COUNTRYSIDE PROPERTIES (UK) LTD
AND ESSEX COUNTY COUNCIL
PROPERTY SERVICES
OAKLANDS MEADOWS
SOUTH WOODHAM FERRERS,
CHELMSFORD, ESSEX

TRANSPORT ASSESSMENT

OCTOBER 2021

the journey is the reward

COUNTRYSIDE PROPERTIES (UK) LTD AND ESSEX COUNTY COUNCIL PROPERTY SERVICES OAKLANDS MEADOWS SOUTH WOODHAM FERRERS, CHELMSFORD, ESSEX

TRANSPORT ASSESSMENT

OCTOBER 2021

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Prepared by:	**JM**
Approved by:	**IM**
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Countryside Properties (UK) LTD and Essex County Council Property Services
South Woodham Ferrers, SOUTH WOODHAM FERRERS, Chelmsford, Essex
Transport Assessment

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1 Introduction and Executive Summary

Introduction

1.1 This Transport Assessment has been prepared by Mayer Brown Ltd. on behalf of Countryside Properties (UK) Limited and Essex County Council Property Services in relation to Oaklands Meadows, South Woodham Ferrers, Essex, to support an application for:

1.2 *"Outline Planning Permission, with all matters reserved (but with full details provided for the principal means of vehicular access to the site, the initial phase of on-site highway works, strategic ground reprofiling, strategic surface water attenuation, and strategic foul drainage) for:*

- Residential development of up to 1020 homes (Class C3);
- Up to 88 bedroom units of residential care use (Class C2 use);
- Up to 1,100 sq m GEA Neighbourhood centre (including retail uses) within class E and including a multi-purpose community centre;
- Up to 1,200 sqm GEA of other commercial uses falling within Class E (of which not less than 1000 sq m to be business floorspace within Use Class Eg);
- 2fe Primary School and 2 no. 56 place Early Years facilities
- 5 serviced plots for Travelling Showpeople (GEA 10,000 sq m);
- Open spaces and other landscaped areas, including parks, play areas wildlife habitat areas, allotments, community orchards, formal/informal open space, playing fields and associated ancillary maintenance buildings, structures and pavilion;
- All associated highway infrastructure, including means of vehicular access to the site and all internal roads and service areas;
- Pedestrian, cycle and bridleway routes (including partial extinguishment of Bridleway 25);
- Vehicular and cycle parking to serve the proposed development;
- All drainage works including foul drainage infrastructure, Sustainable Urban Drainage Systems including ground and surface water attenuation features;
- Ground Reprofiling Works;
- Demolition of existing building;
- All associated ancillary works including services and utilities."

1.3 For the purposes of testing the impact of the Proposed Development, this report assesses 1200 Residential Units allowing for further development within the Allocation Area (Strategic Growth Site 10) , together with the other uses. For clarification;

- The neighbourhood centre test includes for 818 sqm Class E land use (Previously Class A1), with the residual area being the community centre.
- As a sensitivity, the Class E land use, previously B1 has been tested for 2500 sqm.
- The 5 serviced plots for Travelling Show people is considered to generate trips predominately outside of the peak period.

1.4 The location of the Proposed Development is shown in **Figure 1.1**. It forms part of Strategic Growth Site 10 of the approved Chelmsford Local Plan.

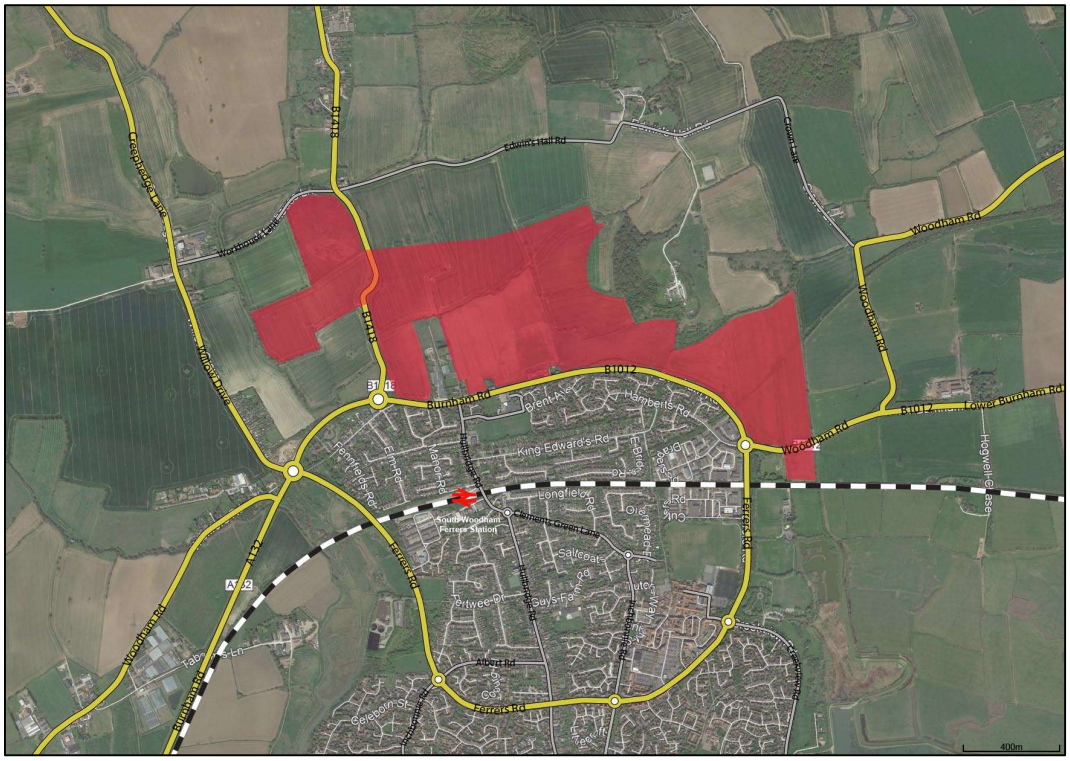


Figure 1.1: Site Location

1.5 Plans showing how the development will be accessed form **Appendix A** to this report.

1.6 This Transport Assessment sets out:

- In Section 2: the relevant transport Policy Framework in relation to the Proposed Development
- In Section 3: the existing transport conditions in the area surrounding the Proposed Development (including traffic surveys) as existed prior to the COVID restrictions.
- In Section 4: the details of the Proposed Development, including access and parking

- In Section 5: summary of the Local Plan Evidence Base
- In Section 6: the trip generation and distribution
- In Section 7: the projected traffic impacts
- In Section 8: cumulative impacts
- In Section 9: the proposed mitigation measures
- In Section 10: the conclusions to this report

1.7 This Transport Assessment has been prepared in accordance with the National Planning Practice Guidance on Transport Assessments.

Executive Summary

1.8 This Transport Assessment has been prepared by Mayer Brown Ltd. on behalf of Countryside Properties (UK) Limited and Essex County Council Property Services in relation to Oaklands Meadows, South Woodham Ferrers, Essex.

1.9 The description of the Proposed Development is contained in paragraph 1.1. For the purpose of the assessments contained in this TA, the impacts of 1,200 dwellings coming forward has been tested to allow the impacts of further residential development within the Allocation Area to be understood.

1.10 The Transport Assessment has considered both;

- How the Proposed Development would work on its own and
- Through the application of traffic growth, the assessments contained in this TA consider the implication of other sites planned to come forward in South East Chelmsford which have either been consented or are otherwise identified in the Chelmsford Draft Local Plan.

1.11 In addition, a cumulative assessment has been undertaken to consider the impacts of the Bradwell B development coming forward, in particular the Bradwell B development.

1.12 The implications in terms of traffic from the Proposed Development and a cumulative assessment of development proposals for Oaklands Meadows have been considered in relation to the key junctions agreed with Essex County Council (ECC).

1.13 The results of the stand-alone Proposed Development show that there are 3 junctions which would require mitigation which the Proposed Development will facilitate, which include:

- Improvements to the B1418/Burnham Road Junction involving the signalisation of the junction
- Increasing the extent of the taper on the A132 west of the Burnham Road/Ferrers Road/Willow Lane Junction

- Upgrades to the A130/A132 Interchange

1.14 In addition, works have been identified to improve the Burnham Road/Willow Grove/ Ferrers Road Junction, to be implemented subject to the findings of ongoing monitoring.

1.15 A comprehensive strategy to encourage trips by non-car means will be implemented, involving:

- A Bus Strategy involving:
  - an increase in frequency of services to Chelmsford
  - Extension of services to Broomfield Hospital
  - Shuttle services to Wickford and Basildon
  - Demand Response Services within Oaklands Meadows and South Woodham Ferrers
- The provision of initial free travel for residents and employees to encourage a culture of travel by bus
- A cycle strategy involving:
  - a network of pedestrian and cycle paths within the development
  - provision of crossings on the Burnham Road and B1418
  - implementation of measures south of the Burnham Road and
  - Cycle Training on Site
- The provision of a Car Club on site
- A Better Points Incentive scheme to encourage Sustainable Travel
- The implementation of Travel Plans for the residential and commercial uses, which would include for comprehensive monitoring of ongoing movements to and from the development.

1.16 It is considered that the Proposed Development would not result in severe harm on a stand alone or cumulative basis, to the operation of the network, which is the relevant test as set out in the NPPF.

2 Policy Framework

2.1 This Section will set out the relevant transport policies, including:

- National Planning Policy Framework (NPPF)
- National Planning Policy Guidance (NPPG)
- Essex County Council (ECC) Local Transport Plan
- Chelmsford City Council (CCC) Local Plan
- Chelmsford City Council (CCC) Core Strategy
- Chelmsford City Council (CCC) Master Plan

2.2 The details of these are set out in the following paragraphs. A full examination of the Proposed Development in accordance with Planning Policies, is contained in the separate Planning Statement.

National Planning Policy Framework (NPPF)

2.3 The revised National Planning Policy Framework was published on 20 July 2021 and sets out the government's planning policies for England and how these are expected to be applied.

2.4 In respect of Transport, Section 9 of the NPPF relates to 'Promoting sustainable transport' and 'Considering development proposals'. In particular paragraphs 110-113 state:

"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b) safe and suitable access to the site can be achieved for all users; and

c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code 46; and

d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree. (NPPF 2021, Paragraph 110)

Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe. (NPPF 2021, paragraph 111)

Within this context, applications for development should:

a) *give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*

b) *address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*

c) *create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*

d) *allow for the efficient delivery of goods, and access by service and emergency vehicles; and*

e) *be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.* (NPPF 2021, paragraph 112)

All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed". (NPPF 2021, paragraph 113)

2.5 It is considered that the proposed development satisfies the relevant Policies of the National Planning Policy Framework.

Planning Practice Guidance (PPG)

2.6 On 6 March 2014, the Department for Communities and Local Government (DCLG) launched the NPPG as a web-based resource. The PPG replaces the DfT Guidance on Transport Assessments. In particular relation to this scheme, this TA has been prepared in accordance with '*Travel plans, transport assessments and statements in decision-taking'* section of the NPPG, which sets out the key principles that should be taken into account when preparing Travel Plans and TAs:

"Travel Plans, Transport Assessments and Statements should be:

- *proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;*
- *established at the earliest practicable possible stage of a development proposal;*

- *be tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally);*
- *be brought forward through collaborative ongoing working between the Local Planning Authority/ Transport Authority, transport operators, Rail Network Operators, Highways Agency where there may be implications for the strategic road network and other relevant bodies. Engaging communities and local businesses in Travel Plans, Transport Assessments and Statements can be beneficial in positively supporting higher levels of walking and cycling (which in turn can encourage greater social inclusion, community cohesion and healthier communities).*

In order to make these documents as useful and accessible as possible any information or assumptions should be set out in a clear and publicly accessible form:

- *the timeframes over which they are conducted or operate should be appropriate in relation to the nature of developments to which they relate (and planned changed to transport infrastructure and management in the area);*
- *Local Planning Authorities should advise qualifying bodies for the purposes of Neighbourhood Planning on whether Travel Plans, Transport Assessments and Statements should be prepared, and the benefits of doing so, as part of the duty to support.*

*Local Planning Authorities may wish to consult the relevant bodies on planning applications likely to affect transport infrastructure, such as Rail Network Operators where a development is likely to impact on the operation of level crossings." (*NPPG paragraph 007)

2.7 Furthermore, paragraph 15 sets out what information should be included in Transport Assessments and Statements:

"The scope and level of detail in a Transport Assessment or Statement will vary from site to site but the following should be considered when settling the scope of the proposed assessment:

- *information about the proposed development, site layout, (particularly proposed transport access and layout across all modes of transport)*
- *information about neighbouring uses, amenity and character, existing functional classification of the nearby road network;*
- *data about existing public transport provision, including provision/ frequency of services and proposed public transport changes;*

- *a qualitative and quantitative description of the travel characteristics of the proposed development, including movements across all modes of transport that would result from the development and in the vicinity of the site;*
- *an assessment of trips from all directly relevant committed development in the area (i.e. development that there is a reasonable degree of certainty will proceed within the next three years);*
- *data about current traffic flows on links and at junctions (including by different modes of transport and the volume and type of vehicles) within the study area and identification of critical links and junctions on the highways network;*
- *an analysis of the injury accident records on the public highway in the vicinity of the site access for the most recent three-year period, or five-year period if the proposed site has been identified as within a high accident area;*
- *an assessment of the likely associated environmental impacts of transport related to the development, particularly in relation to proximity to environmentally sensitive areas (such as air quality management areas or noise sensitive areas);*
- *measures to improve the accessibility of the location (such as provision/ enhancement of nearby footpath and cycle path linkages) where these are necessary to make the development acceptable in planning terms;*
- *a description of parking facilities in the area and the parking strategy of the development;*
- *ways of encouraging environmental sustainability by reducing the need to travel; and*
- *measures to mitigate the residual impacts of development (such as improvements to the public transport network, introducing walking and cycling facilities, physical improvements to existing roads.*

In general, assessments should be based on normal traffic flow and usage conditions (e.g. non-school holiday periods, typical weather conditions) but it may be necessary to consider the implications for any regular peak traffic and usage periods (such as rush hours). Projections should use local traffic forecasts such as TEMPro drawing where necessary on National Road Traffic Forecasts for traffic data.

The timeframe that the assessment covers should be agreed with the local planning authority in consultation with the relevant transport network operators and service providers. However, in circumstances where there will be an impact on a national transport network, this period will be set out in the relevant Government policy." (PPG, paragraph 015)

Essex County Council - Essex Transport Strategy: The Local Transport Plan for Essex June 2011

2.8 The ECC Local Transport Plan consists of a Transport Strategy and Implementation Plan. The strategy sets out what the County want to achieve in the long term. The implementation plan sets out how they will achieve the outcomes.

2.9 The vision for ECC, as stated in the Executive Summary of the Transport Strategy, states:

- *"Provide connectivity for Essex communities and international gateways to support sustainable economic growth and regeneration*
- *Reduce carbon dioxide emissions and improve air quality through lifestyle changes, innovation and technology*
- *Improve safety on the transport network and enhance and promote a safe travelling environment*
- *Secure and maintain all transport assets to an appropriate standard and ensure that the network is available for use*
- *Provide sustainable access and travel choice for Essex residents to help create sustainable communities."* (Essex Transport Strategy, page iv)

2.10 Furthermore, the vision for transport in Essex states:

"a transport system which supports sustainable economic growth and helps deliver the best quality of life for the residents of Essex." (Essex Transport Strategy, paragraph 2.2)

2.11 In respect of Public Transport, Policy 4 (page 54) of the Essex Transport Strategy states:

"The County Council will develop the public transport network to assist economic growth and improve access to essential services by:

- *focusing development and improvement on a network of core bus routes linking locations that attract significant numbers of people;*
- *working with commercial bus service operators to improve service reliability, punctuality and accessibility;*
- *continuing to work in partnership with train operating companies and Network Rail to improve rail services;*
- *working with bus and train operators to improve integration between bus and rail services;*
- *working towards the introduction of multi-operator ticketing;*
- *managing the English National Concessionary Travel Scheme for Essex;*
- *ensuring that accurate and up-to-date service information is made available through a range of media;*

- *working with the police and public transport operators to reduce crime and fear of crime when travelling on the transport network; and*
- *lobbying Government for increased local involvement in the planning and provision of local rail and more effective partnership working with operators over the provision of bus services"* (Essex Transport Strategy, page 54)

2.12 In relation to promoting sustainable Travel Choices, Policy 8 states that:

"The County Council will encourage the use of more sustainable forms of travel by:

- *consistently supporting and promoting sustainable travel;*
- *providing infrastructure for sustainable transport;*
- *working with partners and service providers to promote the use of sustainable forms of travel and to identify new ways to provide services;*
- *requiring effective travel planning for proposed developments in line with the Council's current development management policies;*
- *developing effective travel plans with existing work places, schools, and other locations that attract a significant number of people;*
- *promoting access by sustainable forms of transport to the county's railway stations, ports and airports."*

2.13 As it is demonstrated in Section 6 to this report, a package of measures will be provided to encourage new residents to travel by means other than the private car from the outset, along with marketing of sustainable methods of travel for all residents. This is consistent with Policy 8.

2.14 Policy 15, in terms of Walking and Public Rights of Way states that:

"The County Council will promote walking and use of the Public Rights of Way network by:

- *promoting the benefits of walking;*
- *facilitating a safe and pleasant walking environment that is accessible to all;*
- *improving the signage of walking routes;*
- *ensuring that the public rights of way network is well maintained and easy to use by walkers, cyclists and equestrians."*

2.15 In relation to pedestrian and cycle links, as stated the development will provide high-quality connections throughout the site which will connect to the existing network and surrounding areas.

Chelmsford Local Plan, May 2020

2.16 The Chelmsford Local Plan 2013-2036 was adopted in May 2020. The Plan identifies the number and locations for houses, jobs and businesses, along with the infrastructure needed to support growth.

2.17 In relation to the Proposed Development, Strategic Growth Site Policy 10 of the Local Plan relates to Oaklands Meadows. In terms of the development provision, Policy SG10 states:

Land to the north of Burnham Road (B1012) and east and west of the B1418, as shown on the Policies Map, is allocated for a high quality comprehensively-planned sustainable extension to the existing town, that maximises opportunities for sustainable travel, in a landscaped setting. Development proposals will accord with a masterplan approved by the Council to provide:

Amount and type of development:

- *Around 1,000 new homes of mixed size and type to include affordable housing*
- *Travelling Showpeople site for 5 serviced plots*
- *1,000sqm of business floorspace*
- *1,900sqm of convenience retail floorspace.*

Supporting on-site development:

- *Potential co-location of a new primary school with an early years and childcare nursery, and one stand-alone early years and childcare nursery; or two new stand-alone early years and childcare nurseries*
- *Neighbourhood Centre incorporating provision for convenience food retail (1,900sqm)*
- *Flexible neighbourhood scale business (1,000sqm) and community and healthcare provision*
- *Integration of flexible workspace facilities.*

2.18 In relation to Movement and Access Policy SG10 requires:

- *Development that maximises opportunities for sustainable travel*
- *Main vehicular access to the western and central parcels will be from the B1418 with potential for additional access from Burnham Road subject to traffic management measures being agreed by the Local Highways Authority*
- *Vehicular access to the eastern parcel will be from Burnham Road and/or Woodham Road*
- *Provide a well-connected internal road layout which allows good accessibility for bus services and bus priority measures*
- *Provide new public transport routes/services*

- *Provide an effective movement strategy within the site*
- *Provide additional and/or improved pedestrian and cycle connections to the Town Centre and railway station*
- *Provide high quality circular routes or connections to the wider Public Rights of Way network located away from the Crouch estuary*
- *Provide a dedicated car club for residents and businesses on site and available to the rest of South Woodham Ferrers.*
- *Improvements to the local and strategic road network as required by the Local Highways Authority*

2.19 In relation to transport infrastructure requirements, Policy SG10 states:

- *Appropriate improvements, as necessary, to the local and strategic road network as required by the Local Highways Authority*
- *Appropriate measures to promote and enhance sustainable modes of transport*
- *New and enhanced cycle routes, footpaths, Public Rights of Way and bridleways where appropriate*
- *Capacity improvements to the A132 between Rettendon Turnpike and South Woodham Ferrers, including necessary junction improvements Multi-user crossings of the B1012 in South Woodham Ferrers which may include a bridge or underpass*
- *Provision of and financial contribution to facilitate and sustain car club facilities for residents and businesses within the site and for the use of the wider community*

2.20 Section 4 contains the Proposed Development details, which includes:

- A bus strategy which extends the existing 36 bus service through the development, providing access to the railway station and town centre, with an increased frequency, along with increasing the frequency of the 36x service providing a fast service to Chelmsford. In addition, a DRT (Demand Responsive Bus, which runs in accordance with passenger demand), will be provided to serve South Woodham Ferrers
- Proposals to improve accessibility for pedestrians and cyclists from the site to the Railway Station and Town Centre.
- A well-connected internal road layout is included within the masterplan
- Proposed capacity improvements to the to the Rettendon Turnpike and A132 Burnham Road via junction improvements along the corridor
- The provision of a car club on site which will be accessible for both residents and business users of the site, along with existing residents of South Woodham Ferrers

2.21 In relation to transport Infrastructure Requirements, Policy S9 states that:

- *Priorities for infrastructure provision or improvements are also contained within relevant Strategic Policies and Site Allocation policies.*
- *New development must be supported by the provision of infrastructure, services and facilities that are identified as necessary to serve its needs.*

2.22 As set out in paragraphs 2.18 and 2.20, a number of infrastructure improvements will be provided in accordance with the Strategic Site Policy.

Transport and Highways

New development must be supported by sustainable means of transport to serve its need including walking, cycling and public transport modes. New highway infrastructure should help reduce congestion, link new development and provide connections in the strategic road network. These include but are not limited to:

- *New Rail Station*
- *Chelmsford North East Bypass*
- *An additional new Radial Distributor Road 2 in North East Chelmsford*
- *New access road to Broomfield Hospital*
- *Safeguard land for the expansion of Chelmer Valley and Sandon Park and Ride sites*
- *Additional Park and Ride facilities will be provided in West Chelmsford and North East Chelmsford within the broad locations shown on the Policies Map*
- *Improvements to the Army and Navy Junction*
- *Improvements to A130 (Essex Regiment Way) and A131 Junction improvements on the A12 and other main roads to reduce congestion*
- *Capacity improvements to the A132 between the Rettendon Turnpike and South Woodham Ferrers, including necessary junction improvements to be brought forward as early as possible in tandem with the delivery of development to mitigate its impact*
- *Multi-user crossings across the B1012 in South Woodham Ferrers which may include a bridge or underpass*
- *New and improved cycling and walking routes both within development sites and to provide connections to centres and hubs of activity such as transport nodes, City, Town and Neighbourhood Centres, strategic areas of recreation and employment areas*
- *Bus Priority schemes and rapid transit measures*
- *Improvements to inter-urban public transport*
- *Transport links between new neighbourhoods and Chelmsford City Centre and employment areas*
- *Improved road infrastructure aimed at reducing congestion and providing more reliable journey times.*

2.23 The Proposed Development includes capacity improvements to the to the Rettendon Turnpike and A132 Burnham Road, improved crossings at appropriate positions on Burnham Road, and new and improved cycling and walking routes.

2.24 *In relation to parking standards, Policy DM27 states that:*

"The Council will have regard to the vehicle parking standards set out in the Essex Parking Standards - Design and Good Practice (2009), or as subsequently amended, when determining planning applications.

Proposals which provide below these standards should be supported by evidence detailing the local circumstances that justify deviation from the standard."

2.25 The development will provide car parking and cycle parking for all uses in accordance with standards.

Master Plan Document

2.26 In accordance with the Chelmsford Local Plan requirements, a Master Plan document has been prepared. In Transport terms, this sets out the principals of;

- How the Site will be accessed
- How connections will be provided to encourage trips on foot and by cycle
- Public Transport Proposals

2.27 The Master Plan document was approved by Chelmsford City Council on the 2nd March 2021.

Conclusion to this section

2.28 This section has demonstrated that the Proposed Development accords with Local, Regional and National Policies.

3 Baseline Conditions

3.1 This section sets out the existing accessibility of the site, in relation to:

- Existing Site and Use
- Local Highways Network
- Existing Rail
- Existing Bus Routes and Stops
- Existing Pedestrian Routes
- Existing Cycle Routes
- Accessibility of the Site in Relation to Local Amenities
- Safety Considerations
- Traffic Surveys

3.2 This Section relates to conditions as they existed prior to COVID restrictions (Pre-March 2020) in relation to traffic conditions and public transport services.

Existing Site and Use

3.3 The Oaklands Meadows development is located to the South East of Chelmsford on the north end of South Woodham Ferrers. The site is bounded by Willow Grove to the west, Burnham Road to the south and Woodham Road to the east.

3.4 The site location was shown in **Figure 1.1.**

Local Highways Network

3.5 The local Highways Network in relation to the Application Site is shown in **Figure 3.1.**

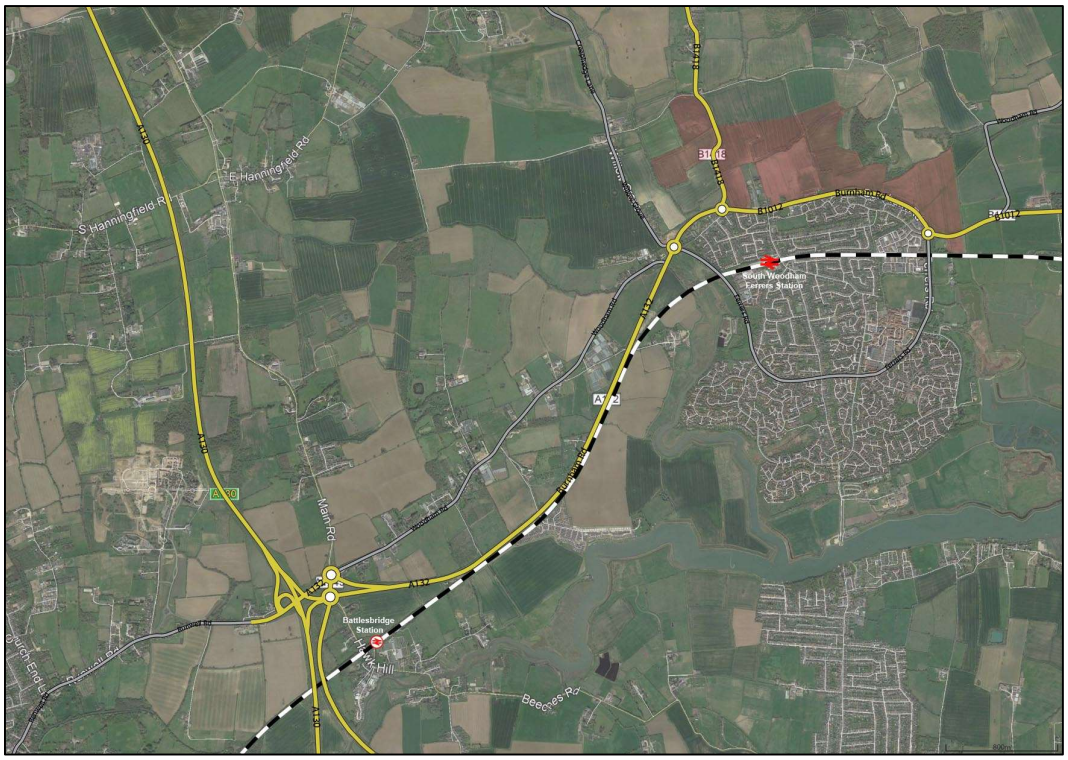


Figure 3.1: Local Highways Network

3.6 The site is located to the north of the B1012 (Burnham Road) and the B1418 runs through the middle, which is where two of the Application Site accesses will be taken from. The B1012 to the west leads to Chelmsford via the A130 (N) and Wickford. The B1418 leads to Chelmsford/Witham via Woodham Ferrers.

Existing Rail

3.7 South Woodham Ferrers Rail Station is located approximately 450m from the nearest proposed pedestrian access (Burnham Road) and is easily accessed on foot or by bicycle via the proposed pedestrian and cycle routes. South Woodham Ferrers Rail Station provides direct connections to Wickford and Southminster, with peak period direct connections to London Liverpool Street. The rail connections map is shown in **Figure 3.2.**

Figure 3.2: Rail Connections Map

3.8 South Woodham Ferrers has three London-bound trains during each AM Peak and Wickford runs six London-bound trains per hour.

Existing Bus Routes and Stops

3.9 The nearest existing bus stops to the site are located on Burnham Road, approximately 200m from the nearest site access, which serves both the 36 and 94 bus services. The site in relation to the bus routes is shown in **Figure 3.3**.

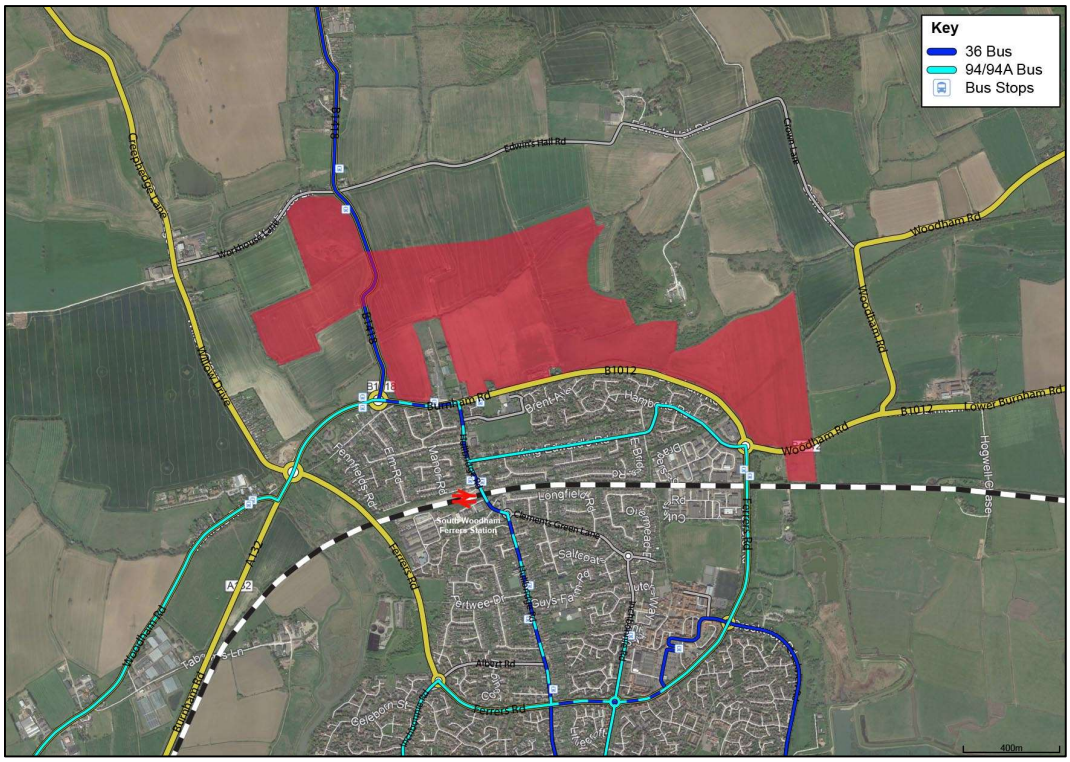


Figure 3.3: Bus Stops and Bus Routes in Relation to the Application Site

3.10 **Table 3.1** sets out the details of the bus routes, shown in **Figure 3.3.** These details relate to services operating in accordance with temporary timetables as a result of COVID19.

Bus Service	Bus Route	Timetable
36	South Woodham Ferrers Chelmsford City Centre, via Danbury and Great Baddow	Mon to Fri: Every 30 mins Sat: Every 2 hours Sun: Every 2 hours
94	South Woodham Ferrers to Basildon via Wickford	Mon to Fri: Every 1 hour Sat: Once per day Sun: No Service

Table 3.1: Existing Bus Services Information

3.11 It can be seen that there are existing bus services in the vicinity of the site, which serve a variety of destinations, including South Woodham Ferrers, Chelmsford Town Centre and Wickford Railway Stations.

Existing Pedestrian and Cycle Routes

3.12 We have considered the existing pedestrian and cycle routes in the area, which are shown in **Figure 3.4.**

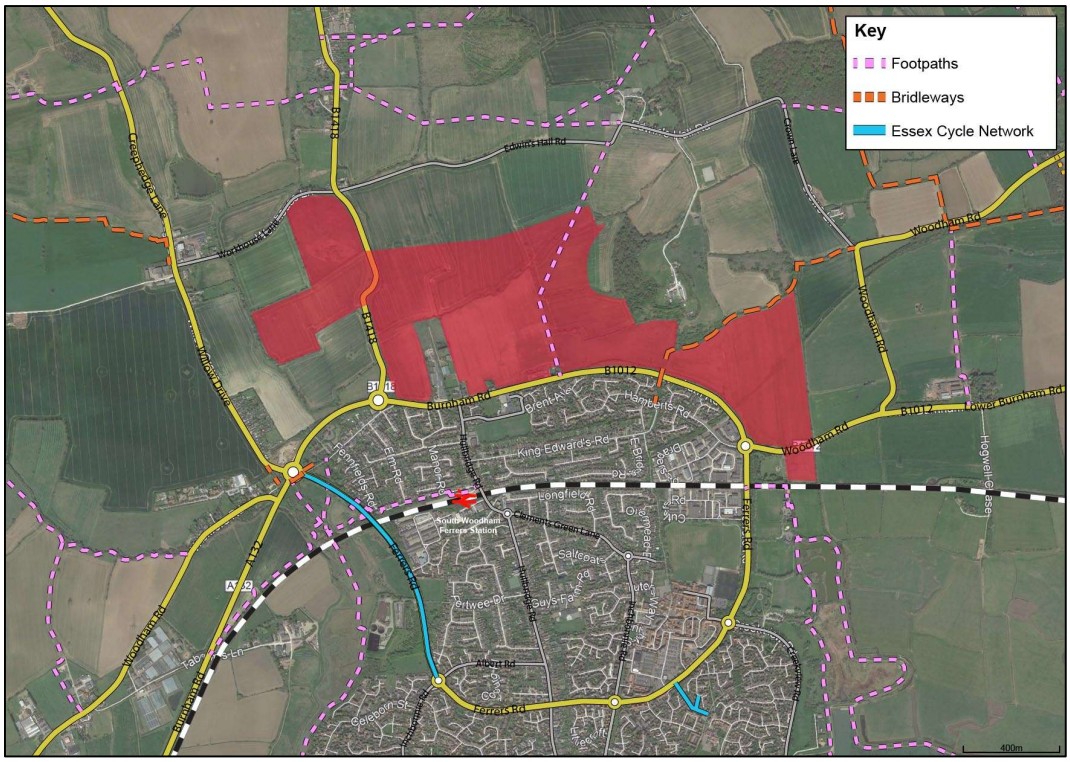


Figure 3.4: Existing Pedestrian and Cycle Routes

3.13 **Figure 3.4** shows that there are a number of footpaths, bridleways and cycle routes near the site, providing connections to the town centre and local amenities.

Accessibility of the Site in Relation to Local Amenities

3.14 We have also looked at the local amenities in relation to the site, which are shown in **Figure 3.5** with details of the closest local amenities set out in **Table 3.2**.

Figure 3.5: Site in Relation to Local Amenities

Type of Amenity	Name and Location	Distance from the Site Access point 4	Distance from the Pedestrian / Cycle Point F
Doctor	Crouch Vale Medical Centre, Burnham Road	800m	85m
Dentist	Sudhakar Papineni, Hullbridge Road	1.7km	965m
General Store	One Stop, Hullbridge Road	965m	322m
Hospital	Basildon University Hospital (24 hr)	20km	19.3km
Library	South Woodham Ferrers Library, Trinity Row	1.4km	2.5km
Nursery School	South Woodham Pre School, Brent Avenue	965m	482 m
Primary School	Woodville Primary School, Brent Avenue	965m	482 m
Secondary School	William de Ferrers School, Trinity Row	1.28km	1.93km
Sports and Leisure	Woodham Radars Football Club, Hullbridge Road	805m	160m
Supermarket	Sainsburys, Burnham Road	1.1km	320m

Table 3.2: Details of the Local Amenities

3.15 It can be seen that the site is well located in relation to local amenities, including a Sainsbury's Supermarket, health centre and education facilities within 150 metres of the nearest proposed site access points. It is also noted that the town centre, with a range of additional amenities, is located approximately 1.5km from the site.

Safety Considerations

3.16 We have obtained the existing accident statistics for the key roads in the local highway network surrounding the site from ECC between 1st June 2016 to 21st December 2020, which is the latest available data. The accident locations are shown in **Figure 3.6**.

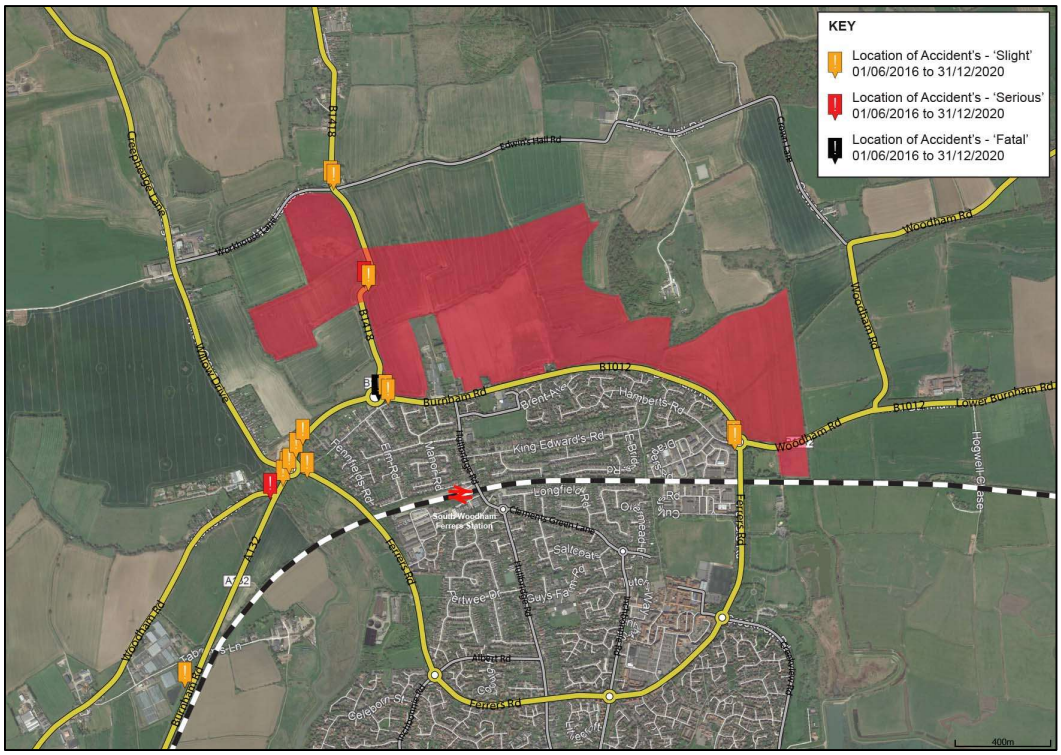


Figure 3.6: Accident Statistics

3.17 **Figure 3.6** shows that there has been one fatal accident in the last 5 years, which occurred on the A132 (Burnham Road) at the B1418 junction. It is noted that this junction will be improved as part of the proposals. There have been some slight/serious accidents in the vicinity of the site and the junctions being assessed. However, there are no accident blackspots in the area.

Existing Statistics

3.18 We have obtained data from National Statistics 2011 Census Data, to understand the existing method of travel to work for residents.

3.19 **Table 3.3** sets out the existing method of travel to work data, from the 2011 Census.

	Ward		District		Region		Country	
All Usual Residents Aged 16 to 74	4,227		81,742		2,688,084		23,813,153	
Underground, Metro, Light Rail, Tram	15	0.4%	374	0.5%	33,110	1.2%	1,027,625	4.3%
Train	549	13.0%	11,364	13.9%	205,077	7.6%	1,343,684	5.6%
Bus, Minibus or Coach	81	1.9%	3,386	4.1%	106,303	4.0%	1,886,539	7.9%
Taxi	17	0.4%	266	0.3%	13,227	0.5%	131,465	0.6%
Motorcycle, Scooter or Moped	21	0.5%	588	0.7%	22,475	0.8%	206,550	0.9%
Driving a Car or Van	2,812	66.5%	50,259	61.5%	1,757,121	65.4%	14,345,882	60.2%
Passenger in a Car or Van	169	4.0%	3,624	4.4%	143,749	5.3%	1,264,553	5.3%
Bicycle	75	1.8%	2,542	3.1%	100,651	3.7%	742,675	3.1%
On Foot	466	11.0%	8,927	10.9%	288,663	10.7%	2,701,453	11.3%
Other Method of Travel to Work	22	0.5%	412	0.5%	17,708	0.7%	162,727	0.7%

Table 3.3: Existing Mode of Travel to Work 2011 Census Data

3.20 **Table 3.3** shows that in terms of the use of car or van to travel to work and travel on foot, the Ward is consistent with the District, Region and Country. The data shows decreased bus and bicycle usage, the development plans include for improvements to cycle infrastructure and improved bus services through the development proposals.

Traffic Surveys

3.21 Three primary data sources, have been used in the assessment, these involve:

- Classified Counts and Queue Length Surveys undertaken by Mayer Brown in February 2020
- Classified Counts and Queue Length Surveys undertaken by Mayer Brown in October 2016
- Classified Counts and Queue Length Surveys undertaken by ECC in July 2017

3.22 The details of the traffic surveys used in the assessment are contained in **Table 3.4.** TEMPro 7.2b traffic growth forecasts have been applied to the surveys to bring them forward to the assessment year.

Junction	Date of Survey	Type of Survey	AM Peak Period	PM Peak Period
Site Access 1: B1418 Site Access Roundabout	February 2020	Base Flows determined from flows on B1418	07:30-08:30	16:30-17:30
Site Access 2: Burnham Road Site Access Roundabout	February 2020	Base Flows determined from flows on Burnham Road	07:00-08:00	16:15-17:15
Site Access 3: Burnham Road Left-in/Left-out Site Access	February 2020	Base Flows determined from flows on Burnham Road	07:00-08:00	16:15-17:15
Site Access 4: Burnham Road/Hamberts/Woodham Road	July 2017	Manual Classified Turning Count	07:00-08:00	16:15-17:15
Site Access 5: B1418 Left-in/Left-out Site Access	February 2020	Base Flows determined from flows on B1418	07:30-08:30	16:30-17:30

Junction	Date of Survey	Type of Survey	AM Peak Period	PM Peak Period
Junction A: A132 Burnham Road/Ferrers Road/Willow Grove junction	February 2020	Manual Classified Turning Count and Queue Length	07:15-08:15	16:30-17:30
Junction B: Burnham Road/Old Wickford Road/B1418 junction	February 2020	Manual Classified Turning Count and Queue Length	07:30-08:30	16:30-17:30
Junction C: Rettendon Turnpike	October 2016	Manual Classified Turning Count and Queue Length	0715-0815	1700-1800
Junction D: Hawk Hill Roundabout	October 2016	Manual Classified Turning Count and Queue Length	0730-0830	1645-1745
Junction E: A132 Burnham Road/Wickford Road junction	October 2016	Manual Classified Turning Count and Queue Length	07:30-08:30	16:45-17:45
Junction F: Burnham Road/Hullbridge Road junction	February 2020	Manual Classified Turning Count and Queue Length	07:00-08:00	16:15-17:15
Junction G: Hullbridge Road/Clements Green Lane roundabout junction	October 2016	Manual Classified Turning Count and Queue Length	08:15-09:15	17:30-18:30
Junction H: A130 Northbound Slip Road	October 2016	Manual Classified Turning Count and Queue Length	0715-0815	1700-1800

Table 3.4: Base Traffic Flow Sources

3.23 The base traffic survey data is contained in **Appendix B.**

Conclusion to this section

3.24 This section has demonstrated that the site is well located in relation to accessibility by means other than the private car; with regular bus routes, which link the site to the town centre and South Woodham Ferrers and Wickford railway stations; and the ability to walk and cycle to a number of local amenities, which will encourage residents of the development to travel by sustainable means, and to create a culture of sustainable travel from the outset.

4 Proposed Development Details

4.1 The application description is contained in paragraph 1.1.

4.2 The Movement Parameter Plan is shown in **Figure 4.1**.

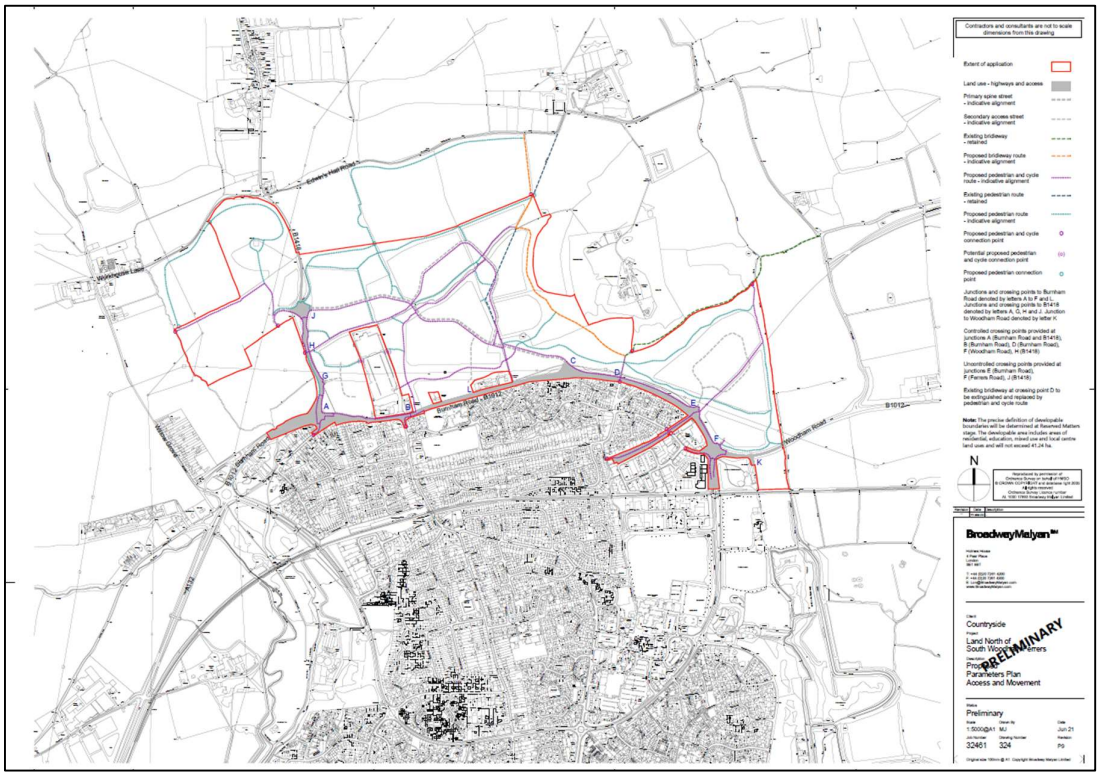


Figure 4.1: Movement Parameter Plan

Development Access Strategy

Vehicular Access

4.3 A number of vehicular accesses are proposed at the following locations:

- A new roundabout junction on the B1418, approximately 450m north of the junction with Burnham Road – Reference J in the Movement Parameter Plan
- A new left-in/left-out junction on the B1418, approximately 150m north of the junction with Burnham Road - Reference G in the Movement Parameter Plan
- A new roundabout junction on Burnham Road, approximately 550m east of the Hullbridge Road junction - Reference C in the Movement Parameter Plan
- A new left-in/left-out junction on Burnham Road, approximately 200m north of the Burnham Road/Woodham Road/Ferrers Road Junction - Reference E in the Movement Parameter Plan

- A new arm on the Burnham Road/Woodham Road/Ferrers Road junction to the development - Reference F in the Movement Parameter Plan

4.4 The proposed access strategy is shown in **Figure 4.2.**

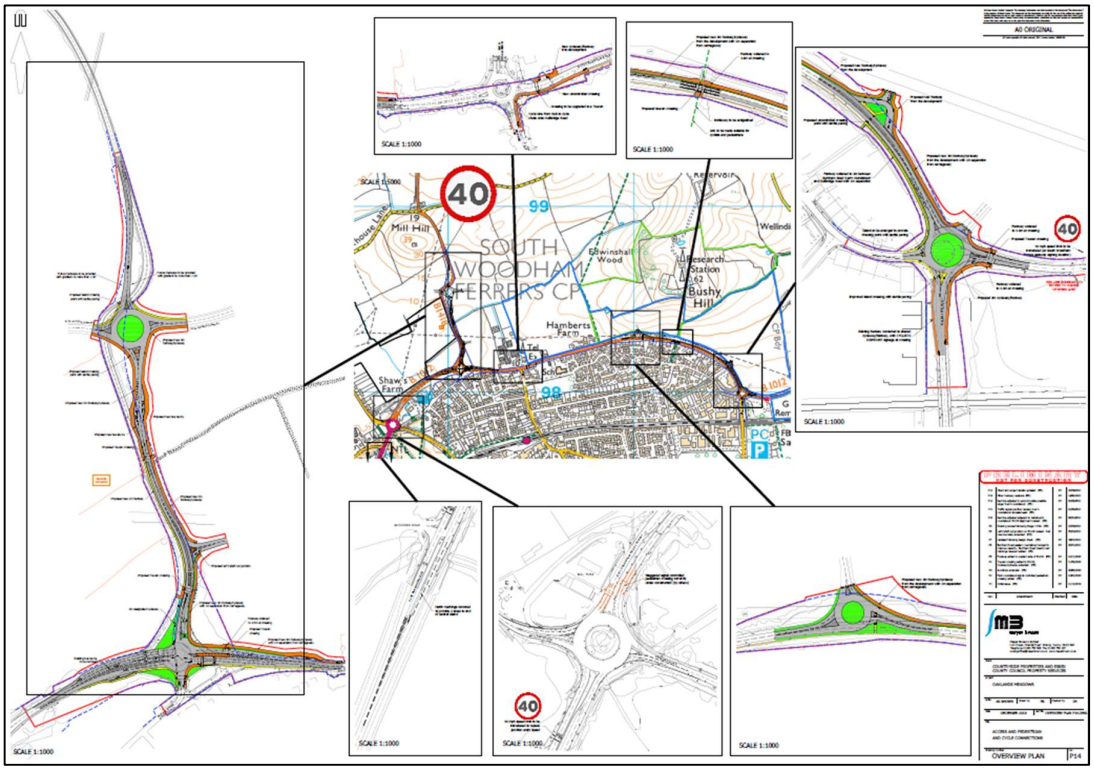


Figure 4.2: Proposed Site Access Points

4.5 **Appendix A** to this report, contains the overview plan and detailed plans of each of the Junctions, referenced below;

General Arrangement Details

- GA1 Rev P4 – Site Access/Woodham Road/Ferrers Road/Burnham Road
- GA2 Rev P4 – Left in/Left out junction Burnham Road and TOUCAN crossing Burnham Road
- GA3 Rev P4 – Site Access/Burnham Road Roundabout
- GA4 Rev P5 – Burnham Road/Hullbridge Road Roundabout
- GA5 Rev P6 – Burnham Road/B1418/Old Wickford Road Proposed Signal Junction
- GA6 Rev P5 - B1418/Site Access Roundabout
- GA7 Rev P2 – Burnham Road/Willow Grove/Ferrers Road/A132
- OVERVIEW PLAN Rev P14

Pedestrian and Cycle Details

- PED&CYCLE-1 Rev P3 - Site Access/Woodham Road/Ferrers Road/Burnham Road

- PED&CYCLE-2 Rev P4 – Left in/Left out junction Burnham Road and TOUCAN crossing Burnham Road
- PED&CYCLE-3 Rev P4 - Site Access/Burnham Road Roundabout
- PED&CYCLE-4 Rev P5 - Burnham Road/Hullbridge Road Roundabout
- PED&CYCLE-5 Rev P6 - Burnham Road/B1418/Old Wickford Road Proposed Signal Junction WITH TOUCAN crossing
- PED&CYCLE-6 Rev P5 - B1418/Site Access Roundabout with TOUCAN crossing

4.6 These plans have been subject to a Stage 1 Safety Audit and a review against LTN 1/20. These are contained in **Appendix A.**

Access on Foot and by Cycle

4.7 In addition to the vehicle accesses, a number of pedestrian and cycle accesses and crossing points are proposed, to provide sustainable links to the existing network and facilities. The crossing points are shown in **Figure 4.3** and in detail in **Plans Ped & Cycle-1** to **6,** which are contained in **Appendix A.**

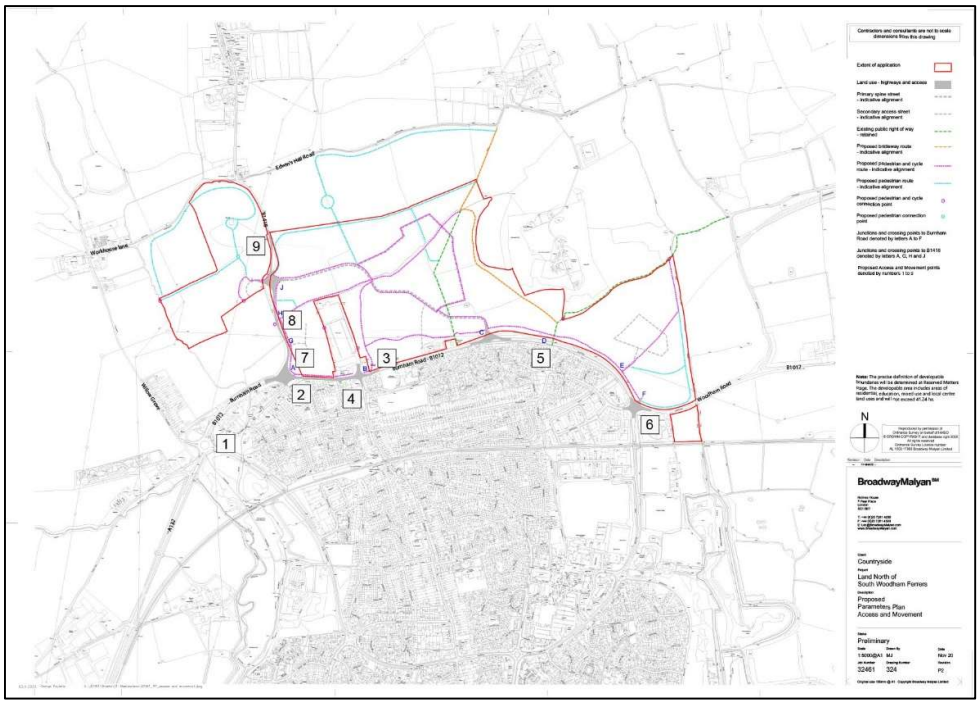


Figure 4.3: Foot and Cycle Crossing Points

4.8 The Crossing Points are described below.

Crossing Point 1: Staggered Toucan at the Willow Grove/Ferrers Road/Burnham Road junction

4.9 A new staggered Toucan crossing is being installed, to be provided as part of KFC development on Burnham Road. This provides potential for future connections from the south western corner of the Master Plan area. This provides access to the employment area to the west of South Woodham Ferrers, as well as the town centre and railway station.

Crossing Point 2: Proposed footway/cycleway and island crossings provided at the B1418/Burnham Road junction

4.10 This junction will be improved as part of the development proposals. The improvements will incorporate a Toucan crossing on Burnham Road east of the junction and a Toucan crossing on the B1418. In addition advance Cycle Stop Lines are provided on the B1418 and Old Wickford Road, with a segregated nbnd cycleway leading to the TOUCAN crossing on the B1418.

4.11 Cycleways and pedestrian footpaths connect to the Toucan crossings.

Crossing Point 7/8/9: B1418

4.12 Three crossing points are provided on the B1418. These are:

- Crossing Point 7 – A Toucan Crossing forming part of the B1418/Burnham Road improvements
- Crossing Point 8 – A Toucan Crossing at a midway point between the new site access roundabout on the B1418 and the B1418/Burnham Road junction
- Crossing Point 9 – An island crossing north of the new roundabout junction on the B1418

4.13 A footway is provided on the west side of the B1418 north from the B1418/Burnham Road junction up to the new roundabout, with a shared footway/cycleway provided on the east side.

Crossing Point 3: Hullbridge Road junction

4.14 The existing controlled crossing at the roundabout junction on Hullbridge Road, is to be upgraded to a Toucan crossing. In addition, footway/cycleway will be provided on both the northern and southern sides of the road to the east of the junction, providing cycle and pedestrian access from the development. There will also be island crossings on the northern and western arms of the junction, with a zebra crossing provided on the southern arm.

Crossing Point 4: Burnham Road

4.15 Where the existing Bridleway (No 46) meets Burnham Road, it is proposed to provide a Toucan crossing. This will allow for strategic connections to the town's cycle network linking to the town centre and railway station, along with a new footway / cycleway along the frontage of the site.

4.16 If the bridleway is not extinguished, a Pegasus crossing would be provided.

4.17 The proposed footway/cycleway continues all along the northern side of Burnham Road up to the proposed new left-in/left-out junction. Dropped kerbs with tactile paving are provided for pedestrian and cyclists crossing, along with an island crossing across Burnham Road.

Crossing Point 5: Burnham Road (Left in/Left out junction)

4.18 A left in left out junction is proposed here, along with a new footway / cycleway on the frontage of Burnham Road that links to pedestrian and cycle routes within the development. An uncontrolled crossing over the Burnham Road with tactile paving would be located here, aligning with the route of the former South Woodham Ferrers to Maldon railway.

Crossing Point 6: Burnham Road/Ferrers Road/ Woodham Road junction

4.19 It is proposed that a footway/cycleway is provided along the eastern side of the new arm on the roundabout, with a Toucan crossing provided across Woodham Road. In addition, the footway/cycleway will continue onto Ferrers Road, with island crossing points provided on the Ferrers Road and Hamberts Road arms of the junction. This provides access to the industrial estate east of South Woodham Ferrers as well as the town centre.

4.20 It can be seen that a comprehensive number of crossings are proposed.

Access by Bus

4.21 A comprehensive Bus Strategy is proposed to support the development. The details are set out in **Appendix C.**

Parking

4.22 Parking will be provided in accordance with the Local Plan Parking Standards.

5 Summary of the Local Plan Evidence Base

5.1 The proposed development, forms part of an allocated site within the Chelmsford Local Plan. We have in this section, considered the conclusions of the evidence base for the Local Plan, in particular:

- EB026 – Strategic and Local Junction Modelling – Preferred Option – which includes for the analysis of the Junctions which are considered in this TA
- Statement of Common Ground (SoCG) agreed between CCC, ECC and the promotors of the site, which set out a framework of the understanding of the Transport Requirements for the allocation.

5.2 Considering each in turn:

The Local Plan Evidence Base, conclusions in relation to the junctions considered in this assessment.

5.3 The Local Plan Evidence Base drew the conclusions shown in **Table 5.1** in relation to the junctions which are considered within the site catchment.

Junction/Link	Local Plan Evidence Base Conclusion in relation to capacity	Local Plan Evidence Base Conclusion in relation to mitigation requirements
B1418/Burnham Road	The junction modelling results indicate the junction is currently nearing capacity on one approach in both peaks with the slight alteration to the junction. However it is likely to be at capacity on Burnham Road East in the AM peak in the 2036 Do Minimum scenario, with this exceeding capacity in the Local Plan scenario. In the PM peak, Burnham Road West is forecast to be near capacity in the 2036 Do Minimum scenario and at capacity in the 2036 Local Plan scenario.	Although the junction modelling results indicate that the junction is likely to be overcapacity in 2036 with the Local Plan growth, mitigation has not been designed for this junction. This is because this junction is proposed to be the main access point into the development site and is bounded by the site. Therefore, the developer would be expected to mitigate the junction to sufficiently accommodate all forecast development growth. This may require utilising some of the development land to enlarge the roundabout.
Burnham Road/Hullbridge Road Junction	The modelling results suggest that the junction is currently over capacity in the base year AM peak on Hullbridge Road. In the 2036 Do Minimum, it is expected that the junction will be operating within capacity, however in the Local Plan scenario, it is likely that the junction will be at capacity in both peaks. This is as a result of the proposed development surrounding Sainsbury's.	Mitigation at the existing junction has not been investigated as it appears that the new roundabout maximises the land available to create as much capacity as possible at that location. Therefore the developer should look to further mitigate the impact of their development through other access arrangements and sustainable transport links.

Junction/Link	Local Plan Evidence Base Conclusion in relation to capacity	Local Plan Evidence Base Conclusion in relation to mitigation requirements
Hullbridge Road/Clements Green Lane	The modelling results, using the existing layout, indicate that this junction is currently operating within capacity and is likely to continue to do so in 2036.	
Burnham Road/Willow Grove/Ferrers Road Junction	This junction was modelled using the existing layout, and the modelling results indicated that in the 2036 Do Minimum scenario the junction is likely to be approaching capacity in both peaks, while in the Local Plan scenario, it is also likely to be approaching capacity in the AM peak and at capacity in the PM peak.	It was determined that the junction is too constrained. As it is likely to be overcapacity, the developer should be expected to mitigate the impact of their development through sustainable transport measures, potentially by providing public transport services for longer distance trips e.g. to Wickford/Basildon/Chelmsford that serve the development.
A130/A132 Interchange	The junction has been modelled in isolation using the existing layout. The results indicate that it is currently operating within capacity in both peaks and is likely to still be within capacity in the 2036 Do Minimum scenario. However with the forecast 2036 Local Plan growth, specifically the growth at South Woodham Ferrers, the junction is forecast to be overcapacity on several arms in both the AM peak and the PM peak. As a result the developer would be expected to provide sufficient mitigation through both infrastructure improvements and sustainable transport mitigation.	

Table 5.1: Summary of the Local Plan Evidence Base

5.4 It can be seen that the Local Plan Evidence Base determined that the allocation could be accommodated on the local highway network, through a combination of a) highways mitigation proposals and b) sustainable measures.

5.5 It is noted that the development proposals, will allow up to 1200 dwellings to come forward within the allocated sites, which is 200 more dwellings than assessed in the Local Plan Evidence Base. As noted in Section 7 of the report this represents a minor change in the traffic movements, tested in the Local Plan Evidence Base and it is noted that the principal of this quantum of development being accepted, was confirmed in the ECC response to the Chelmsford City Council, Policy Board held on the 14th January 2021.

Statement of Common Ground (SOCG)

5.6 The SOCG sets out the details in relation to the Transportation and Highways proposals to support Strategic Growth Site 10, Oakland Meadows . The SOCG considered:

- Access
- Internal Layout
- Pedestrian and Cycle Links
- Public Transport Connections
- Highways Impacts and Mitigation
- Local Improvements

5.7 In particular, the SOCG and the Local Plan evidence base identified the scope of mitigation which might be required to support a future planning application.

Conclusions to this Section

5.8 Section 38(6) of the Planning and Compulsory Purchase Act 2004 directs Local Planning Authorities to determine planning applications in accordance with the policies of the Development Plan unless material considerations indicate otherwise.

5.9 This Section demonstrates that the Proposed Development forms part of an up to date Local Plan.

6 Trip Generation and Distribution

6.1 This Section of the report considers the vehicle trip generation and distribution. **Appendix D** provides the full details which are summarised in this section.

6.2 For the purpose of the assessment, 2 different scenarios for Vehicle Trip Rates and Vehicle distribution have been considered. These are;

- Part 1 – Local Plan Trip Rates and Distribution of Trips in Accordance with Journey Purpose
- Part 2 – ECC Proposed Trip Rates (*approximately 58% higher than Local Plan Trip Rates in the AM Peak)* and Distribution of all Residential Trips by Journey to Work Census Data

6.3 As part of pre-application discussions with ECC, it has been agreed to assess the impacts of the proposed development using the **Part 2** Trip Rates and Distribution. The **Part 1** Trip Rates and distribution have been used to present the Mayer Brown view of the likely traffic implications of the proposals.

6.4 The Trip Rates and Distribution are explained in detail in **Appendix D,** (Part 1 – Chapter 3)(Part 2 – Chapter 2).

6.5 The Part 2 Vehicle Trip Rates and Distribution are summarised in the following paragraphs. We have in addition provided in this section, a projection of non-car movements from the development, which has been used;

- To assess the demand for use of each of the controlled crossings
- To examine the impact on public transport services

6.6 **Appendix D1**, provides a spreadsheet calculator, which demonstrates how the trips have been generated and assigned to the network.

Vehicle Trip Rates (Part 2)

6.7 The Part 2 Vehicle Trip Rates were confirmed by ECC to be acceptable in a response dated 11/02/2021, for which extract is shown below;

'TRICS trip rates as per ECC's response dated 22/10/20 have been agreed'

6.8 The vehicles trip rates tested for the residential and other uses are shown in **Table 6.1** and **Table 6.2.**

	Arrivals	Departures	Total
AM Peak	0.129	0.394	0.523
PM Peak	0.378	0.150	0.528

Table 6.1: ECC Proposed Residential Trip Rates (Source: ECC Provided TRICS Output)

Land Use	AM Peak		PM Peak	
	Arr	Dep	Arr	Dep
Primary School (per staff member)	0.800	0.100	0.050	0.100
Local Centre (per 100 sqm)	8.295	8.512	10.127	9.226
Business Space (per 100 sqm)	2.226	0.169	0.219	2.437
Care Home (per 100 sqm)	0.079	0.039	0.039	0.105

Table 6.2: Non-Residential Trip Rates used for Part 2 Testing

6.9 The TRICS data is contained in **Appendix D2.**

6.10 The Part 2 residential vehicle trip rates are;

- 46% higher than the Local Plan Trip Rates in the AM peak
  and
- 15% higher than the Local Plan Trip Rates in the PM peak

Vehicle Trip Distribution and Assignment (Part 2)

Vehicle Trip Distribution

6.11 The distribution of all residential trips using Census Travel to Work data has been agreed with ECC for testing. It is considered that this provides for a very robust analysis of the operation of the Interchange, since for example Shopping and School trips are assigned using a travel to work distribution.

6.12 This is explained in detail in **Appendix D3** *(2021-03-04 TN6 - Updated TTW Dist following meeting rev A)***,** to the TA and summarised below. This distribution has been confirmed by ECC in an email dated 22nd March 2021, which states;

- *Further to your email of 4th March we can confirm in relation to bullet 1 and the travel to work data, your approach is acceptable as set out in 2021-03-04 TN6 - Updated TTW Dist following meeting rev A.pdf.*

6.13 The distribution to the Wider Areas has been assigned based on the Census Local Authority Districts. For the Chelmsford, Maldon and Basildon Local Authority Districts, these have been split by Census Output Areas in order to understand how much traffic might assign to the B1418 to travel to South Chelmsford.

6.14 The other trips were distribution based on the likely origin and destination as well as Travel to Work census data as set out in the **Appendix D3.**

6.15 A summary of the assignment by road is shown in **Tables 6.3 and 6.4** for the Part 2 assessment.

Zone	Destination	Distribution	AM Arr	AM Dep	PM Arr	PM Dep
1	Runwell Road	17.5%	27	83	80	32
2	A130 – North	24.2%	37	114	110	43
3	Main Road	2.3%	4	11	10	4
4	A1245	9.2%	14	44	42	17
5	A130 – South	16.9%	26	80	77	30
6	Wickford Road	0.0%	0	0	0	0
7	Willow Grove	0.0%	0	0	0	0
8	Ferrers Road West	0.0%	0	0	0	0
9	Old Wickford Road	0.0%	0	0	0	0
10	B1418 North	5.0%	8	23	22	9
11	Hulbridge Road	15.7%	24	74	71	28
12	Clements Green Lane	0.0%	0	0	0	0
13	King Edwards Road	0.0%	0	0	0	0
14	Ferrers Road East	1.7%	3	8	8	3
15	B1012 Woodham Road	3.2%	5	15	14	6
A	Maldon 001-005	4.3%	7	20	19	8

Table 6.3: Distribution of Residential Trips in Accordance with Travel to Work Census Data

Zone	Destination	AM Arr	AM Dep	PM Arr	PM Dep
1	Runwell Road	9	1	1	6
2	A130 – North	64	8	7	43
3	Main Road	0	0	0	0
4	A1245	12	1	1	8
5	A130 – South	5	1	1	4
6	Wickford Road	0	0	0	0
7	Willow Grove	0	0	0	0
8	Ferrers Road West	0	0	0	0
9	Old Wickford Road	5	5	6	6
10	B1418 North	23	4	4	16
11	Hulbridge Road	10	10	12	11
12	Clements Green Lane	7	7	8	8
13	King Edwards Road	7	7	8	8
14	Ferrers Road East	3	3	4	4
15	B1012 Woodham Road	2	0	0	1

Table 6.4: Distribution of Non-Residential Trips

Vehicle Assignment

Distribution of Residential Trips by Site Access

6.16 The Trips have been distributed in accordance with draft residential parcels, which are shown in **Figure 6.1.**

6.17 The routes used from each of the parcel areas is colour coded.

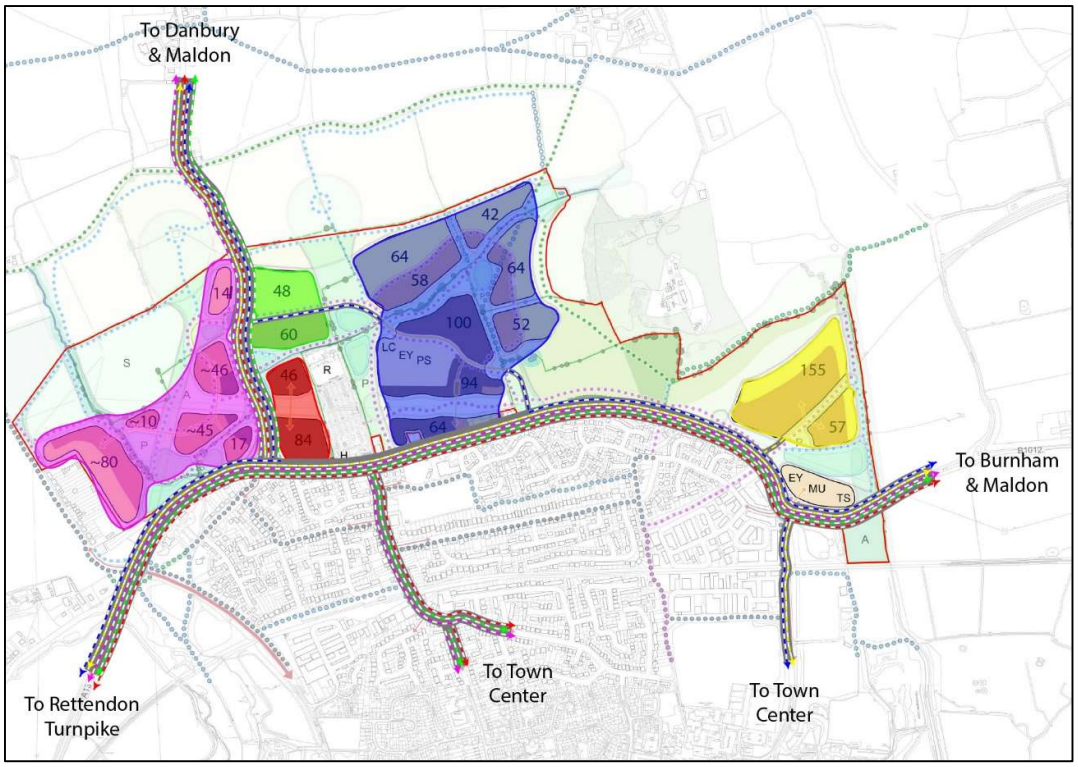


Figure 6.1: Residential Parcel Distribution

6.18 This distribution assigns a larger proportion of residential shopping, leisure and school trips to the Burnham Road/Ferrers Road/Willow Grove and A130/A132 junctions, then a more localised traffic distribution (Part 1) and is therefore considered to provide a worst-case assessment of the Burnham Road/A132 Corridor.

The Demand for Pedestrian Crossings

6.19 Forecasts have been made for trips by non-car means, which has been used;

- To assess the demand for use of each of the controlled crossings
- To examine the impact on public transport services

6.20 Projections have been prepared and are contained in **Appendix D** for the;

- Early peak period when there are a higher proportion of Journey to Work Trips and Rail Trips
- The later peak period when there are a higher proportion of School Trips

6.21 These trips have been allocated to the crossings shown in **Figure 6.2**, using the development allocation by parcel shown illustratively in **Figure 6.1** and then assigning trips in accordance with the likely route to the destination. This is explained in detail in **Appendix D.**

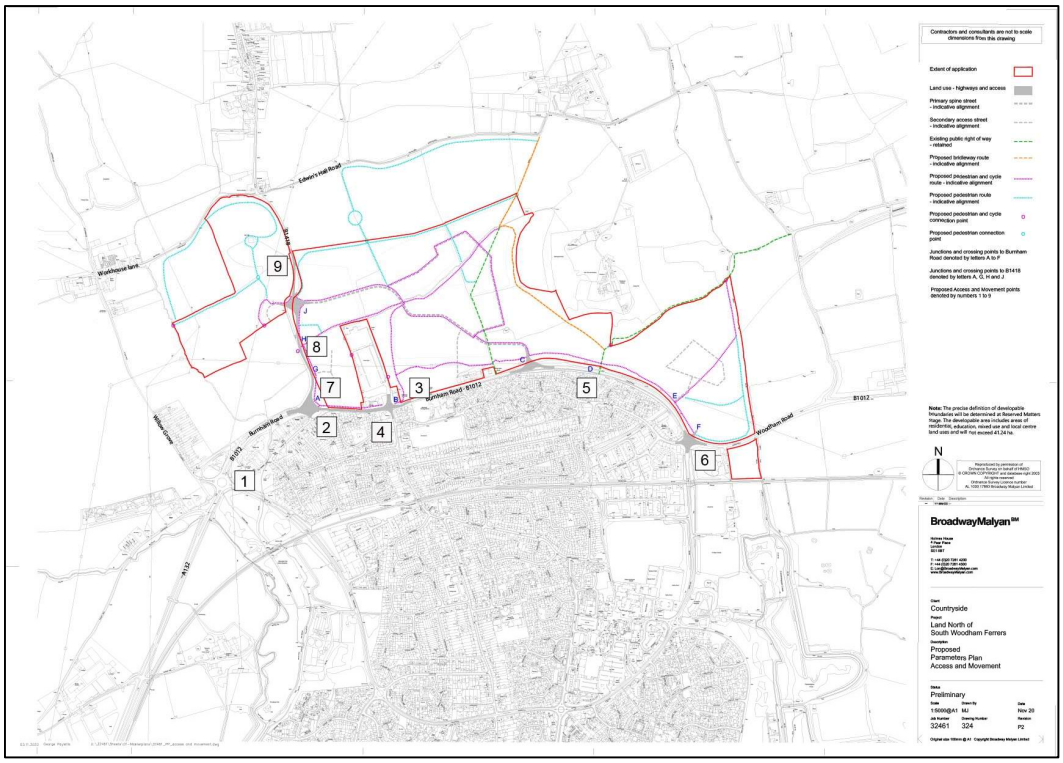


Figure 6.2: Crossing Number

6.22 **Table 6.5.** provides the projected usage of each crossing. For the purpose of the assessment, even though the traffic peak is earlier than the walking peak, the assessment is based on them occurring at the same time, as explained in **Section 7.**

Crossing	AM Peak (0700-0800)		AM Peak (0800-0900)		PM Peak	
	Arr	Dep	Arr	Dep	Arr	Dep
1 – Crossing on Burnham Rd at Fenn Roundabout	10	45	20	61	36	14
2 – Toucan crossing on Burnham Rd adj to B1418	20	86	38	117	70	28
3 – Toucan crossing on Burnham Rd adj to Hullbridge Rd	34	152	64	196	121	48
4 – Zebra crossing on Hullbridge Rd adj to Burnham Rd	10	44	9	28	29	11
5 – Toucan crossing on Burnham Rd between Site Accesses 2 and 3	23	102	47	144	84	33
6 – Toucan crossing on Woodham Rd at Site Access 4	3	14	7	21	12	5
7 – Toucan crossing on B1418 adj to Burnham Rd	3	13	6	18	11	4
8 – Toucan crossing on B1418 between Site Accesses 1 and 5	2	8	3	10	6	2
9 – Island crossings on B1418 at Site Access 1	1	5	2	6	4	1

Table 6.5: Non-Car Trips per Crossing

6.23 If the busiest junction is considered, Number 3, this equates to an average figure of 7 crossings per cycle, based on a 90 second cycle time.

6.24 The capacity of the crossings is considered, in Section 7.

Trips by Bus and Rail

6.25 The Bus Strategy is contained in **Appendix C.** This sets out the proposals to;

- Provide fast public transport access from South Woodham Ferrers to Chelmsford City and Broomfield Hospital through the development.
- Increase the frequency of the services from South Woodham Ferrers to Chelmsford
- Provide peak period connections to Wickford
- Subject to further investigation to introduce DRT. (Demand Responsive Transport)

6.26 This will provide a significant increase in capacity for journeys to be made by Bus. If demand exceeds initial forecasts, as has been demonstrated on other Countryside schemes additional services can be provided with the agreement of the operator.

6.27 In relation to rail, 2011 Census data showed a 13.0% Rail Modal share for Journeys to Work. New train stock is being introduced on the rail line through South Woodham Ferrers which will increase train capacity at this station. The Great Eastern Mainline Study July 2019, concluded that the new rolling stock provided between 164 – 305 extra seats per train.

6.28 The Great Eastern Mainline Study has not identified the Southminster Branch on which South Woodham Ferrers is located as being a principal area of overcrowding this. Notwithstanding this conclusion, the proposals include for a shuttle service is to be provided to Wickford Station, which has a higher frequency service, reducing the impacts at South Woodham Ferrers Station.

7 Traffic Impacts

7.1 In this Section of the report, we consider the detailed operation of the network and junctions assessed within this TA.

7.2 **Appendix D (D5-D8)**, contains in detail the junction assessments and models, and this Chapter summarises:

- Junctions Assessed and the form of Assessment
- Traffic Growth Assumptions
- Base Traffic Data Used in the Assessments
- Issued on the Network
- Summary of the findings of the Junction Assessments
- Pedestrian and Cycle Crossing Capacity

Junctions Assessed and the form of Assessment

7.3 **Table 7.1** shows the junctions that have been assessed in this TA and the model used in the assessment. It also shows the period of assessment for each Junction.

Junction	Form of Assessment	Peak Period	
		AM Peak	PM Peak
Site Access 1: B1418 Site Access Roundabout	ARCADY (Junctions9)	07:30-08:30	16:30-17:30
Site Access 2: Burnham Road Site Access Roundabout	ARCADY (Junctions9)	07:00-08:00	16:15-17:15
Site Access 3: Burnham Road Left-in/Left-out Site Access	ARCADY (Junctions9)	07:00-08:00	16:15-17:15
Site Access 4: Burnham Road/Hamberts/Woodham Road	ARCADY (Junctions9)	07:00-08:00	16:15-17:15
Site Access 5: B1418 Left-in/Left-out Site Access	ARCADY (Junctions9)	07:30-08:30	16:30-17:30
Junction A: A132 Burnham Road/Ferrers Road/Willow Grove junction	ARCADY (Junctions9)	07:15-08:15	16:30-17:30
Junction B: Burnham Road/Old Wickford Road/B1418 junction	ARCADY (Junctions9) and LinSig	07:30-08:30	16:30-17:30
Junction C: Rettendon Turnpike	ARCADY (Junctions9)	07:15-08:15	17:00-18:00
Junction D: Hawk Hill Roundabout	ARCADY (Junctions9) and LinSig	07:30-08:30	16:45-17:45
Junction E: A132 Burnham Road/Wickford Road junction	ARCADY (Junctions9)	07:30-08:30	16:45-17:45
Junction F: Burnham Road/Hullbridge Road junction	ARCADY (Junctions9)	07:00-08:00	16:15-17:15
Junction G: Hullbridge Road/Clements Green Lane roundabout junction	ARCADY (Junctions9)	08:15-09:15	17:30-18:30
Junction H: A130 Northbound Slip Road	LinSig	07:15-08:15	17:00-18:00

Table 7.1: Junctions Assessed and Form of Assessment

Traffic Growth Assumptions

7.4 The Junctions have been assessed for a Test Year of 2026. This is a standard test required by the Local Highway Authority ECC, which represents 5 years from the date of the submission of the application.

7.5 Traffic Growth has been applied to 2020 (pre-COVID) surveys taken from the TEMPro 7.2b database as shown in **Table 7.2.**

Growth Period	AM Peak	PM Peak
2016-2020	1.0406	1.0394
2017-2020	1.0297	1.0290
2020-2026	1.0527	1.0535

Table 7.2: TEMPro Traffic Growth Forecasts used in the assessments

Base Traffic Data Used in the Assessments

7.6 As referenced in **Table 3.4**, the data used in the assessments is from the following sources:

- Mayer Brown Surveys undertaken February 2020
- ECC Surveys Undertaken October 2017
- Mayer Brown Surveys undertaken May 2016.

7.7 **Table 7.3** below, shows for each junction tested the survey that has been used:

Junction	Date of Survey	Type of Survey
Site Access 1: B1418 Site Access Roundabout	February 2020	Base Flows determined from flows on B1418
Site Access 2: Burnham Road Site Access Roundabout	February 2020	Base Flows determined from flows on Burnham Road
Site Access 3: Burnham Road Left-in/Left-out Site Access	February 2020	Base Flows determined from flows on Burnham Road
Site Access 4: Burnham Road/Hamberts/Woodham Road	July 2017	Manual Classified Turning Count
Site Access 5: B1418 Left-in/Left-out Site Access	February 2020	Base Flows determined from flows on B1418
Junction A: A132 Burnham Road/Ferrers Road/Willow Grove junction	February 2020	Manual Classified Turning Count and Queue Length
Junction B: Burnham Road/Old Wickford Road/B1418 junction	February 2020	Manual Classified Turning Count and Queue Length
Junction C: Rettendon Turnpike	October 2016	Manual Classified Turning Count and Queue Length
Junction D: Hawk Hill Roundabout	October 2016	Manual Classified Turning Count and Queue Length
Junction E: A132 Burnham Road/Wickford Road junction	October 2016	Manual Classified Turning Count
Junction F: Burnham Road/Hullbridge Road junction	February 2020	Manual Classified Turning Count and Queue Length
Junction G: Hullbridge Road/Clements Green Lane roundabout junction	October 2016	Manual Classified Turning Count
Junction H: A130 Northbound Slip Road	October 2016	Manual Classified Turning Count and Queue Length

Table 7.3: Survey Undertaken for Each Junction

7.8 A comparison of the available 2017 survey data with the 2020 survey data has been undertaken and forms **Appendix E.** This demonstrated the survey records to be comparable.

Issues on the Network

7.9 Inspection of the surveys undertaken in February 2020 identified two major constraints which impact the operation of the network in the peak periods. These are;

- Queueing on Burnham Road westbound between the B1418 and Hullbridge Road junctions which reduces capacity at the Burnham Road/Hullbridge Road junction.
- Queueing due to narrowing from 2 lanes to 1 lane on Burnham Road south of the Burnham Road/Ferrers Grove/Willow Road junction which constrains the operation of the adjacent roundabout.
- Issues on the A130/A132 junction

Queueing on Burnham Road Westbound Between B1418 And Hullbridge Road Junctions

7.10 Due to the capacity constraints at the Burnham Road/B1418 junction, queues build up between the B1418 and Hullbridge Road junction westbound on Burnham Road, as shown in **Figures 7.1 to 7.3.** This causes queueing at the Burnham Road/Hullbridge Road junction.

7.11 This issue will be resolved through the developer funded improvements to the Burnham Road/B1418 junction as demonstrated in this Section.

Figure 7.1: Queueing Between B1418 and Hullbridge Road Junctions on Burnham Road

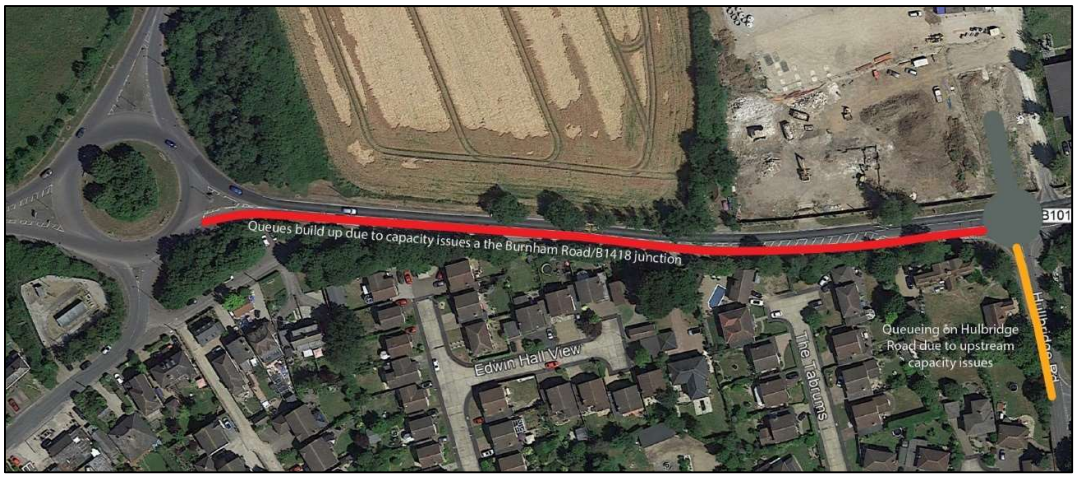


Figure 7.2: Upstream Capacity Issues Causes Queueing on Hullbridge Road

Figure 7.3: Queueing on Hullbridge Road

Queueing on Burnham Road South of the Burnham Road/Ferrers Grove/Willow Road Roundabout

7.12 There is currently queueing in the AM peak on Burnham Road as a result of the narrowing from 1 lane to 2 lanes. **Figure 7.4** shows that the queueing at the road narrowing causes queueing to extend back to the Burnham Road/Ferrers Grove/Willow Road Roundabout and decreases the capacity at the junction which causes AM peak queues on the Ferrers Road and Burnham Road east approach arms. The queueing dissipates after the road narrowing and Burnham Road returns to free-flow conditions, as shown in **Figure 7.5.**

Figure 7.4: Queueing on Burnham Road Due to Narrowing From 2 lanes to 1 lane

Figure 7.5: Queueing Cleared After the Road Narrowing on Burnham Road

7.13 It is considered that the impact could be reduced through an extension of the taper where Burnham Road is reduced from 2 lanes to 1 lane by approximately 100 metres as shown in **Figure 7.6** below.

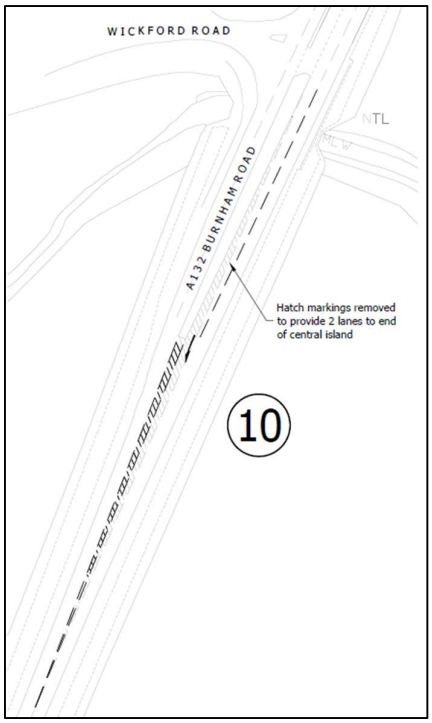


Figure 7.6: Modification to Burnham Road South of the Burnham Road/Ferrers Grove/Willow Road Roundabout

Analysis of the Operation of the A130/132 Interchange

7.14 *We have considered the three junctions which form the Interchange, shown in **Figures 7.8 and 7.9,** which are the Rettendon Turnpike roundabout junction (Junction C), the Hawk Hill Roundabout junction (Junction D) and the A130 on/off slips onto the A132 (Junction H).*

Layout Change

7.15 It is noted that the surveys were undertaken in 2016 and the lane marking amendments have been undertaken subsequently at the Rettendon Turnpike and Hawk Hill Roundabout as shown in **Figure 7.7.**

Figure 7.7: Lane Marking Changes at Rettendon Turnpike and Hawk Hill Roundabout

7.16 *The following amendments have been made;*

- Entry from A132 Burnham Road at Rettendon Turnpike – Reduced from 3 lanes to 2 lanes.
- Entry from A132 Burnham Road at Hawk Hill Roundabout – Reduced from 3 lanes to 2 lanes.
- Circulation lanes painted on Rettendon Turnpike and Hawk Hill Roundabout
- Clear lane direction markings on all entry arms
- Lane direction markings on Rettendon Turnpike

7.17 *Although these changes have slightly decreased the entry capacity of the junction, Base Junction Capacity Assessments, considered subsequently in this Technical Note do not demonstrate any notable change to the operation of the junctions.*

7.18 The findings presented in **Figures 7.8 and 7.9,** show the findings from video surveys undertaken 18th and 19th October 2016, which have been verified against ECC surveys undertaken in 2017.

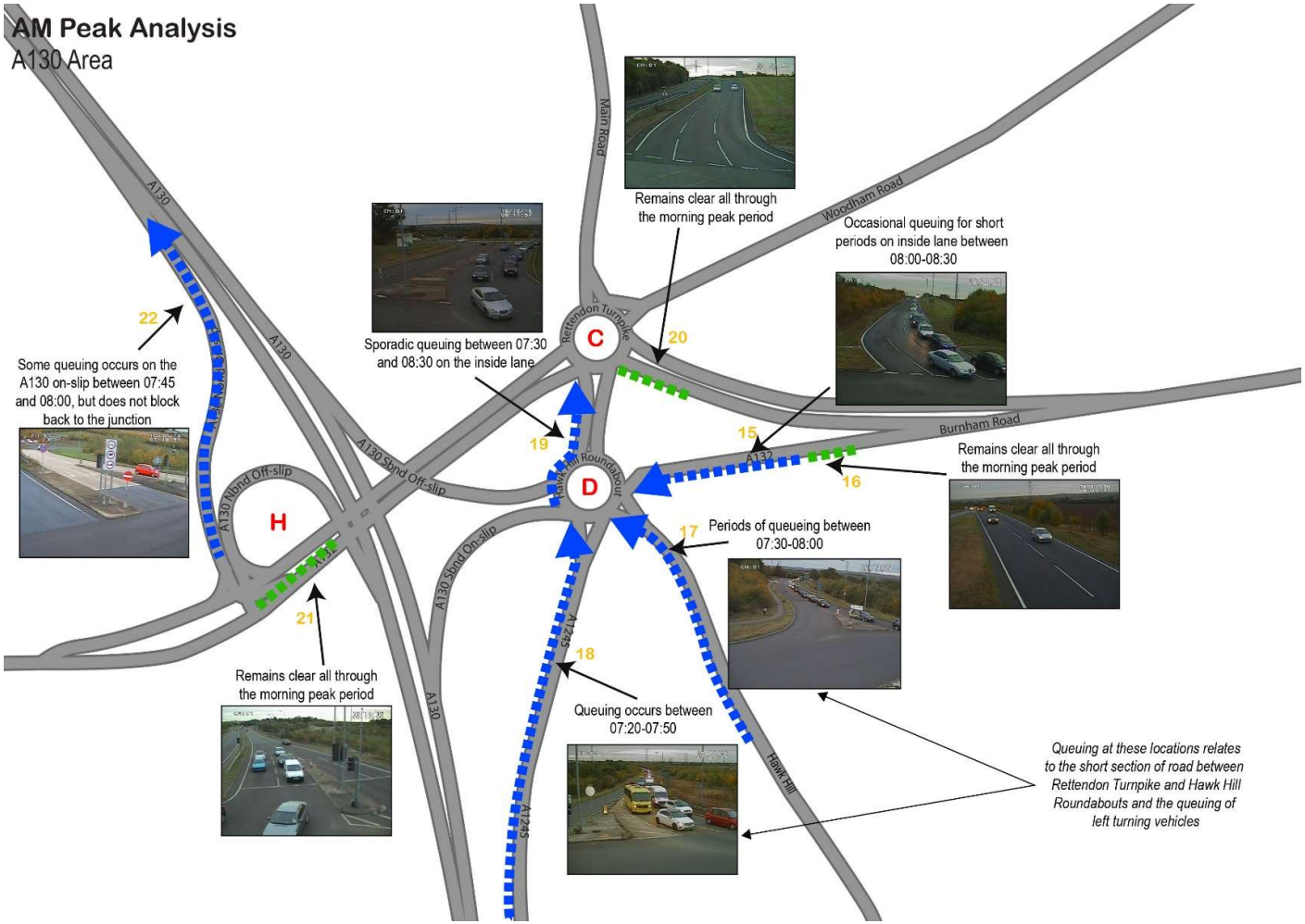


Figure 7.8: A130/A132 Junction Area AM Peak

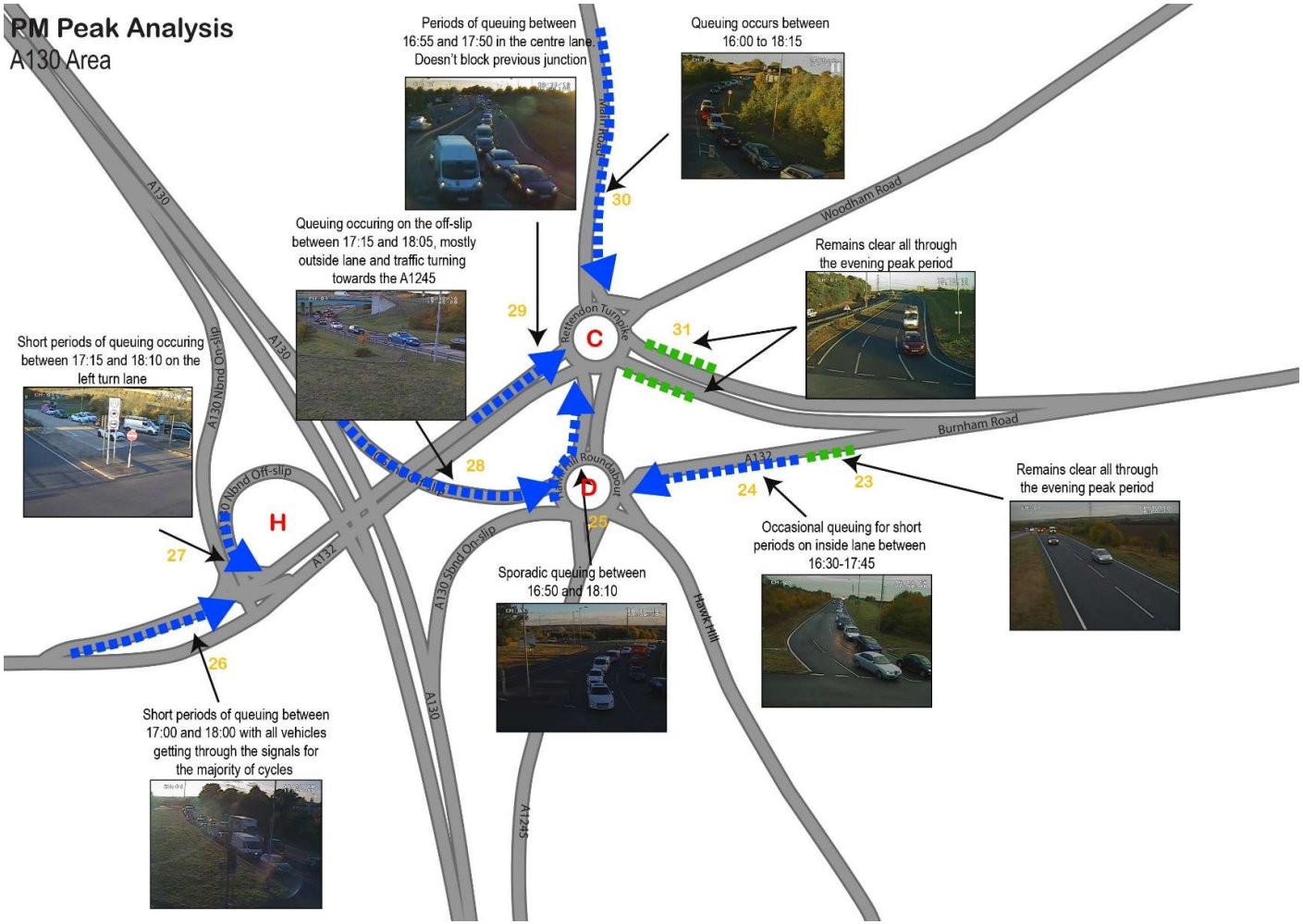


Figure 7.9: A130/A132 Junction Area PM Peak

AM Peak

7.19 In the AM Peak, the main issue relates to queuing which occurs on the short arm between Junctions D and C, which partially blocks Junction D between 07:30 and 08:30. This is shown as point 19 in **Figure 7.8.** This delays traffic on the A1245 and Hawk Hill arms, shown at points 17 and 18 in **Figure 7.8**. The majority of the vehicles queuing on the section between the two roundabouts are mainly vehicles turning left towards the A130 on-slip.

7.20 In terms of the A130 junction with the A132 (Junction H), the right turn onto the A130 from the A132 remains clear and free flowing throughout the am peak period, as shown at point 21 in **Figure 7.8**. Some queuing was noted on the A130 on-slip between 07:45 and 08:00, however this did not block back to the junction, and seemed to relate to slow moving traffic on the A130 northbound itself, discussed in paragraph 3.13. This is demonstrated at point 22 in **Figure 7.8.**

PM Peak

7.21 In the PM peak, similar to the am peak, sporadic queuing occurring on the short arm between Junctions D and C causes queuing on the southbound A130 off slip between 17:15 and 18:05. This is demonstrated in points 25 and 28 in **Figure 7.9**. This is mainly vehicles on the outside lane, with traffic turning towards the A1245 and Hawk Hill.

7.22 Short periods of queuing occur at the signals at Junction H, from the A132 west of the junction, however vehicles get through the signal cycle for the majority of cycles. Similarly, some periods of queuing occur on the A130 northbound off slip, but this does not block back onto the A130. These are demonstrated at points 26 and 27 in **Figure 7.9.**

7.23 The Main Road arm of Junction C experiences queueing between 16:00 and 18:15, which is demonstrated at point 30 in **Figure 7.9**. This is likely to be due to the high flows of vehicles on the roundabout from the A130/A132, making it difficult for vehicles to access the roundabout. Main Road runs parallel to the A130, and it is likely that the majority of these vehicles are using this route as an alternative to the A130.

7.24 The exit onto the A132 Burnham Road remains clear throughout the evening peak periods, as shown in point 31.

Conclusions to the A130/A132 analysis of existing conditions

7.25 Whilst congestion does occur at Junctions C, D and H, it is clear where the congestions points are. In particular:

- On the A1245 and Hawk Hill approaches to the Hawk Hill roundabout (D), but as a result of queuing back from the Rettendon Turnpike roundabout (C).
- On the A130 southbound off slip in the pm peak, where the major flow is towards the A1245 and Hawk Hill.

7.26 As set out in the Local Plan Evidence base and subsequently within this Technical Note, there are clear improvements that could be made, which would alleviate the observed queueing and provide capacity for future development.

Summary of the Findings of the Junction Assessments

Junctions Assessed

7.27 The following junctions have been assessed, with the detailed findings contained in **Appendix D** and **Appendix F** (Capacity Analysis of the upgraded A130/A132 Junction):

The site access junctions:

- Site Access 1: B1418 Site Access Roundabout
- Site Access 2: Burnham Road Site Access Roundabout
- Site Access 3: Burnham Road Left-in/Left-out Site Access
- Site Access 4: Burnham Road/Hamberts/Woodham Road
- Site Access 5: B1418 Left-in/Left-out Site Access

Junctions on the wider network which form part of the Local Plan Evidence Base:

- Junction A: A132 Burnham Road/Ferrers Road/Willow Grove junction
- Junction B: Burnham Road/Old Wickford Road/B1418 junction
- Junction C: Rettendon Turnpike
- Junction D: Hawk Hill Roundabout
- Junction E: A132 Burnham Road/Wickford Road junction
- Junction F: Burnham Road/Hullbridge Road junction
- Junction G: Hullbridge Road/Clements Green Lane roundabout junction
- Junction H: A130 Northbound Slip RoadSite Access/B1418 roundabout

7.28 *Where a junction works for the Part 2 assessment, no further assessment has been considered and the development scenarios tested shown in **Table 7.4** have been undertaken.*

Test Number	Flows Tested	Test Progression	Trip Rates and Distribution Used
Test 1	Base 2020	N/A	N/A
Test 2	Base 2026	Test 1 + Growth	N/A
Test 9	Base 2026 + KFC Trips	Test 2 + KFC Trips	N/A
Test 6	Base 2026 + KFC Trips + Development	Test 9 + Development Trips	Part 2
Test 7	Base 2026 + KFC Trips + Development + Cumulative	Test 6 + Cumulative Assessment	Part 2
Test 10	Base 2026 + KFC Trips + Development + Mitigation	Test 6 + Mitigation	Part 2

Table 7.4: Development Scenarios Tested – Part 2

7.29 For junctions at or near capacity for the Part 2 assessment, the Part 1 Trip Rates and Distribution have been considered for a sensitivity test. The development scenarios shown in **Table 7.5** have been undertaken for Junction A.

Test Number	Flows Tested	Test Progression	Trip Rates and Distribution Used
Test 3	Base 2020 + Development	Test 1 + Development Trips	Part 1
Test 4	Base 2026 + Development	Test 2 + Development Trips	Part 1
Test 5	Base 2026 + Development + Cumulative	Test 4 + Cumulative Assessment	Part 1
Test 8	Base 2026 + Development + Mitigation	Test 4 + Mitigation	Part 1

Table 7.5: Development Scenarios Tested – Part 1

7.30 The findings of the tests, are summarised in the following paragraphs, with detailed models and model outs contained in **Appendix D** and **F.**

7.31 For the new site access junctions, they have been designed in accordance with the ECC criteria that the RFC does not exceed 0.85 on any arm.

Site Access 1: B1418 Site Access Roundabout

7.32 This would be a new junction on the B1418, the proposed layout for the junction is shown in **Figure 7.10.**

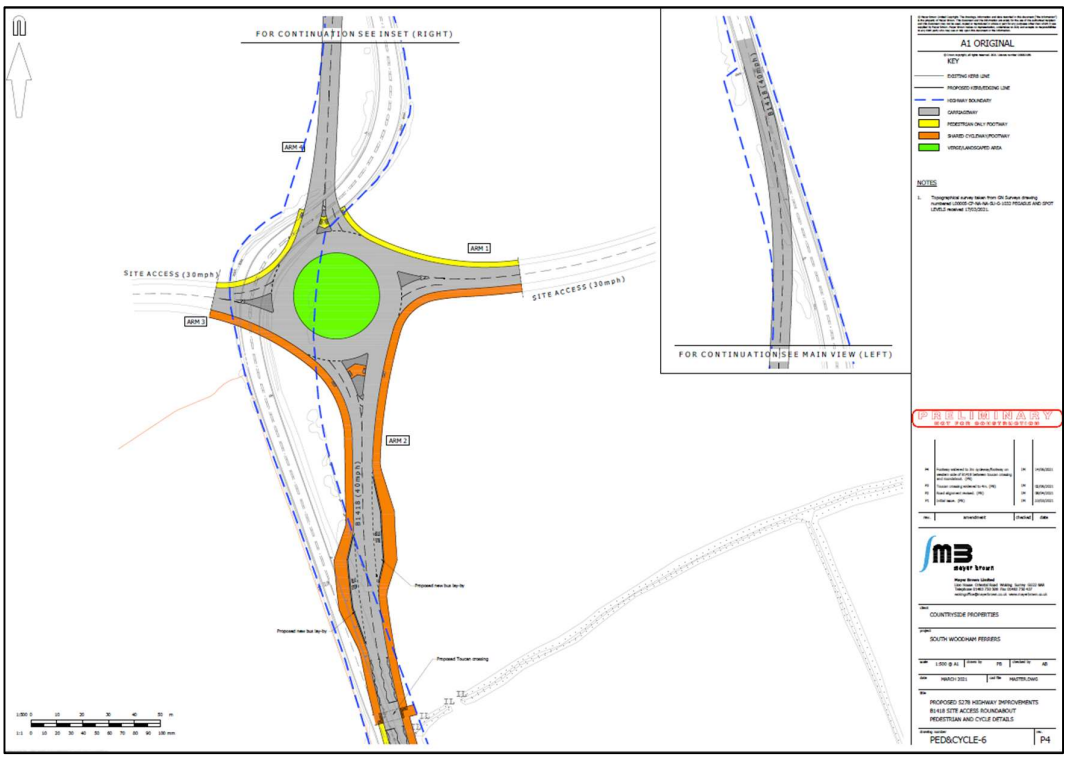


Figure 7.10: Proposed B1418/Site Access Roundabout Layout

7.33 The results of the ARCADY (Junctions9) model contained in **Appendix D**, demonstrates this junction operated below 0.85 RFC for all arms for all testing conditions.

Site Access 2: Burnham Road Site Access Roundabout

7.34 This would be a new junction on Burnham Road, the proposed layout for the junction is shown in **Figure 7.11.**

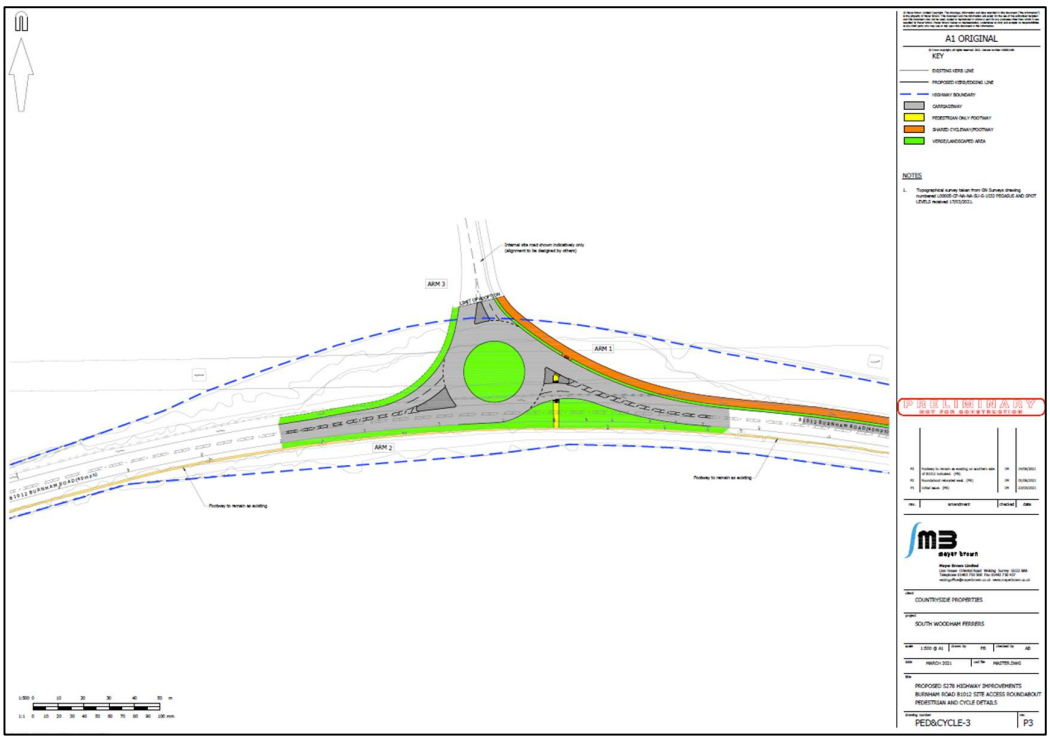


Figure 7.11: Proposed B1012 Burnham Road/Site Access Roundabout Layout

7.35 The results of the ARCADY (Junctions9) model contained in **Appendix D**, demonstrates this junction operated below 0.85 RFC for all arms for all testing conditions.

Site Access 3: Burnham Road Left-In/Left-Out Site Access

7.36 The results of the PICADY (Junctions9) model contained in **Appendix D**, demonstrates this junction operated below 0.85 RFC for all arms for all testing conditions.

Site Access 4: Burnham Road/Hamberts/Woodham Road

7.37 The existing junction layout will be modified to provide an additional arm to access the proposed development. The proposed junction layout is shown in **Figure 7.12.**

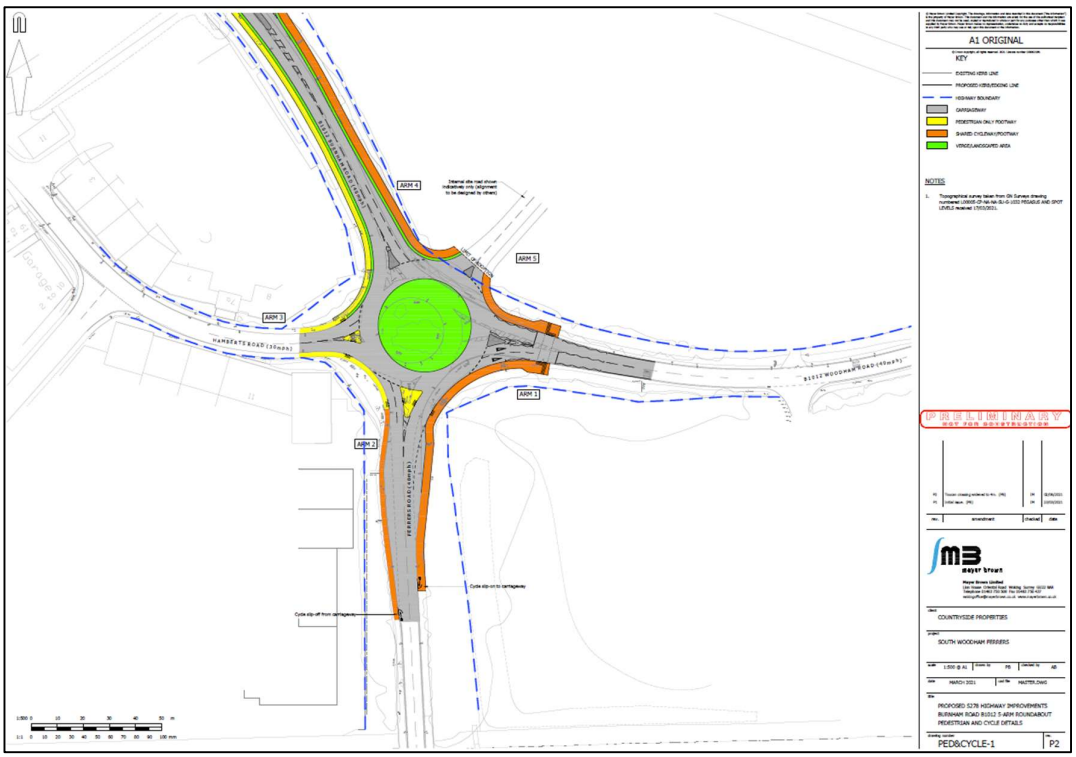


Figure 7.12: Proposed Burnham Road/Ferrers Road/Woodham Road/Site Access Roundabout

7.38 The results of the ARCADY (Junctions9) model demonstrates that the junction operates below 0.85 RFC for all testing conditions.

Site Access 5: B1418 Left-In/Left-Out Site Access

7.39 T The results of the PICADY (Junctions9) model contained in **Appendix D**, demonstrates this junction operated below 0.85 RFC for all arms for all testing conditions.

Junction A: A132 Burnham Road/Ferrers Road/Willow Grove Junction

7.40 As explained in **paragraphs 7.12-7.13**, there is currently queueing in the am peak on Burnham Road as a result of the narrowing from 1 lane to 2 lanes. This causes am peak queues on the Ferrers Road and Burnham Road east approach arms. It is considered that the impact could be reduced through an extension of the taper distance where Burnham Road is reduced from 2 lanes to 1 lane by approximately 100 metres.

7.41 The junction capacity assessment uses the junction improvements currently under construction as part of the *'Proposed Drive through Restaurant, Fenn Roundabout'*, as shown in **Figure 7.13.**

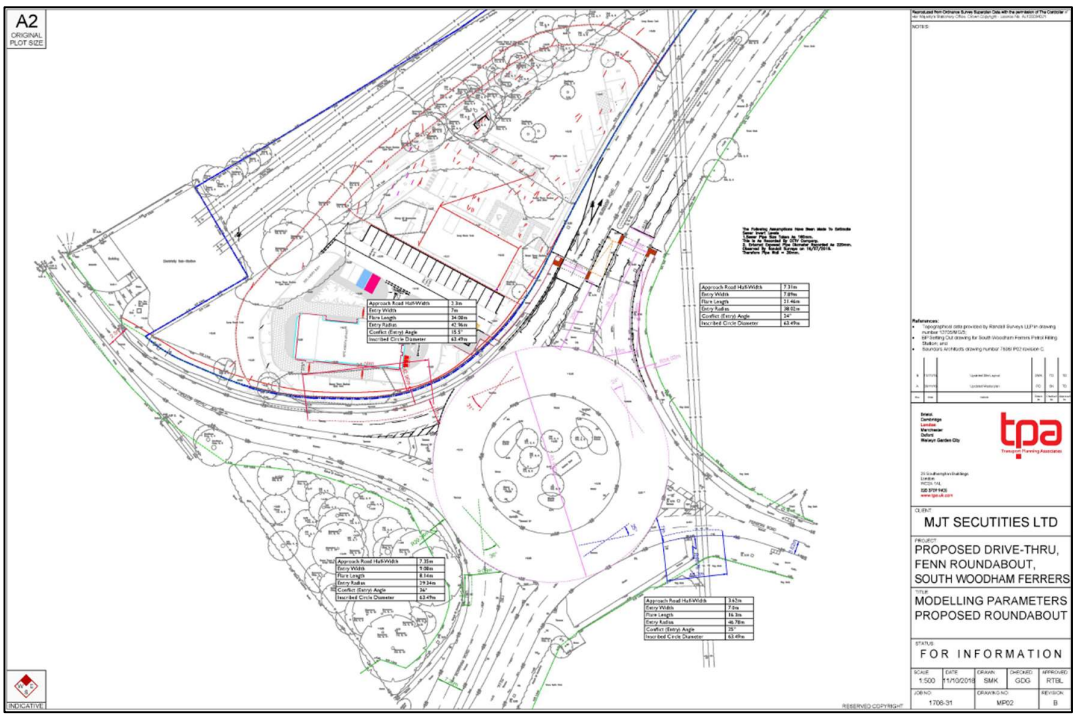


Figure 7.13: A132 Burnham Road/Ferrers Road/Willow Grove Junction Improvement Currently Under Construction

7.42 The junction capacity assessment results contained in **Appendix D** demonstrate that the exiting junction capacity is not the cause of queuing that occurs at the roundabout in the am peak.

7.43 This demonstrates that the junction is approaching capacity with only growth applied. The junction is able to operate with a manageable queueing on the primary arms of the roundabout with a small modal share adjustment using the Part 2 trip rates and distribution. The junction would operate within capacity for the Part 1 Assessment.

7.44 Notwithstanding the results of the Part 1 assessments, it would be proposed through a planning condition to monitor the operation of the junction and if flows exceed certain thresholds, to submit an updated TA and if flows exceed certain thresholds to implement either additional highways mitigation or further measures to adjust modal share. The details in terms of the monitoring period, the criteria for the implementation of improvements and the mitigation measures would be contained in the S106 Agreement. The potential upgrade is shown in **Figure 7.14.**

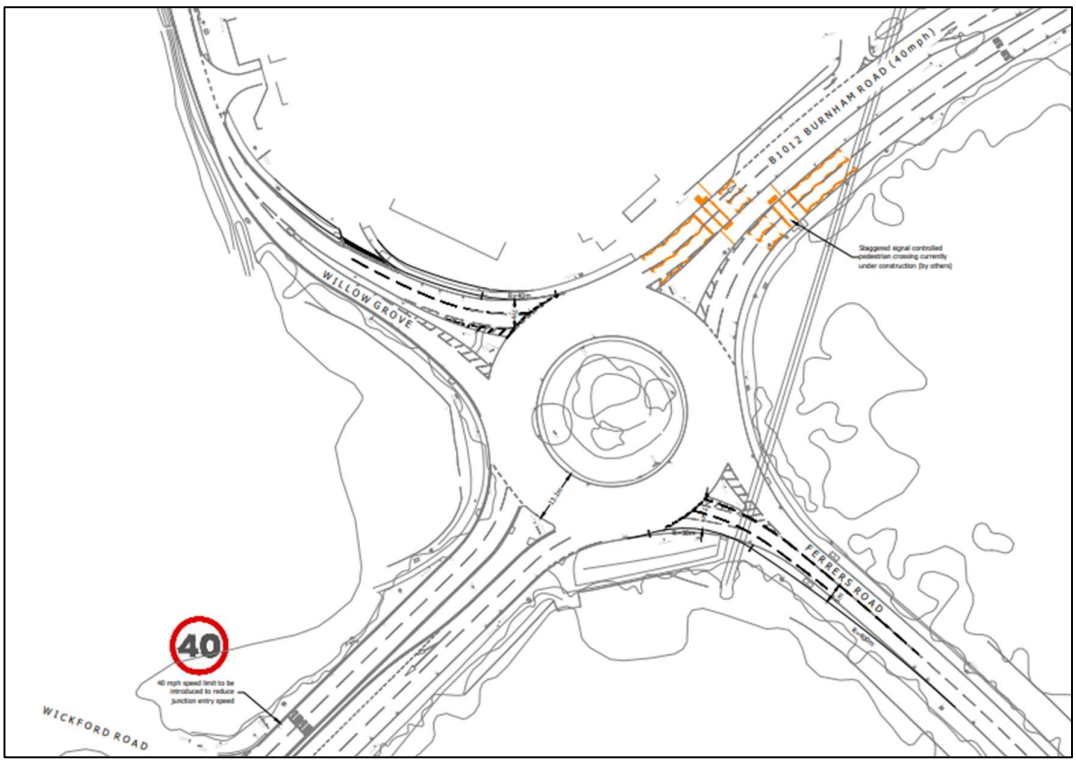


Figure 7.14: A132 Burnham Road/Ferrers Road/Willow Grove Junction Possible upgrades to the Willow Grove and Ferrers Road Roundabout Arms

Junction B: Burnham Road/Old Wickford Road/B1418 Junction

7.45 The Local Plan Evidence Base demonstrated a requirement to improve this junction. The examination of the Local Highway Network also demonstrated that queuing from this junction impacts on the operation of the Burnham Road/Hullbridge Road junction and mitigation will relieve queuing on Hullbridge Road.

7.46 A signal option has been designed to address the above-mentioned issues. This is shown in **Figure 7.15.**

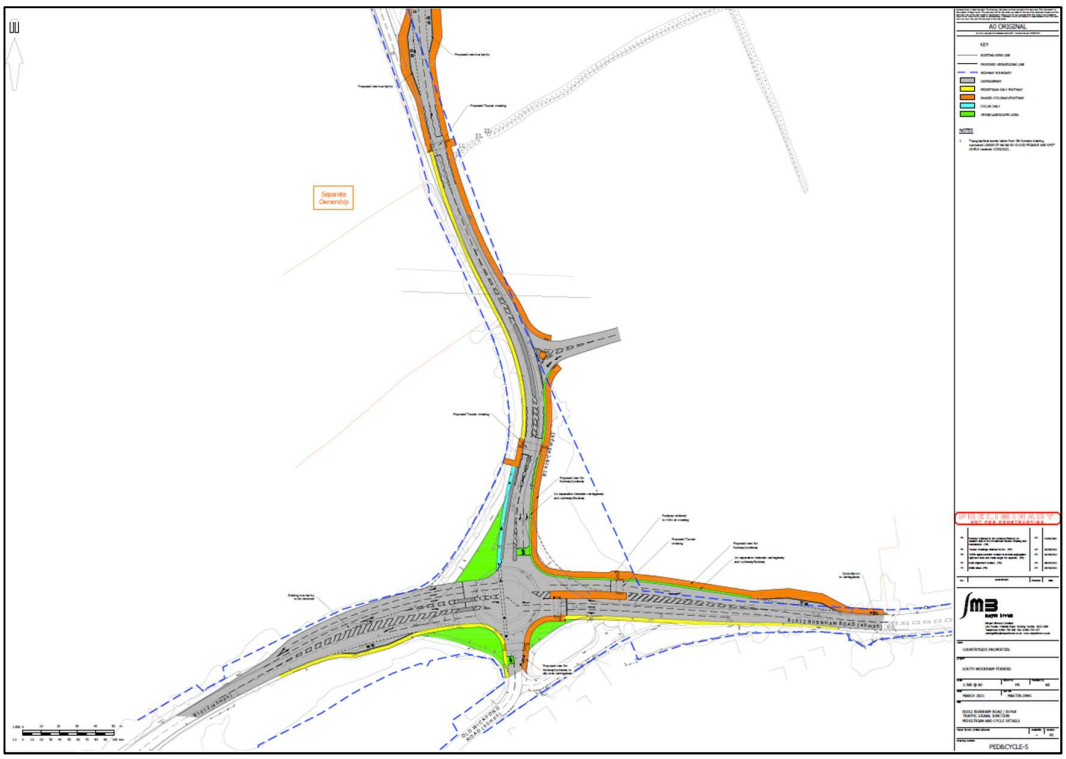


Figure 7.15: Proposed Burnham Road/B1418 Signal Junction

7.47 The junction capacity assessment demonstrates that the proposed signal junction operates under capacity for all testing conditions.

Junction E: A132 Burnham Road/Wickford Road Junction

7.48 The junction capacity assessment demonstrates that the junction operates under capacity for all testing conditions.

Junction F: Burnham Road/Hullbridge Road Junction

7.49 The Local Plan Evidence Base demonstrated that the junction was operating within capacity at present but would operate above capacity at the end of the Local Plan period. The analysis of the existing Network contained earlier in this section has demonstrated that the capacity of this junction is constrained by the Burnham Road/B1418 which will be improved through the implementation of the proposed development.

7.50 The junction capacity assessment demonstrates that there are no capacity issues in the pm peak and with mitigation, in the form of a transfer of trips to means other than the private car, the proposed signal junction operates under capacity for all testing conditions.

7.51 A sensitivity test was undertaken with the Sainsburys TA predictions for movements in and out of development. These demonstrated that the junction would operate with less queueing than the February 2020 surveys.

Non-Car Mitigation Effect

7.52 The Non-Car mitigation is described in full in Section 9. For the purpose of this junction assessment the effect of the mitigation has been assessed as a 30 PCU reduction in vehicles in the Busiest Hour. Noting that the mitigation includes for;

- Additional Public Transport Capacity, for new and existing residents
- A comprehensive network of pedestrian and cycle improvements
- Travel Plan and Smarter Choices Incentives
- Does not allow for increased working from home

7.53 This is clearly a very modest modal share adjustment.

Junction G: Hullbridge Road/Clements Green Lane Roundabout Junction

7.54 The junction capacity assessment demonstrates that the junction operates under capacity for all testing conditions.

Junction C: Rettendon Turnpike Roundabout Junction

7.55 **Appendix F** examins the operation of the A130/A132 Intersection. Examination of the existing layout demonstrated that the current layout has geometric constraints on the A1245 connection from Hawk Hill roundabout and Main Road, which supports the video surveys.

7.56 It is proposed to widen the entry from the Hawk Hill Roundabout approach to 3 lanes and to provide a flare on Main Road as shown in **Figure 7.16.**

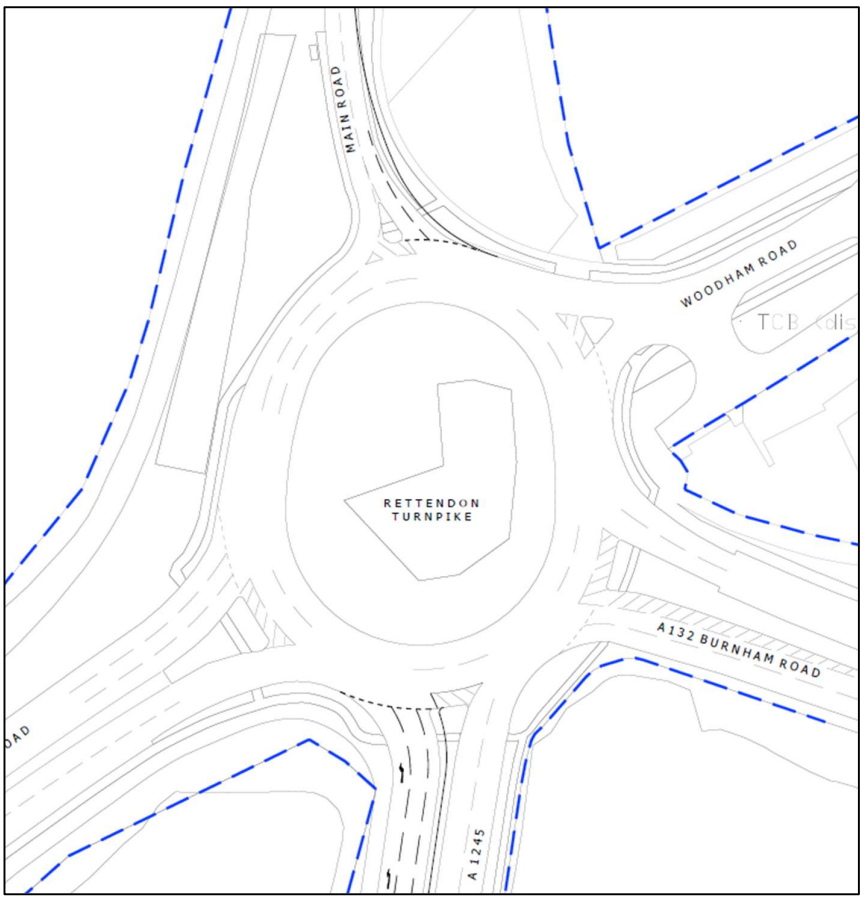


Figure 7.16: Rettendon Turnpike Proposed Improvements

7.57 The junction capacity assessment demonstrates that the A1245 Connection to Hawk Hill operates under capacity and will not queue back to the Hawk Hill roundabout and that the mitigation would resolve the existing queuing that occurs.

Junction D: Hawk Hill Roundabout Junction

7.58 **Appendix F** examines the operation of the A130/A132 Intersection. Examination of the existing layout demonstrated that the current layout has geometric constraints on the A130 southbound off-slip, which supports the video surveys.

7.59 It is proposed to provide peak period signals on the A130 southbound off slip as shown in **Figure 7.17.**

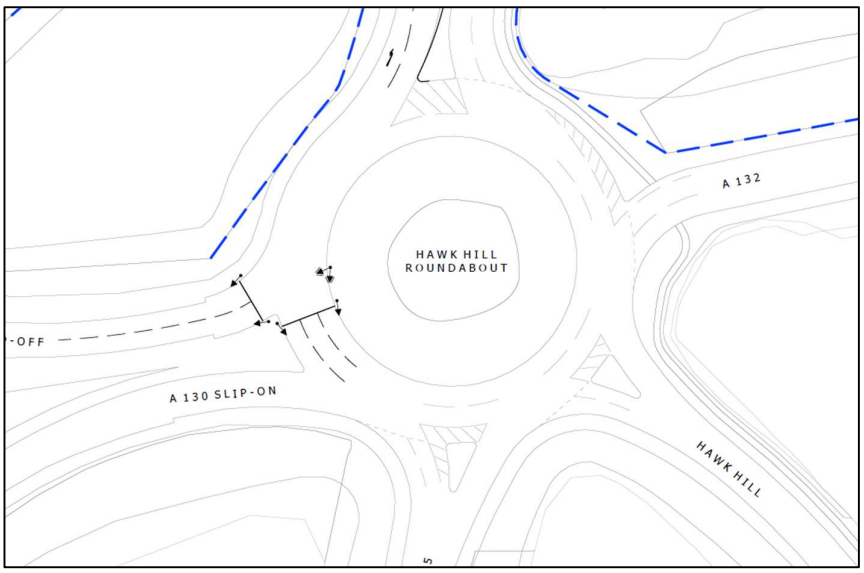


Figure 7.17: Proposed Signalisation of A130 Southbound Off Slip

7.60 The junction capacity assessment demonstrates that the junction operates under capacity on all arms for the Test 6 condition. Under the cumulative Test 7 conditions, the junction operates near capacity on the Hawk Hill arm in the am peak with an improvement compared to the existing queueing.

7.61 The signalisation of the A130 southbound off slip allows the arm to operate under capacity. When combined with the ARCADY results this demonstrates that the capacity at the Rettendon Turnpike/Hawk Hill roundabout will be enhanced by the proposed improvements. These would operate as part-time signals and would only need to be operational in the pm peak.

Junction H: A132/A130 Northbound On/Off Slip

7.62 The junction capacity assessment demonstrates that the existing layout operates under capacity for the Test 7 (Base 2026 + KFC Trips + Development + Cumulative) scenario.

7.63 It is noted that ECC have developed a scheme to be delivered within the local plan period. The Local Plan Evidence Base showed the junction to operate under capacity for the Base scenario, with the junction over capacity for the Local Plan Test Year of 2036.

7.64 Consequently, it is considered that the mitigation forms a requirement to support traffic growth, which may be the subject of adjustment once updated TEMPro forecasts have been issued.

Pedestrian/Cycle Controlled Crossing Capacity

7.65 The pedestrian and cycle crossings will operate well under capacity, as shown in **Table 7.6.**

7.66 It is noted that this assessment assumes a worst-case scenario where none of the walking and cycling trips are internalised and that all trips use a crossing point on the Burnham Road to access their destination. This is considered an extreme test given the amenities to be provided on-site.

Crossing Point	Capacity in accordance with LTN 2/95	Peak 2-way Residential Demand (peds/hour)	Existing Demand	Peak + Existing + 20% Allowance	Is sufficient capacity provided?
1 – Crossing on Burnham Rd at Fenn Roundabout	600	81	New crossing	97	Yes
2 – Toucan crossing on Burnham Rd adj to B1418	600	155	New crossing	186	Yes
3 – Toucan crossing on Burnham Rd adj to Hullbridge Rd	600	260	37	356	Yes
5 – Toucan crossing on Burnham Rd between Site Accesses 2 and 3	600	191	New crossing	229	Yes
6 – Toucan crossing on Woodham Rd at Site Access 4	600	28	New crossing	34	Yes
7 – Toucan crossing on B1418 adj to Burnham Rd	600	24	New crossing	29	Yes
8 – Toucan crossing on B1418 between Site Accesses 1 and 5	600	14	New crossing	17	Yes

Table 7.6: Pedestrian/Cycle Crossing Capacity

7.67 This demonstrates that even with an extreme test of the crossing points, the crossing points are well below the capacity indicated in LTN 2/95.

Conclusions to this Section

7.68 **Table 7.7** provides a summary of the results of the Capacity Assessments and whether mitigation is proposed.

Junction	Conclusions	Mitigation Requirements
Site Access 1: B1418 Site Access Roundabout	Under capacity for all testing scenarios.	n/a
Site Access 2: Burnham Road Site Access Roundabout	Under capacity for all testing scenarios.	n/a
Site Access 3: Burnham Road Left-in/Left-out Site Access	Under capacity for all testing scenarios.	n/a
Site Access 4: Burnham Road/Hamberts/Woodham Road	Under capacity for all testing scenarios.	n/a
Site Access 5: B1418 Left-in/Left-out Site Access	Under capacity for all testing scenarios.	n/a
Junction A: A132 Burnham Road/Ferrers Road/Willow Grove junction	Existing operation constrained by upstream issues. With non-car mitigation, the Part 1 assessment shows queuing is similar to current operation.	Implementation of non-car package and monitor and manage.
Junction B: Burnham Road/Old Wickford Road/B1418 junction	Under capacity for all testing scenarios with mitigation.	Implementation of junction upgrade
Junction C: Rettendon Turnpike	Under capacity for all testing scenarios with mitigation.	Widening of the A1245 Northbound approach Widening the entry arm and increasing the Flare Length on the Main Road Approach
Junction D: Hawk Hill Roundabout	Under capacity for Test 6 scenario with mitigation. Test 7 queuing is similar to current operation.	Signalisation of the A130 Off Slip pm peak Period Only
Junction E: A132 Burnham Road/Wickford Road junction	Under capacity for all testing scenarios.	n/a
Junction F: Burnham Road/Hullbridge Road junction	Existing operation constrained by upstream issues. With non-car mitigation, queuing is similar to current operation.	Implementation of non-car package
Junction G: Hullbridge Road/Clements Green Lane roundabout junction	Under capacity for all testing scenarios.	n/a
Junction H: A130 Northbound Slip Road	Under capacity for all testing scenarios.	Not required unless demonstrated through Monitoring

Table 7.7: Summary of Traffic Impacts and Mitigation Requirements

7.69 It can be from this section, that the existing operation of the network has been carefully considered and highways mitigation proposed to accompany the non-car mitigation which is discussed in Section 9.

8 Cumulative Impacts Assessment

8.1 This section of the report sets out the assessment that has been undertaken to consider the cumulative impacts.

8.2 TEMPro 7.2b allows for the growth anticipated within the Local Plan Period. In addition, we have undertaken a cumulative test to consider the impact of the Bradwell B development.

8.3 The Bradwell B consultation report states it is anticipated that they will still be able to use SWF ring road (the existing B1012) for 500-700 2-way HGV movements per day for 8 years of the build.

8.4 In that context the additional flows have been added to the models contained in Section 7, as shown in **Table 8.1**. It is noted that the promoters of the Bradwell B scheme, are likely to have to demonstrate measures to restrict other movements by private car during the construction period.

	AM Peak	PM Peak
Burnham Road Wbnd	40 HGVs (80 PCUs)	40 HGVs (80 PCUs)
Burnham Road Ebnd	40 HGVs (80 PCUs)	40 HGVs (80 PCUs)

Table 8.1: Additional Traffic Flow Added for the Cumulative Assessments

8.5 The findings are shown in detail in **Appendix D and F** and summarised in **Table 8.2**.

Junction	Capacity Conclusions
Site Access/B1418	No Change with Cumulative Assessment
Site Access/B1012	No Change with Cumulative Assessment
Burnham Road/Wickford Road Junction	No Change with Cumulative Assessment
Burnham Road/B1418 Intersection	No Change with Cumulative Assessment
Burnham Road/Hullbridge Road Junction	Modal Share adjustment requirement
Hullbridge Road/Clements Green Lane Mini Roundabout	No Change with Cumulative Assessment
Burnham Road/Willow Grove/Ferrers Road	Increased requirement for Modal Share adjustment and a requirement for the implementation of the improvements shown in Figure 7.13.
A130/A132 Intersection Rettendon Turnpike Roundabout	No Change with Cumulative Assessment

Table 8.2: Summary of the Cumulative Capacity Assessments

9 Mitigation Measures and Travel Plan

9.1 A comprehensive package of mitigation measures is proposed to support the development, which aims to maximise the number of trips by non-car means and to provide additional highways capacity as appropriate.

9.2 These are described in detail in the following section, with a table at the end of this section showing the method of delivery.

- Highways Mitigation
- Public Transport Strategy
- Free Bus Travel
- Cycle Proposals
- Provision of a Car Club
- Better Points Scheme
- Smarter Choices Campaign
- Travel Packs for Residents
- Travel Plans for Residential and Commercial Uses

9.3 Considering each in turn:

Highways Mitigation

9.4 This was discussed in **Section 7.** The method of delivery is described at the end of this section.

9.5 The proposed highway mitigation includes:

- Extension of 2 lanes southbound south of the Burnham Road/Willow Grove/Ferrers Road roundabout
- Signal Junction improvement at Burnham Road/B1418 junction
- Enlarged roundabout at Burnham Road/Woodham Road/Ferrers Road/Hamberts Road
- Widened northbound connection between Hawk Hill and Rettendon Turnpike
- Part signalisation of the Hawk Hill roundabout on the A130 southbound off-slip arm
- Subject to ongoing monitoring, increasing the flare lengths on the Willow Grove and Ferrers Road arms of the Burnham Road/Willow Grove/Ferrers Road roundabout

Bus Strategy

9.6 A detailed Bus Strategy has been prepared to support the proposed development. This is described in detail in **Appendix C** and summarised in the following paragraphs.

9.7 The proposed bus strategy involves:

- Divert the 36 bus service (or equivalent) through the development providing a clockwise and anti-clockwise service to serve the development and town centre. The masterplan is designed to allow bus services to be routed through the development. Services would be introduced through a phased approach to the introduction of bus services with interim solutions such as taxi-buses considered at the initial occupation prior to a full service becoming viable
- Increased frequency of the 36 to every 20 minutes
- Provision of a Demand Responsive Bus Service for the South Woodham Ferrers Area
- Improvements in services to Broomfield Hospital
- Enhanced frequency commuter service (36X or equivalent) to Chelmsford
- Provision of up to one years' free bus travel on local and proposed bus services for up to four persons in each household
- Extension of the Town Centre Fare Zone to include the proposed development
- Provision of a shuttle service to Basildon and Wickford to be used for Demand Responsive Trips within South Woodham Ferrers during the off peak period

Free Bus Travel

9.8 To encourage the use of the bus service, it is proposed to provide all residents with up free initial bus travel when the bus service is implemented.

9.9 When the bus service is introduced at the development, marketing information will be provided to residents setting out the timetable and route information, along with how residents can apply for a free season ticket. An example of this is shown in **Figure 9.1.**

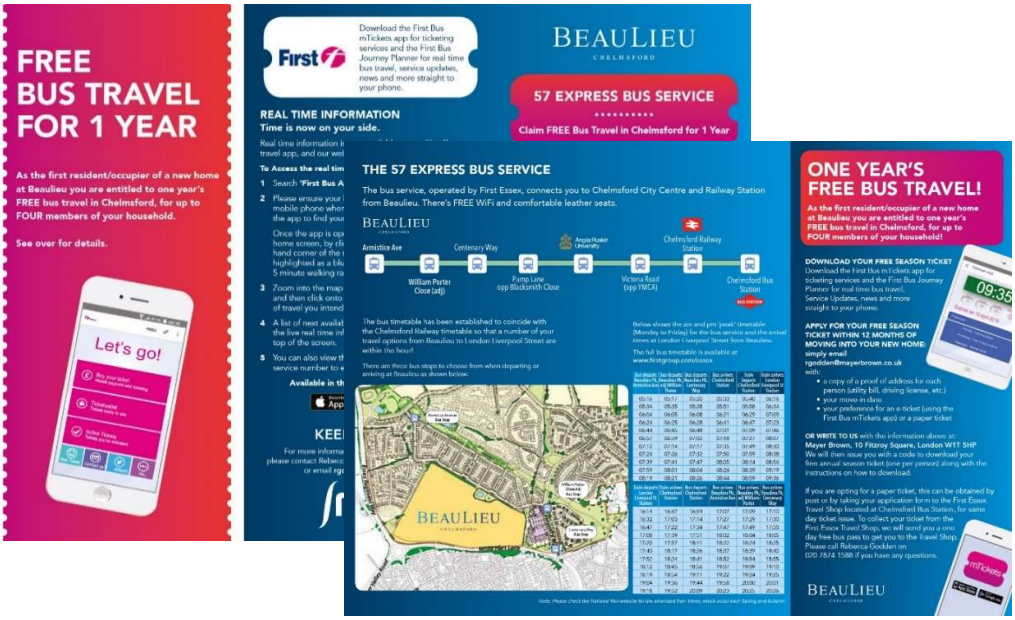


Figure 9.1: Example of Bus Marketing Information

9.10 *This has been provided at a number of Countryside schemes, which has proven to encourage residents to travel by bus and continue this behaviour after the free travel period has finished. As an example, at Beaulieu, over 20% of peak trips leaving/arriving at the development are made by bus.*

Pedestrian and Cycle Proposals

9.11 The development proposals include for a comprehensive network of pedestrian and cycle links within the development, together with controlled crossing points over the Burnham Road and the B1418. A cycle and pedestrian strategy is contained in **Appendix G** and summarised below.

9.12 In addition, the development will:

- Implement a series of cycle improvements from the crossing points on Burnham Road, connecting to key destinations within South Woodham Ferrers
- Provide cycle familiarity training for residents.

9.13 The cycle improvements have been identified through a detailed audit of the local network and the proposals are shown in **Figures 9.2** and **9.3.**

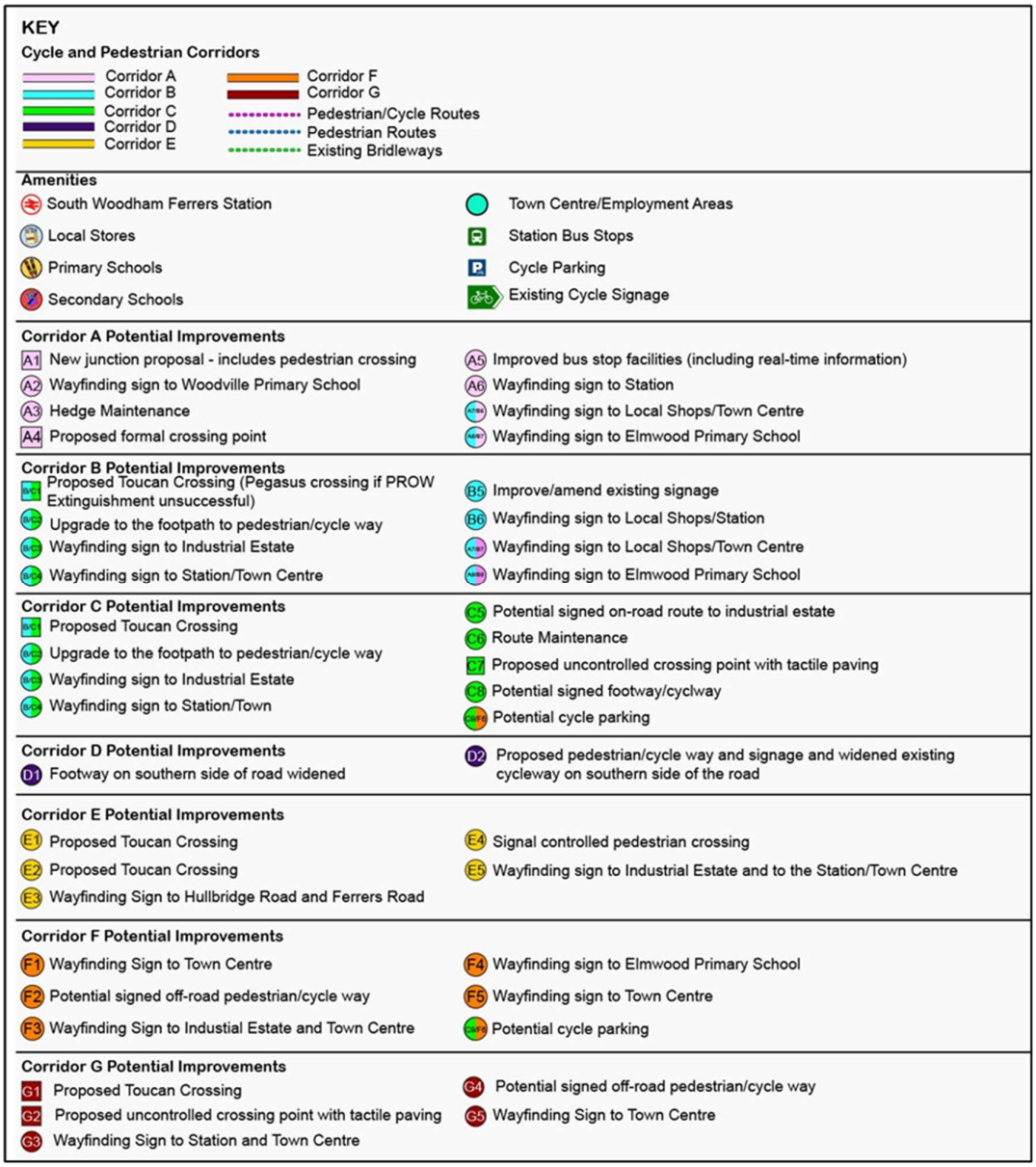


Figure 9.2: Key to Improvements Plan

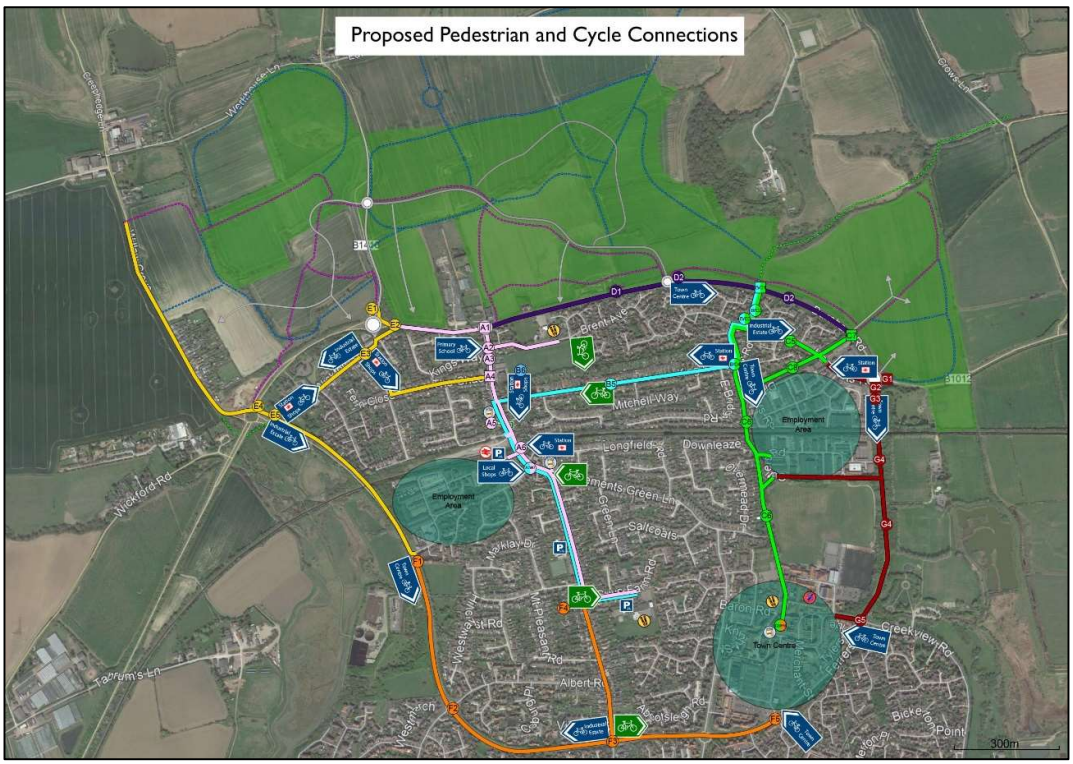


Figure 9.3: Pedestrian/Cycle Corridors Improvement Plan

Car Club

9.14 It is proposed to provide a Car Club on site, for use by residents and employees. This could initially start with one or two vehicles, which would be increased as demand grows with the development.

9.15 The Car Club will include:

i) The Provision of Car Club Spaces on the Eastern and Western Side of the development to allow reasonable access times
ii) Spaces will be provided to allow the car club to grow
iii) The 1st car to be provided in the 1st phase of development
iv) Free Car Club Membership and Discounted Drive Time Credit
v) Bespoke Marketing for Bourn Airfield residents
vi) Bespoke marketing, particularly taking advantage of the walk, cycle bus links to the Car Club
vii) Links of usage and renewal of Membership into the Better Points scheme

9.16 It is proposed to offer the following to residents as Shown in **Table 9.1**, plus an incentive will be provided to local residents.

	Initial Offer	Follow Up Offer	Target Members
Oaklands Meadows Residents	2 free 6 month Enhanced Plan per household	50% renewal for 6 months based on Bonus Points	150
Local Residents	50% Discount on Standard Plan – 2 per household on entry to the Better Points Scheme	Discount Provided based on 50Bonus Points	100

Table 9.1: Car Club Membership Proposals

9.17 A study undertaken in 2017/2018 by COMOUK has demonstrated that 25% of Car Club Members decreased their use of a private car. In addition, members were asked how often they travel by each mode and the results show that they make more use of sustainable modes of transport and less use of private cars than the average resident of England.

9.18 The study also demonstrated that Car Club members are less likely to own a private car, with 12 members deferring a car purchase for each car club vehicle.

9.19 Therefore, the provision of a Car Club within the development would not only reduce the number of cars owned and vehicle trips it would increase the number of sustainable transport modes.

9.20 Some of the results of the study are shown in **Figure 9.4.**

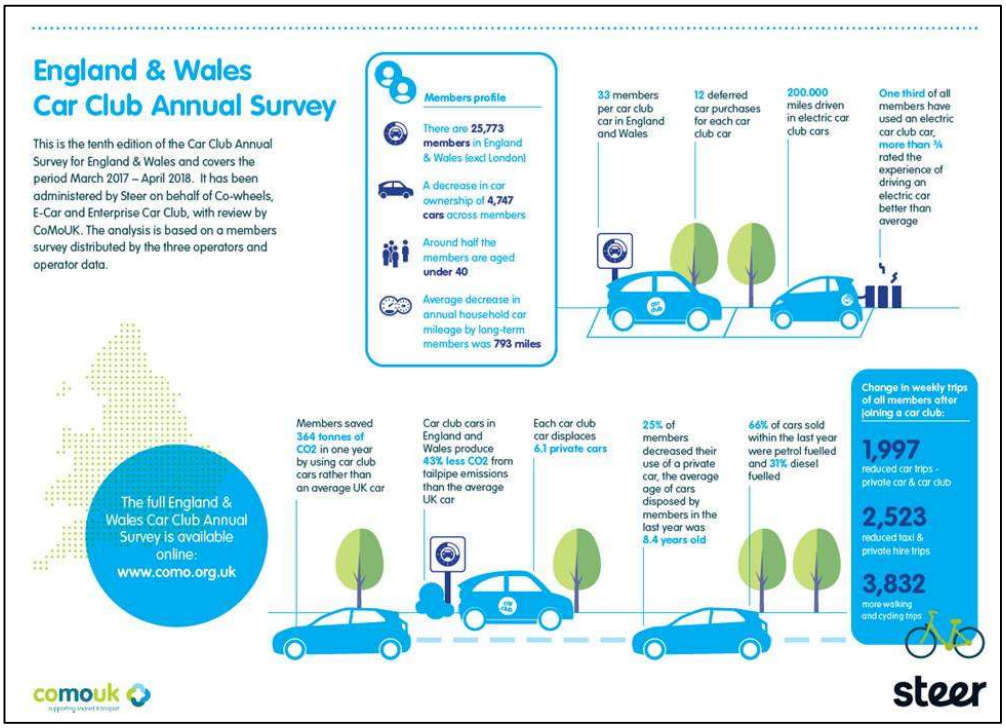


Figure 9.4: Car Club Study Results

Better Points Scheme

9.21 The Better Points scheme is an app-based reward scheme, incentivising behaviour change. A bespoke programme would be created for the Proposed Development to incentivise use of sustainable travel and reduce car journeys.

9.22 Residents would record their movement activities for specific activities, for example:

- Car Club Hire
- Bus Season Ticket Renewal
- Bike Hire
- Car Share
- Using the shared office spaces
- Using the Bus services
- Walking, cycling or using a bus instead of a car

9.23 The app could be linked with the various incentives, for example a connection with the First app so that points are rewarded when people renew their bus ticket, a QR code on the Car Club car keys which would record the use of the Car Club, a QR code at the Shared Office Space that residents would scan which would be linked to the postcode of the space, etc. to ensure that the system is used correctly.

9.24 Then each time they would record their green activity they would be rewarded with points to either spend at a local facility (e.g. a local coffee shop, towards car club credit, etc.), redeem as a gift voucher or donate to a local charity.

9.25 Better Points case studies have demonstrated results that have been achieved around the country. As an example, the Sutton Plan campaign, powered by BetterPoints, was a six-month pilot commissioned by the London Borough of Sutton to test the effectiveness of an app- based incentivisation programme to raise awareness of air quality. In relation to mode shift, the scheme saw:

- 51% of people change their work travel behaviour
- 82% of people changed their leisure travel behaviour
- 55% of people said they would maintain their new travel behaviour

9.26 Based on 2.5 persons per dwelling and using a 5% member sign up as a conservative assessment, this would equate to 150 members. Using the statistics from the Sutton scheme that 51% of people changed their work travel behaviour and of that 51%, 55% would maintain that change, there would be a total of 42 trips maintaining a sustainable method as a consequence of the Better Points scheme.

Smarter Choices Campaign

9.27 As part of the development, it would be proposed to introduce a Smarter Choices Campaign for the neighbouring residential areas. The area which would be subject to the Campaign is shown in **Figure 9.5**.

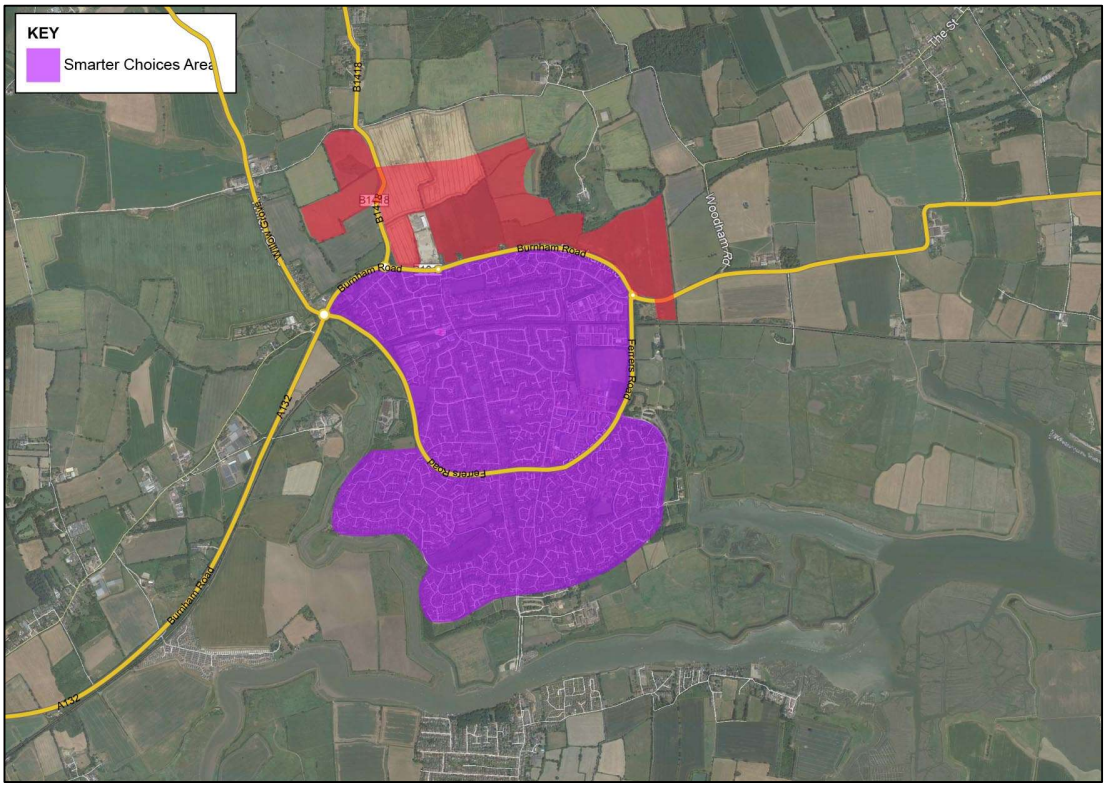


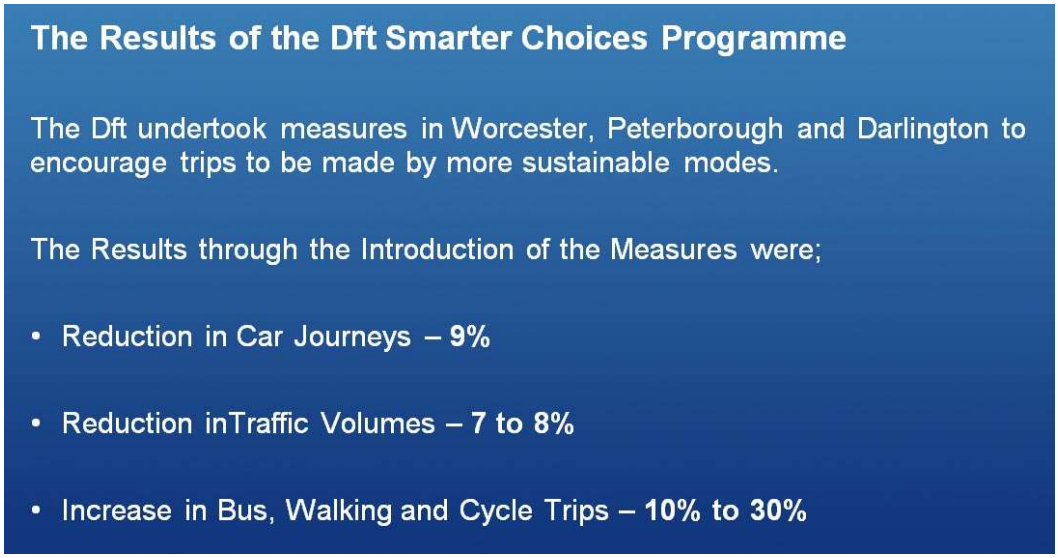
Figure 9.5: Smarter Choices Campaign Area

9.28 The Smarter Choices Campaign would involve:

- Each household within the area shown will be sent a Smarter Choices leaflet to contain local travel information updated regularly
- Promotion of car sharing within the commercial areas within the area shown
- Promotion and participation in national/local campaigns, such as Bike Week/LiftShare Week
- Provision of discounts with local bike shops and subsidized public transport promotions
- Set up of a Smarter Choices web site
- Appointment of a Smarter Choices coordinator for the Smarter Choices campaign period (ten years)
- Undertake Personalised Travel Plans

- Every year, the Smarter Choices Coordinator will produce a monitoring report, and submit it to the County Council:

9.29 The DfT have undertaken pilot studies in Worcester, Peterborough and Darlington, to encourage trips on foot, by cycle and by public transport. These initiatives have made considerable differences in terms of reducing background traffic, as shown below, indicating a 7%-8% reduction in traffic volumes.



9.30 In that context we would anticipate a 7%-8% reduction in traffic which would be attributable to the Smarter Choices Campaign. It would be proposed that all local trips within that area are reduced by 7%.

Travel Plans for Residential and Commercial Uses

9.31 **Appendix H** and **I** contain the Draft Residential and Business Travel Plans. These provide details of:

- The aims and objectives of the Travel Plan
- The Travel Plan targets
- The proposed Travel Plan measures, which involve:
- The monitoring of the Travel plan

9.32 The requirement to implement detailed Travel Plans for the uses within the Proposed Development will form a planning/condition obligation of the development.

Summary of the Implementation Strategy for the Mitigation Package

9.33 It is proposed that the mitigation package is implemented as set out in **Table 9.2.**

Measure	Implementation Measures
Site access's	S278 Agreement pursuant to Planning Condition
B1418/Burnham Road Improvement	S278 Agreement pursuant to Planning Condition
Improvements West of Burnham Road/Wickford Road	Shared Improvements with remainder of allocation
A130/A132 Intersection Rettendon Turnpike Roundabout	Shared Improvements with remainder of allocation
Public Transport Strategy	Planning Obligation
Provision of Initial Free Bus Travel	Forms a Planning Obligation/Condition
Off-Site Cycle Improvements	Forms a Planning Obligation
Provision of a Car Club	Forms a Planning Obligation
Better Points Scheme	Forms a Planning Obligation/Condition
Smarter Choices Campaign	Forms a Planning Obligation
Travel Plans	Forms a Planning Obligation/Condition

Table 9.2: Implementation of the Mitigation Strategy

10 Conclusions

10.1 This Transport Assessment has been prepared by Mayer Brown Ltd. on behalf of Countryside Properties (UK) Limited and Essex County Council Property Services in relation to Oaklands Meadows, South Woodham Ferrers Essex.

10.2 The description of the Proposed Development is contained in paragraph 1.1. For the purpose of the assessments contained in this TA, the impacts of 1,200 dwellings coming forward has been tested to allow the impacts of further residential development within the Allocation Area to be understood.

10.3 The Transport Assessment has considered both;

- How the Proposed Development would work on its own and
- Through the application of traffic growth, the assessments contained in this TA consider the implication of other sites planned to come forward in South East Chelmsford which have either been consented or are otherwise identified in the Chelmsford Draft Local Plan.

10.4 In addition, a cumulative assessment has been undertaken to consider the impacts of the Bradwell B development coming forward, in particular the Bradwell B development.

10.5 The implications in terms of traffic from the Proposed Development and a cumulative assessment of development proposals for Oaklands Meadows,have been considered in relation to the key junctions agreed with Essex County Council (ECC).

10.6 The results of the stand-alone Proposed Development show that there are 3 junctions which would require mitigation which the Proposed Development will facilitate, which include:

- Improvements to the B1418/Burnham Road Junction involving the signalisation of the junction
- Increasing the extent of the taper on the A132 west of the Burnham Road/Ferrers Road/Willow Lane Junction
- Upgrades to the A130/A132 Interchange

10.7 In addition, works have been identified to improve the Burnham Road/Willow Grove/ Ferrers Road Junction, to be implemented subject to the findings of ongoing monitoring.

10.8 A comprehensive strategy to encourage trips by non-car means will be implemented, involving:

- A Bus Strategy involving:

- an increase in frequency of services to Chelmsford
- Extension of services to Broomfield Hospital
- Shuttle services to Wickford and Basildon
- Demand Response Services within South Woodham Ferrers

- The provision of initial free travel for residents and employees to encourage a culture of travel by bus
- A cycle strategy involving:
  - a network of pedestrian and cycle paths within the development
  - provision of crossings on the Burnham Road and B1418
  - implementation of measures south of the Burnham Road and
  - Cycle Training on Site
- The provision of a Car Club on site
- A Better Points Incentive scheme to encourage Sustainable Travel
- The implementation of Travel Plans for the residential and commercial uses, which would include for comprehensive monitoring of ongoing movements to and from the development.

10.9 It is considered that the Proposed Development would not result in severe harm on a stand alone or cumulative basis, to the operation of the network, which is the relevant test as set out in the NPPF.

APPENDIX A: Access and Highways Mitigation Drawings, Stage 1 Safety Audit, LTN 1-20 Assessment

APPENDIX B: Traffic Surveys

APPENDIX C: Bus Strategy

APPENDIX D: Trip Generation/Distribution and Junction Assessment Technical Note

APPENDIX E: 2017 AND 2020 Traffic Survey Comparison

APPENDIX F: A130/A132 Intersection Assessment

APPENDIX G: Pedestrian and Cycle Strategy

APPENDIX H: Draft Residential Travel Plan

APPENDIX I: Draft Business Travel Plan