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Transport Assessment

Northstowe - Phase 1 Development

Gallagher

14 February 2012

QM

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
Remarks	For Application			
Date	14 February			
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Project number	11012988			
File reference	N:\Northstowe, Phase 1, Planning Application\TEXT\REPORTS\Transport Reports\Transport Assessment\120214 Transport Assessment.Docx			

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Executive Summary

This report considers a Phase 1 development at Northstowe which is to be a new town to the north east of Longstanton in accordance with the Northstowe Area Action Plan.

This report examines existing and future transport network conditions, building on work undertaken over recent years. To ensure the cumulative effects of other developments and planned transport network changes are considered, the Cambridge Sub-Regional Model has been employed to consider the impact of development.

This report is submitted in support of an outline planning application for Phase 1 of Northstowe comprising up to 1,500 dwellings; a primary school; a mixed-use local centre (including a community building, and provision for non-residential institutions, financial and professional services, shops, cafes and restaurants, drinking establishments, and hot food takeaways); leisure, community, residential institutions, cultural, health, and employment provision (business, general industry and storage & distribution) including a household recycling centre; formal and informal recreational space and landscaped areas; and infrastructure works including site re-profiling and associated drainage works, foul and surface water pumping stations, two flood attenuation ponds on land east of Hatton's Road; and associated works including the demolition of existing buildings and structures. It focuses on the transport network with and without the Phase 1 development at Northstowe; considering the local rights of way, bus services, local roads and the A14 corridor.

As the A14 is operating close to capacity the land use and transport model reveals that there are few material changes to traffic flows on the A14 and in the local area. Generally where changes do occur they are relatively small, revealing that some existing inter-urban trips on local roads redistribute onto other roads. The model also reveals that some jobs are relocated out of central areas and travel demands shift towards more sustainable transport modes where people divert to the Cambridgeshire Guided Busway.

Whilst changes to traffic flows are typically small some local roads will experience increases in volume as vehicles change routes due to increased demand at the A14, primarily at the Bar Hill interchange. Where traffic flows increase they are typically within capacity limits of existing roads or junctions. Increases in traffic flow at Bar Hill are limited by the overall layout of the junction and therefore there is not a material impact on the operation of the junction.

It is accepted that there will be some material changes in traffic flows on a few local roads and therefore a package of traffic management measures will be necessary to preserve and enhance road safety. The promoters of development at Northstowe are therefore keen to engage with Cambridgeshire County Council and local communities to ensure that the package of measures delivered in future years is appropriate.

With the initial Phase 1 and subsequent phases of development at Northstowe, the delivery of education, employment and retail land uses will positively influence the distribution of trips to locations further afield. The development promoters are keen to ensure that travel to these land uses and those of the future community are managed and have established the basis for Travel Plans to deliver meaningful alternatives that will contribute to reducing the number and length of private motorised trips. It is intended that these Travel Plans are extended to existing local communities in order to reduce vehicular demand generally in the area.

From the transport assessment it has been concluded that there should be a number of measures to mitigate the impact of the Phase 1 development at Northstowe. These include:

- Travel planning for the new occupants at the site and existing residents in the vicinity of the development in order to reduce the demand for travel, particularly by car, in the area.
- Traffic management measures in local villages and on local roads where the increase in traffic flows is considered material.
- Supporting both the Highways Agency and Cambridgeshire County Council in the co-ordinated implementation of local measures which improve the performance of the A14.

1 Introduction

1.1 PREAMBLE

1.1.1 WSP has been commissioned by Gallagher and the Homes and Communities Agency (HCA) to provide transport and highways advice to support their promotion of the new town of Northstowe in Cambridgeshire. This Transport Assessment (TA) supports the outline application by Gallagher for a Phase 1 development at Northstowe comprising; up to 1,500 dwellings, a primary school, a mixed-use local centre (including a community building and provision for non-residential institutions, financial and professional services, shops, cafes and restaurants, drinking establishments and hot food takeaways), leisure, community, residential institutions, cultural, health and employment provision (business, general industry and storage & distribution) including a household recycling centre, formal and informal recreational space and landscaped areas; and infrastructure works including site re-profiling and associated drainage works, foul and surface water pumping stations, two flood attenuation ponds on land east of Hatton's Road; and associated works including the demolition of existing buildings and structures.

1.1.2 The TA has been produced in accordance with national guidance, provided in the Department for Transport's 'Guidance on Transport Assessment' (GTA, March 2007), and from discussions held with Cambridgeshire County Council (CCC), the Highways Agency (HA) and their consultants, along with feedback from District and Parish Councils.

1.2 THE SITE

1.2.1 The primary development site is situated immediately north east of Longstanton and is approximately 10km north-west of the centre of Cambridge. The site itself is currently partially open land, but in the main is occupied by the Cambridge Golf Club, an 18 hole golf course with associated facilities. The site location can be seen on Figure 1.

1.2.2 The northern border of the site is formed by the Cambridgeshire Guided Busway (CGB) which has rural land to its north. The south-western border of the site is the settlement of Longstanton, with residential buildings and a school backing onto the site. Northstowe will eventually extend into the land to the east of the site but it is currently rural, with Rampton Road approximately 200m further east and then the former airfield site.

1.2.3 The north-west of the site is bordered by the B1050 Station Road which runs south to north. On the western side of Station Road is a small amount of development with a larger degree of rural land.

1.3 STRUCTURE OF THIS REPORT

1.3.1 The Transport Assessment assesses the Phase 1 development which consists of:

- Up to 1,500 residential dwellings
- A three form entry primary school
- A mixed-use local centre
- B1, B2 and B8 employment
- A sports hub

- Public open space
- Allotments
- Associated infrastructure.

1.3.2 It is set out in the following sections:

- **Section 2** summarises the history of the Northstowe site and its progress in recent years;
- **Section 3** provides an overview of national and local policies in relation to the site and the development proposals;
- **Section 4** details the site location and existing conditions in the vicinity of the site, including the pedestrian, cycle, public transport and road networks. Existing traffic conditions and the local accident record are also examined;
- **Section 5** discusses the current accessibility of the site to facilities;
- **Section 6** details the development proposals;
- **Section 7** considers the access strategy for the proposed development;
- **Section 8** considers forecast conditions in 2021 without development;
- **Section 9** considers forecast conditions in 2021 with development, considering changes in conditions, development impact and possible mitigation: and
- **Section 10** summarises the content of this report and provides key findings and recommendations.

2 Background

2.1 PLANNING HISTORY

2.1.1 Through the South Cambridgeshire Local Development Framework (LDF) Northstowe was promoted as an Area Action Plan (AAP) setting out the broad strategy.

2.1.2 An outline planning application was submitted in December 2007 for the whole of Northstowe by Gallagher Longstanton Ltd and the HCA (then English Partnerships), together with further detailed applications for the road access remote from the core site. These applications were the subject of detailed discussions and consultations which were suspended in recent years due to the economic climate. Consequently these applications are still awaiting determination. It remains the intention of the joint promoters to deliver the Northstowe development, although it is anticipated that this should now be undertaken through a phased approach.

2.1.3 This phased approach is to be based on the previously submitted development framework plan which has recently been refreshed through a series of workshops with the promoters and the local authorities.

2.2 MATERIAL CHANGES

2.2.1 At the time of the 2007 applications the A428 Caxton to Hardwick trunk road scheme had just opened in May 2007. These improvements had been included in the modelling at that time although no actual traffic data had been recorded. The opening of the scheme provided a second east west dual carriageway and the HA acknowledged that this offered an improvement to the level of service on the A14 corridor.

2.2.2 The Cambridgeshire Guided Busway (CGB) formed part of a package of measures identified to support regional growth and a gradual shift towards more sustainable transport. The CGB was opened in August 2011 and initial patronage has been good with the frequency of services having been increased shortly after the opening.

2.2.3 At the time of the 2007 applications the Highways Agency were promoting a major improvement to the A14. This consisted of a dual 3-lane trunk road and associated parallel local roads. The applications for Northstowe included road links which were consistent with this scheme. This scheme was suspended following the Government's Spending Review in 2010 which meant that the southern road links proposed in the 2007 applications were no longer appropriate.

2.2.4 Although the major A14 scheme was suspended the Government recognised the importance of the A14 route in this location and they confirmed that the DfT would be commissioning a study to investigate and promote an alternative scheme for the corridor. The first part of this study has been produced and initial recommendations are programmed to report during 2012.

2.2.5 Emphasising the importance of this route the Department for Transport (DfT) has also recently allocated £20M to support more immediate interim measures to assist with the performance of the A14. It is anticipated that these monies will support a range of measures to encourage more trips to divert to the CGB amongst other more sustainable measures.

2.2.6 The South Cambridgeshire District Council (SCDC) and CCC Employment Land Review 2008 updated previous forecasts (2004) identified for the Core Strategy. This considered additional employment sites to 'front load' economic growth in the sub-region.

2.2.7 SCDC undertook a similar sub-regional retail study updated in 2008 and examined further in 2009. It acknowledged a need for retail growth in convenience and comparison goods in Cambridge and in the SCDC area and considers possible development sites.

2.2.8 The third Local Transport Plan (LTP3) identifies a strategy for the County to 2026 and it is reviewed later. It notes that there are 'no schemes' on the Major Schemes list before 2015/16. It focuses on measures to improve safety, accessibility and deliver the Market Town Transport Strategy. Amongst these plans are complementary programmes to link cycle infrastructure and improve parking control and enforcement.

2.2.9 Responding to changes in the planning system the Councils are monitoring the strategic housing market in the region. It notes a decline in housing delivery reporting that SCDC should deliver around one third of housing, much of which will still be delivered between 2012 – 2018 but acknowledging delivery has slowed. It also highlights some key local trends:

- Buy to-let properties are still in demand and around 13% of houses are privately rented;
- Population growth remains high, growing 19% since 2001; and
- Economic growth is relatively stable.

3 Policy Context

3.1 INTRODUCTION

3.1.1 This Section sets out an overview of the national, regional and local transport policies to provide context for the assessment of the transport issues related to the development proposals.

3.2 NATIONAL POLICY

DRAFT NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

3.2.1 The draft NPPF was published in July 2011 and has been subject to some debate. Although it is only currently in draft it does provide some guidance on the Government's current planning outlook.

3.2.2 The draft NPPF seeks to simplify and decentralise planning decisions. It outlines an over-arching principle, being the presumption in favour of sustainable development, embracing economic sustainability into decision making.

3.2.3 The NPPF suggests that there is "…no necessary contradiction between increased levels of development and protecting and enhancing the environment, as long as development is planned and undertaken responsibly". It states "Decision-takers at every level should assume the default answer to development proposals is "yes", except where this could compromise the key sustainable development principles set out in this framework".

3.2.4 The key Transport messages include:

- "…facilitating development but also contributing to wider sustainability…"
- "The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel".
- "The planning system should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport".
- "…development should not be prevented or refused on transport grounds unless the residual impacts of development are severe…"

CREATING GROWTH, CUTTING CARBON: MAKING SUSTAINABLE LOCAL TRANSPORT HAPPEN

3.2.5 *Creating Growth, Cutting Carbon* is the DfT White Paper, published in January 2011, which sets out plans for transport to become an engine for economic growth through careful investment in sustainable transport. A key aim is to:

- *Encourage sustainable local travel and economic growth by making public transport, cycling and walking more attractive and effective, promoting lower carbon transport and tackling local road congestion.*

3.2.6 It aims to encourage more sustainable transport choices through returning decision making to the local level where they know what works. It realises that for some journeys, car is the only viable mode and therefore low emission vehicles are important in addressing that demand, together with car sharing and car-pooling opportunities.

3.2.7 However it is recognised that for many shorter journeys (those less than 5 miles), walking, cycling or using public transport can be a viable alternative. Giving people choices will encourage modal shift thereby improving not only the environment, but also health.

PLANNING POLICY STATEMENT 1: DELIVERING SUSTAINABLE DEVELOPMENT

3.2.8 Planning Policy Statement 1: Delivering Sustainable Development (PPS1), published in January 2005, sets out an overarching planning policy on the delivery of sustainable development in the planning system.

3.2.9 Much importance is placed on sustainable development in planning. Paragraph 3 states that: *"Sustainable development is the core principle underpinning planning."*

3.2.10 PPS1 describes several key objectives to achieve sustainable development in planning including, inter alia:

- Social cohesion and inclusion;
- Protection and enhancement of the environment;
- Prudent use of natural resources; and
- Sustainable economic development.

3.2.11 PPS1 provides an outline of the means by which sustainable development and patterns of inclusive urban and rural development should be achieved. These are:

- Making suitable land available for development in line with economic, social and environmental objectives;
- Making contributions to sustainable economic development;
- Protection and enhancement of the natural and historic environment and existing communities;
- Ensuring a high quality development via good and inclusive design and the efficient use of materials; and
- Ensuring that development supports existing communities and contributes to the creation of safe, sustainable and liveable communities with good access to employment, facilities and services.

PLANNING POLICY STATEMENT 3: HOUSING

3.2.12 Planning Policy Strategy 3 (PPS3), published in November 2006 in place of PPG3, underpins the delivery of the Government's strategic housing policy objectives. PPS3 is consistent with other relevant statements of national planning and housing policy.

3.2.13 The Government's key objective for the planning of housing is:

"to ensure that everyone has the opportunity to live in a decent home, which they can afford in a community where they want to live."

3.2.14 To achieve this objective PPS3 highlights how the government is seeking to:

- Widen opportunities for home ownership and ensure high quality housing for those who cannot afford market housing, in particular those who are vulnerable or in need;
- Improve affordability across the housing market, including by increasing the supply of housing; and
- Create sustainable, inclusive, mixed communities in all areas, both urban and rural.

3.2.15 PPS3, which is complementary to other national planning policy, places emphasis on sustainability appraisals as a key means of ensuring housing policies help to deliver sustainable development objectives.

3.2.16 To support objectives of sustainable and mixed communities, PPS3 identifies that:

"The Government's policy is to ensure that housing is developed in suitable locations which offer a range of community facilities and with good access to jobs, key services and infrastructure".

3.2.17 In doing so, PPS3 states that "the priority for development should be previously developed land, in particular vacant and derelict sites and buildings".

PLANNING POLICY STATEMENT 4: PLANNING FOR SUSTAINABLE ECONOMIC GROWTH

3.2.18 Planning Policy Statement 4 (PPS4) was published in December 2009 and applies to Business (B) Use Classes, public and community uses and main town centre uses. The overarching objective is sustainable economic growth and the key aims include, inter alia:

- Build prosperous communities by improving the economic performance of cities, towns, regions, sub-regions and local areas, both urban and rural;
- Reduce the gap in economic growth rates between regions, promoting regeneration and tackling deprivation;
- Deliver more sustainable patterns of development, reduce the need to travel, especially by car and respond to climate change; and
- Promote the vitality and viability of town and other centres as important places for communities.

3.2.19 PPS4 considers the need for balanced development considering the mix of land uses, where development can improve deprivation and any deficiencies in existing centres such us a lack of local convenience shopping and other facilities which serve people's day-to-day needs.

3.2.20 **Policy EC2: Planning for sustainable economic growth** provides guidance for regional planning bodies and local planning authorities to ensure their development plan and:

- Identifies, protects and promotes key distribution networks, and locates or co-locates developments which generate substantial transport movements in locations that are accessible (including by rail and water transport where feasible), avoiding congestion and preserving local amenity as far as possible; and

- Plans for the delivery of the sustainable transport and other infrastructure needed to support their planned economic development and, where necessary, provides advice on phasing and programming of development.

3.2.21 **Policy EC8: Car parking for non-residential development** requires local planning authorities, through their local development frameworks, to set maximum parking standards for non-residential development. Consideration when setting standards should be made to current, and likely future, levels of public transport accessibility and the need to encourage access to development for those without use of a car and promote sustainable transport choices, including cycling and walking.

3.2.22 **Policy EC10: Determining planning applications for economic development** states that:

"Local planning authorities should adopt a positive and constructive approach towards planning applications for economic development. Planning applications that secure sustainable economic growth should be treated favourably."

PLANNING POLICY GUIDANCE NOTE 13: TRANSPORT

3.2.23 Planning Policy Guidance Note 13: Transport (PPG13), published in March 2001 and updated in January 2011, provides advice on transport for new developments. The objectives of PPG13 are to integrate planning and transport at the national, regional, strategic and local level to:

- Promote more sustainable transport choices for both people and for moving freight;
- Promote accessibility to jobs, shopping, leisure by public transport, walking and cycling;
- Reduce the need to travel, especially by car.

3.2.24 PPG13 emphasises the key themes of sustainable development that have emerged in recent years. It advises that planning applications for major developments should be accompanied by a Transport Assessment, which includes details of access by walking, cycling and public transport.

3.2.25 With regard to the proposed residential development at the Northstowe site, PPG13 sets out that the focus for residential development should be in existing towns and cities in order to promote more sustainable patterns of development and to make better use of previously developed land. PPG13 sets out that local planning authorities should:

- *Build in ways which exploit and deliver accessibility by public transport to jobs, education and health facilities, shopping, leisure and local services;*
- *Place the needs of people before ease of traffic movement in designing the layout of residential developments; and*
- *Seek to reduce car dependence by facilitating more walking and cycling, by improving linkages by public transport between housing, jobs, local services and local amenity, and by planning for mixed use.*

3.2.26 With regard to parking, paragraph 49 of PPG13 states;

"Policies on parking should be coordinated with proportionate parking controls and charging set out in the local transport plan, and should complement planning policies on the location of development".

3.2.27 Paragraph 50 of PPG13 sets out that Local Authorities should;

- Ensure that, as part of a package of planning and transport measures, levels of parking provided in association with development will promote sustainable transport choices;
- Not require developers to provide more spaces than they themselves wish, other than in exceptional circumstances which might include for example where there are significant implications for road safety which cannot be resolved through the introduction or enforcement of on-street parking controls;
- Encourage the shared use of parking, particularly in town centres and as part of major proposals: for example offices and leisure uses (such as cinemas) might share parking because the peak levels of use do not coincide, provided adequate attention is given at the design stage;
- Take care not to create perverse incentives for development to locate away from town centres, or threaten future levels of investment in town centres. While greater opportunities exist to reduce levels of parking for developments in locations with good access by non-car modes, local authorities should be cautious in prescribing different levels of parking between town centres and peripheral locations, unless they are confident that the town centre will remain a favoured location for developers. Advice in Planning Policy Guidance 6 makes clear that good quality secure parking is important to maintain the vitality and viability of town centres, and to enable retail and leisure uses to flourish;
- Require developers to provide designated parking spaces for disabled people in accordance with current good practice;
- Where appropriate, introduce on-street parking controls in areas adjacent to major travel generating development to minimise the potential displacement of parking where on-site parking is being limited;
- Require convenient safe and secure cycle parking in development at least at levels consistent with the cycle strategy in the local transport plan; and
- Consider appropriate provision for motorcycle parking.

3.2.28 The Northstowe site has the potential to create patterns of movement which have much less reliance on the private car; thereby contributing towards the delivery of PPG13 objectives.

MANUAL FOR STREETS

3.2.29 Manual for Streets (MfS) was published in March 2007 and supersedes Design Bulletin 32: Places, Streets and Movement. MfS, produced for the Department for Transport (DfT) and the Department for Communities and Local Government (DCLG), provides guidance to a range of practitioners on effective residential street design.

3.2.30 MfS recognises that there is a need to transform the quality of residential streets, and this requires a new approach to their provision. MfS is aimed at any organisation or discipline with an interest in residential streets, ranging from highway engineers to the emergency services. The importance of joint working among practitioners is a key feature of MfS. Its scope is limited to residential and other lightly trafficked streets, although some of its principles may be applied to other road types where appropriate. Streets should not be designed just to accommodate the movement of motor vehicles. A prime consideration is that they meet the needs of pedestrians and cyclists.

MANUAL FOR STREETS 2 – WIDER APPLICATION OF THE PRINCIPLES

3.2.31 The Chartered Institution of Highways and Transportation (CIHT) – have produced the report *Manual for Streets 2 - Wider Application of the Principles (September 2010).* This has been achieved by the CIHT working with the Department for Transport and other members of the transportation industry.

3.2.32 CIHT have stated that "*This new document does not supersede MfS1; rather it explains how the principles of MfS1 can be applied more widely*." This forms a companion guide to MfS1.

3.2.33 MfS2 builds on the guidance contained in MfS1, exploring in greater detail how and where its key principles can be applied to busier streets and non-trunk roads, thus helping to fill the perceived gap in design guidance between MfS1 and the Design Manual for Roads and Bridges (DMRB).

3.2.34 The ethos of MfS 1 and 2 is considered to be essential in the planning for Northstowe It is therefore considered appropriate to apply these standards to both the interface of the Phase 1 development with the B1050 and to the internal roads.

DFT CIRCULAR 02/2007

3.2.35 The Department for Transport Circular clarifies that the "*Agency, on behalf of the Secretary of State for Transport, is responsible for managing and operating a safe and efficient strategic road network.*" (SRN).

3.2.36 The Circular acknowledges that "…*the Agency is responsible for considering the potential impact on the network of proposals for new developments. Part of this remit is to enable the network to support the economic viability and sustainable growth in the regions."* It goes on to state "*Where the assessed traffic flows exceed the capacity of the strategic road(s) concerned… or where safety would be compromised or statutory environmental standards breached*…[they] *may direct that a condition be attached to any planning permission.*"

3.2.37 Whilst the Circular acknowledges that 'safety' is paramount, it suggests that the HA will still expect developers to "…*manage down the traffic impact of their developments.*" In summary the main aim of the Circular is to ensure that the SRN "…*will be no worse throughout the Review Period with the development than if it had not taken place*" otherwise commonly referred to as 'nil detriment'.

3.2.38 The Circular also accepts that "*Under certain circumstances RSSs…may include planning proposals which might increase traffic demands on the affected network above levels that would assure the efficient flow of traffic. In such circumstances, the RSS would need to make clear that development would be subject to mitigation measures agreed by the Agency being put in place to minimise the consequences on the…*" SRN.

Post application discussions had focused on identifying a suitable measure of 'Level of Service' on the SRN.

3.2.39 Where there is a material impact, the onus of the Circular is to "…*identify reasonably practicable highway works or demand management techniques capable of safely and efficiently accommodating…future traffic flows and providing an acceptable standard of service to strategic road users*…" As part of the 2007 outline application post-application discussions had focused on the 'level of service' which might be expected in advance of strategic road network improvements and it is envisaged that this principle will still apply.

GUIDANCE ON TRANSPORT ASSESSMENT

3.2.40 The Guidance on Transport Assessment (GTA) outlines the thresholds when a Transport Assessment is required, the methodology that should be used to agree the scope and the means to judge the area of assessment for future forecast years.

3.2.41 By adopting an agreed approach the GTA outlines "…the type and level of mitigation that will be required." Directing priority towards measures that would contribute towards more sustainable travel patterns, particularly walking, cycling and public transport.

3.2.42 The Guidance identifies an assessment methodology to establish baseline and future forecast travel demand and network capacity and explores the effects of development demand on that network. Where development would exceed capacity, the GTA offers advice on possible mitigation measures. The GTA acknowledges however that physical or environmental constraints may limit potential improvements and therefore mitigation measures "…should provide capacity that is comparable to the general capacity of that part of the network and not…seek to provide a junction with significantly more capacity than the surrounding SRN."

3.3 REGIONAL POLICY

3.3.1 The Localism Bill was enacted in November 2011, thereafter becoming the Localism Act. Different parts of the Act will come into effect at different times over the coming months. The Act enables Regional Spatial Strategies to be abolished, but this will be undertaken by statutory order by the Government in due course (it is currently understood that this will be around March/April 2012), subject to consultation. Whilst the East of England Plan remains part of the development plan until it is formally abolished, the Government has advised that the proposed abolition of Regional Strategies should be regarded as a material consideration by local planning authorities when deciding planning applications. It should therefore be afforded limited weight in the determination of this planning application. Reference is, however, included to relevant policies within the Core Strategy, which takes account of regional policy.

3.4 LOCAL POLICY

CAMBRIDGESHIRE LOCAL TRANSPORT PLAN 3 (LTP3)

3.4.1 LTP3 replaces the previous LTP2, and was formally adopted in March 2011. It covers the period 2011-2026 and contains two main elements, a Policies and Strategy part outlining objectives and strategies to overcome the challenges in the county, and a short term three year Implementation Plan which details programmes for delivery of transport improvements to the network.

3.4.2 The Policies and Strategies part of the plan translates the issues into a set of eight challenges, which are as follows:

- Improving the reliability of journey times by managing demand for road space, where appropriate and maximising the capacity and efficiency of the existing network;
- Reducing the length of the commute and the need to travel by private car;
- Making sustainable modes of transport a viable and attractive alternative to the private car;
- Future-proofing the maintenance strategy and new transport infrastructure to cope with the effects of climate change;
- Ensuring people – especially those at risk of social exclusion – can access the services they need within reasonable time, cost and effort wherever they live in the county;
- Addressing the main causes of road accidents in Cambridgeshire;
- Protecting and enhancing the natural environment by minimising the environmental impact of transport; and
- Influencing national and local decisions on land-use and transport planning that impact on routes through Cambridgeshire.

Provide housing and employment land to meet strategic requirements in sustainable locations

3.4.3 The associated Implementation Plan details funding, county-wide programmes, and monitoring methods, and will be reviewed on an annual basis over its three year period.

SOUTH CAMBRIDGESHIRE DISTRICT COUNCIL (SCDC) CORE STRATEGY DPD (ADOPTED JANUARY 2007)

3.4.4 The Core Strategy replaces the previous Local Plan adopted in February 2004, as part of the government's new legislation for development plans. It holds a vision for South Cambridgeshire for which new developments must meet a set of targets and objectives. Inter alia, these are:

- To provide an adequate and continuous supply of land for housing and employment, to meet strategic requirements, in sustainable locations;
- To locate development where access to day-to-day needs for employment, shopping, education, recreation, and other services is available by public transport, walking and cycling thus reducing the need to travel, particularly by private car;
- To create a sustainable small new town close to but separate from the villages of Longstanton and Oakington connected to Cambridge by a high quality rapid transit

Improve journey times by managing demand for road space.

system along the route of the disused St Ives railway. The new town will make best use of previously developed land; and

- To provide and enable provision of enhanced infrastructure to meet the needs of the expanded population.

DEVELOPMENT CONTROL POLICIES DPD (ADOPTED JULY 2007)

3.4.5 As part of the Local Development Framework, the Development Control Policies were adopted in July 2007 and cover the period up to 2016. With regard to transport, the key objectives are derived as part of policies on Development Principles, Economy & Tourism, and Travel.

3.4.6 The objectives set out in the Development Principles section have been derived with the aim to "achieve attractive, high quality sustainable places where people want to work, live and relax". Inter alia, these are:

- To ensure essential infrastructure is provided appropriately (Policy DP/a);
- To ensure all new development makes appropriate provision of services and infrastructure to meet its needs (Policy DP/f).

That all development proposals provide, as appropriate to the nature, scale and economic viability:

- appropriate access from the highway network that does not compromise safety, enhanced public and community transport and cycling and pedestrian infrastructure;
- Car Parking, with provision kept to a minimum; and
- Safe and secure cycle parking.

3.4.7 Policy DP/3 maintains that planning permission will not be granted where the proposed development would have an unacceptable adverse impact from traffic generated. Policy DP/4 states that new developments must ensure suitable arrangements for the provision of infrastructure are made.

3.4.8 In relation to Construction Management, Policy DP/6 states that developments should commit to restricted hours of noisy operations, prepare a 'Resource, Re-use and Recycling Scheme' and agree gain prior approval as to sections of the local highway will be used for haul roads.

3.4.9 Transport objectives contained in the Economy & Tourism section, SCDC aim "to reduce commuting distances and the need to travel, particularly by car, by bringing home and workplace closer together, and by encouraging employment opportunities in accessible locations, or accessible by sustainable modes of travel".

3.4.10 The objectives set out in the Travel section are focussed around the aim "to promote more sustainable travel choices, to improve access to major trip generators by non-motorised modes, and to reduce the need to travel, especially by car". With these challenges in mind, SCDC seek:

- "To provide a transport system that meets the needs of the economy **(TR/a)**;
- To reduce the need to travel, and where travel is unavoidable, to increase the use of sustainable modes **(TR/b)**;

- To promote the use of more sustainable modes of travel such as public transport, community transport, walking and cycling by making such modes more integrated, highly accessible, safer and more attractive to use **(TR/c)**;
- To promote sustainable travel by ensuring new development takes place in locations with, or with potential for, good accessibility by non-motorised modes to facilities and services and ensuring provision for all transport modes **(TR/d)**;
- To minimise the amount of car parking provided in new developments, within the context of maximum parking standards, compatible with its location and availability of alternative transport modes, to avoid over-reliance on the car **(TR/e)**;
- To promote a healthy lifestyle through travel choice **(TR/f)**;
- To reduce the environmental impact of travel, to conserve energy and reduce air pollution by limiting the growth in road traffic **(TR/i)**; and
- To provide transport proposals that protect or enhance the built and natural environment. **(TR/j)**"

3.4.11 Policy TR/1 (Planning for More Sustainable Travel) states that:

- New developments will not gain planning permission if there is to be a material increase in travel demands and insufficient levels of accessibility by non-car modes;
- The Council will seek to ensure every opportunity is taken to improve accessibility to non-motorised modes by:
    - securing appropriate public transport improvements
    - securing design proposals which promote integrated travel and access by non-motorised modes
    - minimising the amount of car parking provision in new developments
    - ensuring new developments are located and designed with permeable layouts to facilitate walking, cycling and public transport interchanges
    - requiring safe and secure cycle parking
- The LTP road user hierarchy will be taken into account to ensure adequate emphasis is placed on the relevant modes.

Development should minimise the adverse effects of travel demand through the delivery of adequate integrated transport infrastructure and travel plans

3.4.12 Policy TR/2 states that Car Parking should be provided in accordance with maximum standards and for some locations where accessibility is good, the Council will seek to reduce the permitted level of car parking for new developments. Revisions to PPG13 and PPS4 both post-date the policy. These revisions accept at a national level, that some flexibility may be appropriate to deliver high quality development. Discussions with SCDC have indicated that they would wish to see some flexibility with parking to ensure that it is appropriate for the type of housing, the proposed phasing and the overall sustainable aspirations for Northstowe.

3.4.13 In relation to mitigation, Policy TR/3 states that new developments should minimise impact on levels of travel, noise and pollution through providing adequate integrated transport infrastructure. Transport Assessments and Travel Plans will be required for all major developments, with the Travel Plan having measurable outputs related to targets or aims in the LTP, and providing monitoring arrangements.

3.4.14 In support of Non-Motorised Users (NMUs), SCDC seek to ensure that all new developments are located and designed to facilitate and encourage short distance trips between home, work, schools and for leisure, in accordance with Policy TR/4.

NORTHSTOWE AREA ACTION PLAN (ADOPTED JULY 2007)

3.4.15 The Northstowe Area Action Plan (NAAP) provides site specific policies for the areas of land developed for Northstowe. Policies relating to the provision of transport at Northstowe are set out in Section D7, and consider the necessary components of providing sustainable and efficient transport networks.

Northstowe should provide a Guided Busway through the development, ensuring distances to stops are within easy walking distances

3.4.16 The provision of road infrastructure is discussed in **Policy NS/10**. The approval of Northstowe will require adequate highway capacity on the surrounding highway network; this includes the A14 corridor between Bar Hill and Cambridge.

3.4.17 Additional highway links which **Policy NS/10** requires for the whole of Northstowe include the following:

- An improved Hatton's Road from the A14 or its parallel distributor road and a new road into the southern end of Northstowe;
- A new access from the proposed Longstanton West Bypass/ Station Road, Longstanton into the northern end of Northstowe;
- A new road from the A14 or its parallel distributor road in the vicinity of the existing Dry Drayton junction into the southern end of Northstowe; and
- An emergency access from the Cottenham direction.

3.4.18 The need for a bypass at Willingham is to be assessed by CCC and if required contributions could be sought from developers.

3.4.19 **Policy NS/11** considers alternative transport modes. The Cambridgeshire Guided Busway and other bus services will provide public transport within Northstowe. The whole development is required to be within 400m walking distance of general bus stops and 600m easy walking distance of the dedicated local busway. To support the operation of these services, an initial subsidy to residents for a 12 month period after occupation should be provided.

3.4.20 To promote the use of non-motorised modes **Policy NS/11** states that cycle parking should be provided in line with the minimum standards set out in Appendix 2 of the DPD.

3.4.21 For non-motorised modes, public rights of way (PROW) routes are encouraged between Northstowe and cycle network route 51. Existing foot, cycle and bridleways should be widened where possible. New links are also encouraged between Northstowe and villages within a 5km radius.

4 Existing Conditions

4.1 INTRODUCTION

4.1.1 The whole Northstowe site is identified in the Northstowe Area Action Plan. The primary area of this Phase 1 development is shown in Figure 1. It is located to the north east of Longstanton and near the villages of Over, Willingham, Rampton and Oakington. To the north of the site there is the recently opened Cambridgeshire Guided Busway (CGB) and CGB Park and Ride site. The application also includes some isolated areas on Hatton's Road to the south of Longstanton. These are for attenuation ponds associated with the primary development which do not have any transport implications.

4.1.2 The site incorporates an 18 hole golf course and agricultural land. Generally the site is in a rural location although the presence of the A14 means that an Air Quality Management Area (AQMA) was declared on both sides of the A14 between Bar Hill and Impington in July 2007.

4.1.3 The site is approximately 10km north west of the centre of Cambridge. The northern border of the site is formed by the CGB which has unoccupied land to its north. To the east of the site there is rural land, with Rampton Road approximately 200m beyond and then the former airfield, although this area will eventually be incorporated into Northstowe. The south-western border of the site is the existing settlement of Longstanton, with residential buildings and a school backing onto the site.

4.1.4 At the north west the site is bordered by the B1050, Station Road, which runs from the north of Cambridgeshire south to the A14. On the western side of Station Road there is a small area of Phase 1 development and then more open land which, according to the NAAP, can eventually form part of Northstowe. Junction 29 of the A14 is situated just under 4km south of the site near Bar Hill.

4.1.5 Figure 2 identifies local community facilities close to the development identifying a range of land uses. Accessibility is examined further in Section 5 whilst connecting infrastructure is reported below. Further details on the existing transport network conditions around the site and the wider connections are outlined below.

4.1.6 However it is important to note that the existing conditions will be significantly improved through facilities to be provided as part of the development. For example, the inclusion of a primary school, employment uses, local centre and sports hub will all reduce the need to travel by car. The layout of the development will maximise links to these facilities for non-car modes of transport.

4.2 NON-MOTORISED USERS (NMU)

4.2.1 This Section summarises the existing conditions for non-motorised users (NMUs) in the vicinity of the Phase 1 development, in particular, the facilities and conditions for pedestrians, cyclists and equestrians.

4.2.2 In addition to facilities for NMUs around the highway environment, there are a number of public footpaths, bridleways and byways within the site and the surrounding area as identified in Figure 3. These Public Rights of Way (PROW) currently provide opportunities for healthy exercise, sustainable transport and recreation for pedestrians, equestrians and cyclists in the existing surrounding communities. These routes, and those provided in the highway context, are all considered below.

4.2.3 The IHT cycle audit guidelines have been used as a consistent approach to assessing the quality of each key NMU route. The assessment scoring methodology has been reproduced in Table 4.1 and this shows that a high score means that the link is deemed to be a good quality and a low score means it is less attractive for users.

Table 4.1: NMU Level of Service (LOS)

LOS	Score	Typical traffic characteristics	Likely road/NMU route
A	81-100	Little or no motor traffic, low speeds good passing width; no significant conflicts; good riding surface; lit good social safety	High quality NMU route; well surfaced minor rural road; 20 mph limit urban road
B	61-80	Light / moderate traffic flows; good / adequate passing width; few conflicts; good riding surface	Minor road; well surfaced but unlit NMU route
C	41-60	Moderate traffic flows; 85th %ile speeds around 30 mph: adequate passing width; some conflicts (not major)	Minor road / local distributor
D	21-40	Busy traffic HGV/buses; speeds around 40 mph	Urban single carriageway; poor quality NMU route
E	1-20	Heavy traffic flows; speeds >40 mph; HGVs	Dual c/w speed limit 40 mph or higher, large roundabouts
F	>0	Heavy traffic flows, HGVs; speeds >60 mph, narrow lanes; unlit	Narrow rural single c/w or dual c/w, grade separated junctions

LOS = Level of service

Source: IHT Cycle Audit Guidelines

4.2.4 The existing key infrastructure is shown in Figures 3, 4 and 5 which identify existing pedestrian and cycle routes, highlighting links to settlements close to Northstowe. Table 4.2 below demonstrates that existing provision for non-motorised users is discontinuous on most corridors, although some settlements benefit from both highway NMU and PROW links. However, Over and Swavesey do not currently have any continuous links to the Northstowe site for NMUs and the bridleway to Bar Hill employs some short on-road connections and is less suitable for some NMUs.

Table 4.2: Summary of Existing NMU and PROW Links from Northstowe

Destination	Approximate Distance from Site Perimeter	Existing Provision (tick indicates a direct route)			
		Highway NMU provision	Footpath	Bridleway	Byway
Longstanton	Adjacent to site	✓	✓	-	✓
Rampton	1.5 km	-	-	-	✓
Oakington	2.5 km	✓	✓ (disused)	✓ (disused)	-
Willingham	2 km	✓	-	-	-
Over	3 km	-	-	-	-
Cottenham	3.5 km	✓	-	-	✓
Swavesey	3.5 km	-	-	-	-
Bar Hill	3.5 km	-	-	-	-
Histon/Impington	4 km	✓	✓	✓	-
Girton	5 km	✓	✓	-	-

4.3 PEDESTRIANS

4.3.1 In terms of promoting walking, both as a sustainable means of transport, and of achieving a living streetscape, the public realm should provide an attractive walking environment in which it is easy and safe to walk directly to one's destination.

4.3.2 The assessment methodology for walking routes within this Transport Assessment is based upon the IHT publication *Guidance for Providing for Journeys on Foot*. The methodology scores each route, or part route on a series of elements summed up by the so-called '5 C's', which were first propagated by the London Planning Advisory Committee. These state that a good pedestrian environment should be:

- Connected (providing a comprehensive network),
- Convenient (direct routes without detours),
- Comfortable (good surface, width, lighting etc.),
- Convivial (encouraging interaction and improving personal security),
- Conspicuous (legible routes with good signing).

4.3.3 In general terms, particularly bearing in mind the PPG13 policy context, it is considered that a 2km walking catchment, measured as a crow-fly distance from the site boundary, represents a realistic walking catchment for Northstowe. This catchment includes the following settlements:

- Longstanton,
- Rampton,
- Parts of Willingham.

4.3.4 Corridors of pedestrian demand are therefore identified between each of these settlements and the Phase 1 development. The existing conditions relating to each of these corridors are shown below.

4.3.5 Significant additional routes exist within the 2km catchment which, whilst not representing important origin-destination based desire lines, have significant potential for use as walking routes for leisure purposes from Northstowe.

4.3.6 The importance of walking as a leisure and health activity is widely recognised, and it is important that high quality leisure walking opportunities are provided for Northstowe residents, both on site and off site. Therefore, all existing routes which fall within the 2km walking catchment have been surveyed to ascertain the existing conditions and improvements identified where appropriate within the transport strategy.

4.3.7 Included in the route assessments are dedicated footpaths and PROW further afield, in order to account for potential leisure journeys. This includes the following routes which are shown on the catchment assessment plan, see Figure 3.

- Longstanton public footpath (from St Michael's Lane to Station Road);
- Longstanton to Rampton PROW (from Rampton Road to Cuckoo Lane);
- Rampton to Histon PROW; and
- Oakington to New Close Farm/Hatton's Road PROW.

Public Footpath adjacent to Magdalene Close

LONGSTANTON

4.3.8 Pedestrian conditions in Longstanton are generally good with footways provided on all streets and traffic calming on the High Street. Similar provision is present on Rampton Road, providing one of the main routes into the Northstowe site.

4.3.9 Additionally the public footpath from St Michael's Lane to the south-east of Longstanton, across Rampton Road and through the golf course to Station Road north of the village, provides a route adjacent to the new development. This route is off-road, unsurfaced and narrow through stiles and other access barriers.

4.3.10 There is an existing link via a PROW running from the end of Rampton Road to Rampton village, which crosses the CGB line. On the Longstanton side of the CGB line the path is unsurfaced. The section to the east of the line is similarly unsurfaced and suitable for use as a leisure route. The path is a reasonable width (about 2m) throughout. There is no footway where the PROW emerges onto Cuckoo Lane although the road is a dead end providing vehicular access only to a breakers yard.

Rampton PROW at Cuckoo Lane

RAMPTON

4.3.11 Pedestrian conditions in Rampton are generally good albeit Cuckoo Lane does not provide a footway.

4.3.12 The Rampton to Histon PROW links to the Longstanton route from Cuckoo Lane and runs through farmland south of Rampton, crossing Oakington Road halfway between Oakington and Cottenham. It is unsurfaced but reasonable in width (greater than 2m for much of its length). This route is likely to be used for leisure purposes only.

WILLINGHAM

4.3.13 Access to Willingham for all non-motorised modes is via the B1050 corridor. This corridor does not have a continuous footway along the section from the end of the High Street to Station Road where it crosses the CGB line. Traffic flows are relatively high along this route making it less attractive.

SUMMARY

4.3.14 In order to quantify the existing conditions for pedestrians on the relevant corridors all the above routes have been audited using the methodology set out in G*uidance for Providing Journeys on Foot* and scored in accordance with Table 4.1 of this TA, where a Level of Service of A is a high quality route (i.e. little motor traffic and good surface) and a value of F is poor (i.e. heavy traffic flows on rural roads or dual carriageways). Table 4.3 summarises the results of this audit process.

Table 4.3: Pedestrian Audit Results

Pedestrian Corridor	Pedestrian Audit Score	Level of Service
Longstanton: on street links	27	D
Longstanton PROW	27	D
Rampton	23	D
Willingham	19	E

Source: Consultant Calculated

4.3.15 It can be seen from the above table that existing conditions to and through Longstanton are relatively good, given the rural nature of the site, although the score for the on street links is reduced because of the busy B1050 and the PROW route is lower as it is unsurfaced. The other corridors score less well due to the reasons outlined below:

- Rampton: this route scores moderately well, but is let down by the poor existing surface conditions.
- Willingham: the Willingham corridor is the only one reviewed which consists mainly of narrow or discontinuous footways next to a live road. It therefore scores lower due to the impact of traffic on the B1050.

4.4 CYCLING

A number of junctions between Longstanton and Bar Hill do not present a cycle-friendly design.

4.4.1 As outlined above the IHT cycling audit guidelines have been adopted to assess the provision around the site.

4.4.2 Cycling facilities were assessed to key destinations around Northstowe using existing highway infrastructure as well as any alternative routes offered by dedicated cycleways and PROWs. This includes the routes linking Northstowe with Longstanton and the surrounding villages, as well as key destinations further afield such as Cambridge.

Longstanton High Street: conditions are relatively good for cyclists, with low traffic speeds assisted by some existing traffic calming

4.4.3 Routes linking Northstowe with surrounding villages have been identified as providing infrastructure for cycle journeys, see Figure 5. Distances to some of the destinations shown on Figure 3, are in excess of what might normally be considered a 'reasonable cycling distance' for assessment purposes. However, it is important to recognise that the topography and existing 'cycling culture' in Cambridgeshire (particularly in the areas surrounding Cambridge) means that cycling is likely to be a realistic option, particularly for commuting trips, to a number of destinations outside the standard 5km catchment. In addition to the more direct links, the cycle provision map on Figure 3 has included existing PROW, bridleways and byways with a view to potential leisure trips associated with the development.

4.4.4 Conditions for cyclists within Longstanton itself are generally good. Traffic flows are relatively light on Longstanton High Street, and the traffic speed is managed by traffic calming. Lane widths are adequate and a route is signed as part of the National Cycle Network.

4.4.5 The Cambridgeshire Guided Busway (CGB), for which the public transport aspect will be detailed below, boasts an adjacent bridleway. For much of its length it provides a wide smooth blacktop surface which offers a traffic free cycling super highway forming National Cycle Network Route (NCN) 51. The route runs along the northern perimeter of the site, heading east to Westwick/Oakington, Histon and Cambridge, and west to the Longstanton Park & Ride site, Swavesey and then unsurfaced to Fen Drayton Nature Reserve and St Ives Park & Ride stop. Most stops along the guided section of The Busway provide covered, well lit and CCTV monitored cycle parking, providing an ideal opportunity for cyclists to both commute to work, or to use this route for leisure purposes.

Advance stop lines are provided on the National Cycle network route at Oakington cross roads

4.4.6 NCN24 also provides a link for cyclists from Longstanton to Cambridge, via Oakington and Girton. Conditions for cyclists within Oakington itself are generally good and traffic volumes are considered to be acceptable. This route utilises a shared use footway / cycleway between Oakington and Girton. At Girton, although the route moves onto the carriageway, traffic must abide by a 30mph limit which is complemented by a traffic calming scheme. The heavily utilised route continues through to Cambridge, generally functioning well and providing a safe environment for cyclists with the context of a busy radial corridor. All elements of this route are rated as service level C under the service level assessment.

Vehicle speeds are high on the B1050 between Longstanton and Bar Hill, with no dedicated facilities for cyclists

4.4.7 Cycle routes to other surrounding villages such as Histon, Impington, Bar Hill, Rampton, Cottenham, Willingham, Over and Swavesey, have all been included in the assessment of cycle provision. Cycle routes and their assigned grades can be found on Figure 3.

4.4.8 All the above routes have been audited again using Table 4.1 in order to quantify the existing conditions for cyclists on the relevant corridors. Table 4.4 summarises the results of this audit process. As each link within each corridor is audited separately, the figures quoted in Table 4.4 are average figures for each corridor.

Table 4.4: Cycle Audit Results

Cycle Corridor	Average Cycle Audit Score	Level of Service
Longstanton (Adjacent to site)	28	D
Rampton (1.5 km)	17	E
Oakington (2.5km)	42	C
Willingham (2.5km)	34	D
Over (3 km)	8	E
Cottenham (3.5 km)	12	E
Swavesey (3.5 km)	24	D
Bar Hill (3.5 km)	15	E
Histon (4 km)	41	C
Impington (4 km)	41	C
Girton (5 km)	43	C
Cambridge (7 km)	43	C

*

4.4.9 It can be seen from the above table that a considerable amount of variability exists in the conditions on the existing cycle corridors. The routes to Cambridge, Girton, Histon/Impington and Oakington all have a good score of 40 or above. However, other corridors are less well served, with the routes to Bar Hill and Over being poor.

4.5 PUBLIC TRANSPORT

4.5.1 Existing bus services are identified on Figure 6 and summarised below.

4.5.2 The primary existing form of public transport near the site is provided by buses running on the CGB. The only other bus route in the vicinity of the site is Citi 5. Tables 4.4 to 4.6 summarise the details of these bus services.

Table 4.4: Existing Bus Services – Monday to Friday (Except Bank Holiday)

Route No	Operator	Route Description	Daytime frequency and first and last departures*
A / B Alternating services A & B during day Service B only during evening	Stagecoach in the Fens	Trumpington P&R – Addenbrooke's – Central Cambridge – St Ives - Huntingdon	Day Services (Every 10mins) First Bus 0558 Last Bus 1901 Evening Services (Hourly) First Bus 1843 Last Bus 2336
C / D Service D on early morning services only	Whippet Coaches	Cambridge Rail Station – Central Cambridge – Longstanton – St Ives	Day Services (Hourly) First Bus 0653 Last Bus 1840
Citi 5	Stagecoach	City Centre – Girton – Bar Hill – Longstanton – Willingham – Over – Swavesey – Fenstanton – St Ives	Day Services (every 20 mins to Bar Hill, hourly to St Ives) First Bus 0605 Last bus 2305

*First times are departure times from Longstanton or nearest point. Last times are from Cambridge

Table 4.5: Existing Bus Services – Saturdays

Route No	Operator	Route Description	Daytime frequency and first and last departures*
A / B Alternating services A & B during day Service B only during evening	Stagecoach in the Fens	Trumpington P&R – Addenbrooke's – Central Cambridge – St Ives - Huntingdon	Day Services (Every 10mins) First Bus 0718 Last Bus 1901 Evening Services (Hourly) First Bus 1843 Last Bus 2336
C / D Service D on early morning services only	Whippet Coaches	Cambridge Rail Station – Central Cambridge – Longstanton – St Ives	Day Services (Hourly) First Bus 0743 Last Bus 1840
Citi 5	Stagecoach	City Centre – Girton – Bar Hill – Longstanton – Willingham – Over – Swavesey – Fenstanton – St Ives	Day Services (every 20 mins to Bar Hill, hourly to St Ives) First Bus 0605 Last bus 2305

*First times are departure times from Longstanton or nearest point. Last times are from Cambridge

Table 4.6: Existing CGB Bus Services – Sundays

Route No	Operator	Route Description	Daytime frequency and first and last departures*
A / B Alternating services A & B during day Service B only during evening	Stagecoach in the Fens	Trumpington P&R – Addenbrooke's – Central Cambridge – St Ives - Huntingdon	Day Services (Every 20mins) First Bus 0853 Last Bus 1740
C / D Service D on early morning services only	Whippet Coaches	Cambridge Rail Station – Central Cambridge – Longstanton – St Ives	Day Services (Hourly) First Bus 0903 Last Bus 1740
Citi 5	Stagecoach	City Centre – Girton – Bar Hill	Day Services (every 20 mins) First bus 0928 Last bus 1805

*First times are departure times from Longstanton or nearest point. Last times are from Cambridge

4.6 CAMBRIDGESHIRE GUIDED BUSWAY

4.6.1 As introduced earlier, the CGB line which opened in August 2011 has been built along the disused railway line from St Ives Park & Ride to Trumpington Park & Ride, offering an attractive alternative to the private car. The CGB itself is traffic-free, but is extended in parts to follow an on-road route through central Cambridge, St Ives and Huntingdon, utilising bus priority measures such as new bus lanes and bus priority traffic signals. This makes these destinations convenient to access.

4.6.2 The CGB provides commuters and those looking to reach local facilities with a high quality, comfortable journey. Bus services provided along the Busway route are frequent and reliable since there is no general traffic to contend with. All services stop at Longstanton Park & Ride, which is adjacent to the northern perimeter of the Northstowe site, making these services easily accessible to new residents.

4.6.3 Although the frequency of the service means that passengers are able to arrive at a stop and get on a bus within 10 minutes during peak times, all CGB stops feature real time travel information boards. Bus stops are also well-lit and feature raised platforms reached by ramps making accessibility for wheelchair users and people with pushchairs much easier.

4.7 RAIL NETWORK

4.7.1 The nearest railway station to the site is Cambridge station, which is located approximately 14km south-east. The station is operated by National Express East Anglia. Patronage at the station in the year 2009/10 was approximately 7.7 million passengers which represented an increase of 26% when compared with five years previously.

4.7.2 Cambridge station is staffed 24 hours a day, seven days a week. The ticket office is open from 05:00 until 23:00 during the week and there are also self-service machines available. The station has a number of accessible facilities for people with impaired mobility and eight of the 435 spaces in the station car park are for disabled use only.

4.7.3 Cycle parking is provided at the station, and this includes 20 secure storage lockers.

4.7.4 Services from the station provide frequent coverage to a range of destinations. These include:

- London Kings Cross;
- London Liverpool Street;
- Ipswich;
- Stansted Airport;
- Leicester;
- Birmingham New Street; and
- Norwich.

4.7.5 A breakdown of the services to these destinations in peak time and the associated journey times is shown in Table 4.7 below.

Table 4.7: Summary of Cambridge Rail Station (direct) Services

To (AM) / From (PM)	Frequency		Journey Time (min)
	AM Peak	PM Peak	
London Kings Cross	2	2	49
London Liverpool Street	3	4	76
Ipswich	1	1	81
Stansted Airport	1	1	29
Leicester	1	2	107
Birmingham New Street	1	1	158
Norwich	1	1	79

Source: National Rail Enquiries

4.7.6 An alternative local station is available at Waterbeach, approximately 16km east of the site. It attracts around 0.25M passengers per year and offers services to destinations including London Kings Cross and Kings Lynn.

4.7.7 Huntingdon rail station is situated approximately 21km north-west of the site. It offers twice hourly services to Peterborough and London Kings Cross.

4.8 HIGHWAY NETWORK

4.8.1 The existing road network surrounding the site is shown on Figure 7. The proposed development will have an impact on the surrounding highway network; therefore a comprehensive review of the local and wider highway network has been undertaken.

A14 CORRIDOR

4.8.2 The A14 is the most significant strategic road for Northstowe, lying approximately 2km to the south of the site. In the vicinity of the site the A14 is formed of three lanes of traffic in both an eastbound and westbound direction from the M11 interchange at Girton (Junction 31) to Bar Hill (Junction 29). To the west of Bar Hill the A14 reduces to two lanes in each direction up to the A1 at Huntingdon. The road is subject to the national speed limit of 70mph and the speed limit in the area of the development is now enforced with average speed cameras known as SPECS.

4.8.3 For longer distance trips the A14 Trunk Road serves the east coast and the Midlands, the M11 provides access to London and A428 Trunk Road runs to the west to Bedford and the M1.

4.8.4 Journey time reliability on the A14 corridor can be variable, but only some sections experience congestion and delay due to traffic volumes. The A14 is currently operating *close to capacity* between Girton and Milton, with other parts operating close to theoretical capacity on sections near Swavesey and further east. It is therefore reasonable to state that the 'general capacity' of the A14 corridor is constrained and therefore any potential improvements should be planned at a strategic level.

The 'Airfield Road' is a *private road* with private rights of access and some permitted public rights for non-motorised vehicles.

LONGSTANTON

4.8.5 The existing roads around Longstanton and Oakington form the local highway network. The B1050 Hatton's Road serves, but now bypasses, the village of Longstanton on a broadly north south alignment from the A14 Bar Hill interchange. Hatton's Road is generally a below standard carriageway with widths less than 7m with a derestricted speed limit and no street lighting.

4.8.6 The B1050 Longstanton Western Bypass has been constructed and was opened in December 2008. The new section of the B1050 continues north, bypassing Longstanton to the west and providing access to Swavesey, Over and Willingham. The Bypass removes over 7,000 vehicles per day from the old B1050 which ran through the centre of the village, relieving much pressure on the local highway.

4.8.7 From its junction with the newly constructed Bypass, Hatton's Road continues on a north east alignment towards Longstanton High Street. On the approach to Longstanton High Street the speed limit is reduced to 30mph, and this is emphasised with edge of carriageway markings. From its junction with the Colesfield residential area, footpaths and street lighting are provided along both sides of the carriageway, and these connect with those provided on Longstanton High Street.

4.8.8 The High Street is a well-lit single carriageway generally 6m wide. There are footpaths of between 1m and 2m along both sides of the carriageway providing access between the numerous residential areas and the local retail provision on the High Street. The speed limit remains at 30mph for the length of the High Street and is reinforced by traffic calming measures in the form of speed humps.

4.8.9 At its most southerly point the High Street forms a staggered cross roads with School Lane, Woodside and Rampton Road. Woodside and Rampton Road are local roads which provide access for vehicles and pedestrians to the residential areas. The roads are generally about 5m wide south and east of Longstanton. School Lane returns west as a below standard width single carriageway to form the minor arm of a priority junction with Hatton's Road. On School Lane street lighting and pedestrian facilities are provided on both sides of the carriageway from its junction with the High Street, west to its junction with Stokes Close.

4.8.10 Further north the High Street joins the end of the new Bypass and continues as Station Road through a more rural setting, with reduced lighting and derestricted vehicle speeds. Approximately 600m north of the village the 7m wide single carriageway road turns through a 90 degree bend known locally as Crabtree Corner and then continues to a new signal junction with the CGB Park and Ride site and then a signalised crossing over the CGB.

4.8.11 Until the Second World War the B1050 passed though Longstanton and Oakington, linking the villages to the north with Cambridge, joining the A14 (now A1307) at Girton College. With the construction of the Oakington Airfield, the road was closed to public use and the B1050 was then diverted to join the A14 at Bar Hill as it is today.

4.8.12 The Airfield Road remains as a 'private road' in the control of the HCA, one of the joint promoters, However by historic use it preserves a public right of way and as such it now has a traffic regulation order which prevents use by motorised vehicles except for access.

4.8.13 Despite these arrangements the road is used by a number of vehicles as it is a route from the west to Cambridge which avoids the A14.

WILLINGHAM

4.8.14 From the CGB crossing on Station Road, north of Longstanton, the B1050 continues north to Willingham with a shared pedestrian and cycle route on the east side. Within Willingham a well-lit signalised crossroads between Station Road, Berrycroft Road, Over Road and Willingham High Street is provided. On each arm of the junction advance cycle stop-lines and anti-skid surfacing are provided and there is a full pedestrian crossing stage at the signals. Similar to Longstanton, vehicle speeds within Willingham are reduced to 30mph and pedestrian footpaths are generally provided on both sides of the carriageway throughout the village.

SWAVESEY

4.8.15 The B1050 Longstanton Western Bypass Bypass meets Ramper Road at a 3-arm roundabout. Ramper Road leads west to Swavesey, passing over a crossroads with Over Road which leads to Over in the north. Continuing along Ramper Road, the road is unlit with derestricted vehicle speeds.

4.8.16 Upon entrance to Swavesey, the speed limit reduces to 30 mph and street lighting commences. At a 3-arm priority junction, a right turn due north can be taken into Swavesey village on Middle Watch, while a left turn onto Boxworth End leads to Bucking Way Road linking Swavesey with Junction 28 of the A14 and Cambridge Services.

OAKINGTON

4.8.17 In Oakington there is a traffic signal crossroads at the junction of Dry Drayton Road and Water Lane. To the south of this junction there is another rural C class road which leads to the village of Girton. This road then passes under the A14 to join the A1307 Huntingdon Road into Cambridge. Segregated cycle provision is provided along the east side of Oakington Road towards Girton.

4.8.18 Dry Drayton Road provides the primary route for local traffic travelling from Madingley, Dry Drayton and the A14 Dry Drayton interchange north towards the villages of Oakington and Cottenham. Vehicle speeds are derestricted from the Dry Drayton interchange. However, on the approach to Oakington village the 6m wide single carriageway becomes Water Lane and the speed limit is reduced to 30mph. A number of residential properties front Water Lane through Oakington. At the north of the village Water Lane becomes Station Road and there is an existing gated access road to the airfield site.

COTTENHAM

4.8.19 Station Road continues north of Oakington village, through Westwick, in a north east alignment and becomes Oakington Road as it leads into Cottenham. This is generally a 6m wide single carriageway road which is bound on either side by grass verges. A number of agricultural and private accesses are located along the length of Oakington Road. No dedicated provisions for pedestrians or cyclists are provided and vehicle speeds are derestricted between Westwick and Cottenham.

4.8.20 Within Cottenham there is generally a 30mph speed limit which is reinforced by 'traffic management' measures, particularly on the entry to the village.

4.8.21 From Cottenham there are a number of roads radiating out to Rampton (Rampton Road), Wilburton, Landbeach, Histon and Impington. These are rural C class roads except for the B1049 Cottenham Road which is a secondary rural road which runs from Wilburton to Histon and then Cambridge.

DRY DRAYTON INTERCHANGE (JUNCTION 30)

4.8.22 Travelling west from the Girton interchange, the Dry Drayton interchange provides access from Oakington to the A14 and from Dry Drayton to the south of the A14. The interchange features a compact grade separated junction where access to the A14 towards Cambridge can be taken directly from the Oakington approach and to the A14 towards Huntingdon via the southern approach from Dry Drayton.

4.8.23 To the north of the interchange, a priority T-junction gives access onto the A14 to Cambridge via the minor arm. Continuing through the interchange and over the A14 leads to the minor arm of another priority T-junction, where a right turn leads onto the A14 to Huntingdon and a left turn leads south into Dry Drayton. Visibility at both junctions is good and vehicle speeds are derestricted.

BAR HILL INTERCHANGE (JUNCTION 29)

4.8.24 At the Bar Hill Interchange, a compact grade-separated junction facilitates direct access to the A14 towards Cambridge from the B1050 Longstanton approach in the north via a 3-arm roundabout, and to the A14 towards Huntingdon from the Bar Hill approach in the south via a 5-arm roundabout.

4.8.25 The southern five arm roundabout links the A14 with east and west routes into Bar Hill. For traffic from the southeast and M11 continuing through the Bar Hill Interchange on the A14 towards Huntingdon, the carriageway drops a lane where traffic leaves at the junction. After the Interchange, traffic joins the A14 but the slip road ends and the carriageway remains as two-lanes.

4.8.26 The northern three arm roundabout was constructed in recent years. It includes dedicated left turn slip roads although, from site observations, these are little used because of their design which restricts speeds.

TRINITY FOOT INTERCHANGE (JUNCTION 28)

4.8.27 Further west, the A14 continues as a two-lane carriageway to the Trinity Foot Interchange. At the compact grade-separated junction, the northern approach has a priority T-junction where the major arm leads directly onto the A14 towards Cambridge, and the minor arm links with the 4-arm roundabout at the southern approach. This roundabout also provides access to and from the A14 westbound, south to the village of Boxworth and to Cambridge Services.

4.8.28 Cambridge services offer petrol, a hotel and fast food refreshments, and can accommodate cars, lorries, coaches and caravans.

4.9 HIGHWAY SAFETY

4.9.1 Historic Personal Injury Accident (PIA) data has been obtained from Cambridgeshire County Council (CCC). The extent of highway covered in the study area includes the following links which are shown graphically on the PIA request plan contained in Appendix A and on Figure 8:

- A14 from Junction 28 to 30;

- Bucking Way Road / Boxworth End, from Junction 28 of the A14 to its junction with Ramper Road in Swavesey;
- Ramper Road and B1050 from Swavesey to the B1050 Station Road roundabout;
- Rampton Road between Willingham and Cottenham;
- Oakington Road and Dry Drayton Road between Cottenham and Junction 30 of the A14;
- Hatton's Road between Ramper Road and Junction 29 of the A14; and,
- Longstanton Road between Station Road and Dry Drayton Road.

4.9.2 It should be noted that the current CCC data policy means that accident descriptions are no longer issued as part of their data outputs as this information is viewed as opinion rather than fact. This reduced information requires a greater level of interpretation of potential contributory factors that might reveal opportunities to remove, reduce, or mitigate future casualties. Older data includes a little more description which enables some comments to be made. Consequently the data for the most recent period (01/01/2008 to 04/08/2011) is presented in detail and data for an earlier three year period is summarised.

SUMMARY OF OLDER ACCIDENT DATA

4.9.3 Analysis of accident data before 2008 reveals 194 accidents occurred on the highway network surrounding the site. Of the 194 accidents, the majority of accidents (85%) were slight accidents, approximately 13% were serious and a further 2% were fatal.

4.9.4 Vulnerable users were involved in 54 of the 194 accidents. Of the 54 accidents 22 involved cyclists, 21 involved motor cyclists and 11 involved pedestrians. Generally accidents recorded within the villages of Cottenham and Willingham involved all types of vulnerable uses, whilst those recorded on surrounding link roads tended to involve cyclists or motorcyclists.

4.9.5 Clusters of recorded accidents can be identified along the length of the A14, the Bar Hill and Dry Drayton interchanges and within the villages of Longstanton and Willingham. Of the four fatal accidents recorded, one occurred at the Dry Drayton interchange, one occurred in Willingham and two occurred close to Cottenham.

4.9.6 At the Dry Drayton interchange the fatal accident was a shunt type accident. The accident occurred between a cyclist and an HGV at the approach to the Dry Drayton eastbound slip road. One serious accident and ten slight accidents were also recorded at the Dry Drayton interchange. These accidents tended to be a result of traffic turning right or queuing traffic.

4.9.7 Further north on the B1050 and through Longstanton village a total of fourteen recorded accidents occurred, three of which were serious. One serious accident was recorded at the Longstanton High Street with Over Road junction. The accident resulted from a HGV turning right and colliding with a cyclist. Three other slight accidents occur at this junction two of which also involved traffic turning from Over Road.

4.9.8 A small cluster of accidents also occurred to the north of Longstanton close to Crabtree Corner. The remaining two serious accidents in Longstanton occurred as part of this cluster of accident. Both of the serious accidents were a result of vehicles travelling around the right hand bend and losing control. In one instance the vehicle travelling north collided with a second vehicle travelling south on the B1050. A number of slight accidents also occurred as a result of loss of control through the bend at this location.

4.9.9 Within Willingham a pedestrian was fatally injured as he crossed the road from the driver's off side on Rampton Road. This accident occurred in isolation, approximately 500m south of the junction of Rampton Road with Newington. The majority of accidents through Willingham occurred on the High Street and were slight accidents. Accidents which occurred at the Willingham cross roads involved right turning traffic, whilst those to the north and south of the junction resulted from driver error when overtaking other vehicles or travelling round bends.

4.9.10 Of the two fatal accidents close to Cottenham, one occurred on 20 Pence Road to the north of Cottenham and one accident occurred on Histon Road to the south of Cottenham. Both accidents would appear to result from driver error. On 20 Pence Road a vehicle travelling northeast appeared to lose control on a right hand bend which resulted in a fatal accident. On Histon Road the fatal accident occurred as a vehicle tried to overtake and change lanes, in this case a total of three road users were involved, one of which was a cyclist.

OVERVIEW OF RECENT CASUALTIES

4.9.11 A total of 133 accidents were reported in the data provided from 01/01/2008 to 04/08/2011. 17 of which were reported as serious in nature. The remaining 116 incidents were reported as slight, there were no reported fatalities. It is acknowledged that fatalities have occurred in the past but these pre-date many steps taken to enhance highway safety in the last decade.

4.9.12 Of the 133 reported incidents 29 were recorded as involving vulnerable road users, these are broken down as follows;

- 6 pedestrians (all slight)
- 11 cyclists (3 serious and 8 slight)
- 12 motorcycles (4 serious and 8 slight)

4.9.13 Collisions involving vulnerable road users account for approximately 22% of the total incidents recorded within the study area. A summary of the principal statistics is set out in Table 4.8 below.

Table 4.8: Personal Injury Accident Summary

Road User	Slight	Serious	Fatal
Vehicle	95	9	0
Motor Cycle	8	4	0
Cyclist	7	4	0
Pedestrian	6	0	0
Total	116	17	0
	133		

A14 CORRIDOR

4.9.14 The A14 corridor analysis includes the mainline sections and three grade separated junctions from Junction 28 to Junction 30. Table 4.9 below summarises all reported incidents on the A14.

Table 4.9: A14 Accident Summary

Road User	Slight	Serious	Fatal
Vehicle	49	5	0
Motor Cycle	1	3	0
Cyclist	0	0	0
Pedestrian	0	0	0
Total	50	8	0
	58		

4.9.15 The data indicates a total of 58 reported accidents, of these eight were regarded as serious, four of which involved motorcyclists. Three of these collisions involving motorcyclists were serious in nature.

4.9.16 A breakdown of the data shows that the majority of the reported accidents occurred as vehicles were slowing down or stopping. Reviewing the points of impact reveal that these incidents are likely to have been shunt-type accidents, whereby the first point of contact was in almost all cases the rear of the first vehicle. As the contributory factors are removed from the incident description it is not practical to ascertain the number of lane changing incidents.

4.9.17 There were 10 reported incidents where a collision occurred as a vehicle was attempting to change lane, two others where drivers were attempting to turn off the carriageway (other than at a grade separated junction) and one occurred during an overtaking manoeuvre.

4.9.18 The A14 is known to be congested, particularly during peak periods of the day. The accidents statistics shown above are consistent with the shunt type accidents and the severity which could be expected during prolonged periods of slow moving and congested highway conditions.

4.9.19 The Highways Agency acknowledges that the number of collisions is not materially higher than for similar roads and traffic flows, nevertheless a series of possible intervention measures have been considered for the A14 including enhanced traffic signs and road markings.

BUCKING WAY ROAD

4.9.20 Table 4.10 below summarises all reported incidents on Bucking Way Road.

Table 4.10: Bucking Way Road Accident Summary

Road User	Slight	Serious	Fatal
Vehicle	4	0	0
Motor Cycle	0	0	0
Cyclist	0	0	0
Pedestrian	0	0	0
Total	4	0	0
	4		

4.9.21 A total of four incidents were recorded on Bucking Way Road in the three year period. All were slight in severity and did not involve any vulnerable road users.

4.9.22 Two of the accidents occurred as vehicles were negotiating bends within the road and struck an oncoming vehicle. These incidents suggest that vehicles are travelling at excessive speeds compared to the prevailing highway conditions. One of the other accidents occurred as a vehicle was traveling over the A14 overbridge; insufficient information was available to determine a potential cause. The remaining accident occurred when a vehicle attempted to overtake an LGV as it was turning right.

4.9.23 Whilst vehicle speed may be material, from the limited number of collisions and general lack of crash patterns it is unlikely that physical engineering measures would influence the road safety rate on the Bucking Way Road corridor.

BOXWORTH END, SWAVESEY

4.9.24 Table 4.11 below summarises all reported incidents on Boxworth End.

Table 4.11: Boxworth End Accident Summary

Road User	Slight	Serious	Fatal
Vehicle	2	0	0
Motor Cycle	0	0	0
Cyclist	0	0	0
Pedestrian	0	0	0
Total	2	0	0
	2		

4.9.25 Two accidents were reported on the Boxworth End corridor approaching Ramper Road. One occurred as a vehicle was attempting to turn right and was struck by an oncoming vehicle. The second accident occurred as a vehicle was attempting to turn left and was shunted by a following vehicle. Both of these incidents were slight in severity and occurred near the Boxworth Road/Rose and Crown Road junction.

4.9.26 As there is no discernible pattern, no mitigation measures are considered necessary for the Boxworth End corridor.

RAMPER ROAD

4.9.27 Ramper Road is subject to a 60mph speed limit. Table 4.12 below summarises all reported incidents on Ramper Road.

Table 4.12: Ramper Road Accident Summary

Road User	Slight	Serious	Fatal
Vehicle	2	0	0
Motor Cycle	0	0	0
Cyclist	0	1	0
Pedestrian	0	0	0
Total	2	1	0
	3		

4.9.28 There were three incidents at the western end of Ramper Road in the three year period reported, two of which were slight in severity and one was serious.

4.9.29 The two accidents reported as slight occurred as vehicles were travelling round bends where no other road users were involved. The information available would suggest that the drivers were traveling at excessive speeds for the prevailing conditions, resulting in loss of control accidents.

4.9.30 The accidents regarded as serious, involved a cyclist, who struck a parked agricultural vehicle.

B1050 STATION ROAD

4.9.31 Table 4.13 below summarises all reported incidents on the B1050 Station Road.

Table 4.13: B1050 Station Road Accident Summary

Road User	Slight	Serious	Fatal
Vehicle	11	1	0
Motor Cycle	2	1	0
Cyclist	1	2	0
Pedestrian	1	0	0
Total	15	4	0
	19		

4.9.32 A total of 19 accidents were reported along the length of the B1050 Station Road, from its junction with Ramper Road to the junction with Meadow Road in Willingham. Four of these were serious in nature while the remaining 15 were slight. Six of the reported accidents involved vulnerable road users, three cyclists, two motorcyclists and one pedestrian.

4.9.33 Of the 19 accidents three occurred within a 60mph speed limit, 11 in a 40mph limit and five in a 30mph zone.

4.9.34 Two of the accidents within the 60mph speed limit occurred at the southern end of the B1050 near the bend in the road possibly associated with the perception of road alignment. Both of these were slight in nature and occurred as the vehicle was traveling round the bend. One of these vehicles was a motorcycle and the other a passenger car.

4.9.35 The other high speed accident was classified as serious and occurred further north, approximately 250m north of Stanton Mere Way. The crash occurred as a car was turning left off the main carriageway and struck an oncoming motorcyclist. There is a good level of visibility available to drivers using this junction and therefore the likely cause of this incident is driver error.

4.9.36 Of the ten collisions that occurred in the 40mph speed limit, nine were reported as slight in severity and one as serious. One of the slight injuries involved a pedestrian. The serious accident occurred as a vehicle was traveling round a bend and struck on oncoming LGV. The majority of the remaining incidents occurred as vehicles were traveling round a bend. This would indicate drivers are traveling two quickly for the conditions where additional traffic management measures may be necessary.

4.9.37 The remaining accident involved a pedestrian who was struck as a car moved off from a parked position. This was reported as slight in severity.

4.9.38 Of the five collisions occurring in a 30mph speed limit three involved cyclists, two of which were serious in nature. The accidents (serious) involving cyclists occurred when car drivers attempted to turn off the main highway and struck oncoming cyclists. The remaining accident (slight) occurred as a cyclist changed lanes/road position and was struck by a passing vehicle.

4.9.39 The remaining two accidents occurred as a vehicle was traveling round a bend, and the other as a vehicle attempted to turn left off the carriageway and was struck by an oncoming vehicle.

4.9.40 It is noted that, in conjunction with the new Bypass, traffic calming measures have been installed at the southern end of the road within the last 2-3 years which has materially changed the composition of traffic on parts of the road network. It can be assumed that a Stage 3A/4 Road Safety Audit and subsequent accident reports would be undertaken and any residual issues tackled as part of this process.

4.9.41 A high proportion of the recorded incidents on Station Road occurred as vehicles were travelling around bends, resulting in loss of control. In some cases collisions occurred on the bends as vehicles travelled in opposite directions. Chevron boards and edge of carriageway marking are already present on most bends therefore only more intrusive urbanising measures could be employed to materially alter conditions. In addition there is a designated shared footway/cycle-way along the eastern edge of Station Road; this could be made more conspicuous with additional signage and lane markings.

RAMPTON ROAD

4.9.42 Table 4.14 below summarises all reported incidents along the Rampton Road corridor.

Table 4.14: Rampton Road Accident Summary

Road User	Slight	Serious	Fatal
Vehicle	5	1	0
Motor Cycle	0	0	0
Cyclist	2	1	0
Pedestrian	2	0	0
Total	9	2	0
	11		

4.9.43 A total of 11 reported accidents occurred along Rampton Road, two of these were reported as serious and a total of five involved vulnerable road users.

4.9.44 Both serious injuries occurred within a 60mph speed limit and one involved a cyclist. The first occurred as a car attempted to pass a cyclist on a sharp bend and was struck by an oncoming vehicle. The other incident occurred as a vehicle was travelling around a bend approximately 2km south east of Willingham. Due to the high speed of the road and the presence of the bend it can be reasonably assumed that the drivers were travelling too fast for the conditions

4.9.45 The remaining nine collisions all resulted in slight casualties, occurring at various points along Rampton Road; the spread of accidents does not indicate any particular trends. The majority of accidents occurred as vehicles attempted to turn of the main carriageway which resulted in a minor collision with oncoming traffic. In other cases incidents occurred as drivers were traveling ahead, often no other vehicles were involved, which indicates driver error/ loss of control.

4.9.46 As there are no appreciable accident patterns, it is unlikely that specific engineering measures could mitigate the scattered pattern of collisions on the Rampton Road corridor.

OAKINGTON ROAD

4.9.47 Table 4.15 below summarises all reported incidents on the Oakington Road corridor.

Table 4.15: Oakington Road Accident Summary

Road User	Slight	Serious	Fatal
Vehicle	10	1	0
Motor Cycle	4	0	0
Cyclist	2	0	0
Pedestrian	1	0	0
Total	17	1	0
	18		

4.9.48 18 accidents have been reported along the length of Oakington Road, the majority of which occurred on approach to its junction with Rampton Road. A total of seven accidents occurred on the approach to the Rampton Road junction at the northern end of Oakington Road, six of which were slight in severity, one involved a cyclist and one other a pedestrian.

4.9.49 The accident involving the cyclist occurred as it was travelling along Oakington Road. The cyclist collided with a parked vehicle without any reported reason. This would appear to be an error on the part of the cyclist.

4.9.50 The serious accident occurred as a car driver attempted to overtake an agricultural vehicle as it was turning right. The car collided with the rear of the agricultural vehicle. This incident occurred within the 60mph straight section of Oakington Road and is considered to be driver error.

4.9.51 The remaining 12 accidents occurred along the length of the Oakington Road up to the A14. All were slight in nature and occurred as vehicles attempted to negotiate bends, overtake or turn off the main carriageway

4.9.52 Six of these accidents occurred within the village of Oakington. One involved a motorcyclist who was struck by a car turning across its path. The other involved a pedestrian who was struck by a car.

4.9.53 Oakington Road already has village gateways and signage to reduce vehicle speed. There is also good forward visibility. The majority of the accidents reported can be attributed to driver error and therefore no mitigation measures are considered necessary for the Oakington Road corridor.

B1050 HATTON'S ROAD

4.9.54 Table 4.16 below summarises all reported incidents on the Hatton's Road corridor.

Table 4.16: B1050 Hatton's Road Accident Summary

Road User	Slight	Serious	Fatal
Vehicle	10	1	0
Motor Cycle	0	0	0
Cyclist	1	0	0
Pedestrian	1	0	0
Total	12	1	0
	13		

4.9.55 13 reported incident occurred along Hatton's Road, one of which was recorded as serious. The serious accident involved one vehicle and occurred at night as the vehicle was traveling ahead at the Hatton's Road / B1050 Roundabout. No other details are provided and therefore it is not possible to determine a likely cause.

4.9.56 The remaining collisions occurred as drivers negotiated bends or attempted to overtake other vehicles.

4.9.57 The majority of the accidents reported can be attributed to driver error and therefore no mitigation measures are considered necessary for the B1050 Hatton's Road corridor.

LONGSTANTON ROAD

4.9.58 Table 4.17 below summarises all reported incidents on the Longstanton Road corridor.

Table 4.17: Longstanton Road Accident Summary

Road User	Slight	Serious	Fatal
Vehicle	1	0	0
Motor Cycle	3	0	0
Cyclist	1	0	0
Pedestrian	0	0	0
Total	5	0	0
	5		

4.9.59 Five slight accidents have been reported along Longstanton Road, three involved motorcyclist and one involved a cyclist.

4.9.60 All three accidents involving motorcyclists occurred as the rider was negotiating a bend. Based on the limited information available it has been concluded that these accidents were caused by driver error. The accident involving a cyclist occurred when the rider was struck by a vehicle traveling in the opposite direction.

4.9.61 The fifth accident occurred when a car was traveling around a sharp bend and the report indicates that it was dark and in heavy rain, suggesting a loss of control/poor road conditions.

4.9.62 Based on the above the majority of the accidents reported can be attributed to driver error and therefore no mitigation measures are considered necessary for the Longstanton Road corridor.

ACCIDENT SUMMARY

4.9.63 The data analysed above is summarised in Table 4.18 below. The accidents are split by corridor and severity. It is quite apparent that more collisions occur on the A14, however these are broadly representative of collision rates for a similar road with similar traffic flows.

Table 4.18 Total Summary Table

Road	Slight	Serious
A14	50	8
Bucking Way Road	4	0
Boxworth End, Swavsey	2	0
Ramper Road	2	1
B1050 Station Road	15	4
Rampton Road	9	2
Oakington Road	17	1
B1050 Hatton's Road	12	1
Longstanton Road	5	0
Total	116	17
	133	

4.9.64 Analysis of the data provided by CCC has revealed a number of trends in terms of vehicle movements when accidents have occurred. The vast majority resulted when vehicles attempted to turn off the main carriageway, or negotiate bends. The rural nature of the roads within the study area lend themselves to higher speeds, which would explain the high number of accidents occurring on bends.

4.9.65 There are also relatively few accidents involving vulnerable road users, presumably because of the rural location. The proposed development will alter the highway environment in some locations such that it will be necessary to alter the speed limits of some roads, as part of a package of traffic management measures. In some cases these will change naturally as a consequence of development, whilst others will include measures appropriate to the environment, such as enhanced village gateways.

4.9.66 The surrounding highway environment does provide a number of long-distant and glimpse views of open countryside, these preserve and enhance driver stress conditions, however these also influence drivers' perception of safe speed. The potential to reduce forward visibility to enhance road safety could form part of a package of measures of traffic management measures.

CONCLUSION

4.9.67 This analysis of PIA data reveals some accident trends but cannot conclusively comment on the exact causes of the reported accidents in the supplied data. Based on assumptions of the contributory causes of personal injuries, some trends emerge, mostly these are associated with excessive speeds.

4.10 TRAFFIC CONDITIONS

4.10.1 In line with the GTA, pre-application discussions identified that the preferred approach for traffic data was to employ the Cambridge Sub Regional Traffic Model (CSRM). Whilst the CSRM was created based on 2006 survey data, it incorporates recent infrastructure and service improvements and forecast development commitments. It also considers a series of forecast design years in 5-year intervals between 2006 to 2031.

4.10.2 For the purposes of this assessment it was agreed that the CSRM 2011 forecast year should be adopted as the baseline conditions. However, in order to confirm confidence in this approach the CSRM flows have been compared with some 2011 actual traffic data.

4.10.3 There is a permanent traffic counter (HA TRADS site) on the A14 between Junctions 30 and 31 and this can provide average peak hour flows in each direction along the A14.

4.10.4 In addition to this permanent site, WSP commissioned three additional automatic traffic counts (ATC) on key roads around the site. The first is on the B1050 Station Road to the north of the site and was designed to assess traffic using the B1050 corridor around Willingham. The second ATC was on Hatton's Road just north of the A14 and the road which is likely to accommodate most of the Phase 1 traffic. These sites were also chosen as the B1050 corridor is most likely to have changed given the opening of the Longstanton Bypass and the associated development which has been completed in this area.

4.10.5 The third ATC was placed on the Airfield Road south of Longstanton. This site was chosen as the road is not modelled in the CSRM as it has traffic orders restricting its use. However, it is known to be used by traffic and therefore the level of use should be established.

4.10.6 Table 4.19 compares the surveyed flows with the 2011 CSRM figures. Appendix B contains the output from the A14 TRADS site and the ATC results. Appendix C contains the Atkins technical note reporting on the 2011 CSRM output.

Table 4.19: Comparison of 2011 Flows (PCUs)

Location of Survey	AM Peak (08:00 – 09:00)		PM Peak (17:00 – 18:00)	
	Survey	CSRM	Survey	CSRM
A14 East of J30 Eastbound	4430	4664	3634	4456
A14 East of J30 Westbound	3570	3790	4466	4599
B1050 Station Road (2 way)	960	894	995	1068
B1050 Hatton's Road (2 way)	1320	1327	1480	1629
Airfield Road (2 way)	265	N/A	201	N/A

4.10.7 Whilst this comparison reveals traffic flows are within reasonable tolerance levels, it is also important to note that the CSRM forecast traffic flows are typically higher than those observed in 2011. Taking account of existing economic conditions this conclusion could be reasonably anticipated. Whilst it may be reasonable to adopt the observed traffic flows, or 'rebase' the CSRM model, on the basis that economic conditions should recover within 5-10 years it has been assumed that these will contribute to an increase in travel demand to ensure the assessment is considered adopting robust forecasts.

4.10.8 Given this level of confidence with the CSRM results the 2011 two way traffic flows on all the roads to be assessed have been extracted from Appendix C and are summarised in Table 4.20. The link numbers in Table 4.20 refer to the roads identified in Figure 9.

Table 4.20: 2011 CSRM Base Scenario Two-Way PCU Trips

Link Ref.	Link Name	Two-Way Flow (PCUs)	
		AM Peak (08:00 – 09:00)	PM Peak (17:00 – 18:00)
S	Site Access	-	-
1	Station Road, Willingham	894	1068
2	Rampton Road, Rampton	434	406
3	Ramper Road	157	146
4	High Street, Longstanton	115	137
5	B1050 Longstanton Bypass	946	1172
6	Bucking Way Road	524	574
7	School Lane, Longstanton	281	318
8	Woodside/Airfield Road	Not modelled	Not modelled
9	Oakington Road, Cottenham	984	828
10	B1050 Hatton's Road	1327	1629
11	Water Lane, Oakington	984	828
12	Dry Drayton Rd, Oakington	1505	1445
-	Over Road, Willingham	163	224
19	Oakington Rd, Dry Drayton	528	504
13	A14 West of J28	6377	7018
14	A14 East of J28	6987	7599
15	A14 East of J29 (Bar Hill)	8491	9349
16	A14 East of J30	8454	9055
-	A14 East of J31 (Girton)	6780	6636
-	A14 East of J32 (Histon)	6325	6454

Source: Atkins/CCC CSRM Model Outputs.

4.11 SUMMARY

4.11.1 The area around the proposed primary development site is semi-rural with a series of small villages linked via a series of B, C and unclassified roads. The transport network offers a range of travel options, with reasonably good cycle infrastructure and very good bus services connecting villages and towns in the sub-region, supporting relatively sustainable travel trends.

4.11.2 The road safety record suggests the surrounding network is broadly comparable with other similar roads in the UK. From the accident records it would appear that most incidents on the local rural roads occur due to the rural historic nature of the road alignment and standard. On the A14 accidents appear to occur due to a combination of heavy flow and poor layout, particularly at junctions.

4.11.3 The A14 corridor operates close to theoretical capacity, accommodating strategic and local traffic needs, thus continued tension arises between the need to preserve journey time reliability on the Strategic Road Network whilst meeting the needs and aspirations of local communities. This difficult balance is recognised at a national level and whilst planned improvements have been shelved a series of interim measures are being explored until works to separate local and strategic traffic become affordable.

5 Accessibility to Facilities and Key Services

5.1 INTRODUCTION

5.1.1 The Phase 1 development will be providing a number of local facilities such as a mixed-use local centre and primary school. In addition to these facilities the site has a degree of accessibility to other facilities which are located in the surrounding area. Many of these are within reasonable walk and cycle distances and exploit the potential for walking, cycling and public transport delivering high levels of transport sustainability appropriate to the nature of the proposed development.

5.1.2 This Section considers the opportunities to access local facilities from the site including education, employment, leisure and retail, by means other than the private car. An audit of such local facilities has been carried out. Figure 2 maps out the location of key land uses in the context of the site. To provide an idea of the accessibility of the site distances have been measured from a central point.

5.1.3 Where new facilities are to be provided as part of this application, these have been incorporated into the tables to give a full picture of the opportunity to travel by non-car modes

5.2 WALKING

5.2.1 Paragraph 75 of PPG13 states that: "*walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under two kilometres.*"

5.2.2 Guidance given by the Institution of Highways and Transportation (IHT) in their publication ' Guidelines for Providing for Journeys on Foot, 2000' suggests that in terms of commuting, walking to school and recreational journeys, walk distances of up to 2,000 metres can be considered, with the desirable and acceptable distances being 500 and 1,000 metres respectively.

5.2.3 For non-commuter journeys the guidance suggests that walk distance of up to 1,200 metres can be considered, with the desirable and acceptable distances being 400 metres and 800 metres respectively.

5.2.4 Assuming a 'typical' walking speed of approximately 4.8kph, Table 5.1 summarises the broad walk journey times that can be 'considered'; are 'acceptable'; and those that are 'desirable'.

Table 5.1: Walk Journey Times

IHT Standard	Distance (m)		Walk Time (mins)	
	Commuting, Walking to School and Recreation	Other Non-Commuter Journeys	Commuting, Walking to School and Recreation	Other Non-Commuter Journeys
'Desirable'	500	400	6¼	5
'Acceptable'	1000	800	12½	10
'Considered'	2000	1200	25	15

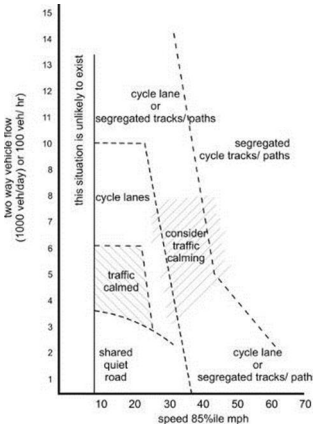
Source: IHT 'Guidelines for Providing for Journeys on Foot'

5.3 CYCLING

5.3.1 Paragraph 78 of PPG 13 states that: "cycling … has the potential to substitute for short car trips, particularly those under 5km, and to form part of a longer journey by public transport."

5.3.2 Assuming a typical cycling speed of 1,200 metres every five minutes the accessibility of facilities 5km from the site can be considered to be a 20 minute cycle ride.

5.3.3 Many people will cycle considerable distances depending on, inter alia, weather, time of day, level of fitness and real or perceived safety/convenience. The average cycle trip in the UK is around 2.4 miles (3.8km), broadly consistent with the policy objective.



Source: Guidelines for Cycle Audit & Cycle Review, IHT, 1998

5.3.4 As the UK average is affected by a range of factors, including topography, one can consider the South Cambridgeshire area as substantially flat thus average cycle distances should be around 3 miles, with many confident cyclists cycling to Cambridge.

5.3.5 Local cycle infrastructure and the highway environment is examined in Section 4, however it is important to note that any absence of dedicated cycle infrastructure does not preclude on-road cycling. Indeed, IHT guidance suggests (see image left) that certain street environments offer attractive cycle routes. Within Northstowe the master plan will provide a network of 'quiet streets' and off-road infrastructure, linked to existing routes and surrounding infrastructure.

5.3.6 Like car ownership, the capital cost of owning a vehicle contributes to use. Around 80% of children and nearly half of all adults own a bicycle and therefore adequate space for cycle parking is influential in design of new homes. Facilities at destinations are also significant factors in willingness to cycle, notably shower, changing facilities, lockers and safe secure parking. Most of these design issues will be incorporated into all parts of the development to exploit the potential for cycling for all occupiers.

5.3.7 Cycle parking both at home and at travel destinations is a key part in encouraging the use of cycling. Table 5.2 shows that the nature of a journey purpose will influence a willingness to park further from the end destination, although other factors will influence choice.

Table 5.2: Cycle Parking – Distance & Location

Cycle Parking		Cycle Parking – location preference	
Journey Purpose	**Median Distance (m)**	**Influencing factor**	**%**
Commuting	40	Close to destination	86%
Business	50	Security	16%
Education	38	Only place available	9%
Shopping	125	Space available	7%
Leisure	20	Location conspicuous/busy	6%

Source: TRL 276: 'Cycle Parking and Demand'

5.3.8 The master plan for the employment and retail areas preserves public realm areas that will provide short-stay cycle parking areas, as well as dedicated secure long-stay cycle parking near primary entrances.

5.4 ACCESS TO FACILITIES

5.4.1 When considering the accessibility of existing facilities, the rural nature of the site has been taken into consideration, although it should be recognised that the development will deliver a number of services with easy pedestrian and cycle access. For example some local facilities are within accepted walking thresholds, but have not been included as walking to them may require using a road which has no footway. However, these same facilities can be sufficiently accessible by bike.

5.4.2 Similarly, the age of the persons accessing the facility has been considered. Nursery school children for example would not be expected to cycle, being more likely to walk.

5.4.3 Distances to facilities are measured from the centre of the site.

EDUCATION

5.4.4 The Department for Education and Skills offers guidance on the eligibility for home to school transport, where the education authority will normally provide free transport unless the available route is unsafe:

- <8 years Distances over 2 miles
- 8+ years Distances over 3 miles

5.4.5 There are several education facilities within a reasonable distance of the site. Existing pre-school facilities are summarised in Table 5.3 below. Within the DfES standards few are within acceptable walking distances but all can be reached in a reasonable time by cycle.

5.4.6 In addition several schools are currently available within modest cycling distances of Northstowe, these are listed in Table 5.4.

Table 5.3: Accessibility to Pre-School Facilities

Facility Name	Facility Type	Distance	Walk Time (mins)	Cycle Time (mins)
Northstowe Phase 1 Primary School	**Pre-School / Primary School**	**Average 400m**	**5**	**2**
Mad Hatters Pre-School	Pre-School	1,600m	20	7
Old Buttery Day Nursery	Pre-School	3,400m	42	14
Honeypot Pre-School	Pre-School	3,800m	N/V	16
Phoenix School	Pre-School / Primary School	3,900m	N/V	16
Scallywags Day Nursery	Pre-School	4,100m	N/V	17
Swavesey Pre School	Pre-School	4,900m	N/V	20

N/V = Walking route not considered viable for under 8 years

Table 5.4: Accessibility to Education Facilities

Facility Name	Facility Type	Distance	Walk Time (mins)	Cycle Time (mins)
Northstowe Phase 1 Primary School	**Primary School**	**Average 400m**	**5**	**2**
Hatton Park Primary School	Primary School	1,600m	20	7
Willingham Primary School	Primary School	3,800m	47	16
Phoenix School	Pre-School / Primary School	3,900m	49	16
Oakington CofE Primary School	Primary School	4,100m	51	17
Swavesey Primary School	Primary School	4,900m	N/V	20
Swavesey Village College	Secondary School	5,000m	N/V	21

N/V = Walking route not considered viable for children

5.4.7 As capacity is generally limited and the walking distances to existing facilities is generally unrealistic to most existing schools the Phase 1 development will provide a primary school to accommodate future residents.

HEALTH

5.4.8 A number of health facilities are accessible from the proposed development either on foot or by bicycle. These have been categorised and are presented in Table 5.5.

Table 5.5: Accessibility to Health Facilities

Facility Name	Facility Type	Distance	Walk Time (mins)	Cycle Time (mins)
Longstanton Branch Surgery	GP	1,800m	23	8
Willingham Medical Practice	GP	3,800m	47	16
The Surgery, Swavesey	GP	4,900m	N/V	20
Willingham Pharmacy	Pharmacy	3,900m	49	16
Clive Jones Dental Surgery	Dentist	1,300m	17	6
Mr Gwain King & Mrs Antoinette King	Dentist	1,400m	18	6

N/V = Walking route not considered viable

5.4.9 It is anticipated that subsequent phases of Northstowe will provide a larger community hub and associated health facilities. However, as existing health facilities are available at Willingham, which are within a modest cycle or bus journey from the site it is unlikely that a health centre would be required until the end of Phase 1 development.

LEISURE AND RECREATION

5.4.10 In the locality of the site, there are several leisure and recreation opportunities which are accessible by walking or cycling. Table 5.6 summarises these.

Table 5.6: Accessibility to Leisure and Recreation Facilities

Facility Name	Distance	Walk Time (mins)	Cycle Time (mins)
Longstanton Sports Club	1,800m	23	8
Longstanton Bowls Club	1,800m	23	8
Longstanton Tennis Club	1,800m	23	8
Swavesey Village College Community Sports Centre	5,000m	N/V	21

N/V = Walking route not considered viable

5.4.11 In addition to the facilities shown in Table 5.6, there are many clubs and societies in the area which do not operate on a full-time basis, instead providing classes and recreation opportunities from different venues for a period on a regular basis. Such facilities include:

- Histon & District Angling Society;
- Longstanton Cricket Club;
- The Fitness Class; and
- Willingham Keep Fit.

RETAIL

5.4.12 Immediate convenience shopping requirements will be possible on the Phase 1 development however they can also be fulfilled by any of the several facilities which are situated within a convenient cycle ride of the site. Table 5.7 summarises these facilities.

Table 5.7: Accessibility to Retail Facilities

Facility Name	Location	Distance	Walk Time (mins)	Cycle Time (mins)
New Local Centre	**Development**	**Average 400m**	**5**	**2**
Longstanton Post Office and Village Store	High Street, Longstanton	1,400m	18	6
Willingham Post Office	High Street, Willingham	3,500m	43	15
Co-operative Food Store	High Street, Willingham	3,600m	45	15
One Stop	Church Street, Willingham	3,800m	48	16
Costcutter	Middle Watch, Swavesey	4,700m	N/V	20

N/V = Walking route not considered viable

5.5 SUMMARY

5.5.1 Given the rural location of the site, accessibility to local facilities within suggested cycling distance and time limits can be considered reasonable. Whilst some of the distances and roads between villages may be less appropriate for young or inexperienced cyclists, it is considered that most adult cyclists could be expected to undertake such journeys.

5.5.2 The primary development site lies slightly north of Longstanton. Whilst there is some separation from the existing settlement and other villages in the rural hinterland, trips on foot are likely to be limited to Longstanton. A series of public rights or way (PROW) do expand the potential for leisure and other activities, where time is less critical, otherwise the need to enhance existing pedestrian infrastructure to accommodate trips beyond Longstanton or the Park & Ride site is very limited.

5.5.3 The new development provides many facilities to enhance the existing offer and provide significantly improved opportunities for travel by non-car modes.

5.5.4 A number of surrounding villages do provide facilities that may not be available within Northstowe until later years therefore traffic management measures to enhance the potential for on-road cycling to Willingham may be appropriate.

6 Development Proposals

6.1 2007 OUTLINE APPLICATION

6.1.1 In 2007, Gallagher Longstanton Ltd and English Partnerships (now the HCA), joint promoters, submitted an application, incorporating an outline application for the Northstowe development with a Development Framework Plan, along with full detailed applications for elements of the proposed development, including the road accesses. The application was registered and remains current.

6.1.2 This Transport Assessment supports an outline planning application for Phase 1 of Northstowe comprising up to 1,500 dwellings, a primary school; a mixed-use local centre (including a community building, and provision for non-residential institutions, financial and professional services, shops, cafes and restaurants, drinking establishments, and hot food takeaways); leisure, community, residential institutions, cultural, health, and employment provision (business, general industry and storage and distribution) including a household recycling centre; formal and informal recreational space and landscaped areas; and infrastructure works including site re-profiling and associated drainage works, foul and surface water pumping stations, two flood attenuation ponds on land east of Hatton's Road; and associated works including the demolition of existing buildings and structures.

Phase 1 will include up to 1,500 dwellings, employment, retail and supporting community infrastructure

6.2 PHASE 1 APPLICATION USES

6.2.1 The Phase 1 application is for:

Residential (42ha)

- Up to 1,500 residential dwellings;
- Indicative housing mix: 25% 2 bed, 46% 3 bed, 22% 4 bed and 7% 5 or more bed;
- Affordable housing to a maximum of 35% subject to a viability assessment during the application process; and
- Residential care homes for elderly persons (residential institution(s)).

Primary School (3ha)

- 3 form entry (630 pupils); and
- Community facilities (potentially interim arrangements).

Mixed-use local centre (1.22 ha)

- Community buildings of approx. 900m² (net floorspace) and associated car park spaces (number not defined);
- Ground floor retail covering approx. 1,500m² (net floorspace) and associated dedicated car park spaces (number not defined);
- Additional on-street parking;
- Other commercial / retail / food & drink / community & other appropriate uses (approx. 450m² net floorspace); and
- Residential units (included within the 1,500 units).

Employment (5ha)

- B1, B2 and B8;
- The estimate split of employment (based on uses for the transport modelling) is:
    - B1 offices – approx. 1.82ha;
    - B2 general industrial – approx. 1.46ha;
    - B8 storage and distribution – approx. 0.36ha; and
    - Household recycling centre – approx. 1.25ha.

Sports Hub (6.17ha)

Public open space / parks / play space excluding water bodies (23ha)

Allotments (1.57ha)

6.2.2 It is considered that these land uses are likely to generate the maximum number of traffic movements and hence are likely to be a reasonable worst case scenario for the traffic assessment. It should also be understood that the new facilities that will be built as part of Phase 1 will present opportunities for internalised trips which remain within Northstowe and also linked trips between land uses.

6.3 PHASE 1 LAYOUT

6.3.1 The outline planning application includes a series of parameter plans which show the form of the development. There is also an illustrative master plan which provides an overall view of the Phase 1 development, see Appendix D.

6.3.2 The master plan shows that the Phase 1 development is predominantly to the east of the B1050 although there is a small area of residential development on the west side. A square and the local centre are located adjacent to the B1050. This provides a gateway to the site whilst achieving visibility for the local centre from passing traffic which should assist in the viability of the local centre in the early years.

6.3.3 The employment area is to the north of the square and local centre. It has its own access in order to avoid employment traffic passing through the local centre, although there are alternative accesses to the employment area from within the site. It also includes the household recycling centre. This area then adjoins the existing CGB park and ride site.

6.3.4 Travelling east into the site the primary road access continues to the proposed busway corridor which travels south from the park and ride site and eventually will continue through the whole of Northstowe.

6.3.5 The primary school is located to the south of the local centre on one of the primary roads which will run through the site. Although it is not located exactly in the centre of Phase 1 it is a convenient location for most residents and the furthest development area is only approximately 800m from the school.

6.3.6 The sports hub and allotments are located along the western boundary of the site and adjacent to Longstanton. With existing and proposed rights of way this ensures that access to these areas is convenient for both the new residents and the existing village.

6.3.7 Details of the transport strategy to serve the site are detailed in the next section.

7 Transport & Access Strategy

7.1 INTRODUCTION

7.1.1 Section 6 provides a summary of the submitted master plan and The *Design & Access Statement* explores the development proposals and their relationship to existing land uses. This section considers in more detail the transport strategy and the implementation of the development.

7.2 NMU STRATEGY

7.2.1 As shown in the Illustrative Master Plan (Appendix D) the Phase 1 development is located at the northern end of the wider Northstowe site and is adjacent to the recently opened CGB stop and Park and Ride facilities. This provides the opportunity for the development to use a high quality public transport service from the first day.

7.2.2 Direct and indirect pedestrian and cycle routes will be provided which will enable Northstowe residents to easily access the CGB without the need to use their car. The average distances from the CGB P&R to the following land uses are approximately:

- Residential – 600m
- Employment - 200m
- Retail - 350m

7.2.3 Pedestrian and cycle routes will also be created throughout the Phase 1 development. These will be a combination of more direct segregated routes and more informal routes which will be provided within the development parcels. These will also be designed so that they can be extended into the future phases of Northstowe, thereby providing direct routes to the south and the cycleway alongside the CGB.

7.2.4 NMU routes will be extended to Longstanton and Rampton Road by using the existing public rights of way and upgrading them as necessary. A full surfaced pedestrian cycleway route will be established along the B1050 from the edge of Longstanton through the development to the Park and Ride site. These routes are shown in Figure 10.

7.2.5 There will be no CGB services through the primary development site in Phase 1, although the corridor for the future busway through Northstowe will be created.

7.2.6 However, bus services within the site will be provided by extending and diverting the current Citi 5 service, see Figure 11. Currently during week days there are three buses per hour from Cambridge to Bar Hill with one service per hour extending from Bar Hill to Longstanton and a number of villages on the way to St Ives. For Phase 1 all Citi 5 services will be extended to Longstanton village and then into the site. With the exception of the hourly service to St Ives, all the services will terminate at the P&R stop. Within the Phase 1 development bus stops will be provided at locations ensuring that virtually every resident is within 400m of a bus stop.

7.3 ROAD NETWORK

B1050 AND PRIMARY ACCESS

7.3.1 All road access to the Phase 1 development will be from the B1050, this includes the small area to the north west of the B1050 in the Phase 1development. As the NAAP indicates that Northstowe is planned to extend further west it means that the design and character of the B1050 needs to considered in detail.

7.3.2 For the Phase 1 development the small area to the west of the B1050 will accommodate approximately 80 units. This means it is necessary to ensure that there are good connections between this site and the main area of development. At this stage and with only this small area of land to be developed the B1050 will remain in its current location. Development further west is not likely to occur in the near future and detailed planning is sometime away. At that time any future design may be able to include for the rerouting of the B1050. This would need to be in conjunction with the scale of development and any relevant SCDC and CCC policies at that time. Given these circumstances the road network around the B1050 needs to be designed to address the immediate requirements but it also needs to be capable of incorporation into a larger scale development to the west with some flexibility. The resulting design is described below.

7.3.3 For Phase 1 it is appropriate that the B1050 becomes a more urban environment with a 30mph speed limit. This reflects the proposed development to the west, the development along the eastern frontage, the need to provide access junctions, the existing Park & Ride signal junction, the CGB signal crossing and to make the route attractive for pedestrians from Longstanton to the P&R site. It is also considered highly desirable to create an early local retail centre in order to provide immediate vitality to the Phase 1 development. This can be achieved by existing vehicles passing on the B1050 being able to see and divert to the local shops. It also means that the road itself is capable of being easily integrated with any future expansion to the west.

7.3.4 It is essential to provide good pedestrian and cycle crossing points of the B1050, not only for Phase 1 but for the future development. Where possible these should be short and provide the opportunity to cross in one movement without significant delay.

7.3.5 The design then needs to accommodate the future predicted traffic demand. This design should be on the basis that the B1050 will continue to use this alignment but at the same time be capable of amendment to reflect more local traffic needs should development continue with an alternative route for the B1050.

7.3.6 The Movement and Access Parameter Plan and the Illustrative Master Plan (Appendix D) show the proposed development in this area and the associated highway layout. It can be seen that the development is incorporated into the corridor by creating a visible square with the B1050 passing along one side. The north side of the square contains the retail element combined with parking. This means that it is both visible and convenient. The B1050 would continue to be surfaced with conventional materials whilst the remaining areas of the square would be treated in accordance with the overall Northstowe design philosophy. This means that the significance of the B1050 is clear whilst enforcing the urban local nature of the design.

7.3.7 WSP drawing 2951/SK/004/D in Appendix E shows the proposed highway design for the B1050 which is incorporated into application plans. By adopting the design principles outlined above it has been concluded that the design should be in accordance with Manual for Streets 2 (MfS2). As outlined earlier this design guide was produced in order to accommodate all these design principles and avoid some of the problems which are associated with conventional highway design.

7.3.8 Travelling north along the B1050 from Longstanton the key features of the layout shown in Appendix E are as follows. It is proposed that there should be a 30mph speed limit on leaving the end of the Longstanton Western Bypass. There is then a simple priority junction to the development parcel to the west. This parcel will only accommodate approximately 80 units and so it does not warrant a more significant junction. This is followed by a pedestrian crossing which will link a key NMU corridor through the site. It will be across a single carriageway and so pedestrians will be able to cross in one stage.

7.3.9 The next junction will be the main access to Phase 1 for vehicles travelling from the A14 and the south. Movements between Northstowe and the B1050 north will be banned. This means that a very simple junction design can be achieved, providing pedestrian crossings which can be negotiated in a single phase. As a result the amount of street furniture can be minimised. This junction also marks the start of the central square.

7.3.10 At the northern end of the square there will be a second signal junction for movements between Phase 1 and the B1050 north, with movements to the south banned. Again this layout ensures that simple pedestrian facilities can be provided and street furniture is minimised.

7.3.11 Moving further north there will be an access to the employment and household recycling centre formed by a priority junction with a right turning lane. This is opposite the existing industrial site although the accesses are staggered. This access has been designed to accommodate the larger vehicles that would need to access these uses and ensure that they do not travel through the residential area of Phase 1.

7.3.12 The B1050 then continues north to the P&R access which is signalised. This road could also provide an access to the employment area.

7.3.13 As indicated above surfaced pedestrian and cycle facilities will be provided alongside the B1050 over this entire length, thereby creating a high quality link between Longstanton and the P&R.

7.3.14 It can be seen from this design that the B1050 will be designed as an urban road. This does not need to compromise the flow of through vehicles as it can be designed, in accordance with Manual for Streets 2, to have sufficient capacity as outlined later in this report. Unlike other existing urban areas with through traffic this will be purpose built and will not be retrofitted into an old or ancient village or town fabric. This ensures that the layout is satisfactory for the competing users.

7.3.15 As the road design is fairly simple with street furniture minimised it is possible to relatively easily change the B1050 corridor into a more local road if the B1050 is rerouted. The surfacing of the B1050 could be changed to assimilate with the surrounding square and the kerb lines could be amended or even removed to provide alternative features along the corridor.

INTERNAL STREETS

7.3.16 The Movement and Access Parameter Plan (see Appendix D) shows the internal street network. The primary streets leave the B1050 and then pass alongside the local centre before penetrating into the site. There are two streets which serve the east and west sides of the area which can then be extended south into later phases of Northstowe. Primary streets cross the proposed busway in two locations thereby allowing traffic and the Citi 5 to circulate within the site.

7.3.17 The remaining roads will be local roads providing access within each parcel of development.

7.4 DEVELOPMENT PHASING

7.4.1 Indicative phasing for the residential land use at Northstowe is as follows:

- 100 dwellings (2014)
- 175 dwellings (2015)
- 275 dwellings (2016)
- 360 dwellings (2017)
- 350 dwellings (2018)
- 160 dwellings (2019)
- 60 dwellings (2020)
- 20 dwellings (2021)

7.4.2 The development phasing will ensure that dwellings are typically within 400m of a bus service, either the current CGB services or the diverted Citi 5.

7.5 ASSESSMENT YEARS

7.5.1 The 2007 application had an estimated build out programme for the whole of Northstowe which has clearly been superseded for a number of reasons. This report now simply considers an assessment for the Phase 1 development.

7.5.2 The preparation of this TA has been undertaken in 2011 and this is coincidental with the CSRM, therefore 2011 is considered the appropriate existing scenario. The DfT's Guidance on Transport Assessment requires assessments to be taken 5 or 10 years after the registration of the application, depending on the nature of the application. As this is part of a major application and has an impact on the strategic road network a 10 year assessment is deemed appropriate. With registration of the application in 2012 this would mean that a 2022 should be undertaken. However, the CSRM only has forecasts every 5 years which means that they are available for 2021 and 2026. Given these circumstances it has been agreed with both CCC and the HA that an assessment for 2021 is acceptable.

7.5.3 On this basis the forecast years considered are:

- 2021 Forecast Base – This excludes the Phase 1 development but includes committed developments and transport infrastructure, notably these are the major strategic sites around Cambridge such as North West Cambridge, the Southern Fringe and Cambridge East. For the modelling it is referred to as the 'Do Minimum' case.
- 2021 Forecast Development - This includes the Phase 1 development as well as committed developments and transport infrastructure, for the modelling it is referred to as the 'Scheme' case.

7.6 TRAVEL PLANS

7.6.1 The development proposals include three Framework Travel Plans which are summarised below. Each plan would have a Travel Plan Co-ordinator, responsible for monitoring, co-ordinating with local groups and partners to deliver SMART sustainable travel targets.

7.6.2 In line with recent research, each plan endeavours to set formal targets to reduce the number and length of motorised trips, taking account of a package of measures that would be available for prospective occupiers and their visitors.

7.6.3 The Framework Travel Plans also include proposals for them to be extended to existing local communities. This will encourage existing residents to reconsider their travel behaviour. At the same time it could also be a mechanism for integrating new residents with existing communities.

Residential Framework Travel Plan

7.6.4 The residential travel plan sets a number of headline targets that will:

- Achieve a 25% take-up of bike and bus vouchers by first household occupiers
- A 10% reduction in the mode share of car trips

7.6.5 The Travel Plan includes a number of measures, including:

- Provision of travel information and welcome packs for new residents,
- Establishment of a Northstowe website,
- Measures to promote walking and cycling, through the provision of vouchers to purchase equipment,
- Measures to promote public transport, including the provision of vouchers to trial services,
- Measures to promote car sharing, including membership to CamShare,
- Establishment of car club,
- Provision of high-speed broadband infrastructure to support home and transient working.

Workplace Framework Travel Plan

7.6.6 The Workplace Framework Travel Plan sets a number of headline targets that will:

- Ensure 100% of eligible employers undertake a staff survey and produce a company specific plan
- Achieve a 10% reduction in the mode share of car trips

7.6.7 The Workplace Travel Plan adopts most of the measures identified in the Residential Travel Plan, but also includes:

- Measures to promote flexible working practices
- Guaranteed ride home for car sharers
- Financial and alternative incentives
- Sustainable company car policies

School Framework Travel Plan

7.6.8 The School Framework Travel Plan (SFTP) sets an over-arching target which is:

"To support each school in Northstowe by providing a safe environment in which to travel to school and thereby reducing single occupancy car travel and promoting and encouraging the use of alternative transport options amongst staff, parents, pupils and visitors"

7.6.9 It should be noted that the SFTP is provided as a commitment by the Northstowe promoters to sustainable travel, however the implementation of the SFTP will be the responsibility of the school itself.

7.6.10 At present 20% of all school trips in CCC's area are undertaken by car. The Phase 1 development will include a primary school with easy accessibility and it should be possible to significantly reduce the number of car trips. Some secondary education may take place at the primary school, otherwise this will occur at local colleges, such as Swavesey. Until more detailed arrangements are identified no formal targets have been set at this stage, although it is envisaged that these will be established and reviewed annually.

7.6.11 Embracing a national supported toolkit of measures the school travel plan will, amongst other things:

- Reduce the number of cars travelling to, and parking at, schools
- Encourage greater use of public transport

Summary

7.6.12 As far as reasonably practicable, each plan sets a measurable target against which measures are identified that should deliver these. Should monitoring of these plans fail to deliver the mode shift targets a series of remedial measures including personalised travel planning could be made available to establish sustainable travel trends with the 1st phase of development at Northstowe.

7.7 CONSTRUCTION TRAFFIC

7.7.1 A Construction Management Strategy has been developed for the planning application and will be submitted to ensure that future contractors abide by the obligations outlined in the strategy. Given the planning stage it is expected to evolve offering more comprehensive details before construction commences.

7.7.2 The Strategy outlines the nature of the construction activities both on and off-site, including works associated with the enhancement of network capacity for utilities such as gas and sewers. The Phase 1 development will include substantial earthworks however the re-use of materials on site will minimise the need for imported minerals and exported waste. To mitigate the impact of associated earthworks movements, a series of on-site haul routes will be established that may later serve subsequent phases of development.

7.7.3 Based on current construction phasing estimates for completion by 2021, the number of HGV's per day will average around 19 (or 38 HGV movements), rising to a maximum of 39 per day (or 78 HGV movements) around 2017/18. These movements will be managed via a secure holding compound where HGV's can be monitored and managed effectively. Where appropriate wheel washing and street-cleaning can be undertaken subject to demand and impact on the surrounding streets.

7.7.4 Until a preferred contractor is identified, the strategy highlights that reasonable endeavours will be made to source local staff and materials, and direct associated vehicles to use the primary road network to remove or reduce the impact on villages and other traffic sensitive streets, typically using the B1050.

7.7.5 Where it is not reasonably practicable to avoid sensitive streets, deliveries will be timed to avoid critical time periods to mitigate its impact, consolidating materials at local centres where possible.

8 2021 Conditions without Development

8.1 CAMBRIDGE SUB REGIONAL MODEL (CSRM)

8.1.1 In order to assess the impact on the local highway network of the Phase 1 development, analysis has been undertaken of the position in 2021 without the proposed development by using the Cambridge Sub Regional Transport Model (CSRM). The CSRM is a strategic multi-modal transport model which covers the four district authorities of the Cambridge sub region, these being:

- South Cambridgeshire;
- Cambridge;
- Huntingdonshire; and
- East Cambridgeshire.

8.1.2 The model covers the sub regional area in detailed geographic zones, with regional and national zones considered as part of the wider transport network in conjunction with other land uses. This ensures that all inbound and outbound trips associated with zones in the region, and across the Country (where they include trips through the sub-region), are represented in the model.

8.1.3 The forecast years for the CSRM include all committed and planned developments and infrastructure in the region. The overall growth in trip making is then constrained to the regional forecast growth as represented by Tempro. As Northstowe is a planned development this is included coarsely in the model. Therefore for this assessment without the development, Northstowe was removed from the CSRM. However, the region still needs to plan for the same overall growth and therefore the total trips in the CSRM forecast were retained. This means that the forecast model run without development (do minimum) includes all the committed and planned developments except Northstowe.

8.1.4 For each zone, trips are 'loaded' onto the network relative to the land use(s) associated with each particular zone. Within forecast years congestion and delay within the network attract a number of travel responses which are considered as part of any future travel patterns, these include:

- Mode Shift – changing mode of transport
- Relocation – change of origin / destination of trip, such as visiting a different supermarket.
- Reassignment – diverting to alternative routes
- Peak spreading – reduction in peak hour trips, with trips typically re-timed to other time periods

8.1.5 The model was then run for the AM and PM peak hours. This produces the trip characteristics for the region followed by the traffic assignment. The traffic assignment part of the model uses the SATURN program which assigns traffic to the quickest routes. The journey time is assessed by the accumulation of time and delays through the links and nodes of the network. Notably for a congested network it is possible for vehicles to be delayed at nodes (junctions) and queuing is recorded. This means it is possible that all the traffic does not pass through the network in the hour modelled. As a result SATURN produces both 'actual' and 'demand' flows. Actual flows represent the traffic which actually reaches each link or node in the modelled hour whereas a demand flow is the traffic volume which should have travelled along the network but was unable to. The difference between the actual and demand flows can represent either queuing traffic within the network during the modelled hour or some element of peak spreading whereby people choose to travel either side of the peak hour to reduce the amount of queuing they experience.

8.1.6 The results from the model have been provided by CCC in a series of reports and technical notes. Appendix F is a report on the land use characteristics of the model and Appendix G contains details of the 2021 SATURN analysis for both the Do Minimum and Scheme scenarios.

8.2 MODEL SCENARIOS FOR ASSESSMENT

The CSRM produced 2021 forecast conditions without Northstowe and without A14 improvements

8.2.1 It is assumed that the Phase 1 development would be substantially complete by 2021, without any A14 improvements. This model scenario offers a reasonably robust assessment scenario without appreciable transport network improvements. This also ensures that consistent criteria are considered in each scenario. Broadly, these are:

- Growth of dwelling numbers for the Cambridge sub region is consistent with the specification in the East of England Regional Spatial Strategy;
- Growth in job numbers has been benchmarked against the forecasts from TEMPRO database 5.4; and
- The A14 will not be improved.

8.2.2 This section examines the Do Minimum scenario which means that the Phase 1 development at Northstowe does not occur and the associated highway infrastructure for Northstowe is not constructed.

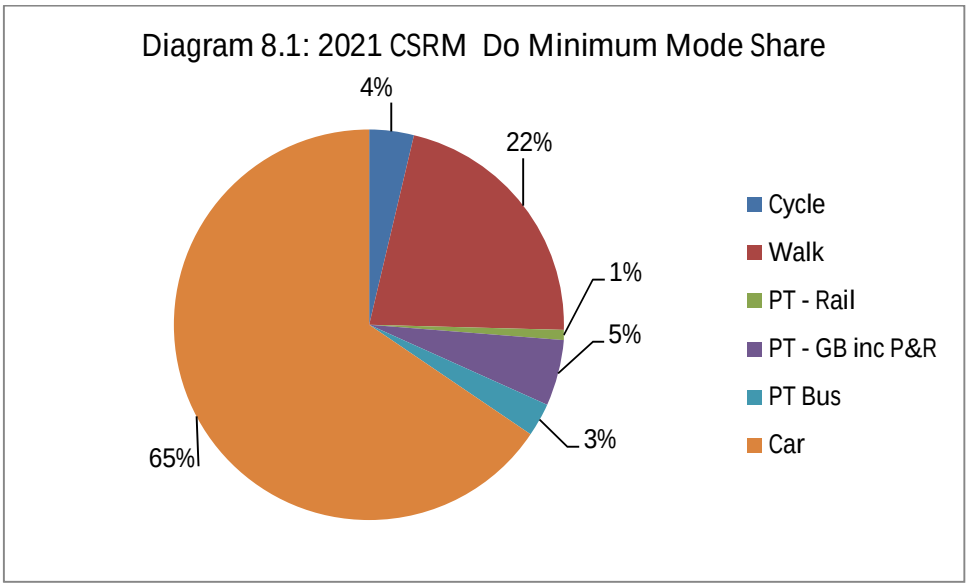
8.3 TRANSPORT MODE SHARE

8.3.1 The 2001 Census provides data on the travel characteristics of people in the Longstanton area. It is being superseded by the 2011 census and pre-dates the CGB. It also includes a smaller population of around 1,350 people in the Longstanton ward. The resultant journey to work mode share is therefore less representative of current conditions, nevertheless the data below assists in depicting local travel trends that are useful for comparison purposes:

- 7.6% Walk & cycle
- 7.8% Public Transport
- 74.0% Car driver
- 10.6% Other

8.3.2 The CSRM reports the forecast mode share in 2021 for all trip purposes for the zones around Phase 1; this includes Longstanton and the area of Northstowe without development. Diagram 8.1 reveals the future 2021 forecast mode share for the local area (all trip purposes) where car travel represents 65.5% of travel. This is broadly consistent with the Census data although the car mode share has reduced slightly. This probably represents the implementation of the CGB and some increased congestion in road conditions.

Diagram 8.1: 2021 CSRM Do Minimum Mode Share



8.3.3 The National Travel Survey (NTS, 2011) confirms that most (18.0%) of all trips begin during the AM peak period (07:00-10:00), indeed 10.0% begin during the AM Peak hour (08:00-09:00) whereas trips beginning during the PM peak (16:00-19:00) represent a much smaller proportion of just 10.8%, although the PM peak period includes a greater range of trip purposes. It follows that the AM peak period provides a more representative indication of the typical regular travel characteristics for the largely residential Phase 1 development at Northstowe.

8.3.4 The presence of the CGB and the park and ride provide a unique additional facility in the area and its use has been extracted from the CSRM. This forecasts that there are 213 CGB trips in the AM peak period from the Longstanton Park & Ride, where almost all trips are to central and northern Cambridge.

8.4 NON-MOTORISED USERS

8.4.1 The Local Transport Plan does not identify any notable improvements to the pedestrian and cycle network in the Longstanton area. Whilst it might be reasonable to suggest that none will occur before 2021 it might equally be reasonable to suggest that minor improvements to existing footways and cycle routes may occur, as part of local safety schemes, off-setting the impact of network traffic growth.

8.4.2 An existing on-road cycle route extends from the CGB Park & Ride site to the Airport Road as well as an off-road facility as part of the (B1050) Longstanton Bypass.

8.4.3 CCC aspire to enhancing the cycleway adjacent to the CGB however, it is unlikely any monies will be available to enhance this route before 2016, however given the recent delivery of the project and other priorities it is unlikely that improvement would occur until demand is well established.

8.4.4 It might be reasonable to suggest that measures to improve enforcement of motorised users of the Airfield Road may occur before 2021 however it is more likely that little if any changes would occur to the cycle network.

8.4.5 Without development at Northstowe it would be reasonable to suggest that road safety or accessibility improvements may deliver minor improvements, otherwise the NMU network would remain largely unchanged.

8.5 PUBLIC TRANSPORT

8.5.1 Over 80% of bus services in Cambridgeshire are operated commercially including the Citi 5 service. Cambridgeshire has recently completed a consultation exercise following plans to cut bus subsidies in the County by £2.77M. Within the last two years a number of bus services were modified, either as a result of commercial decisions or as a result of Council decisions to withdraw or reduce levels of subsidies on contracted routes.

8.5.2 Existing inter-urban bus services in the area are operated commercially thus it is unlikely that services would materially change, however other services may not be operated as frequently during off-peak periods which may affect travel habits in the sub-region. It would be reasonable to assume however that the effects of these spending cuts would be reconciled by the forecast design year of 2021.

8.5.3 There are a number of travel plans in the sub-region but few that could offer any real influence travel patterns in the Longstanton area. Where Travel Plans do or will exist they apply to modest developments that are being or have yet to be occupied. Some provide financial incentives which might increase bus travel however these are unlikely to contribute significantly to service revenue thus services are unlikely to materially change.

8.5.4 Without development at Northstowe no material bus service changes are anticipated although one could be confident that services would not materially improve.

8.6 COMMITTED TRANSPORT IMPROVEMENTS

8.6.1 The Government has committed £20 Million towards interim improvements to the A14 corridor from Huntingdon to Fen Ditton and some of these would improve the performance in the Northstowe area. It is understood that these monies would be split between CCC and the HA, to ensure that the Level of Service on the A14 preserves journey time reliability and highway safety.

Without Northstowe sustainable transport infrastructure and services are unlikely to materially improve.

8.6.2 It is understood that the available funding is likely to include additional measures to encourage more people to divert to the CGB, as well as highway improvements to the following interchanges:

- Girton,
- Histon, and
- Spittals Interchanges.

8.6.3 No infrastructure improvements were identified at the time the CSRM brief was agreed with CCC/HA therefore no improvements were incorporated in the model test scenarios. With the available funding it would be reasonable to suggest that these monies would offer some improvements to the SRN in real-terms.

8.7 FORECAST DO MINIMUM TRAFFIC FLOWS

8.7.1 The SATURN part of the CSRM provides actual traffic flows for the road network and these are contained in the output analysis provided by Atkins, see Appendix G. Table 8.1 summarises the forecast traffic flows in the area of interest around Northstowe, these are presented as two way flows in the AM and PM peak periods in passenger car units (PCUs). The link references are shown in Figure 9. PCUs represent the traffic flow in car units whereby larger vehicles are considered on average to be the equivalent of between 2 cars.

8.7.2 The roads examined in Table 8.1 are; the local roads around the site, roads which potentially may be subject to changes due to the reassignment of traffic and the A14 from the site to Cambridge. These results are discussed below.

Table 8.1: 2021 Do Minimum Scenario Two-Way PCU Trips

Link Ref.	Link Name	Two-Way Flow (PCUs)	
		AM Peak (08:00 – 09:00)	PM Peak (17:00 – 18:00)
S	Site Access	N/A	N/A
1	Station Road, Willingham	991	1114
2	Rampton Road, Rampton	566	496
3	Ramper Road	199	195
4	High Street, Longstanton	204	198
5	B1050 Longstanton Bypass	1062	1257
6	Bucking Way Road	544	631
7	School Lane, Longstanton	410	372
8	Woodside/Airfield Road	Not modelled	Not modelled
9	Oakington Road, Cottenham	979	823
10	B1050 Hatton's Road	1599	1832
11	Water Lane, Oakington	979	823
12	Dry Drayton Rd, Oakington	1583	1430
-	Over Road, Willingham	202	273
19	Oakington Rd, Dry Drayton	613	585
13	A14 West of J28	7132	7529
14	A14 East of J28	7795	8140
15	A14 East of J29 (Bar Hill)	9593	10149
16	A14 East of J30	9602	9993
-	A14 East of J31 (Girton)	7011	7287
-	A14 East of J32 (Histon)	6699	7182

Source: Atkins/CCC CSRM Model Outputs.

8.7.3 Figure 12 provides a summary of all the traffic flows associated with the A14, showing the link flows and the volumes joining and leaving the A14 at each of the local interchanges.

8.7.4 The CSRM reveals that traffic flows on the A14 corridor typically increase from 2011 to 2021 by around 9-11% without development. The level of delay on the A14 corridor increases slightly, with average vehicle speeds falling by around 1mph during the peak hours across the study area as a result of increases in traffic. The resultant effect is that average journey times increase slightly contributing to small changes across the network.

8.7.5 Appendix G reports the ratio of traffic flow volume to capacity (v/c) across the study area, summarised in Table 8.2. These indicate that the A14 is close to capacity during the peak hours, particularly for the 2-lane sections northwest of Junction 29 Bar Hill. The CSRM also reports that the westbound A14 exit, at the Bar Hill south roundabout, is also approaching capacity during the PM peak period.

Table 8.2: 2021 Do Minimum Scenario Volume / Capacity Ratio (V/C)

Link Ref.	Link Name	% Volume / Capacity			
		AM Peak (08:00 – 09:00)		PM Peak (17:00 – 18:00)	
		EB	WB	EB	WB
13	A14 West of J28	85	79	88	84
14	A14 East of J28	97	86	98	93
15	A14 East of J29	81	70	79	81
16	A14 East of J30	78	69	74	79

Source: Atkins/CCC CSRM Model Outputs.

8.7.6 The scale of traffic change on local roads is less significant than the A14 corridor. Table 8.1 reports that forecast traffic flows without development will increase by around 8-9%.

8.7.7 Compared to 2011 appreciable traffic increases are reported on the following links:

- High Street, Longstanton 85%
- School Lane, Longstanton 47%
- Rampton Road, Rampton 31%
- Ramper Road 27%

8.7.8 These increases tend to highlight the level of traffic reassignment from the increased demand along the B1050 corridor due to a combination of traffic growth and other developments in the area. For example in 2011 High Street Longstanton experiences lower traffic volumes following the opening of the Western Bypass. As volumes increase the more lightly trafficked roads in the village become more attractive. Similarly Rampton Road and Ramper Road provide alternative routes for vehicles from the north seeking to avoid the B1050 to the A14.

8.7.9 Without additional traffic management measures it is reasonable to conclude that local roads can expect marked increases in traffic even without Northstowe.

8.8 FORECAST DO MINIMUM JUNCTION ASSESSMENTS

8.8.1 As outlined above the performance of junctions can have an impact on the SATURN assignment process and therefore these have been examined around the area of interest. The CSRM SATURN output provides v/c (volume / capacity) results for all junction approaches (see Appendix G). Values less than 100% show that the approaches are operating within capacity whereas over 100% there is a problem and the queuing delay begins to increase. The v/c values have been interrogated at the fourteen junctions identified in Table 8.3 which are also shown on Figure 13.

Table 8.3: Junctions Assessed in CSRM 2021 Do Minimum Scenario

Junction Ref	Description	Junction Type
1	Willingham crossroads: B1050 / Berrycroft / Over Road	Signalised
2	B1050 Longstanton Bypass / Ramper Road	Roundabout
3	B1050 Longstanton Bypass / Station Road	Roundabout
4	B1050 / Northstowe Access (not built in Do Minimum scenario)	Signalised
5	B1050 Longstanton Bypass / Hatton's Road	Roundabout
6	A14 J28 northern junction	Priority
7	A14 J28 southern roundabout	Roundabout
8	A14 J29 northern roundabout	Roundabout
9	A14 J29 southern roundabout	Roundabout
10	A14 J30 northern junction	Priority
11	A14 J30 southern junction	Priority
12	Oakington crossroads: Dry Drayton Road / Cambridge Road	Signalised
13	Cambridge Road / Park Lane (between Oakington and Girton)	Priority
14	Oakington Road / Rampton Road (Cottenham)	Mini-roundabout (Priority in CSRM)

A14 JUNCTIONS

8.8.2 For the A14 junctions no v/c values greater than 100% were noted, however, problems can sometimes currently be experienced at the Bar Hill interchange. Notably there can be southbound queues on the B1050 in the morning and queues at Saxon Way in the evening peak. Consequently these roundabouts have been assessed further using ARCADY.

8.8.3 The CSRM reports forecast traffic flows assuming traffic flows are broadly consistent over the peak hours. Often conditions at individual less busy junctions can vary over time, some isolated junction assessments can consider these variations by simulating the peak period with escalating demand over a 90 minute period. However due to the level of demand it is assumed for this assessment that the flows over the peak hour remain consistently high and so the flows have been averaged over the peak hour. Either side of the peak hour the adjacent 15 minute periods have been modelled with 75% of the peak hour flow.

Bar Hill, Crafts Way Roundabout

8.8.4 ARCADY roundabout assessments have been undertaken for the northern roundabout, see Tables 8.4 and 8.5. The first analysis used the existing junction geometry, including the segregated left turn lanes. It can be seen that the junction operates within capacity with no problem on the B1050 approach if the lanes are used. However, from site observations it can be seen that the left turn lanes do not operate very effectively and so a second analysis was undertaken without incorporating the left filter lanes, see Tables 8.4 and 8.5. This showed that the B1050 approach was over capacity in the AM peak as witnessed on the ground. For the PM peak it can be seen that the bridge approach over the A14 becomes a problem if the left turn lanes are not used.

Table 8.4: Bar Hill Northern Roundabout - 2021 Do Minimum AM Peak ARCADY Results

Arm	Movement	AM Peak Hour (8-9am) (Left turn lanes used)		AM Peak Hour (8-9am) (Left turn lanes not used)	
		RFC	MMQ	RFC	MMQ
A	B1050 (North)	0.161	1	0.989	27.1
B	A14 Eastbound off-slip	0.095	1	0.102	0.1
C	A14 Overbridge	0.228	1	0.560	1.3

RFC = Ratio of flow to capacity MMQ = Mean maximum queue
Source: Consultant calculated based on ARCADY assessment

Table 8.5: Bar Hill Northern Roundabout - 2021 Do Minimum PM Peak ARCADY Results

Arm	Movement	PM Peak Hour (5-6pm) (Left turn lanes used)		PM Peak Hour (5-6pm) (Left turn lanes not used)	
		RFC	MMQ	RFC	MMQ
A	B1050 (North)	0.123	0.1	0.675	2.1
B	A14 Eastbound off-slip	0.076	0.1	0.079	0.1
C	A14 Overbridge	0.292	0.4	1.040	76.4

RFC = Ratio of flow to capacity MMQ = Mean maximum queue
Source: Consultant calculated based on ARCADY assessment

8.8.5 For the southern roundabout an ARCADY assessment was undertaken for the PM, see Table 8.6. As can be seen from these results the queuing that can occur on Saxon Way has not been replicated. It is known that this is a sensitive junction due to the largely uninterrupted flow on the A14 exit slip road and so the CSRM model has been examined a little more closely. This shows that the v/c value on the northbound overbridge in the PM peak is at 100%. This means that it is nominally at capacity and the speed of traffic will be reduced. Advice was sought from the CSRM and it was indicated that a reduced capacity has been assigned to this link to replicate the overall restricted capacity at the Bar Hill interchange in the PM peak. This might also partly reflect the actual performance of the northern roundabout if the left turn lanes are not used.

8.8.6 In practice this means that as demand increases the speed will reduce which in turn means that traffic either reassigns elsewhere or spreads to the periods either side of the peak hour.

Table 8.6: Bar Hill Southern Roundabout - 2021 Do Minimum PM Peak ARCADY Result

Arm	Movement	AM Peak Hour (7-8am)		PM Peak Hour (5-6pm)	
		RFC	MMQ	RFC	MMQ
A	B1050 (A14 Overbridge)	0.184	1	0.141	1
B	A14 Westbound off-slip	0.556	2	0.828	5
C	Hotel Access	0.119	1	0.105	1
D	Crafts Way	0.160	1	0.048	1
E	Saxon Way	0.178	1	0.477	1

Source: Consultant calculated based on ARCADY assessment

8.8.7 All of the ARCADY outputs for the Bar Hill analysis are contained in Appendix H.

LOCAL JUNCTIONS

8.8.8 The CSRM SATURN v/c results around the other local junctions showed that most should operate satisfactorily in 2021 without Northstowe. Only two junctions were shown to experience problems. These were; Cambridge Road / Park Lane (reference node 13) which had a maximum v/c of 105% and Oakington Road / Rampton Road (reference node 14) with a maximum v/c of 107%. No junction improvements are currently identified within this period and therefore some constraint would exist at this part of the network, affecting some traffic flows in Oakington and Girton.

8.8.9 From a more detailed examination it appears that node 14 is coded as a priority junction in the SATURN model whereas it is now a mini roundabout. This means that the queuing on the minor arm is likely to be reduced as a mini roundabout tends to balance capacity with demand.

8.9 SUMMARY

8.9.1 Without development few if any changes can be expected to support more sustainable travel patterns in the local area. Existing travel patterns will remain largely unaffected.

8.9.2 The results from the CSRM suggest the scale of traffic flow increases represent around 1% per year without development. As a result some junctions will start to experience increased levels of congestion and delay.

8.9.3 Some roads and junctions in the study offer some reserve capacity, and as more congested roads experience more delay, the CSRM suggests that traffic will divert to utilise existing capacity. Whilst local road safety schemes may help manage the impact of these changes it would be reasonable to suggest that a number of local roads will see marked increases in traffic flow without development.

9 2021 Conditions with Development

9.1 CAMBRIDGE SUB REGIONAL MODEL (CSRM)

9.1.1 The CSRM has been used to assess the proposed Phase 1 development. Two zones have been used for this purpose, one zone containing the residential development and the other zone the employment area. To model accessibility levels these have adopted the following typical distances to the CGB interchange.

- Residential – 585m
- Local centre – 340m
- Employment – 190m

9.1.2 The model also includes the proposed access arrangements to the site. These have been represented by a traffic signal 'T' junction with unlimited capacity which means that the full turning movements due to Northstowe can be obtained. It also means that the new junction does not add undue delay to the B1050 corridor.

9.1.3 NMU access to the CGB services has been modelled together with the proposed 20 minute Citi 5 service, diverting into the site as shown in Figure 11.

9.1.4 As identified in Section 8 the specific development content is added to the 'do minimum' model scenario. Again, no improvement to the A14 corridor is included in the scheme model.

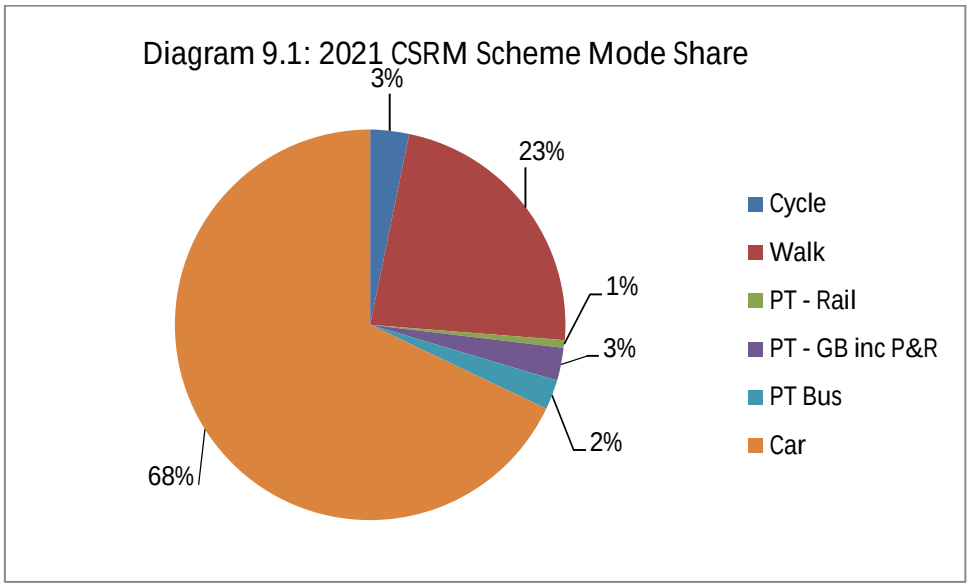
9.2 DEVELOPMENT TRIP CHARACTERISTICS

9.2.1 The land use element of the CSRM model provides details on the trip characteristics of the proposed development and Appendix F contains a summary of this part of the model.

9.2.2 The CSRM planning and transport output reveals that the population of Longstanton and Northstowe (Phase 1) combined will roughly double, with a similar demographic profile to the existing community. It suggests however, that with an increase in younger families and lower professional / intermediate adults the car ownership and car use will materially increase. Whilst the proposed Travel Plan will adopt steps to reduce these effects this may take a few years to take effect.

9.2.3 In addition to these residual trends the proposed employment will also attract trips. Given the size of Northstowe and Longstanton in 2021 the proportion of local resident workers will be small. The results also suggest that employment demand in the sub-region may be insufficient to occupy the employment area fully by 2021.

9.2.4 The output from the CSRM allows for a comparison to be drawn on the effect of the Phase 1 development on the modal share in the area. Diagram 8.1 revealed the future do minimum forecast mode share for the local area (i.e. Longstanton) where car travel represents 65% of travel. Diagram 9.1 reveals very similar mode share patterns when Northstowe is added to Longstanton. However as the resident and working population of the area more than doubles, the travel demand and mode share by car rises to 68%. The notable rise appears to be as a result of the employment uses at the proposed development.



9.2.5 A direct comparison between Diagrams 8.1 (Do Nothing) and 9.1 (with Northstowe, Phase 1) reveal little appreciable changes. The number of walking trips increases slightly and although the changes in public transport trips are negligible (typically less than 40 additional trips for each mode) the scale of existing trips captured by the CGB Park & Ride begins to reduce the impact of additional traffic onto the network.

9.2.6 Overall, a conclusion can be drawn that the mode share of sustainable transport is not significantly affected by the proposed development with just the Phase 1 development. It should be noted that the CSRM does not include any positive travel planning measures. It is therefore to be expected that the mode share reflects the existing uses at Longstanton which is a semi-rural location. This means that there will be an overestimate of traffic generation and that the traffic impact will therefore be a reasonable worse case. The implementation of the Travel Plan with targets to deliver a 10% mode shift would thereby reduce the car mode share to around 61% by 2026. Such a mode share would represent a more sustainable development.

9.2.7 As stated in Section 8, The NTS confirms that most trips begin during the AM peak period. As the AM peak provides a clearer indication of regular trips for the largely residential development of Phase 1, this section examines the AM peak period (07:00-10:00) in greater detail to inform travel trends.

AM Peak Travel Trends

9.2.8 During the AM peak period a range of travel patterns occur. The CSRM forecasts these based on local trends, relative to the available land uses in the sub-region and accessibility to jobs and schools.

9.2.9 Around 400 person trips from Northstowe will be associated with work and business travel, with most destined for Cambridge, Huntingdon and surrounding settlements. Around 130 of these trips include destinations to the north and west. As many of these trips are in less accessible areas, the number of car trips is relatively high, representing around 100 cars.

9.2.10 For education purposes around 300 person trips would occur, however approximately 80 of these are forecast to be undertaken by car beyond the primary development site, many as part of a trip chain to other locations or to higher education.

9.2.11 The CSRM determines mode choice for all trips based on a consistent cost / time relationship, enabling travellers to select their mode of travel based on access options. It does include variations of access to a car but does not take account of discounted or free public transport travel which may apply to *home to school* travel and associated special bus services. It is therefore likely that secondary school and sixth form travel would include much fewer car based trips as part of Phase 1 and many of these would be become internal trips once subsequent phases of development are delivered.

9.2.12 During the AM Peak period (0700 to 1000), the development is forecast to generate 1379 and 2331 person trips to and from Northstowe respectively.

9.2.13 This includes 488 residential trips (around 20% of residential trips) which are internal between the land uses within the development.

9.2.14 As 22% of all trips are for education purposes, it is unsurprising that over 500 residential trips are forecast to be undertaken on foot or bicycle, although future phases of development may increase this.

9.2.15 For Northstowe itself the CSRM assumes that the Phase 1 development will attract a population of 3,200 persons within 1,500 dwellings, along with a total of 648 jobs in the employment area and at the other uses in the Phase 1 development.

9.2.16 Around half of all public transport trips to or from Northstowe are associated with the CGB. During the AM peak period the CSRM forecasts that 241 CGB trips would occur from the Longstanton Park & Ride, revealing an increase from 213 without the Phase 1 development.

Around 20% of residential trips will remain internal to Northstowe

9.2.17 Interestingly the original A14 / CGB model (CHUMMS) forecast CGB trips would be around 1.5M passengers per year at opening and this would climb to around 3.5M passengers per year around three years later.

9.2.18 Recent figures confirm that early use of the CGB has been nearly 50% greater than originally forecast thus operators are now running more frequent services. With additional services it would be reasonable to suggest that more sustainable travel patterns would arise and the use of CGB services by existing motorists and Northstowe residents and employees would be greater than the CSRM model predicts.

Peak Hour Vehicle Trip Generation

9.2.19 The CSRM forecasts the following vehicle travel demands at the site entrance:

- AM Peak Hour – 189 in, 463 out; and
- PM Peak Hour – 448 in, 242 out.

9.2.20 463 vehicle departures in the AM peak hour equates to a vehicle trip rate of 0.31 vehicles per dwelling for the 1,500 households. This rate is comparable to TRICS data for the TRICS categories:

- Below average private residential development; or
- Average mixed private/non-private residential development.

9.2.21 The SATURN model forecasts 189 vehicle arrivals in the AM Peak hour and 242 departures in the PM Peak hour, for a combination of employment, retail and community land uses. If the majority of retail and community trips are considered to be internal, pass-by or diverted trips, one can consider the employment to generate around 150-200 car trips.

9.2.22 Assuming a GFA of 12,250m^2 for the proposed mixed use (B1, B2 and B8) employment this could be considered to result in a total trip generation rate of around 1.4 / 100m^2 GFA, which is comparable with those observed at Cambridge Business Park and other business parks and industrial estates.

9.3 NON-MOTORISED USERS

9.3.1 The development master plan has been designed to exploit the potential for walking and cycling, offering excellent links to Longstanton and the CGB Park & Ride site.

9.3.2 The site access arrangements are designed to provide a high quality public realm on the B1050 Station Road, incorporating a number of pedestrian crossings some of which are integrated into proposed junctions.

9.3.3 A number of existing footpaths (public rights of way) link the site with Magdalene Close and Prentice Close, offering more direct links to existing facilities within the existing village.

9.3.4 An existing on-road cycle route extends from the proposed site access to the Airfield Road as well as an off-road facility as part of the (B1050) Longstanton Bypass. The proposed development includes a street hierarchy to ensure there is a natural continuation of the route quality into the primary development site along primary and secondary streets.

9.3.5 All these measures are designed to increase and maximise the number of local movements undertaken without the use of a car.

9.4 PUBLIC TRANSPORT

9.4.1 As part of the Phase 1 development at Northstowe improvements to the bus network will form part of the mitigation package. This will include enhanced infrastructure such as low floor accessibility stops and real time information at key stops.

9.4.2 Whilst it remains the intention of the development promoters to eventually supplement and divert CGB bus services through Northstowe, in line with the 2007 outline application, this will not occur for the first phase of development. As noted in Section 6 the development master plan has been developed to ensure that NMU travel to the CGB is direct and delivers an attractive environment.

9.4.3 The development will incorporate a diversion to the existing Citi 5 service turning into the primary development site at points of staged completion. To mitigate the impact of these diversions additional buses will operate on the route to maintain the service frequency.

9.4.4 It is also important to note that the Travel Plan will provide a number of financial incentives to increase bus use. These will effectively reduce the cost of bus travel for a modest period to help introduce residents and workers to the benefits of bus travel.

9.5 FORECAST SCHEME TRAFFIC FLOWS

9.5.1 The actual 2021 CSRM SATURN scheme flows have been extracted for the same roads as identified for the do minimum scenario. Appendix G contains the 2021 scheme SATURN output. Table 9.1 shows the number of two-way PCU trips for the road links considered, Figure 9 shows the location of these roads.

Table 9.1: 2021 Scheme Two-Way PCU Trips

Link Ref.	Link Name	Two-Way Flow PCUs)	
		AM Peak (08:00 – 09:00)	PM Peak (17:00 – 18:00)
S	Site Access	652	690
1	Station Road, Willingham	1005	1115
2	Rampton Road, Rampton	588	581
3	Ramper Road	259	341
4	High Street, Longstanton	242	265
5	B1050 Longstanton Bypass	1308	1368
6	Bucking Way Road	649	797
7	School Lane, Longstanton	451	412
8	Woodside / Airfield Road	Not modelled	Not modelled
9	Oakington Road, Cottenham	964	793
10	B1050 Hatton's Road	1905	2029
11	Water Lane, Oakington	964	793
12	Dry Drayton Rd, Oakington	1583	1381
-	Over Road, Willingham	233	310
19	Oakington Rd, Dry Drayton	661	560
13	A14 West of J28	7168	7544
14	A14 East of J28	7769	8171
15	A14 East of J29 (Bar Hill)	9811	10194
16	A14 East of J30	9734	10051
-	A14 East of J31 (Girton)	7013	7297
-	A14 East of J32 (Histon)	6692	7206

Source: Atkins/CCC CSRM Model Outputs.

Improvements to the Citi 5 Bus service are proposed to help mitigate the development impact.

9.5.2 Table 9.1 also shows the traffic movements at the site access and it confirms that the Phase 1 development will generate 652 external vehicle movements in the AM peak and 690 in the PM peak.

9.5.3 Table 9.2 illustrates the change in traffic flows between the Do Minimum and Scheme scenarios. Figures 14 and 15 show the flows on the road network for the AM and PM peak hours respectively.

Table 9.2: 2021 Change in Two Way Flow from Do Minimum to Scheme

Link Ref.	Link Name	Change in PCUs			
		AM Peak (08:00 – 09:00)	AM Peak % Change	PM Peak (17:00 – 18:00)	PM Peak % Change
S	Site Access	N/A	N/A	N/A	N/A
1	Station Road, Willingham	14	1%	1	0%
2	Rampton Road, Rampton	22	4%	85	17%
3	Ramper Road	60	30%	146	75%
4	High Street, Longstanton	38	19%	67	34%
5	B1050 Longstanton Bypass	246	23%	111	9%
6	Bucking Way Road	105	19%	166	26%
7	School Lane, Longstanton	41	10%	40	11%
8	Woodside / Airfield Road	-	-	-	-
9	Oakington Road, Cottenham	-15	-2%	-30	-4%
10	B1050 Hatton's Road	306	19%	197	11%
11	Water Lane, Oakington	-15	-2%	-30	-4%
12	Dry Drayton Rd, Oakington	0	0%	-49	-3%
-	Over Road, Willingham	31	16%	37	14%
19	Oakington Rd, Dry Drayton	48	8%	-25	-4%
13	A14 West of J28	36	1%	15	0%
14	A14 East of J28	-26	0%	31	0%
15	A14 East of J29 (Bar Hill)	218	2%	45	0%
16	A14 East of J30	132	1%	58	1%
-	A14 East of J31 (Girton)	2	0%	10	0%
-	A14 East of J32 (Histon)	-7	0%	24	0%

Source: Consultant calculated based on Atkins/CCC CSRM Model Outputs.

A14 LINK FLOWS

9.5.4 The results for the A14 in Table 9.2 and contained in Figure 12 generally show that there are very few increases in traffic on the A14 and, due to the volume of traffic, the percentage changes are low. Notably to the west of Bar Hill (J29) the greatest changes are just over 30 PCUs but still around 0%. To the east of Girton (J31) the change in flows are virtually zero. It can therefore be concluded that there will not be a material impact on the A14 to the west of Bar Hill or to the east of Girton.

9.5.5 There are greater changes on the A14 between Bar Hill and Girton, however there are three lanes in each direction on this length and therefore there is some capacity for an increase in traffic.

9.5.6 The impact of these changes can be assessed by comparing the scheme v/c values shown in Table 9.3 with the do minimum values in Table 8.2. It can be seen that there is very little change on adjacent sections of the A14, with very subtle changes west of Bar Hill.

Table 9.3: 2021 Scheme Scenario V/C Values

Link Ref.	Link Name	% Volume / Capacity			
		AM Peak (08:00 – 09:00)		PM Peak (17:00 – 18:00)	
		EB	WB	EB	WB
13	A14 West of J28	85	80	88	85
14	A14 East of J28	97	85	98	93
15	A14 East of J29 (Bar Hill)	88	71	83	81
16	A14 East of J30	79	70	74	80

9.5.7 From a more detailed interrogation of model it is apparent that the levels of congestion and delay at the Bar Hill roundabouts has an effect on the volume of traffic choosing to access the A14 via the B1050. Whilst the level of delay is modest for network traffic the combination of additional delays results in subtle levels of redistribution to alternative routes, particularly for trips to and from locations to the north. Consequently the overall impact on the A14 is negligible.

LOCAL ROAD COMPARISON

9.5.8 Of the local roads (excluding the A14) examined in Table 9.2, four have been identified by the CSRM as experiencing either a reduction in flow in peak periods or a negligible increase. These are:

- Station Road, Willingham;
- Oakington Road, Cottenham;
- Water Lane; and
- Dry Drayton Road, Oakington.

9.5.9 Conversely the following roads experience some increases in traffic:

- Rampton Road, Rampton;
- Ramper Road;
- High Street, Longstanton;
- B1050 Longstanton Bypass;
- Bucking Way Road;
- School Lane, Longstanton;
- B1050 Hatton's Road;
- Over Road, Willingham; and
- Oakington Road, Dry Drayton.

9.5.10 From these changes there are a number of key changes in traffic patterns. First, not surprisingly, the traffic increases on the main B1050 corridor to the A14, namely along the bypass and Hatton's Road. The 30-36% increase in traffic is also responsible for some traffic returning to Longstanton village along the High Street and School Lane, although only 10-17% of this traffic is actually associated with the development itself.

9.5.11 The increase in traffic on B1050 is also responsible for traffic diverting along some minor roads to access alternative A14 junctions. This is reflected by the increase in traffic along Ramper Road and Bucking Way Road. To a lesser extent some traffic also diverts through Over to access the A14 and through Rampton in order to access the north of Cambridge by alternative routes.

9.5.12 Notably the traffic flow changes through Willingham are negligible. Given that very little Northstowe traffic travels through Willingham this indicates that some other traffic from villages to the north has diverted away from the B1050 corridor.

9.5.13 The other key corridor near Northstowe is the route from Cottenham, through Oakington to the A14 and then Dry Drayton beyond. Notably the traffic flows along this corridor are generally unaffected by the development and there are some small reductions. Given that the Phase 1 development only has an access to the B1050 and any connections to the Oakington corridor are more remote then this is not surprising. The small reductions in traffic would appear to be due to the small increases on the A14 particularly from Bar Hill to Girton, which means that travelling to the Dry Drayton interchange to access the A14 becomes a little less attractive.

9.5.14 The change in traffic through Dry Drayton is more varied as there is an increase in the AM but a decrease in the PM. This change probably reflects subtle changes in traffic assignments for traffic travelling to the west changing between the A14 and A428.

9.5.15 Generally the change in traffic flows on the local roads is not excessive and are within the theoretical capacity of the roads. However, it is accepted that some of these changes may be detrimental to the villages and therefore, where the increases are deemed to be significant, traffic management / calming measures could be introduced.

9.5.16 Aside from the links already identified, the CSRM does not indicate significant increases in vehicle numbers elsewhere. All other links will be able to accommodate their respective changes in traffic flow with marginal changes to queues or delays.

9.6 FORECAST SCHEME JUNCTION ASSESSMENTS

9.6.1 The junction performance around the proposed development was examined again for the scheme scenario. For most of the junctions shown in Figure 13 the v/c values remain below 100%. However, the performance of key and proposed junctions needs to be reviewed.

A14 JUNCTIONS

9.6.2 As identified in Section 8 the key junction along the A14 is at Bar Hill. This experiences the greatest change in flows due to the development and also experiences problems at present.

9.6.3 The Bar Hill north roundabout has been assessed using ARCADY for the AM and PM peak hours using the SATURN actual flows. As identified in Section 8 the performance of the roundabout, particularly in the AM peak is best replicated by using ARCADY and not modelling the left turn lanes. However, it is possible that if the junction becomes busier then the left turn lanes may be used more efficiently. Consequently the scheme analysis has been undertaken for both these scenarios, see Tables 9.4 and 9.5. Appendix I contains the output from these assessments.

Table 9.4: Bar Hill Northern Roundabout AM Peak ARCADY Results

Arm	Movement	AM Peak Hour (8-9am) (Left turn lanes used)		AM Peak Hour (8-9am) (Left turn lanes not used)	
		RFC	MMQ	RFC	MMQ
A	B1050 (North)	0.164	1	1.170	101
B	A14 Eastbound off-slip	0.112	1	0.112	1
C	A14 Overbridge	0.217	1	0.613	1

Source: Consultant calculated based on ARCADY assessment

Table 9.5: Bar Hill Northern Roundabout PM Peak ARCADY Results

Arm	Movement	PM Peak Hour (5-6pm) (Left turn lanes used)		PM Peak Hour (5-6pm) (Left turn lanes not used)	
		RFC	MMQ	RFC	MMQ
A	B1050 (North)	0.127	0.1	0.774	3.4
B	A14 Eastbound off-slip	0.097	0.1	0.097	0.1
C	A14 Overbridge	0.265	0.4	1.052	90.7

Source: Consultant calculated based on ARCADY assessment

9.6.4 The results show again that there is no problem at the junction if the left turn lanes are used but there are queues on the critical approaches if the left turn lanes are not used. In practice the development may not make much difference to the performance if people use the lanes as congestion increase. Alternatively some minor changes to the left turn lanes may increase their use.

9.6.5 For the southern roundabout it was concluded for the do minimum scenario that the SATURN actual flows are constrained by the overall limit to capacity modelled on the overbridge in the PM peak hour. This is replicated again in the scheme situation whereby the v/c on the overbridge in the PM peak rises marginally from 100% in the do minimum to 103% with the scheme. This is indicative of the increase in traffic along the B1050 corridor.

9.6.6 ARCADY assessments have been undertaken for the southern roundabout and the results are summarised in Table 9.5 and the outputs are in Appendix I.

Table 9.5 Bar Hill Southern Roundabout PM Peak ARCADY Result

Arm	Movement	AM Peak Hour (8-9am)		PM Peak Hour (5-6pm)	
		RFC	MMQ	RFC	MMQ
A	B1050 (A14 Overbridge)	0.193	1	0.148	1
B	A14 Westbound off-slip	0.559	2	0.833	5
C	Hotel Access	0.120	1	0.103	1
D	Crafts Way	0.161	1	0.146	1
E	Saxon Way	0.178	1	0.482	1

Source: Consultant calculated based on ARCADY assessment

9.6.7 The results for the Bar Hill south roundabout show that there is very little change to the operation of this junction compared to the do minimum scenario.

LOCAL JUNCTIONS

9.6.8 Junctions 13 and 14, shown in Figure 13, remain the only junctions operating above 100% v/c. Indeed the difference between the do minimum and scheme scenarios is only between 0% and 1% again confirming the development impact is negligible even at congested junctions.

9.6.9 The only other junctions which need to be reviewed are the proposed new access junctions on the B1050.

B1050 / NORTHSTOWE ACCESS JUNCTIONS

9.6.10 Concurrent with the production of the development master plan the CSRM was run to produce forecast traffic flows. As identified above the Northstowe access junction was simply modelled as a signalised 'T' junction with sufficient capacity to avoid any delays due to the junction. Since the modelling was completed the master plan and access arrangements have been determined in more detail. This has resulted in a number of junctions serving the various parcels of land as described earlier and shown in Drawing 2951/SK004/D (Appendix E).

9.6.11 On travelling from the A14, the first access junction is a minor priority junction serving approximately 80 units. Then there are two linked traffic signal junctions into the main residential area to the east of the B1050. These are followed by a ghost island priority junction serving the employment area. Each of these junctions have been assessed with the actual scheme turning flows from the CSRM.

9.6.12 As outlined above there are no specific turning movements for the minor residential access. These have therefore been estimated using the two way flow to the south of the modelled site access and then adjusting them with an estimate for the traffic that would be generated by 80 residential units. Table 9 shows the results of the PICADY analysis for the AM and PM peak hours which are contained in Appendix J.

Table 9.6: 2021 PICADY Results for Minor Residential Access

Arm	AM Peak		PM Peak	
	RFC	Q	RFC	Q
Western Access	0.085	1	0.036	1
B1050 Southbound	0.025	1	0.047	1

Source: Engineer Calculation

9.6.13 From Table 9.6 it can be seen that there would be no capacity problems with this junction.

9.6.14 Appendix E shows the two proposed signal junctions which will be linked. These have also been designed so that all pedestrian crossings can be accommodated as part of the traffic staging, ensuring that pedestrians can 'walk with traffic'. These junctions were modelled in one LINSIG analysis. The actual turning movements from the SATURN output were used. None of the flows were reduced to take account of traffic using the two other priority junctions, hence the results are robust. Table 9.7 shows the results of this analysis and Appendix K contains the output.

Table 9.7: 2021 LINSIG Results for Main B1050 Access

Link Name	AM Peak		PM Peak	
	DOS %	Queue	DOS %	Queue
B1050 Southbound	40.0	5	35.1	5
Northern Access	45.1	2	32.6	2
B1050 Southbound (Internal)	72.4	8	86.6	12
Southern Access	42.7	6	16.0	3
B1050 Northbound	71.7	9	86.5	18
B1050 Northbound (Internal)	26.6	2	39.0	2
PRC (AM Peak 75s, PM Peak 90s Cycle time with Peds)	**24.3%**		**3.9%**	

DOS = degree of Saturation PRC = Practical Reserve Capacity
Source: Model Flows

9.6.15 From Table 9.7 it can be seen that the main signal access junctions operate with reserve capacity for the design year, with modest reserve capacity to accommodate subsequent development phases in advance of other infrastructure. It should be noted that this result assumes that the pedestrians demand to cross the B1050 every cycle. In practice this would not occur and so the actual practical reserve capacity is likely to be considerably higher.

9.6.16 Finally, the employment ghost island priority access was assessed using PICADY. For this junction the two way flows north of the CSRM site access junction were used and adjusted with an assessment of the traffic generation for the total proposed employment. Table 9.8 shows the PICADY results for this junction and the analysis is contained in Appendix L.

Table 9.8: 2021 PICADY Results for Employment Access

2021 Phase 1 Baseline + Development Flows				
Arm	AM Peak		PM Peak	
	RFC	Q	RFC	Q
Employment Access	0.053	1	0.154	1
B1050 Northbound	0.082	1	0.018	1

Source: Engineer Calculation

9.6.17 From Table 9.8 it can be seen again that there is significant reserve capacity at this junction which means that queues and delays beyond 2021 will remain negligible with the proposed access junction strategy.

9.7 OVERALL NETWORK COMPARISON

9.7.1 Data for the overall sub regional network included within the CSRM displays the cumulative impact of the Phase 1 development. Table 9.9 compares the overall of average speeds and total travel time for the whole network.

Table 9.9: CSRM Complete Network Comparison

	AM Peak (08:00 – 09:00) Do Minimum	PM Peak (17:00 – 18:00) Do Minimum	AM Peak (08:00 – 09:00) Do Something	PM Peak (17:00 – 18:00) Do Something
Total Travel Time (PCU hrs)	96,379	103,401	96,009	103,342
Average Speed (kph)	54.4	54.2	54.5	54.2

Source: Atkins/CCC CSRM Model Outputs

9.7.2 It is accepted that this data is the total for a very large network but it does provide a summary of the overall performance. The data in Table 9.9 shows that in terms of total vehicle travel time, which includes both time on the move and when delayed, the Scheme scenario indicates a very small decrease in both AM and PM peaks. The CSRM reports that the average speed across the entire network, with the Phase 1 development, will have no discernible impact on speeds between the 'with' and 'without' development scenarios.

9.7.3 Although small, these apparent counterintuitive results indicate that as demand increases on the road network there are some small transfers to other transport modes.

9.7.4 Whilst in both peaks the decrease in travel time is less than one percent, it demonstrates that beyond the proposed bus service improvements the need for further mitigation measures for the Phase 1 development should be modest.

9.8 SUMMARY

9.8.1 This section has analysed data from the CSRM supplied by CCC. Link flows and junction turning movements have been assessed for scenarios which exclude and include the proposed Phase 1 development.

9.8.2 Overall there is increased traffic demand from the primary development site to the A14. This results in other traffic reassigning to other roads nearby and over a wider area. At the same time there is also a small change of transport mode. The consequence of this is that there is little net change at the Bar Hill interchange and generally the flows on the A14 are only subject to minor changes. The only exception to this is the increase in traffic on the three lane section of the A14 where there is some additional capacity available.

9.8.3 The increase in traffic on the local roads around the site varies. Theoretically these increases are acceptable in terms of capacity only, however, it is acknowledged that they may be material for local residents. It is therefore proposed that traffic management measures should be implemented in areas which experience a significant increase.

9.8.4 It has been demonstrated that the access junctions on the B1050 have capacity for the development in the forecast design year.

9.8.5 When considering the effect on all factors, including but not limited to, link flows, junction capacities and journey times, the proposed development has been evaluated to have an overall negligible impact on the highway network in the area.

10 Conclusions

10.1 EXISTING SITUATION

10.1.1 The proposed development is located in a largely rural area in the Cambridge hinterland consequently existing travel patterns include multiple inter-urban trips, with a bias towards car travel. The primary development site however is located to the north of Longstanton where the recently opened CGB has delivered greater accessibility to a range of land uses and sustainable travel alternatives.

10.1.2 The A14 is a busy trunk road corridor, operating close to capacity and therefore contributing to greater use of local roads in the surrounding area. Despite this the accident record is consistent with similar roads accommodating similar traffic volumes.

10.1.3 To address capacity problems the Department for Transport, with the Highways Agency, had programmed improvement works that were at an advanced stage until funding was cancelled as part of spending reviews. The Department for Transport is currently advancing interim measures, inviting the public and professionals to identify possible improvement options.

10.1.4 In recent years the Longstanton Western Bypass has been fully opened and this has reduced traffic flows within Longstanton.

10.2 DEVELOPMENT AND TRANSPORT STRATEGY

10.2.1 The proposed development will expand the existing community, offering a number of complementary land uses and pedestrian / cycle infrastructure to assist local needs, exploiting access to the CGB. Additional employment and retail uses are also proposed that should help reduce the number and length of some trips into urban areas on congested corridors.

10.2.2 The design of the site will ensure that it is highly permeable for pedestrians and cyclists. Clear and direct routes will be provided through the site with access to the Park & Ride site. These will also be designed to expand into further phases of the new town.

10.2.3 Whilst the development is phased, the longer-term plan would be to provide busway services through the new town. For Phase 1 there will be easy access to the current CGB services and the Citi 5 bus service will be extended and diverted into the development linking also to the adjacent Park & Ride site.

10.2.4 For Phase 1 all access will be from the B1050 north of Longstanton. At present for this first phase the B1050 will continue to run along its current alignment and pass through a small corner of the development. Consequently it will be designed to be an integral part of the urban area whilst maintaining its role and capacity. The design will be undertaken such that it is possible to reduce the scale and nature of the road if further development occurs and an alternative alignment is selected for the B1050 through traffic.

10.2.5 Travel Plans will be instituted at the site in order to seek to reduce the level of car related travel. These travel plans could also be extended to the neighbouring settlements in order to reduce existing car travel demand.

10.2.6 There will be a Construction Management Plan. This will ensure that all construction vehicles are managed and controlled to reduce their impact on the local road network particularly at peak times.

10.3 FORECAST CONDITIONS

10.3.1 Without further development it would be reasonable to state that local infrastructure is unlikely to materially change. Investment in the sub-region has 'pump-primed' pedestrian, cycle and public transport infrastructure and services, to exploit the potential for sustainable travel. Whilst these will continue to support other efforts to increase non-car trends, it is unlikely that further measures would be delivered within the coming five years.

10.3.2 The Department for Transport's investment in interim improvements for the A14 corridor are likely to deliver some junction improvements at Girton, Histon and Spittals interchanges, with complementary measures on local roads. These will help manage traffic flows and improve safety on the A14 corridor, and indirectly supporting greater use of the Cambridgeshire Guided Busway.

10.3.3 Without further investment modest traffic growth (around 1% per annum) can be expected to occur. Transport modelling reveals that much of this demand will result in a series of travel changes in the area, including greater use of roads with reserve capacity. Without intervention measures this will include increases on the following roads:

- High Street, Longstanton
- School Lane, Longstanton
- Rampton Road, Rampton
- Ramper Road

10.3.4 A few junctions, notably the Bar Hill roundabouts, would continue to operate at or marginally above capacity resulting in some levels of congestion and/or delay.

10.4 DEVELOPMENT IMPACT

10.4.1 The development results in around 650-700 vehicles per hour (2-way) during the peak hours. As a result, many existing travel patterns change, with modest changes to traffic flows across the sub-region. There are modest increases on some roads and small reductions on others.

10.4.2 Transport modelling reveals that traffic flow increases are typically within the capacity limits of existing roads or junctions. A few junctions would operate at or above capacity, typically with marginal changes compared to those without development.

10.4.3 On the A14 the impact from the Phase 1 development is negligible. However, the promoters acknowledge both Government and local concern with regards to the performance of the A14. National policy suggests that any potential improvements to the Strategic Road Network should be identified as part of the Regional Strategy on behalf of the Secretary of State. These improvements should respect the general capacity of the corridor and where possible support more sustainable travel patterns. The Department for Transport are consulting interested parties on options for the A14 Challenge and the Northstowe promoters accept and intend to participate in any coordinated measures which may be brought forward.

10.4.4 In addition to bus service improvements, it is proposed to advance a series of modest traffic management measures to mitigate the development if the traffic flow increases become significant. These could include:

- Tackle traffic flow increases through Longstanton High Street;
- Manage traffic speeds on Ramper Road; and
- Enhance enforcement and/or traffic management on Longstanton (Airfield) Road.

10.4.5 Travel Plans will be established targeting a 10% reduction in car travel by:

- Establishing a Travel Plan website,
- Providing residents and staff travel information;
- Exploiting car sharing opportunities (through Cam-Share),
- Providing public transport 'taster tickets'; or
- Supporting cycle purchases.

10.5 CONCLUSIONS

10.5.1 It is acknowledged that the proposed development is in an area of high travel demand. Consequently the development results in additional pressure on the transport network. The recent opening of the CGB has provided some additional infrastructure to meet this demand.

10.5.2 The proposed development does add to the demand in the area. The consequence of this additional demand means that there are subtle changes in travel patterns across the region with people changing travel mode and changing their travel routes. This means that the impact on the immediate transport network is reduced.

10.5.3 Generally the highway impact is negligible although there are some specific areas where measures will be needed to mitigate the development impact. These will need to be agreed with SCDC, Cambridgeshire County Council, the Highways Agency and the relevant local representatives and they could be undertaken in association with any relevant strategic and local transport policies.