discounting future year benefits at the rate of 3.5% p.a. for the first 30 years from the current year, and then 3.0% p.a. for all subsequent years.

[14] Using modelled output from Scenario Iter2b (fixed land use assumption).

Table 7.6 - Summary of Economic Impact Net Present Value

	Casualty Costs £m	Accident Costs £m	Total Costs £m	Saving £m	Saving (Ref case%)
DM	3,531	1,616	5,147	96	1.9%
DS	3,465	1,585	5,051		

Security

7.43 The security assessment required by WebTAG focuses on the impacts of detailed elements of scheme design. The indicators which are used in the assessment reflect impacts on things such as site perimeters (e.g. entrances and exists at public transport facilities), surveillance (e.g. CCCTV coverage), landscaping, lighting and visibility, emergency call facilities and pedestrian and cycle facilities. As the designs for the Transport Improvements are still at a very early stage, this level of detail has yet to be determined.

7.44 Notwithstanding this, the general principle behind the design process would be to provide infrastructure improvements which take account of security considerations for both users and non-users, aiming to enhance public security and safety. The score against the security sub-objective has been assessed as beneficial.

Economy

Public Accounts

7.45 The Public Accounts (PA) table is output directly by the TUBA assessment and is not subject to any alteration due to 'offline' analysis. In particular it should be noted that the costs associated with walk, cycle and smarter choices have been included in the cost estimates and are presented within the analysis for the separate walk, cycle and smarter choices 'mode'. This is in contrast to the assessment of walk and cycle and benefits which have been calculated offline and were incorporated into the Transport Economic Efficiency (TEE) separately following the TUBA model run. Smarter Choices benefits have not been included for the reasons explained in Chapter 6.

7.46 Similarly the costs of the Congestion Charge Scheme as opposed to the other road schemes in the proposed Package and the costs of different forms of public transport schemes are identified separately[15].

7.47 Within the PA table all costs are presented as positive values. Any negative costs, such as revenues to providers, can therefore be viewed as 'benefits'.

7.48 The Public Accounts (PA) tables, Table 7.7 and 7.8, present the costs and benefits of the proposed Package of measures to the public sector for the two scenarios. It should be stressed that entries in the PA table are present values discounted to 2002 in 2002 prices for a 60 year appraisal period. These values include risk and optimism bias. These figures are for economic appraisal purposes and are not indicative of real 'cash' values.

[15] By defining cost-only modes in the TUBA analysis.

Local Government Funding

7.49 With regard to local government funding the Package is forecast to provide revenue of £792M (2017 Congestion Charging Scheme opening) or £717M (2021 Congestion Charging Scheme opening) over the 60 year appraisal period, in the form of Congestion Charging tolls from road users. This is offset by Local Government's share of operating costs of £300M (2017 Congestion Charging Scheme opening) or £271M (2021 Congestion Charging Scheme opening) associated with the full Package of measures (the operating and maintenance costs of the Transport Improvements, including renewal costs, as well as the operating and maintenance costs of the Congestion Charging Scheme) and investment costs of just over £48M (10% of the total investment cost for the Package) for both scenarios. It is assumed that this latter cost element will be offset by developer contributions; hence the net impact of local government funding will be a negative cost (a 'benefit') of some £494M (2017 Congestion Charging Scheme opening) or £448M (2021 Congestion Charging Scheme opening) in the form of Congestion Charging revenue[16].

Central Government Funding

7.50 The impact on central government funding would comprise of three elements:

- Operating Costs of £4-4.5M under both scenarios.
- Investment Costs of £439M (2017 Congestion Charging Scheme opening) or £436M (2021 Congestion Charging Scheme opening) representing central government's assumed 90% share of investment costs. Again an alternative method of representing the PT investment costs would be to have placed these costs for the operators, but offset this by subsidy from central government to the operators.
- Indirect Tax Revenue: This represents the taxation impact to government. The net Indirect Tax impact to central government is a cost of £294m (2017 Congestion Charging Scheme opening) or £269m (2021 Congestion Charging Scheme opening). This will include the indirect tax uplift to the Local Government revenues (which conversely can be regarded as the lost VAT revenue from area licence charges) but it will also include lost fuel taxation owing to the reduction in road traffic compared to the Reference Case and lost VAT due to increased spend on PT fares, which are zero-rated.

7.51 The net impact to central government funding is a cost of £737M (2017 Congestion Charging Scheme opening) or £709M (2021 Congestion Charging Scheme opening).

Net Impact

7.52 The overall impact on both central and local government is a Present Value Cost of £243M (2017 Congestion Charging Scheme opening) or £262M (2021 Congestion Charging Scheme opening).

[16] In reality it is anticipated that the developer contributions will exactly offset the Local Government investment costs, resulting in a net benefit of £333.5m. However, due to limitations in the way TUBA deals with temporal cost profiles, it has not been possible to show this. Instead the Local Government investment costs are underestimated by £3.5m, with a balancing overestimate of investment costs elsewhere. The scheme NPV is unaffected by this.

Table 7.7 – Public Accounts Table for Phased Implementation (2017 congestion charging)

Public Accounts

Local Government Funding	All modes
Revenue	-792,353
Operating costs	300,559
Investment costs	48,759
Developer	-51,076
Grant/Subsidy	0
NET IMPACT	**-494,111**

Road	Road Pricing	Segregated bus	Bus	Rail	Park & Ride	Walk, Cycle & Smart Choices
-792,354	0	0	0	0	0	0
26,976	189,380	10,035	1,882	10,232	42,300	19,754
9,129	2,188	18,072	1,384	3,259	7,758	6,969
-9,129	-2,188	-19,203	-1,851	-3,259	-8,477	-6,969
0	0	0	0	0	0	0
-765,378	**189,380**	**8,904**	**1,415**	**10,232**	**41,581**	**19,754**

Central Government Funding	All modes
Revenue	0
Operating costs	4420
Investment costs	438827
Developer	0
Grant/Subsidy	0
Indirect tax	293,597
NET IMPACT	**736,844**

Road	Road Pricing	Segregated bus	Bus	Rail	Park & Ride	Walk, Cycle & Smart Choices
0	0	0	0	0	0	0
0	0	1,490	1,449	0	1,481	0
82,159	19,691	162,645	12,453	29,332	69,826	62,720
0	0	0	0	0	0	0
0	0	0	0	0	0	0
243,271	0	21,069	1,375	-1,158	29,040	0
325,430	**19,691**	**185,204**	**15,277**	**28,174**	**100,347**	**62,720**

Total	
TOTAL Present Value	**242,733**

Table 7.8 – Public Accounts Table for Phased Implementation (2021 congestion charging)

Public Accounts

Local Government Funding	All modes
Revenue	-716,664
Operating costs	271,205
Investment costs	48,477
Developer	-50,794
Grant/Subsidy	0
NET IMPACT	**-447,776**

Road	Road Pricing	Segregated bus	Bus	Rail	Park & Ride	Walk, Cycle & Smart Choices
-716,664	0	0	0	0	0	0
26,976	161,404	9,930	1,753	10,232	41,156	19,754
9,129	1,907	18,072	1,384	3,259	7,758	6,969
-9,129	-1,907	-19,203	-1,851	-3,259	-8,477	-6,969
0	0	0	0	0	0	0
-689,688	**161,404**	**8,799**	**1,286**	**10,232**	**40,437**	**19,754**

Central Government Funding	All modes
Revenue	0
Operating costs	4172
Investment costs	436295
Developer	0
Grant/Subsidy	0
Indirect tax	269,010
NET IMPACT	**709,477**

Road	Road Pricing	Segregated bus	Bus	Rail	Park & Ride	Walk, Cycle & Smart Choices
0	0	0	0	0	0	0
0	0	1,407	1,346	0	1,419	0
82,159	17,160	162,645	12,453	29,332	69,826	62,720
0	0	0	0	0	0	0
0	0	0	0	0	0	0
221,614	0	20,565	463	-1,068	27,436	0
303,773	**17,160**	**184,617**	**14,262**	**28,264**	**98,681**	**62,720**

Total	
TOTAL Present Value	**261,701**

Transport Economic Efficiency: Business Users, Transport Providers, Consumers

7.53 The TEE table is based directly on the TUBA output with two amendments:

- Walking, Cycling (WC) benefits are included as a separate mode that is not modelled directly in the TUBA and are instead assessed separately 'offline'. It is important to highlight this element of the presentation of the analysis as the benefits from WC are significant.
- Smarter Choices: it should be noted that benefits associated with Smarter Choices have not been included in the appraisal as explained in Chapter 6;
- The benefits from the Chesterton station scheme have also been assessed 'offline' separately[17]. The benefits from this scheme are then amalgamated within the TUBA model output produced for the Package.

7.54 The TEE table presents the benefits of the proposed Package of measures. It should be stressed that entries in the TEE table are present values discounted to 2002 in 2002 prices for a 60 year appraisal period. Cost values include risk and optimism bias. These figures are for economic appraisal purposes and are not indicative of real 'cash' values.

7.55 The TEE tables show significant user benefits for all users, by both PT and highway modes, travelling for both business and consumer purposes. For all but consumer highway users, the user charges (fares/congestion charges) do *not* exceed the user benefits, resulting in net benefits. However, consumer highway users are forecast to experience large net dis-benefits due to the scale of the user charges and the fact that the travel time and vehicle operating cost benefits are not sufficient to offset the charges.

7.56 The results, contained in Tables 7.9 and 7.10, are presented by sector in more detail below.

Results: Consumer Users

7.57 The headline results for consumer users are that the Package would provide a positive Present Value of Benefits of £690M (2017 Congestion Charging Scheme opening) or £709M (2021 Congestion Charging Scheme opening). However, the separate walk, cycle (WC) analysis provides a contribution of £523.4M of benefit to this value, and hence the level of Present Value of Benefits for consumer users excluding WC would be £167M.

7.58 These totals mask a large benefit for PT consumers and disbenefit for highway consumers; road consumer users would have a negative Present Value of Benefits of -£197M (2017 Congestion Charging Scheme opening) or -£161M (2021 Congestion Charging Scheme opening). This reflects the £746M (2017 Congestion Charging Scheme opening) or £675M (2021 Congestion Charging Scheme opening) in user charges (Congestion Charge tolls) which are treated as a dis-benefit and offset the value of time saving benefits (£397M for 2017 Congestion Charging Scheme or £376M for 2021 Congestion Charging Scheme) and vehicle operating cost savings (£152M for 2017 Congestion Charging Scheme or £139M for 2021 Congestion Charging Scheme). In simple terms the value of the Congestion Charge toll that the

[17] This is because while the costs of the scheme are included in the appraisal, the benefits are not reflected in the standard model output, owing to the scheme's inclusion in both the modelled reference case and with Package scenarios.

consumer users would pay is more than the valuation by those users of the resulting time and operating cost savings.

7.59 Public transport (including Park & Ride) consumer users would have benefits of £363M (for 2017 Congestion Charging Scheme) or £347M (for 2021 Congestion Charging Scheme) which is comprised primarily of time savings (£361.5M for 2017 Congestion Charging Scheme or £345M for 2021 Congestion Charging Scheme) with a small element of fare savings (user charges at around £2M under both Congestion Charging Scenarios) through more direct journeys which incur a smaller distance based fare.

Results: Business Users

7.60 With the introduction of a Congestion Charging Scheme in 2017, Business users have a net benefit of £198.8M. This comprises £303.7M of travel time savings and £17M of Vehicle Operating Cost (VOC) savings which are then offset by £121.8M of additional user charges. In contrast to the consumer user benefits, the business road users value their time savings at a greater level and hence these alone outweigh the additional cost of the Congestion Charging Scheme tolls (£303.7M versus £121.8M).

7.61 With the introduction of a Congestion Charging Scheme in 2021, Business users have a net benefit of £196.5M. This comprises £290.5M of travel time savings and £16M of VOC savings which are then offset by £110.1M of additional user charges. Again, in contrast to the consumer user benefits, the business road users value their time savings at a greater level and hence these alone outweigh the additional cost of the Congestion Charging Scheme tolls (£290.5M versus £110.1M).

Results: Private Sector Providers

7.62 The private sector providers represent the public transport operators. With the introduction of a Congestion Charging Scheme in 2017 the operators would have an increase in revenue of £474.1M offset by £329.8M of additional operating costs and £70.6Mm of investment costs primarily in the form of new buses. The net effect is a positive benefit of £73.8M.

7.63 Delaying introduction of a Congestion Charging Scheme until 2021, the operators would have an increase in revenue of £456.1m offset by £298.7M of additional operating costs and £68.8m of investment costs primarily in the form of new buses. The net effect is a positive benefit of £88.7M.

Other Business Impacts

7.64 The other business impacts represent the developer contributions that would accrue to local government. These represent a negative Present Value of Benefits of -£51.1M to business with the introduction of a Congestion Charging Scheme in 2017 or a negative Present Value of Benefits of -£50.8M to business with introduction of a Congestion Charging Scheme in 2021. It should be emphasised that this dis-benefit would accrue to developers as distinct to private sector operators.

Summary

7.65 The overall Present Value of Benefits from the TEE table is positive at £911M with a Congestion Charging Scheme introduced in 2017 and £944M with a Congestion Charging Scheme introduced in 2021.

7.66 The Present Value of Benefits from the TEE table excludes other sources of benefit as described above. These sources include accident benefits, carbon benefits, noise benefits and air quality benefits. These benefits are evaluated separately where possible and are incorporated into the Analysis of Monetised Costs and Benefits Tables (AMCB) which are presented later in this Chapter (Tables 7.11 and 7.12).

OVERALL VFM CONCLUSIONS

Analysis of Monetised Costs and Benefits

7.67 The Analysis of Monetised Costs and Benefits (AMCB) table presents a combination of information presented in the TEE and PA tables, supplemented with other estimates of benefits which otherwise would not be included in the TUBA calculations. Consequently the table has been amended from that output by the TUBA assessment with the addition of new elements to account for accident benefits, air quality benefits and noise benefits. In addition the complicating effects associated with walk, cycle and smarter choices and also the Chesterton Station scheme, which have all been evaluated offline, are also included.

7.68 The AMCB table presents the overall costs and benefits of the proposed Package of measures. It should be stressed that entries in the TEE table are present values discounted to 2002 in 2002 prices for a 60 year appraisal period. These values include risk and optimism bias. These figures are for economic appraisal purposes and are not indicative of real 'cash' values.

Non-Exchequer Impacts

7.69 These are as detailed in the TEE tables (Tables 7.9 and 7.10).

Additional Benefits

7.70 Carbon benefits, representing the monetised valuation of the reduction of green house gases due to the Package have been estimated by TUBA at £24.8m (2017 Congestion Charging Scheme) and £23.5M (2021 Congestion Charging Scheme).

7.71 The additional benefits calculated separately to the TUBA assessment are:

- Accidents: Changes in accident numbers have been assessed using a spreadsheet based approach to evaluate changes in veh-km totals for different road types. The benefits have been monetised in accordance with TAG guidance at £95.8m;
- Noise: The assessment of changes in noise is described in the Environmental Appraisal Report submitted with the OPF. It should be noted that the assessment of the noise benefits have not been included in the AMCB table;
- Walk and Cycle (WC): The benefits associated with these measures have been assessed in accordance with TAG guidance. The costs of WC measures are included in the scheme cost profiles input into TUBA. The values are consistent with those incorporated in the TEE table;

Table 7.9 – TEE Table for Phased Implementation (2017 Congestion Charging)

Transport Economic Efficiency Benefits

Consumers	**ALL MODES**		**Road**	**Road Pricing**	**PT**	**Walk, Cycle**
User Benefits	**TOTAL**					
Travel Time	1,281,831		396,962	0	361,469	523,400
Vehicle Operating Costs	151,737		151,737	0	0	0
User Charges	-744,083		-746,084	0	2,001	0
During Construction & Maintenance	0		0	0	0	0
NET CONSUMER BENEFITS	689,485	(1)	-197,385	0	363,470	523,400

Business									
User Benefits			**Personal**	**Freight**	**Personal**	**Freight**	**Personal**	**Freight**	**Personal**	**Freight**
Travel Time	303,723		154,789	60,996			27,338	0	60,600	0
Vehicle Operating Costs	16,991		6,000	10,991			0	0	0	0
User Charges	-121,868		-75,704	-47,557			1,393	0	0	0
During Construction & Maintenance	0		0	0			0	0	0	0
Subtotal	198,846	(2)	85,085	24,430	0	0	28,731	0	60,600	0

Private Sector Provider Impacts					**Segregated bus**	**Bus**	**Rail**	**Park & Ride**	
Revenue	474,160		0	0	123,305	8,763	156,798	185,294	0
Operating Costs	-329,755		0	0	-290,498	56,746	-15,589	-80,414	0
Investment Costs	-70,619		0	0	-68,322	10,629	0	-12,926	0
Grant/Subsidy	0		0	0	0	0	0	0	0
Subtotal	73,787	(3)	0	0	-235,515	76,138	141,210	91,954	0
Other Business Impacts									
Developer Contributions	-51,076	(4)	-9,129	-2,188	-19,203	-1,851	-3,259	-8,477	-6,969
NET BUSINESS IMPACT	221,557	(5) = (2) + (3) + (4)							

TOTAL		
Present Value of Transport Economic Efficiency Benefits	911,042	(6) = (1) + (5)

Table 7.10 – TEE Table for Phased Implementation (2021 Congestion Charging)

Transport Economic Efficiency Benefits

Consumers User Benefits	ALL MODES TOTAL		Road	Road Pricing	PT	Walk, Cycle
Travel Time	1,243,641		375,641	0	344,600	523,400
Vehicle Operating Costs	138,885		138,885	0	0	0
User Charges	-673,144		-675,082	0	1,938	0
During Construction & Maintenance	0		0	0	0	0
NET CONSUMER BENEFITS	709,382	(1)	-160,556	0	346,538	523,400

Business User Benefits			Personal	Freight	Personal	Freight	Personal	Freight	Personal	Freight
Travel Time	290,500		145,895	57,693			26,312	0	60,600	0
Vehicle Operating Costs	16,041		5,334	10,707			0	0	0	0
User Charges	-110,047		-68,392	-42,934			1,279	0	0	0
During Construction & Maintenance	0		0	0			0	0	0	0
Subtotal	196,494	(2)	82,837	25,466	0	0	27,591	0	60,600	0

Private Sector Provider Impacts					Segregated bus	Bus	Rail	Park & Ride	
Revenue	456,177		0	0	120,366	3,368	157,427	175,016	0
Operating Costs	-298,714		0	0	-259,682	49,422	-15,589	-72,865	0
Investment Costs	-68,750		0	0	-65,893	9,754	0	-12,611	0
Grant/Subsidy	0		0	0	0	0	0	0	0
Subtotal	88,714	(3)	0	0	-205,209	62,544	141,839	89,540	0

Other Business Impacts									
Developer Contributions	-50,795	(4)	-9,129	-1,907	-19,203	-1,851	-3,259	-8,477	-6,969
NET BUSINESS IMPACT	234,413	(5) = (2) + (3) + (4)							

TOTAL		
Present Value of Transport Economic Efficiency Benefits	943,795	(6) = (1) + (5)

7.72 The calculation of Wider Economic Benefits is detailed in the Wider Economic Benefits Report. Current WebTAG guidance is that this source of benefit should not be included in the assessment and hence, while this source of benefit is reported on, it is not include in the overall assessment.

7.73 Air Quality Benefits have not been assessed for this submission; it is intended that an assessment of this source of benefit will be included in any revision to this submission.

7.74 The impact of the additional benefits is to increase the Net Present Value of Benefits to £1,031M (2017 Congestion Charging Scheme) and £1,063M (2021 Congestion Charging Scheme).

Costs

7.75 The net present value of costs is as reported in the Public Accounts tables (Tables 7.7 and 7.8) at £242.7M (2017 Congestion Charging Scheme) and £261.7M (2021 Congestion Charging Scheme).

Summary

7.76 Under a scenario whereby the Transport Improvements are complete by 2016 and a Congestion Charging Scheme is introduced in 2017, comparing the Present Value of Benefits against the Present Value of Costs provides a net present value (NPV) of £789M, with a benefit cost ratio (BCR) of 4.25.

7.77 Under a scenario whereby the Transport Improvements are complete by 2016 and a Congestion Charging Scheme is introduced in 2021, comparing the Present Value of Benefits against the Present Value of Costs provides a net present value (NPV) of £801M, with a benefit cost ratio (BCR) of 4.06.

Table 7.11 – AMCB Table for Phased Implementation (2017 Congestion Charging)

Analysis of Monetised Costs and Benefits

	PT	Road	Walking, Cycling	Total
Non-Exchequer Impacts				
Consumer User Benefits	363,470	-197,385	523,400	689,485
Business User Benefits	28,731	109,515	60,600	198,846
Private Sector Provider Impacts	73,787	0	0	73,787
Other Business Impacts	-32,790	-11,317	-6,969	-51,076
Additional Benefits				
Accident Benefits	0	95,821	0	95,821
Carbon Benefits	0	24,847	0	24,847
Air Quality Benefits	0	0	0	0
Noise Benefits	0	0	0	0
Net present Value Benefits (PVB)	**433,198**	**21,481**	**577,031**	**1,031,710**
Local Government Funding	62,132	-575,998	19,754	-494,112
Central Government Funding	329,002	345,121	62,720	736,843
Net present Value Costs (PVC)	**391,134**	**-230,877**	**82,474**	**242,731**
Overall Impact				
Net present Value (NPV)	42,064	252,358	494,557	**788,979**
Benefit to Cost Ratio (BCR)				**4.25**

Table 7.12 – AMCB Table for Phased Implementation (2021 Congestion Charging)

Analysis of Monetised Costs and Benefits

	PT	Road	Walking, Cycling	Total
Non-Exchequer Impacts				
Consumer User Benefits	346,538	-160,556	523,400	709,382
Business User Benefits	27,591	108,303	60,600	196,494
Private Sector Provider Impacts	88,714	0	0	88,714
Other Business Impacts	-32,790	-11,036	-6,969	-50,795
Additional Benefits				
Accident Benefits	0	95,821	0	95,821
Carbon Benefits	0	23,534	0	23,534
Air Quality Benefits	0	0	0	0
Noise Benefits	0	0	0	0
Net present Value Benefits (PVB)	**430,053**	**56,066**	**577,031**	**1,063,150**
Local Government Funding	60,754	-528,284	19,754	-447,776
Central Government Funding	325,824	320,933	62,720	709,477
Net present Value Costs (PVC)	**386,578**	**-207,351**	**82,474**	**261,701**
Overall Impact				
Net present Value (NPV)	43,475	263,417	494,557	**801,449**
Benefit to Cost Ratio (BCR)				**4.06**

8. Social and Distributional Impacts

BACKGROUND

8.1 The implementation of the TIF Package would have some important and wide ranging social and distributional implications for the area. These could be as a result of the major improvements to public transport services, improved cycle facilities or walking environment across the City, or they could be as result of the Congestion Charging Scheme.

8.2 Extensive Social and Distributional investigatory (SDI) work has been undertaken, much of which was undertaken prior to the submission of the OPF. Subsequently, and following discussions with DfT, this work has been supplemented by further analysis of a variety of data sources and the staging of focus group meetings. All work has been undertaken in accordance with the WEBTag Guidance, has previously been supplied to DfT and is available on the Council's website.

8.3 A variety of research sources have been used to build up a picture of the socio demographic and socio economic characteristics of the County. Overall, the investigatory work has drawn on:

- Census and Travel to Work Data.
- Indices of Multiple Deprivation and Output Area Data.
- The County Council's Accession Program to determine local accessibility.
- "Paycheck" Data.
- A statistically stratified survey of 997 households to establish the current travel patterns of Cambridgeshire residents (quantitative research), which also explored the likely responses to a charge for driving within Cambridge.
- Focus Group Sessions (qualitative research), which explored the difficulties for potentially vulnerable groups.

8.4 The use and analysis of this information has enabled the Council to better understand the main positive impacts of the introduction of the TIF transport package and also those areas where more work is required to assist vulnerable groups that could be disproportionately affected.

THE CURRENT SOCIAL AND DISTRIBUTIONAL SITUATION IN CAMBRIDGESHIRE

8.5 The evidence base indicates that the East of England has relatively low levels of deprivation compared to other regions, and that in Cambridgeshire, income levels are relatively high; in 2006, 42% of households had an annual income of between £15,000 and £35,000 and 40% had a household income above £35,000. This income and other data indicates that pockets of deprivation exist in some Cambridge City wards and in the rural Fenland areas and in some Cambridgeshire Market Towns.

8.6 These patterns of deprivation are reflected across the County in other surveyed factors, including demographics/age distribution, poor accessibility levels, unemployment levels, learning opportunities, poor leisure and cultural facilities and

limited food shopping choice. However, some pockets of deprivation can exist close to areas of comparative prosperity.

8.7 Whilst significant transport investment as part of a TIF package could help address social problems in the wider Cambridge area, other sources of funding would be needed to help address problems elsewhere in the County. Continuing LTP funds could be re-focused to such areas, although the Local Transport Act 2008 does allow for retained surpluses from congestion charging schemes to be used to pursue the Authority's transport policies elsewhere.

RESEARCH FINDINGS

Quantitative Findings

8.8 The Household Interview Survey conducted across Cambridgeshire provided valuable information on individuals' travel patterns and their likely responses to the introduction of the Congestion Charging Scheme.

8.9 Just over 40% of the 997 respondents from the Cambridgeshire household survey travel to or within the prospective charging area at some time, with there being little variation between the social groups in the numbers travelling.

8.10 In total 62% of respondents travelling anywhere stated they would find it 'difficult' to change from private vehicle to make at least one of their journeys. This is compared with 42% of those specifically travelling to or within the charging zone. The reasons given for difficulty in changing from private vehicle included journeys taking too long/too far without a car, public transport not running at the times needed and the public transport route did not cover the respondent's journey.

8.11 Further specific analysis concluded that 18% of respondents stated that they would be willing to pay an additional charge without considering any alternative options to them for at least one journey. 14% of respondents said they would not pay an additional charge to travel in or into the charging area.

8.12 A comparison of the responses for all those travelling to or within the charging area with those identified as 'vulnerable' demonstrates that the lower income, disabled and carers gave a higher number of responses stating difficulty with changing from their private vehicle for at least one home based journey, (76% versus 40%).

Qualitative Findings

8.13 The qualitative research was undertaken in three focus groups, Addenbrooke's Workers, Further Education (FE) Students and Disabled Group representatives, and was able to draw a number of conclusions on a range of issues. In particular, the current travel behaviour and the attitudes to changing to alternative mode in the light of an additional charge. The key messages were:

- Those working at Addenbrooke's and travelling from the Newmarket and Haverhill area found it difficult in most cases to use public transport to travel to work due to 'long journey times', 'inconvenient schedules' and 'combining journey to and from work with other purposes'.
- Most of the college FE students used public transport to travel to the Regional College but claimed that these were old, dirty and unreliable services. Most

travelled in this way as they were unable to drive or the college bus service was not readily available to them. Those that did drive believed that they would reconsider their mode of travel with the Congestion Charging Scheme.

- There is a wide range of Issues claimed for those with a disability or mobility impairment and many rely on the car. Issues in using public transport included concerns over driver training and on-bus facilities, as well as the position of bus stops.

8.14 Additionally, a separate case study conducted under the wider economic impact study element of the TIF project was based around lower paid manual workers employed by in the public sector. It was discovered that whilst some of the employees, who for example are cleaners and waste disposal personnel, travelled by car to their depot, their normal starting hours began typically between 6.30 and 7.00am. Such lower paid workers would not be directly affected by the Congestion Charging Scheme, although in their daily working environment they would face less traffic congestion and many would benefit from better public transport.

Positive Impacts of the Transport Improvements

8.15 The intention to introduce extensive comprehensive Transport Improvements to enhance the transport facilities of the Cambridge area, will markedly reduce any negative impact of the introduction of a congestion charge.

8.16 The package of Transport Improvements detailed in this proposition covers all modes of travel, and as such provides improvements for residents within Cambridgeshire as follows:

- Walking, cycling and public realm proposals will provide a comprehensive network of pedestrian and cycle routes across Cambridge and surrounding areas in South Cambridgeshire. These networks cover areas where vulnerable groups have been identified and will provide a lower cost alternative for these groups than using public transport or private car.

- Many bus services within Cambridge City already have good coverage and relatively high frequency. The package of Transport Improvements provides a very large investment in bus priority measures, improved access to buses at the bus stop, the quality of the bus fleet, increased frequency of existing services, and in new bus services. This will benefit all users, including vulnerable groups who may have previously been excluded from the bus as a viable mode choice due to problems with accessibility of services, or problems with ease of physical access to the vehicle itself.

- The new station at Chesterton will enable more people to access the rail network without entering the charging zone, and will increase journey options for those living within walking or cycling distance of the station. Furthermore, finance will be available to extend the Guided Busway to the station forecourt, which will considerably improve the accessibility by bus of the new station.

- The smarter choices elements of the package of Transport Improvements (and notably the personal travel planning element) will be available to a significant proportion of the population, including vulnerable groups. This will enable informed decisions to be made about relative merits of various travel options, including the implications of financial cost, time and convenience, This should

help minimise the impact of the congestion charge on people and groups who might otherwise be unaware of all of the options available to them.

RESEARCH SUMMARY AND CONCLUSIONS

8.17 The Social and Distributional Impact work has illustrated that there would be major benefits for many groups from the investment in transport under the TIF package. However, there are vulnerable groups who could be disadvantaged through the impact of a Congestion Charging Scheme.

8.18 The SDI work recommended that the following compensatory measures should be considered:

- Strengthening the Demand Responsive Transport (DRT) network of services to enable any gaps in mainstream public transport provision to be filled if appropriate by DRT, but more importantly to provide an alternative to those residents who cannot use mainstream transport. **Action – review the community transport provision in Cambridgeshire and identify the availability of services, eligibility criteria and booking requirements to better understand the alternatives available to those that need to use these services;**
- Further consideration will be required of the needs of those who must attend medical appointments for treatment or therapy during the proposed charging period. **Action - undertake more detailed discussions with a broad range of people with differing disabilities or impaired mobility**; and
- Consideration of the impact the proposed Congestion Charging Scheme would have on low income groups, disabled and mobility impaired, carers, shift workers and parents/guardians dropping of/picking up their children from school. **Action - undertake discussions with these groups to understand the likely numbers affected, magnitude of any negative impacts and solutions to any identified issues.**

8.19 In developing its final TIF Package the Council will investigate appropriate solutions which can form an integral part of the final business case submission.

PART B: Chesterton Station Major Scheme Business Case

9. Introduction

CONTEXT

9.1 The following 12 Chapters contain the Major Scheme Business Case submission for Chesterton Station along with a subsequent addendum.

9.2 The MSBC (Chapters 10 to 15) was submitted to DfT in 2007. The addendum (Chapters 16 to 22), which was prepared at the request of DfT to reflect some updates and to demonstrate the viability of the new station with the TIF proposals, was submitted to DfT in May 2008.

9.3 They are included within this document for completeness because the Council is seeking funding of £22.6M, being 90% of the delivery cost for the Chesterton Rail Station project. Programme Entry is sought for the scheme by the end of 2009 along with up front funding to allow its further development, through railway processes, and to implementation. The scheme enjoys widespread support locally and is ranked very highly in the Regional Funding Allocation (RFA), with opening expected in 2016. Its' development and implementation earlier than this is fully supported and encouraged by Network Rail to tie in with development and delivery of Thameslink and Intercity Express Programme (IEP) stabling at Chesterton by 2013.

9.4 A Programme Entry decision for Chesterton Station now would enable the scheme to progress over the next 12 months through GRIP stages 3 and 4. This would enable development to take place in tandem with the Thameslink and IEP stabling schemes and for the detailed design and delivery to be undertaken as part of the same contract. It is expected that delivery would commence in 2012 with opening in 2013.

10. Original MSBC: Executive Summary

10.1 Cambridgeshire is a diverse county with many different transport needs. To the north of the county, economic regeneration and accessibility to key services are important. In the south, the Cambridge sub-region is one of the fastest growing parts of the UK and its inclusion within the London – Stansted – Cambridge growth corridor means that this growth will continue.

10.2 In order to cater for this growth the Regional Spatial Strategy (RPG14) requires that Local Development documents should provide for approximately 47,500 homes in the Sub-Region between 2001 and 2016. A further 15,000 homes will be required between 2016 and 2021. Much of this new development will be accommodated within the Cambridge built up area and in new developments on the fringes of the city.

10.3 To help deliver housing and economic growth, the County Council must ensure that future travel demand is catered for in a sustainable way; maximising accessibility whilst at the same time seeking to protect the environment and quality of life. Although this presents a difficult challenge, through the Local Transport Plan and the Long Term Transport Strategy, the County Council has identified the infrastructure required to support the growth agenda and to deliver a cohesive and integrated transport network. Chesterton Interchange (the scheme) is an integral part of this network, and a key transport node in the north-east quadrant of the city. The scheme will encompass a new railway station, on the West Anglia mainline, and an interchange facility providing access onto the wider public transport network. Chesterton Interchange will enable travellers to switch between all modes with access for pedestrians and cyclists, bus users, car drivers and passengers, and heavy rail users. In the longer term it is envisaged that the interchange will be linked into the guided bus way network, and the proposals have been designed with this in mind.

10.4 The geographic location of the scheme also supports development sites associated with the growth agenda, a significant proportion of which are located on the northern boundaries of the city. The choice of location is further enhanced by links to the city centre, its proximity to major employment and business areas, as well as to the existing residential areas of Arbury and Chesterton.

10.5 One of the larger sites identified within local planning documents, known as Cambridge Northern Fringe (East), is earmarked to accommodate approximately 2400 homes by 2016. This site includes the disused Chesterton Sidings (currently owned by Network Rail) where the new interchange facility would be located. As well as providing a key link in local transport network, delivery of the scheme would facilitate future development of, what is currently, a brown-field site.

10.6 The interchange will incorporate a main station building, with high quality passenger waiting facilities, toilets and a ticket office. Two new platforms will be constructed on the main rail line. Design of the site will incorporate access for all modes including further extension of the guided bus way network. The high quality design will include will include CCTV and provision of real time information.

10.7 The interchange facility will be served by through trains on the West Anglia mainline, providing 11 southbound services between 0540 and 0900, and two southbound services per hour in the off peak period. The scheme is forecast to attract more than 2600 users daily, with the strongest demand for travel being to London, followed by Cambridge.

10.8 The location of the existing rail station to the south of Cambridge means that the introduction of the new interchange improves access to the rail network from the north of the city, reducing the number of car journeys made across the city. The interchange will also reduce pressure on the existing station and use available capacity on trains north of Cambridge station.

10.9 In economic terms, delivery of the scheme benefits both users and non-users. Users accessing Cambridge railway station that switch on to the rail network at Chesterton will benefit from journey time savings, whilst non-users on the highway will benefit from decongestion effects associated with the removal of trips from the network.

10.10 The scheme has a PVB of £148.8m, with PVC of £48.1m identified for central government. Therefore in economic terms the scheme presents 'high' value for money with a strong BCR of 3.09. A series of sensitivity tests were carried out on the economic case for the scheme. These gave consideration to changes in patronage and associated economic indicators. This included a test removing development at Cambridge Northern Fringe (East) from the land use scenario. This demonstrated that the scheme is not dependent on demand generated from the new development site, although it would facilitate its delivery. A worst case scenario with Optimism Bias applied at 100% was also tested. Under each of the sensitivity tests the scheme BCR remained within the range 1.5 – 2.0 or higher.

10.11 The wider appraisal takes into account impacts on other indicators which do not have a monetary assessment and considers the supporting analyses. In environmental terms the scheme is likely to have a negligible impact on local air quality and noise, with changes in traffic flows not triggering a detailed assessment. A net increase in greenhouse gases and accident disbenefits are brought about by the relative success of the scheme, trips accessing Chesterton Interchange on the highway network, and offsetting the benefits brought about by reductions in journeys to Cambridge station.

10.12 Adverse impacts are identified for landscape because the scheme presents a change in character, though the majority of residual impacts could be mitigated. An overall beneficial assessment is identified for townscape where the sidings and subsequent development will transform an area of derelict Brownfield land. However, this is off set by slight adverse impacts for heritage (relating to a specific listed building), biodiversity and water environment although mitigation measures would be put in place.

10.13 The scheme performs strongly when assessed against accessibility and integration indicators, delivering large benefits through the provision of a new facility, enhanced connectivity, and full integration within the wider land use and transport policy context.

10.14 No legal or technical issues are foreseen at this stage of the assessment, and the risk register will be maintained throughout the scheme development. The scheme is self enforcing insofar as it does not require any other measures to ensure it is effective. Whilst the scheme has many elements, these can all be delivered through standard highway or railway engineering methods.

10.15 As a stand alone scheme Chesterton Interchange would make a significant contribution to the transport network in Cambridge, but the benefits of the scheme are enhanced by its connectivity to the wider highway and public transport network and will be enhanced further if links to the Guided Busway are established at a later date. In the same way, whilst the scheme supports the delivery of the Cambridge Northern Fringe (East) development site, its feasibility is not dependent upon it.

10.16 The scheme has been a key element of the County Council's transport planning policy for many years, and as such is well known. In this way public consultation on the scheme was undertaken through the LTP process. Discussions with Network Rail, as the landowner, will continue as the scheme progresses.

10.17 A major scheme bid is therefore being submitted to cover the capital cost element.

11. Original MSBC: Strategic

CONTEXT

11.1 Cambridgeshire is a diverse county with many different transport needs. To the north of the county, economic regeneration and accessibility to key services are important. In the south, the Cambridge sub-region is one of the fastest growing parts of the UK.

11.2 In order to cater for this growth the Regional Spatial Strategy (RPG14) requires that Local Development documents should provide for approximately 47,500 homes in the Sub-Region between 2001 and 2016. A further 15,000 homes will be required between 2016 and 2021. Much of this new development will be accommodated within the Cambridge built up area and in new developments on the fringes of the city.

11.3 To help deliver housing and economic growth, the County Council must ensure that future travel demand is catered for in a sustainable way; maximising accessibility whilst at the same time seeking to protect the environment and quality of life. Through the Local Transport Plan and the Long Term Transport Strategy, Cambridgeshire County Council (CCC) has identified the infrastructure required to support the growth agenda and to deliver a cohesive and integrated transport network. Chesterton Interchange (the scheme) is an integral part of this network, and a key proposed transport node in the north-east quadrant of the city.

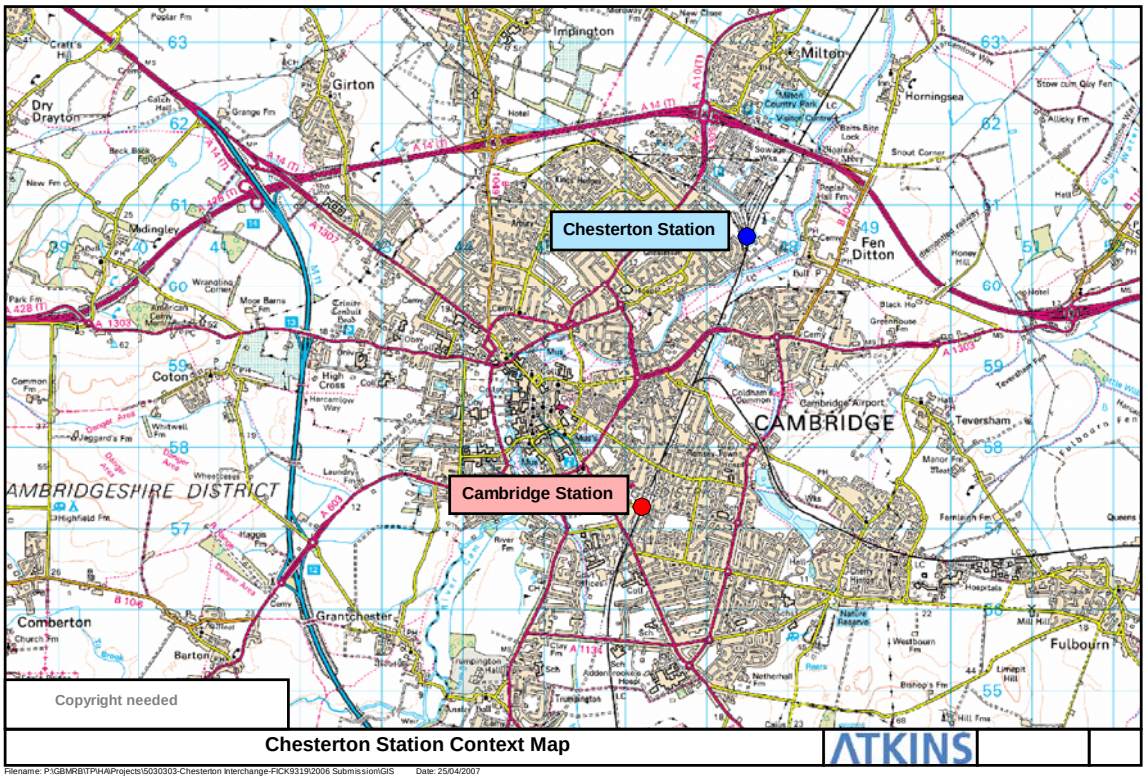
11.4 The scheme will encompass a new railway station on the West Anglia main line and an interchange facility providing access onto the wider public transport network. Chesterton Interchange will enable travellers to switch between all modes with access for pedestrians and cyclists, bus users, car drivers and passengers, and heavy rail users. In the longer term it is envisaged that the interchange will be linked into the guided busway network, and the proposals have been designed with this in mind.

11.5 Cambridge has an existing rail station located to the south of the city, as illustrated by Figure 11.1 overleaf. The existing station suffers from congestion problems caused by a single platform layout. Vehicular access to the station is inadequate, and access from the north by car requires journeys across the congested city centre. Access by public transport is also constrained and most bus journeys require interchange in the city centre. One of the Chesterton Interchange's key functions will be to provide direct public transport access to both Cambridge railway station and the wider rail network.

11.6 The location of the proposed Chesterton Interchange scheme (Figure 11.1) supports development sites associated with the growth agenda, a significant proportion of which are located on the northern boundaries of the city. The choice of location is further enhanced by its proximity to major employment and business areas, as well as to the existing residential areas of Arbury and Chesterton.

11.7 One of the larger development sites identified within local planning documents, known as Cambridge Northern Fringe (East), is earmarked to accommodate approximately 2400 homes by 2016. This site includes the disused Chesterton Sidings (currently owned by Network Rail) where the new interchange facility would be sited. As well as providing a key link in local transport network, delivery of the scheme would facilitate future development of what is currently a brown-field site.

Figure 11.1 – Location of Chesterton Interchange



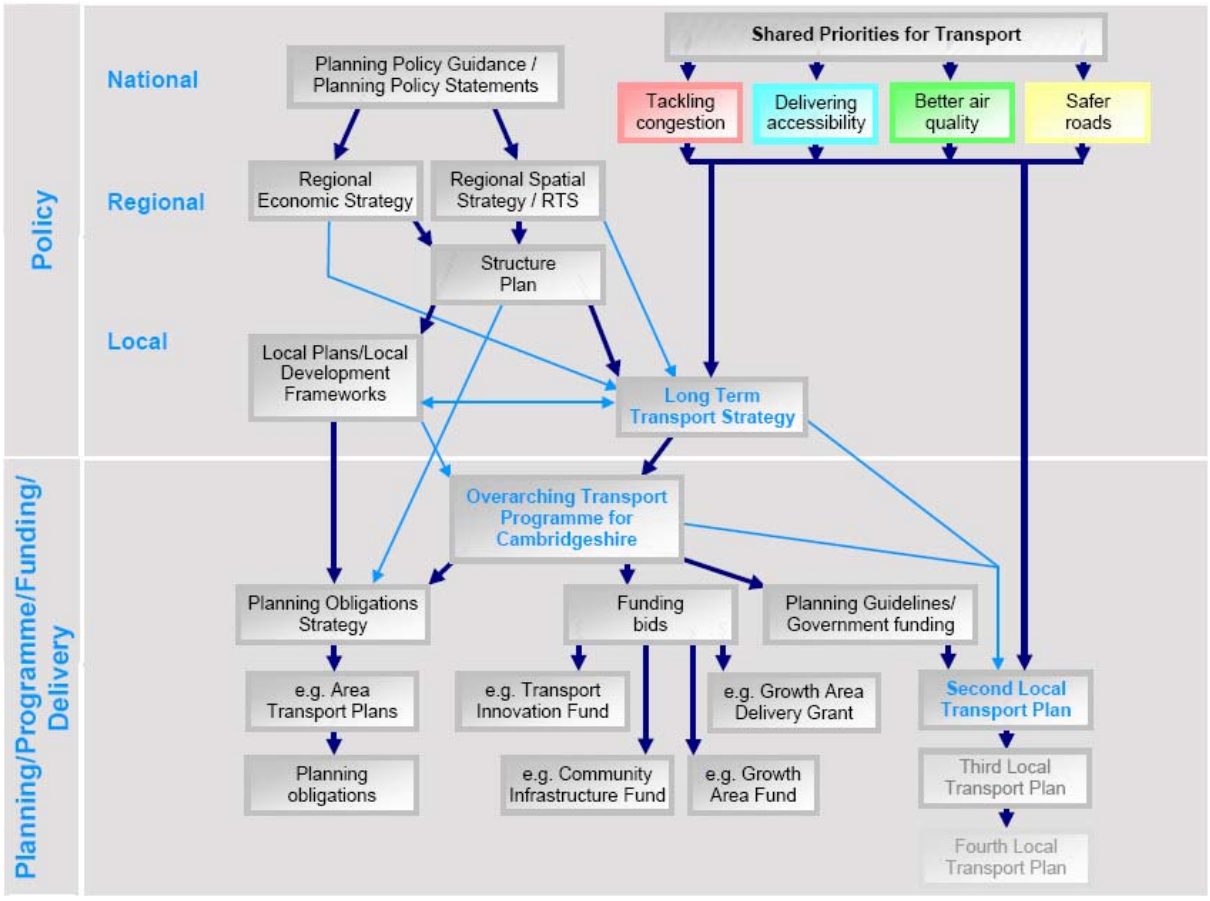
LOCAL AND REGIONAL POLICY CONTEXT

11.8 Chesterton Interchange is fully supported within all of the relevant local planning documents:

- Cambridgeshire Local Transport Plan 2006-2011;
- CCC Rail strategy;
- Cambridgeshire and Peterborough Structure Plan (2003);
- Cambridge Local Plan 2006; and,
- South Cambridgeshire Local Development Framework Submission Draft (January 2006).

11.9 In addition to its contribution to the delivery of *local* planning and transport objectives, the scheme also contributes to the delivery of regional objectives for transport and the economy. Figure 11.2 demonstrates how, at a strategic level, the policies contained within the LTP are developed within the regional and national planning framework and as such have due regard to both the Regional Transport Strategy (RTS) and the Regional Economic Strategy (RES).

Figure 11.2 – Relationship between LTP and the current/emerging Planning Framework



Local Transport Plan 2006-2011

11.10 Figure 11.3 illustrates the way in which Chesterton Interchange will contribute to the delivery of both LTP and central Government objectives. However, the lead in time for the delivery of the scheme means that it would not be realised until after the end of the LTP period, thus the appraisal of policy fit also reflects the longer term objectives of the County Council as set out in the Long Term Transport Strategy and which are consistent with the LTP.

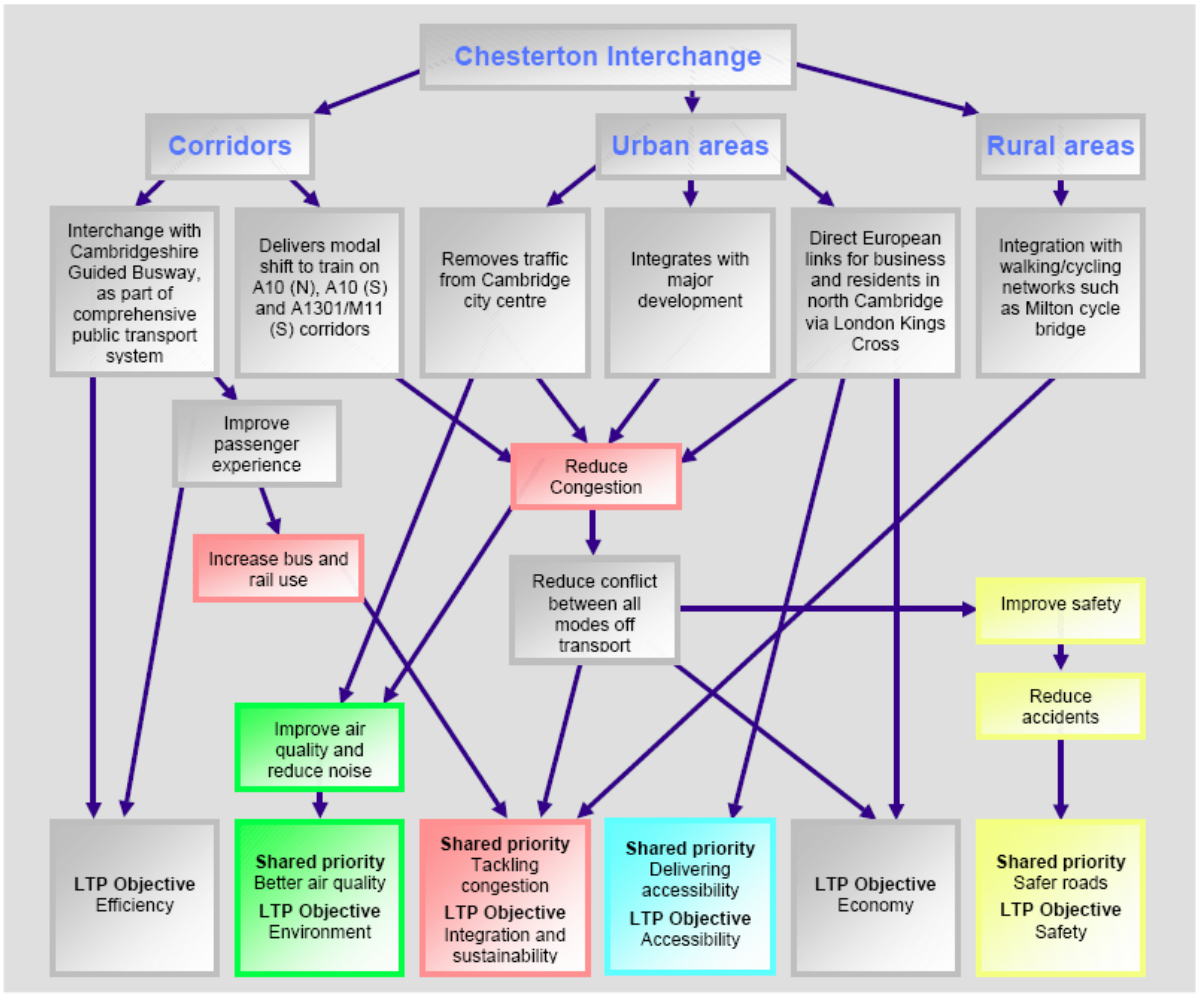
11.11 Three strategy areas are identified within the LTP; transport corridors, urban areas and their hinterlands, and rural areas. This is supported by two main delivery mechanisms of widening choice and managing demand. The provision of a new interchange facility at Chesterton is included under the 'Transport Corridors' strategy for the A10 corridor.

11.12 The scheme would contribute to the delivery of the following LTP targets:

- ACC1 (LTP1) Accessibility
- AQ1 (LTP2) CO_2 emissions from road transport in Cambridgeshire
- CON1 (BV102) Countywide bus patronage

- CON3 (LTP3) Cycling trips
- CON6a (LTP6) Cambridge Peak hour traffic
- CON6b, c, d Trends in travel in Cambridge
- CON7a, b Trends in Travel in the Market towns

Figure 11.3 – Fit with Local Transport Plan Objectives



Rail Strategy

11.13 Cambridgeshire County Council's current Rail Strategy (RS) sets out the role of rail in meeting the transport needs of the county during the period 2006/07 – 2010/11. Although CCC does not have direct influence over the specification of services or operation, the rail strategy sets out the process of engagement with the industry to ensure that shared objectives are met. The strategy notes the need for integration of rail with other modes and its role in providing access at a regional and national level. In the context of catering for forecast growth, and providing a balance of services for users across the county, specific support is given to the delivery of Chesterton Interchange as a major rail investment project.

Cambridgeshire & Peterborough Structure Plan (2003)

11.14 The relevant Structure Plan document is the Cambridgeshire and Peterborough Structure Plan 2003 – Planning for Success (this will be superseded in mid 2007 by the East of England Regional Spatial Strategy). Policy P8/10 makes specific provision for delivery of a rail station and interchange facility at Chesterton linking in to the guided busway system. Table 11.1 identifies the contribution to other Structure Plan policies. This shows that Chesterton Interchange is central to the delivery of an integrated transport network within Cambridge and the wider sub region.

Table 11.1 – Cambridgeshire & Peterborough Structure Plan (2003) Policies

Structure Plan Policy	Description of Policy	Effect of Scheme on Policy
Policy P1/1	Approach to Development - concentration in main centres, larger towns and a new settlement. Minimising need to use private car, encouraging walking and cycling, locating development where good public transport accessibility exists or can be provided. Selection criteria for identifying sites for development in local plans based on giving highest priority to using previously developed land/buildings in existing settlements.	Park and Ride, and non-car transport modes are central to the strategy.
Policy P5/1	Housing Distribution - provision to be made for construction of 12,500 homes in Cambridge City and 20,000 in South Cambridgeshire between 1999 and 2016.	The development will facilitate the construction of homes in the Cambridge Northern Fringe
Policy P8/6	Improving Bus and Community Transport Services	The proposal achieves this.
Policy P8/7	Improvements to Rail Services – priority to be given to improvements which are feasible to serve existing and planned developments or which will deliver a significant transfer from road based travel. Local plans to identify and protect former rail routes with the potential for re-use as transport corridors.	The proposal facilitates this policy.
Policy P8/10	Transport Investment Priorities – this highlights, in the Local Schemes section, Chesterton Rail Station and Interchange including link to the rapid transit system utilising the former St. Ives railway line. Also identifies improvements that will increase the efficient operation of the whole transport system with regard to Park and Ride sites for Cambridge.	The proposal delivers a specific element of this policy.
Policy P8/11	Provision for the Movement of Freight and Lorry Parking – transfer of freight from road	The proposal enables freight activity to

	to rail will be encouraged. Local plans will protect rail depots and private rail sidings for the transhipment of freight including sites that cease to be used.	continue on the site.
Policy P9/1	Housing Distribution – Cambridge Sub-Region - provision will be made for 47,500 additional homes in the sub-region between 1999 and 2016 including 8,900 within the built up area of Cambridge and 8,000 on the edge of Cambridge subject to review of the Green Belt boundary.	As Policy P5/1 above
Policy P9/8	Infrastructure Provision	Supports policy
Policy P9/9	Cambridge Sub-Region Transport Strategy – identifies Chesterton railway station and interchange including link to the rapid transit system utilising the former St. Ives railway line and significantly improved road, cycle and pedestrian access as requirements to support the development of the Cambridge Northern Fringe.	The proposal delivers specific element of this policy.

Cambridge Local Plan (July 2006)

11.15 The Cambridge Local Plan was formally adopted in July 2006. The role of Chesterton Interchange is recognised in policies associated with the areas of Major Change and specifically for the Northern Fringe Development area (Policy 9/6) which identifies the delivery of a railway station in the Chesterton area and interchange facilities for rail, Cambridgeshire Guided Bus, buses, taxis, cycles and pedestrians as a high priority. Whilst the Chesterton Interchange site falls within South Cambridgeshire, access will be provided through the Cambridge City administrative area.

South Cambridgeshire Local Development Framework Submission Draft (January 2006)

11.16 The South Cambridgeshire Local Development Framework (LDF) Core Development Document was submitted to the Secretary of State in January 2006. South Cambridgeshire was the first Council in England to receive an Inspectors' Report declaring its Core Strategy "sound" in October 2006. Following this, South Cambridgeshire approved the adoption of the document on 25 January 2007. Subsequently, a private company has launched a legal challenge to one paragraph of the Core Strategy document so the matter has been referred to the High Court. Until such time as the High Court decides otherwise, the Core Strategy stands adopted in its entirety.

11.17 Policy ST/3 Edge of Cambridge identifies the Cambridge Northern Fringe as one of a number of sites where development can take place provided adequate infrastructure is provided. Policy SP/2 of the Site Specific Proposals deals with the land in detail, and refers to the need for a Masterplan to demonstrate how land at Chesterton Sidings should be developed, specifying a multi-modal interchange on the Cambridge-Ely line (West Anglia main line), which provides links to the guided bus, conventional bus, and walk and cycle networks.

Regional Planning Guidance 6: East Anglia (2000)

11.18 The current policy document at regional level is Regional planning Guidance 6: East Anglia (RPG6). Policy 8 states that provision for net increase in dwellings of 4000 should be made within development plans. Policy 22 gives an order of preference for the location of housing and related development; firstly within the built-up area of Cambridge and second, on the periphery of the built-up area of Cambridge.

Regional Spatial Strategy (RPG14) – Draft East of England Plan (EERA)

11.19 RPG6 will be superseded by the Regional Spatial Strategy (RPG14), the Draft East of England Plan. The Regional Spatial Strategy highlights the need for a significantly enhanced level of public transport service provision to, from and within the Regional Interchange Centres. It also highlights the need for sub-regional transport infrastructure to support existing and forecast development with a focus on growth areas, priority regeneration areas and sustaining rural hinterlands. Located in the Cambridge Northern Fringe development area, the scheme supports many of these needs.

11.20 Chesterton Interchange is included within the list of infrastructure investment priorities (policy T17), and was identified as a top priority scheme for the Regional Funding Allocation submission in January 2006. Table 11.2 shows how the scheme contributes to the delivery of a number of overarching objectives for the region.

Table 11.2 – Contribution to the Delivery of Regional Objectives

Objective	Contribution of Chesterton Interchange
Objective 5 *- deliver more integrated patterns of land use, movement, activity and development, including employment and housing*	• Adjacent to existing development and a site identified for further housing • Will provide direct access to existing rail network and Cambridge railway station • Will provide access to the city centre, major employment sites such as Addenbrooke's and the Science Park, and destinations to the north west of the city through its connections to the guided bus network.
Objective 7 *- make more use of previously developed land and existing buildings, and use land more efficiently in meeting future development needs*	• Will be on a brown-field site, the majority of which is currently un-used. • Scheme would enable the release of land for further development.
Objective 8 *- meet the region's identified housing needs, and in particular provide sufficient affordable housing*	• Will provide sustainable transport infrastructure to support development in the northern fringe. • Access point onto the public transport network for car-owners and non-car owners via highway, walk, cycle and existing public transport networks.
Objective 12 *- minimise the environmental impact of travel, by reducing the need to*	• Provides direct alternative to the private car for trips accessing Cambridge railway

travel, encouraging the use of more environmentally friendly modes of transport, and widening choice of modes	station. • Widens mode choice for trips originating in the area with links to the Guided Bus network and onto the wider rail network.
***Objective 13** - ensure that infrastructure programmes, whether for transport, utilities or social infrastructure, will meet current deficiencies and development requirements; and that the responsible agencies commit the resources needed to implement these programmes and co-ordinate delivery with development*	• Caters for existing demand, providing relief to the highway network by removing car trips currently accessing Cambridge railway station. • Caters for planned development within the growth corridor in a sustainable way, providing access point onto the public transport network. • Cambridgeshire County Council is working in partnership with other local authorities, regional agencies, Network Rail and central government to ensure successful delivery of this scheme.

11.21 The RSS also contains regional transport objectives which the Regional Transport Strategy (RTS) seeks to deliver through a policy of widening travel choice, promoting the carriage of freight by rail and water, and stimulating the efficient use of existing transport infrastructure. The delivery of the scheme would contribute to the following specific objectives:

- improve opportunities for all to access jobs, services and leisure/tourist facilities;
- enable infrastructure programmes and transport service provision to support both existing development (addressing problems of congestion) and that proposed in the spatial strategy (economic regeneration needs and further housing growth); and
- reduce the transport intensity of economic activity, including freight.

Regional Economic Strategy – A Shared Vision: the regional economic strategy for the East of England (EEDA)

11.22 The Regional Economic Strategy (RES) sets out the vision for sustainable economic development for the East of England, identifying a series of objectives for the delivery of this vision. The scheme will contribute to the delivery of the following objectives:

- the need to ensure the provision of social and transport infrastructure to make communities more sustainable;
- providing access to essential services;
- ensuring that transport solutions serve economic growth in a more sustainable manner; and
- understanding and addressing the importance of transport links with London.

11.23 Whilst Chesterton Interchange is not dependent on development take-up in the area, one of its functions is to provide direct public transport access to both Cambridge railway station and the wider rail network, as well as access to the city centre, major employment sites at Addenbrooke's Hospital and the Science Park, along with destinations to the north west of Cambridge through its planned access to the

Cambridgeshire Guided Bus network. These links will have a direct impact on sustainable access both to existing local communities and planned new developments, and will serve to enhance access to essential services.

OTHER TRANSPORT DELIVERY AGENCIES

11.24 Chesterton Interchange would be developed on the former Chesterton Sidings freight facility. The Office of the Rail Regulator (ORR) is responsible for the identification and protection of strategic assets on the rail network, and has identified Chesterton Sidings as an existing freight facility which should be retained. However, the ORR is aware of the proposal to provide a new station facility on this site. Retention of the freight facilities should therefore be addressed in the development of the scheme.

11.25 The provision of a new station at Chesterton is identified as a proposal for further development within the recent Network Rail 2006 Business Plan. It is also included on the SRA/NR Single List of Enhancements (SLOE).

Eastern Regional Planning Assessment (2006)

11.26 Regional Planning Assessments (RPA) are designed to inform strategy development for the railway for the next 20 years. The RPAs also inform the Network Rail Route Utilisation Strategies (RUS). Objectives for the Eastern RPA have been distilled from the wider regional planning context. Chesterton Interchange contributes to the delivery of the following objectives:

- supporting the delivery of the main locations for planned housing and employment growth across the RPA area – rail's role being to provide the link between them and other regional centres, including London;
- supporting the spatial strategy of strengthening the main regional centres, by encouraging better use of existing rail services delivering access to and between those centres;
- supporting integration of rail with other transport modes by encouraging the development of stations as interchanges;
- supporting the focussing of new development at locations where convenient access to existing stations exists or can be relatively easily provided; and
- supporting delivery of regeneration and social inclusion priorities.

11.27 In examining the potential range of solutions for the routes within the area, the RPA specifically acknowledged the importance of the East Coast Main Line (routes to Peterborough and Kings Lynn) in contributing to regional objectives, including the delivery of employment and housing-led growth in the London – Stansted – Cambridge – Peterborough growth area. It also identifies a series of priorities for improvements on the West Anglia route between Cambridge and Kings Lynn (considered within the RPA under the East Coast Mainline):

- Improved access to north Cambridge by opening a new station at Chesterton, or Cambridge North. This could serve new developments and link with the proposed Cambridgeshire Guided Busway, providing connections to/from St Ives, Histon and the new settlement at Northstowe. Further study is required to determine the most feasible pattern of services for the new station;
- Increased station capacity at Cambridge. The proposed station at Chesterton could act as the terminus for some services and could free up platform capacity

- Improvements to interchange facilities at Cambridge, the physical passenger throughput capacity of the station buildings, and the station environment – the redevelopment of Cambridge Station and adjacent railway land offers the opportunity to do this; and
- If demand to Kings Lynn grows and provides sufficient justification, additional capacity should probably be provided through train lengthening (which would require platform lengthening and a power supply upgrade), rather than through increasing train frequencies.

11.28 Chesterton Interchange is identified within the RPA as a medium term priority for the West Anglia route as a "New station in north Cambridge and/or improved capacity at Cambridge" with the stated objective of "Improved access to north Cambridge and capacity to operate more trains through Cambridge, e.g. from north of Cambridge to Stansted Airport".

11.29 The RPA also acknowledges higher forecast levels of growth on some of the routes within the area, proposing a potential order of priority for the examination of further options, placing the West Anglia route first in order to accommodate the impacts of the London-Stansted-Cambridge growth corridor.

Capacity Utilisation Policy/Network Utilisation Strategy/Route Utilisation Strategy

11.30 In December 2002 the SRA published its Capacity Utilisation Policy (CUP) Statement of Principles. The statement of principles has a threefold purpose, to formulate clear strategies for capacity utilisation, to lead the rail industry in a process to develop these strategies, and to help identify where investment is needed. The principles of the CUP are implemented through the National Network Utilisation Strategy (NUS) and Route Utilisation Strategies (RUS). The NUS sets out the policy and planning framework for 10 RUS, with the objective of making best use of network capacity to the benefit of rail customers and taxpayers.

11.31 In publishing its RUS programme, Network Rail highlight principal drivers of the Great Anglia RUS as the East of England Regional Planning Assessment, freight traffic growth to/from ports, and passenger growth from Sustainable Communities developments. The Greater Anglia RUS would impact on services travelling through Chesterton Interchange. Work on the Greater Anglia RUS has now begun and is due to be completed during 2007.

New Stations: A guide for Promoters

11.32 In September 2004 the SRA published a guide for promoters of new stations. The document was designed to set out the process which promoters should follow when engaging with the rail industry, such that proposals would then be considered on a consistent basis. This remit has now passed to the DfT's Rail Division. The document highlights the need to liaise with, and gain the support of, Network Rail, Train Operating Companies (TOCs) and the Office of Rail Regulation (ORR), as well as setting out a staged process for the consideration of proposals. It requires that proposals are consistent with the objectives set out by the SRA in both the CUP and the RUS.

11.33 The guidance notes that new stations must not have a negative impact on network performance. They must be affordable and must offer value-for-money, with the appraisal including an assessment of capital and operating costs taking into account the long-term impacts on rail industry finances. An economic impact of the scheme is included in the next Chapter, including overall impacts on rail industry finances.

12. Original MSBC: Appraisal and Value for Money

SCHEME DESCRIPTION

Location

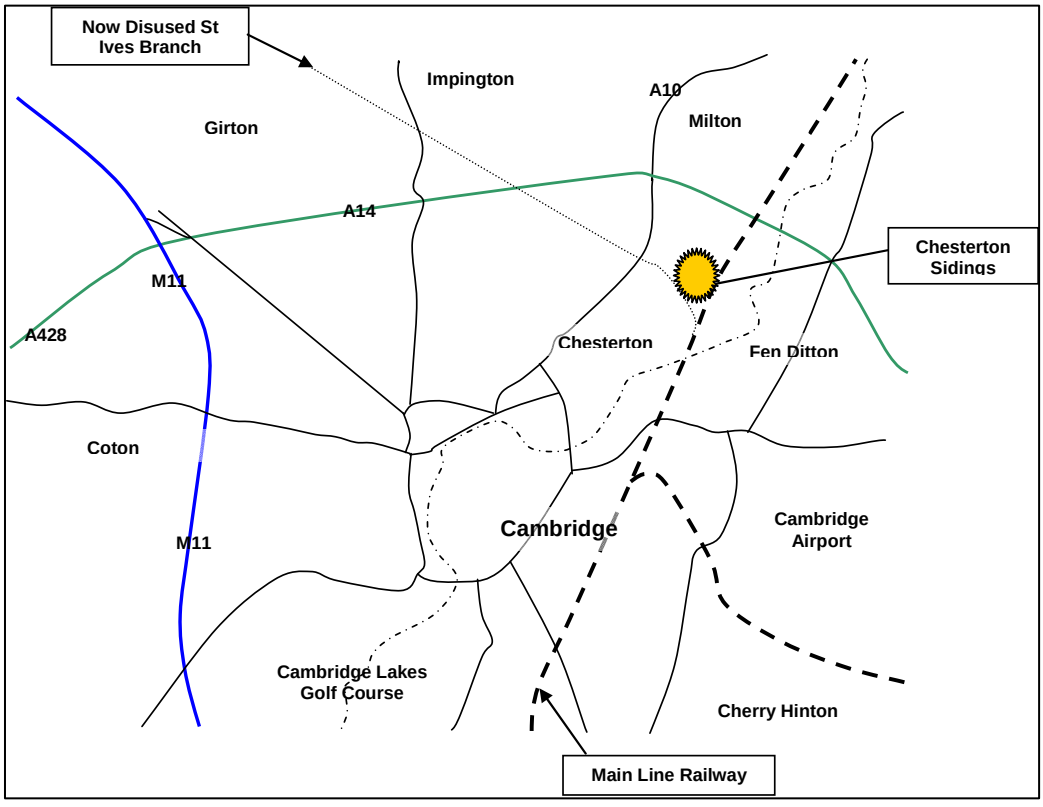
12.1 The proposed new railway station and interchange facility will be located on the West Anglia main line in the area of Chesterton Sidings (formerly Chesterton permanent way depot), approximately three miles north of Cambridge Station, on the north-east side of the city.

12.2 The proposed site is on Network Rail owned land and is adjacent to the existing north-south main line running through Cambridge and providing direct services towards London and Stansted Airport (southwards) and Ely, Peterborough, Kings Lynn and Norwich towards the North.

12.3 Figure 12.1 shows the location of Chesterton Interchange in relation to the surrounding area.

12.4 Part of the land is currently under a long-term lease to English, Welsh and Scottish Railway Company (EWS) and consultation is required with EWS to understand the longer term requirements for railway sidings on the site. The preferred option would involve removing the current EWS stabling sidings in order to construct the station, car park and access road. The current marshalling sidings would be retained without modification.

Figure 12.1 – Chesterton Interchange and Surrounding Network



Site Selection

12.5 The selection of the former Chesterton Sidings as the preferred site for the station was driven by a number of important criteria, including that it should be located:

- adjacent to the London-Kings Lynn rail corridor;
- with good access to the trunk road network;
- with connections to the Guided Bus network;
- to serve existing and proposed new developments;
- on a brownfield site;
- in close proximity to major employment/business areas to facilitate inbound employment/business rail trips;
- near significant residential areas (and preferably be fully integrated into their areas) to encourage rail-based trips;
- on a site which minimises the project's overall cost (eg; minimise the land acquisition and road and rail infrastructure upgrading costs);
- on a site which utilises public-owned land; and
- on a site which avoids major social or environmental impacts.

12.6 The selected location at Chesterton is able to meet all of these criteria, a number of which were taken forward as scheme specific objectives (see 12.38). The proposed interchange is located immediately adjacent to the London – Kings Lynn rail corridor providing direct access to services along this route. Situated on the northern edge of Cambridge, the interchange is a short journey by road to the A10 and A14, providing wider access to the trunk road network.

12.7 Proposals for the Cambridgeshire Guided Busway include an extension of the main corridor across Milton Road to serve the proposed Chesterton Interchange facility. In line with this, provision for interchange between rail and guided bus forms an integral part of the Chesterton Interchange proposals.

12.8 Chesterton Sidings is a brownfield site owned by Network Rail. The majority of the site is currently under a long term lease to English Welsh and Scottish Railway Company (EWS). A further proportion of the site is currently under a short-term lease to Lafarge (aggregate operation). This lease will end prior to the proposed opening date for Chesterton Interchange.

12.9 The position of the station within the site has been selected so as to minimise the operational impact on services. It has also been selected to minimise the costs associated with construction of a new station on the operational network, both in terms of capital costs and disruption to existing passengers. The impacts of the proposed scheme on the existing occupants of the site are discussed briefly in 12.52.

12.10 Whilst existing freight activity takes place on the site, the incorporation of passenger services will not present a fundamental change in use, rather it will serve to enhance the area and open up a currently under-used resource. Thus the location is not deemed to give rise to adverse social and environmental impacts, the assessment of which is discussed further in 12.130.

Service Provision

12.11 Table 12.1 below shows a summary of the level of service provision proposed for Chesterton Interchange. This timetable delivers a total of 11 southbound services (12 including the Norwich – Cambridge service) between 0540 and 0900 hours. Of these, four are semi-fast services serving the early morning peak commuting period into London (0630 – 0730) and a further five southbound services serve the traditional morning peak commuting into Cambridge (0730 – 0830).

12.12 A detailed description of the train planning process can be found in the Forecasting Report at Appendix C.

Table 12.1 – Summary of Services Calling at Chesterton Interchange (Option B)

Time		Service
0540		Ely-Kings Cross semi-fast
0609		Kings Lynn-L'pool St semi-fast
0630		Cambridge-Kings Lynn
0634		Chesterton-Liverpool St semi-fast
0639		Kings Lynn-Kings Cross semi-fast
0702		Kings Cross-Kings Lynn
0704		Kings Lynn-L'pool St semi-fast
0709		Ely-Kings Cross semi-fast
0731		Kings Cross-Chesterton slow
0736		Kings Lynn-L'pool St semi-fast
0742		Norwich-Cambridge
0748		Chesterton-Kings Cross slow
0808		Kings Lynn-Kings Cross semi-fast
0810		Kings Cross-Kings Lynn fast
0812		Ely-L'pool St semi-fast
0831		Kings Cross-Chesterton slow
0843		Kings Cross-Kings Lynn fast
0847		Chesterton-Kings Cross slow
0909		0909 Kings Lynn-Kings Cross semi-fast
Remainder of day (minutes past the hour)	XX12	Cambridge-Norwich
	XX24	Chesterton-Kings Cross semi-fast
	XX36	Kings Cross-Kings Lynn fast
	XX39	Kings Lynn-Kings Cross fast
	XX49	Norwich-Cambridge
	XX58	Kings Cross-Chesterton semi-fast

***Notes**: All times refer to Chesterton Option B*
Timetable based on December 2005 National Rail timetable
XX12 refers to service arriving/departing at 12 mins past the hour e.g. 11:12

Infrastructure Provision

Access Arrangements

12.13 Road access to the station, car park and guided busway would be via Cowley Road which would require junction improvements at the boundary of the Network Rail land.

Station Infrastructure and Passenger Facilities

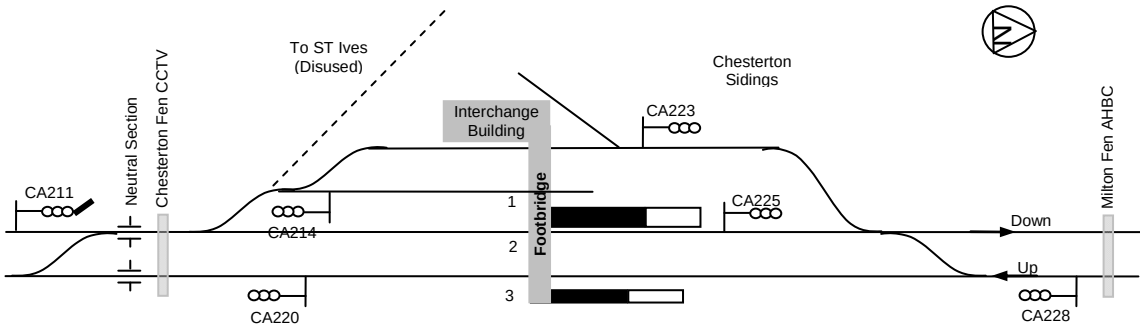
12.14 The Preferred Option would comprise a three platform station to the north of the Chesterton site.

12.15 A single bay platform and one island platform would be provided (see Figure 12.2) and the total length of each platform would be 300m – a length capable of accommodating a train of 12 cars.

12.16 Direct demand modelling has forecast the total number of passengers (boarders) in one day to be approximately 2630. A station building comprising waiting room, booking office and toilets would be provided in addition to passenger shelters on the platforms.

12.17 A footbridge would provide access over the main lines and operational sidings from the station to the platforms. Lift and stairs would be provided on each platform and at the station. A multi storey car park for 400 cars is also proposed and this would serve the guided bus interchange and station.

Figure 12.2 – Proposed Station Schematic Layout



12.18 Visual passenger information on the platforms will be provided by a Customer Information System (CIS), which can be used to relay train information and other information to assist passenger movements in waiting areas and on platforms. The preferred method of operation for customer information systems is that they are as automated as possible, using real time train positional data to provide accurate running information to passengers, with scope for local operator input.

12.19 In line with typical CIS provision at a small station, it is proposed that the interchange facility incorporate three information screens within the main station building, with a further screens providing information on each of the three platforms.

12.20 A public address (PA) system will also be provided so that audio announcements regarding train running and other passenger information can be made. As with the CIS, the preferred method of operation for the PA system is that it provides automated announcements linked to real time train positional information so that

passengers receive the most accurate train running information. The system will also have the facility for local announcements.

12.21 In line with typical PA system provision at a small station, it is proposed that the interchange facility incorporate two internal speakers within the main station building, with a further four external speakers on each of the platforms.

12.22 A closed circuit television system (CCTV) will be installed to monitor the public areas of the interchange facility and the car park. Consultation with the proposed station operator and the British Transport Police would be undertaken to establish the exact CCTV coverage patterns and minimum image sizes.

Interchange with Other Modes

12.23 The layout of Chesterton Interchange has been designed so as to permit full access by guided bus vehicles in the future, although physical extension of the guideway from Milton Road to the interchange along the disused St. Ives Branch Line is not included within the scope of this major scheme bid. The interchange will also cater for access by standard bus, and the facility will be linked in to the surrounding walking and cycling networks serving the northern parts of Cambridge and surrounding northern villages.

Parking

12.24 Proposed facilities at the new station include the provision of a 400 space surface-level open tarmac car park.

Forecast Demand and Revenue

12.25 Forecast Years of 2011 (Opening Year), 2016 and 2021 were appraised. The Forecasting and Economics report, included at Appendix C, provides full details of the application and results of the demand forecasting models. A summary of the demand for travel to and from Chesterton Interchange is set out below.

12.26 Table 12.2 shows that more than 2600 trips are forecast from Chesterton to other rail station destinations. Similarly, approximately 177 trips are forecast to be made to Chesterton from other rail stations.

12.27 The introduction of Chesterton Interchange into the rail network would result in the abstraction of trips from other stations in the vicinity. Approximately 50% of the trips from Chesterton are forecast to be abstracted from other stations, principally Cambridge. A re-assignment of trips from Cambridge to Chesterton would lead to a desired reduction in cross-city trips and help relieve footfall and car park congestion at Cambridge.

Table 12.2 – Summary of Average Weekday Demand Results, 2011 Opening Year

Demand Element	Trips
Generation at Chesterton	2626
Generation changes at other stations	-1313
Attraction to Chesterton	177
Effects on through travellers	-27
Net change to UK rail	**1464**

Forecast Trip Destinations

12.28 Table 12.3 shows the forecast distribution of Chesterton users, presenting the results for the six principal destinations modelled. This shows the strength of the southbound market, with London dominant, then Cambridge.

12.29 Northbound destinations of Ely, Peterborough and Norwich are weaker, reflecting the lower economic attractiveness of these destinations.

Table 12.3 – Forecast Destinations of Generated Trips for Chesterton, 2011 Opening Year, Average Weekday

Destination	Trips
Cambridge	830
Ely	180
Norwich	40
Peterborough	70
Stansted Airport	60
London	1,440
Sum	**2,620**

12.30 Table 12.4 shows a summary of trips attracted to Chesterton Interchange by origin.

Table 12.4 – Summary of Trips to Chesterton Interchange by Origin, Average Weekday

Origin/Route	Trips
North of Ely/Ipswich	30
Ely	45
Waterbeach	6
Royston line	24
Bishops Stortford line	32
London and south east	40
Sum	**176**

12.31 These results clearly show that the main market predicted for attracted trips to Chesterton are from Ely (commuting trips) and London (business trips).

Revenue

12.32 Table 12.5 below shows that the annual (opening year) revenue following the introduction of Chesterton Interchange to the rail network leads to the generation of significant additional revenue once the effects of abstraction are taken into account.

Table 12.5 – Summary of opening year (2011) revenue results, 2002 prices

Element	Cost (£s)
Generation at Chesterton	9,816,600
Generation model change to National Rail	-5,638,100
Attraction to Chesterton	435,100
MOIRA effects	-73,600
Chesterton parking	658,900
Other parking	-124,600
Net change to UK rail	*5,074,300*
Rail traveller lost	-5,711,700
Chesterton earnings	**10,910,600**

PROBLEMS AND OBJECTIVES IDENTIFIED

Problems

Access to Cambridge Railway Station

12.33 The Cambridgeshire Local Transport Plan (LTP2) notes that almost 80% of trips made by car to Cambridge railway station originate from the north/north-west of Cambridge and thus pass through the central area. These trips contribute to increased levels of congestion and delay and associated impacts relating to safety,

noise and air quality. The ability to 'capture' these trips earlier in their journey and remove them from the local highway network would bring significant benefits.

Growth Agenda

12.34 Cambridgeshire LTP2, submitted in March 2006, identifies a number of major challenges facing the county. Significant amongst these is the need to cater for development pressures associated with the continued economic success of the Cambridge sub-region[18] alongside the delivery of the Government's growth agenda for the south-east. The Cambridge sub-region must accommodate around 47,500 new houses in the period to 2016, and it is the intention that this growth in housing will be accompanied by a significant growth in employment. Thus, one of the main challenges facing the County Council is the need to ensure that the travel associated with this growth is catered for in a sustainable way which minimises negative environmental and quality of life impacts.

12.35 The Cambridgeshire and Peterborough Structure Plan (2003) (CPSP) sets out how the growth in housing should be catered for. This establishes a sequential approach which, after the built up area of Cambridge, identifies the 'edge of Cambridge (subject to Green-Belt review) on sites on the north, east, north-west and southern fringes' as the most suitable locations for development. It is within this context that an allocation of approximately 2,400 dwellings has been identified for the site known as Cambridge Northern Fringe (East) (CNF(E)).

12.36 To support this development the provision of sustainable links to the transport network will be important. Access will be required to the major employment and education sites to the north of Cambridge including the Science Park, St. John's Business Park and the Regional College as well as to the city centre and the south of Cambridge and major employment sites such as Addenbrooke's Hospital.

Capacity at Cambridge Railway Station

12.37 At present, platform capacity at Cambridge railway station is seriously constrained, with trains on layover between trips occupying one of the two through platforms for approximately half of every hour. The ability to alleviate this 'obstruction' would increase the number of through trains that could be handled, potentially resulting in a performance enhancement for operators serving the station and giving rise to timetable improvements to the benefit of passengers. The station buildings are also congested at peak times, constraining the movement of passengers within the station.

Objectives

12.38 The proposal for an interchange facility in the Chesterton area has existed for a number of years and thus the objectives for the scheme have developed over time in response to planning policy changes and development pressures. The scheme objectives can be summarised as follows:

- Provide an interchange facility which forms an integral part of the high quality public transport network for Cambridge and the surrounding area including connections between rail and guided bus;

[18] Cambridge Sub-Region – defined as Cambridge and the ring of surrounding Market Towns.

- Provide a public transport alternative to the private car for local and regional trips to and from the Science Park and to new development in the Cambridge Northern Fringe (CNF), integrating public transport provision with urban development thus promoting non-car modes of travel;
- Provide a public transport alternative to the private car for European and International trips via Eurostar at Kings Cross, Stansted Airport and, post Thameslink 2000, Gatwick Airport;
- Remove car trips from the Cambridge central area to release decongestion benefits and improvements to air quality and noise;
- Facilitate connections between rail and guided bus; and
- Provide a parking resource away from Cambridge city centre potentially in conjunction with the Cowley Road Park and Ride site.

ASSESSMENT OF ALTERNATIVE OPTIONS

12.39 The provision of an interchange facility in the Chesterton area has long been identified as a key element of the integrated transport strategy developed for Cambridgeshire by the County Council, and as such has been supported by provision for the facility within local and regional planning documents (demonstrated in Chapter 11 above).

12.40 Preliminary appraisal work undertaken in 2003[19], examined a range of station (location and infrastructure) and service option combinations. Two options performed well with strong benefit to cost ratios (BCR) and high economic Net Present Values (NPV). The options were taken forward for development as part of this study, where, for the purposes of the Major Scheme Business Case development, four options in total were tested. These were:

- Option A - a new single platform station on the disused St. Ives Branch Line spur (thereby only able to be served by services from the south extended onwards from Cambridge);
- Option B - a new three platform station on the main-line (with all passing services able to call, as well as onward extension of services beyond Cambridge to Chesterton);
- Option C - a new two platform station on the main-line (only able to be served by passing train services); and
- Option D (Low Cost Alternative) - an alternative mode, dedicated bus link from the Chesterton Interchange site to Cambridge railway station (akin to a bus-based park and ride service feeding heavy rail).

12.41 Summary descriptions of alternative Options A, C and D (Low Cost Alternative) are presented below, following which is a more detailed account of the appraisal of Option B, the preferred option.

Option A

12.42 This option tested the provision of a single bay platform located on the alignment of the now disused St. Ives branch line. A full scheme description for Option A is

[19] Jacobs Consultancy – Chesterton Proposed New Station: Pre-feasibility study and outline business case. (2003)

included within the GRIP2 report at Appendix A. In all other respects, facilities within the Interchange building, on the station platforms and in the car park were assumed to be the same as those specified for the preferred Option B.

12.43 The construction of a single bay platform for this option means that it is only possible to serve those services which could be extended onwards from Cambridge and which would terminate at Chesterton Interchange. This results in a timetable which delivers 3 southbound slow services serving the early morning peak (0630-0730) commuting into London and a single additional southbound slow service during the traditional morning peak (0730-0830) commuting into Cambridge. Full timetable information for Option A is presented in Appendix C.

Option C

12.44 This option tested the provision of an island platform to the north of the site providing two platforms on the main line. Part of the EWS stabling sidings would be removed to allow space for the construction of the station, car park, access road and Guided Busway interchange. The services able to stop at Chesterton Interchange under Option C would be a reduced version of the Option B service timetable. Between 0540 and 0900 there would be a total of eight southbound services from Chesterton (nine including the Norwich to Cambridge service).

12.45 A full scheme description for Option C is included within the GRIP2 report at Appendix A. As for Option A, in all other respects, facilities within the Interchange building, on the station platforms and in the car park were assumed to be the same as those specified for the preferred Option B.

12.46 Full timetable information for Option C is presented in Appendix C.

Option D (Low Cost Alternative)

12.47 This option represents the provision of a bus-based park and ride solution located at the Chesterton Sidings site. A 200 space car park with waiting provision and infrastructure to enable interchange with buses would be provided. As with the rail based options a connection with the Guided Bus network was assumed. Connection back to the highway network would also be provided.

12.48 As the bus-based option was forecast to generate significantly lower levels of travel demand compared to that forecast for the rail based options, it was assumed that the specification for the provision of facilities would be revised accordingly. High quality infrastructure including shelters and real time information provision would be included, however, an interchange building was not provided with this option. The details of layout, landscaping and materials would be consistent with the high quality of provision made for Park & Ride elsewhere in Cambridgeshire.

12.49 In identifying an equivalent service pattern for Option D, to that provided by the rail based options, the following main assumptions were made about the level of service provision required between Chesterton Interchange and Cambridge Station:

- Peak hour frequency = every 20 minutes;
- Off-peak hour frequency = every 30 minutes;
- Buses run throughout the railway operating day (06:00-23:00); and
- Journey time to Cambridge Railway station from Chesterton site = 25 minutes.

12.50 Further detailed information on the appraisal of Option D as the low cost alternative is presented in Appendix K.

Option B- Preferred Option

12.51 This option tested the provision of a three platform station. A single bay platform accessed from the disused St Ives Branch Line and an island platform on the main line would be provided to the north of the Chesterton site. The total length of each platform would be 300m which would be capable of accommodating a train of 12 cars.

12.52 The benefit of having a three platform station is that it would enable all passing services to call as well as the onward extension of services beyond Cambridge to Chesterton.

12.53 Direct demand modelling has forecast the total number of passengers (boarders) in one day to be approximately 2630.

12.54 A station building comprising waiting room, booking office and toilets would be provided in addition to passenger shelters on the platforms. A footbridge would provide access over the main lines and operational sidings from the station to the platforms. Lifts and stairs would be provided on each platform and at the station. A multi storey car park for 400 cars is also proposed and this would serve the guided bus interchange and station.

12.55 The construction of an additional bay platform within the station configuration means that some additional services, extended on from Cambridge to Chesterton, could also be accommodated within Option B. This results in a timetable which delivers four southbound semi-fast services serving the early morning peak (0630-0730) commuting into London and a further five southbound services serving the traditional morning peak (0730-0830) commuting into Cambridge.

12.56 A summary of the timetable for Option B is provided in Table 12.1.

Appraisal Results

12.57 An overview of the results of the appraisal process, focusing on those areas which assist in differentiating between the options, is set out below.

Forecast Demand and Revenue

12.58 Table 12.6 summarises the forecast average weekday demand and revenue (2011) at Chesterton for each of the four options.

Table 12.6 –Average Weekday Demand and Revenue for all Options (2004 prices, rounded)

Forecast	Option			
	A	B	C	D
Demand (boarders)	1140	2620	2420	50
Revenue (£ gross per annum)	4.1m	9.9m	9.2m	282,000

12.59 For Option A the combination of the overall reduced level of service and the penalty of having to head south to then change and then head north to access Ely, Peterborough and Norwich explains the much lower demand.

12.60 It should be noted that the results shown for Option D are in fact the incremental change at Cambridge station, but have been shown as the effect of the Chesterton remote Park and Ride site.

12.61 The results also reflect the higher level of service provision for Option B compared to Option C, because Option B includes the onward extension of some services from Cambridge.

Capital and Operating Costs

12.62 Table 12.7 shows the capital costs relating to each of the options. The difference in capital costs between each of the rail options is attributable to a relatively small number of factors. Situated on the St. Ives Branch Line, Option A includes the provision of a single straight platform with level access which does not require the either a footbridge or staircase. However, construction of the station at this location would require relocation of the Overhead Line Equipment Booster Overlap and a significant number of associated structures.

Table 12.7 –Capital and Operating Costs for all Options (2004 prices, rounded)

Costs (£s)	Option			
	A	B	C	D
Capital	11,716,100	15,002,800	12,712,000	3,118,500
Maintenance/ staffing	266,000	347,000	281,000	50,000
Additional Rail Operating Costs	31,600	37,700	0	119,600
Renewals (15 years)	0	0	0	200,000

12.63 Whilst neither Option B nor Option C requires relocation of the Overhead Line Equipment Booster Overlap, Option B requires additional structures to support the additional bay platform. In both cases lift and stair structures would be needed in order to cross the live track and access the platforms. Similarly the inclusion of the bay platform within Option B contributes to the higher capital cost of the scheme.

Economic Appraisal

12.64 Table 12.8 summarises the headline results from the economic appraisal.

12.65 Option B generates the highest Net Present Value (NPV) and the highest Present Value of Benefits (PVB). The Benefit to Cost Ratio (BCR) of 3.09 represents high value for money against DfT assessment criteria.

12.66 Option C has a lower Present Value of Costs (PVC) and consequently the slightly greater BCR at 3.18. However, the higher level of user benefits associated with Option B, along with a scheme BCR that, at 3.09 is only slightly lower than that for Option C, means Option B is viewed as the preferred option.

12.67 Option A generates approximately half of the benefits and NPV of Option B and therefore performs less well economically. Option D generates substantially lower benefits and has a negative NPV and therefore performs poorly in economic terms.

12.68 It is important to realise that the BCR is only one input into a decision about whether or not a project should go ahead. The BCR shows those impacts that have established monetary valuations such as user and non user time and accidents.

Table 12.8 – Summary of Economic Appraisal Results for all Options

Benefits	Option			
	A	B	C	D
Time	£19,820	£46,610	£38,340	£2,590
users	*£12,400*	*£7,320*	*£1,030*	*-£630*
non-users	*£7,420*	*£39,290*	*£37,310*	*£3,220*
Accidents	-£3,890	-£6,300	-£5,830	£100
Revenues	£72,560	£123,310	£114,540	£7,060
Operating	-£11,470	-£14,820	-£10,850	-£6,880
Present Value of Benefits	£77,020	£148,790	£136,200	£2,870
Costs				
Capital	£16,300	£20,870	£17,680	£4,340
Indirect Tax Revenues	£11,540	£27,290	£25,110	£1,120
Present Value of Costs	£27,840	£48,160	£42,790	£5,460
Net Present Value	**£49,180**	**£100,630**	**£93,410**	**-£2,580**
Benefit/Cost Ratio	**2.77**	**3.09**	**3.18**	**0.53**

Service Provision and Network Operation

12.69 The timetable for Option A, in particular the AM peak period proved the most difficult to plan to provide an adequate level of service. Due to the absence of a train which could subsequently be timetabled to start from Chesterton, there would no inbound arrival into Chesterton between 0730 and 0830, which is deemed to be a major disincentive to any inbound commuting to the area. The only other way to enhance the Option A timetable would be to schedule an extension of the Liverpool Street service to arrive at Chesterton at 0810, departing again at 0815. However, the instability that such a tight turnaround time would introduce into the timetable meant that this service was excluded. Similarly, enhancing the timetable during the off-peak period, such that there would be two inbound and two outbound services every hour, would mean that the single platform would be occupied by a train between 32 and 48 minutes past each hour (Kings Cross slow service) and between 58 minutes in one hour to 24 minutes past the following hour (Kings Cross semi-fast service). In this way if one service were to be running late this would present a risk of one service blocking out the next. Equally there is a risk that trains would be turned back at Cambridge in order to recover time and restore schedules, rather than continuing to Chesterton. This would have a significant adverse effect on the perception of the quality and value of a Chesterton interchange.

12.70 Operationally, the implications and effect of a bay platform under Option B remain as for Option A although any disruption to the extended services would be mitigated by the through services calling at the station. The allocation of train crew might also have an effect on the consistency and reliability of services scheduled to turn back at Chesterton. Train crews are likely to be based either at Cambridge or London Kings Cross and a shortage caused by service disruptions might also result in the cancellation of a Chesterton service if there was a shortage of time and resources. Thus a single terminating service is scheduled to use the bay platform under both Option A and Option B.

12.71 Timetabling provision for the island platform under Options B and C involved a difficult trade off between the ability to serve both Waterbeach and the new station at Chesterton Interchange in the peak and off-peak. The single track constraints on the Kings Lynn line meant that to provide a fast service to London from Chesterton it was essential to schedule the Kings Lynn to Kings Cross service to call there. The solution to this was to remove the Waterbeach stop, particularly so in the off-peak period. The morning and evening peak period services were designed to retain as many of the Waterbeach services as possible. In the off-peak the service would be reduced from hourly to every two hours on the Norwich-Cambridge service, and would no longer run direct to/from London.

12.72 Therefore under Options B and C, Waterbeach would see a downgrading of its current service level. However, this was deemed an acceptable trade-off due to the relative levels of demand currently experienced at Waterbeach compared with the forecast demand for Chesterton Interchange. Platform allocation between services at Cambridge would also need to be altered to permit through running northwards by the present Kings Cross-Cambridge semi-fast service.

12.73 When planning infrastructure works on the rail network, consideration must be given to the amount of 'possession' time that is likely to be required to undertake the work. The appraisal undertaken for the Network Rail GRIP2 analysis indicates that all three of the rail options would require a similar number of nine or ten weekend Rules of Route (ROR) possessions.

Impacts on Existing Site Users

12.74 At present, parts of the Network Rail site are leased to three separate organisations. The lease period for elements currently leased to EWS extends into the appraisal period. However, the other leases will terminate prior to the proposed scheme opening date. It is not therefore appropriate to consider these in the appraisal as future lease arrangements have not been determined.

12.75 Table 12.9 summarises the impacts in terms of the area of existing sidings which would need to be cleared, the impacts on EWS, and the land which would be released for development under each option.

Table 12.9 – Impact on existing site users

Impact	Option			
	A	B	C	D
Clearance of sidings	7km Network Rail sidings to south of site.	15km EWS stabling sidings.	9km EWS stabling sidings.	7km Network Rail sidings to south of site.
Impact on EWS	Marshalling and stabling sidings retained.	Marshalling sidings retained. Stabling sidings removed.	Marshalling sidings retained. Stabling sidings removed.	Marshalling and stabling sidings retained.
Development Land	Limited area released	Large area released	Large area released	Limited area released

Environmental Appraisal

12.76 An environmental appraisal was carried out for the site as a whole, and whilst it is likely that there would be differences in detail in the impacts for each of the alternative options, the environmental appraisal would be unlikely to differ significantly for one option over another. A more detailed environmental assessment of the chosen option will be carried out as part of the process of obtaining statutory consents.

12.77 Further detail is provided in Table 12.14, the NATA appraisal summary table for the preferred option.

Appraisal Summary

12.78 The appraisal considered the performance of each of the alternatives in the following areas:

- Delivery of scheme objectives;
- Forecast demand and revenue;
- Capital and operating costs;
- Economic performance;
- Service provision and network operating impacts;
- Impacts on existing site users; and,
- Environmental impacts.

12.79 All of the options would deliver a new interchange facility on the public transport network on the north east side of Cambridge, though the bus-based option would deliver the lowest level of waiting facilities without an interchange building. Options B and C both perform strongly in terms of forecast demand and revenue, generating more than twice as many daily trips as Option A, which performs next best. This is a result of the timetable arrangements which could be provided under each option. Options B and C allow through services on the main line to call at the station, whereas Option A can only be served by services extended onwards from Cambridge. Option D is forecast to generate significantly fewer trips and therefore lower revenues.

12.80 The station specification and engineering requirements mean that capital and operating costs are similar for Options A and C. Option B is more expensive with the inclusion of the additional bay platform on the main line. Option D has the lowest capital costs, akin to those associated with a high quality bus based park and ride site. Operating costs reflect the level of maintenance required for each option, with Option B having the highest cost and Option D the lowest. Options A and C perform comparably.

12.81 Option B and Option C perform strongest in the economic appraisal, generating scheme BCRs of 3.09 and 3.18 respectively. The slightly higher BCR for Option C is brought about by lower scheme costs, as scheme benefits are greatest under Option B. Each of these options demonstrates significantly higher economic performance than either Option A or D, which generate BCRS of 2.77 and 0.53 respectively.

12.82 Potential difficulties in scheduling services to use the bay platform under Option B do not appear to have significantly affected forecast levels of patronage. The timetable for Option C is deemed to be robust, but it generates a lower level of demand to that of Option B.

12.83 Although the timetable for Option D has a similar level of service frequency this was not sufficient to generate similar levels of demand.

12.84 Impacts on existing site users would be comparable for Options B and C, under which a significantly larger area of land would be released for development compared to with Options A and D. However, the bay platform in Option B requires the clearance of an additional area of sidings with associated costs.

12.85 The current level of environmental appraisal considered the site as a whole and thus limited differences were identified between options at this stage.

12.86 Despite the higher scheme costs and potential timetabling difficulties associated with the bay platform, the higher level of patronage and scheme benefits meant Option B was chosen as the preferred option for a Chesterton Interchange facility. The remainder of this document therefore focuses on the detailed appraisal of Option B. The results of the full NATA appraisal for the preferred option are presented at 12.130.

PREFERRED SCHEME CAPITAL AND OPERATING COSTS

Capital Costs

12.87 The capital costs for the scheme were derived using railway engineering best practice to a level of detail consistent with that required by the Network Rail GRIP2 process. Table 12.10 provides a summary breakdown of the scheme capital costs in 2004 prices. Further details of the capital costs associated are included in the GRIP2 report at Appendix A.

12.88 These costs exclude allowances for risk, optimism bias and scheme development, which are included in the costs presented in Table 12.7.

Table 12.10 - Summary of Option B Capital Costs

Discipline	Cost (£s)
Permanent Way	761,000
Civils	2,048,500
Signalling	596,000
Telecoms	174,000
M & E	651,500
OLE	734,300
Car access and parking, bus interchange	1,809,100
Network Rail Asset Protection	350,000
Contractor preliminaries and design fees	3,180,600
Total	**10,935,000**

12.89 Note that these costs do not include any allowance for possessions during the actual construction period – it has been assumed that pre-booked engineering possessions would be utilised wherever possible.

Operating Costs

Site Maintenance and Staffing Costs

12.90 Annual maintenance and staffing costs have also been estimated, based upon the following assumptions:

- Station open between first and last service each weekday, reduced on Sundays;
- Staffed ticket office (open for morning peak and part of day);
- Platform staff for train despatch and passenger assistance;
- Multiple platforms linked by footbridge;
- No buffet or shop;
- Staff/supervisors office;
- PA system and CCTV provided;
- Messing facilities for staff;
- Public waiting areas; and
- Public toilets.

12.91 Based on the application of these assumptions, an annual site operating cost of £347,000 per annum (2004 prices) was derived.

Service Operating Costs

12.92 The selection of Option B as the preferred scheme results in some additional operating costs of £37,700 over and above those already incurred by existing train operators.

RISK ASSESSMENT AND OPTIMISM BIAS

Risk

12.93 In accordance with the Major Scheme Appraisal guidance a Quantified Risk Register has been established for the scheme. The QRA is included at Appendix L.

12.94 The high level risks identified through the risk management process are listed in Table 12.11 overleaf.

12.95 From the initial risk exercise, risks relating to the site such as ground conditions, ecology and the condition of the rail infrastructure have been mitigated through surveys and investigations.

12.96 Of the remaining six high risks, three relate to the funding of the project and are to be mitigated through discussion and negotiation between CCC, NR and DfT.

12.97 Continuing involvement and consultation with Members will mitigate the possibility of political support for the scheme being withdrawn.

12.98 More detailed consideration of the construction related risks will be carried out during further scheme development but no specific individual risks have been identified at this time. To mitigate against the risk of the market overheating and insufficient resources, contact with suppliers and market testing will be adopted in order that an informed decision can be made on the programme for implementation of the project.

Table 12.11 - High Level Risks

Risk ID No	Risk Description
2	Funding restrictions as a result of the regionalisation of transport funding
16	Construction related risks
15	Funding gap cannot be made up
10	Insufficient Resources/ Market overheats due to competing projects e.g. Olympics
26	Strategic Planning Risk undermines business case for the station
1	County Council withdraw support for the scheme

Optimism Bias

12.99 Within the economic appraisal of the scheme, optimism bias of 66% has been applied to both the capital and operating costs. This assumes a conservative approach and

is in keeping with current DfT guidance on optimism bias, which would categorise the scheme as 'non-standard' civil engineering.

12.100 However, it is acknowledged that the development of scheme costs to the Guide to Rail Investment Projects Pre-Feasibility (GRIP2) stage means that the rail industry would accept the application of optimism bias at 50%.

PASSENGER MODELLING AND ASSUMPTIONS

Model Development

12.101 Full details of the development of the model structure for the base year demand model and the suitability of that model for assessment of future year demand are provided in the Local Model Validation Report (LMVR) at Appendix B. The models were validated to a 2004 Base Year.

12.102 The development of the modelling process for the models to forecast the demand for a new station at Chesterton to the north of Cambridge was driven by the expected markets which it would serve, and the various rail based options which were to be tested. Three separate models were developed/utilised, covering:

- A locally calibrated generation model;
- An attraction model; and
- The use of the existing MOIRA model to model the effects of service journey time extensions for through rail travellers.

12.103 Used together, the complete suite of modelling tools enabled the effects of a new station at Chesterton, serving both the adjacent population and drive-in demand from further afield, to be assessed.

Demand and Revenue Forecasting Assumptions

12.104 A summary of the main assumptions applied in the demand and revenue forecast modelling is provided below.

Rail Fares

12.105 Fares for Chesterton were taken to be the average of those between Cambridge and Waterbeach, reflecting the mid-point location of the new station. However, for Option A, an additional fares penalty was applied to replicate the need to double back from Chesterton where a traveller is heading northwards. This has only been applied to movements to Ely, as further distance destinations (Norwich and Peterborough) would be more likely not to pick up the financial penalty of this doubling back movement.

Timetabling

12.106 In order to define the rail services available to call at the new station, a detailed timetabling exercise was undertaken. The basic timetable was based upon the December 2004 public timetable, with the known incremental changes to the December 2005 timetable applied (the changes mainly related to Liverpool Street-Cambridge and Stratford-Stansted Airport services). This timetable then acted as the do-minimum to which all Chesterton service options were appended. As part of this

process, reference was also made to the platform docking timetable for Cambridge which shows the planned allocation of trains to platforms.

12.107 The timetable for Option B, incorporating the most complicated and extensive service pattern, was tested for robustness within the industry standard software Railsys. The Railsys model showed that the proposed timetable would be able to cope with normal railway timetable perturbations.

12.108 The timetables for Options A and C were derived based upon this analysis of Option B. As such, given that Option C features exactly the same timetable but without the terminating trains, it can be concluded that this option would also have a robust timetable. In a similar manner, Option A contains only the extended services from Option B's timetable, so again should provide a robust timetable.

12.109 The most significant issue for consideration in the train planning work undertaken to devise a working timetable for Chesterton Interchange was the need to estimate the extra time involved both in extending southern trains from Cambridge Station to Chesterton Interchange and in stopping existing through trains at Chesterton Interchange. To do this, consideration was given to the following factors:

- Running time between the two stations;
- Delay/recovery time for services approaching Cambridge;
- Turnaround times at the new station; and
- Platform occupation at the Cambridge station.

12.110 A further consideration was the need to accommodate services within the existing rolling stock such that no additional trains would be required.

12.111 For Option D, the bus based low cost alternative, services were modelled as an altered access mode to Cambridge railway station. Service schedules have already been described in paragraphs 2.47-2.50. The new mode of access was combined with that of the do-minimum using a logsum formulation to give a marginally lower set of times and costs of access to Cambridge for those zones which could access the service. Owing to its proximity, the model parameters used in this process were taken from the Park and Ride model for Cowley Road as developed for the Cambridge Guided Bus (CGB) study, with a modal constant against Park and Ride of £4.53 per inbound trip against use of Park and Ride. This value was applied to the generalised cost of using Park and Ride access before derivation of the logsum.

Development Assumptions

12.112 For the do-something scenario the highway times and distances were taken from skims of the Cambridge SATURN model based in turn upon outputs from the MENTOR land-use/transport model. The scenario used was that of committed highway and housing schemes in Cambridgeshire for future years.

Parking Costs at Chesterton Interchange

12.113 To enable the different models to be applied to Chesterton, assumptions are required regarding the costs accruing to users of the new station. For the parking charges the same charging regime was assumed to apply as for Cambridge railway station, being £4.40 in the peak period and £3.30 outside the peak.

Demand and Revenue Build-up

12.114 The demand for a new railway station does not achieve its forecast for the first few years due to delays as the travelling public gain knowledge of the new rail facility. To reflect this, in the economic appraisal the assumption has been made that demand and revenue in the year of opening (2011) would be 50% of the forecast, and in the next year (2012) would rise to 75% of the predicted, followed by a rise to the full 100% of forecast demand from 2013 onwards.

Expansion Factors

12.115 For the Trip Generation Model, standard rail industry annualisation factors (daily to annual) were identified. These are shown in Table 12.12 below.

Table 12.12 – Model Expansion Factors

Market	Daily to Annual Factor
Full	252
Reduced	341
Season	252

12.116 The same expansion factors are applied to the Trip Attraction Model for the full and season ticket markets. This conservative assumption implies that no weekend market is expected to be attracted to the Interchange catchment.

Through Rail Travellers

12.117 The impact of the introduction of Chesterton Interchange on through rail travellers and associated demand and revenue forecasts were estimated using the MOIRA suite of models. However, for some movements in MOIRA there is an obvious degree of overlap between the effects of the time extension in both it and the generation model. For example, the effects of an additional stop at Chesterton in Option B upon Ely-Cambridge movements are estimated in both models, and so those from the generation model have been selected. A process of removal of such duplication was undertaken, with the generation model results preferred given that they also allowed for station choice changes, which are not included within MOIRA. By allowing for this station change to occur, the disbenefits from the generation model would be less than from MOIRA which would show a simple loss of demand due to the time extension effects.

Capital and Operating Costs

12.118 For inclusion within the economic assessment, the capital and operating costs set out in Table 12.7 were rebased to 2002 prices (based upon the retail prices index) and uplifted by 20.9% to reflect market pricing.

12.119 Optimism Bias at a rate of 66% was applied to all elements of the costs, covering construction, station operating and service operating costs. This ensures a robust assessment of scheme costs, as the completion of a detailed GRIP2 report would ordinarily allow a lower level of optimism bias (50%) to be adopted.

Decongestion Calculations

12.120 Usage was made of the DfT Rail/SRA advice on the calculation of decongestion benefits. This provided rates per passenger car unit of 56.7p/veh km in 'congested' conditions and 12.5p/veh km in 'uncongested' conditions (both at 2002 prices).

12.121 For the purposes of this study the definition of 'congested' conditions was defined by the area within Cambridge bounded by the M11, A14 and the A1134 to the east of the city. Using a crow fly assessment the proportion of the distance between each origin zone and the destination was assessed to enable the proportion of the journey being valued at the 'congested' or 'uncongested' rates.

12.122 The traditional assumption between mode transfer from car/induced travel for new trips is a 50%:50% split. This was assumed for all movements in the generation model, with the exception of trips to London, for which a 25%:75% split (mode transfer/induced travel) was assumed. This is a more conservative assessment which has recently been used for work undertaken for Network Rail assessing the business case for station enhancements for Kings Cross and approved by DfT Rail.

12.123 Based on an analysis of LATS data for access to Cambridge railway station, an assumed level of 50% access by car was applied to all stations with exception of Chesterton, for which a figure of 66% was used, based on the access to Warwick Parkway, chosen as an analogous situation.

12.124 For short distance trips of less than 3km to the station no decongestion calculations were undertaken on the basis that such trips would most likely be slow mode walk or cycle trips.

Accident Benefits

12.125 The assumptions used for the calculation of decongestion benefits, relating to the split between mode transfer/induced travel for new trips, and station access mode for existing trips, were also applied to the calculation of accident benefits.

12.126 SRA accident rates were applied to the change in split between car access and rail journey passenger kilometres between the do-minimum and the do-something scenarios.

Taxation Changes

12.127 Effects on taxation income to the UK Treasury were estimated in accordance with SRA advice for both VAT and fuel duty adjustments. Further information is provided in the Forecasting and Economics Report at Appendix C.

Car Parking Revenue Effects

12.128 To assess the likely number of self-driven car trips accessing Chesterton Interchange, and thus generating parking revenue, an analysis of LATS survey data (for Cambridge stations) as well as a recent study at Ely[20], providing indications of the level of such car usage, was undertaken. Further reference was made to the level of drive in demand to Gloucester and Cheltenham stations which serve as a hub station

[20] Atkins – Ely Public Transport Interchange Study

for their respective areas in a similar manner to the expected for Chesterton Interchange.

12.129 Both gains and losses in parking revenue were assessed, taking account of generated demand at Chesterton Interchange and reductions in demand at other stations where diversion has occurred. Table 12.13 below shows the assumed mode split for self-drive car parking access, for the purposes of car park revenue assessment. The level of self-driven car demand at Chesterton Interchange reflects the presence of local population demand at nearby Kings Hedges, Chesterton and a little further away at Milton.

Table 12.13 – Assumed Mode Split of Self-Driven Car Parking Access

Market	Cambridge	Chesterton	Ely/ Huntingdon	Small stations
Full	12%	28%	28%	12%
Reduced	10%	28%	28%	10%
Season	8%	28%	28%	8%

WORKSHEETS FOR NATA OBJECTIVES

12.130 This section summarises the results of the full NATA appraisal for Option B as the preferred scheme. The completed Appraisal Summary Table is presented in Table 12.14, below.

12.131 Supporting information for each of the Central Government Objectives and, where applicable, sub-objectives is then provided.

Environment

12.132 The Environmental Appraisal was undertaken in accordance with the Detailed Guidance on Major Scheme Appraisal in Local Transport Plans (Department for Transport) and is consistent with other relevant guidance, including the former SRA's Guide for Promoters of New Stations.

Noise & Local Air Quality Sub Objectives

12.133 Standard noise and air quality assessments both require the comparison of traffic flows for the do-minimum and do-something scenarios in order to identify those links on the highway network where changes, greater than a certain level, occur. The assessments are undertaken for the opening year situation.

12.134 For the purposes of noise assessment, guidance[21] suggests that improvements or deterioration in the noise environment may be perceived when the changes are as low as 1dB(A). This is equivalent to an increase in traffic flow of 25% or a decrease of 20%. Accordingly, preliminary screening of the existing road network was carried out to identify where changes in the order of 1 decibel, and hence a significant change in noise, were expected. Road segments would only need to be included within the noise assessment if the change in traffic from the Do-Minimum to the Do-Something scenario is predicted to be significant according to these terms.

12.135 For the purposes of local air quality assessment, guidance[22] suggests that due to the uncertainty in traffic forecasting and the size of traffic flow change needed to affect air quality, options which change traffic flows by less than 10% on existing or new routes, or elsewhere on the local network can be scoped out.

12.136 The suite of demand and revenue forecasting models used to test the scheme options for Chesterton Interchange do not include a local highway network model. As such an appropriate alternative methodology had to be developed for the appraisal of noise and local air quality impacts. A preliminary screening exercise was undertaken to see if detailed assessment of these indicators could be 'scoped-out' of the appraisal process.

[21] DMRB (Volume 11, Section 3, Part 7, Chapter 3)
[22] Transport Analysis Guidance (TAG) Unit 3.3.3 The Local Air Quality Sub-objective, April 2004, Design Manual for Roads and Bridges (DMRB)

Table 12.14 – Appraisal Summary Table – Option B (Preferred Option)

Option B (Preferred)		**Description – Rail based option. Single Bay Platform & Island Platform on the Mainline (3 Working Platforms in Total).**	**Problems**	**Present Value of Costs to Public Accounts £42.8m**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE ASSESSMENT**	**ASSESSMENT**
ENVIRONMENT	**Noise**	Changes in traffic flows are lower than the threshold values for assessment		Neutral
	Local Air Quality	Changes in traffic flows are lower than the threshold values for assessment		Neutral
	Greenhouse Gases	Generated trips offset reduction for those trips removed between Chesterton and Cambridge railway station		688 CO_2 tonnes per year (2011) net increase
	Landscape	The scheme would have an adverse impact on the open landscape. Changes to character and existing use of the site result in moderate adverse score.		Moderate adverse
	Townscape	Overall the scheme would improve the currently unused sidings area and would result in a moderate beneficial impact.		Moderate beneficial
	Heritage of Historic Resources	Impact on locally significant features (railway furniture) could be mitigated. Adverse impact on Old Rectory (Listed Building). Overall score is slight adverse		Slight adverse
	Biodiversity	Effects on Bramblefields Local Nature Reserve during construction and operation. Adverse residual effects during operation cannot be fully mitigated.		Slight adverse
	Water Environment	With mitigation scheme will have a negligible impact on most attributes. Impacts of low significance on Milton Drain.		Slight adverse
	Physical Fitness	Opportunity for walk and cycle access to the interchange from Cam bridge Northern Fringe area.		Slight beneficial
	Journey Ambience	Car users able to switch to PT mode earlier in journey. Depending on the delivery of other improvements, some crowding may be experienced.		Slight adverse
SAFETY	**Accidents**	Accident savings generated through mode switch from car to rail results offset by additional car based generation accessing new interchange facility.		PVB £-6.303m
	Security	All users will benefit from new high quality interchange, waiting and parking facilities. CCTV system would be installed to monitor interchange facilities and car park.		Moderate beneficial
ECONOMY	**Public Accounts**	Scheme has a BCR of 3.09, representing 'high' value for money against DfT guidance	Central Govt PVC £48.2m, Local Govt PVC £0m	PVC £48.2m
	Transport Economic Efficiency: Business Users & Transport Providers	Transport benefits arise from decongestions benefits associated with removal of car trips from the highway network. Transport operators benefit from increased revenue and patronage.	Users PVB £28.2m, Transport Providers PVB £108.5m, Other PVB £0m	PVB £136.7m
	Transport Economic Efficiency: Consumers	Transport benefits arise from decongestion benefits associated with removal of car trips from the highway network.	Users PVB £18.3m	PVB £18.3m
	Reliability	Additional stop on rail network increases journey options and reduces impacts on reliability.		Slight beneficial
	Wider Economic Impacts	Scheme does not fall within a regeneration area.		Not applicable
ACCESSIBILITY	**Option values**	>2400 users forecast to access the rail network at Chesterton Interchange daily. Interchange will provide new access point on to the public transport network for local population (>13000) within 1500m of facility.		Strong beneficial
	Severance	Scheme will be developed on existing rail sidings. No detrimental effect on non-motorised users. Access likely to be improved when new development takes place.		Neutral
	Access to the Transport System	28.85% of local population (non-car available) will have access to a new service 2 trains per hour in each direction in the off-peak period.		Large beneficial
INTEGRATION	**Transport Interchange**	New facility transport network. Provides interchange between rail, car, bus, guided bus, walk and cycle.		Moderate beneficial
	Land-Use Policy	All local and regional planning and land-use policies directly support the delivery of the scheme.		Strong beneficial
	Other Government Policies	Scheme will have limited impact on wider government policies.		Beneficial

12.137 The preliminary screening exercise involved an assessment of flow changes on the main highway links immediately adjacent to the site (Milton Road), and as such the area of the network most likely to be affected by the proposal. Known trips to Chesterton Station were extracted from the model. As these are daily trips identified by ticket type (full, reduced, and season) individual factors were applied to each ticket type to provide peak hour trips to the station. A factor was then applied to the peak hour trips to identify the proportion making the trip by car, i.e. those driving and parking at the station (including those travelling by car and being dropped off) and the proportion travelling by other modes.

12.138 The methodology then focused on car based trips using the highway network. As these additional car trips have no other choice but to access the station via Milton Road, these trips were then added to the existing traffic data available for Milton Road, and the increase in traffic analysed. Table 12.15 illustrates a summary of this procedure.

Table 12.15 – Screening Procedure for Noise and Air Quality Assessment

Peak Hour	Stage 1: 2005 Milton Road Traffic Data	Stage 2: Chesterton Peak Hour Trips	Stage 3: Chesterton Peak Hour Car Trips	Stage 4: % increase in trips on Milton Road	Stage 5: Noise/Air Quality Assessment required?
AM	3184	358	186	5.8%	NO
PM	2694	72	38	1.4%	NO

12.139 This assessment looked at the area of the network certain to suffer the greatest impact from the proposal. Thus it was assumed that, as a worst case scenario, this could be used to indicate the impact on other areas of the network.

12.140 The TAG noise assessment is required to be completed for dwellings within 300m of road segments within the study area where the change in traffic between the Do-Minimum and Do-Something scenarios is significant (ie >+25% or >-20%). On this basis the road segments in the network did not qualify for analysis.

12.141 The TAG air quality assessment is required to be completed where the change in traffic between the Do-Minimum and Do-Something scenarios is significant (ie >10%). On this basis the road segments in the network did not qualify for analysis.

12.142 Therefore the overall assessment for both Noise and Local Air Quality is neutral.

Greenhouse Gases Sub-Objective

12.143 The assessment of greenhouse gas emissions and the overall change in carbon dioxide indicates a net increase of 688 tonnes of CO2 per year at 2011. This increase results as the trip generation associated with Chesterton Interchange offsets the removal of trips elsewhere on the network.

Landscape and Townscape

12.144 The issues with regard to landscape and townscape will be how the visual impact of the proposed station building and car park compares with the existing derelict urban landscape, and how landscape quality could be improved as a result of the development.

12.145 The scheme will have a moderate adverse impact on the landscape because of the changes to the character and use of the existing site that it would bring about.

12.146 A number of properties are likely to experience moderate adverse visual impact from the proposed interchange building, car parking facilities and lighting. They would be more affected at night time and during winter. However, landscape mitigation measures would reduce the impact of the proposals. These would take into account the potential to extend and improve ecological diversity.

12.147 Overall the proposed development would improve the currently unused siding area and would give a moderate beneficial impact on the townscape of the area. The AST worksheet for Environment – Landscape is included at Appendix E.

Heritage

12.148 This assessment identified the known and potential cultural heritage resources that may be affected by the proposed development.

12.149 There are two known sites recorded on the Cambridgeshire Historic Environment Record (CHER) within the proposed development site - an Anglo-Saxon burial (AH no.2) and a prehistoric cremation burial (AH no. 3) - both discovered during quarrying between the 19th and 20th centuries. The latter also contained Roman pottery (AH no.3a) although this was most likely a result of later disturbance of the burial. However, the record of the Iron Age burial discovery can not be confidently verified and its original siting may well be outside of the limits of the development site. However, the railway sidings and associated structure, while not listed on the CHER, are of local interest and should be considered.

12.150 There is high potential that the proposed development could impact on as yet unknown buried archaeological remains associated with the discovery of the burials. An understanding of the extent and importance of any buried archaeological remains in this area will be developed through the undertaking of further investigations (see below). At this stage no definitive impact assessment can be made, though it is possible that these remains could be of National importance and that the scale of the impact on them could be Substantial, resulting in a Large Adverse effect. However, taking account of the information currently available the overall the impact on heritage is assessed as slight adverse. The AST worksheet for Environment – Heritage of Historic Resources is included at Appendix G.

Biodiversity

12.151 The main biodiversity issues to be considered at the site include the possible presence of great crested newts within the ponds, the possible presence of bats within a number of buildings which may have to be demolished as part of the scheme and the possible presence of badgers and reptiles within the site. Disturbance to nesting birds and loss of nesting habitat is also an issue to be considered.

12.152 Furthermore, the Chesterton Sidings site shares a boundary with the Bramblefields Local Nature Reserve (LNR). This site is important at a county level and possible damage or disturbance to this site also needs to be considered.

12.153 The Environmental assessment identifies a number of mitigation measures which would need to be put in place prior to construction and operation. However, assuming these are fully implemented the overall assessment for biodiversity is slight adverse. This is due to the impacts on the Bramblefields LNR. The AST worksheet for Environment – Biodiversity is included at Appendix F.

Water Environment

12.154 The Chesterton Interchange proposal involves creating fairly extensive areas of hard standing which will create an excess amount of run-off. Excess amounts of run-off will require attenuation by storage. There are two appropriate drainage routes for surface water. The Milton drain to the north is sensitive to flooding and the Public drain to the East is socially sensitive. An increase in un-attenuated flow could lead to flood risk in both the public drains and also the River Cam which is sensitive to flooding. Parts of the site lie within the indicative floodplain. However, the Environmental assessment identified a number of mitigation measures which could be put in place to limit the effects of the station both during construction and operation. With these mitigation measures in place, the impact on the water environment is assessed as slight adverse. The AST worksheet for Environment – Water Environment is included at Appendix D.

Physical Fitness

12.155 The delivery of the scheme will include facilities for access via non-motorised modes. This will benefit locally generated trips which would otherwise have accessed Cambridge railway station by car enabling them to walk or cycle to the new interchange point. Provision of secure cycle storage and links to the local walk and cycle network should encourage access by non-motorised modes. The impact on physical fitness is assessed as slight beneficial.

Journey Ambience

12.156 Approximately 50% of the trips from Chesterton are forecast to be abstracted from other stations, principally Cambridge. As almost 80% of trips to Cambridge station originate to the north and north-west of the city this indicates that, with the scheme in place, a large number of Chesterton users should be able to avoid travelling across the city to get to Cambridge station. Thus there is likely to be an improvement in journey ambience for those users leaving the highway network as a car driver and joining the public transport network earlier in their journey.

12.157 High quality car parking and waiting facilities will be provided at the interchange, and journey stress will be reduced through the provision of real time information at the station. Increased parking provision will also relieve current difficulties of parking at Cambridge station. For existing public transport users the option will represent an improvement in journey ambience. For users which transfer from car for their whole journey an additional interchange and associated waiting time will be introduced.

12.158 At the present time some services between Cambridge and London during the morning peak period are known to be congested, though particular concerns exist at the London end of the journey.

12.159 In the short/medium term a number of potential measures have already been identified within the Eastern Regional Planning Assessment for the Railway (RPA) to increase capacity along the West Anglia and East Coast Main Line corridors:

- Possible train lengthening for West Anglia Main Line Liverpool Street – Cambridge trains to 12 cars to cater for commuter demand and regional growth;
- re-timetabling on the East Coast Main Line (ECML) to Cambridge to deliver more peak trains;
- Ensuring the maximum number of 8-car trains run in the shoulder peak to enable peak spreading;
- using diesel trains to overcome power supply issues south of Peterborough to deliver more peak trains; and
- 2tph from Stansted Airport towards the north via Cambridge

12.160 Plans to increase capacities in terms of train lengthening and time-table optimisation would also be supported by the delivery of schemes such as Thameslink 2000 and Crossrail. The timing and delivery of these schemes is currently uncertain, however implementation of only part of these plans would bring additional capacity on-line that could accommodate the forecast demand generated by Chesterton Interchange.

12.161 Consideration was also given to crowding issues on southbound services to the north of Cambridge. An analysis of capacities and loadings from PLANET outputs for the Ely-Cambridge section suggests that in 2016 load factors would be approximately 31% in the morning peak period. The addition of Cambridge and London bound trips from Chesterton Interchange would increase load factors to approximately 51%.

12.162 It is recognised that Cambridge bound trips are likely to be more tightly concentrated between 0800 and 0900, and as such load factors may tend to be higher than the average during this time, although this is off-set by the majority of London bound commuting trips travelling earlier during the peak period.

12.163 The introduction of the interchange at Chesterton would also reduce the number of users at Cambridge station, which would serve to reduce the congestion of the station buildings by pedestrians. This would in turn reduce constraints on passenger movement within Cambridge station and improve journey ambience there.

12.164 The overall assessment for journey ambience is slight adverse. Further information on impacts on the rail network is presented in Appendix J.

Safety

Accidents

12.165 Accident savings as a result of the removal of highway trips, both those accessing the rail network at Chesterton rather than Cambridge and trips using the rail network for their whole journey, are offset by disbenefits generated by additional users accessing the station on using the highway network. This results in an overall accident disbenefit of -£6.3m.

Security

12.166 Waiting facilities will be provided within the station building and are intended to be designed to a high quality standard and including best practice design for security and visibility, together with CCTV, lighting, and passenger help points. Though it is not intended that the ticket office will be manned all day, platform staff (present during service operating hours) will be able to provide passenger assistance and contribute to the delivery of a safe and secure waiting environment. The overall impact on security is assessed as moderate beneficial.

Economy

Public Accounts

12.167 Table 12.16 shows the breakdown of costs to public accounts, including the costs of investment and lost taxation.

Wider Economic Impacts

12.168 Chesterton Interchange does not fall within a Regeneration Area therefore an assessment of wider economic impacts is not applicable.

Table 12.16 - Public Accounts

Public Accounts (Option B)

	ALL MODES TOTAL		ROAD INFRASTRUCTURE	BUS & COACH	RAIL	OTHER
Local Government Funding						
Revenue	0				0	
Operating Costs	0				0	
Investment Costs	0				0	
Developer & Other Contributions	0				0	
Grant/Subsidy Payments	0				0	
NET IMPACT	0	(7)	0	0	0	0
Central Government Funding						
Revenue	0				0	
Operating Costs	0					
Investment Costs	20870				20870	
Developer & Other Contributions	0				0	
Grant/Subsidy Payments	0				0	
Indirect Tax Revenues	27293		10900		16393	
NET IMPACT	48163	(8)	10900	0	37263	0
TOTAL Present Value of Costs (PVC)	48163	(9) = (7) + (8)				

Notes: **Costs** appear as **positive** numbers, while **revenues and developer contributions** appear as **negative**
All entries are discounted present values, in 2002 prices and values

Accessibility

Option Values

12.169 The option values appraisal must be considered where a scheme will substantially change the availability of transport services within the area, such as providing a new rail service as in the case of Chesterton Interchange.

12.170 Chesterton Interchange would provide excellent access to local developments such as Cambridge Science Park and St Johns Business Park as well as the A14 trunk road. A station at Chesterton would relieve some of the road traffic in this area of the city by providing an alternative location giving access to rail travel. The station would also provide an interchange opportunity with Cambridgeshire Guided Busway, giving access to an alternative mode of transport into the city centre, to Addenbrooke's Hospital, and to destinations to the north-west of Cambridge including Northstowe (new settlement), St. Ives and Huntingdon.

12.171 Chesterton Interchange will provide a link to those living in the area as well as those commuting to and from the area. However, for those that may not necessarily use the service with any regularity they may still value having the option to use the service if they choose. Should residents wish to travel to Cambridge and beyond, Chesterton Interchange provides an additional facility for them to do so. For those that already have means of travel to a destination provided by the new scheme, they too may value the option offered for rail travel over those already taken account of.

12.172 The modelling exercise has estimated that approximately 2420 passengers will use Chesterton Interchange each day; the overall assessment for option values is therefore strong beneficial.

Severance

12.173 Severance effects, on users of non-motorised modes in the vicinity of the scheme, must be assessed as part of the overall appraisal for the scheme. The assessment is usually undertaken as a simple comparison with and without the scheme in place, estimating the likely numbers of people to be affected. However, the Chesterton Interchange proposal makes use of existing railway sidings, and consequently the level of severance for the do-something is no different than that for the do-minimum scenario. There will be no reduction or increase in severance for users of non-motorised modes with the implementation Chesterton Interchange, thus the overall assessment for severance is neutral.

Access to the Transport System

12.174 As the WEBTAG methodology is designed to assess a plan or strategy, and is therefore not appropriate for the appraisal of Chesterton Interchange, an alternative methodology was adopted. Census data (2001) was used to identify population within a 1500m radius of the new station. This serves two purposes. It encompasses the accepted walk-in catchment for a rail station (approximately 800m) and includes the development area (Cambridge Northern Fringe East) which would be served by the new station. The analysis identified numbers of car available and non-car available residents in 250m annuli. Within 1500m of the proposed scheme the average number of residents who do not have a car available is approximately 28.85%.

12.175 Table 12.17 shows the population numbers within 250m annuli of the station location up to 1500m. This demonstrates that even without the forecast development in place more than 3800 people who do not have access to a car will benefit from the delivery of the scheme. With the new development in place this number could rise to more than 5000. The proposed timetable for services calling at Chesterton interchange would provide two services per hour in each direction during the off peak period. The overall assessment for access to the transport system is large beneficial.

Table 12.17 – Population within 1500m of Chesterton Interchange

	Existing Population		Cambridge Northern Fringe (E)		Total	
Distance (m)	Car available	Non-car available	Car available	Non-car available	Car available	Non-car available
0 – 250	20	8	60	24	80	32
0 – 500	684	277	837	339	1520	616
0 – 750	1651	670	1315	533	2966	1203
0 – 1000	3333	1352	3586	1454	6919	2806
0 – 1250	6713	2722	3586	1454	10299	4176
0 – 1500	9513	3858	3586	1454	13099	5312

Passenger Interchange Assessment

12.176 Chesterton Interchange will provide access to both the heavy rail network and the wider public transport network, through connections with the Cambridgeshire Guided Bus network. It will provide a new interchange opportunity for private car users, cyclists and pedestrians to make local and regional journeys using the public transport network. Amongst other destinations users will be able to access the new development proposed for Cambridge Northern Fringe East integrating public transport provision with urban development thus promoting non-car modes of travel. The interchange facility will form an integral part of the high quality public transport network for Cambridge and the surrounding area.

12.177 Extensive facilities will be provided at the interchange to enhance the passenger experience, these have been described earlier in but will include:

- Car parking capacity for 400 vehicles;
- Capacity for 12 car trains;
- Station building with waiting room, booking office and toilets;
- Waiting shelters on platforms;
- High specification communications and security equipment;
- Lift and stair access to platforms;
- Direct links between rail and guided bus

12.178 In terms of passenger interchange the proposal has been assessed as moderate beneficial. The AST worksheet for Integration – Passenger Interchange is included at Appendix H.

Land Use Policy Context

12.179 Chapter 11 demonstrates that scheme is consistent with all local, regional and national planning and transport policies, contributing to the sustainable delivery of the growth agenda within Cambridgeshire, and the development of a coherent and integrated public transport network. The AST worksheet for Integration – Land-use Policy is presented in Appendix I. The assessment for the Land Use Policy Context is therefore large beneficial.

Other Government Policy

12.180 As well as contributing to local and regional objectives the scheme also contributes to the delivery of wider Government transport objectives, through the delivery of LTP2 objectives and contribution to the "shared priorities" for transport. The delivery of Chesterton Interchange supports sustainable development within one of the Government's growth corridors releasing brownfield land for future development. It provides access to the public transport network and in particular facilitates movement between private car and public transport. Although the scheme has a PVC to central Government of £48 million, it demonstrates a strong economic case with a BCR of 3.09.

12.181 Direct contribution to wider Government policies relating to health and education is likely to be limited, however it is not anticipated that the scheme will have any negative impacts. Thus, the overall positive contribution to the delivery of wider government policies is assessed as beneficial.

TRANSPORT ECONOMIC EFFICIENCY DATA

12.182 Table 12.18 shows the Transport Economic Efficiency Benefits results for the Chesterton Interchange scheme.

Table 12.18 – Transport Economic Efficiency Benefits

Transport Economic Efficiency Benefits (Option B)

Consumers	**ALL MODES**		**ROAD**	**BUS & COACH**	**RAIL**	**OTHER**
User Benefits	**TOTAL**		**Private Cars & LGVs**	**Passengers**	**Passengers**	
Travel Time	28226		26322		1904	
Vehicle Operating Costs	0		0		0	
User Charges	0		0		0	
During Construction & Maintenance	0		0		0	
NET CONSUMER BENEFITS	28226	(1)	26322	0	1904	0

Business								
User Benefits			**Goods Vehicles**	**Business Cars & LGVs**	**Passengers**	**Passengers**	**Freight**	
Travel Time	18380			12964		5416		
Vehicle Operating Costs	0			0		0		
User Charges	0			0		0		
During Construction & Maintenance	0			0		0		
Subtotal	18380	(2)	0	12964	0	5416	0	0

Private Sector Provider Impacts					
				Passengers	**Passengers**	
Revenue	123309		0		123309	
Operating Costs	-14822		0		-14822	
Investment Costs	0		0		0	
Grant/Subsidy	0		0		0	
Subtotal	108487	(3)	0	0	108487	0

Other Business Impacts						
Developer Contributions	0	(4)				
NET BUSINESS IMPACT	126867	(5) = (2) + (3) + (4)				

TOTAL		
Present Value of Transport Economic Efficiency Benefits	155093	(6) = (1) + (5)

Notes: **Benefits** appear as **positive** numbers, while **costs** appear as **negative** numbers

SENSITIVITY AND SCENARIO ANALYSES

12.183 A series of sensitivity tests were undertaken in order to assess the robustness of the scheme in response to changes in different internal and external factors. The following sensitivity tests were undertaken:

- Applying 100% optimism bias to construction costs (no effect upon rail demand or revenue);
- Uplifting rail fares at Chesterton by RPI+5%;
- Raising Chesterton parking charges by 15%;
- Revised land-use and highway assumptions for future years; and
- Lower levels of GDP growth based on SRA UK wide GDP growth rather than localised GVA growth.

12.184 The results of the sensitivity tests (forecast demand) are summarised below (Table 12.19) relative to the central case for Option B. The optimism bias test has no effect upon demand, being the same as the central case.

Table 12.19 – Summary of Sensitivity Test Results, Forecast Weekday Demand (2011)

Demand element	Central case	Rail Fares +5%	Parking Charges +15%	Land-use test	GDP growth test
Generation at Chesterton	2,626	1,820	2,381	2,634	2,535
Generation changes at other stations	-1,313	-750	-1,174	-1,321	-1,268
Attraction to Chesterton	177	146	177	177	177
Effects on through travellers	-27	-27	-27	-27	-26
Net change to UK rail	**1,464**	**1,189**	**1,248**	**1,463**	**1,418**

12.185 Table 12.20 then shows the changes in annual revenue (2011) for each of the sensitivity tests when compared with the central case for Option B.

12.186 These results show that the greatest sensitivity to changes at the Interchange is caused by the uplift in rail fares at Chesterton. This test has the effect of driving passengers back to the alternative stations at Cambridge, Waterbeach and Ely, as evidenced by the reduction in the negative value of the change to National Rail.

12.187 It should be borne in mind that the 5% per annum uplift in real fare prices has a cumulative effect, so by 2011 from a 2004 base, the fares have risen by $(1.05)^7$ or 41% as opposed to the central case assumption of RPI+1% which would see fares rise by $(1.01)^7$ or 7%. Therefore the 31% reduction in generated demand at Chesterton should be viewed relative to the 31% increase $(1.05/1.01)^7$ in fares between the two scenarios, implying a fares elasticity of approaching unity.

Table 12.20 – Summary Sensitivity Test Revenue Results (2011), 2002 Prices, Rounded

Demand element	Monetised Benefits (£s)				
	Central case	Rail Fares +5%	Parking Charges +15%	Land-use test	GDP growth test
Generation at Chesterton	9,816,600	7,390,100	8,998,300	8,447,500	8,112,000
Generation model change to National Rail	-5,638,100	-2,524,300	-4,993,300	-4,757,300	-4,560,400
Attraction to Chesterton	435,100	470,300	435,100	356,800	356,800
MOIRA effects	-73,600	-73,600	-73,600	-73,600	-71,100
Chesterton parking	658,900	449,500	686,700	561,800	540,100
Other parking	-124,600	-71,100	-111,000	-111,400	-106,000
Net change to UK rail	5,074,300	5,598,500	4,901,100	4,424,500	4,272,800
Rail traveller lost	-5,711,700	-2,597,900	-5,066,900	-4,830,400	-4,631,000
Chesterton earnings	10,910,600	8,267,500	10,079,000	9,265,900	9,009,000

12.188 The effects of the parking charge increase are relatively small as this forms a small part of the overall travel cost, and is not a cumulative effect i.e. 15% on any one year's parking charge.

12.189 The revised land-use provides for much greater growth closer to Chesterton itself and hence shows greater revenue accruing to Chesterton itself. However, the growth forecasts for further away, such as at Ely, are lower than for the Central Case and hence the change to national rail shows a slightly greater disbenefit.

12.190 Finally, the revised GDP growth test shows lower levels of revenue as would be expected, slightly reducing the net change to UK rail.

12.191 Although the optimism bias test does not have an effect on forecast demand, it does have an effect on the scheme economics. Table 12.21 presents a summary for each of the sensitivity tests compared in comparison to the central case for Option B.

12.192 This shows that the NPV and BCR remain at healthy levels for all sensitivity tests, with the lowest values being obtained for the 5% fares increase above RPI year on year, which drives passengers back to existing stations and impacts on the case for Chesterton. These results demonstrate that the financial and economic case for Chesterton is robust against changes in a range of internal and external factors to the scheme.

Table 12.21 – Summary Sensitivity Test TEE Table Results (2002 prices)

Economic Indicator	£s					
	Central case	100% Optimism bias	Rail Fares +5%	Parking charges +15%	Land-use	GDP Growth
Benefits						
Time	46,610	46,610	1,360	41,250	12,350	45,490
Users	7,320	7,320	-31,270	2,560	-24,020	9,240
Non-users (decongestion)	39,290	39,290	32,630	38,690	36,370	36,250
Accidents	-6,300	-6,300	-2,060	-6,010	-5,970	-5,770
Revenues	123,310	123,310	79,030	122,110	125,410	119,450
Operating costs	-14,820	-14,820	-14,820	-14,820	-14,820	-14,820
Present Value of Benefits	148,790	148,790	63,510	142,530	116,970	144,350
Costs						
Capital	20,870	25,150	20,870	20,870	20,870	20,870
Taxation lost	27,290	27,290	16,100	26,480	27,370	25,980
VAT adjustment	16,390	16,390	10,990	15,960	16,660	15,870
Fuel duty	10,900	10,900	5,600	10,520	10,700	10,100
Present Value of Costs	48,163	52,440	36,970	47,350	48,240	46,850
Net Present Value	100,630	96,350	26,540	95,180	68,730	97,500
Benefit-Cost Ratio	**3.09**	**2.84**	**1.72**	**3.01**	**2.42**	**3.08**

SUPPORTING ANALYSES

Practicality

Feasibility

12.193 The scheme is legally and technically feasible. There should be no technical difficulties arising in its implementation.

Enforcement

12.194 The scheme is self-enforcing, Chesterton Interchange does not require other supporting enforcement measures to ensure it is effective.

Area of Interest

12.195 The scheme will occupy the site of the former Chesterton Sidings, to the north east of Cambridge. It is close to the Cambridge Science Park, St. Johns Business Park and A14 trunk road. The station would be an important accompaniment to developing a major brownfield site on the Cambridge Northern Fringe. Principal stakeholders in the project include:

- Network Rail – responsible for the operation and maintenance of the Railway, and landowner of the proposed station location;
- EWS – long term lease holder and user of the sidings;
- Freightliner, LaFarge – short term lease holders and user of the sidings; and
- TOC's – train operators running and operating trains on the adjacent railway.

Complexity

12.196 The scheme will involve a number of factors to provide the interchange package of measures. Road access to the interchange will be via Cowley Road which will require junction improvements at the boundary of the Network Rail land. The scheme proposals include the provision of a station building, intended to incorporate passenger waiting facilities, toilets, and a ticket office which will need to be constructed.

12.197 The proposed platform layout includes two main line platforms and an island platform along with a footbridge that will provide the passenger access between the station building and the platforms. This will be served by both stair and lifts.

Time-scale

12.198 The timescale for the implementation of Chesterton Interchange assumes the station opening in 2011.

Phasing and Partitioning

12.199 The nature of the scheme means that Chesterton Interchange can not be broken down into a series of components and adopted in stages.

Complementarity

12.200 Chesterton Interchange will make a significant contribution on its own, but the benefits of the scheme are enhanced by its connectivity to the wider highway and public transport network and will be enhanced further if links to the Guided Busway are established at a later date. In the same way, whilst the scheme supports the delivery of the Cambridge Northern Fringe (East) development site, its feasibility is not dependent upon it.

Conflicts

12.201 Chesterton Interchange does not conflict with other measures. The scheme is integrated within the County's main policy documents so that policies are consistent for effective planning.

Political Nature of Policies & Proposals

12.202 It has been demonstrated that Chesterton Interchange will help to achieve LTP and Government objectives, and therefore has a positive impact on these policies, in particular in reducing congestion and improving accessibility.

Public Acceptability

12.203 Consultation on an interchange at Chesterton was undertaken as part of the CCC first Local Transport Plan. The scheme continues to form part of Cambridgeshire County Council's second LTP as an essential element in delivering the LTP strategy and meeting LTP objectives. It is likely that further public consultation will need to be carried out as a component of developing the application for planning permission for the scheme.

12.204 It is proposed that the station would be constructed on land owned by Network Rail, part of which is currently under a long-term lease to English, Welsh and Scottish Railway Company (EWS). Network Rail has been involved in the development of the scheme and regular meetings have been held to keep them informed of progress.

12.205 Consultations are required with EWS to identify the long term requirements for the sidings on the site. Lafarge and Freightliner lease parts of the site but these are on a short term basis of up to 6 years and it will be necessary to consult Network Rail on future arrangements. It is envisaged that the completed station would be operated and maintained by franchise agreement with a Train Operating Company.

12.206 The district councils have also been kept informed of scheme progress, and in terms of desired outcomes, South Cambridgeshire District Council, along with Cambridge City Council and Network Rail are all supportive of the delivery of the scheme.

Affordability and Financial Sustainability

12.207 Table 12.22 shows the analysis of affordability and financial sustainability. The prime criterion against which the proposed scheme is assessed value for money, as expressed in the TEE Table and AST. However, it is important to have an understanding of the financial performance of the scheme and to be aware of how in this regard the scheme impacts upon the private and public sectors. The Affordability and Financial Sustainability (AFS) worksheet demonstrates the forecast financial performance of the scheme. The role of this analysis is to provide an overall

assessment of the likely public expenditure required to ensure the provision option under consideration.

12.208 It is important to note that financial impacts are presented against the baseline do-minimum and represent changes to costs and revenues rather than absolute values.

12.209 The positive net revenues and, moreover, the growth in net revenues between 2011 and 2021, demonstrate the financial affordability of the proposed scheme. Approximately 95% of operating costs and revenues will be accrued by the train operating companies, with the remaining 5% accruing to Network Rail.

12.210 The scheme capital costs are also presented in the AFS, 95% of which is presented as Central/Local Government grant.

Table 12.22 – Affordability and Financial Sustainability

Affordability and Financial Sustainability (AFS) - Sheet 1 of 3

Local Government Affordability and Financial Sustainability

Costs	**TOTAL (undiscounted)**		**Breakdown by organisation/budget**		
Investment Costs			Local highways	Light rail	Other
Year I	£1,739,019				£1,739,019
Year ii	£15,299,015				£15,299,015
Year iii	£931,440				£931,440
Year iv	£0				£0
Year v	£0				£0
TOTAL	£17,969,474	(1)	£0	£0	£17,969,474
Developer and Other Contributions	£1,796,947	(2)	£0	£0	£1,796,947
Grant from Central Government	£16,172,526	(3)	£0	£0	£16,172,526
Grant to Private Sector		(4)			
Cost to Local Government net of contributions	£0	(5)=(1)+(4)-(2)-(3)	£0	£0	£0

Public Sector Operations			**Breakdown by organisation/budget**		
2011			Local highways	Light rail	Other
Change in operator costs	£0	(6)	£0	£0	£0
Change in operator revenue	£0	(7)	£0	£0	£0
NET IMPACT	£0	(8)=(7)-(6)	£0	£0	£0
2016					
Change in operator costs	£0	(9)	£0	£0	£0
Change in operator revenue	£0	(10)	£0	£0	£0
NET IMPACT	£0	(11)=(10)-(9)	£0	£0	£0
2021					
Change in operator costs	£0	(12)	£0	£0	£0
Change in operator revenue	£0	(13)	£0	£0	£0
NET IMPACT	£0	(14)=(13)-(12)	£0	£0	£0

Affordability and Financial Sustainability (AFS) - Sheet 2 of 3

Central Government Affordability and Financial Sustainability

Costs	**TOTAL (undiscounted)**		**Breakdown by organisation/budget**				
Investment Costs			HA	DfT	Network Rail	TOCs	
Year I	£0						
Year ii	£0						
Year iii	£0						
Year iv	£0						
Year v	£0						
TOTAL	£0	(15)	£0	£0	£0	£0	
Developer and Other Contributions	£0	(16)			£0		
Grant to Local Government	£0	(17)		£0			
Grant to Private Sector	£0	(18)					
Indirect Tax Revenues	£2,985,594	(19)		£2,985,594			Need link to network-based file
Cost to Central Government of contributions	-£2,985,594	(20)=(15)+(17)+(18)-(16)-(19)	£0	-£2,985,594	£0	£0	
Operations			**Breakdown by organisation/budget**				
2011			HA	SRA	NR	TOCs	
Change in operator costs	£1,095,087	(21)			£398,594	£696,493	
Change in operator revenue	£3,015,500	(22)			£478,313	£2,537,187	
NET IMPACT	£1,920,413	(23)=(21)-(20)	£0	£0	£79,719	£1,840,694	
2016							
Change in operator costs	£398,636	(24)			£63,412	£335,224	
Change in operator revenue	£5,583,267	(25)			£76,095	£5,507,172	
NET IMPACT	£5,184,631	(26)=(24)-(23)	£0	£0	£12,682	£5,171,949	
2021							
Change in operator costs	£461,791	(27)			£70,012	£391,779	
Change in operator revenue	£5,994,599	(28)			£84,014	£5,910,584	
NET IMPACT	£5,532,808	(29)=(28)-(27)	£0	£0	£14,002	£5,518,805	

Affordability and Financial Sustainability (AFS) - Sheet 3 of 3

Private Sector Affordability and Financial Sustainability

Private Sector Investment Costs and Grants	**TOTAL (undiscounted)**		**Breakdown by organisation**					
Investment Costs			Network Rail	TOCs	Bus corridor 1	Bus corridor 2	Rail freight	Other
Year I	£1,739,019		£1,739,019					
Year ii	£15,299,015		£15,299,015					
Year iii	£931,440		£931,440					
Year iv	£0		£0					
Year v	£0		£0					
TOTAL	£17,969,474	(30)	£17,969,474	£0	£0	£0	£0	£0
Grants from Central and Local Government	£16,172,526	(31)	£16,172,526					

Private Sector Operators	TOTAL (undiscounted)		**Breakdown by organisation**					
2011			Network Rail	TOCs	Bus corridor 1	Bus corridor 2	Rail freight	Other
Change in operator costs	£1,095,087	(32)	£398,594	£696,493				
Change in operator revenue	£3,015,500	(33)	£478,313	£2,537,187				
NET IMPACT	£1,920,413	(34)=(33)-(32)	£79,719	£1,840,694	£0	£0	£0	£0
Subsidy	£0	(35)	£0	£0				
2016								
Change in operator costs	£398,636	(36)	£63,412	£335,224				
Change in operator revenue	£5,583,267	(37)	£76,095	£5,507,172				
NET IMPACT	£5,184,631	(38)=(37)-(36)	£12,682	£5,171,949	£0	£0	£0	£0
Subsidy	£0	(39)						
2021								
Change in operator costs	£461,791	(40)	£70,012	£391,779				
Change in operator revenue	£5,994,599	(41)	£84,014	£5,910,584				
NET IMPACT	£5,532,808	(42)=(41)-(40)	£14,002	£5,518,805	£0	£0	£0	£0
Subsidy	£0	(43)	£0	£0				

Private Sector NET IMPACT								
Investment net of capital grant	£1,796,947	=(30)-(31)	£1,796,947	£0	£0	£0	£0	£0
Operations net of subsidy								
Year 1	£1,920,413	=(34)-(35)	£79,719	£1,840,694	£0	£0	£0	£0
Year 5	£5,184,631	=(38)-(39)	£12,682	£5,171,949	£0	£0	£0	£0
Year 10	£5,532,808	=(42)-(43)	£14,002	£5,518,805	£0	£0	£0	£0

OVERALL VFM CONCLUSIONS

12.211 The scheme has a PVB of £148.8m, with PVC of £48.1m identified for central government. Therefore in economic terms the scheme presents 'high' value for money with a strong BCR of 3.09. A series of sensitivity tests were carried out on the economic case for the scheme, which gave consideration to changes in patronage and associated economic indicators. This included a test removing development at Cambridge Northern Fringe (East) from the land use scenario. The test demonstrated that the scheme is not dependent on demand generated from the new development site, although it would facilitate its delivery. Another sensitivity test included a worst case scenario with Optimism Bias applied at 100%. Under each of the sensitivity tests the scheme BCR remained in the range 1.5 – 2.0 or higher.

12.212 Table 12.23 shows that monetary impacts have not been calculated for the non standard indicators of noise, local air quality, greenhouse gases, option values or reliability. These areas have been included in the wider appraisal of non-monetised benefits and are discussed below.

ANALYSIS INCLUDING NON-MONETISED BENEFITS

12.213 With a strong economic performance, the wider appraisal of the scheme takes into account impacts on other indicators which do not have a monetary assessment and considers the supporting analyses.

12.214 In environmental terms the scheme is likely to have a negligible impact on local air quality and noise, with changes in traffic flows not triggering a detailed assessment. A net increase in greenhouse gases and accident disbenefits are brought about by the success of the scheme and the effects of trips accessing Chesterton Interchange on the highway network, and offsetting the benefits brought about by reductions in journeys to Cambridge station.

12.215 Adverse impacts are identified for landscape because the scheme presents a change in character, though the majority of residual impacts could be mitigated. An overall beneficial assessment is identified for townscape where the sidings and subsequent development will transform an area of derelict brownfield land. However, this is off set by slight adverse impacts for heritage (relating to a specific listed building), biodiversity and water environment although mitigation measures would be put in place.

12.216 The scheme performs strongly when assessed against accessibility and integration indicators, delivering large benefits through the provision of a new facility, enhanced connectivity and full integration within the wider land use and transport policy context.

12.217 No legal or technical issues are foreseen at this stage of the assessment, and the risk register will be maintained throughout the scheme development. The scheme is self enforcing insofar as it does not require any other measures to ensure it is effective. Whilst the scheme has many elements, these can all be delivered through standard highway or railway engineering methods.

12.218 As a stand alone scheme Chesterton Interchange would make a significant contribution to the transport network in Cambridge, but the benefits of the scheme are enhanced by its connectivity to the wider highway and public transport network and will be enhanced further if links to the Guided Busway are established at a later date.

In the same way, whilst the scheme supports the delivery of the Cambridge Northern Fringe (East) development site, its feasibility is not dependent upon it.

12.219 The scheme has been a key element of the County Council's transport planning policy for many years, and as such is well known. In this way public consultation on the scheme was undertaken through the LTP process. Discussions with Network Rail, as the landowner, will continue as the scheme progresses.

Table 12.23 - Analysis of Monetised Costs and Benefits

Noise		
Local Air Quality		
Greenhouse Gases		
Journey Ambience		
Accidents	-6303	
Consumer Users	28226	
Business Users and Providers	126867	
Reliability		
Option Values		
Present Value of Benefits (PVB)	148790	
Public Accounts	48163	
Present Value of Costs (PVC)	48163	
OVERALL IMPACTS		
Net Present Value (NPV)	100627	NPV = PVB-PVC
Benefit to Cost Ratio	3.089	BCR = PVB/PVC

Note: This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used the sole basis for decisions.

13. Original MSBC: Delivery

DELIVERY TO TIME AND BUDGET

13.1 The project will be managed in accordance with current best practice, incorporating aspects of the methodology produced by Office of Government Commerce, PRINCE2.

Governance and Staffing

13.2 The arrangements for project governance will be appropriate to the stage of scheme delivery reached. At present, the project is lead by the County Council's Head of Transport Policy and Strategy and Railway Development Officer with reporting lines to the Director of Sustainable Infrastructure. Regular updates are provided to Members at meetings of the County Council's SMT Cabinet. The County Council's project team are supported by a consultant team supplied by their framework consultant, Atkins. The consultant team is lead by an experienced Project Manager with expert technical support in the areas of transport and economic appraisal, engineering, risk management, cost control and environmental assessment. The combined project team meets on a monthly basis.

13.3 As the scheme progresses towards delivery, an appropriate project governance forum will be put in place. The forum, drawn from senior officers and Members will oversee the progress of the project, review the scope of the scheme and make appropriate recommendations to Cabinet. Delivery of the scheme will be delegated to a Project Manager who will be an officer with appropriate experience, reporting to the project governance forum. The Project Manager will in turn be supported by a consultant team with skills in project delivery including procurement, programming, cost control, risk management, design and engineering.

13.4 A Project Board will be constituted, comprising senior representatives from CCC, key suppliers and stakeholders. Members would include representatives from the County Council's consultants, Network Rail and in due course the scheme contractor.

13.5 The model of project delivery described has been successfully adopted by CCC on recent large infrastructure projects, including Cambridgeshire Guided Busway.

Risk Management

13.6 Risk management for the scheme has been incorporated by a process of risk workshops which identified, assessed and allocated responsibility for management of risks to the scheme. Risk workshops were attended by members of the project team including the project manager, engineering representatives and representatives from the principal stakeholder, Network Rail. The scheme risk register is regularly updated.

13.7 The risk management process incorporated the production of a Quantified Risk Analysis which made allowance for the financial impact of risk to the scheme budget. The QRA was derived using a Monte Carlo analysis using values estimated by the

project team. The 80th percentile value derived from the QRA was then included in the scheme cost plan.

13.8 The scheme risk register is included at Appendix L.

Project Plan and Milestones

13.9 The forward programme is inextricably linked with the acceptance of the scheme to programme entry. However, an outline of the project programme is set out below.

2007

May	Submit Major Scheme Business Case
	DfT Business case assessment

2008

March	Programme entry
April	Public consultation
	Scheme Development
September	Planning Application
	Submit Business Case for Conditional Approval

2009

April	Procurement Exercise
September	Submit Business Case for Full Approval
November	Award construction contract
December	Detailed design

2010

January	Site clearance and environmental mitigation
March	Commence construction

2011

April	Construction complete, station brought into service

Stakeholder Analysis

13.10 Identification of key stakeholders and their effective involvement in the project is an important aspect of project delivery. Table 13.1 below summarises stakeholders identified, their potential role in the project and the likely way in which their involvement will be managed.

13.11 Principal stakeholders, whose input is critical to the project include Network Rail, Cambridge City Council, DfT and Train Operators.

13.12 The stakeholder map shown below has been developed to guide dealings with stakeholders in the development of the Major Scheme Business Case. This mapping relates solely to the current stage of scheme development and will be reviewed and revised as the scheme progresses and different stakeholder engagement strategies developed.

Table 13.1 – Stakeholder Mapping

Influence	Low Interest	High Interest
Low	General Public	Potential Users
High	South Cambs DC Cambridge City DC Train Operating Companies	Network Rail CCC Members Department for Transport

13.13 Network Rail, CCC Members and DfT have been involved in the development of the scheme and regular meetings have been held to keep them informed of progress. At the current stage of scheme development, the district councils have been kept informed of scheme progress however as the scheme progresses a greater degree of engagement will be required. DfT rail have been consulted regarding the involvement of train operating companies and engagement with them is planned once the GRIP study has been submitted to Network Rail. Public consultation will be carried out as a component of developing the application for planning permission for the scheme.

13.14 In terms of desired outcomes, Cambridge City, South Cambs and Network Rail are all supportive of the delivery of the scheme. Details of the policy and organisational support are given in Chapter 11 above.

13.15 In broad terms it is envisaged that CCC will continue to promote the scheme through the process of developing and verifying the business case and confirming funding. Network Rail will develop the technical aspects of the scheme in partnership with CCC and carry out a procurement exercise. Once the procurement process is complete but prior to awarding contracts, the final case for the funding of the scheme will be made to DfT. Subject to full approval being confirmed, Network Rail will assume the promotion of the scheme through to completion of construction and operation and maintenance of the station assets.

Statutory Consultees

13.16 Consultation responses are awaited from English Nature, English Heritage and the Environment Agency.

Gateway review

13.17 Successful implementation of the scheme will depend on delivery in partnership with Network Rail. It is recognised that both parties have processes to ensure scheme delivery and these will be implemented. In the case of Cambridgeshire's contribution to delivery of the scheme, the framework of milestones and gateway reviews set out in the 4Ps approach to local authority project management will be adopted. The relevant review stages are set out below:

- Gateway Review 1 – Business Justification
- Gateway Review 2 – Procurement Strategy
- Gateway Review 3 – Investment Decision
- Gateway Review 4 – Ready for Service
- Gateway Review 5 – Benefits Realisation

13.18 The first review, Business Justification, will be carried out on completion of the MSBC.

13.19 Network Rail's delivery process is based on their Guide to Rail Investment Projects (GRIP). This 8 stage process extends from feasibility and option selection through to scheme delivery and commissioning, with stage gate reviews at the end of each GRIP stage. This process will be used in the delivery of the scheme and the report produced as a deliverable for GRIP stage 2 is attached at Appendix A.

Scheme Progress Monitoring

13.20 Monitoring of the progress of the scheme will be carried out through a series of regular meetings with the project team, with the key delivery stakeholders and with the project board. Key delivery stakeholders will include both Network Rail and DfT.

13.21 Regular, monthly, reporting on progress against programme, budget and predicted completion will be carried out. Where appropriate, earned value analysis will be adopted to ensure that forecast out-turn positions are met. A record of progress in the form of a Project Manager's report will be made and retained.

13.22 A cost report for the scheme, incorporating all aspects of scheme costs both predicted and incurred will be maintained and updated on a monthly basis. A record of expenditure against forecasts will be kept and out-turn costs re-predicted as appropriate. A similar approach will be taken to the project programme with an integrated programme for all project activities being maintained. This approach to project progress monitoring has been successfully implemented for other CCC Major Projects including Cambridgeshire Guided Busway.

13.23 Regular meetings with DfT will be scheduled in the run up to submission of the business case for full approval.

POST IMPLEMENTATION MONITORING

13.24 CCC has a well established annual programme monitoring traffic levels crossing a radial cordon on key access routes into Cambridge and on traffic circulating within the city at screen-line points on the network. Monitoring of the levels of traffic on the network in this way allows the effectiveness of traffic management measures to be assessed and has been used in the past to evaluate for example the impact of the Cambridge core scheme. This data would help to assess the level to which the introduction of the new interchange at Chesterton has achieved the scheme objective of reducing cross-city car trips.

13.25 To complement the traffic data, railway patronage surveys would be carried out at the new Chesterton Interchange, Cambridge and Ely stations to assess the degree to which rail patronage was enhanced through the implementation of the scheme.

13.26 Further details of a post implementation monitoring programme would be developed in discussion with DfT at an appropriate point in the scheme's development.

14. Original MSBC: Financial

FUNDING

14.1 Funding proposals for the scheme have been developed in the light of the recent consultation paper from the department on funding Local Authority major schemes.

14.2 The proposed station lies within land allocated for housing in the County Council's structure plan and in the Local Development Framework. The land is currently occupied by rail sidings and is owned by Network Rail. On completion, the station would be owned by Network Rail, who would assume responsibility for its maintenance and operation. It is anticipated that operation and maintenance of the station would then be carried out by a Train Operating Company as part of their operating franchise arrangements.

14.3 The principal source of funding to supplement those funds provided by the department is likely to flow from development of the remainder of the Network Rail owned site. Developer contributions are therefore anticipated to be available to meet 10% of the Quantified Cost Estimate for the scheme, as defined in the recent consultation paper on Local Authority Major Schemes. This will amount to £1.8 million based on the preferred Option B.

14.4 Further, should the scheme successfully achieve full funding approval, Network Rail would assume the role of promoter of the scheme. Developer contributions would also be anticipated to provide the local contribution element of any contribution to costs within the Additional Risk Layer.

FINANCIAL RISK

Risks and liabilities if funding sources are not realised

14.5 Progress of the scheme is contingent on Network Rail's support. The scheme will be developed in partnership with NR to achieve NR's technical and operational objectives for the project. This will proceed in parallel with development of the scheme business case in consultation with NR to ensure their continuing support. Withdrawal of technical development support by NR would mean that the project could not be delivered.

14.6 As noted above, NR have a property interest in the site and support its development in order to maximise its value. In this way, the interests of NR and CCC are aligned and the risk to their contribution to the scheme development is minimised.

FINANCIAL SUSTAINABILITY

Long term affordability for operation/maintenance

14.7 The forecasting of revenues arising as a consequence of introducing Chesterton Interchange indicates strong financial performance. The scheme is forecast to

generate sufficient revenues to cover operational costs and maintenance requirements.

14.8 Car parking provided at Chesterton is forecast to provide a significant source of revenue, which together with anticipated station access charges, are forecast to provide a revenue stream which will support the operation and maintenance of the station in the long term. Opening year undiscounted car parking revenues are estimated at £534,000 per annum versus operating costs of £347,000 per annum, indicating a significant surplus.

14.9 Levels of Station Access charges are determined by Network Rail in negotiation with the Train Operating Companies and therefore are difficult to quantify for presentation in the business case. However, the forecasting indicates both a strong revenue stream for the TOCs amounting to approximately £1.8 million per annum in 2011 (undiscounted) and an alternative revenue stream in the form of car parking charges for Network Rail. This suggests that a level of station access charge could be negotiated that would be unlikely to provide a deterrent for the TOCs to serve the station.

15. Original MSBC: Commercial

PROCUREMENT STRATEGY

Outline strategy

15.1 The procurement strategy for the scheme has been developed in accordance with the following objectives:

- Obtaining best value from the procurement process
- Making best use of supplier inputs
- Ensuring that the best placed party manages the scheme delivery and associated risks

15.2 In order to achieve these objectives, delivery of the scheme is best lead by an experienced rail client. It is therefore proposed that Network Rail will develop the scheme jointly with CCC to the stage of achieving outline planning consent. Following this, Network Rail would appoint consultants to develop, design and build contract documents which would form the basis of a competitive tender for the scheme. Once the scheme construction costs are finalised, an application would be made for full funding approval. Provided this is successful Network Rail will let and act as clients for the construction contract.

15.3 As noted earlier, Network Rail may consider any enhancements to the scheme which may result in operational benefits to Network Rail and these will be included in the design & build contract as appropriate. This would allow economies to be realised in comparison to procuring these elements in a separate, subsequent contract.

15.4 Throughout the process of developing the scheme and carrying out the procurement exercise, best practice project management techniques will be employed to control change, monitor costs and maintain delivery to programme.

15.5 Risk management and mitigation will continue throughout the procurement process. Assignment of risks will be made on the basis of those best able to manage them and clear assignment of risk will be enabled through the construction contract.

16. Addendum to MSBC: Introduction

BACKGROUND

16.1 This Technical Note responds to queries raised by Department for Transport (DfT) following the submission of the Chesterton Interchange Major Scheme Business Case (MSBC) in 2007 and subsequently discussed at a follow-up meeting between DfT Rail, Cambridgeshire County Council (CCC) and Atkins, held at CCC's offices in February 2008. It was submitted to DfT in May 2008.

16.2 Subsequent to the development of the major scheme business case, CCC submitted an Outline Proposal for Funding to central Government to support congestion charging via the Transport Innovation Fund (TIF) in October 2007. The scheme would be supplemented by a range of complementary measures for public transport and non-vehicular transport improvements to provide the realistic alternative to using the car and incurring a road charge. Some of these proposals would result in significant improvements in Cambridge Northern Fringe East (CNFE) accessibility:

- A new access road to Chesterton Station from Cowley Road;
- Milton Park and Ride upgrade and bus priority;
- Wide ranging improvements to the cycle network; and,
- Alterations to the Chesterton Rail Station timetable.

16.3 The proposed congestion charge area includes Cambridge station but not Chesterton station interchange. Approximately 80% of current commuters using Cambridge Station come from the north of the city centre. Access to the rail network at Chesterton without paying a charge will therefore be a very attractive option and will reduce city centre traffic levels. In order to make Chesterton a realistic alternative, the service has to be comparable with that at Cambridge. Under the TIF proposals, the following improvements to the original service patterns outlined in the MSBC have therefore been proposed:

- Two fast trains per hour to London's Kings Cross. The proposed service pattern under the TIF proposition has both the Kings Cross services which currently terminate at Cambridge extended though to Chesterton station as well as the Kings Lynn services calling additionally at Chesterton; and,
- The Stansted, Ely and Norwich services also stopping at Chesterton.

16.4 Proposals are being developed by Network Rail and have been included in the High Level Output Statement (HLOS) to add an additional through-platform at Cambridge Station which would provide sufficient platform capacity to accommodate these service alterations.

PURPOSE

16.5 It is intended that this document forms an Addendum to the MSBC and should therefore be read in conjunction with the main MSBC documentation. The Addendum has been produced to deal with the following specific issues:

- To incorporate revisions to the assessment methodology so as to make the value for money appraisal WebTAG-compliant;
- To assess the impact of Road User Charging and associated Complementary Measures on the scheme value for money; and
- To respond to recent changes in land use policy and rail policy since the completion of the MSBC.

16.6 Each of these issues is discussed in more detail in the sections below.

TERMINOLOGY

16.7 For clarity, the scenarios for the Chesterton Interchange MSBC are as follows:

- Do-Minimum: Without Chesterton Rail Station
- Do-Something: With Chesterton Rail Station

16.8 For the proposals under TIF, the scenarios are defined as:

- Do-Minimum: Without Chesterton Rail Station, with Road User Charging
- Do-Something: With Chesterton Rail Station, with Road User Charging

16.9 This was done to allow testing of the Chesterton Interchange scheme in a scenario with road pricing in place, rather than attempting to model the effects of road pricing itself .

STRUCTURE

16.10 Following this Introduction, the remainder of the document is structured as follows:

- **Chapter 17** presents the **Updated Business Case in line with new WebTAG guidance**, examining the impact of changes to assumptions relating to optimism bias and highway decongestion benefits;
- **Chapter 18** presents the **Revised Business Case for Chesterton with the TIF proposals in place**;
- **Chapter 19** presents the **Additional Train Set Value Assessment**;
- **Chapter 20** outlines the **Changes in Wider Policy & Land Use Proposals since the MSBC Submission**;
- **Chapter 21** provides an outline of the ongoing Discussions with Train Operating Companies (TOCs); and
- **Chapter 22** sets out our Conclusions and Recommendations

17. Addendum to MSBC: Updated Chesterton Station Major Scheme Business Case

INTRODUCTION

17.1 The meeting between CCC, Atkins and DfT in February 2008 highlighted three specific issues in relation to the value for money assessment of the proposed Chesterton Interchange, which required a revised approach:

- Decongestion benefits had been calculated using SRA, rather than WebTAG, guidance;
- Optimism bias on capital costs had been applied at 66%, rather than 50% as recommended; and,
- Optimism bias on operating costs had been applied at 66%, rather than at 1.6% as recommended.

17.2 In addition it was identified that no allowance for contribution to scheme benefits from a fixed retail concession at Chesterton Interchange had been made.

17.3 This section summarises the impacts of these changes on the appraisal results.

DECONGESTION BENEFITS

17.4 Decongestion benefits, in the form of travel time and vehicle operating cost savings, will be generated by the scheme when existing car users transfer to rail following the opening of Chesterton Interchange. This will be offset to some extent by the reduction in indirect tax revenues accrued by central government (due to the reduction in total vehicle-kilometres on the highway network), and by the increased travel times and vehicle operating costs generated by entirely new car trips accessing Chesterton station.

17.5 In calculating the value of these decongestion effects, the original scheme appraisal adopted SRA guidance, which has since been superseded by WebTAG guidance. The original SRA-based decongestion benefits were calculated using a standard monetised value for each vehicle-kilometre removed from the highway network. Traffic removed from the urban / city centre highway network was valued at 56.7pence per kilometre, whilst suburban / rural trips were valued at 12.5 pence per kilometre.

17.6 The WebTAG guidance presents a range of alternative approaches to the calculation of decongestion benefits. The fundamental principles of the SRA- and WebTAG-based methodologies are similar, with traffic removed from more congested routes being valued more highly than on less congested routes. However, the WebTAG approach suggests the use of a traffic model for valuing the change in travel costs, with industry-standard appraisal software (COBA or TUBA) being used to convert these costs into monetary values.

17.7 For the reappraisal of decongestion benefits relating to Chesterton Interchange, the TUBA-based approach has been adopted, whereby trips in the car demand matrix were manually adjusted to allow for the changes in travel patterns.

17.8 The adoption of a WebTAG-based assessment has a negative impact on the level of decongestion benefits generated by the scheme, although it should be noted that the reappraisal has considered purely those benefits that would be generated in the morning peak. Table 17.1 overleaf presents a summary of the key impacts.

Table 17.1 – Impact of Reappraisal of Decongestion Benefits (Highway Users Only)

Economic Summary Statistic	2007 MSBC	2008 Reappraisal
Travel Time Savings		
Consumers	£26.32m	£0.85m
Business	£12.96m	£2.34m
Total	£39.28m	£3.19m
Vehicles Operating Cost Savings		
Consumers	-	£3.28m
Business	-	- £0.2m
Total	-	£3.08m
Indirect Tax Revenues	£10.9m	£3.51m
Carbon Emissions	**-**	£0.46m
Net Impact on Benefits	**-**	**- £25.16m**

17.9 The main points to note from the reappraisal are as follows:

- Time savings for road users fall by £36m as a result of replacing SRA guidance with that specified by WebTAG. This represents a reduction of 92%;
- Vehicle operating costs contribute just over £3m. The original appraisal did not consider benefits relating to vehicle operating costs, so this represents a net gain;
- The loss in indirect tax revenues accrued by central government decreases, from £10.9m to £3.5m;
- Benefits from the reduction in carbon emissions, which were not previously calculated, amount to £0.46m; and
- The revised approach to the calculation of decongestion impacts leads to a net loss of £25.16m when compared to the original business case.

17.10 The revised decongestion benefits represent a conservative estimate of the true benefits that would be generated by the scheme, as the analysis is based purely on an assessment of impacts in the morning peak. In reality, we would expect the benefits to be approximately 2-3 times higher once the inter-peak and evening peak traffic impacts have been considered.

Optimism Bias on Scheme Costs

17.11 There has been a revision to the profile for capital and operating costs following adjustment of optimism bias from 66% to 50%, in the case of the former, and from 66% to 1.6% for the latter.

17.12 The main impacts of the reappraisal are as follows:

- Scheme capital costs fall from £20.87m to £18.85m following the application of 50% optimism bias, representing a reduction in costs of £2.02m, and

- Scheme operating costs fall from £14.82m to £9.07m following the application of 1.6% optimism bias. Additionally, a correction to the rate of discount applied beyond the 30th year of the appraisal period (i.e. when the rate of discount changes from 3.5% to 3.0%), produced a further reduction in scheme costs, culminating in a final discounted operating cost of £8.59m;

17.13 The revisions to optimism bias on scheme costs leads to a net gain of £8.25m when compared to the original business case.

Potential Contribution of a Retail Concession

17.14 The original appraisal did not include the potential contribution to funding from a retail concession at the new station. Based on evidence from outlets at stations with a similar throughput to that anticipated at Chesterton, it is estimated that £10,000 per annum could be generated as a revenue stream across the project lifetime. This would represent a net gain of £0.19m when compared to the original business case. However, since additional investigation into this issue is required in order to determine whether such a scheme is realistic for Chesterton, this revenue source has not been included in the revised TEE Table for the reappraisal. The Council and its advisors will be happy to discuss this element in greater detail should it be viewed as a necessary component of the funding allocation.

Summary of Revised value for Money Assessment

17.15 Table 17.2 presents the summary statistics generated by the updated value for money assessment, incorporating the changes to decongestion analysis and scheme costs set out above. The full TEE Table generated by the revised Chesterton Interchange scheme appraisal is presented in Annex A. The original TEE table is also presented for comparative purposes.

17.16 Although the scheme benefits are lower than in the previous appraisal, the reduction in scheme capital and operating costs, and slight reduction in indirect tax losses, means the overall value for money of the scheme improves, from 3.09 to 3.16. A BCR well in excess of 2.0 means the scheme remains high value for money based on DfT guidance.

Table 17.2 – Impact of Reappraisal on Scheme Value for Money

Economic Summary Statistic	2007 MSBC	2008 MSBC Update
Present Value of Benefits (PVB)	£148.79m	£122.49m
Present Value of Costs (PVC)	£48.16m	£38.76m
Net Present Value (NPV)	£100.63m	£83.73m
Benefit-Cost Ratio (BCR)	3.09	3.16

18. Addendum to MSBC: Revised Business Case for Chesterton Station with TIF

INTRODUCTION

18.1 The Chesterton Interchange business case was submitted in 2006, and again in 2007. During that period, extensive work has been undertaken to develop TIF-related packages for improving highway and public transport provision in Cambridgeshire, and the Chesterton Interchange proposals are included as part of the wider TIF package of measures.

18.2 A revised assessment has been undertaken to make allowance for some of the measures included in the TIF packages, which includes the following:

- Road user charging in Cambridge; and
- An alternative train timetable (details of which are in an Appendix B).

18.3 These changes were represented within the modelling framework and a revised value for money assessment was produced. The results of the assessment with the TIF proposals in place are presented in Table 18.1 below. It should be noted that the revised scheme appraisal (as described in Chapter 17) has been used as the basis for the subsequent analysis.

REVISED APPRAISAL

18.4 Table 18.1 compares the demand (average daily weekday) and revenue (annual figures) impacts on Chesterton and other stations as presented in the MSBC, with a scenario with the TIF measures in place. The increase in demand and revenue at Chesterton is offset by reductions of a similar magnitude at other stations, resulting in similar demand across the study area.

Table 18.1 – Demand & Revenue Impacts of TIF Measures

	2007 MSBC		2007 TIF Appraisal	
	Demand	Revenue	Demand	Revenue
Do-Minimum	11,790	£55,254,520	11,620	£53,455,760
Do-Something Chesterton	2,620	£9,916,800	3,470	£14,293,660
Do-Something Other Stations	10,500	£49,624,240	9,870	£45,157,040
Do-Something Total	13,130	£59,535,110	13,340	£59,450,700

18.5 Table 18.2 presents the economic summary statistics for the RUC-/TIF-based appraisal.

Table 18.2 – Economic Summary Statistics for RUC-/TIF-Base Appraisal

Economic Summary Statistic	2008 MSBC Update	2007 TIF Appraisal
Present Value of Benefits (PVB)	£122.49m	£172.83m
Present Value of Costs (PVC)	£38.76m	£42.56m
Net Present Value (NPV)	£83.73m	£130.27m
Benefit-Cost Ratio (BCR)	3.16	4.06

18.6 The increase in rail operator revenues at Chesterton drives the PVB up from £122m to £172m, which easily offsets the £4million increase in scheme costs associated with the additional train set to service the alternative timetable. This generates an increase in the overall BCR from 3.16 to 4.06, representing high value for money.

19. Addendum to MSBC: Additional Train Set Value Assessment

19.1 The revised appraisal has highlighted the possible need for an additional train set, particularly in the peak hour. This will generate additional operating costs, which are reflected in the increased scheme costs. Thus the appraisal reflects the impacts of the additional train set and the costs and benefits associated with this, rather than the direct impacts of road pricing on Chesterton Interchange. This also reflects the functionality of the model used for the original MSBC submission.

19.2 While it is possible to infer the effects of road pricing, by comparing the MSBC do-minimum with the TIF do-minimum, this should be done with some caution. Within the model only a proportion of the rail demand is affected by road pricing, because only around 30% of outbound rail trips are assumed to occur during the charging period (0730-0930), and, of these, less than 30% are assumed to access the station by car. For these reasons, the impact of the road pricing on the results is relatively minor.

19.3 Qualitatively, the main effects were:

- A reduction in trips from Cambridge station due to the additional cost of accessing the station by car; and
- An increase in rail trips into Cambridge from nearby stations, due to increased cost of the alternative car mode.

19.4 Whilst it is likely that an additional train set would generate additional benefits in the form of reduced crowding, the existing model formulation does not contain a crowding algorithm to establish what these benefits may amount to. It is likely, also, that any such reduction in crowding would eventually feed through to increased passenger demand, culminating in further travel time savings, operator revenues, and highway decongestion benefits. Again, the model has not been developed to assess these elements in sufficient detail, so no further analysis of these benefits is included at this stage. We would be happy to discuss the possibility for extending the analysis to incorporate crowding effects at a later date, if deemed appropriate.

20. Addendum: Changes in Wider Policy and Land Use Proposals since MSBC Submission

HLOS

20.1 In addition to the Government's White Paper "Delivering a Sustainable Railway", published in July 2007, an associated Rolling Stock Plan was published setting out in more detail how additional rolling stock will be used to deliver increased capacity on the rail network. These documents outline commitments relating to the Thameslink Upgrade, and the provision of additional rolling stock to the train operators serving Chesterton; they are thus important new developments in considering the proposals for a new rail station at Chesterton.

20.2 The MSBC submission did not consider the potential upgrade of the Thameslink line which will enhance the frequency and capacity of services that operate north-south through central London. The Secretary of State has since given financial approval for the Thameslink Programme, the proposals for which include the operation of 12-car trains on the Cambridge route, planned to be delivered by December 2015. As a consequence of this increase in capacity, and with connections to a greater number of stations, Cambridge station will see an increase in passengers. Chesterton would relieve passenger congestion at Cambridge station and would further provide additional platform capacity improving operational flexibility.

20.3 The Rolling Stock Plan outlines the additional number of vehicles allocated to each Train Operating Company by 2014; First Capital Connect will see an increase of 256 vehicles by 2014, and One West Anglia an additional 188 vehicles by 2014. This additional rolling stock is required to accommodate future growth in demand on both the Kings Cross and Liverpool Street routes and as a result, there is now a need for larger train stabling facilities in the Cambridge area. Chesterton has been identified by Network Rail as a suitable location for train stabling and this is discussed in more detail in the next section.

LAND USE

20.4 Since the Major Scheme Business Case was submitted there have been changes to the land use proposals adjacent to the Chesterton Station Interchange. However the original MSBC submission, and the subsequent appraisal of the scheme with congestion charging in place, did not assume any level of demand from adjacent new developments. Thus changes in those land use proposals do not affect the scheme's appraisal although the presence of new trip generating land uses would undoubtedly improve its viability.

20.5 In May 2008 Cambridgeshire Horizons published a study on the land use options for the Cambridge Northern Fringe East (CNFE).[23] The study includes a review of the previous development proposals which would have seen a comprehensive housing-led redevelopment of the area. There has been little progress towards realising this

[23] Roger Tym & Partners, Cambridge Northern Fringe East – Viability of Planning Options, Final Report, May 2008

aspiration in recent years and the study concluded that it is no longer possible to envisage a primarily housing-led comprehensive development concept at least within the next five years and that it was probably unlikely in the longer term. The Consultant's Report references three relevant changes to the planning context:

- PPS3 – now places far higher emphasis on practical delivery of housing and it would be very difficult for the City Council and SCDC to demonstrate that a comprehensive development concept could be implemented within the next five years.

- A joint employment land study commissioned by the City Council and SCDC has identified a shortage of sites for B1(c) and B2 development in and around Cambridge and part of the CNFE could satisfy requirements for industrial development.

- As a consequence of increased demand for rail use, the emerging Greater Anglia Route Utilisation Strategy advocates expansion of capacity between London and Cambridge. Additionally, Network Rail has identified Chesterton as a possible location for train stabling and washing facilities.

20.6 The original proposals for the Chesterton Sidings (north) site included the relocation of the existing freight operations to another location (as then unspecified) to enable the comprehensive housing led development to be brought forward. However, for the reasons listed above, this is now unlikely. Furthermore, Chesterton will need to remain protected for operational rail uses, and much of the site will not be able to be released for redevelopment. There are two reasons for this:

- A CCC sponsored study to identify alternative sites for relocating the existing freight operations concluded that there are in fact no suitable alternative locations within the area and thus they would need to remain in situ at Chesterton; and,

- Network Rail have identified Chesterton as the most suitable location for stabling up to 60 four-car multiple units in the light of HLOS and the associated rolling stock plan.

20.7 The Cambridgeshire Horizons work proposed an alternative mix of land use proposals, retaining land for operational rail needs, but also identifying some parts of the Chesterton site which can be released for redevelopment. Table 20.1 overleaf, and by reference to Figure 20.1 following, identified how each part of the site could be developed. The plan proposes 25,000 m^2 of B1 Offices located adjacent to the new station with a new multi-storey car park for use by both the station and offices.

20.8 In order to maximise developable land, and also facilitate operational flexibility with regard to the rail sidings (which were not envisaged at the time of the MSBC), an alternative arrangement has been proposed by the study as contained in Figure 20.1. This suggests that if the station platforms are relocated further south towards Cambridge, direct access to the sidings from any of the proposed three platforms at Chesterton could be achieved.

20.9 The revised layout would provide the following benefits:

- 20 x 250m stabling sidings each capable of accommodating 12 car passenger stock including provision for walkways for cleaning purposes and for locating structures to support the overhead line equipment;

- Reception and departure tracks at the country end of the yard to accommodate a 360m long freight train;

- A 360m run-round at the London end to enable freight locomotives to change ends and perform shunting manoeuvres; and,

- A 360m aggregates siding, which could be altered to two shorter sidings if required.

20.10 This revised layout for the site requires the relocation of Lafarge's existing road coating plant (within the site) to provide greater flexibility for all rail operators. Once the requirement for carriage stabling and the partial relocation of the Lafarge operation has been satisfied, there remains more than two hectares of land which could be used for additional aggregates facilities.

Table 20.1 – Current and Proposed land uses in CNFE

Site	Land Area	Current Position	Proposals
Anglian Water Waste water Treatment Works (WwTP)		The site will continue in its present use until AWG judge the market conditions indicate that redevelopment would justify the re-location of the existing works.	Continues in its present use for the foreseeable future
Cambridge Business Park	8.3ha	Investment in this park and the jobs created should be supported by 'sympathetic' and appropriate development on adjacent sites.	No additional development potential at this site.
Existing Office, Orwell Furlong	1ha	These office units are accessed off a small loop road called Orwell Furlong but have their frontage onto Cowley Road. It is assumed that these offices will remain in any scheme that does not require wholesale redevelopment.	None
Cowley Road Industrial Estate	7ha	A relatively dense industrial estate used for a mixture of manufacturing and storage.	It would not be feasible to redevelop the estate for office use and consequently small scale internal improvements and rationalization should be encouraged.
P&R / Driving Range site	6.4ha	Owned by the City Council, the park & ride facility is to be relocated to Milton and the site will be available for development.	6.4 hectares to be developed for a local waste recycling facility adjacent to a site for the City's relocated Mill Road Depot, with the remainder of this land being used as coach and bus storage by Stagecoach. This range of uses is compatible with the site's location within the 200 metre buffer zone from the WwTW.
Chesterton Sidings, North	14.3ha	A range of rail operational uses have been identified together with continued occupation as a rail based aggregates facility, and also a rail accessed waste transfer facility.	18.1 hectares to be used for rail related uses: stabling for 60 4-car EMU trains; a realigned aggregates depot; and, additional land which could either be used for aggregates purposes or a rail accessed waste transfer station.
Chesterton Sidings, South	3.8ha	TIF proposal for a gateway station and associated car park, which would interchange with the guided busway network, associated with this proposal.	3.8 hectares to be used for a gateway station and car park with the remaining area developed with up to 25,000 square metres of offices.

Information taken from Roger Tym & Partners, Cambridge Northern Fringe East – Viability of Planning Options Final Report, May 2008

Figure 20.1 – Framework Strategy – Cambridge North East Fringe[24]

[24] Roger Tym & Partners, Cambridge Northern Fringe (East): Viability Study, Draft Final Report, May 2008

21. Addendum to MSBC: TOC Discussions

21.1 During the course of April 2008, representatives of CCC met formally with both National Express and First Group (operators of the two relevant passenger franchises – First Capital Connect, and One West Anglia). As part of these meetings, a "TOC Proposition Paper" was discussed which set out, succinctly, the Chesterton Interchange proposals in terms of:

- Station specification;
- Train service specification;
- Rolling stock and operations including operating costs (station and services); and,
- Demand and revenue.

21.2 Both Groups have been receptive to the proposals and have requested additional data and information following the meetings. Dialogue will be maintained with these companies as the scheme is developed.

22. Addendum to MSBC: Summary

22.1 In summary:

- An update of the MSBC for WebTAG compliance leads to a reduction in benefits but this is more than offset by a larger reduction in costs (as a result of lower levels of optimum bias) leading to an improved BCR of 3.16 (over 3.09 as per the May 2007 submission);
- An appraisal of the scheme with CCC's TIF congestion charging proposals in place leads to a further improvement in the BCR of 4.06 (over 3.16);
- It is not possible to accurately model the value of the additional train set proposed under the TIF scheme, though without it the enhanced timetable could not be implemented;
- Since submission of the MSBC, the Thameslink upgrade has been approved along with significant numbers of additional rolling stock for the Cambridge to London routes both of which will lead to increased demand at an increasingly congested Cambridge Station;
- Recent work for Cambridgeshire Horizons indicated that Chesterton will now be required as a stabling depot for rolling stock but that it would also be possible to deliver 25,000 m^2 of B1 office uses immediately adjacent to the station; and,
- Initial discussions with both TOCs (FCC and One West Anglia) have resulted in positive responses from both giving confidence that the scheme will be well received by the rail industry.

APPENDICES

A full set of appendices for Chesterton Station were included with the original MSBC submission in 2007 and the Addendum document in 2008. Due to their size they have not been included in this document but can be supplied upon request.