Alton Transport Strategy

Final Report

Hampshire County Council

22 June 2015

ATKINS

Plan Design Enable

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1. Introduction

Atkins has been appointed by Hampshire County Council (HCC) and East Hampshire District Council (EHDC) to develop a high level transport strategy for Alton to cater for the potential increase in travel demand generated by future housing development in and around the town. This report will assess the transport implications of the residential development of sites identified within the East Hampshire District Council's Strategic Housing Land Availability Assessment (SHLAA) as well as wider growth within the sub-region to outline, at a strategic level, the necessary transport improvements and interventions to support the development.

1.1. Methodology

The level of development planned in and around Alton was determined through reviewing relevant documentation including:

- The adopted East Hampshire District Local Plan: Joint Core Strategy (JCS) which identifies the housing requirements for the East Hampshire District up until 2028. Within Alton it identifies a requirement for 'a minimum of 700 new homes'.
- The Strategic Housing Land Availability Assessment (SHLAA) which has been prepared by EHDC to consider where the housing development in and around Alton may be accommodated.
- Transport Assessments (TAs) submitted by developers to support planning applications for various sites supplemented by information on other sites provided by HCC and EHDC.

Following review of these documents and discussions with East Hampshire District Council, Councillors and other key stakeholders, the core development scenarios to be considered were determined and are summarised in Table 1-1. Scenario 1 reflects the realistic level of potential development in Alton and Scenario 2 presents the 'worst case' scenario for ensuring a robust and comprehensive assessment of full development potential.

Table 1-1 Development Scenarios

Development Scenario	Residential Units
Scenario 1 – Full Development	1,667 units
Scenario 2 – Full Development plus 26%	2,100 units

Forecasting the trips generated by the development scenarios was undertaken by reviewing the TAs submitted by developers to support planning applications and using the TRICS database. The trips were distributed across the Alton transport network and overlaid on the existing flow data in order to assess the capacity of key links and junctions across the town.

This assessment highlighted where there are capacity issues now and with future development traffic and if mitigation is required either by local improvements or by more strategic schemes. A number of local schemes have been considered that have been proposed as part of current planning applications and four strategic schemes were reviewed to determine the impact on traffic flows in Alton. The strategic schemes had already been identified in outline prior to the study by others and were an improvement to the Butts Bridge junction, a Western Bypass, a Northern Link Road and a new junction of the A31 / B3004.

A transport strategy has been devised as a result of this assessment and forms recommendations for which local and strategic schemes should be taken forward and investigated further. The strategy includes measures to encourage use of sustainable modes of travel that should be explored in order to minimise traffic congestion and reduce impacts on the environment.

1.2. Report Structure

The remainder of this report is structured as follows:

Section 2 - Policy and Document Review.
Section 3 - Baseline Review.

Section 4 - Existing Traffic Conditions.
Section 5 - Planned Development in Alton.
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Section 17 - Sustainable Transport Strategy.
Section 18 - Appraisal and Funding.
Section 19 - Conclusions and Recommendations.

2. Policy and Document Review

2.1. National Level Policy

2.1.1. National Planning Policy Framework (Department for Communities and Local Government, 2012)

The National Planning Policy Framework (NPPF) applies to England and is designed to supersede and simplify previous national planning policies. It is intended as a framework for the development of local and neighbourhood plans. However, existing Local Plan policies should not be considered out of date because they were adopted prior to the NPPF's publication.

The NPPF emphasises that the purpose of planning is to help achieve sustainable development; that which results in positive growth and economic, environmental and social progress. The NPPF is based upon a presumption in favour of sustainable development, which should be allowed to proceed without delay. Therefore, proposed development that accords with an up to date Local Plan should be approved, while that which conflicts should be refused. The NPPF sets out twelve core land-use planning principles, which should underpin both plan-making and decision-taking. One of the principles states that planning should:

"Actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable".

The NPPF sets out policies to achieve sustainable development under thirteen headings, one of which is titled "*Promoting Sustainable Transport".* This states that:

- "All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:
  - the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure.
  - safe and suitable access to the site can be achieved for all people.
  - improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe".
- "Developments should be located and designed where practical to:
  - accommodate the efficient delivery of goods and supplies.
  - give priority to pedestrian and cycle movements, and have access to high quality public transport facilities.
  - create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones".

2.1.2. Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen (DfT, 2011)

The Local Transport White Paper sets out the Government's vision for a sustainable local transport system that supports the economy and reduces carbon emissions. It explains how the Government is placing localism at the heart of the transport agenda, taking measures to empower Local Authorities when it comes to tackling these issues in their areas. The White Paper also underlines central Government's direct support to local authorities, including through the Local Sustainable Transport Fund (LSTF).

The vision is for a transport system that is an engine for economic growth but one that is also greener and safer and improves quality of life in communities. By improving the links that move goods and people around, and by targeting investment in new projects that promote green growth, a balanced, dynamic low carbon economy that is essential for our future prosperity can be built.

Economic growth is noted as one of the biggest challenges. Transport's role in this is hugely important – getting people to work and to services such as education and healthcare providers, as well to leisure activities and shops, is crucial to quality of life as well as to enhancing people's spending power. This White Paper sets out examples of how local authorities can make this happen in both urban and rural contexts.

2.2. Local Policy

2.2.1. East Hampshire and South Downs National Park Core Strategy

The adopted Joint Core Strategy (JCS) identifies the housing requirements for the East Hampshire District up until 2028. Within Alton it identifies a requirement for 'a minimum of 700 new homes'.

The JCS is a long-term document that will shape and guide development in East Hampshire to 2028. Being spatial, the JCS reflects other strategies and policies of the area and addresses where necessary other issues such as healthcare priorities, education and economic development.

The JCS takes a broad look at the future of places in East Hampshire and considers where changes should be made. It should be noted that the JCS states that, beyond existing commitments totalling 1031, new sites will be identified for a minimum of 700 dwellings at Alton. The Alton Transport Strategy assesses the two potential development scenarios of 1667 homes and 2100 homes.

2.2.2. East Hampshire District Council - Strategic Housing Land Availability Assessment (SHLAA) 2012

The National Planning Policy Framework[1] (NPPF, para.159), requires Planning Authorities to prepare a Strategic Housing Land Availability Assessment (SHLAA) to demonstrate that a sufficient number of suitable sites would be available to meet the identified need for housing over the plan period.

This is the fourth SHLAA to be prepared by East Hampshire District Council and has the following objectives:

- To inform the Council's strategy for the provision of housing to meet the housing target for the district through its JCS, up to 2028.
- To identify potential sites for new housing development and assess their suitability, availability and deliverability.
- To inform the subsequent allocation of sites for housing in the Local Plan: Allocations.
- To inform the plan, monitor and manage the approach for the provision of housing land and the Council's assessment of a five year supply of deliverable sites as required by the NPPF.

2.2.2.1. The Role of the SHLAA

The SHLAA is part of the evidence base of the Local Plan. The sites identified in the SHLAA show the potential choices available to meet the need and demand for housing within the district. The SHLAA justifies that the quantum of housing identified in the JCS is available. The inclusion of a site in the SHLAA does not automatically qualify it for allocation for residential or other development.

The identification of potential housing sites, buildings or areas in the SHLAA does not state or imply that the Council would necessarily grant planning permission for residential development. Planning applications will continue to be treated on their own merits at the time of the planning application. The SHLAA does not prevent planning applications being submitted on any sites identified in or excluded from the report at any time.

Overall, sites identified in the SHLAA and its appendices have no additional planning status, and inclusion in the SHLAA does not imply a presumption of planning approval for residential development on any site.

2.2.2.2. East Hampshire District: Housing Requirement Figures

The housing requirement figures for the whole East Hampshire District Council administrative area are based on the Objectively Assessed Housing Needs Assessment carried out in the Strategic Housing Market Assessment (SHMA) updated to August 2013 to inform the JCS. The JCS makes provision for minimum increase of 10,060 dwellings in the period. Given the planning permissions granted between 2011 and the adoption of the plans this equates to a remaining requirement of 592 dwellings per year for the period to 2028.It

has been agreed between East Hampshire District Council and the South Downs National Park Authority that, in order to reflect the importance that should be given to protecting the National Park, that this 592 dwellings per year should be split with 100 dwellings per year being delivered in the National Park area and 492 dwellings in those parts of East Hampshire lying outside the National Park.

2.3. Hampshire County Council Local Transport Plan 3

The Hampshire Local Transport Plan is the third Local Transport Plan (LTP), published and approved in February 2011. This plan consists of several components, with those pertinent to development in Alton highlighted below. The vision and objectives of the Plan are focussed on what transport can do to help improve the economy, environment and quality of life in Hampshire until March 2031.

Transport is viewed by Hampshire as an enabler of activity and in many ways essential to the success of society, however the need to facilitate movement of people and goods needs to be tempered by an awareness of our impact on the environment, to ensure transport is sustainable.

Hampshire's policy acknowledges that for the majority of residents private cars will continue to be the dominant form of transport across the county, necessitating improvement and active traffic management measures to ensure continued traffic flow and mitigate congestion. Where possible new developments will be planned to avoid increasing traffic pressure by ensuring that a choice of attractive alternative forms of transport are available

Hampshire's LTP policy objectives are:

- Supporting the economy through resilient highways.
- Management of traffic.
- The role of public transport.
- Quality of life and place.
- Transport and growth areas.

Careful implementation of transport policy should ensure that transport:

- Respects and protects the physical quality of places.
- Serves places' economic needs.
- Minimises carbon emissions and the impact of climate change.
- Is fully integrated with other areas of policy affecting places (for example, economic development, energy and land-use planning).
- Helps places be sustainable and socially connected.

The emphasis of this LTP over the next five to ten years will not be on attempting to enlarge the network through major capital projects, but will instead be principally focused on three priorities covering: maximising the efficiency of the existing network to support the economy, maintenance and management through the following 3 main policies:

- Main Priority 1: To support economic growth by ensuring the safety, soundness and efficiency of the transport network.
- Main Priority 2: Provide a safe, well-maintained, and more resilient road network as the basic transport infrastructure of the county on which all forms of transport directly or indirectly depend, and the key to continued casualty reduction.
- Main Priority 3: Manage traffic to maximise the efficiency of existing network capacity, improving journey time reliability and reducing emissions, thereby supporting the efficient and sustainable movement of people and goods.

Hampshire's LTP policy encapsulates a broad approach to ensuring sustainable transport provision in the county. Alongside the aforementioned investment in road network infrastructure, the county's LTP policies provide for investment in expanding bus travel and uptake, long term rail network investment in collaboration with Railway sector partners, improving integration between transport modes through provision of better local interchanges, investment in walking and cycling infrastructure and awareness as a sustainable transport mode, and introducing shared space philosophy into future design language for the region.

2.4. East Hampshire District Council Transport Statement

Adopted in September 2012, and running through to 2028, the Transport Statement (TS) provides a local transport policy framework for the district; assisting with the prioritisation of transport investment, whilst also providing a basis for land use and development planning. The TS includes a Schedule of Transport Improvements which lists the proposed schemes and possible funding sources.

The Statement links to current county wide and regional economic priorities, planned growth, and county level transport policies. The transport vision for East Hampshire district is to deliver safe, efficient and reliable ways to get around, helping to promote a prospering and sustainable area.

Four objectives underpin the priorities and proposals of the statement:

1. Promoting economic growth through provision of transport improvements and tackling congestion.
2. Maintaining a safe and efficient highway network.
3. Improving access: to jobs, facilities and services.
4. Protecting the environment: reducing carbon emissions and the effects of transport on communities.

East Hampshire's TS aims to create growth and planned regeneration where needed, improve travel choices to encourage the safer and more sustainable movement of people and goods, whilst reducing carbon emissions and the dominance of traffic through more walking, cycling and passenger transport use.

Specific to Alton the TS highlights Alton 2020, a plan adopted in 2005 to maintain the bustling local economy of Alton, ensuring its future viability without detriment to the historic character of the town. The TS highlights that Alton would benefit from better access from the surrounding villages and outlying areas, improved road safety, bus and rail improvements, alongside highlighting the need to identify opportunities for improving the vitality and viability of the town centre. Whilst East Hampshire does not generally experience extensive or wide spread congestion, the TS highlights the A339 at The Butts, Alton as one of six congestion hot spots in the district.

The TS highlights the following core transport issues for the District:

- Managing existing and forecasted road congestion especially on main routes, key junctions and town and villages centres.
- Considering ways of reducing congestion and possible measures to deliver reductions.
- Working to encourage lower-carbon transport choices.
- Delivering improvements to the cycle and walking networks across the district.
- Planning for and mitigating the likely travel demands and local impacts arising from new developments.
- Managing traffic speeds and flows.
- Maintaining and improving existing transport access to main employment areas, local centres, services and facilities.
- Addressing problems caused by the inappropriate use of the local road network by HGVs.

2.5. East Hampshire District Council Local Development Framework Transport Assessment – August 2013

The East Hampshire LDF Transport Assessment was developed between EHDC and WSP in August 2013. The TA assists in the investigation of the transport related impacts of delivering the Local Plan housing target for East Hampshire District Council and the South Downs National Park Authority. Its goal is to outline the proposed developments from 2006 to 2028 and identify measurement standards, impact and required mitigation measures.

The Transport Assessment built upon the work undertaken as part of the "Development Location Assessment" last updated in December 2011. The majority of the methodology remained from this study barring the change in dwelling proposed at each development. The housing allocation set out in the EHDC Local Development Framework TA is set out in Table 2-1.

Table 2-1 Housing Allocation Scenarios

District Region	Settlement	Projected Housing at Allocated Sites
North of SDNP	Alton	700
	Liphook	175
	Four Marks / South Medstead	175
	Grayshott	0
	Whitehill / Bordon	2725
SDNP	Petersfield	700
	Liss	150
South	Horndean	700
	Clanfield	200
	Rowlands Castle	150
TOTAL		**5675**

The assessment showed that when background growth was applied a number of links which were nearing capacity in the existing situation (2011) became over capacity in 2028. In relation to this background growth, the projected additional impact of the development proposals is minimal and does not cause any additional links to go over capacity. Therefore, in most cases the impact caused by proposed development is negligible on key routes.

The largest increases in traffic levels caused by development were at Horndean and Petersfield. At Horndean, the largest increases are on the A3 and B2149. Development at Petersfield also sees increases in traffic levels forecast on the A3 southbound between B2171 and the A325. However, both sections of the A3 remain under-capacity in 2028. The A325 (Boxhead Common, Bordon (NB)) is already well in excess of capacity in 2028 due to background growth. Therefore, development traffic will have minimal additional effect on the network as this link is already heavily congested. A traffic solution on this link will therefore be required prior to 2028, which should enable better access for new and existing development.

To mitigate development impact and rising levels of traffic, a range of options were identified. These included hard measures such as junction improvements and consideration of smarter choice measures including, workplace and residential travel plans. It was recommended that these measures were initially focused on the Horndean and Petersfield developments.

In summary, it was deemed that much of the proposed development could be implemented without significant impact. However, where negative traffic impact is forecast a series of mitigation measures are available to negate this impact.

2.6. East Hampshire District Council local plan Joint Core strategy Infrastructure Development Plan

An Infrastructure Development Plan (IDP) is currently being developed and refined by EHDC; the most recent published documentation for the IDP is from October 2014. The IDP's purpose is to outline the infrastructure requirements of East Hampshire over the period of the Local Plan, through to 2028 and clarify the funding routes and budget available to ensure infrastructure delivery. The IDP enables EHDC and SDNPA to meet the requirements of the NPPF in delivering infrastructure in a timely manner whilst balancing the need for Local Plans; the Local Plan process has provided the District Council and the SDNPA with the opportunity to plan positively for infrastructure to meet the objectives, principles and policies of the NPPF.

Whilst the IDP covers a much broader spectrum of infrastructure requirements than transportation alone, it has identified a number of critical and priority transport projects in Alton, including:

- Improvements to Butts Bridge, Alton (Priority).
- Improvements to A31 / B3004.

- Improvements to Mill Lane / B3004.
- Improvements to London Road / Anstey Road junction.
- Roundabout at Whitedown Lane / Basingstoke Road junction.
- Improvements to Anstey Lane / Anstey Road junction.
- Traffic calming & parking improvements.

It should be noted that all of these projects have been investigated as part of the Alton Transport Strategy.

The provision of infrastructure, be it through S106 or CIL (including through the 'meaningful proportion' set out in amended CIL Regulations), at the community level will be a key determinant in the sustainable development of East Hampshire. The IDP classifies 'Critical' infrastructure as that which is essential to the delivery to the proposals and policies of the Local Plan and JCS, and without which sustainable development cannot satisfactorily take place. Some of these requirements will be addressed through the investment programmes of utility and infrastructure providers and delivered directly, but otherwise will need to be met by developer contributions, be it S106 or CIL as appropriate. Priority is defined by EHDC within the IDP as infrastructure identified as that required to meet a specific need in neighbourhoods where development is planned or anticipated.

3. Baseline Review

3.1. Introduction

The section outlines the existing conditions in and around Alton, including:

- Area background.
- Surrounding highway network and traffic conditions.
- Pedestrian and cyclist facilities.
- Public transport provision.

3.2. Area Background

Alton is a historic market town located in East Hampshire alongside the A31. Alton is approximately 5 miles south west of Bentley, 6 miles north east of Four Marks and Medstead, 13 miles south of Basingstoke, and 15 miles north of Petersfield. Alton has approaching 8000 dwellings and 17,816 residents according to the 2011 Census.

3.3. Surrounding Highway Network and Traffic Conditions

The strategic highway network surrounding Alton is illustrated in Figure 3-1 with the local Alton network shown in Figure 3-2.

3.3.1. A31 and A32

Alton is bounded to the south and east by the A31 which is a dual carriageway that operates at the national speed limit and runs west towards Winchester and the M3 and east towards Guildford. There are three junctions on the A31 which provide vehicular access to, from or through Alton.

The northern most junction, adjacent to Holybourne is a roundabout with the western arm providing the main route in and out of northern Alton. To the south of Alton there are two junctions, the northernmost being a grade separated junction with the A339 (Selborne Road). The southernmost junction is a roundabout and the north-western arm is Northfield Lane leading to Chawton Park Road. The southern arm of the roundabout is the A32 serving villages to the south of Alton and ultimately provides the recommended route to the A3, M27 and Fareham.

3.3.2. A339 and B3006

The A339 links the A31 south of Alton with Basingstoke to the north-west. It is a single carriageway road. Within Alton, the A339 is known as Whitedown Lane between Basingstoke Road and Butts Bridge and has a speed limit of 30mph. This is an often congested link as it provides a key route through the town and to the north, but also due to the constrained nature of the junction at Butts Bridge. To the south of Butts Bridge the A339 Selborne Road links to the A31. Selborne Road continues south beyond the A31 as the B3006 and provides a connection to the village of Selborne and to the A3 south of Whitehill.

3.3.3. B3004

The B3004 links Alton with villages and towns to the south east including Bordon. The section of the B3004 within Alton is known as Wilsom Road and passes under the A31 where the road becomes Caker Lane and runs through East Worldham and toward Bordon. The road operates at a 30mph speed limit within Alton. This then increases to 40mph heading south east, shortly after the junction with Omega Park, towards Bordon.

3.3.4. B3349

The B3349 runs in a predominantly north-south orientation from Junction 5 of the M3 at North Wanborough to Basingstoke Road on the western side of Alton. It is a single carriageway that operates at a speed limit of 40mph between Basingstoke Road and Greenfields Avenue and transitions to national speed limit north of Greenfields Avenue.

3.3.5. Local Roads

Local roads within Alton are predominantly single carriageway with a speed limit of 30mph. This is lowered to 20mph on Alton High Street due to the built up nature and heavy pedestrian usage.

Figure 3-1 Strategic Highway Network

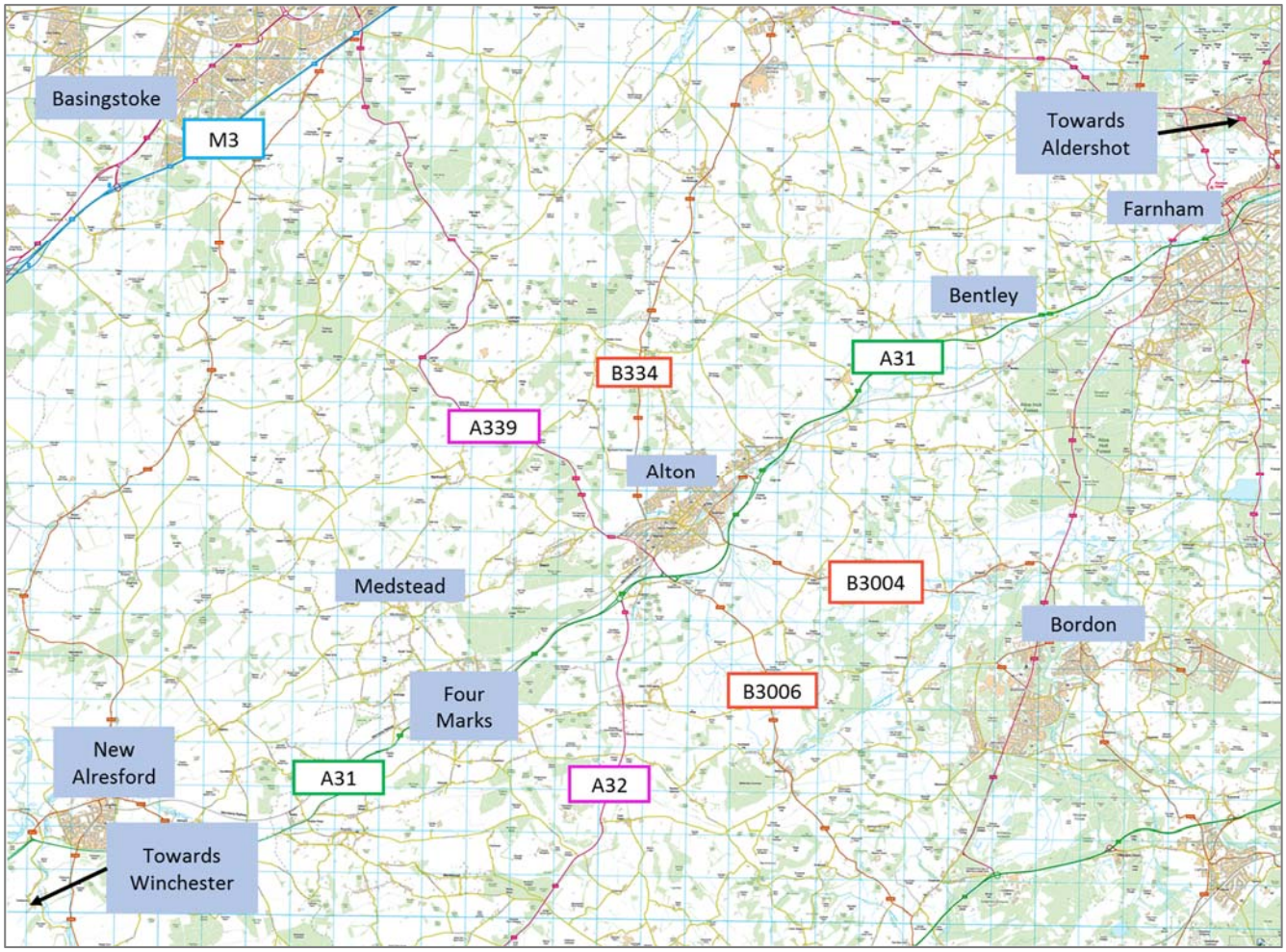
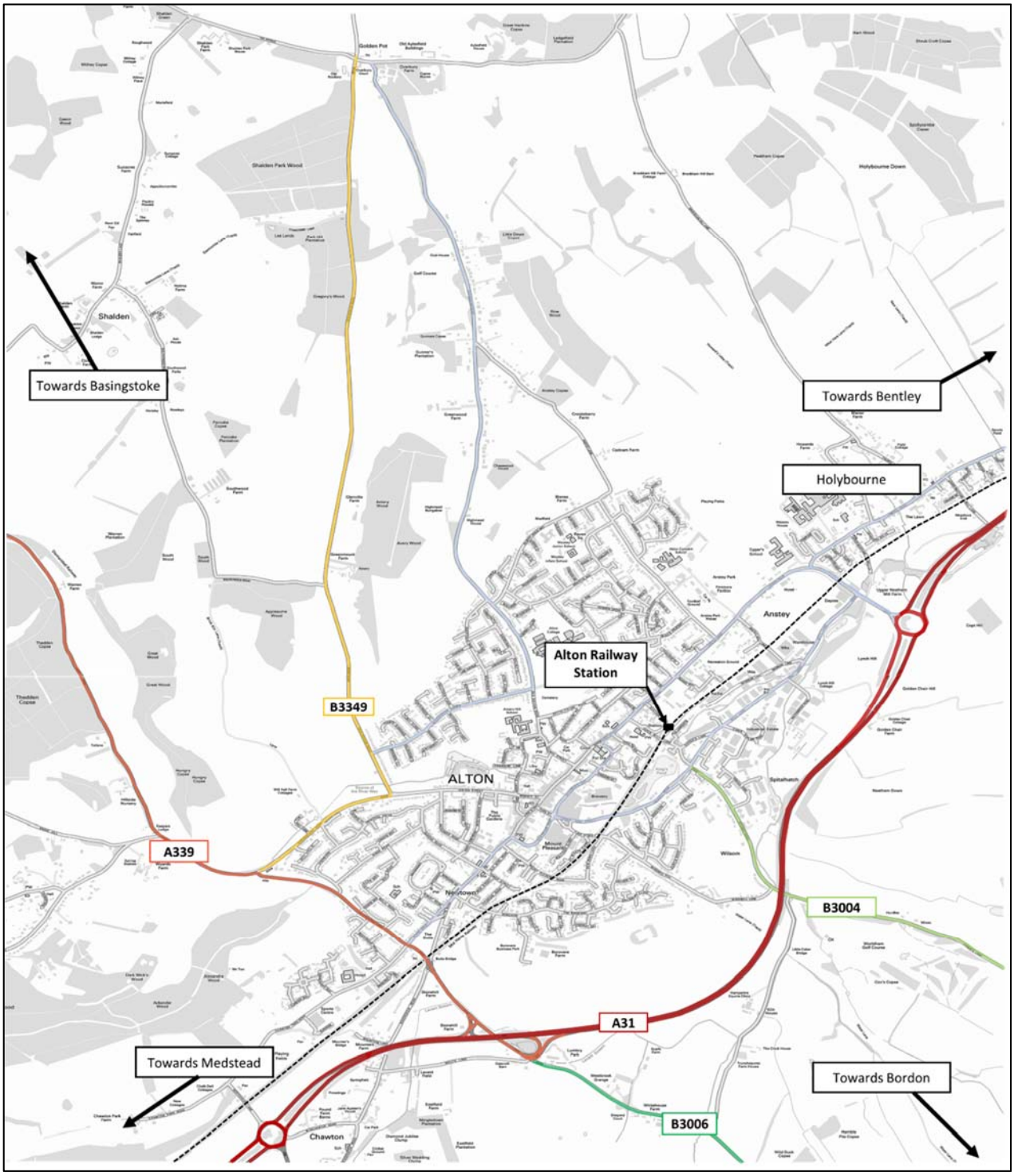


Figure 3-2 Local Highway Network



3.4. Pedestrian and Cyclist Facilities

3.4.1. Footpaths, Bridleways and Public Byways

The quality of pedestrian facilities in the Study Area is varied, with good provision on the High Street with dropped kerbs and many crossing opportunities. There are also raised crossings on High Street, as shown in

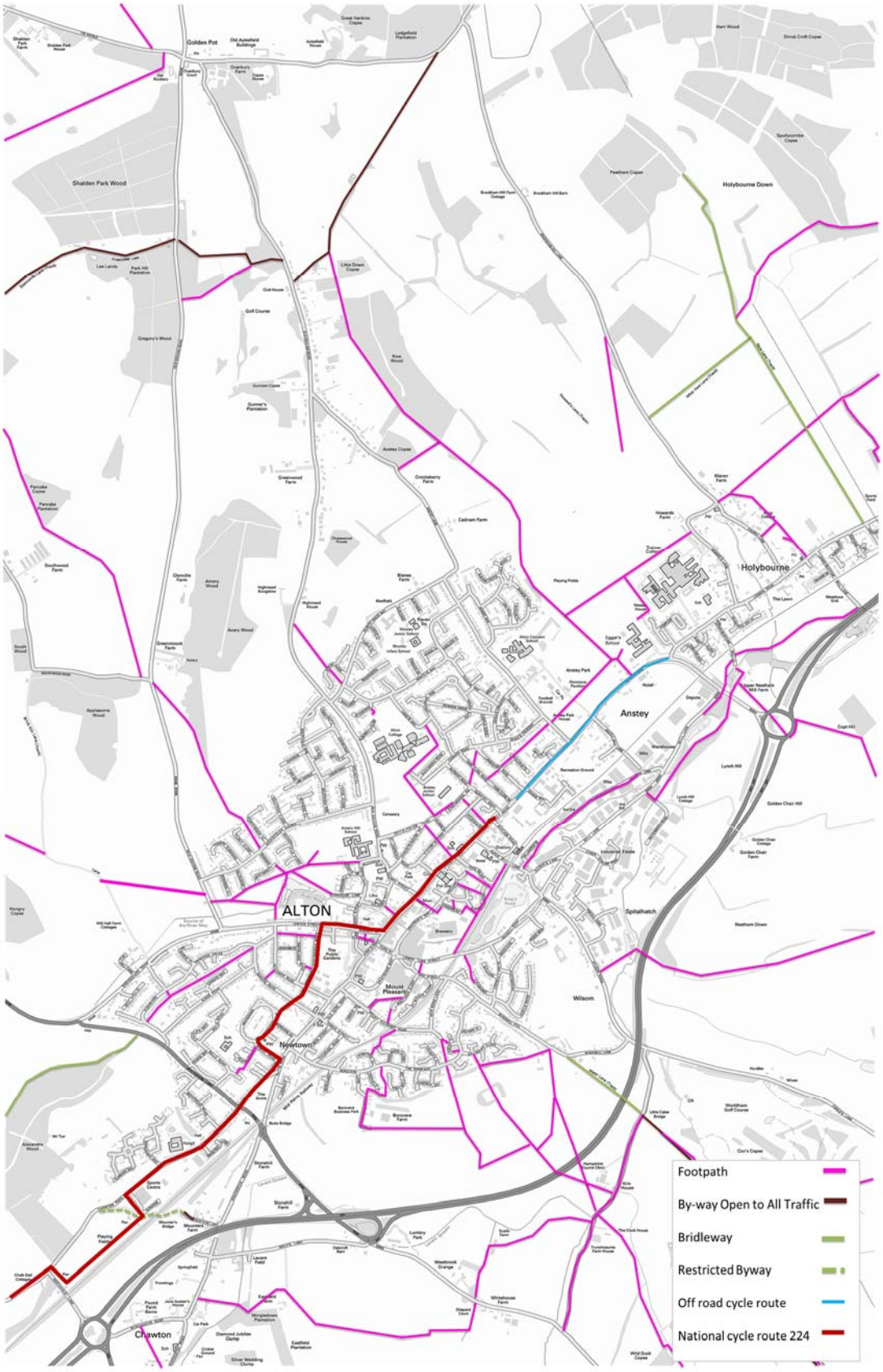
Figure **3-3**, and a section of 'shared space' adjacent to the bus stops, as shown in Figure 3-4.

Figure 3-3 Raised Crossing on High Street, Alton

Figure 3-4 Shared Space adjacent to bus stops on High Street

Footpaths, bridleways and public byways across the town are shown in Figure 3-5.

Figure 3-5 Footpaths, Byways and Bridleways



3.5. Public Transport Provision

3.5.1. Rail Services

Alton Railway Station is located in Alton town centre on Station Road. The station is operated by South West Trains and acts as a terminus for the Alton to Waterloo services. The service runs twice per hour in each direction during the peak times. The journey to London Waterloo has a duration of approximately 1 hour and 10 minutes. The line continues to the south and west of Alton as a heritage railway the Mid Hants Railway Ltd and is known commonly as the Watercress Line. The line is used for leisure trips from Alton to Medstead, Ropley, Alresford and back to Alton. Throughout the year, the line is run every weekend from mid-February to October, with additional weekday services provided from May to September. Special events and weekday services are also provided during certain times in December in the build up to and through the Christmas period. Details of these services are shown in Table 3-1.

Table 3-1 Rail Services at Alton

Operator	Route	Frequency per hour
South West Trains	Alton- Bentley- Farnham- Aldershot- Woking- Clapham Junction- Waterloo	2 (in both directions)
Mid Hants Railway Ltd - Watercress Line	Alton- Medstead- Ropley- Alresford- Alton	Varies during the year (runs between 11:00-16:00 at certain times of the year)

3.5.2. Bus Services

There are a number of bus services serving the wards within Alton providing routes from the outskirts of the town to the railway station and town centre. Many of these routes also provide services to nearby towns and villages of Selborne, Four Marks, Bentley and Binstead as well as to larger towns of Basingstoke, Petersfield, Guildford and Winchester. Details of these services, the routes and frequencies are shown in Table 3-2. It should be noted that services are relatively infrequent with the 64 being the most regular having two buses per hour in each direction from Winchester to Alton.

Table 3-2 Bus Services in Alton

Operator	Bus Number	Route	Frequency per hour
Stagecoach	13	Basingstoke Bus Station- (43min)- Alton High Street- (16min)- Bordon Camp Fire Station- (23min)- Liphook Rail Station	1 (in both directions)
Stagecoach	38	Alton Railway Station- (25min)- Selborne Selborne Arms- (20min)- Liss- (10min)- Petersfield Rail Station	0.5
Stagecoach	64	Winchester Bus Station- (20min)- Alresford Swan Hotel- (12min)- Four Marks Mill- (15min)- Alton Rail Station	2 (in both directions)
Stagecoach	65	Alton Rail Station- (-()- Guildford Bus Station (53mins)	2
Cresta Coaches	206	Alton Rail Station- Upper Froyle- Bentley- Binstead- Alton	3 services per day on a Tuesday and Friday only
Cresta Coaches	208	Alton High Street- Beech- Medstead- Bentworth- Alton	3 services per day on a Tuesday and Friday only
Cresta Coaches	240	Ropley Village Hall- Grundleton- Bighton- Alresford	2 services per day on a Monday and Thursday only

In additional to the commercial bus services within Alton, there are now also several Alton College routes that run on only College days and provide 1 to 2 services in the AM and school PM peaks. Stagecoach have a contract with Alton College for 3 years which started in September 2014. Details of these routes are shown in Table 3-3[1].

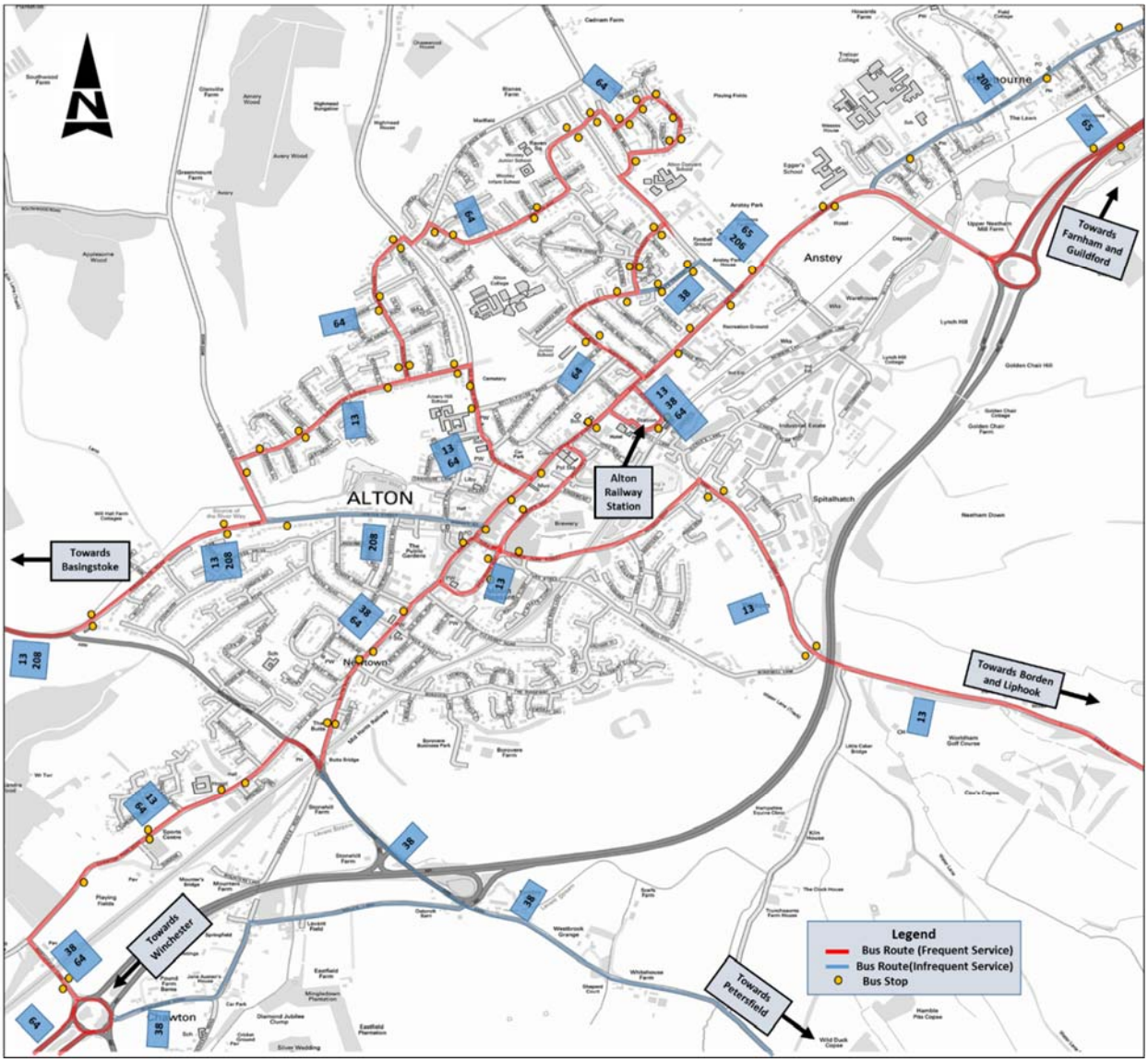
Table 3-3 Alton College Bus Services

Operator	Bus Number	Route	Frequency per hour
Stagecoach	13X	Liphook –Alton	1 per hour in AM and School PM peak
		Basingstoke – Alton	1 per hour in AM and School PM peak
	18X	Haslemere – Alton	2 per hour in AM and School PM peak
	37X	Clanfield – Alton	1 per hour in AM and School PM peak
	38X	Petersfield – Alton	1 per hour in AM and School PM peak
	65X	Hook - Alton	1 per hour in AM and School PM peak

Bus routes and stop locations are shown on the plan in Figure 3-6.

[1] http://www.altoncollege.ac.uk/sixth-form/transport

Figure 3-6 Bus Service Routes in Alton



4. Existing Traffic Conditions

4.1. Existing Traffic Flows

In order to determine the existing traffic flows, the Transport Assessments that were available for developments in Alton were reviewed to utilise recently collected survey data for key junctions across Alton. Data was also requested from Hampshire County Council where it was available. This provided turning counts at twelve junctions in Alton.

Where junctions did not have survey data available, these locations were identified and if deemed strategically necessary for this study then surveys were commissioned. These additional surveys were completed on neutral days between September and November 2014 and collected turning counts covering the AM and PM peaks as well as queue length data. The extent of the data collection was discussed and agreed at the first Stakeholder meeting on the 2nd July 2014.

Figure 4-1 shows the locations of traffic survey data used within this study. It identifies the junction turning counts and ATCs that have been utilised from previous recent studies and also indicates where further counts were required for this study. All survey data that has been taken from previous studies undertaken during neutral months in 2013 or 2014. Link flows for the AM and PM peak hours are shown in Table 4-1. The flows are derived from an average of the junction flows at either end of the link, or Automatic Traffic Count (ATC) data where available. All survey data is included in Appendix A.

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Figure 4-1 ATC and Junction Turning Count Surveys

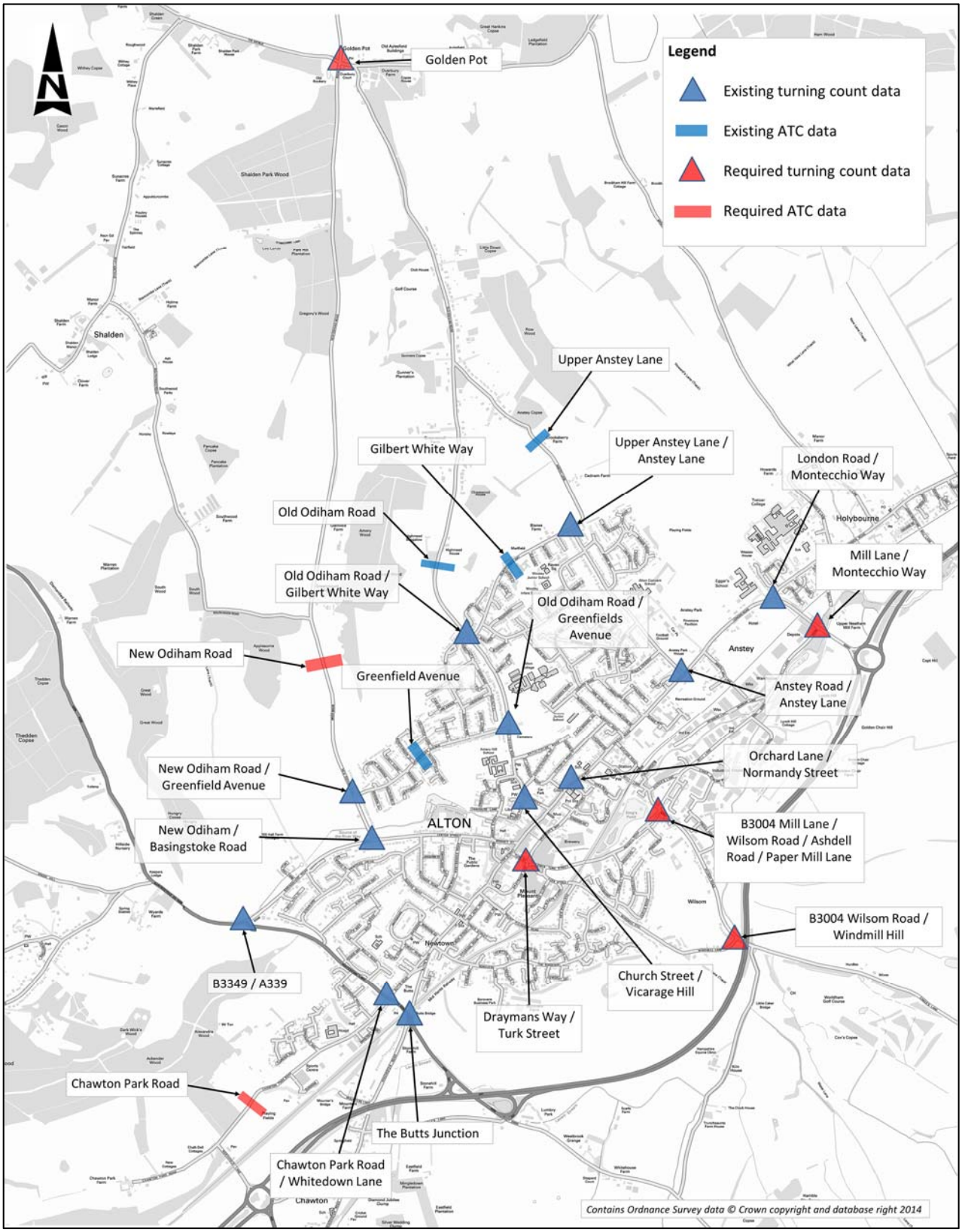


Table 4-1 Existing Link Flows – Weekday AM and PM Peak Hours (vehicles)

Road Name	Direction	Base	
		AM Peak Hour	PM Peak Hour
Whitedown Lane (South of Chawton Park Road)	Northbound	801	483
	Southbound	489	688
Whitedown Lane (South of Basingstoke Road)	Northbound	752	327
	Southbound	485	746
A339 (between Medstead Road and Whitedown Lane)	Northbound	596	432
	Southbound	506	517
Basingstoke Road (B3349) (between Whitedown Lane and New Odiham Road)	Eastbound	588	295
	Westbound	411	629
Selborne Road (between Butts Bridge and A31 junction)	Northbound	1248	732
	Southbound	697	907
Draymans Way	Eastbound	683	532
	Westbound	328	429
Butts Road	Eastbound	831	635
	Westbound	576	610
Anstey Road	Eastbound	817	621
	Westbound	638	720
London Road	Eastbound	437	465
	Westbound	577	517
Montecchio Way	Northbound	986	671
	Southbound	645	782
New Odiham Road	Northbound	475	254
	Southbound	198	573
Old Odiham Road	Northbound	174	129
	Southbound	179	215
Wilsom Road	Northbound	626	298
	Southbound	395	535

4.2. Existing Junction Capacity Assessments

This section describes the performance of the existing junctions in Alton based on the traffic data that has been collated and collected. Capacity assessments have been undertaken for the weekday AM Peak Hour (08:00-09:00) and weekday PM Peak Hour (17:00-18:00) using LinSIG for the signalised junctions and Junctions 8 for all other junctions.

A total of twelve junctions have been assessed based on those junctions where significant changes in traffic volume were predicted with the two development scenarios and/or as they were requested to be assessed by stakeholders. The junctions are:

- Montecchio Way / Mill Lane (priority junction).
- Paper Mill Lane / Wilsom Road / Mill Lane / Ashdell Road (priority junction).
- Anstey Lane / Anstey Road (priority junction).
- Basingstoke Road / New Odiham Road (roundabout)
- Basingstoke Road / Whitedown Lane (priority junction).
- Chawton Park Road / Whitedown Lane (priority junction).
- Montecchio Way / London Road (traffic signals).
- Wilsom Road / Windmill Hill (priority junction).
- Normandy Street / Orchard Lane (roundabout)
- Vicarage Hill / Church Street (roundabout)
- Draymans Way / Turk Street (roundabout)
- Butts Bridge Junction (roundabouts).

The capacity of these junctions has also been assessed for the two future development scenarios as described in Section 8 and 9 in order to predict the impact that additional development traffic has on Alton and identify where mitigation may be required.

4.3. Summary of Results

The results of the junction capacity assessments for the AM Peak Hour and PM Peak Hour are summarised in Figure 4-2 and Figure 4-3 using a colour coded system to highlight the current performance status of each junction. This system was largely adopted to articulate results to a non-technical audience, for example as part of stakeholder presentations undertaken during the development of the transport strategy. The colours used represent the highest predicted Ratio of Flow to Capacity (RFC) (for priority junctions or roundabouts) or the Degree of Saturation (DoS) (for traffic signals) for any of the various turning movements available at each junction.

Red indicates a DoS or RFC of more than 1 and represents a junction where at least one turning movement is predicted to be over theoretical capacity.

Amber indicates a junction with a DoS or RFC of between 0.85 and 1 for at least one turning movement. 0.85 has been chosen to represent the practical capacity.

Yellow indicates a junction with a DoS or RFC of between 0.75 and 0.85 for at least one turning movement. This represents a junction with some reserve capacity.

The black circle indicates that the capacity of the junction has been assessed but all predicted DoS or RFC are below 0.75 and accordingly the junction is considered to be operating within capacity.

The weekday AM Peak Hour results indicate that the following junctions are predicted to operate at or over theoretical capacity in the existing situation:

- Basingstoke Road / Whitedown Lane.
- Normandy Street / Orchard Lane (although results for this junction are counter to on-site observations as discussed later in this section).
- Butts Bridge junction.

A further three junctions are predicted to operate over the practical capacity and approaching the theoretical capacity in the AM Peak Hour, namely:

- Anstey Road / Anstey Lane.
- Draymans Way / Turk Street.
- Wilsom Road / Paper Mill Lane / Mill Lane / Ashdell Road.

The weekday PM Peak Hour results indicate that the following junctions are predicted to operate at capacity in the existing situation:

- Normandy Street / Orchard Lane.
- Montecchio Way / Mill Lane.
- Butts Bridge junction.

Additionally, the Wilsom Road / Paper Mill Lane / Mill Lane / Ashdell Road junction is predicted to operate over the practical capacity and approaching the theoretical capacity in the PM Peak Hour.

Figure 4-2 Existing - Summary Junction Capacity Assessment Results - AM Peak Hour (08:00 – 09:00)

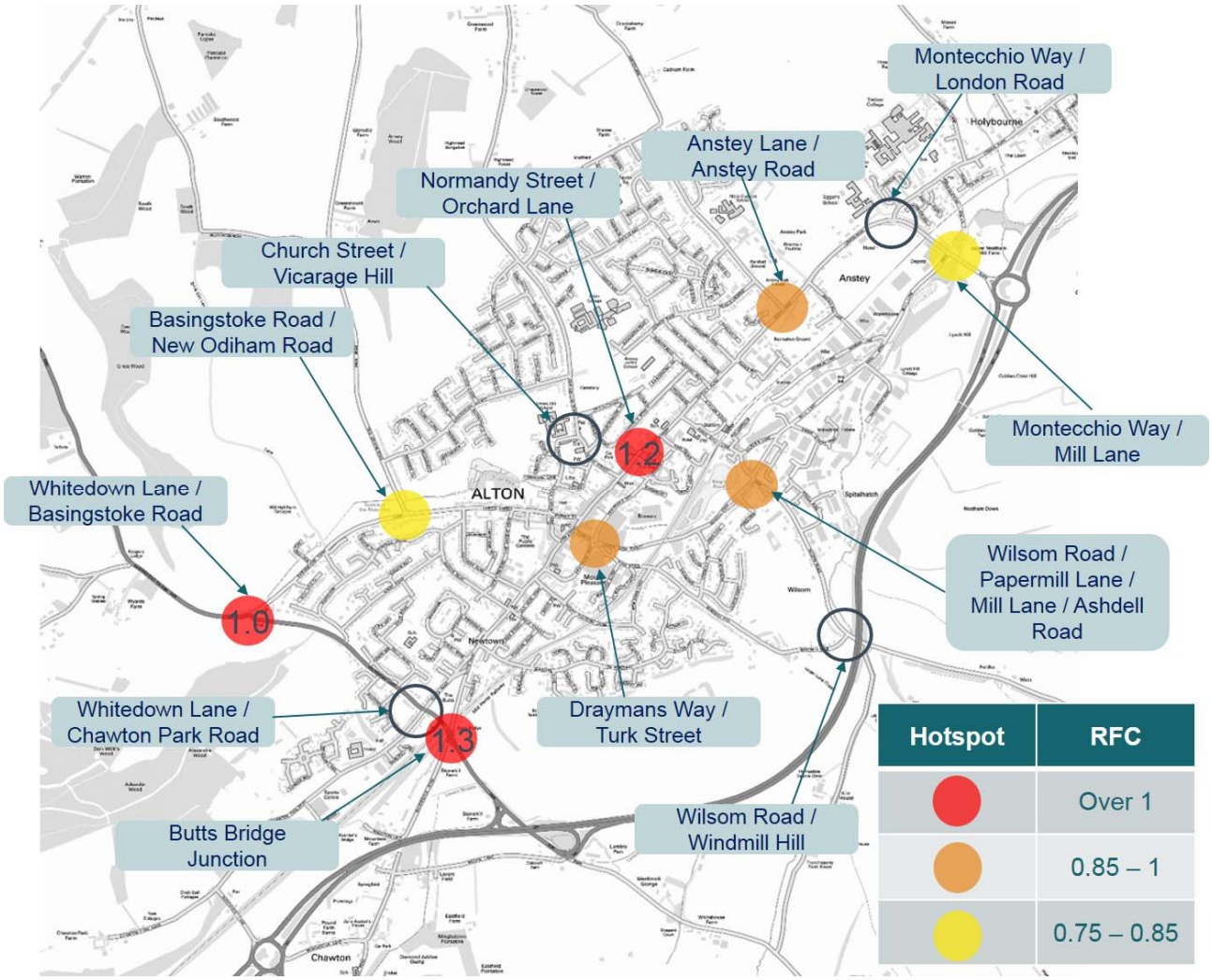
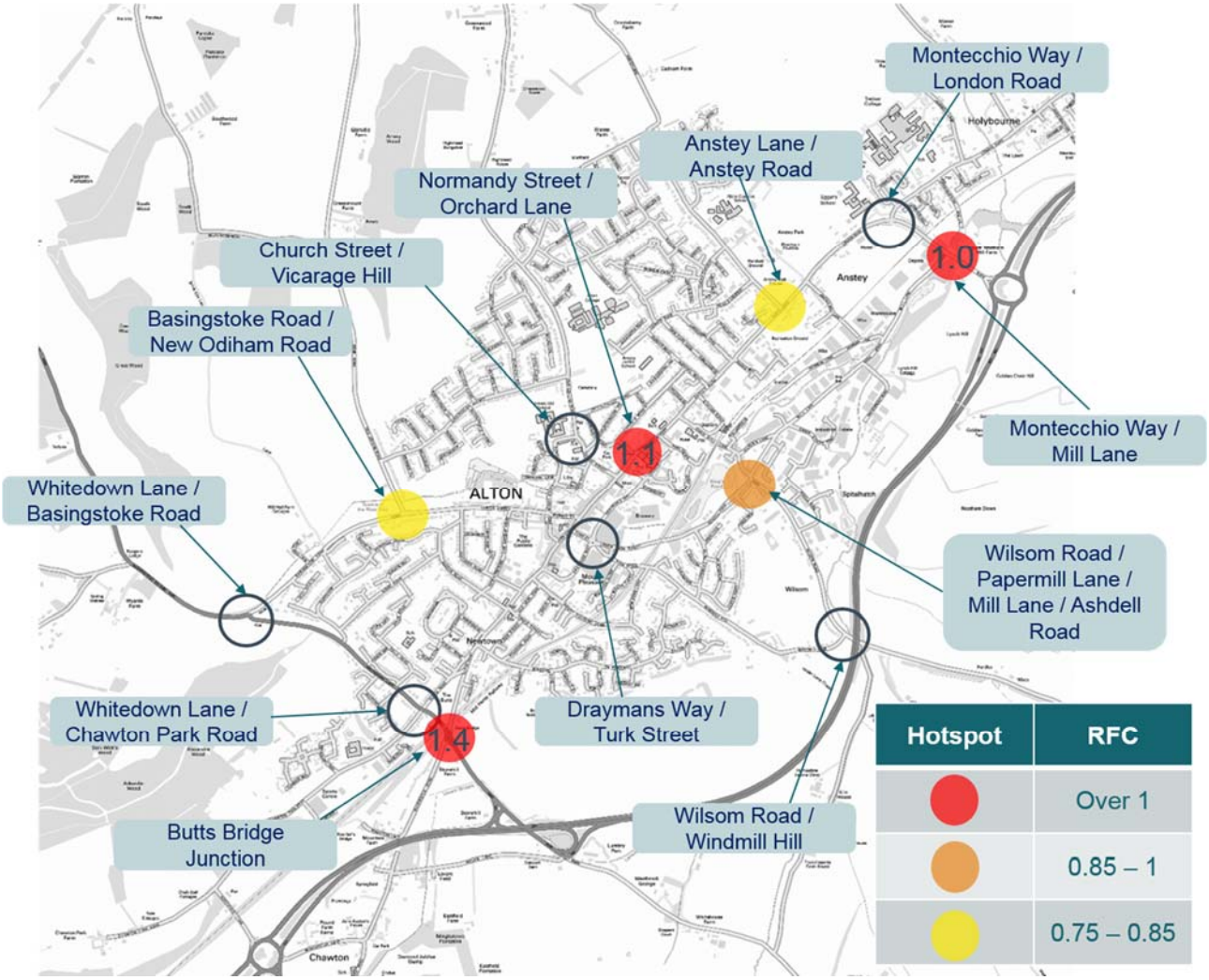


Figure 4-3 Existing – Summary Junction Capacity Assessment Results - PM Peak Hour (17:00 – 18:00)



4.4. Detailed Results

The detailed junction capacity results are presented and described below. Full results are provided in Appendix G.

4.4.1. Montecchio Way / Mill Lane Priority Junction

Results for the existing situation at the Montecchio Way / Mill Lane priority junction during the AM and PM Peak Hours are shown in Table 4-2.

Table 4-2 Montecchio Way / Mill Lane Existing Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Mill Lane to Montecchio Way (Left turn)	0.47	1	1.07	8
Mill Lane to Montecchio Way (Right turn)	0.76	3	1.05	18
Montechhio Way (N) to Mill Lane (Right turn)	0.37	1	0.13	0

- In the AM Peak Hour, there are no issues predicted at the junction with low queues on all arms.
- In the PM Peak Hour, congestion is predicted on Mill Lane with a predicted RFC over 1.0 and queues of approximately 26 vehicles consistent with the level of queuing observed during site visits.

4.4.2. Paper Mill Lane / Wilsom Road / Mill Lane Priority Junction

Results for the existing situation at the Paper Mill Lane / Mill Lane priority junction during the AM and PM Peak Hours are shown in Table 4-3.

Table 4-3 Paper Mill Lane / Mill Lane Existing Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Ashdell Road (all turns)	0.59	1	0.40	1
Wilsom Road (northbound right turn)	0.85	7	0.33	1
Mill Lane (all turns)	0.60	1	0.87	6
Wilsom Road (southbound right turn)	0.35	1	0.57	2

- In the AM Peak, only the right turn from Wilsom Road (northbound right turn) is predicted to operate at practical capacity with a queue of approximately 7 vehicles. All other arms are under capacity.
- In the PM Peak, Mill Lane is predicted to operate at practical capacity with a queue of 6 vehicles.

4.4.3. Anstey Lane / Anstey Road Priority Junction

Results for the existing situation at the Anstey Lane / Anstey Road priority junction during the AM and PM Peak Hours are shown in Table 4-4.

Table 4-4 Anstey Lane / Anstey Road Existing Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Anstey Lane (all turns)	0.89	6	0.81	4
Anstey Road (westbound right turn)	0.57	2	0.60	2

- In the AM Peak, the RFC is predicted to be over practical capacity on Anstey Lane with a predicted queue of six vehicles.
- In the PM Peak, the predicted RFC is just under practical capacity on Anstey Lane with predicted queue of four vehicles.

4.4.4. Basingstoke Road / New Odiham Road Roundabout

Results for the existing situation at the Basingstoke Road / New Odiham Road junction during the AM and PM peaks are shown in Table 4-5.

Table 4-5 Basingstoke Road / New Odiham Road Existing Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Basingstoke Road (east)	0.40	1	0.65	2
Basingstoke Road (west)	0.75	3	0.39	1
New Odiham Road	0.75	3	0.84	5

- In the AM Peak Hour, there are no issues predicted at the junction with a maximum RFC of 0.75 and small queues predicted for all arms.
- In the PM Peak Hour, New Odiham Road is predicted to be at practical capacity with a predicted queue of five vehicles.

4.4.5. Basingstoke Road / Whitedown Lane Priority Junction

Results for the existing situation at the Basingstoke Road / Whitedown Lane priority junction during the AM and PM peaks are shown in Table 4-6.

Table 4-6 Basingstoke Road / Whitedown Lane Existing Junction Capacity Assessment Results

Turning movement	AM Peak (08:00 – 09:00)		PM Peak (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Whitedown Lane to A339 (left turn)	1.05	21	0.41	1
Whitedown Lane to Basingstoke Road (right turn)	1.04	17	0.44	1
A339 to Whitedown Lane (right turn)	0.44	1	0.68	2

- In the AM Peak Hour, the predicted RFCs for both turning movements from Whitedown Lane are greater than 1 indicating these are operating at theoretical capacity.
- In the PM Peak Hour, there are no issues predicted at the junction with small queues on all arms.

4.4.6. Chawton Park Road / Whitedown Lane Priority Junction

Results for the existing situation at the Chawton Park Road/Whitedown Lane priority junction during the AM and PM Peak Hours are shown in Table 4-7.

Table 4-7 Chawton Park Road / Whitedown Lane Existing Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Chawton Park Road to Whitedown Lane (left turn)	0.32	1	0.22	0
Chawton Park Road to Whitedown Lane (right turn)	0.47	1	0.45	1
Whitedown Lane (right turn)	0.36	1	0.68	4

- In both the AM Peak Hour and PM Peak Hour, there are no issues predicted at the junction.

4.4.7. Montecchio Way / London Road Traffic Signals

Results for the existing situation at the Montecchio Way / London Road priority junction during the AM and PM Peak Hours are shown in Table 4-8.

Table 4-8 Montecchio Way / London Road Existing Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)
Montecchio Way (All turns)	75.7	10	64.0	7
Garstons Way (All turns)	22.2	1	12.9	1
London Road (West) (All turns)	74.9	11	69.7	11

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)
London Road (Holybourne) (All turns)	75.4	11	73.8	9

- In both the AM Peak Hour and PM Peak Hour, there are no issues predicted at the junction although queues of 11 PCUs are predicted for both London Road arms in the AM Peak Hour and the London Road (west) arm in the PM Peak Hour.

It should be noted that stakeholders indicated that this junction was very busy in the existing situation with longer queues than those predicted above. However, based on feedback on the poor performance of the junction, HCC had adjusted the signal timings to improve the situation before this study was started which may explain the results described above.

4.4.8. Wilsom Road / Windmill Hill Priority Junction

Results for the existing situation at the Wilsom Road/Windmill Hill priority junction during the AM and PM peaks are shown in Table 4-9.

Table 4-9 Wilsom Road / Windmill Hill Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Windmill Road to Wilsom Road (N)	0.07	0	0.02	0
Windmill Road to Wilsom Road (S)	0.25	0	0.24	0
Wilsom Road (N)	0.01	0	0.06	0

- In both the AM Peak hour and PM Peak Hour, there are no issues predicted at the junction.

4.4.9. Normandy Street / Orchard Lane Roundabout

Results for the existing situation at the Normandy Street / Orchard Lane junction during the AM and PM Peak Hours are shown in Table 4-10.

Table 4-10 Normandy Street / Orchard Lane Existing Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Normandy Street (East)	0.94	10	1.04	30
Orchard Lane	1.24	72	1.10	34
Normandy Street (West)	0.89	7	0.63	5

- In the AM Peak Hour, the predicted RFCs are high for all arms and over theoretical capacity on Orchard Lane with a predicted queue of 72 vehicles.
- In the PM Peak Hour, the predicted RFCs are also high and over theoretical capacity on Normandy Street (east) and Orchard Lane with predicted queues of 30 and 34 vehicles respectively.

It should be noted that the extent of queuing predicted was not observed on site and accordingly this should be taken into account when interpreting results for this junction for the development scenarios. Any further analysis of this junction beyond the study should be based on new traffic survey information.

4.4.10. Vicarage Hill / Church Street Roundabout

Results for the existing situation at the Vicarage Hill/Church Street junction during the AM and PM peaks are shown in Table 4-11.

Table 4-11 Vicarage Hill / Church Street Existing Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Church Street (South)	0.38	1	0.38	1
Vicarage Hill	0.60	1	0.63	2
Church Street (North)	0.56	1	0.47	1

- In both the AM Peak Hour and PM Peak Hour, there are no issues predicted at the junction.

4.4.11. Draymans Way / Turk Street Roundabout

Results for the existing situation at the Draymans Way/Turk Street junction during the AM and PM peaks are shown in Table 4-12.

Table 4-12 Draymans Way / Turk Street Existing Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Draymans Way (East)	0.47	1	0.63	2
Lower Turk Street	0.54	1	0.68	2
Draymans Way (West)	0.89	7	0.70	2
Turk Street	0.45	1	0.54	1

- In the AM Peak Hour, the predicted RFC for Draymans Way (west) indicates that arm is operating at practical capacity with a predicted queue of 7 vehicles.
- In the PM Peak all arms are predicted to operate within capacity with predicted queues of one or two vehicles.

4.4.12. Butts Bridge

Results for the existing situation at the Butts Bridge junction during the AM and PM Peak Hours are shown in Table 4-13. To aid interpretation of the results, the Selborne Road junction is the southern of the two roundabouts, and the Butts Road junction is the northerly of the two roundabouts. The junction has been assessed using Junctions 8 to allow operating conditions to be predicted for the existing situation and the two development scenarios and for the relative performance to be compared. The budget for this study did not extend to developing and validating a micro-simulation model of the junction using PARAMICS or VISSIM although this is recommended for any further analysis given the complex interaction between the two roundabouts and the narrow carriageway under the railway on Whitedown Lane which precludes the passing for two large vehicles simultaneously.

Table 4-13 Butts Bridge Existing Junction Capacity Assessment Results

Junction	Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
		RFC	Queue	RFC	Queue
Selborne Road Junction	Selborne Road	0.76	3	0.45	1
	Winchester Road	0.08	0	0.02	0
	Roundabout Link (South)	0.34	N/A	0.42	N/A
Butts Road Junction	Butts Road	0.83	5	0.99	16
	Roundabout Link (North)	0.98	N/A	0.57	N/A
	Whitedown Lane	1.27	63	1.37	120

Selborne Road Junction

- In both the AM Peak and PM Peak Hours, there are no issues predicted at the southern of the two junctions with low predicted queues on all arms.

Butts Road Junction

- In the AM Peak Hour, the Roundabout Link (North) and Whitedown Lane are predicted to be operating at or over theorectical capacity with RFCs of 0.98 and 1.27 respectively. A long queue of 63 vehicles is predicted on Whitedown Lane which would block back through the Chawton Park Road / Whitedown Lane junction.

- In the PM Peak Hour, a very long queue of approximately 120 vehicles is predicted for Whitedown Lane which is consistent with on-site observations and the predicted RFC is 1.37. As with the AM Peak Hour this predicted queue would block back through the Chawton Park Road / Whitedown Lane junction. The predicted RFC for Butts Road is 0.99 which indicates that this approach is operating at theoretical capacity.

It should be noted that due to limitations of modelling the Butts Bridge junction as a linked roundabout in Junctions 8, for the internal roundabout links, it is only possible to measure volume on the arms and therefore only RFC is reported. It is not possible to report on queue lengths for these internal links.

5. Planned Development in Alton

5.1. Introduction

This section identifies which development sites in Alton have been considered as part of developing the transport strategy and how the travel demands from those sites have been estimated. The key sources of information that we have reviewed in this respect are:

- The adopted JCS which identifies the housing requirements for the East Hampshire District up until 2028. Within Alton it identifies a requirement for 'a minimum of 700 new homes'.
- The Strategic Housing Land Availability Assessment (SHLAA) which has been prepared by EHDC to consider where the housing development in and around Alton may be accommodated.
- TAs submitted by developers to support planning applications for various sites supplemented by information on other sites provided by HCC and EHDC.

5.2. Residential Development

Details of the information received for various residential development sites as part of the above are presented in Table 5-1 which shows the numbers of units assumed as part of the SHLAA and an updated figure that has been sourced from the relevant TA or from HCC or EHDC on the basis of pre-application discussions.

Table 5-1 Residential Development Sites in Alton

Site Ref.	Site Location	SHLAA Number of Units	Updated Number of Units	Built by 1st April 2014	Net Units to be Built	Status of Site
20934/035	1-3 Butts Road		12	0	12	Granted and not built (13/14 – 14/15)
22826/011	Caffyns Ford, Butts Road		31	0	31	Granted and not built (13/14 – 14/15)
24917/028	The Grange Hotel, London Road		13	2	11	Granted and partially built (13/14 – 14/15)
50167/001	Chandos Lodge		172	94	78	Granted and partially built (13/14 – 15/16)
28984/005	31 Gentlemen Jim Raven Square		11	0	10*	Granted and not built
36003/004	28 Greenacre, Borovere Lane		12	0	11*	Granted and not built
20753/002	Travis Perkins, Littlefield Lane		10	0	10	Granted and not built
30714/005	74-76 Anstey Road		10	0	8*	Granted and not built
27970/007	22-28 Wey River House, High Street		14	0	14	Granted and not built
25050/054	The Malt House, Turk Street		52	0	52	Granted and not built
21392/016	Oceanic House, Butts Road		14	0	14	Granted and not built
24900/016	32A Butts Road		14	0	14	Granted and not built
23278/034	The Maltings, Maltings Close		6	0	6	Granted and not built
31765/007	4a Lenten Street		3	0	2*	Granted and not built

Site Ref.	Site Location	SHLAA Number of Units	Updated Number of Units	Built by 1st April 2014	Net Units to be Built	Status of Site
24482/005	8 Normandy Street		3	0	3	Granted and not built
49288/002/ RENU	20 Grebe Close		2	0	2	Granted and not built
29254/011	Highmead House, Old Odiham Road		1	0	1	Granted and not built
23341/005	22 Peacehaven, Wilsom Road		4	2	1*	Granted and partially built
50068/005	Amery House, Space Technology Systems Ltd, Steeple Drive		1	0	1	Granted and not built
33146/008	Manor House, Church Lane		1	0	1	Granted and not built
22766/034	Alton House Hotel, Normandy Street		2	0	2	Granted and not built
22977/008	15, 15a & 15b Turk Street		6	0	6	Granted and not built
29949/003	30 Edward Road		2	0	2	Granted and not built
54070	28 Anstey Lane		1	0	1	Granted and not built
21818/042	76 Westbrooke House, High Street		7	0	7	Granted and not built
31468/003	100 Normandy Street		1	0	1	Granted and not built
53816	40 Normandy Street		1	0	1	Granted and not built
34799/006	Eastbrook Education Trust, Vicarage Hill		2	0	2	Granted and not built
33367/001	Alton Boys Club, Nursery Road		3	0	3	Granted and not built
50992/006	21c Majestic Wine, High Street		5	0	5	Granted and not built
26852/015	111 Victoria Road		1	0	1	Granted and not built
40113/004	13 & 17 (The Grange), Land Between London Road		4	0	4	Granted and not built
53594/001	59 Kings Road		1	0	1	Granted and not built
55102	96 Mount Pleasant Road		1	0	0*	Granted and not built – existing house replaced by one new unit
24229/010	72 Barley Mow, Normandy Street		6	0	5*	Granted and not built
54936	70 Bon Bon, Normandy Street		2	0	1*	Granted and not built
31433/008	Highmead Cottage, Old Odiham Road		1	0	0*	Granted and not built – existing house replaced by one new unit
55116	13-14 The Garth, Land North of Nursery Road		2	0	2	Granted and not built
20284/020	Prospect Place, Land North of Mill Lane		9	0	9	Granted and not built
55160/001	18 Shoveltree Arcade, Normandy Street		1	0	1	Granted and not built

Site Ref.	Site Location	SHLAA Number of Units	Updated Number of Units	Built by 1st April 2014	Net Units to be Built	Status of Site
55344	9 First Floor Offices, Turk Street		2	0	2	Granted and not built
Total Granted Development		**-**	**446**	**98**	**338**	**Predicted Loss of 10 Units**
AL001	Borovere Farm, Alton	230	250	0	250	Application submitted but not determined
AL002	Treloar Hospital, Alton	130 + 150	280	0	280	Application submitted but not determined
AL005	Cadnams Farm, Anstey Lane, Alton	150	275	0	275	Application submitted but not determined
AL033	Will Hall Farm, Alton	150	200	0	200	Application submitted but not determined
AL047	West Old Odiham Road, Alton	60	96	0	96	Application submitted but not determined
AL044	Land at Highmead House, east of Old Odiham Road, Alton (Pre-app as Land to North Gilbert White Way, Alton)	100	120	0	120	No Application
	Coors Sports Ground	96	96	0	96	No Application
	Convent School, Anstey Lane	12	12	0	12	No Application
Total Full Development		**-**	**1,775**	**98**	**1,667**	**Predicted Loss of 10 Units**

** indicates that some units are predicted to be demolished as part of the development and therefore this has been removed from the number of units to be built in order to represent the net increase in units.*

The location of the SHLAA sites included within Table 5-1 are shown on the plan in Figure 5-1. It should be noted that a total of 39 units were built in Alton in 2013-14. Depending on the timing of the completion of these units, the trip generation from these houses may not be included in the traffic data collected in 2013 which has been used for this study. However, any flows will be included in the data that is collected as part of this study in September 2014. It is not possible to fully reconcile this information, but as the number of units is low this will not have a significant impact on the outcome of the study.

Based on this information and following discussions with HCC, EHDC and stakeholders, the following two development scenarios for Alton were agreed in September 2014. The original scope included a development scenario with 700 new housing units, however at the initial Stakeholder meeting on the 2nd July 2014, the stakeholders advised this would be too low. It was noted that there were already housing applications and local plan commitments totalling 1031 units. The following scenarios were therefore suggested and agreed:

- A 'Full development scenario' of 1,667 units including all those sites for which a planning application had been granted and where there are committed developments. The term "committed" in this context is defined as those sites that are reasonably certain to proceed as set out in local planning documents (such as the JCS and Strategic Housing Land Availability Assessment (SHLAA)) and therefore includes sites for which planning consent has not yet been obtained.
- A 'Full development plus 26% scenario", which equates to 2,100 units. The scenario assumes that traffic flows are uplifted and the trip distribution developed for the 'Full development scenario' would be retained.

5.2.1. Scenario 2 – Assumptions

Scenario 2 presents the 'worst case' scenario for ensuring a robust and comprehensive assessment of the town's full development potential. Scenario 2 examines the development of 2,100 units which equates to Scenario 1 (Full development – 1,667 units) plus 26%.

The additional 433 units in Scenario 2 have been allocated to nine specific sites outlined within the SHLAA. The nine sites are as follows:

- Land off Wilsom Road (between 60-86 Wilsom Road)
- Land at Weysprings.
- Land adjacent to Convent School.
- Land at London Road.
- Land at The Triangle.
- Land at Wilsom Road, GU34 2SP.
- Land at Lower Turk Street.
- Land off Howards Lane.

The number of units proposed at these sites is shown in Table 5-2, with the total number reaching 329 units. This 329 units in addition to the Scenario 1 full development of 1,667 means a total of 1,996 leaving a shortage of 104 from the desired Scenario 2 development scenario of 2,100 units. The additional 104 units have been distributed across the nine sites according to the proportion of the original units proposed in each location. The proportions are shown in Table 5-2 along with the subsequent total number of units allocated at each site.

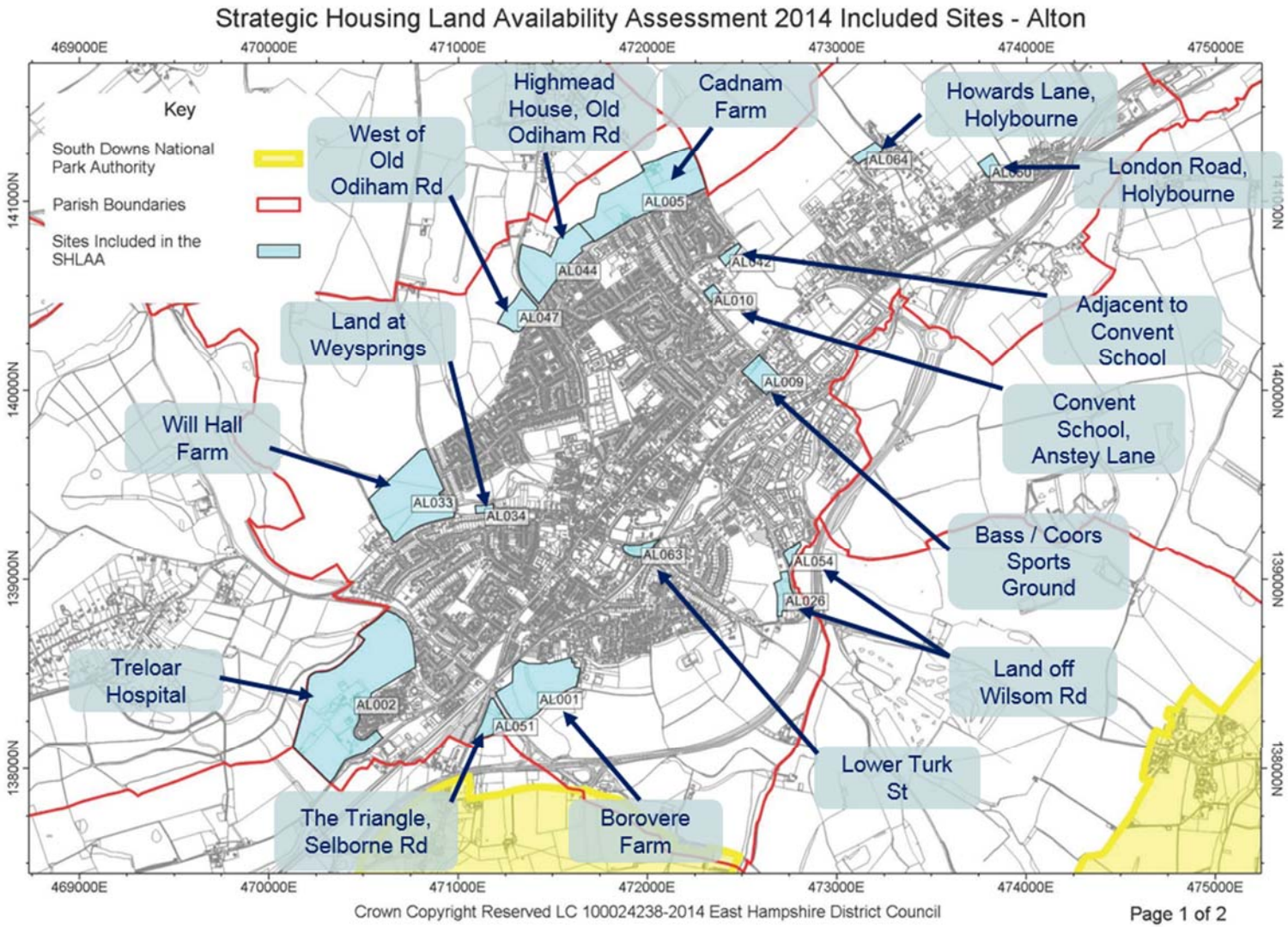
Table 5-2 Additional Sites and Unit Allocation

Site	Units proposed	Additional units	Total units allocated to each site to reach 2100 unit total
Land off Wilsom Road, between 60-86	25	8	33
Land at Weysprings	12	4	16
Land adjacent to Convent	14	4	18
Land at London Road	6	2	8
Land at the Triangle	50	16	66
Land at Wilsom Road GU34 2SP	95	30	125
Land at Lower Turk St	120	38	158
Land off Howards Lane	7	2	9
TOTAL	**329**	**104**	**433**

5.3. Employment Related Development

Travel demands for employment development sites in Alton have not been included as there is no concrete information on any such sites currently available. Also, as there are a number of residential sites it is expected that new residents would be attracted to any new employment and therefore taking into account the trips to the employment sites would duplicate some of the trips generated by the residential developments.

Figure 5-1 SHLAA Sites 2014



6. Forecasting Travel Demands for Developments in Alton

6.1. Trip Generation

The trip generation for each of the residential development sites has been estimated for each mode of travel. Trip rates per unit for those sites with a TA prepared by developers (and agreed with HCC in advance) have been extracted and used for this study. For those sites without a TA, trip rates have been applied based on a combination of those quoted in other TAs and those extracted from the industry standard TRICS database. We have reviewed the individual trip rates available from the data sources which are presented in Table 6-13 which also shows the trip rates for each mode that we adopted.

Table 6-1 Residential Development Trip Generation Rates - Alton

Source	Two-Way Trip rates per Residential Unit					
	Private Car	Vehicle Occupants	Public Transport	Walk	Cycle	Total Person Trips
Weekday morning peak hour (typically 0800-0900 hours)						
Cadnam Farm TA	0.541	*	*	*	*	*
Old Odiham Road TA	0.554	0.585	0.122	0.061	0.031	0.799
Will Hill Farm TA	0.581	0.830	0.028	0.226	0.022	1.106
Assumed trip rate for sites without a TA	0.559	0.708	0.075	0.144	0.027	0.953
Weekday evening peak hour (typically 1700-1800 hours)						
Cadnam Farm TA	0.624	*	*	*	*	*
Old Odiham Road TA	0.595	0.626	0.132	0.071	0.020	0.849
Will Hill Farm TA	0.631	0.834	0.020	0.115	0.029	0.998
Assumed trip rate for sites without a TA	0.617	0.730	0.076	0.093	0.025	0.924
Weekday 24 hours/12 hours						
Cadnam Farm TA	5.167	*	*	*	*	*
Old Odiham Road TA	5.195	5.511	1.092	0.571	0.204	7.378
Will Hill Farm TA	5.373	7.147	0.17	1.586	0.193	9.096
Assumed trip rate for sites without a TA	5.245	6.329	0.631	1.079	0.199	8.237

** Not assessed*

The 'Assumed trip rate for sites without a TA' has been calculated as an average of the data provided for each of the modes. The trip rates for each specific site within Alton have been included in Appendix B. The number of trips generated by development sites in Alton is shown in Table 6-2.

Table 6-2 Residential Development Trips - Alton

Location	Units	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)		
		In	Out	Total	In	Out	Total
Alton	1667	236	591	827	576	338	914
	2100	302	767	1069	743	438	1181

6.2. Trip Distribution

The trip distribution methodology within each TA for the above sites has been reviewed. It is apparent that the trips from the new developments have not been distributed over an extensive area of Alton and accordingly it was not possible to use any of the assumptions generated by developers as they did not cover the town as a whole. As a result, the trip distribution has been based on a review of the existing traffic flow profile and 2001 Journey to Work Census data. The existing traffic flow profile has been assessed using data previously collected and survey data collected specifically as part of this study (as described in Section 3). This has been

used to understand how the trips generated by the residential developments are to be distributed locally. The Journey to Work Census data has been utilised to determine the direction of travel from the new developments. The most recent Journey to Work data detailing the direction of travel is for 2001 as the 2011 Census data was not available at a ward level when this analysis was undertaken. It is appreciated that 2001 data is several years old but it provides the most suitable independent empirical data and can be used as the basis of the trip distribution.

Table 6-3 shows the percentage of trips traveling in each direction from Alton according to the 2001 Census data. It also shows the percentage of journey to work trips that remain within Alton. The Alton Transport Strategy assumes that the traffic will travel in the proportions shown during the AM Peak Hour and in the PM Peak Hour they will make the return journey.

Table 6-3 Trip Distribution from Alton

From	Direction of Travel				
	North via A339 and B3349	Northeast via A31	Southwest via A31	Southeast via Wilsom Road	Within Alton
Alton	18%	32%	32%	9%	9%

7. Forecasting Travel Demands for Developments in Surrounding Settlements

7.1. Introduction

The purpose of this section is to confirm which development sites in the areas immediately surrounding Alton have been considered as part of developing the transport strategy and how the travel demands from those sites have been estimated. The key sources of information that we have reviewed in this respect are:

- The adopted JCS which identifies the housing requirements for the East Hampshire District up until 2028.
- The Strategic Housing Land Availability Assessment (SHLAA) which has been prepared by EHDC to consider where the housing development in and around Alton may be accommodated.
- TAs submitted by developers to support planning applications for various sites supplemented by information on other sites provided by HCC and EHDC.

7.2. Residential Development

Details of the information received for various residential development sites as part of the above are presented in Table 7-1 which shows the numbers of units specified within the JCS and were agreed with EHDC for use within this study.

A significant number of residential units are proposed at Whitehill Bordon[2]. This study has adopted the details presented for Option 1 (Full Masterplan) which is understood to have been selected as the preferred option. This masterplan assumes a total development of 4,000 units to be delivered by 2036. As the future year scenario assessment for this study is to align with the Core Strategy timescales (2028) the table below includes 2,725 units which is the expected number to be delivered in this timescale.

Table 7-1 Residential Development Units Outside Alton – Scenario 1 and 2

Site	Joint Core Strategy	Scenario 1	Scenario 2
Bentley	50	50	63
Four Marks / Medstead	175	434	547
Whitehill Bordon	0	2725	3434
Total	**225**	**3209**	**4044**

Based on this information the study has considered two development scenarios for Bentley, Four Marks, Medstead and Whitehill Bordon as follows:

- A ‘Full development scenario’ of 3,209 units as set out in the JCS.
- A ‘Full development plus 26% scenario”, which equates to 4,044 units. This scenario is based on the same percentage growth on the ‘Full development scenario’. This scenario assumes that traffic flows are uplifted and the trip distribution developed for the ‘Full development scenario’ is retained.

The total ‘Full development scenario’ will therefore consist of the ‘Full Alton’ residential growth (1,667 units) plus the ‘Full Other Areas’ residential growth (3,209 units) noting that a large proportion of the traffic generated by sites outside Alton will not route through Alton. The total ‘Full development plus 26% scenario’ will consist of the ‘Full Alton plus 26%’ residential growth (2,100 units) plus the ‘Full Other Areas plus 26%’ residential growth (4,044 units).

[2] *Transport Assessment – Whitehill Bordon Eco-town, Amey, January 2012*

7.3. Employment Related Development

Similar to Alton we have not considered travel demands for any employment development sites in Bentley, Four Marks, and Medstead. It is recognised that the East Hampshire Employment Land Review has identified some employment sites in East Hampshire and these are detailed in Table 7-2.

Table 7-2 Allocated Employment Sites

Site Name	Size (Ha)	Potential Uses
Land south of Woolmer Trading Estate (Viking Park), Bordon	2.2	B1 – B8
Land south of Buckmore Farm, Petersfield	2.1	B1 – B8
Land adjacent to Bentley Industrial Centre	0.3	B1 – B8
Former Ordnance Supply Unit, Liphook	1.8	B1 – B8

As part of the development at Whitehill Bordon there is significant employment and retail land uses proposed. It is understood Option 1 (Full Masterplan) has been adopted as the preferred option and includes the creation of employment to support 5,500 jobs. However, as there are a significant number of residential sites it is expected that new residents would be attracted to any new employment and therefore taking into account the trips to the employment sites would duplicate the trips generated by the residential developments.

7.4. Trip Generation

The trip generation for sites outside of Alton has been calculated using the average trip rates taken from the TAs available. Table 7-3 shows the trip rates for used for the developments in Bentley, Four Marks and Medstead. The trip rates used show trips per unit.

Table 7-3 Residential Development Trip Rates – Other Areas

Location	AM Peak Hour (08:00 – 09:00)			PM Peak Hour (17:00 – 18:00)		
	In	Out	Total	In	Out	Total
Bentley / Four Marks / Medstead sites	0.150	0.354	0.504	0.342	0.199	0.541

Trip rates used show trips per unit.

The number of trips generated by development sites in Bentley, Four Marks and Medstead are shown in Table 7-4.

Table 7-4 Residential Development Trips - Other Areas

Location	Units	AM Peak Hour (08:00 – 09:00)			PM Peak Hour (17:00 – 18:00)		
		In	Out	Total	In	Out	Total
Bentley	50	7	18	25	17	10	27
Four Marks / Medstead	434	65	154	219	149	86	235

7.5. Trip Distribution

7.5.1. Summary

Trips generated by sites outside of Alton have been distributed using two methodologies. Sites in Four Marks, Medstead and Bentley have been distributed using one method, and the trips generated by Whitehill Bordon have been distributed using a second method.

7.5.2. Four Marks, Medstead and Bentley

Having reviewed the TAs, the forecast trips generated by the residential sites in Four Marks, Medstead and Bentley have not been distributed by the developers' transport consultants over a significant area from the

proposed site accesses. Similar to the distribution of trips for the sites in Alton, the distribution of these trips has been based on a combination of previously collected traffic flow data and new survey data (to understand how trips are to be distributed locally), plus Journey to Work Census data, 2001. Table 7-5 shows the proportion of work trips that travel to Alton from the surrounding wards of Binsted and Bentley, Four Marks and Medstead. These figures also include trips that will use Alton as a through route (not including traffic continuing on the A31). For example, journeys from Four Marks travelling to Basingstoke were deemed to use the A31, and then travel north through Alton via the A339 and Butts Bridge junction.

Table 7-5 Trip Distribution from 'Other' Areas

From	Percentage of Trips To Alton	Percentage of Trips Through Alton
Binsted and Bentley	4%	3%
Four Marks and Medstead	12%	8%

7.5.3. Whitehill Bordon

For trips originating from sites within Whitehill Bordon, a detailed distribution of trips has been provided within the Whitehill Bordon Eco Town Evidence Base Transport Assessment. This has been used to indicate the number of trips arriving in Alton from new sites within the Whitehill Bordon area as opposed to relying on Census data. The TA indicates the AM and PM Peak Hour trips at the Paper Mill Lane / Wilsom Road / Ashdell Road / Mill Lane junction generated by the Whitehill Bordon development. The trips have been extrapolated from this point and distributed across or through Alton on the key routes. This approach has ensured that all land uses within the Whitehill Bordon development are accounted for as part of this study.

8. Scenario 1 – Full Development Traffic Assessment

8.1. Scenario 1 Junction Capacity Assessments - Results Summary

This section describes the results of the junction assessments with the trips generated by Scenario 1 (with the Full Development scenario of 1667 additional dwellings), and the trips associated with development outside Alton. The size and location of these developments has been informed by the SHLAA document as well as additional input from HCC and EHDC. The assessment examines the existing road network with no junction improvements. The junctions assessed are those listed in Section 4. The link flows for Scenario 1 are shown in Table 8-1.

Table 8-1 Scenario 1 Link Flows - AM and PM Peak Hours

Road Name	Direction	Base	
		AM Peak Hour	PM Peak Hour
Whitedown Lane (South of Chawton Park Road)	Northbound	863	546
	Southbound	640	809
Whitedown Lane (South of Basingstoke Road)	Northbound	832	431
	Southbound	600	825
A339 (between Medstead Road and Whitedown Lane)	Northbound	655	465
	Southbound	526	565
Basingstoke Road (B3349) (between Whitedown Lane and New Odiham Road)	Eastbound	641	400
	Westbound	518	688
Selborne Road (between Butts Bridge and A31 junction)	Northbound	1371	940
	Southbound	913	1064
Draymans Way	Eastbound	722	569
	Westbound	342	416
Butts Road	Eastbound	884	689
	Westbound	623	686
Anstey Road	Eastbound	875	680
	Westbound	692	761
London Road	Eastbound	644	574
	Westbound	599	683
Montecchio Way	Northbound	1070	842
	Southbound	854	886
New Odiham Road	Northbound	462	252
	Southbound	225	536
Old Odiham Road	Northbound	179	149
	Southbound	244	209
Wilsom Road	Northbound	705	364
	Southbound	473	594

The same twelve junctions and assessment criteria as was used in Section 4.3, has been used within this section for consistency. The criteria are as follows:

Red indicates a DoS or RFC of more than 1 and represents a junction where at least one turning movement is predicted to be over theoretical capacity.

Amber indicates a junction with a DoS or RFC of between 0.85 and 1 for at least one turning movement. 0.85 has been chosen to represent the practical capacity.

Yellow indicates a junction with a DoS or RFC of between 0.75 and 0.85 for at least one turning movement. This represents a junction with some reserve capacity.

The black circle indicates that the capacity of the junction has been assessed but all predicted DoS or RFC are below 0.75 and accordingly the junction is considered to be operating within capacity.

Figure 8-1 shows the Scenario 1 summary results plan for the AM Peak Hour and indicates junctions at or over theoretical capacity at:

- **Whitedown Lane / Basingstoke Road.**
- Chawton Park Road / Whitedown Lane.
- **Normandy Street / Orchard Lane.**
- Paper Mill Lane / Wilsom Road / Mill Lane.
- Anstey Road / Anstey Lane.
- Montecchio Way / Mill Lane.
- **Butts Bridge junction.**

This represents a worsening in performance at several junctions across Alton when compared to the existing situation with seven junctions now exceeding theoretical capacity where only the three shown in bold were before. Those which were over theoretical capacity previously are now forecast to be further over theoretical capacity.

Figure 8-2 shows the Scenario 1 summary of the PM Peak Hour and highlights that the following junctions are predicted to exceed theoretical capacity:

- **Normandy Street / Orchard Lane**
- **Montecchio Way / Mill Lane**
- Anstey Road / Anstey Lane
- **Butts Bridge junction.**

Anstey Road / Anstey Lane is predicted to be over theoretical capacity with the additional development flows where it was previously operating below practical capacity in the existing situation. A breakdown of the junction performance for each junction approach during the AM and PM Peak Hours with Scenario 1 is provided below.

Figure 8-1 Scenario 1 - Summary Junction Capacity Assessment Results - AM Peak Hour (08:00 - 09:00)

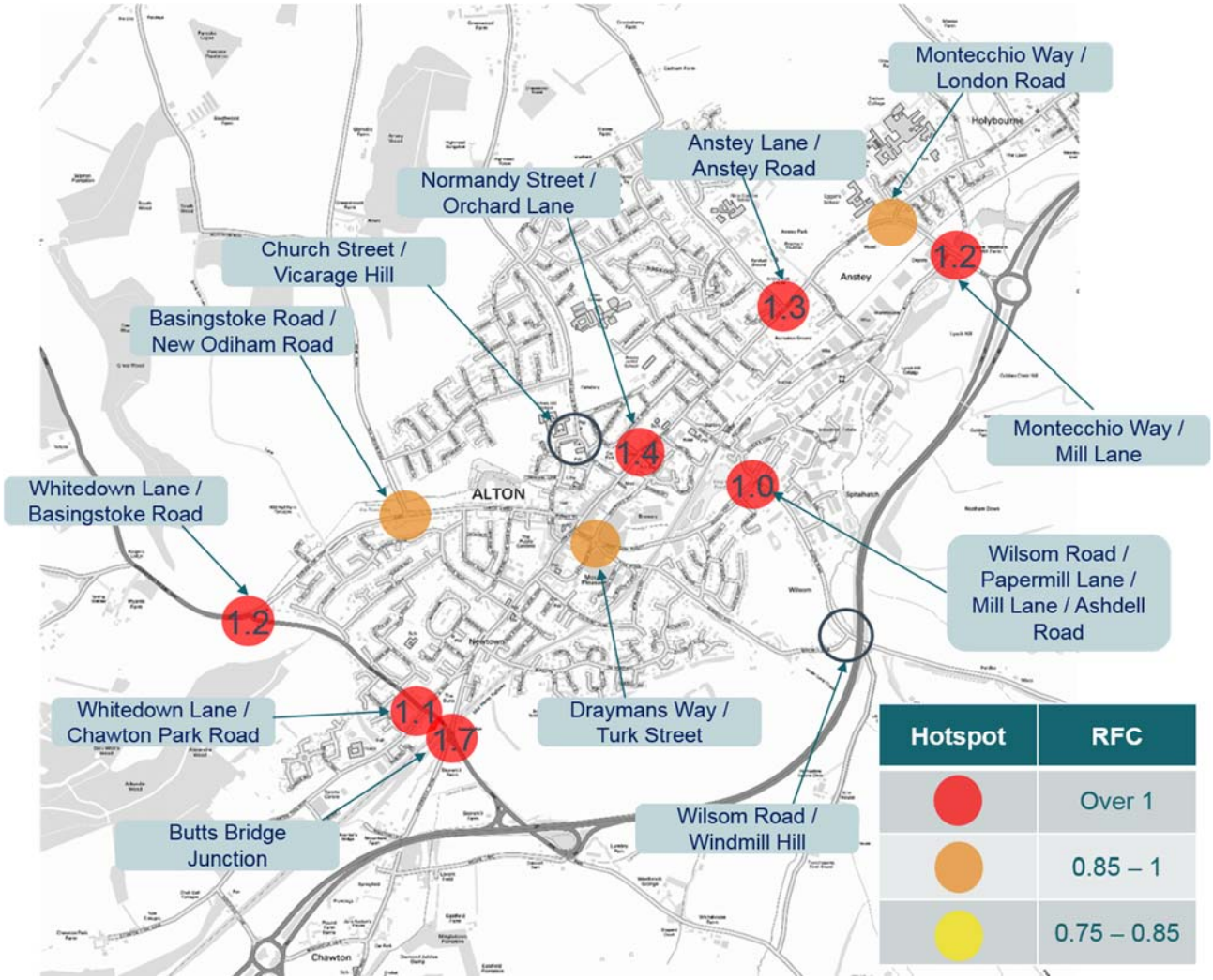
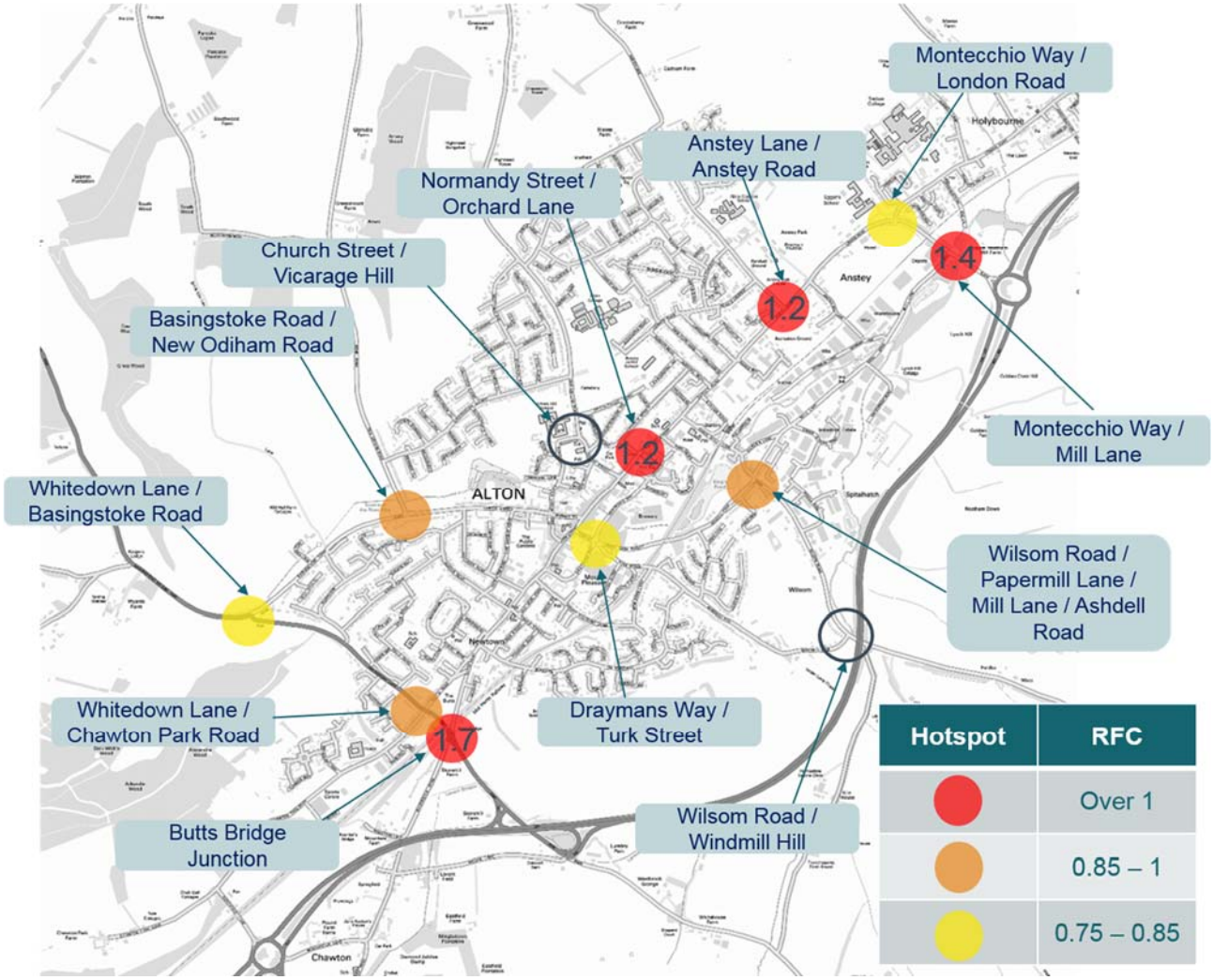


Figure 8-2 Scenario 1 - Summary Junction Capacity Assessment Results - PM Peak Hour (17:00 - 18:00)



8.2. Scenario 1 - Detailed Junction Capacity Assessment Results

8.2.1. Montecchio Way / Mill Lane Priority Junction

Results for Scenario 1 at the Montecchio Way / Mill Lane priority junction during the AM and PM Peak Hours are shown in Table 8-2.

Table 8-2 Montecchio Way / Mill Lane Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Mill Lane to Montecchio Way (left turn)	1.24	21	1.42	17
Mill Lane to Montecchio Way (right turn)	1.22	23	1.36	55
Montechhio Way (N) to Mill Lane (right turn)	0.39	1	0.14	0

- In the AM Peak Hour, the predicted RFCs for the Mill Lane to Montecchio Way turns are significantly over theoretical capacity with queues of more than 20 PCUs for each turn.
- In the PM Peak Hour, the results are similar but with a predicted total queue of 72 PCUs on Mill Lane.

The results represent a worsening in performance on all arms when compared to the existing situation, particularly for the two give way turns on Mill Lane during the AM Peak Hour. This junction needs improvement as it is predicted to be over theoretical capacity in both the AM and PM Peak Hours with long queues on Mill Lane.

8.2.2. Paper Mill Lane / Wilsom Road / Mill Lane

Results for Scenario 1 at the Paper Mill Lane / Wilsom Road / Mill Lane priority junction during the AM and PM Peak Hours are shown in Table 8-3.

Table 8-3 Paper Mill Lane / Wilsom Road / Mill Lane Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
From Ashdell Road	1.43	44	0.46	1
Wilsom Road (South)	0.90	10	0.41	1
From Mill Lane	0.71	2	0.98	14
Wilsom Road (North)	0.41	1	0.63	3

- In the AM Peak Hour, the predicted RFC for Ashdell Road is well over theoretical capacity with a predicted queue of approximately 44 PCUs. This is a significant worsening in junction performance when compared to the existing situation.
- In the PM Peak Hour, the predicted RFC for Mill Lane is approaching theoretical capacity with a predicted queue of 14 PCUs.

This junction needs improvement as it is significantly over theoretical capacity in the AM Peak Hour and at theoretical capacity in the PM Peak Hour with a long predicted queue on Ashdell Road in the AM Peak Hour.

8.2.3. Anstey Lane / Anstey Road

Results for Scenario 1 at the Anstey Lane / Anstey Road priority junction during the AM and PM peaks are shown in Table 8-4.

Table 8-4 Anstey Lane/Anstey Road Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Anstey Lane	1.30	72	1.22	39
Anstey Road (East) right turn	0.71	3	0.97	17

- In the AM Peak Hour, the predicted RFC on Anstey Lane is over theoretical capacity with a predicted queue of 72 PCUs.
- In the PM Peak Hour, the predicted the RFC on Anstey Lane is also over theoretical capacity with a predicted queue of 39 PCUs.

This shows a worsening in performance on all approaches to the junction but particularly on Anstey Lane that was operating at practical capacity in the existing situation. This junction requires improvement as it is predicted to be over theoretical capacity in both peaks hours with a long queue predicted on Anstey Lane in the AM Peak Hour and a queue for the right turn from Anstey Road in the PM Peak Hour that will block westbound traffic.

8.2.4. Basingstoke Road / New Odiham Road

Results for Scenario 1 at the Basingstoke Road / New Odiham Road junction during the AM and PM Peak Hours are shown in Table 8-5.

Table 8-5 Basingstoke Road / New Odiham Road Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Basingstoke Road €	0.44	1	0.69	2
Basingstoke Road (W)	0.80	4	0.52	1
New Odiham Road	0.95	11	0.93	10

- In the AM Peak Hour, New Odiham Road is predicted to be approaching theoretical capacity with a predicted queue of 11 PCUs.
- In the PM Peak Hour, New Odiham Road is at predicted to be approaching theoretical capacity with a predicted queue of 10 PCUs.

The results indicate that junction is predicted to be approaching theoretical capacity in both peaks and may require improvement.

8.2.5. Basingstoke Road / Whitedown Lane

Results for Scenario 1 at the Basingstoke Road / Whitedown Lane junction during the AM and PM Peak Hours are shown in Table 8-6.

Table 8-6 Basingstoke Road / Whitedown Lane Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Whitedown Lane Left to A339	1.23	54	0.53	1
Whitedown Lane Right to Basingstoke Road	1.22	43	0.75	3
A339 to Whitedown Lane	0.49	1	0.76	3

- In the AM Peak Hour, the predicted RFCs for both turns from Whitedown Lane are over theoretical capacity with a combined predicted queue of nearly 100 PCUs.
- In the PM Peak Hour, the predicted RFCs for all turning movements are within practical capacity with predicted queues of 1 to 3 PCUs.

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The junction requires improvement as it is significantly over theoretical capacity in the AM Peak Hour with a long queue predicted for Whitedown Lane.

8.2.6. Chawton Park Road / Whitedown Lane

Results for Scenario 1 at the Chawton Park Road/Whitedown Lane junction during the AM and PM Peak Hours are shown in Table 8-7.

Table 8-7 Chawton Park Road / Whitedown Lane Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Chawton Park Road to Whitedown Lane (N)	1.11	11	0.50	1
Chawton Park Road to Whitedown Lane (S)	1.11	15	0.80	1
Whitedown Lane (N)	0.43	2	0.85	9

- In the AM Peak Hour, the predicted RFCs for the turns from Chawton Park Road are over theoretical capacity with a predicted total queue of 26 PCUs.
- In the PM Peak Hour, the predicted RFC for the right turn from Whitedown Lane north is at practical capacity.

This is a significant worsening in junction performance compared to the existing situation when all arms were predicted to be within capacity. This junction requires improvement as it is over theoretical capacity in the AM Peak Hour and at practical capacity in the PM Peak Hour. It should be noted that this junction has been assessed in isolation and not in conjunction with the nearby Butts Bridge junction.

8.2.7. Montecchio Way / London Road

Results for Scenario 1 at the Montecchio Way / London Road junction during the AM and PM Peak Hours are shown in Table 8-8.

Table 8-8 Montecchio Way / London Road Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Montecchio Way Ahead Right Left	85.2	12.3	64.6	11.0
Garstons Way Left Ahead Right	22.2	1.0	12.9	0.6
London Road (West) Left Ahead Right	87.3	17.2	78.3	14.1
London Road (Holybourne) Right Left Ahead	90.7	13.7	81.5	10.1

- In the AM Peak Hour, the predicted DoS for the two turns from London Road are over practical capacity with predicted queues of 14 and 17 PCUs.
- In the PM Peak Hour, the predicted DoS for all turning movements are within practical capacity.

The junction does not need improvement for Scenario 1 although it is operating marginally over practical capacity during the AM Peak Hour. It may be possible to improve the performance of this junction by adjusting and refining the signal staging and timings.

8.2.8. Wilsom Road / Windmill Hill

Results for Scenario 1 at the Wilsom Road / Windmill Hill priority junction during the AM and PM Peak Hours are shown in Table 8-9.

Table 8-9 Wilsom Road / Windmill Hill Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Windmill Road to Wilsom Road (N)	0.08	0.08	0.02	0.02
Windmill Road to Wilsom Road (S)	0.29	0.40	0.26	0.35
Wilsom Road (N)	0.01	0.01	0.07	0.07

- In both the AM peak and PM Peak Hours, there are no issues predicted at the junction and it therefore does not require improvement in this scenario.

8.2.9. Normandy Street / Orchard Lane

Results for Scenario 1 at the Normandy Street/Orchard Lane junction during the AM and PM Peak Hours are shown in Table 8-10.

Table 8-10 Normandy Street / Orchard Lane Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Normandy Street (East)	1.01	22	1.11	52
Orchard Lane	1.36	117	1.18	54
Normandy Street (West)	0.96	11	0.71	2

- In the AM Peak Hour, the predicted RFC is over practical capacity on Normandy Street (West), and over theoretical capacity on Normandy Street (East) and Orchard Lane. Predicted queues on Orchard Lane reach 117 PCUs;
- In the PM Peak Hour, the predicted RFCs are over theoretical capacity on Normandy Street (East) and Orchard Lane with long queues of approximately 52 and 54 PCUs respectively.

The predicted results indicate the junction needs improvement however results should be examined with caution, as counter to the results predicted for the existing scenario, the junction was not observed on site to be a problem with no significant queues observed.

8.2.10. Vicarage Hill / Church Street

Results for Scenario 1 at the Vicarage Hill/Church Street junction during the AM and PM Peak Hours are shown in Table 8-11.

Table 8-11 Vicarage Hill / Church Street Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Church Street (South)	0.42	1	0.40	1
Vicarage Hill	0.64	2	0.67	2
Church Street (North)	0.62	2	0.54	1

- In both the AM Peak Hour and PM Peak Hour, there are no issues predicted at the junction with predicted queues of 1 or 2 PCUs on all approaches.

The junction does not require improvement as it operates well within capacity in both the AM and PM Peak Hours.

8.2.11. Draymans Way / Turk Street

Results for Scenario 1 at the Draymans Way / Turk Street junction during the AM and PM Peak Hours are shown in Table 8-12.

Table 8-12 Draymans Way / Turk Street Scenario 1 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Draymans Way (East)	0.52	1	0.70	2
Lower Turk Street	0.57	1	0.73	3
Draymans Way (West)	0.94	12	0.75	3
Turk Street	0.67	2	0.67	2

- In the AM Peak Hour, the predicted RFC for Drayman's Way (West) is over practical capacity with a predicted queue of 12 PCUs.
- In the PM Peak Hour, no issues are predicted at the junction as all predicted RFCs are within practical capacity and predicted queues are 2 or 3 PCUs on all approaches.

Although the Drayman's Way approach is predicted to be over practical capacity, predicted issues at this junction are restricted to this approach and the AM Peak Hour only and accordingly an improvement is not considered required. This also takes account of the fact that there is limited potential to improve this junction without land take.

8.2.12. Butts Bridge

Results for Scenario 1 at the Butts Bridge junction during the AM and PM Peak Hours are shown in Table 8-13. To aid interpretation of the results, the Selborne Road junction is the southern of the two roundabouts and the Butts Road junction is the northerly of the two roundabouts.

Table 8-13 Butts Bridge Scenario 1 Junction Capacity Assessment Results

Junction	Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
		RFC	Queue	RFC	Queue
Selborne Road Junction	Selborne Road	1.08	59	0.57	1
	Winchester Road	0.56	1	0.02	0
	Roundabout Link (South)	0.38	N/A	0.44	N/A
Butts Road Junction	Butts Road	0.93	10	1.10	47
	Roundabout Link (North)	1.00	N/A	0.73	N/A
	Whitedown Lane	1.74	249	1.66	250

Selborne Road Junction

- In the AM Peak Hour, Selborne Road is predicted to be over theoretical capacity and a predicted queue of 59 PCUs.
- In the PM Peak Hour, there are no issues predicted at this junction.

Butts Road Junction

- In the AM Peak Hour, the predicted RFCs for all three approaches are over either practical or theoretical capacity with a long predicted queue of more than 200 PCUs on Whitedown Lane which will block back through the nearby Chawton Park Road junction.
- In the PM Peak Hour, Whitedown Lane and Butts Road are predicted to be over theoretical capacity with long queues predicted of over 200 PCUs on Whitedown Lane which will block back through the nearby Chawton Park Road junction.

The Butts Bridge junction as a whole needs improvement as it is significantly over theoretical capacity in both peaks. It is predicted to be the most over capacity of all the junctions assessed and therefore requires a major scheme or solution. As mentioned with reference to the results of the existing situation, it should be noted that due to limitations of assessing the Butts Bridge junction as a linked roundabout in Junctions 8 it is only possible to measure volume on the internal links between the two roundabouts and therefore only RFC is reported.

8.3. Summary

Based on the summary and detailed junction capacity results described above it is clear that mitigation measures are required at the following junctions in order to cater for the traffic generated by Scenario 1 Full Development:

- Whitedown Lane / Basingstoke Road.
- Chawton Park Road / Whitedown Lane.
- Paper Mill Lane / Wilsom Road / Mill Lane.
- Anstey Road / Anstey Lane.
- Montecchio Way / Mill Lane.

- Butts Bridge junction.

9. Scenario 2 – Full Development + 26% Traffic Assessment

9.1. Scenario 2 Junction Capacity Assessment - Results Summary

This section summarises the results from the junction capacity assessments undertaken with the Full Development scenario - equating to an additional 2100 dwellings in Alton. The trips associated with development outside Alton have also been taken into account. As with the Scenario 1 dwellings, the size and location of these developments has been informed by the SHLAA document as well as additional input from HCC and EHDC. The assessment examines the existing road network with no junction improvements. The link flows for Scenario 2 are shown in Table 9-1.

Table 9-1 Scenario 2 Link Flows - AM and PM Peak Hours

Road Name	Direction	Base	
		AM Peak Hour	PM Peak Hour
Whitedown Lane (South of Chawton Park Road)	Northbound	917	576
	Southbound	662	849
Whitedown Lane (South of Basingstoke Road)	Northbound	887	460
	Southbound	622	865
A339 (between Medstead Road and Whitedown Lane)	Northbound	684	480
	Southbound	532	579
Basingstoke Road (B3349) (between Whitedown Lane and New Odiham Road)	Eastbound	668	557
	Westbound	532	708
Selborne Road (between Butts Bridge and A31 junction)	Northbound	1443	1012
	Southbound	960	1110
Draymans Way	Eastbound	738	578
	Westbound	344	406
Butts Road	Eastbound	916	748
	Westbound	663	707
Anstey Road	Eastbound	886	692
	Westbound	707	763
London Road	Eastbound	651	590
	Westbound	603	689
Montecchio Way	Northbound	1087	889
	Southbound	930	940
New Odiham Road	Northbound	488	264
	Southbound	231	551
Old Odiham Road	Northbound	189	153
	Southbound	251	212
Wilsom Road	Northbound	733	402
	Southbound	509	618

The same twelve junctions and assessment criteria as was used in Section 4.3, has been used within this section for consistency. Figure 9-1 shows the Scenario 2 summary results plan for the AM Peak Hour and indicates that the following junctions are over theoretical capacity:

- **Whitedown Lane / Basingstoke Road.**
- **Chawton Park Road / Whitedown Lane.**
- **Normandy Street / Orchard Lane.**
- **Paper Mill Lane / Wilsom Road / Mill Lane.**
- **Anstey Road / Anstey Lane.**
- **Montecchio Way / Mill Lane.**
- **Butts Bridge junction.**

This represents a worsening in performance at several junctions across Alton when compared to the existing situation with seven junctions now exceeding capacity. These are the same seven that were over theoretical capacity in Scenario 1. Those which were over capacity previously are now forecast to be further over capacity.

Figure 9-2 shows the Scenario 2 summary of the PM Peak Hour (17:00 – 18:00) and indicates that there are not as many capacity issues predicted for this time period when compared with the AM Peak Hour. However, there are still five junctions that are forecast to be over theoretical capacity. These junctions are shown below with those that were predicted to be over theoretical capacity in Scenario 1 shown in bold:

- **Normandy Street / Orchard Lane.**
- **Montecchio Way / Mill Lane.**
- **Anstey Road / Anstey Lane.**
- Paper Mill Lane / Wilsom Road / Mill Lane.
- **Butts Bridge junction.**

This is one more junction than was over capacity in Scenario 1, with the Paper Mill Lane / Wilsom Road / Mill Lane junction now predicted to be significantly over capacity. A breakdown of the junction performance by approach during the AM and PM Peak Hours for Scenario 1 is included below.

Figure 9-1 Scenario 2 - Summary Junction Capacity Assessment Results - AM Peak Hour (08:00 - 09:00)

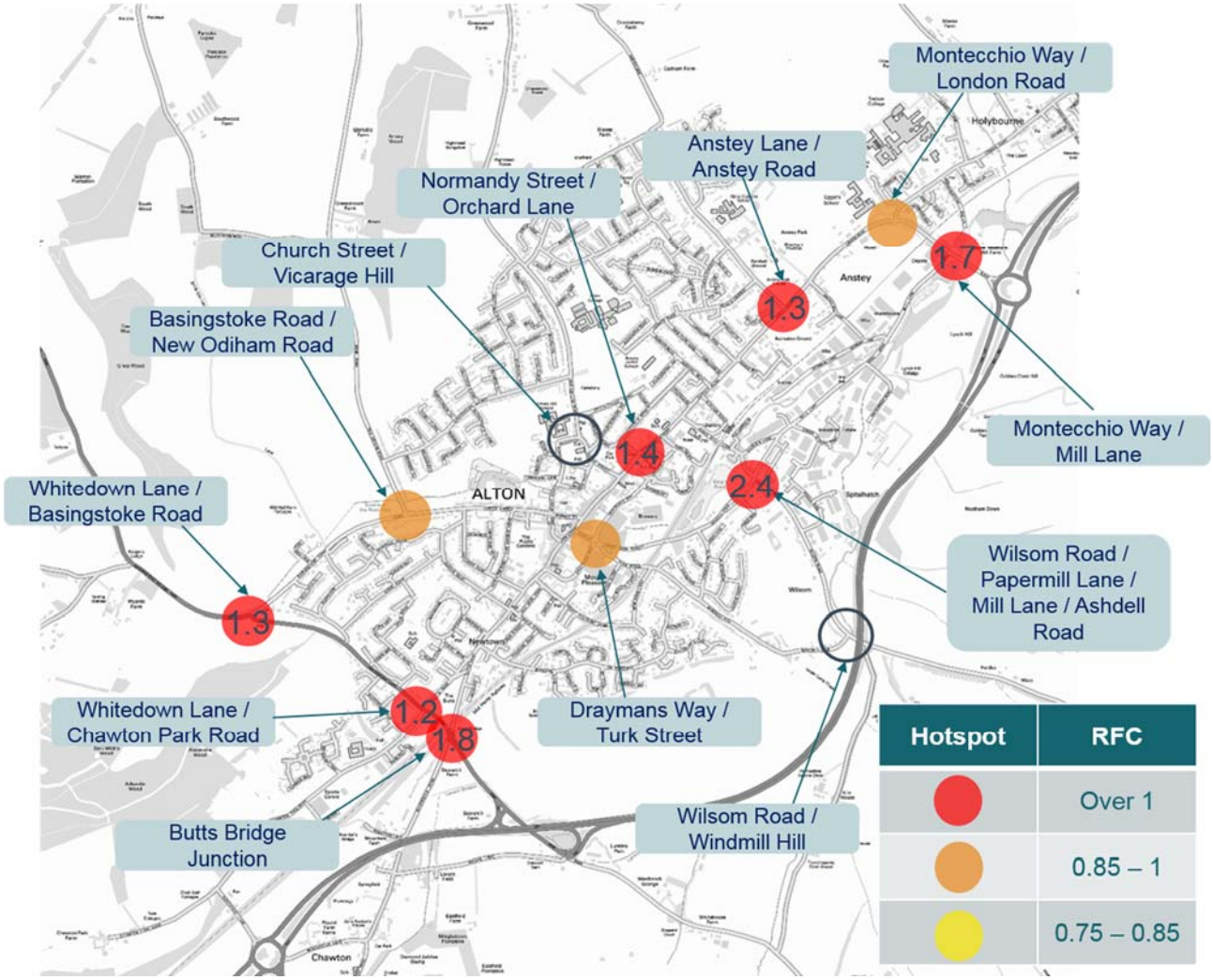
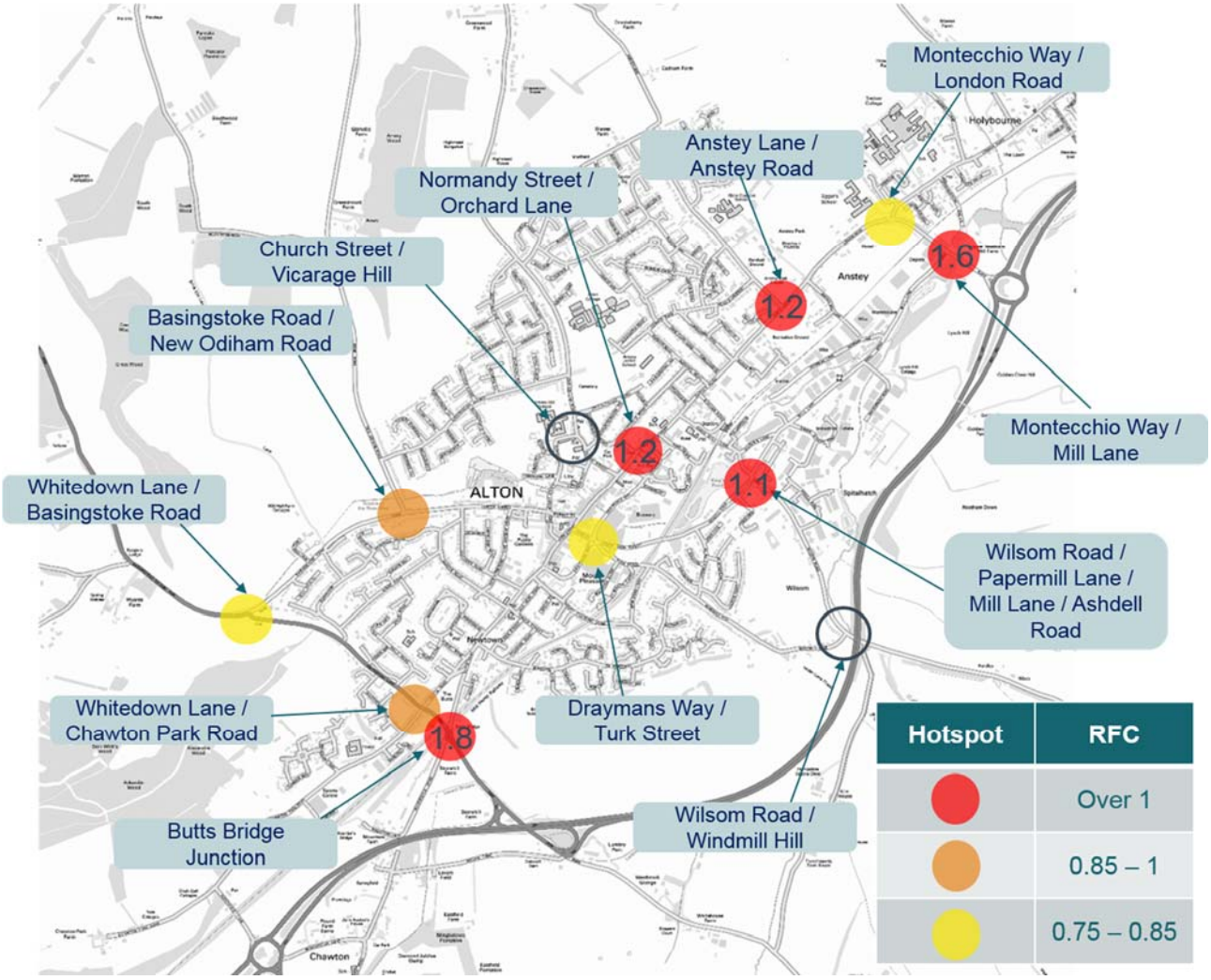


Figure 9-2 Scenario 2 - Summary Junction Capacity Assessment Results - PM Peak Hour (17:00 - 18:00)



9.2. Scenario 2 – Detailed Junction Capacity Assessment Results

9.2.1. Montecchio Way / Mill Lane

Results for Scenario 2 at the Montecchio Way / Mill Lane priority junction during the AM and PM Peak Hours are shown in Table 9-2.

Table 9-2 Montecchio Way / Mill Lane Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Mill Lane to Montecchio Way (N)	1.70	41	1.55	26
Mill Lane to Montecchio Way (S)	1.63	60	1.59	92
Montechhio Way (N) to Mill Lane	0.40	1	0.15	1

- In the AM Peak Hour, the predicted RFC for both movements from Mill Lane to Montecchio Way are significantly over theoretical capacity with a combined predicted queue of over 100 PCUs.
- In the PM Peak Hour, results are similar with predicted RFCs significantly over theoretically capacity for both Mill Lane turning movements with a combined predicted queue of over 120 PCUs.

The junction is significantly over theoretical capacity on Mill Lane during both the AM and PM Peak Hours with long predicted queues and therefore requires improvement.

9.2.2. Paper Mill Lane / Wilsom Road / Mill Lane

Results for Scenario 2 at the Paper Mill Lane / Wilsom Road / Mill Lane junction during the AM and PM Peak Hours are shown in Table 9-3.

Table 9-3 Paper Mill Lane / Wilsom Road / Mill Lane Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
From Ashdell Road	2.47	107	0.63	2
Wilsom Road (South)	0.95	15	0.51	2
From Mill Lane	0.82	4	1.07	27
Paper Mill Lane (North)	0.47	2	0.67	3

- In the AM Peak Hour, the RFC for Ashdell Road is predicted to be significantly over theoretical capacity with a predicted queue of over 100 PCUs. Wilsom Road (south) is also predicted to be approaching theoretical capacity.
- In the PM Peak Hour, the RFC for Mill Lane is predicted to be well over theoretical capacity with a predicted queue of 27 PCUs.

The junction is predicted to be significantly over capacity during both the AM Peak Hour and over capacity in the PM Peak Hour with a long queue predicted on Ashdell Road in the AM Peak Hour. As the layout is sub-standard, small increases in flows significantly exacerbate delays when compared to the existing and Scenario 1 assessments.

9.2.3. Anstey Lane / Anstey Road

Results for Scenario 2 at the Anstey Lane / Anstey Road junction during the AM and PM Peak Hours are shown in Table 9-4.

Table 9-4 Anstey Lane / Anstey Road Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Anstey Lane	1.32	79	1.28	47
Anstey Road (East) Right Turn	0.71	3	0.99	21

- In the AM Peak Hour, the RFC is predicted to be over theoretical capacity on Anstey Lane with a predicted queue of 79 PCUs.
- In the PM Peak Hour, results are similar with the RFC predicted to be over theoretical capacity on Anstey Lane with a predicted queue of 47 vehicles. The right turn from Anstey road (east) is also predicted to be at theoretical capacity with a predicted queue of over 20 PCUs.

The junction requires improvement as Anstey Lane is predicted to be significantly over theoretical capacity during the AM Peak Hour and predicted to be at theoretical capacity in the PM Peak Hour. In the latter the predicted queue on Anstey Road (east) for the right turn would block westbound straight ahead traffic.

9.2.4. Basingstoke Road / New Odiham Road

Results for Scenario 2 at the Basingstoke Road / New Odiham Road junction during the AM and PM Peak Hours are shown in Table 9-5.

Table 9-5 Basingstoke Road / New Odiham Road Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Basingstoke Road (E)	0.45	1	0.68	2
Basingstoke Road (W)	0.84	5	0.90	7
New Odiham Road	0.96	12	1.10	40

- In the AM Peak Hour, New Odiham Road is predicted to be approaching practical capacity with a predicted queue of 12 PCUs.
- In the PM Peak Hour, New Odiham Road is predicted to be over theoretical capacity with a predicted queue of 40 PCUs.

The junction requires improvement as it is approaching theoretical capacity in the AM Peak Hour and is over theoretical capacity in the PM Peak Hour.

9.2.5. Basingstoke Road / Whitedown Lane

Results for Scenario 2 at the Basingstoke Road / Whitedown Lane junction during the AM and PM Peak Hours are shown in Table 9-6.

Table 9-6 Basingstoke Road / Whitedown Lane Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Whitedown Lane to A339	1.32	76	0.60	2
Whitedown Lane to Basingstoke Road	1.32	61	0.83	4
A339 to Whitedown Lane	0.51	1	0.80	4

- In the AM Peak Hour, Whitedown Lane is predicted to be over theoretical capacity for both turns with a combined predicted queue of over 130 PCUs.
- In the PM Peak Hours, all movements are predicted to be within practical capacity.

The junction is in need of improvement as Whitedown Lane is predicted to be significantly over capacity during the AM Peak Hour.

9.2.6. Chawton Park Road / Whitedown Lane

Results for Scenario 2 at the Chawton Park Road / Whitedown Lane priority junction during the AM and PM Peak Hours are shown in Table 9-7.

Table 9-7 Chawton Park Road / Whitedown Lane Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Chawton Park Road to Whitedown Lane (N)	1.23	15	0.74	2
Chawton Park Road to Whitedown Lane (S)	1.22	22	0.88	5
Whitedown Lane (N)	0.46	2	0.91	13

- In the AM Peak Hour, the Chawton Park Road to Whitedown Lane turns are predicted to be over theoretical capacity with a combined predicted queue of 37 PCUs.

- In the PM Peak Hour, the Chawton Park Road to Whitedown Lane (south) right turn and the Whitedown Lane (north) right turn are predicted to be are over practical capacity .

The junction requires improvement as Chawton Park Road is significantly over theoretical capacity during the AM Peak Hour and is over practical capacity during the PM Peak Hour. It should be noted that the operation of this junction is influenced by traffic conditions at the adjacent Butts Bridge junction. The interaction between this junction and Butts Bridge has not been assessed due to the limitation of the models used in the study, which is a function of the stage of the project and the budget available. A micro-simulation model is therefore recommended to be undertaken covering these junctions for any future work on potential solutions.

9.2.7. Montecchio Way / London Road

Results for Scenario 2 at the Montecchio Way / London Road junction during the AM and PM Peak Hours are shown in Table 9-8.

Table 9-8 Montecchio Way / London Road Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Montecchio Way Ahead Right Left	87.5	13	68.1	11
Garstons Way Left Ahead Right	22.2	1	12.9	1
London Road (West) Left Ahead Right	88.4	18	80.0	15
London Road (Holybourne) Right Left Ahead	92.3	15	83.5	11

- In the AM Peak Hour, three of the four approaches to the junction are predicted to be over practical capacity with predicted queues ranging between 13 and 18 PCUs.
- In the PM Peak Hour, all predicted RFCs are within practical capacity.

The junction does not require improvement as it is predicted to operate only slightly over practical capacity during the AM Peak Hour and is predicted to be under capacity during the PM Peak Hour. It may be possible to improve the performance of this junction with this scenario by adjusting and refining the signal staging and timings.

9.2.8. Wilsom Road / Windmill Hill

Results for Scenario 2 at the Wilsom Road / Windmill Hill priority junction during the AM and PM Peak Hours are shown in Table 9-9.

Table 9-9 Wilsom Road / Windmill Hill Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Windmill Road to Wilsom Road (N)	0.08	0.08	0.02	0.02
Windmill Road to Wilsom Road (S)	0.30	0.43	0.27	0.37
Wilsom Road (N)	0.01	0.01	0.07	0.07

- In both the AM Peak Hour and PM Peak Hour, there are no issues predicted at the junction and accordingly the junction operates with significant spare capacity and does not require improvement.

9.2.9. Normandy Street / Orchard Lane

Results for Scenario 2 at the Normandy Street/Orchard Lane priority junction during the AM and PM Peak Hours are shown in Table 9-10.

Table 9-10 Normandy Street / Orchard Lane Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Normandy Street (East)	1.04	28	1.11	52
Orchard Lane	1.40	137	1.20	61
Normandy Street (West)	0.97	13	0.72	3

- In the AM Peak Hour, the Normandy Street and Orchard Lane approaches are predicted to be over theoretical capacity with predicted queues of 28 and 137 PCUs respectively.
- In the PM Peak Hour, the Normandy Street and Orchard Lane approaches are predicted to be over theoretical capacity with predicted queues of 52 and 61 PCUs respectively.

The results imply improvement is required as the junction as it is predicted to be over capacity in the AM and PM Peak Hours. However, the results for the existing situation were counter-intuitive indicating some capacity problems when none were observed as part of site investigations. Accordingly, performance is predicted to be under estimated (demand over estimated / capacity under estimated) and in fact this junction may not necessarily need improvement.

9.2.10. Vicarage Hill / Church Street

Results for Scenario 2 at the Vicarage Hill / Church Street priority junction during the AM and PM peaks are shown in Table 9-11.

Table 9-11 Vicarage Hill / Church Street Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Church Street (South)	0.43	1	0.40	1
Vicarage Hill	0.65	2	0.67	2
Church Street (North)	0.64	2	0.54	1

- In both the AM Peak Hour and PM Peak Hour there are no predicted issues at this junction and therefore the junction does not require improvement.

9.2.11. Draymans Way / Turk Street

Results for Scenario 2 at the Draymans Way / Turk Street priority junction during the AM and PM Peak Hours are shown in Table 9-12.

Table 9-12 Draymans Way / Turk Street Scenario 2 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Draymans Way (East)	0.52	1	0.72	3
Lower Turk Street	0.63	2	0.77	3
Draymans Way (West)	0.98	18	0.82	4
Turk Street	0.60	1	0.77	3

- In the AM Peak Hour, Draymans Way (west) is predicted to be approaching theoretical capacity with a predicted queue of 18 PCUs.

- In PM peak, there are no issues predicted for this junction although Drayman's Way (west) is predicted to be approaching practical capacity.

Although the Drayman's Way approach is predicted to be over practical capacity, predicted issues at this junction are restricted to this approach and the AM Peak Hour only and accordingly an improvement is not considered required. This also takes account of the fact that there is limited potential to improve this junction without land take.

9.2.12. Butts Bridge

Results for Scenario 2 at the Butts Bridge junction during the AM and PM Peak Hours are shown in Table 9-13. To aid interpretation of the results, the Selborne Road junction is the southern of the two roundabouts and the Butts Road junction is the northerly of the two roundabouts.

Table 9-13 Butts Bridge Scenario 2 Junction Capacity Assessment Results

Junction	Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
		RFC	Queue	RFC	Queue
Selborne Road Junction	Selborne Road	1.14	102	0.62	2
	Winchester Road	0.61	1	0.02	0
	Roundabout Link	0.39	0	0.44	0
Butts Road Junction	Butts Road	1.00	19	1.12	52
	Roundabout Link	1.00	0	0.79	0
	Whitedown Lane	1.78	296	1.85	330

Selborne Road Junction

- In the AM Peak Hour, Selborne Road is predicted to be over theoretical capacity with a predicted queue of 102 PCUs.
- In the PM Peak Hour, there are no predicted issues at this junction.

Butts Road Junction

- In the AM Peak Hour, all three approaches are predicted to be at or over theoretical capacity with very long queues predicted on Whitedown Lane which would block back through the nearby Chawton Park Road junction.
- In the PM Peak Hour, the Butts Road and Whitedown Lane approaches are predicted to be over theoretical capacity with very long queues predicted on Whitedown Lane which again would block back through the nearby Chawton Park Road junction.

The Butts Bridge junction as a whole needs improvement as it is significantly over theoretical capacity in both peak hours.

9.3. Summary

Based on the summary and detailed junction capacity results described above it is clear that mitigation measures are required at the following junctions in order to cater for the traffic generated by Scenario 2 Full Development + 26%:

- Whitedown Lane / Basingstoke Road.
- Chawton Park Road / Whitedown Lane.
- Paper Mill Lane / Wilsom Road / Mill Lane.
- Anstey Road / Anstey Lane.
- Basingstoke Road / New Odiham Road.
- Montecchio Way / Mill Lane.
- Butts Bridge junction.

10. Scenario 2 with Local Schemes

This section describes the results of junction capacity assessments of Scenario 2, the Full Development scenario + 26% of additional residential units but with local improvement schemes in place at many of the junctions.

The performance of six junctions has been assessed as part of this section each of which have proposed layouts. Each of these junctions were identified as requiring improvement because they were at or exceeding theoretical or practical capacity with Scenario 2 forecast traffic levels. The proposed layouts for five of the six junctions have been derived from proposals submitted by developers as part of planning applications for various sites in Alton. These layouts would be implemented by the developer as part of any grant of planning permission.

For the purpose of this study the developer's proposed signalised layout for the Chawton Park Road / Whitedown Lane junction, as put forward as part of the South Alton Development, has been used for the junction assessment. However it must be noted that the signalisation scheme put forward has not been approved by Hampshire County Council as, at this stage, it is not deemed to be an acceptable solution. Instead negotiations are underway for the developer to provide Hampshire County Council with the funding to investigate and deliver a solution for the junction.

The layout for the other junction is the proposed roundabout at Basingstoke Road / Whitedown Lane and is a local scheme put forward by Atkins as part of this study. The existing junction here was predicted to exceed theoretical capacity in the AM Peak Hour and therefore a scheme has been proposed. A list of these local schemes and the corresponding planning application where appropriate is presented in Table 10-1. Although the Butts Bridge junction was predicted to be overcapacity with the Scenario 2 forecast traffic flows it is not covered in this section because a 'strategic scheme' has been developed for it and accordingly it is covered in Section 13.

Table 10-1 Proposed Local Schemes

Junction	Scheme	Related Planning Application / Source
Montecchio Way / Mill Lane	Signalisation	Tesco
Paper Mill Lane / Wilsom Road / Mill Lane	Double mini-roundabout	Tesco
Anstey Lane / Anstey Road	Mini-roundabout	Cadnam Farm
Basingstoke Road / New Odiham Road	Priority junction	Will Hall Farm
Chawton Park Road / Whitedown Lane*	Signalisation	South Alton Development
Basingstoke Road / Whitedown Lane	Roundabout	Atkins

*HCC to review scheme

The designs put forward for each scheme have been included within Appendix C. In accordance with the Brief for this study, a design has not yet been developed for the proposed Basingstoke Road / Whitedown Lane junction although a basic junction layout has been assumed in order to allow the capacity of the proposed junction to be assessed.

10.1. Scenario 2 with Local Schemes – Junction capacity Assessment Results Summary

As with the Scenario 2 assessment, this scenario examines the full development flows plus 26% but with the proposed local schemes in place. The distribution of existing and future development related traffic has been maintained and is consistent with the Scenario 2 traffic assessment.

Figure 10-1 and 10-2 show the Scenario 2 summary results plan for the AM Peak Hour and PM Peak Hour respectively. The figures highlight the improvements in junction performance brought about by the Local Schemes but they do not provide sufficient congestion relief for all junctions within Alton to allow them to perform within capacity. Junctions predicted as over theoretical capacity in the AM Peak Hour are (although those in bold are only at or just over theoretical capacity):

- Normandy Street / Orchard Lane.
- Basingstoke Road / New Odiham Road.
- **Anstey Road / Anstey Lane.**
- **Montecchio Way / Mill Lane.**
- Butts Bridge junction.

Junctions showing as over theoretical capacity in the PM Peak Hour are:

- Basingstoke Road / New Odiham Road.
- Normandy Street / Orchard Lane.
- Butts Bridge junction.

The local schemes do provide improvement compared to Scenario 2 and improvements have been predicted at.

- Whitedown Lane / Basingstoke Road.
- Chawton Park Road / Whitedown Lane.
- Anstey Road / Anstey Lane.
- Montecchio Way / Mill Lane.
- Paper Mill Lane / Wilsom Road / Mill Lane.

The assessment at Basingstoke Road / New Odiham Road indicates that the junction performance worsens with the new layout in place and accordingly the new layout should not be implemented. Similarly, the proposed developer layout for the Chawton Park Road / Whitedown Lane junction is not approved by HCC for implementation. A breakdown of the junction performance by approach during the AM and PM Peak Hours for Scenario 2 with the local schemes in place is included below.

Figure 10-1 Scenario 2 with Local Schemes - Summary Junction Assessment Results - AM Peak Hour (08:00 - 09:00)

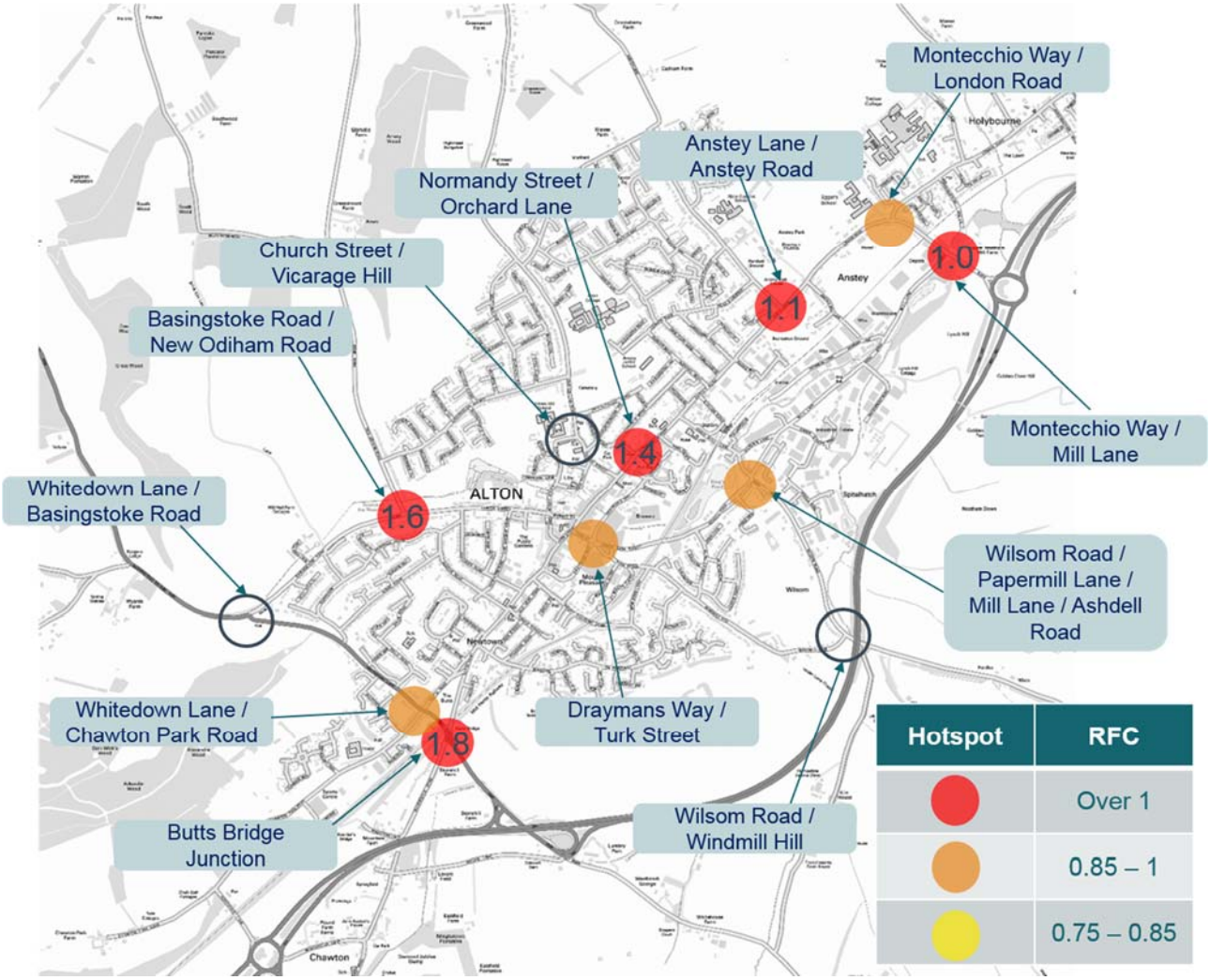
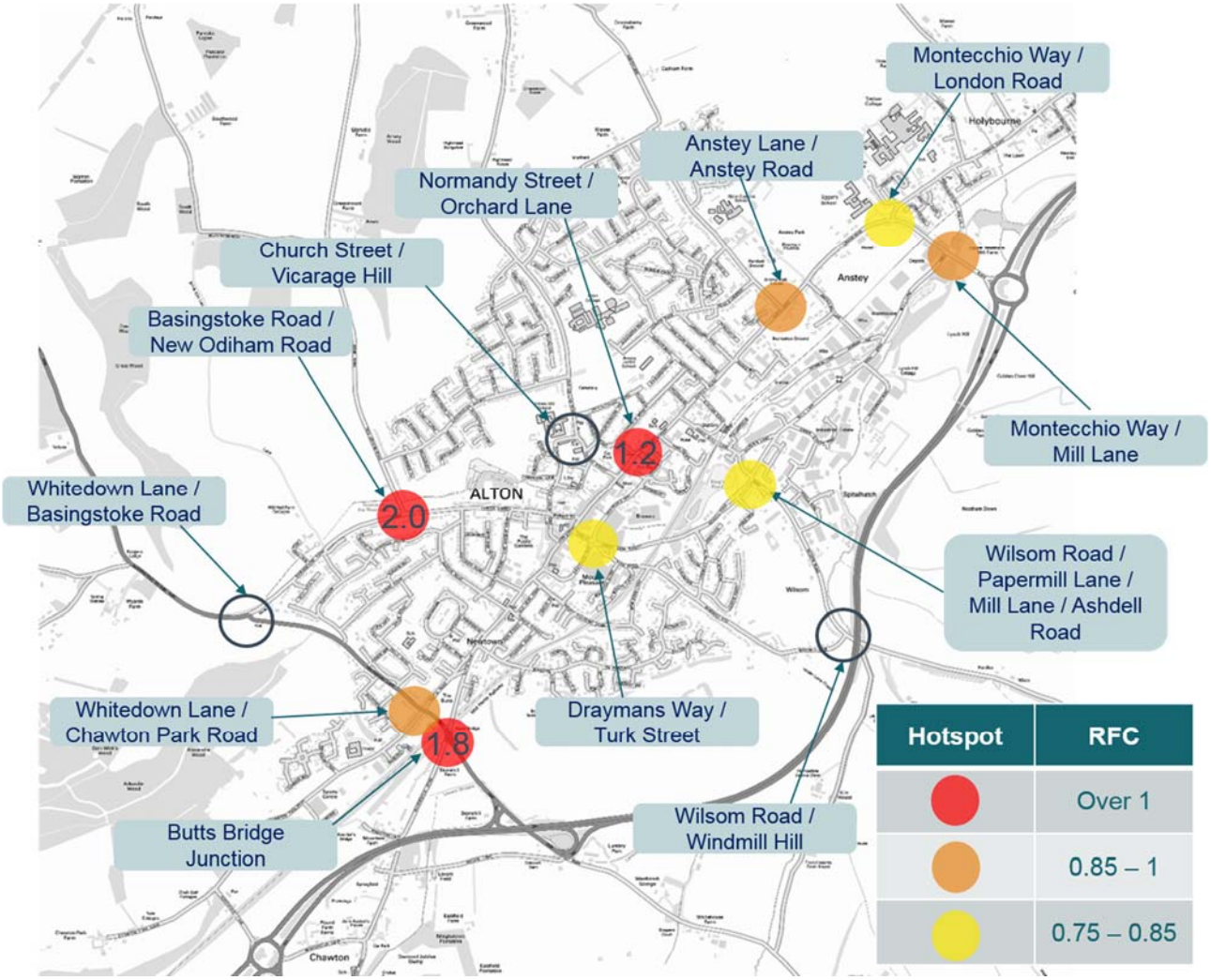


Figure 10-2 Scenario 2 with Local Schemes - Summary Junction Assessment Results - PM Peak Hour (17:00 - 18:00)



10.2. Scenario 2 with Local Schemes – Detailed Junction Capacity Assessment Results

10.2.1. Montecchio Way / Mill Lane – Proposed Signalised Junction

Results for Scenario 2 with local schemes at the Montecchio Way / Mill Lane junction during the AM and PM Peak Hour are shown in Table 10-2. These results take into account the conversion of the junction from a priority to a signalised junction.

Table 10-2 Montecchio Way / Mill Lane Scenario 2 with Local Schemes Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Montecchio Way (north) Ahead Right	57.2	9	49.9	8
Mill Lane Right Left	98.3	16	94.9	17
Montecchio Way (south) Ahead Left	101.3	48	95.4	29

- In the AM Peak Hour, Montecchio Way (south) is predicted to be over theoretical capacity and Mill Lane is predicted to approaching theoretical capacity. Predicted queues for these two movements are 48 and 16 PCUs respectively. The predicted queue for Montecchio Way (south) will occasionally block back into A31 / Montecchio Way roundabout which is approximately 230 metres to the south as the approximate length of the mean maximum queue is around 290 metres. It should be noted that the predicted queue is the average maximum for the worst 15 minutes of the AM Peak Hour and accordingly whilst there is a risk of blocking back it will not occur throughout the entire peak hour. To mitigate against this, the signal timings could be adjusted to provide Montecchio Way with more 'green time' and reduce the length of the queue although this would reduce the 'green time' for Mill Lane and increase the predicted queue there.
- In the PM Peak Hour, Montecchio Way (south) and Mill Lane are predicted to be over theoretical capacity with predicted queues of 29 PCUs (174 metres) and 17 PCUs (102 metres) respectively. These mean maximum queues could be accommodated without affecting adjacent major junctions.

The proposed change from a priority junction to a signalised junction is predicted to improve performance although the proposed junction is predicted to be marginally over theoretical capacity in the AM Peak Hour and approaching theoretical capacity in the PM Peak Hour. The predicted mean maximum queue on Montecchio Way (south) in the AM Peak Hour is likely to block back to the A31 roundabout junction in the AM Peak Hour which could be mitigated by widening the northbound approach to two lanes to increase storage and/or adjusting signal timings as described above.

10.2.2. Paper Mill Lane / Wilsom Road / Mill Lane – Proposed Double Mini-Roundabout Junction

Results for Scenario 2 with local schemes at the Paper Mill Lane / Wilsom Road / Mill Lane junction during the AM and PM Peak Hours are shown in Table 10-3.

Table 10-3 Paper Mill Lane / Wilsom Road / Mill Lane Scenario 2 with Schemes Junction Capacity Assessment Results

Junction	Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
		RFC	Queue	RFC	Queue
Southern mini roundabout	Link to Northern mini roundabout	0.56	1	0.64	2
	Wilsom Road	0.96	13	0.77	3
	Ashdell Road	0.46	1	0.28	1
Northern mini roundabout	Paper Mill Lane (North)	0.82	4	0.59	1
	Mill Lane	0.38	1	0.55	1
	Link to Southern mini roundabout	0.87	6	0.58	1

Southern Mini Roundabout

- In the AM Peak Hour, Wilsom Road is predicted to be approaching theoretical capacity with a predicted queue of 13 PCUs.
- In the PM Peak Hour, there are no predicted issues at the junction.

Northern Mini Roundabout

- In the AM Peak Hour, all approaches are predicted to be within practical capacity,
- In the PM Peak Hour, all approaches are also predicted to be within practical capacity.

The proposed junction improvement is predicted to significantly improve performance to the extent that the proposed junction is predicted to be under theoretical capacity (as opposed to significantly over capacity) with the Scenario 2.

10.2.3. Anstey Lane / Anstey Road – Proposed Roundabout Junction

Results for Scenario 2 with local schemes at the Anstey Lane / Anstey Road proposed roundabout junction during the AM and PM Peak Hours are shown in Table 10-4.

Table 10-4 Anstey Lane / Anstey Road Scenario 2 with Schemes Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Anstey Road (West)	0.75	3	0.94	11
Anstey Road (East)	0.64	2	0.79	4
Anstey Lane	1.07	29	0.83	4

- In the AM Peak Hour, the Anstey Lane is predicted to be over theoretical capacity with a predicted queue of 29 PCUs.
- In the PM Peak Hour, the right turn from Anstey Road (West) is predicted to be approaching theoretical capacity with a predicted queue of 11 PCUs.

The proposed roundabout significantly improves predicted performance although it is predicted to still be over theoretical capacity on Anstey Lane during the AM peak Hour and over practical capacity during the PM Peak Hour.

10.2.4. Basingstoke Road / New Odiham Road – Proposed Priority Junction

Results for Scenario 2 with local schemes at the Basingstoke Road / New Odiham Road priority junction during the AM and PM peaks are shown in Table 10-5.

Table 10-5 Basingstoke Road / New Odiham Road Scenario 2 with Schemes Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Basingstoke Road (E)	1.58	157	2.06	305
Basingstoke Road (W)	0.42	1	0.59	2

- In the AM Peak Hour, Basingstoke Road (east) is predicted to be significantly over capacity with a predicted queue of 157 PCUs.
- In the PM Peak Hour, Basingstoke Road (east) is predicted to be significantly over capacity with a predicted queue of over 300 PCUs.

The proposed change to a priority junction is predicted to significantly worsen junction performance and does not appear to be well suited to catering for the traffic patterns generated by Scenario 2, as performance is worse than the existing junction. It is not recommended that this design change is implemented, thus keeping development related funds for a longer term improvement such as a higher capacity roundabout.

10.2.5. Basingstoke Road / Whitedown Lane – Proposed Roundabout Junction

Results for Scenario 2 with local schemes at the Basingstoke Road / Whitedown Lane during the AM and PM Peak Hours are shown in Table 10-6. To adhere to appropriate standards and to reach an appropriate alignment, the junction has been assessed as a conventional roundabout. The roundabout has an inscribed circle diameter of 50m that encroaches onto third party land outside of the highway boundary. A sketch of the proposed junction is included in Appendix C.

Table 10-6 Basingstoke Road / Whitedown Lane Scenario 2 with Schemes Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Whitedown Lane	0.62	2	0.33	1
Basingstoke Road (W)	0.38	1	0.38	1
Basingstoke Road (E)	0.39	1	0.53	1

- In the AM peak, all approaches are predicted to be within practical capacity.
- In the PM peak, all approaches are predicted to be within practical capacity.

The proposal for a roundabout at the junction is predicted to perform significantly better than the existing priority junction and is able to cater for the traffic associated with Scenario 2.

10.2.6. Chawton Park Road / Whitedown Lane – Proposed Signalised Junction

Results for Scenario 2 with local schemes at the Chawton Park Road/Whitedown Lane priority junction during the AM and PM peaks are shown in Table 10-7.

Table 10-7 Chawton Park Road / Whitedown Lane Scenario 2 with Schemes Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Whitedown Lane (S) Left Ahead	95.5%	25	66.2%	11
Whitedown Lane (N) Right Ahead	83.2%	11	87.3%	18
Chawton Park Road Left Right	94.5%	12	87.9%	7

- In the AM Peak Hour, Whitedown Lane (north) is predicted to be under theoretical capacity with a predicted queue of 11 PCUs whilst Whitedown Lane (south) and Chawton Park Road are both predicted to be over practical capacity and approaching theoretical capacity with predicted queues of 25 and 12 PCUs respectively. The predicted queues on Whitedown Lane (south) is approximately 150 metres in length during the AM Peak Hour and is likely to block back to the Butts Bridge junction occasionally during the worst fifteen minutes during this peak hour.
- In the PM Peak Hour, the Whitedown Lane (N) and Chawton Park Road are predicted to be marginally over practical capacity with predicted queues of 18 and 7 PCUs respectively.

The proposed signalisation of the junction which is not agreed by HCC does improve the performance predicted in the AM Peak Hour to the extent where it operates over practical capacity but is approaching theoretical capacity. However, the predicted mean maximum queue for the worst fifteen minutes in this hour is likely to block back to the Butts Bridge junction. In the PM Peak Hour, the junction is predicted to operate slightly over practical capacity. In order to mitigate against the queues blocking back to the Butts Bridge junction, there is the potential to adjust the signal timings to allow more green time for the Whitedown Lane northbound arm although this would be to the detriment of the other approaches particularly Chawton Park Road which is also a bus route. The interaction between this junction and Butts Bridge has not been assessed due to the limitation of the junction capacity assessments used in this study which is a function of the stage of the study and the budget available. It is therefore recommended that a micro-simulation model is developed to cover these junction for any further work on potential solutions. Also the developer's proposed signalised layout for the Chawton Park Road / Whitedown Lane junction, as put forward as part of the South Alton Development, has not been approved by Hampshire County Council and a further study is required to investigate a solution for the junction and its interaction with the Butts Bridge junction.

10.2.7. Other junction assessments

As there was no reassignment of trips with these local schemes in place, all remaining junction assessments remain the same as those presented in Section 9.2.

11. Strategic Schemes

This section introduces and describes four strategic schemes that were considered as part of this study, and describes how the corresponding construction costs have been estimated. The assessment of the performance of the strategic schemes in terms of their ability to cater for the travel demands generated by development is covered in subsequent sections of this report.

11.1. Overview

At the outset of the project four strategic schemes were identified for investigation as part of the study. These schemes are:

- Western Bypass.
- Butts Bridge
- A31/B3004 grade separated junction.Northern Link Road.

It was also discussed at the initial stakeholder meeting on 2nd July 2014 that consideration should be given to linking the Western Bypass and the Northern Link Road to relieve Basingstoke Road and potentially allow pedestrian and cycle improvements on Basingstoke Road. Consequently, a “Connector Road” was included in the investigation of strategic transport schemes. The location of the strategic schemes is presented in Figure 11-1.

Figure 11-1 Strategic Schemes

11.2. Concept Construction Cost Estimates

Initial construction cost estimates have been prepared for each strategic scheme commensurate to the stage of the design process. Given the designs are at concept stage a number of assumptions have been made in preparing the cost estimates. These assumptions, which apply to all the strategic schemes, are outlined below:

- A cost of £350 per m^2 has been assumed for road construction. This includes carriageway, drainage, footways and street lighting.
- Separate items have been included where appropriate for balancing ponds, bridges and junctions. It should be noted that the assumed cost of a new bridge under the Watercress Line is £5m, which includes an estimated payment of £4m to the Watercress Line and £1m for the construction of a new bridge.
- Preliminaries have been assumed as 30% of the construction cost.
- A contingency of 15% has been applied.
- The following have been excluded:
  - Land acquisition.
  - Diversion of statutory undertakers' equipment, including overhead cables.
  - Site supervision.
  - Design costs.
  - Consultations.
  - Optimism bias.
  - Inquiries.
  - Environmental Impact Assessment and environmental impact mitigation.

- Surveys.

The rates used to calculate the construction costs have been cross referenced to rates from a similar scheme in HCC where we have been able to view the tendered rates.

Each of the strategic schemes and their potential impact are detailed in turn over the following sections. The traffic flows associated with the assessment of Scenario 2 have been used as the starting point for the assessment of each strategic scheme. However both existing and development related traffic flow patterns have been adjusted to reflect the new routes or improved journey times that would be provided by each strategic scheme. The assessment of each strategic scheme also assumes that each of the local schemes described in the previous section are in place. The strategic schemes were not assessed in isolation ie without any of the local schemes.

12. Western Bypass Strategic Scheme

12.1. Scope of the Scheme

An overview of the proposed alignment for the Western Bypass, Northern Link Road and Connector Road is provided on drawing HCCATS-ATK-HGN-ABP-DR-D-0001. This drawing also indicates the extent of various land designations in the area which may be affected by the proposed scheme.

As this is a high level study a number of design assumptions have been made for the proposed Western Bypass and are detailed below. These assumptions have also been applied to the Northern Link Road and Connector Road dealt with in other sections of this report:

- Design speed of 70kph (40-45mph) and the design aims for 720m minimum radii for horizontal curves, however, 200m radii have been used in places to minimise land take and follow the edge of fields as closely as possible.
- 7.3m wide carriageway.
- 2.5m wide verges either side of the carriageway.
- 1 in 3 side slopes for the earthworks for cuttings / embankments to the side of the carriageway. This is the steepest recommended slopes for replanting trees.
- Maximum gradient of 8%, which is slightly higher than the desirable maximum (6%) recommended in the Design Manual for Roads and Bridges (DMRB) TD 9, but is deemed acceptable in hilly terrain to allow HGVs to manage without problems.
- The OS contour plan has been used to provide an approximation of the local topography and the likely earthworks required to implement a bypass based on the design assumptions.

As indicated on drawing HCCATS-ATK-HGN-ABP-DR-D-0001 there are a number of land designations along the alignment of the proposed Western Bypass, including:

- Site of Importance for Nature Conservation (SINC)
- Ancient Woodland Inventory – Replanted and Semi-Natural.
- Forestry Commission land.
- Deciduous Woodland Biodiversity Action Plan (BAP) Priority Habitat.
- National Inventory of Woodland and Trees.
- Lowland Calcareous Grassland BAP Priority Habitat.
- Committed housing developments.
- Common Land.

Two options for the Western Bypass have been prepared and are described below.

Option 1

The proposed design is detailed on drawing HCCATS-ATK-HGN-ABP-DR-D-0002 and the key features are as follows:

- The bypass is approximately 1.5km long.
- There is currently an arch bridge along Northfield Lane under the Watercress Line but it does not meet current design standards and two large vehicles are not be able to pass each other. Therefore, it is proposed to close the existing Northfield Lane connection onto the A31 / A32 roundabout and create a new link from the roundabout which will form the Western Bypass.
- New bridge under the Watercress Line.
- Connection between the new Western Bypass and Northfield Lane to provide access to Northfield Lane and Chawton Park Road.
- New bridge over Chawton Park Road.
- New conventional roundabout at the Western Bypass / Whitedown Lane junction.

- Replacement of the existing priority junction at Whitedown Lane / Basingstoke Road with a conventional roundabout. One arm of this roundabout could form part of the Connector Road towards Old Odiham Road or a possible Northern Link Road.

The alignment has been designed to skirt most of the ancient woodland owned by Forestry Commission although it is routed through a small section of the Forestry Commission land. This alignment avoids a deep cutting through the middle of the wooded area but the design results in a cutting in the grassland, which is around 14m deep and 110m wide at the top of the cutting, to tie into existing levels. This option includes a bridge under the railway and a bridge over Chawton Park Road. However, with the limited contour information available from the OS mapping at this stage of the design process it is not clear if it is achievable to implement a road underneath the railway and then over the Chawton Park Road with acceptable clearances. This would require further investigation in the later stages of the design process.

The proposed alignment passes through the following:

- Ancient Woodland Inventory – Replanted and Semi-Natural.
- Forestry Commission land.
- Deciduous Woodland Biodiversity Action Plan (BAP) Priority Habitat.
- National Inventory of Woodland and Trees.
- Lowland Calcareous Grassland BAP Priority Habitat.
- Committed housing developments.

Option 2

The proposed design is detailed on drawing HCCATS-ATK-HGN-ABP-DR-D-0003 and the key features are as follows:

- The bypass is approximately 1.4km long.
- As with Option 1 it is proposed to close the existing Northfield Lane connection onto the A31 / A32 roundabout and create a new link from the roundabout which will form the Western Bypass.
- New bridge under the Watercress Line.
- New conventional roundabout at the junction with Chawton Park Road, which will provide access to Northfield Lane.
- Replacement of the existing priority junction at Whitedown Lane / Basingstoke Road with a conventional roundabout. One arm of this roundabout could form part of the Connector Road towards Old Odiham Road or a possible Northern Link Road.

The alignment has been designed to provide a direct link between the A31 and the A339 Basingstoke Road. As a result it is routed through the centre of the ancient woodland and results in a cutting that is around 14m deep and 130m wide at the top of the cutting, to tie into existing levels.

The proposed alignment passes through the following:

- Site of Importance for Nature Conservation (SINC).
- Ancient Woodland Inventory – Replanted and Semi-Natural.
- Forestry Commission land.
- Deciduous Woodland Biodiversity Action Plan (BAP) Priority Habitat.
- National Inventory of Woodland and Trees.
- Lowland Calcareous Grassland BAP Priority Habitat.
- Committed housing developments.
-

12.1.1. Estimated Implementation Costs

The estimated construction costs for the Western Bypass proposed options are summarised below. At a presentation to stakeholders on 11th November 2014 the possibility of revising the assumption on the gradient of the slopes of the cuttings to the side of the new carriageway from 1 in 3 slopes to 1 in 1 slopes was discussed to understand the possible cost saving. Consequently, two construction cost estimates have been prepared, as shown in Table 12-1. It should be noted that 1 in 1 slopes are not recommended if replanting is required.

Table 12-1 Western Bypass Cost Estimates

Option	Estimated Cost (1 in 3 slopes for cuttings)	Estimated Cost (1 in 1 slopes for cuttings)
1	£50m-£55m	£40m-£45m
2	£45m-£55m	£35m-£40m

12.1.2. Traffic Assessment Results

With the implementation of a Western Bypass scheme, it is forecast that traffic within Alton would redistribute across the network as a result. The following assumptions have been made:

- There would be a direct connection to the bypass from the Treloar development.
- South west bound trips from development sites to the north of Alton (for example Will Hall Farm, Cadnam Farm and others) redistribute via the Western Bypass and are therefore removed from Whitedown Lane and subsequently the Butts Bridge junction.
- 45% of the existing flows on Whitedown Road move to the Western Bypass. This proportion has been determined by analysing a Hampshire County Council Origin Destination Survey undertaken in 1996 (OD survey data is included within Appendix E). Due to the age of this information, the results should be treated with caution, however, this provided the most suitable basis to determine a volume of traffic to be diverted via the Western Bypass.
- The 45% reduction was determined by assessing the number of southbound through trips on Whitedown Lane (northbound trips were not covered by the OD survey). The origins and destinations were examined and those travelling to the four destinations listed below were deemed to be travelling on routes that would use the Western Bypass in the future. The amount of traffic travelling to these destinations equated to 45% of the total southbound flow on Whitedown Lane. Accordingly, 45% was removed from the existing flows on Whitedown Lane south of Basingstoke Road and this flow reduction was applied to the relevant turning movements at the downstream junctions of Chawton Park Road / Whitedown Lane and Butts Bridge. As there was no northbound data available, the same proportion of traffic was removed from Whitedown Lane south of Basingstoke Road in the opposite direction and again the flow reduction was applied to the upstream junctions of Chawton Park Road / Whitedown Lane and Butts Bridge. Calculations have been included in Appendix E:
  - Portsmouth / Fareham / Gosport – 21%.
  - Winchester and beyond – 15%.
  - Petersfield – 6%.
  - Meon Valley 3%.

Bearing this in mind, all of the twelve junctions within Alton have been reassessed with the Western Bypass Scheme in place as the flows passing through each of the junctions are predicted to change when compared to the situation without the Western Bypass. As with the assessments of the other Strategic Schemes, this scenario examines the full development flows plus 26%, the proposed local schemes with the Western Bypass scheme in place. The link flows for Scenario 2 with the Western Bypass are shown in Table 12-3.

Table 12-2 Scenario 2 with Western Bypass Link Flows - AM and PM Peak Hours

Road Name	Direction	Western Bypass	
		AM Peak Hour	PM Peak Hour
Whitedown Lane (South of Chawton Park Road)	Northbound	607	462
	Southbound	395	526
Whitedown Lane (South of Basingstoke Road)	Northbound	844	269
	Southbound	559	675
A339 (between Medstead Road and Whitedown Lane)	Northbound	473	378
	Southbound	416	413
	Eastbound	487	303

Road Name	Direction	Western Bypass	
Basingstoke Road (B3349) (between Whitedown Lane and New Odiham Road)	Westbound	380	508
Selborne Road (between Butts Bridge and A31 junction)	Northbound	1096	783
	Southbound	653	802
Draymans Way	Eastbound	738	578
	Westbound	347	446
Butts Road	Eastbound	911	748
	Westbound	663	707
Anstey Road	Eastbound	886	692
	Westbound	708	763
London Road	Eastbound	607	569
	Westbound	642	689
Montecchio Way	Northbound	1085	889
	Southbound	927	939
New Odiham Road	Northbound	511	272
	Southbound	207	596
Old Odiham Road	Northbound	231	158
	Southbound	221	266
Wilsom Road	Northbound	733	402
	Southbound	509	618

Figure 12-1 and 12-2 show the summary results plan for the AM Peak Hour and PM Peak Hour respectively. The figures highlight the junction performance with the implementation of the proposed Western Bypass scheme.

Junctions that are predicted to be operating over theoretical capacity in the AM Peak Hour are:

- Normandy Street / Orchard Lane.
- Basingstoke Road / New Odiham Road.
- Anstey Road / Anstey Lane.
- Butts Bridge junction.

Junctions that are predicted to be operating over theoretical capacity in the PM Peak Hour are:

- Basingstoke Road / New Odiham Road.
- Normandy Street / Orchard Lane.
- Butts Bridge junction.

A breakdown of the junction performance by approach during the AM and PM Peak Hours for this scenario are included below.

Figure 12-1 Scenario 2 With Local Schemes and Western Bypass Scheme - Summary Junction Capacity Assessment Results - AM Peak Hour (08:00 - 09:00)

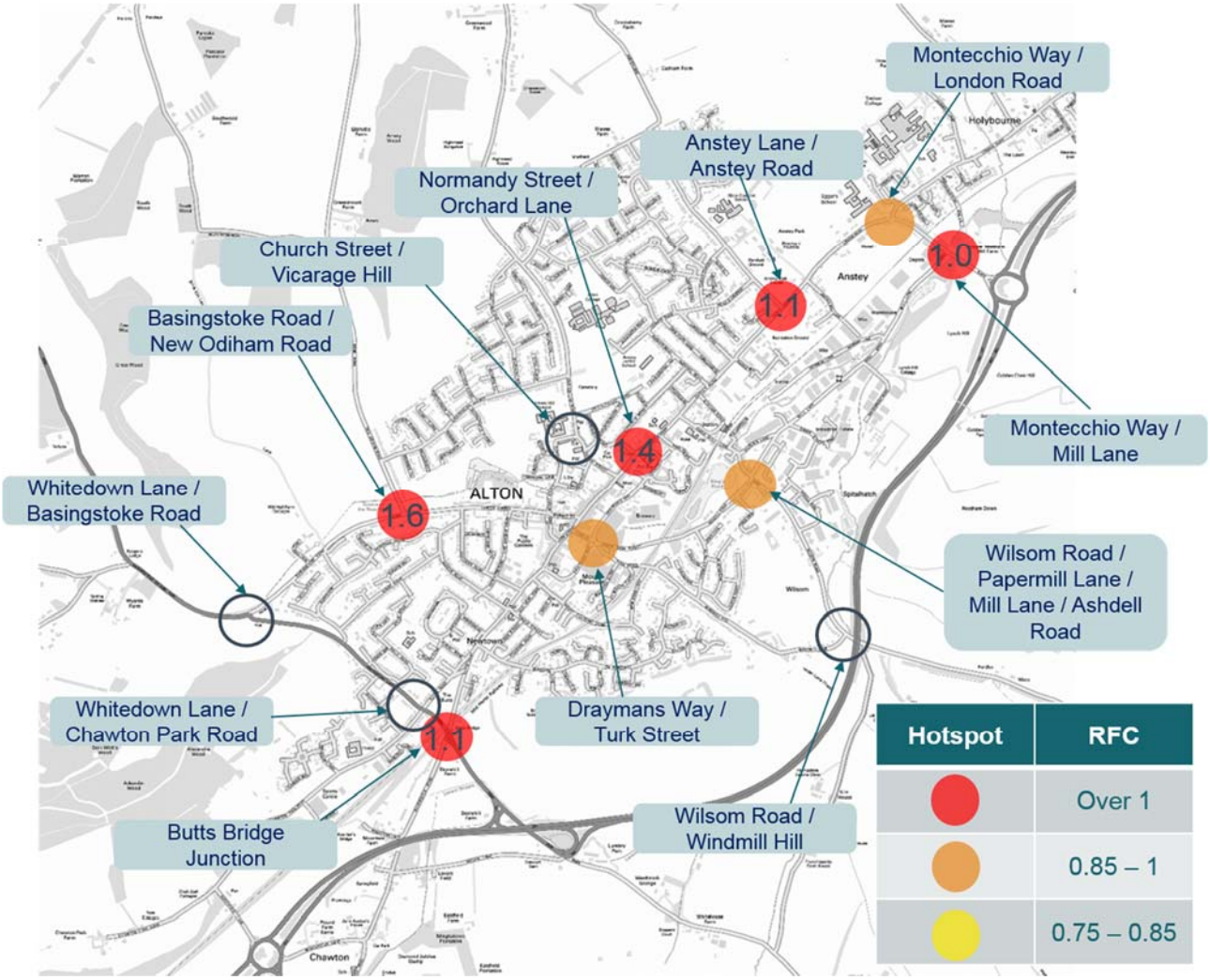
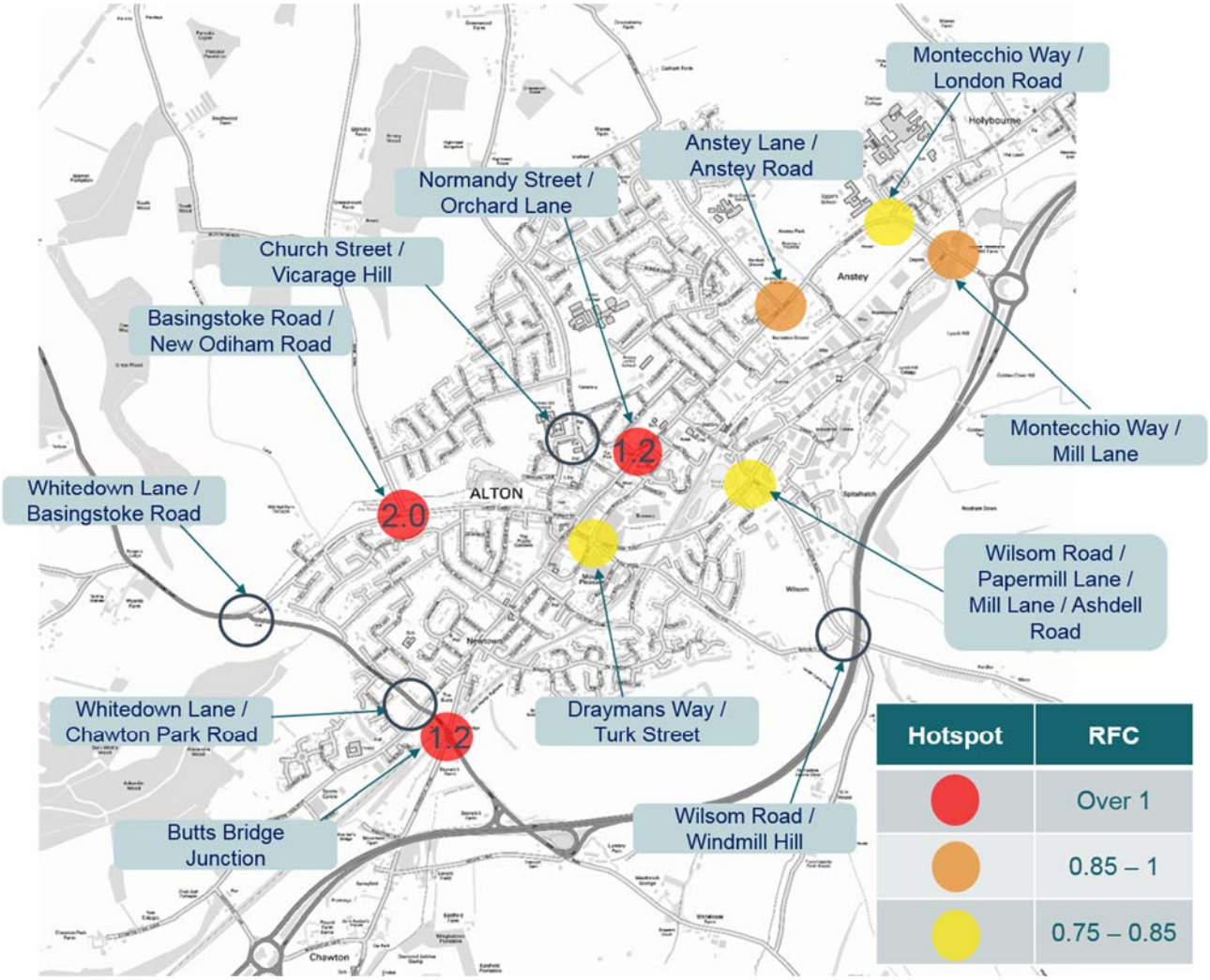


Figure 12-2 Scenario 2 With Local Schemes and Western Bypass Scheme - Summary Junction Capacity Assessment Results - PM Peak Hour (17:00 - 18:00)



12.1.3. Montecchio Way / Mill Lane – Proposed Signalised Junction

Results for Scenario 2 with Local Schemes and Western Bypass at the Montecchio Way / Mill Lane junction during the AM and PM Peak Hours are shown in Table 12-3.

Table 12-3 Montecchio Way / Mill Lane Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Montecchio Way (north) Ahead Right	57.0	9	49.8	8
Mill Lane Right Left	98.3	16	94.9	17
Montecchio Way (south) Ahead Left	101.2	48	95.4	29

- In the AM Peak Hour, Montecchio Way (South) is predicted to be over theoretical capacity with a predicted queue of 48 PCUs. The mean max queue of 48 PCUs on Montecchio Way (south) equates to a queue length of 288 metres assuming a queueing car length of 6 metres. This queue is predicted to block back to the A31 / Montecchio Way Junction (230 metres to the south of Mill Lane). Accordingly during the

busiest fifteen minutes during this peak hour it is likely that this queue will occasionally block back into the junction with the A31. This can be mitigated by adjusting signal timings although it is acknowledged that this will increase the predicted queues on Mill Lane. Mill Lane Right Left is predicted to be marginally under theoretical capacity.

- In the PM Peak Hour, Montecchio Way (South) and Mill Lane are predicted to be approaching theoretical capacity. The predicted queue on Montecchio Way (South) is capable of being accommodated within the space between this junction and the junction with the A31.

The change in performance as a result of the Western Bypass is negligible when compared to Scenario 2 with Local Schemes.

12.1.4. Paper Mill Lane / Wilsom Road / Mill Lane – Proposed Double Mini-Roundabout Junction

Results for Scenario 2 with local schemes and Western Bypass at the Paper Mill Lane / Wilsom Road / Mill Lane junction during the AM and PM Peak Hours are shown in Table 12-4.

Table 12-4 Paper Mill Lane / Wilsom Road / Mill Lane Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Junction	Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
		RFC	Queue	RFC	Queue
Southern mini roundabout	Link to northern mini roundabout	0.55	1	0.64	2
	Wilsom Road	0.95	12	0.77	3
	Ashdell Road	0.45	1	0.28	1
Northern mini roundabout	Paper Mill Lane (North)	0.80	4	0.59	1
	Mill Lane	0.38	1	0.55	1
	Link to southern mini roundabout	0.87	6	0.58	1

Southern mini roundabout

- In the AM Peak Hour, the Wilsom Road is predicted to be over practical capacity and approaching theoretical capacity.
- In the PM Peak Hour, there are no predicted issues at the junction.

Northern mini roundabout

- In the AM Peak Hour, the link to southern mini roundabout is predicted to be operating at practical capacity with a predicted queue of 6 PCUs which will block back into the southern roundabout.
- In the PM Peak Hour, there are no predicted issues at the junction.

The change in performance as a result of the Western Bypass is negligible when compared to Scenario 2 with Local Schemes.

12.1.5. Anstey Lane / Anstey Road – Proposed Roundabout Junction

Results for Scenario 2 with local schemes and Western Bypass at the Anstey Lane / Anstey Road junction during the AM and PM Peak Hours are shown in Table 12-5.

Table 12-5 Anstey Lane / Anstey Road Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Anstey Road (West)	0.74	3	0.94	11
Anstey Road (East)	0.63	2	0.79	4

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Anstey Lane	1.07	28	0.83	4

- In the AM Peak Hour, Anstey Lane is predicted to be operating over theoretical capacity with a predicted queue of 28 PCUs.
- In the PM Peak Hour, the Anstey Road (West) is predicted to be operating over practical capacity with a predicted queue of 11 PCUs which will affect traffic travelling westbound straight on through the junction. Anstey Lane is predicted to be approaching practical capacity.

The change in performance as a result of the Western Bypass is negligible when compared to Scenario 2 with Local Schemes.

12.1.6. Basingstoke Road / New Odiham Road – Proposed Priority Junction

Results for Scenario 2 with local schemes and Western Bypass at the Basingstoke Road / New Odiham Road priority junction during the AM and PM Peak Hours are shown in Table 12-6.

Table 12-6 Basingstoke Road / New Odiham Road Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Basingstoke Road (E)	1.60	161	2.06	302
Basingstoke Road (W)	0.42	1	0.59	2

- In the AM Peak Hour, Basingstoke Road (East) is predicted to be significantly over capacity with a predicted queue of 161 PCUs.
- In the PM Peak Hour, Basingstoke Road (East) is predicted to be significantly over capacity with a predicted queue of over 300 PCUs.

The Western Bypass makes very little difference to the results when compared to Scenario 2 with Local Schemes and there are still very long queues predicted on Basingstoke Road (East).

12.1.7. Basingstoke Road / Whitedown Lane – Proposed Roundabout Junction

A proposed layout has not been designed for the Basingstoke Road / Whitedown Lane junction with the additional arm leading to the Western Bypass. It should be noted that it has been assumed that there would be substantial land for a large roundabout to be implemented in this location that would be designed to perform with spare capacity if the Western Bypass was constructed.

12.1.8. Chawton Park Road / Whitedown Lane – Proposed Signalised Junction

Results for Scenario 2 with local schemes and Western Bypass at the proposed Chawton Park Road / Whitedown Lane junction during the AM and PM Peak Hours are shown in Table 12-7.

Table 12-7 Chawton Park Road / Whitedown Lane Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Whitedown Lane (S) Left Ahead	67.7%	9	49.7%	6
Whitedown Lane (N) Right Ahead	40.7%	4	57.1%	7
Chawton Park Road Left Right	65.2%	5	58.0%	4

- In the AM Peak Hour, all approaches are predicted to be operating well under practical capacity with relatively low predicted queues
- In the PM Peak Hour, all approaches are predicted to be operating well under practical capacity with relatively low predicted queues.

The Western Bypass removes a large amount of traffic from Whitedown Lane and it is predicted that the performance on all approaches will improve and operate under practical capacity in the AM and PM Peak Hour.

12.1.9. Montecchio Way / London Road

Results for Scenario 2 with local schemes and Western Bypass at the Montecchio Way/London Road junction during the AM and PM Peak Hours are shown in Table 12-8.

Table 12-8 Montecchio Way / London Road Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Montecchio Way Ahead Right Left	87.5	13	68.1	11
Garstons Way Left Ahead Right	22.2	1	12.9	1
London Road (West) Left Ahead Right	88.0	18	79.9	15
London Road (North) Right Left Ahead	92.3	15	83.5	11

- In the AM Peak Hour, Montecchio Way and London Road West and North arms are predicted to be operating over practical capacity.
- In the PM Peak Hour, all approaches are predicted to be within practical capacity.

The implementation of the Western Bypass is predicted to have negligible positive impact when compared to Scenario 2 with Local Schemes.

12.1.10. Wilsom Road / Windmill Hill

Results for Scenario 2 with local schemes and Western Bypass at the Wilsom Road / Windmill Hill junction during the AM and PM Peak Hours are shown in Table 12-9.

Table 12-9 Wilsom Road/Windmill Hill Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Windmill Road to Wilsom Road (N)	0.08	0.08	0.02	0.02
Windmill Road to Wilsom Road (S)	0.30	0.43	0.27	0.37
Wilsom Road (N)	0.01	0.01	0.07	0.07

- In both the AM Peak Hour and PM Peak Hour, there are no issues predicted at the junction.

The Western Bypass does not impact upon the results at this junction when compared with Scenario 2 with Local Schemes.

12.1.11. Normandy Street / Orchard Lane

Results for Scenario 2 with local schemes and Western Bypass at the Normandy Street/Orchard Lane junction during the AM and PM Peak Hours are shown in Table 12-10.

Table 12-10 Normandy Street / Orchard Lane Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Normandy Street (East)	1.04	29	1.11	52
Orchard Lane	1.40	138	1.20	61
Normandy Street (West)	0.97	13	0.72	3

- In the AM Peak Hour, Normandy Street (West) is predicted to be operating over theoretical capacity and Normandy Street (East) and Orchard Lane are predicted to be operating at or close to theoretical capacity. A long queue of 138 vehicles is predicted on Orchard Lane.
- In the PM Peak Hour, Orchard Lane and Normandy Street (East) are predicted to be operating over theoretical capacity with queues on each of approximately 50-60 vehicles.

The Western Bypass does not impact upon the result when compared with Scenario 2 with Local Schemes.

12.1.12. Vicarage Hill / Church Street

Results for Scenario 2 with Local Schemes and Western Bypass at the Vicarage Hill/Church Street junction during the AM and PM Peak Hours are shown in Table 12-11.

Table 12-11 Vicarage Hill / Church Street Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Church Street (South)	0.43	1	0.40	1
Vicarage Hill	0.65	2	0.67	2
Church Street (North)	0.64	2	0.54	1

- In both the AM peak and PM peak, there are no issues predicted at the junction.

The Western Bypass does not impact upon the results when compared with Scenario 2 with Local Schemes.

12.1.13. Draymans Way / Turk Street

Results for Scenario 2 with Local Schemes and Western Bypass at the Draymans Way / Turk Street junction during the AM and PM Peak Hours are shown in Table 12-12.

Table 12-12 Draymans Way / Turk Street Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Draymans Way (East)	0.51	1	0.72	3
Lower Turk Street	0.63	2	0.77	3
Draymans Way (West)	0.98	17	0.82	4
Turk Street	0.60	1	0.77	3

- In the AM Peak Hour, only Draymans Way (West) is predicted to be approaching theoretical capacity with a predicted queue of 17 vehicles.
- In the PM Peak Hour, all approaches are predicted to be within practical capacity.

The Western Bypass has very little impact upon the results when compared with Scenario 2 with Local Schemes.

12.1.14. Butts Bridge

Results for Scenario 2 with Local Schemes and the Western Bypass at the Butts Bridge junction (existing layout) during the AM and PM Peak Hours are shown in Table 12-13.

Table 12-13 Butts Bridge Scenario 2 with Local Schemes and Western Bypass Junction Capacity Assessment Results

Junction	Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
		RFC	Queue	RFC	Queue
Selborne Road Junction	Selborne Road	0.67	2	0.48	1
	Winchester Road	0.07	0	0.02	0
	Roundabout Link	0.34	0	0.40	0
Butts Road Junction	Butts Road	0.90	8	1.05	30
	Roundabout Link	0.87	0	0.61	0
	Whitedown Lane	1.14	33	1.17	50

Selborne Road Junction

- In the AM Peak Hour, all approaches are predicted to be operating within practical capacity.
- In the PM Peak Hour, all approaches are predicted to be operating within practical capacity.

Butts Road Junction

- In the AM Peak Hour, Whitedown Lane is predicted to be operating over theoretical capacity with a predicted queue of 33 vehicles. Butts Road and the roundabout link to the Selborne Road Junction are also predicted to be operating over practical capacity.
- In the PM Peak Hour, Whitedown Lane and Butts Road are both predicted to be operating over theoretical capacity with predicted queues of 50 and 30 vehicles respectively. The former would block back through the nearby Chawton Park Road junction.

The performance of the junction is significantly improved with the Western Bypass as a significant proportion of the existing traffic is re-routed away from Whitedown Lane and Butts Bridge. However, the Butts Road junction is still predicted to be over theoretical capacity in both peak hours with predicted queues on Whitedown Lane that will block back through the Chawton Park Road / Whitedown Lane junction, although the queues will be smaller than those existing today.

12.1.15. Summary

Based on the summary and detailed junction capacity results described above it is predicted that the implementation of the Western Bypass provides an improvement in performance at:

- Chawton Park Road / Whitedown Lane
- Butts Bridge.

Despite the improved performance, the following junctions are predicted to operate over theoretical capacity:

- Normandy Street / Orchard Lane.
- Basingstoke Road / New Odiham Road.
- Anstey Road / Anstey Lane.
- Butts Bridge junction.

The introduction of a Western Bypass would provide a new road link which would remove some existing traffic from the Butts Bridge area and the scheme would provide some relief to the severance currently created by the A339 between the town and its main leisure facilities.

Should this scheme be implemented and all growth envisaged in Scenario 2 take place then queues at this location would be smaller than today.

13. Butts Bridge Strategic Scheme

13.1. Scope of the Scheme

The existing junction layout at Butts Bridge is unconventional and comprises of a double roundabout, with a conventional roundabout at the Selborne Road / Winchester Road junction and a mini-roundabout at the Butts Road / Whitedown Lane junction. In the vicinity of the junction there are rail bridges across Butts Road and Whitedown Lane which limit the carriageway width. This is a particular problem on Whitedown Lane where the limited width of the carriageway at the arch bridge prevents two way movement of larger vehicles. This can cause congestion on the approaches to the bridge and blocking through the Butts Bridge junction. The pedestrian facilities at the junction are also limited, with no footway on Whitedown Lane under the existing arch bridge and no controlled crossing facilities.

Three potential schemes have been developed to feasibility level for the Butts Bridge junction with the aim of improving traffic capacity to relieve congestion. A summary of the key design elements are outlined below.

Option 1

The proposed design is shown on drawing HCCATS-ATK-HGN-BBJ-DR-D-0001 (see Appendix D) and includes:

- Conversion of the Winchester Road / Selborne Road roundabout to a signal controlled T-junction.
- Replacement of the Butts Road / Whitedown Lane mini-roundabout with a signal controlled gyratory by:
  - Converting Whitedown Lane to one-way northbound at the junction.
  - Converting Butts Road to one-way southbound at the junction.
  - Creating a new one-way road through Butts Green to complete the northern side of the gyratory.
- Provision of a new footway on Whitedown Lane under the existing arch bridge.
- Provision of signalised pedestrian crossings

This option aims to minimise the construction cost of a scheme at this location. However, it is recognised that it requires use of Butts Green which is in a Conservation area and is designated common land under the custodianship of Alton Town Council and consequently this would be a major risk to the feasibility of implementing this option. Accordingly this option has not been assessed any further.

Option 2

The proposed design is shown on drawing HCCATS-ATK-HGN-BBJ-DR-D-0002 (See Appendix D) and includes:

- Retention of the Winchester Road / Selborne Road roundabout.
- Replacement of the Butts Road / Whitedown Lane mini-roundabout to an un-signalised gyratory by:
  - Converting Whitedown Lane to one-way northbound vehicles at the junction.
  - Converting Butts Road to one-way southbound at the junction.
  - Creating a new one-way road through Butts Green to complete the northern side of the gyratory;
- Provision of a new footway on Whitedown Lane under the existing arch bridge; and
- Provision of a new signalised pedestrian crossing through the centre of the gyratory to improve pedestrian connectivity.

As with Option 1, this option aims to minimise the construction cost of a scheme at this location. However, it is recognised that it requires use of Butts Green which is in a Conservation Area and is designated common land under the custodianship of Alton Town Council and consequently this would be a major risk to the feasibility of implementing this option. Accordingly this option has not been assessed any further.

Option 3

The proposed design is detailed on drawing HCCATS-ATK-HGN-BBJ-DR-D-0003 (See Appendix D) and includes:

- Replacement of the existing double roundabout with a single, elongated roundabout. The Butts Road, Selborne Road and Winchester Road approaches to the junction would remain largely unchanged.

- Implementation of a new bridge under the Watercress Line to the west of the existing arch bridge on Whitedown Lane. This would be designated for northbound traffic and the existing carriageway through the arch bridge on Whitedown Lane would be designated for southbound traffic. To ensure the new bridge is in keeping with the local surroundings it could be constructed as a modern box bridge but clad in brickwork to match the existing arch bridge.
- Provision of a new 2m wide footway on Whitedown Lane under the proposed bridge.
- Provision of a new signalised pedestrian crossing to the north of the existing arch bridge on Whitedown Lane to improve pedestrian connectivity. There is potential to increase the width of the proposed bridge to allow for the provision of a cycleway.

This option avoids impact on Butts Green, however, it would require land take from the French Horn public house which is a listed building and the removal of some mature trees. Discussions and negotiations with the Watercress Line would also be required in order to construct a new bridge under the rail line and they would expect a financial payment assumed to be in the order of £4m. Although these are still significant issues they were considered (by Atkins as well as stakeholders) to be potentially more acceptable than land take from Butts Green. Accordingly, it is this option that has been the subject of further assessment.

13.2. Estimated Implementation Cost

Initial construction cost estimates have been prepared commensurate to the stage of the design process. Given the designs are at concept stage a number of assumptions have been made in preparing the cost estimates as set out in Section 11. The rates used to calculate the construction costs have been cross referenced to rates from a similar scheme in HCC where we have been able to view the tendered rates. The estimated construction costs for the Butts Bridge proposed options (to the nearest £100k) are summarised in Table 13-1:

Table 13-1 Butts Bridge Strategic Scheme Cost Estimates

Option	Concept Construction Cost Estimate
1 – Signalised Gyratory (using Butts Green)	£1.8m – £2m
2 – Unsignalised Gyratory (using Butts Green)	£1.2m - £1.5m
3 – Single Elongated Roundabout	£8m - £10m

The cost estimate for Option 3 – Single Elongated Roundabout assumes the cost of £1m for the construction of a new bridge under the Watercress Line and a £4m compensation payment to the Watercress Line.

13.3. Traffic Assessment Results

The proposed improvement Option 3 for Butts Bridge has been assessed in terms of its ability to accommodate the traffic generated by the Scenario 2 Full Development + 26% scenario. For the purposes of assessing this strategic scheme neither existing nor developed related traffic patterns have been adjusted. Accordingly the proposed assignment of traffic is the same as that used for assessing Scenario 2 and Scenario 2 with Local schemes.

The results of the junction capacity assessment of Butts Bridge Option 3 are summarised in Figure 13-1 and Figure 13-2 for the AM Peak Hour and PM Peak Hour respectively. For completeness these figures also show the junction capacity assessment results for the other junctions in Alton which are retained from the results for the Scenario 2 Full Development plus 26% with Local Schemes scenario. The detailed junction capacity assessment results for the Butts Bridge strategic scheme are shown in Table 13-2 for the AM Peak Hour and PM Peak Hour.

Figure 13-1 Scenario 2 With Local Schemes and Butts Bridge Scheme - Summary Junction Capacity Assessment Results - AM Peak Hour (08:00 - 09:00)

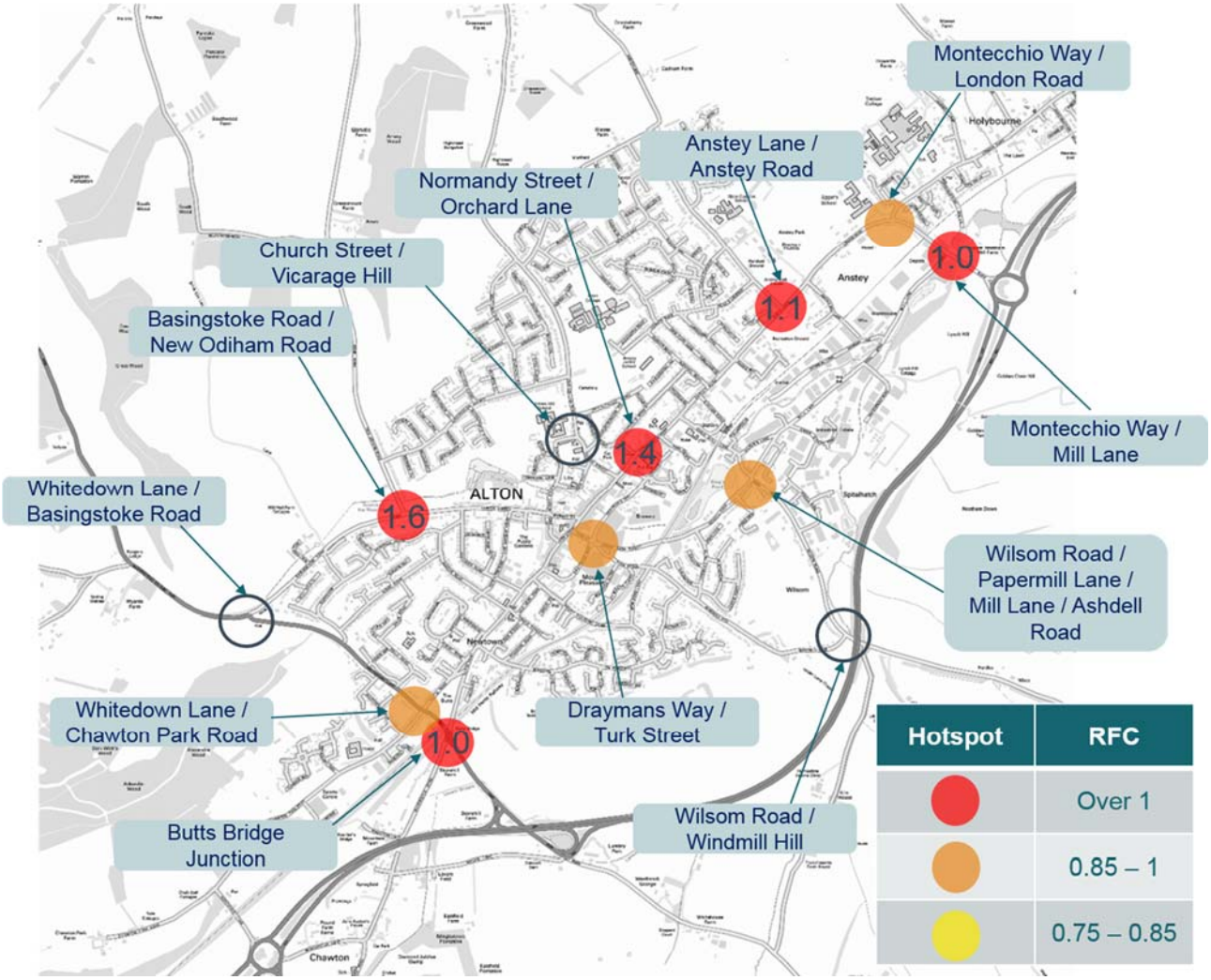


Figure 13-2 Scenario 2 With Local Schemes and Butts Bridge Scheme - Summary Junction Capacity Assessment Results - PM Peak Hour (17:00 - 18:00)

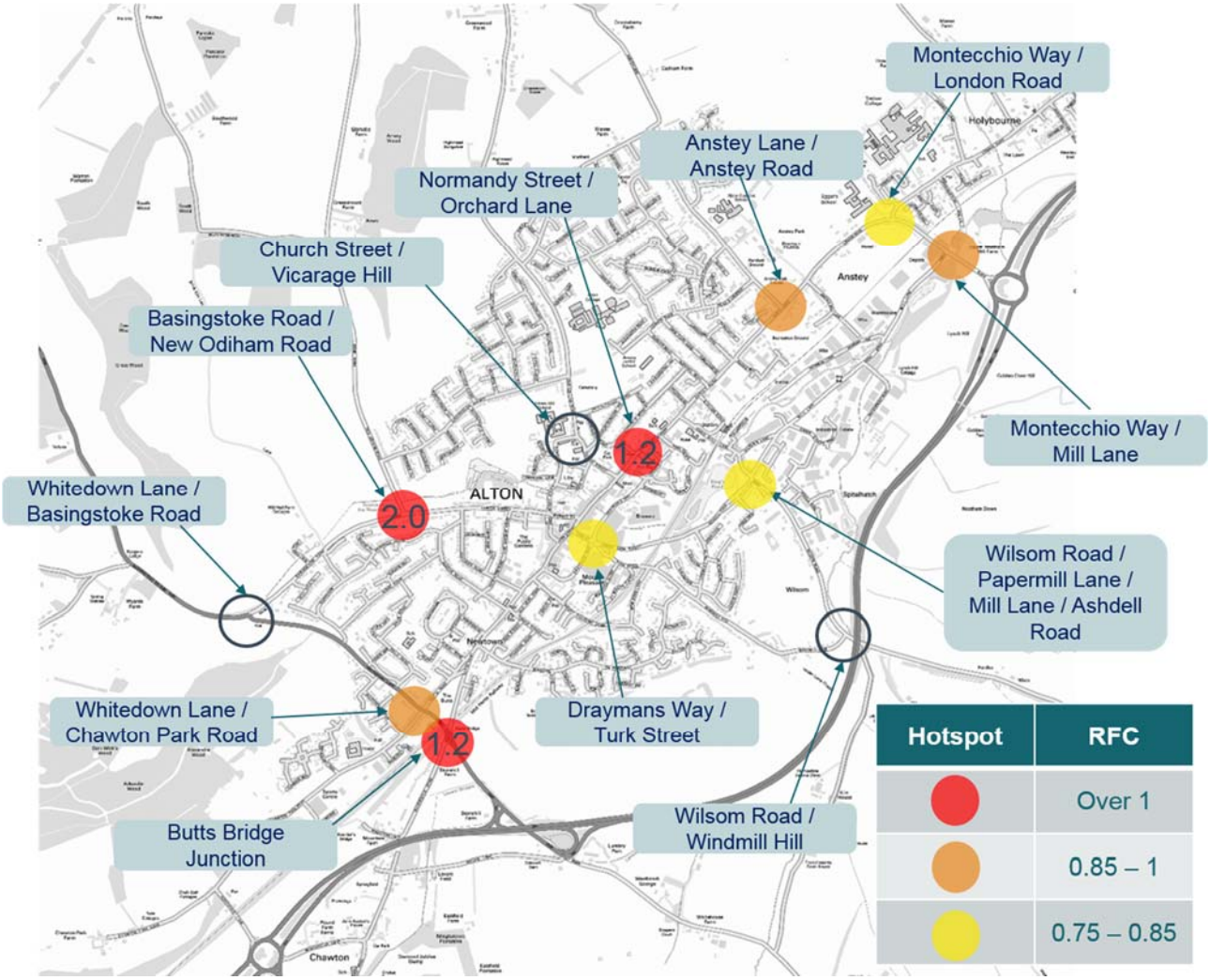


Table 13-2 Butts Bridge with Butts Bridge Strategic Scheme Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Butts Road	1.02	23	1.17	64
Selborne Road	0.95	14	0.66	2
Winchester Road	0.14	0	0.03	0
Whitedown Lane	0.60	1	0.65	2

- In the AM Peak Hour, Butts Road and Selborne Road are predicted to be just over and approaching theoretical capacity respectively with predicted queues of 23 and 14 vehicles respectively.
- In the PM Peak Hour, Butts Road is predicted to be over theoretical capacity with a predicted queue of 64 vehicles. This represents a substantial improvement from the RFC of 1.85 modelled in Scenario 2 without the Butts Bridge Scheme.

The predicted results, whilst still indicating the junction will be over-capacity in AM Peak Hour and PM Peak Hour, represent a significant improvement over the results without this Strategic Scheme in place. For

comparison, the predicted RFCs for Scenario 2 without this scheme were approximately 1.8 in both peak hours compared to 1.02 and 1.17 identified in Table 13-2.

13.3.1. Summary

Based on the summary and detailed junction capacity results described above it is predicted that the implementation of the Butts Bridge scheme provides an improvement in performance at:

- Butts Bridge.

However, improvements are predicted here only since the assumption has been made that traffic would not reassigned as a result of the scheme. The following junctions are predicted to operate over theoretical capacity:

- Normandy Street / Orchard Lane.
- Basingstoke Road / New Odiham Road.
- Anstey Road / Anstey Lane.
- Butts Bridge junction.

14. Proposed A31/B3004 Junction Strategic Scheme

14.1.1. Scope of the Scheme

Two potential schemes have been developed to feasibility level for a new grade separated junction on the A31 at the B3004. The aim of the scheme is to provide a direct connection between the A31 and B3004 enabling through traffic to avoid the town and to redistribute traffic within and approaching Alton to relieve pressure on key junctions. A summary of the key design elements are outlined below.

Option 1

The proposed design is detailed on drawing HCCATS-ATK-HGN-A31GS-DR-D-0001 and the key features are as follows.

- Full grade separated junction which provides for all movements with individual slip lanes. The lengths of the slip lanes have been calculated on the assumption that there is a level difference of approximately 7m between the A31 and Wilson Road.
- Windmill Hill is to be stopped up for safety reasons as the new slip roads would be in close proximity to the Windmill Hill junction. A turning head will be provided on Windmill Hill.
- The farm access to south of the A31 will need to be diverted and it is proposed to link it into the existing golf club access. Negotiations will be required as this is likely to be a private road.
- The carriageway under the A31 is proposed to be widened to provide a right turn lane which leaves a setback from the edge of the carriageway to the safety fence and the fence against culvert of around 900mm.
- The fence adjacent to the culvert does not appear to have any structural strength so this would need to be replaced with a parapet.
- The lay-by on the northbound A31 will need to be relocated.
- The lay-by on the southbound carriageway of Wilson Road is proposed to be removed to accommodate the northbound slip road.

The proposed scheme would require significant land take and the overhead power lines in the south east quadrant of the junction will be affected and will need to be moved which is likely to be a significant cost.

Option 2

The proposed design is detailed on drawing HCCATS-ATK-HGN-A31GS-DR-D-0002 and the key features are as follows.

- Compact grade separated junction that allows for all movements. This type of junction can be used when lower traffic flows are anticipated. DMRB TD40 Layout of Compact Grade Separated Junctions states that:

  "Compact grade separated junctions appear to be suitable for use where mainline flows are between approximately 12,500 AADT and 30,000 AADT and are normally associated with very low flows (generally below 10% of mainline flow) on the minor road."

- The slip roads are designed for two-way movement with a design speed of 30kph.
- It is anticipated that access can be provided from Windmill Hill onto the slip road and the farm access can also be accessed from the slip road.
- As with Option 1 the carriageway under the A31 is proposed to be widened to provide a right turn lane which leaves a setback from the edge of the carriageway to the safety fence and the fence against culvert of around 900mm. The fence adjacent to the culvert does not appear to have any structural strength so this would need to be replaced with a parapet.
- The lay-by on the southbound carriageway of Wilson Road is proposed to be removed to accommodate the northbound slip road.

This option results in much reduced land take and a reduced impact on the overhead cables compared to Option 1.

14.1.2. Estimated Implementation Costs

The estimated construction costs for the A31/B3004 proposed junction options are summarised in **Table 14-1**.

Table 14-1 A34/B3004 Junction Cost Estimates

Option	Concept Construction Cost Estimate
1 – Full Grade Seperated Junction	£20m-£25m
2 – Compact Grade Seperated Junction	£10m-£12m

14.1.3. Traffic Assessment Results

With the implementation of the A31 / B3004 junction scheme, it is forecast that traffic within Alton would redistribute across the network as a result. The following assumptions have been made:

- Approximately 5% reduction in northbound existing flows on Wilsom Road as a result of A31 bound existing traffic redirecting via the new junction.
- New development sites in the vicinity of the proposed junction on Wilsom Road will use the junction for eastbound and westbound trips on the A31.
- Some traffic from development sites in central Alton including the Coors Sports Ground and Lower Turk Street will use the proposed junction.
- A small proportion of traffic from sites in north will be drawn to the junction rather than using alternative A31 junctions at Montecchio Way or via Butts Bridge.
- There will be a reduction in Whitehill Bordon traffic travelling through Alton to reach the A31 at Montecchio Way.

Bearing this in mind, all of the junctions within Alton have been reassessed with the A31 / B3004 Strategic Scheme in place as the flows passing through each of the junctions is predicted to change when compared to the situation without the scheme. As with the other strategic scheme assessments, this scenario examines the full development flows plus 26% with the proposed local schemes, and also with the A31/B3004 scheme in place. The link flows for Scenario 2 with the A31/B3004 scheme are shown in Table 14-3.

Table 14-2 Scenario 2 with A31 / B3004 Strategic Scheme Link Flows - AM and PM Peak Hours

Road Name	Direction	Scenario 2 with A31 / B3004 Strategic Scheme	
		AM Peak Hour	PM Peak Hour
Whitedown Lane (South of Chawton Park Road)	Northbound	917	575
	Southbound	650	855
Whitedown Lane (South of Basingstoke Road)	Northbound	886	459
	Southbound	610	871
A339	Northbound	678	477
	Southbound	532	582
Basingstoke Road (B3349)	Eastbound	667	556
	Westbound	513	707
Selborne Road	Northbound	1429	977
	Southbound	927	1097
Draymans Way	Eastbound	737	578
	Westbound	340	399
Butts Road	Eastbound	901	713

Road Name	Direction	Scenario 2 with A31 / B3004 Strategic Scheme	
	Westbound	641	689
Anstey Road	Eastbound	897	694
	Westbound	707	765
London Road	Eastbound	622	582
	Westbound	578	661
Montecchio Way	Northbound	1035	833
	Southbound	772	881
New Odiham Road	Northbound	488	264
	Southbound	231	551
Old Odiham Road	Northbound	193	156
	Southbound	256	218
Wilsom Road	Northbound	708	472
	Southbound	599	689

Figure 14-1 and 14-2 show the summary results plan for the AM Peak Hour and PM Peak Hour respectively. The figures highlight the junction performance with the implementation of the proposed A31/B3004 scheme. Junctions predicted as over theoretical capacity in the AM Peak Hour are:

- Normandy Street / Orchard Lane.
- Basingstoke Road / New Odiham Road.
- Anstey Road / Anstey Lane.
- Butts Bridge junction.

Junctions showing as over theoretical capacity in the PM Peak Hour are:

- Basingstoke Road / New Odiham Road
- Normandy Street / Orchard Lane
- Butts Bridge junction.

A breakdown of the junction performance by approach during the AM and PM Peak Hours for this scenario are included below.

Figure 14-1 Scenario 2 – With Local Schemes and A31/B3004 Scheme - Summary Junction Capacity Assessment Results AM Peak Hour (08:00 - 09:00)

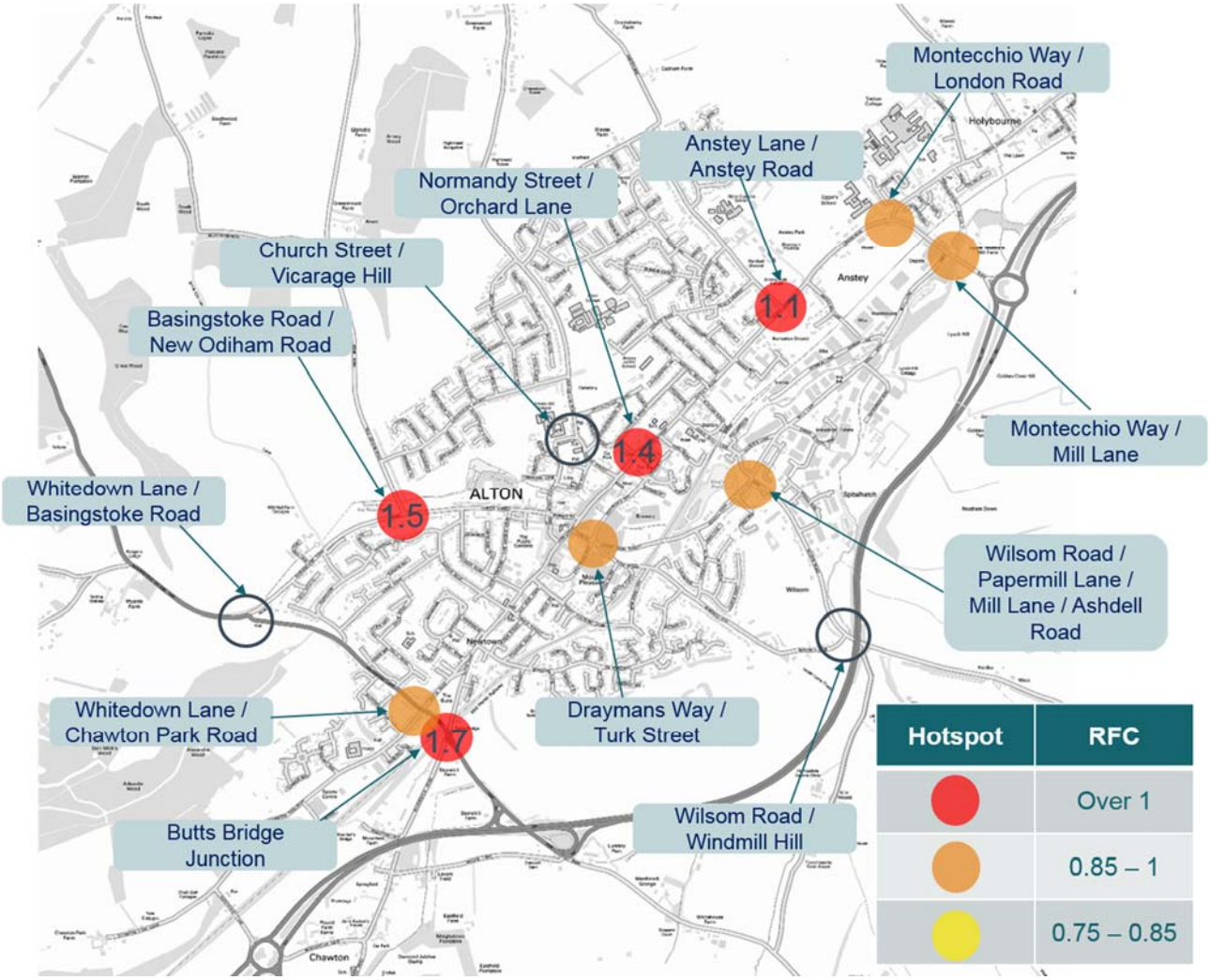
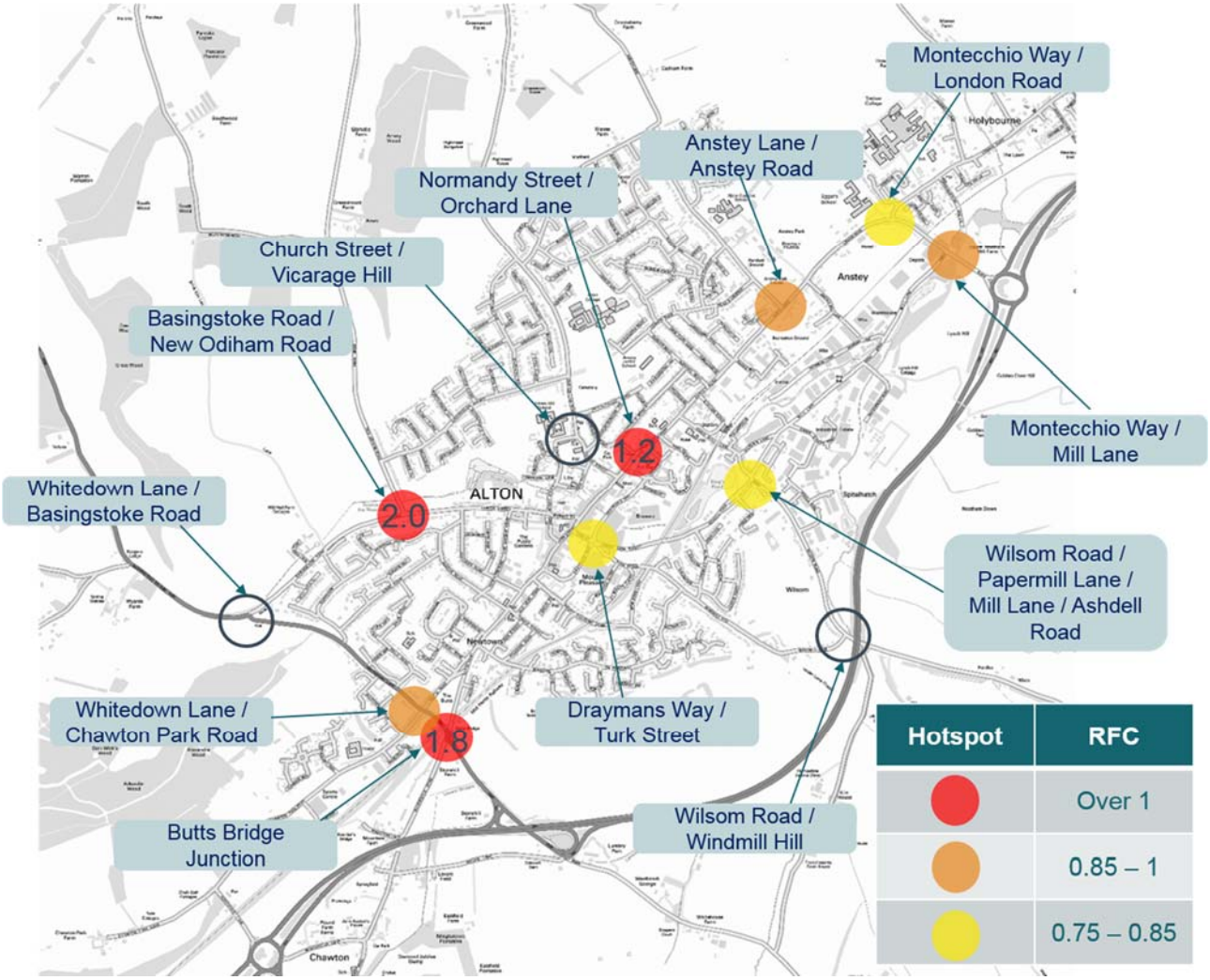


Figure 14-2 Scenario 2 – With Local Schemes and A31/B3004 Scheme - Summary Junction Capacity Assessment Results PM Peak Hour (17:00 - 18:00)



14.1.4. Montecchio Way / Mill Lane – Proposed Signalised Junction

Results for Scenario 2 with local schemes and A31 / B3004 junction at the Montecchio Way / Mill Lane junction during the AM and PM Peak Hours are shown in Table 14-3.

Table 14-3 Montecchio Way / Mill Lane with Local Schemes and A31/B3004 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Montecchio Way (north) Ahead Right	49.8	6	47.9	8
Mill Lane Right Left	88.0	7	88.6	12
Montecchio Way (south) Ahead Left	87.7	25	87.3	21

- In the AM Peak Hour, the Mill Lane Right Left turns and Montecchio Way (South) Ahead Left turns are predicted to be just over practical capacity. However, this is an improvement from Scenario 2 with Local

Schemes where both arms were predicted to be at theoretical capacity. The predicted queues on Montecchio Way (South) in the AM Peak Hour of 25 PCUs equate to 150 metres which would not block back to the A31 junction.

- In the PM Peak Hour, the Mill Lane Right Left and Montecchio Way (South) Ahead Left turns have both improved performance compared to Scenario 2 with Local Schemes with degrees of saturation of around 88% compared to 95% without the A31 / B3004 strategic scheme. The predicted queue on Montecchio Way (South) in the AM Peak Hour of 21 PCUs which equates to 126 metres which would not block back to the A31 junction.

The results with the strategic scheme show benefits for this junction with is predicted to be just over practical capacity in both peak hours.

14.1.5. Paper Mill Lane / Wilsom Road / Mill Lane – Proposed Double Mini-Roundabout Junction

Results for Scenario 2 with local schemes and A31 / B3004 junction at the Paper Mill Lane / Wilsom Road / Mill Lane junction during the AM and PM Peak Hours are shown in Table 14-4.

Table 14-4 Paper Mill Lane / Wilsom Road / Mill Lane with Local Schemes and A31/B3004 Junction Capacity Assessment Results

Junction	Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
		RFC	Queue	RFC	Queue
Southern mini roundabout	Link to northern mini roundabout	0.55	1	0.64	2
	Wilsom Road	0.86	5	0.77	3
	Ashdell Road	0.44	1	0.26	1
Northern mini roundabout	Paper Mill Lane (North)	0.78	3	0.60	1
	Mill Lane	0.34	1	0.53	1
	Link to southern mini roundabout	0.76	3	0.54	1

Southern mini roundabout

- In the AM Peak Hour, Wilsom Road is predicted to be at practical capacity although the predicted queues are low. This shows a slight improvement from Scenario 2 with Local Schemes for which Wilsom Road was predicted to be approaching theoretical capacity.
- In the PM Peak Hour, there are no issues predicted at the junction with low queues on all arms.

Northern mini roundabout

- In both the AM Peak Hour and PM Peak Hour, there are no issues predicted at the junction with low queues on all arms. In the AM Peak Hour the predicted performance has improved as Paper Mill Lane was predicted to be at practical capacity with Scenario 2 with Local Schemes.

The introduction of the proposed A31/B3004 junction improves performance at the Paper Mill Lane / Wilsom Road / Mill Lane junction and reduces the RFCs on arms that were previously over practical capacity.

14.1.6. Anstey Lane / Anstey Road – Proposed Roundabout Junction

Results for Scenario 2 with Local Schemes and A31 / B3004 Strategic Scheme at the Anstey Lane / Anstey Road junction during the AM and PM Peak Hours are shown in Table 14-5.

Table 14-5 Anstey Lane / Anstey Road with Local Schemes and A31/B3004 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Anstey Road (West)	0.71	2	0.90	7
Anstey Road (East)	0.63	2	0.79	4
Anstey Lane	1.07	28	0.83	4

- In the AM Peak Hour, Anstey Lane is predicted to be over theoretical capacity with a predicted queue of 28 PCUs. This represents a small improvement in performance from Scenario 2 with Local Schemes as the predicted queue has reduced by one vehicle.
- In the PM Peak Hour, Anstey Road (West) is predicted to be over practical capacity and Anstey Lane is predicted to be approaching practical capacity. There are small improvements in RFC when compared to Scenario 2 with Local Schemes.

The predicted performance of the junction improves slightly with the introduction of the A31/B3004 Strategic Scheme.

14.1.7. Basingstoke Road / New Odiham Road – Proposed Priority Junction

Results for Scenario 2 with Local Schemes and A31 / B3004 Strategic Scheme at the Basingstoke Road / New Odiham Road junction during the AM and PM Peak Hours are shown in Table 14-6.

Table 14-6 Basingstoke Road / New Odiham Road with Local Schemes and A31/B3004 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Basingstoke Road (E)	1.52	136	2.06	304
Basingstoke Road (W)	0.42	1	0.59	2

- In the AM Peak Hour, Basingstoke Road (East) is predicted to be significantly over capacity with a predicted of 136 PCUs.
- In the PM Peak Hour, Basingstoke Road (East) is predicted to be significantly over capacity with a predicted of 304 PCUs.

In both peaks there are slight improvements over the Scenario 2 with Local Schemes although the junction is still significantly over capacity on Basingstoke Road (East) during both peak hours. Accordingly, it is still recommended that the local scheme at this location is not constructed and an alternative such as a high capacity roundabout is investigated.

14.1.8. Basingstoke Road / Whitedown Lane – Proposed Roundabout Junction

Results for Scenario 2 with Local Schemes and the A31 / B3004 Strategic Scheme at the Basingstoke Road / Whitedown Lane junction during the AM and PM Peak Hours are shown in Table 10-6.

Table 14-7 Basingstoke Road / Whitedown Lane Scenario 2 with Local Schemes and A31 / B3004 Junction Capacity Assessment Results

Turning movement	AM Peak (08:00 – 09:00)		PM Peak (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Whitedown Lane	0.62	2	0.33	1
Basingstoke Road (W)	0.38	1	0.38	1
Basingstoke Road (E)	0.37	1	0.53	1

- All approaches are predicted to operate under practical capacity in both peak hours.

The introduction of the proposed A31 junction makes negligible difference to the results with only minor improvements on Whitedown Lane when compared to Scenario 2 with Local Schemes.

14.1.9. Chawton Park Road / Whitedown Lane – Proposed Signalised Junction

Results for Scenario 2 with Local Schemes and the A31 / B3004 Strategic Scheme at the proposed Chawton Park Road / Whitedown Lane junction during the AM and PM Peak Hour are shown in Table 14-8.

Table 14-8 Chawton Park Road / Whitedown Lane Scenario 2 with Local Schemes and A31 / B3004 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Whitedown Lane (S) Left Ahead	95.3%	25	66.1%	11
Whitedown Lane (N) Right Ahead	81.5%	10	87.9%	18
Chawton Park Road Left Right	94.2%	11	87.9%	7

- In the AM Peak Hour, the Whitedown Lane (South) Left Ahead movement and the Chawton Park Road Left Right movements are predicted to be between practical and theoretically capacity. Whitedown Lane (North) is predicted to be slightly under practical capacity. The mean maximum queue on Whitedown Lane (South) is approximately 150 metres in length during the AM Peak Hour and 66 metres in the PM Peak Hour. During the AM Peak Hour, this predicted queue is likely to block back occasionally to the Butts Bridge junction during the worst fifteen minutes of the peak hour.
- In the PM Peak Hour, Whitedown Lane (South) and Chawton Park Road Left Right turns are predicted to operate marginally over practical capacity with almost identical results to Scenario 2 with Local Schemes.

The predicted results for the A31 / B3004 Strategic Scheme are marginally better than for Scenario 2 with Local Schemes although the junction is predicted to operate over practical capacity in the AM Peak Hour and slightly over practical capacity during the PM Peak Hour. The predicted queues on Whitedown Lane (South) are likely to block back to the Butts Bridge junction for the worst fifteen minutes during the AM Peak Hour. There is the potential to adjust signal timings for this junction to allow more ‘green time’ for the northbound approach from Whitedown Lane to mitigate this problem although the predicted degree of saturation and queue would be increased on Chawton Park Road.

The interaction between this junction and Butts Bridge has not been assessed due to the limitation of the models used in the study, which is a function of the stage of the project and the budget available. A micro-simulation model is therefore recommended to be developed covering these junctions for any future work on potential solutions.

14.1.10. Montecchio Way / London Road

Results for Scenario 2 with Local Schemes and A31 / B3004 Strategic Scheme at the Montecchio Way / London Road junction during the AM and PM Peak Hours are shown in Table 14-9.

Table 14-9 Montecchio Way / London Road with A31/B3004 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Montecchio Way Ahead Right Left	77.8	11	68.1	11
Garstons Way Left Ahead Right	22.2	1	12.9	1
London Road (West) Left Ahead Right	86.6	16	79.9	14
London Road (North) Right Left Ahead	87.9	13	83.5	11

- In the AM Peak Hour, London Road (West) is predicted to operate at practical capacity. Predicted performance for Montecchio Way Ahead Right Left turns has improved from around 88% DoS to 78% DoS.
- In the PM Peak Hour, London Road (North) is predicted to operate close to practical capacity. Minor improvements are predicted on London Road compared to Scenario 2 with Local Schemes.

Slight improvements are predicted at this junction as a result of implementing the proposed A31 / B3004 Strategic Scheme junction although the junction still operates at practical capacity in both peak hours.

14.1.11. Normandy Street / Orchard Lane

Results for Scenario 2 with Local Schemes and A31 / B3004 Strategic Scheme at the Normandy Street / Orchard Lane junction during the AM and PM Peak Hours are shown in Table 14-10.

Table 14-10 Normandy Street / Orchard Lane with Local Schemes and A31 / B3004 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Normandy Street (East)	1.04	28	1.11	52
Orchard Lane	1.40	138	1.21	62
Normandy Street (West)	0.99	15	0.72	2

- In the AM Peak Hour, Normandy Street (East) and Orchard Lane are both predicted to be over theoretical capacity. Normandy Street (West) is predicted to be at theoretical capacity.
- In the PM Peak Hour, Normandy Street (East) and Orchard Lane are both predicted to be over theoretical capacity.

The performance of this junction remains unchanged compared to Scenario 2 with Local Schemes.

14.1.12. Vicarage Hill / Church Street

Results for Scenario 2 with Local Schemes and A31 / B3004 Strategic Scheme at the Vicarage Hill / Church Street junction during the AM and PM Peak Hours is shown in Table 14-11.

Table 14-11 Vicarage Hill / Church Street with Local Schemes and A31 / B3004 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Church Street (South)	0.44	1	0.41	1
Vicarage Hill	0.65	2	0.67	2
Church Street (North)	0.64	2	0.54	1

- In both the AM Peak Hour and PM Peak Hour, there are no issues predicted at this junction.

The performance of this junction remains unchanged compared to Scenario 2 with Local Schemes.

14.1.13. Draymans Way / Turk Street

Results for Scenario 2 with Local Schemes and A31 / B3004 Strategic Scheme at the Draymans Way / Turk Street junction during the AM and PM Peak Hours are shown in Table 14-12.

Table 14-12 Draymans Way / Turk Street with A31 / B3004 Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Draymans Way (East)	0.51	1	0.69	2
Lower Turk Street	0.60	2	0.75	3
Draymans Way (West)	0.97	14	0.78	3
Turk Street	0.59	1	0.74	3

- In the AM Peak Hour, Draymans Way (West) is predicted to be at theoretical capacity with a predicted queue of 14 vehicles. This represents a slight improvement over Scenario 2 with Local Schemes for which the predicted queue was 18 PCUs.
- In the PM Peak Hour, all approaches are predicted to operate within practical capacity.

There is only slight improvement at this junction as a result of the proposed A31 / B3004 Strategic Scheme.

14.1.14. Butts Bridge

Results for Scenario 2 with Local Schemes and A31/B3004 Strategic Scheme at the Butts Bridge junction (existing layout) during the AM and PM Peak Hours are shown in Table 14-13.

Table 14-13 Butts Bridge with Local Schemes and A31 / B3004 Junction Capacity Assessment Results

Junction	Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
		RFC	Queue	RFC	Queue
Selborne Road Junction	Selborne Road	1.13	95	0.60	1
	Winchester Road	0.60	1	0.02	0
	Roundabout Link (South)	0.38	0	0.44	0
Butts Road Junction	Butts Road	0.97	13	1.10	47
	Roundabout Link (North)	1.00	0	0.76	0
	Whitedown Lane	1.73	268	1.79	313

Selborne Road Junction

- In the AM Peak Hour, Selborne Road is predicted to be over theoretical capacity with a predicted queue of 95 PCUs.
- In the PM Peak Hour, there are no issues predicted at the junction.

Butts Road Junction

- In the AM Peak Hour, all three approaches are predicted to be close to or over theoretical capacity with a very long queue of 268 vehicles are predicted on Whitedown Lane which would block back through the nearby Chawton Park Road junction.
- In the PM Peak Hour, the Butts Road and Whitedown Lane approaches are both predicted to be over theoretical capacity with a very long queue of 313 vehicles on Whitedown Lane which would block back through the nearby Chawton Park Road junction.

With the proposed A31 / B3004 Strategic Scheme, predicted results show slight improvement on almost all approaches although the junction is predicted to remain over theoretical capacity.

14.1.15. Summary

Based on the summary and detailed junction capacity results described above it is predicted that the implementation of the A31 / B3004 Strategic Scheme provides an improvement in performance at:

- Basingstoke Road / New Odiham Road.
- Montecchio Way / Mill Lane.
- Butts Bridge.

However, despite these improvements the following junctions are predicted to operate over theoretical capacity:

- Normandy Street / Orchard Lane.
- Basingstoke Road / New Odiham Road.
- Anstey Road / Anstey Lane.
- Butts Bridge junction.

15. Proposed Northern Link Road Strategic Scheme

15.1.1. Scope of the Scheme

The proposed design is detailed on drawing HCCATS-ATK-HGN-ABP-DR-D-0005 and the key features are as follows:

- The Northern Link Road is approximately 1.1km long.
- A new conventional roundabout is provided at the junction with New Odiham Road. An arm of this roundabout could form part of the Connector Road to the Western Bypass.
- A new conventional roundabout is provided at the junction with Old Odiham Road.

The alignment passes through a very steep escarpment to the east of New Odiham Road and this results in a cutting that is around 21m deep and 150m wide. At the junction with New Odiham Road there is a Road Verge of Ecological Importance that would be affected by the scheme.

15.1.2. Estimated Implementation Costs

The estimated construction costs for the Northern Link Road proposal is summarised in Table 15-1. At a presentation to stakeholders on 11th November 2014 the possibility of revising the assumption on the gradient of the slopes of the cuttings to the side of the new carriageway from 1 in 3 slopes to 1 in 1 slopes was discussed to understand the possible cost saving. Consequently, two construction cost estimates have been prepared for the Northern Link Road and the Connector Road. It should be noted that 1 in 1 slopes are not recommended if replanting is required.

Table 15-1 Northern Link Road Cost Estimate

Cost with 1 in 3 Slopes for Cuttings	Cost with 1 in 1 Slopes for Cuttings
£75m-£80m	£60m-£65m

15.2. Proposed Connector Road

15.2.1. Scope of the Scheme

The proposed design is detailed on drawing HCCATS-ATK-HGN-ABP-DR-D-0004. This link is approximately 1km long and provides a connection between the proposed Western Bypass and the Northern Link Road. The proposed carriageway is approximately at the existing ground level but requires a cutting that is around 4m deep and a small bridge to cross Brick Kiln Lane. There is a small area of land to the east of Basingstoke Road that is designated Site of Importance for Nature Conservation and would be affected by the scheme.

15.2.2. Estimated Implementation Costs

The estimated construction costs for the Connector Road proposal is summarised in Table 15-2.

Table 15-2 Proposed Connector Road Cost Estimate

Cost with 1 in 3 Slopes for Cuttings	Cost with 1 in 1 Slopes for Cuttings
£10m-£12m	£8m-£10m

15.2.3. Traffic Assessment Results

With the implementation of a Northern Link Road scheme, it is forecast that traffic within Alton will redistribute across the network as a result. The following assumptions have been made:

- A greater proportion of traffic from development sites in the north traveling west / southwest will use the Northern Link Road and subsequently the A31/ A339 junction via Butts Bridge / Selborne Road instead of routing south to A31 / Montecchio Way.

Bearing this in mind, all of the junctions within Alton have been reassessed with the Northern Link Road Scheme in place as the flows passing through each of the junctions is predicted to change when compared to the situation without the Northern Link Road. As with the other strategic scheme assessments, this scenario examines the full development flows plus 26%, the proposed Local Schemes with the Northern Link Road in place. The link flows for Scenario 2 with the Northern Link Road scheme are shown in Table 15-3.

Table 15-3 Scenario 2 with Northern Link Road Link Flows - AM and PM Peak Hours

Road Name	Direction	Scenario 2 with Northern Link Road Strategic Scheme	
		AM Peak Hour	PM Peak Hour
Whitedown Lane (South of Chawton Park Road)	Northbound	938	634
	Southbound	679	862
Whitedown Lane (South of Basingstoke Road)	Northbound	907	518
	Southbound	639	877
A339 (between Medstead Road and Whitedown Lane)	Northbound	690	483
	Southbound	536	591
Basingstoke Road (B3349) (between Whitedown Lane and New Odiham Road)	Eastbound	693	624
	Westbound	556	721
Selborne Road (between Butts Bridge and A31 junction)	Northbound	1465	1071
	Southbound	977	1117
Draymans Way	Eastbound	738	578
	Westbound	343	400
Butts Road	Eastbound	916	748
	Westbound	662	702
Anstey Road	Eastbound	886	692
	Westbound	706	763
London Road	Eastbound	610	569
	Westbound	581	631
Montecchio Way	Northbound	1066	831
	Southbound	886	918
New Odiham Road	Northbound	502	306
	Southbound	259	562
Old Odiham Road	Northbound	223	174
	Southbound	258	243
Wilsom Road	Northbound	733	402
	Southbound	509	618

Figure 15-1 and 15-2 shows the summary results plan for the AM Peak Hour and PM Peak Hour. The figures highlight the junction performance with the implementation of the proposed Northern Link Road scheme. Junctions showing as over theoretical capacity in the AM Peak Hour are:

- Normandy Street / Orchard Lane.
- Basingstoke Road / New Odiham Road.
- Butts Bridge junction.

Junctions showing as over theoretical capacity in the PM Peak Hour are:

- Normandy Street / Orchard Lane.
- Basingstoke Road / New Odiham Road.
- Butts Bridge junction.

A breakdown of the junction performance by approach during the AM and PM Peak Hours for this scenario are included below.

Figure 15-1 Scenario 2 – With Local Schemes and Northern Link Road Scheme - Summary Junction Capacity Results AM Peak Hour (08:00 - 09:00)

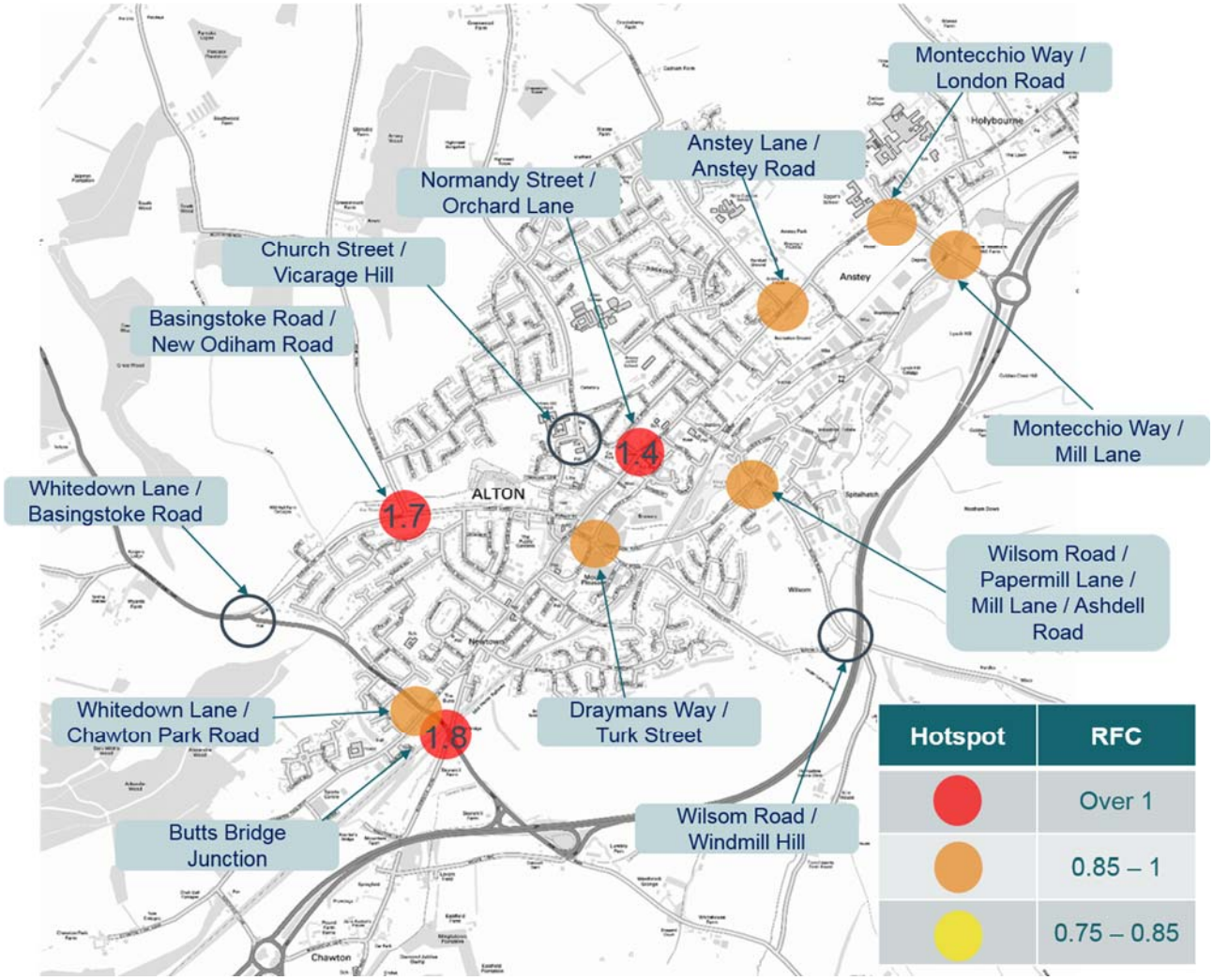
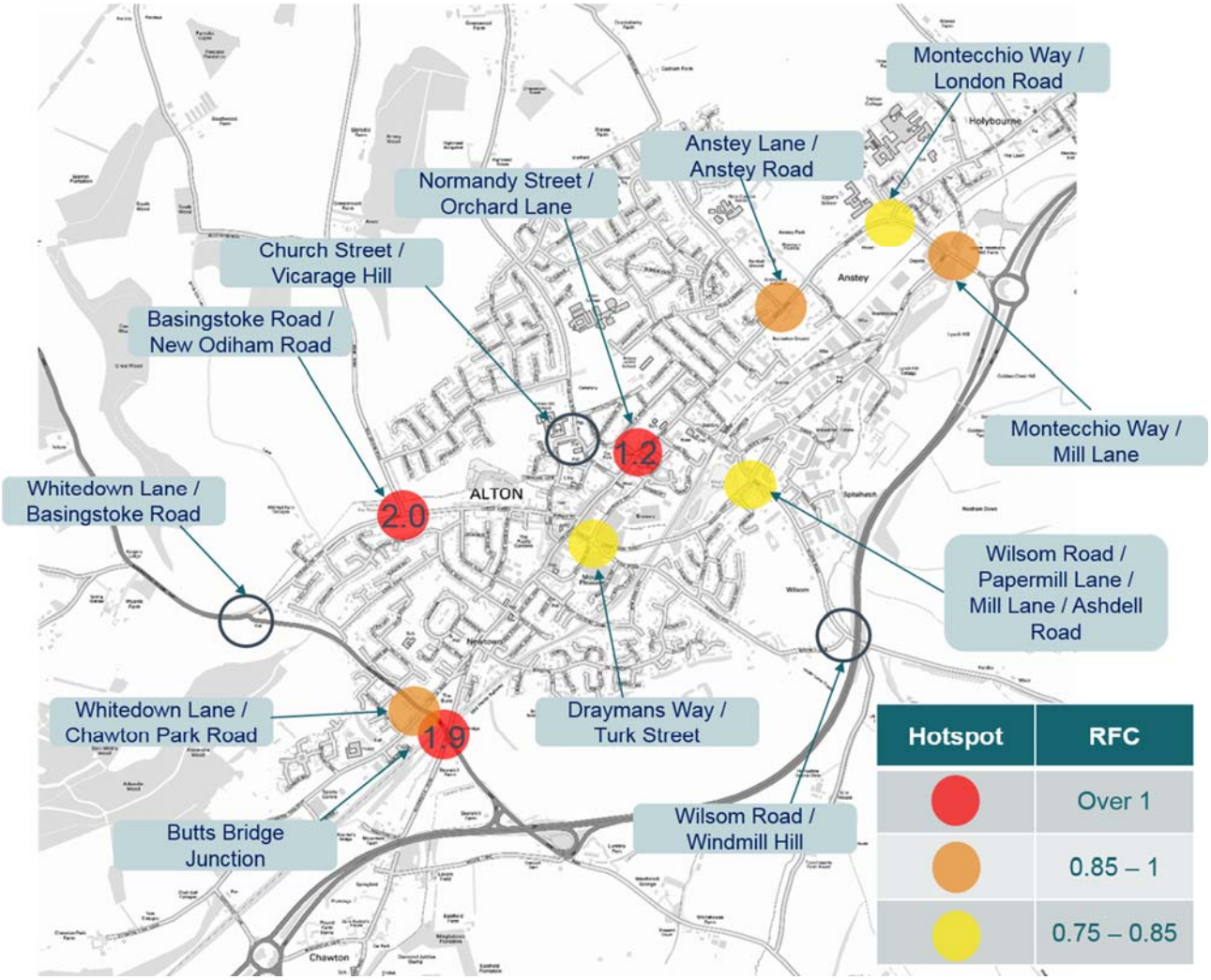


Figure 15-2 Scenario 2 – With Local Schemes and Northern Link Road Scheme - Summary Junction Capacity Results PM Peak Hour (17:00 - 18:00)



15.2.4. Montecchio Way / Mill Lane – Proposed Signalised Junction

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Montecchio Way / Mill Lane junction during the AM and PM Peak Hours are shown in Table 15-4.

Table 15-4 Montecchio Way / Mill Lane with Northern Link Road Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Montecchio Way (north) Ahead Right	54.0	8	49.0	8
Mill Lane Right Left	98.3	16	91.2	15
Montecchio Way (south) Ahead Left	99.3	41	91.3	24

- In the AM Peak Hour, the Mill Lane Right Left movement and Montecchio Way (South) are both predicted to be marginally under theoretical capacity.

- In the PM Peak Hour, the Mill Lane Right Left movement and Montecchio Way (South) are both predicted to be over practical capacity.

The Northern Link Road provides slight improvement at the junction compared to Scenario 2 with Local Schemes and results in the Montecchio Way (South) approach slightly under theoretical capacity in the AM Peak Hour. As with Scenario 2 with Local Schemes there is a risk that the predicted queue on Montecchio Way will block black into the A31 / Montecchio Way occasionally during the worst fifteen minutes during the peak hour. There is the potential to mitigate this by adjusting the signal timings for the junction although that would result in higher queues on Mill Lane.

15.2.5. Paper Mill Lane / Wilsom Road / Mill Lane – Proposed Double Mini-Roundabout Junction

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Paper Mill Lane / Wilsom Road / Mill Lane junction during the AM and PM Peak Hours are shown in Table 15-5.

Table 15-5 Paper Mill Lane / Wilsom Road / Mill Lane with Northern Link Road Junction Capacity Assessment Results

Junction	Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
		RFC	Queue	RFC	Queue
Southern mini roundabout	Link to northern mini roundabout	0.55	1	0.64	2
	Wilsom Road	0.95	12	0.77	3
	Ashdell Road	0.46	1	0.28	1
Northern mini roundabout	Paper Mill Lane (North)	0.80	3	0.59	1
	Mill Lane	0.38	1	0.55	1
	Link to southern mini roundabout	0.87	6	0.58	1

Southern mini-roundabout

- In the AM Peak Hour, Wilsom Road is predicted to be approaching theoretical capacity with a predicted queue of 12 PCUs.
- In the PM Peak Hour, there are no issues predicted at the junction.

Northern mini-roundabout

- In the AM Peak Hour, the link to the southern mini-roundabout is predicted to be marginally over practical capacity. All other arms are predicted to be within capacity.
- In the PM Peak Hour, there are now issues predicted at the junction.

The implementation of the Northern Link Road is predicted to have negligible change on predicted operating conditions at the Paper Mill Lane / Wilsom Road / Mill Lane junction.

15.2.6. Anstey Lane / Anstey Road – Proposed Roundabout Junction

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Anstey Lane / Anstey Road junction during the AM and PM Peak Hours are shown in Table 15-6.

Table 15-6 Anstey Lane / Anstey Road with Northern Link Road Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Anstey Road (West)	0.72	2	0.86	5
Anstey Road (East)	0.62	2	0.76	3
Anstey Lane	0.99	15	0.78	3

- In the AM Peak Hour, the Anstey Lane is predicted to operate at theoretical capacity with a predicted queue of 15 PCUs.
- In the PM Peak Hour, Anstey Road (West) is predicted to operate at practical capacity.

The Northern Link Road improves predicted performance at the Anstey Lane / Anstey Road junction and brings the Anstey Lane arm to theoretical capacity in the AM Peak Hour when it was predicted to be over theoretical capacity with Scenario 2 with Local Schemes.

15.2.7. Basingstoke Road / New Odiham Road – Proposed Priority Junction

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Basingstoke Road / New Odiham Road junction during the AM and PM Peak Hours are shown in Table 15-7.

Table 15-7 Basingstoke Road / New Odiham Road with Northern Link Road Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Basingstoke Road (E)	1.67	187	2.17	333
Basingstoke Road (W)	0.42	1	0.61	2

- Basingstoke Road (East) is predicted to be significantly over capacity in both the AM and PM Peak Hours with long queues predicted.

This junction is predicted to be significantly over capacity without the Northern Link Road. Implementation of the Northern link Road is predicted to worsen the performance of the junction as more traffic is predicted to pass through it from development sites in north Alton.

15.2.8. Basingstoke Road / Whitedown Lane – Proposed Roundabout Junction

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Basingstoke Road / Whitedown Lane junction during the AM and PM Peak Hours are shown in Table 15-8.

Table 15-8 Basingstoke Road / Whitedown Lane Scenario 2 with local schemes and Northern Link Road Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Whitedown Lane	0.64	2	0.37	1
Basingstoke Road (W)	0.39	1	0.40	1
Basingstoke Road (E)	0.40	1	0.54	1

- All approaches are predicted to operate within practical capacity during the AM and PM Peak Hours.

The Northern Link Road is predicted to make negligible impact on the performance at the Basingstoke Road / Whitedown Lane junction compared to Scenario 2 with Local Schemes.

15.2.9. Chawton Park Road / Whitedown Lane – Proposed Signalised Junction

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the proposed Chawton Park Road / Whitedown Lane junction during the AM and PM Peak Hours are shown in Table 15-9.

Table 15-9 Chawton Park Road / Whitedown Lane Scenario 2 with Local Schemes and Northern Link Road Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	Degree Sat (%)	MMQ	Degree Sat (%)	MMQ
Whitedown Lane (S) Left Ahead	97.3%	28	71.6%	12
Whitedown Lane (N) Right Ahead	87.9%	12	88.7%	18
Chawton Park Road Left Right	94.2%	11	87.9%	8

- In the AM Peak Hour, Whitedown Lane (South) and Chawton Park Road are both predicted to be over practical capacity and are approaching theoretical capacity. Whitedown Lane (North) is predicted to be over practical capacity. The predicted queue for Whitedown Lane (South) is likely to block back into the Butts Bridge junction occasionally during the worst fifteen minute period during this peak hour as this approximate length of the mean maximum queue is 168 metres and the distance to the Butts Bridge is approximately 140 metres.
- In the PM Peak Hour, Whitedown Lane (North) and Chawton Park Road are both predicted to be over practical capacity.

With the Northern Link Road, the junction is predicted to operate over theoretical capacity in both the AM and PM Peak Hours where it was only predicted to be over-capacity in the AM Peak Hour with Scenario 2 Local Schemes. This is because with the Northern Link Road some additional traffic from the sites in north Alton will be attracted to pass through this junction.

Queueing is predicted to block back to the Butts Bridge junction in the AM Peak Hour. There is the potential for adjusting the signal timings to allow more 'green time' for the northbound approach although this would mean reduced 'green time' for Chawton Park Road which would increase the predicted queues there.

The interaction between this junction and Butts Bridge has not been assessed due to the limitation of the models used in the study, which is a function of the stage of the project and the budget available. A micro-simulation model is therefore recommended to be developed covering these junctions for any future work on potential solutions.

15.2.10. Montecchio Way / London Road

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Montecchio Way / London Road junction during the AM and PM Peak Hours are shown in Table 15-10.

Table 15-10 Montecchio Way / London Road with Northern Link Road Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	DoS (%)	MMQ	DoS (%)	MMQ
Montecchio Way Ahead Right Left	77.8%	11	68.1%	10
Garstons Way Left Ahead Right	22.2%	1	12.9%	1
London Road (West) Left Ahead Right	84.7%	16	76.9%	14
London Road (North) Right Left Ahead	92.3%	15	83.5%	11

- In the AM Peak Hour, London Road (North) is predicted to be slightly over practical capacity and London Road (West) is predicted to operate at practical capacity.
- In the PM Peak Hour, all approaches are predicted to operate within practical capacity.

The introduction of the proposed Northern Link Road is predicted to improve performance for the approaches to this junction except London Road (North).

15.2.11. Wilsom Road / Windmill Hill

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Wilsom Road / Windmill Hill junction during the AM and PM Peak Hours are shown in Table 15-11.

Table 15-11 Wilsom Road / Windmill Hill with Northern Link Road Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Windmill Road to Wilsom Road (N)	0.08	0	0.02	0
Windmill Road to Wilsom Road (S)	0.30	0	0.27	0
Wilsom Road (N)	0.01	0	0.07	0

- In the AM Peak Hour and PM Peak Hour, there are no issues predicted at this junction.

The Northern Link Road does not impact upon the predicted results for this junction.

15.2.12. Normandy Street / Orchard Lane

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Normandy Street / Orchard Lane junction during the AM and PM Peak Hours are shown in Table 15-12.

Table 15-12 Normandy Street / Orchard Lane with Northern Link Road Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Normandy Street (East)	1.04	28	1.11	51
Orchard Lane	1.40	137	1.21	61
Normandy Street (West)	0.97	13	0.71	2

- In the AM Peak Hour, Normandy Street (East) and Orchard Lane is predicted to be over theoretical capacity and Normandy Street (West) is predicted to be operating approaching theoretical capacity. Along queue of 137 PCUs is predicted for Orchard Lane.
- In the PM Peak Hour, Normandy Street (East) and Orchard Lane are both predicted to be over theoretical capacity.

The Northern Link Road does not impact upon the predicted results of this junction. The results for this junction should be interpreted with caution as the junction capacity assessment for the existing situation predicted long queues that have not been observed on site.

15.2.13. Vicarage Hill / Church Street

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Vicarage Hill / Church Street junction during the AM and PM Peak Hours are shown in Table 15-13.

Table 15-13 Vicarage Hill / Church Street with Northern Link Road Junction Capacity Assessment Results

Turning movement	AM Peak (08:00 – 09:00)		PM Peak (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Church Street (South)	0.43	1	0.40	1
Vicarage Hill	0.65	2	0.67	2
Church Street (North)	0.64	2	0.53	1

- In the AM Peak Hour and PM Peak Hour, there are no issues predicted at this junction.

The Northern Link Road does not impact upon the predicted results of this junction.

15.2.14. Draymans Way / Turk Street

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Draymans Way / Turk Street junction during the AM and PM Peak Hours are shown in Table 15-14.

Table 15-14 Draymans Way / Turk Street with Northern Link Road Junction Capacity Assessment Results

Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
Draymans Way (East)	0.51	1	0.71	2
Lower Turk Street	0.63	2	0.77	3
Draymans Way (West)	0.98	18	0.82	4
Turk Street	0.60	1	0.77	3

- In the AM Peak Hour and PM Peak Hour, there are no issues predicted at this junction except that Draymans Way (West) is predicted to be approaching theoretical capacity in the AM Peak Hour.

The Northern Link Road has negligible impact upon the predicted results for this junction.

15.2.15. Butts Bridge

Results for Scenario 2 with Local Schemes and the Northern Link Road Strategic Scheme at the Butts Bridge junction (existing layout) during the AM and PM Peak Hours are shown in Table 15-15.

Table 15-15 Butts Bridge with Northern Link Road Junction Capacity Assessment Results

Junction	Turning movement	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
		RFC	Queue	RFC	Queue
Selborne Road Junction	Selborne Road	1.16	114	0.65	2
	Winchester Road	0.62	1	0.02	0
	Roundabout Link (South)	0.39	0	0.44	0
Butts Road Junction	Butts Road	1.00	19	1.11	50
	Roundabout Link (North)	1.00	0	0.83	0
	Whitedown Lane	1.80	317	1.88	346

Selborne Road Junction

- In the AM Peak Hour, Selborne Road is predicted to be operating over theoretical capacity with a predicted queue of 114 PCUs.
- In the PM Peak Hour, there are no issues predicted at the junction.

Butts Road Junction

- In the AM Peak Hour, Whitedown Lane is predicted to be significantly over theoretical capacity with Butts Road and the Roundabout Link operating at theoretical capacity. There is a long queue of 317 vehicles predicted for Whitedown Lane which will block back through the nearby Chawton Park Road junction.
- In the PM Peak Hour, it is predicted that Whitedown Lane and Butts Road are significantly over theoretical capacity with substantial queues. Again the predicted queue on Whitedown Lane of 346 vehicles will block back through the nearby Chawton Park Road junction.

The Northern Link Road results in a slight worsening of predicted performance at Butts Bridge as some additional traffic is predicted to pass through the junction to/from the sites in north Alton.

15.2.16. Summary

Based on the summary and detailed junction capacity results described above, the implementation of the Northern Link Road provides an improvement in performance at:

- Anstey Road / Anstey Lane.
- Montecchio Way / Mill Lane.
- Paper Mill Lane / Wilsom Road / Mill Lane.
- Montecchio Way / London Road.

However, performance is predicted to worsen at the following junctions:

- Basingstoke Road / New Odiham Road.
- Butts Bridge.

16. Link Capacity

A link capacity assessment of the existing and future scenarios for each scheme has been undertaken using the methodology set out in DMRB TA 79/99. The traffic volumes are based on a 60/40 directional split in the flow, based on these guidelines, and have been compared against theoretical lane capacities to identify if the roads are predicted to operate under, at, or over capacity.

DfT guidance states that a Ratio of Flow to Capacity (RFC) of below 0.85 means that the link operates satisfactorily. Above 0.85 it is approaching capacity and beyond 1.00 it is over capacity and queues and delays may result. One-way flows are represented using the busiest flow 60 percent figure of the link in the AM and PM Peak Hours. This has been completed for 12 roads across Alton, namely:

- Whitedown Lane (between Basingstoke Road and Chawton Park Road).
- Whitedown Lane (between Chawton Park Road and Butts Bridge);
- A339 (on Basingstoke Road – between Whitedown Lane and Medstead Road).
- Basingstoke Road (B3349) (between Whitedown Lane and New Odiham).
- Selborne Road (between Butts Bridge and A31).
- Draymans Way (between Turk Street and Normandy Street).
- Butts Road (between Butts Bridge and Draymans Way).
- Normandy Street (between Orchard Lane and Paper Mill Lane).
- London Road (between Anstey Lane and London Road (Holybourne)).
- Montecchio Way (between Mill Lane and A31 junction).
- New Odiham Road (between Greenfield Avenue and Southwood Road).
- Old Odiham Road (between Gilbert White Way and Upper Anstey Lane).
- Wilsom Road (between Windmill Hill and East Worldham).

16.1. AM Peak Hour Link Capacity Assessments

From the link capacity assessment summary as shown in Table 16-1, it is predicted that only the southern section of Whitedown Lane (between Chawton Park Road and Butts Bridge) operates over practical capacity in the existing situation. In the future scenarios there are three roads that exceed 0.85 RFC:

- Whitedown Lane.
- Normandy Street.
- Selborne Road.

It should be noted that the northern section of Whitedown Lane (between Basingstoke Road and Chawton Park Road) is predicted to be under capacity in the existing scenario as well as all future development scenarios. It is the southern section of Whitedown Lane (between Chawton Park Road and Butts Bridge) that is predicted to exceed theoretical capacity in Scenario 1, Scenario 2, with the Butts Bridge scheme, with the Northern Link Road and with the A31/B3004 junction.

The key constraint on Whitedown Lane is the relatively narrow section of carriageway between Chawton Park Road and Butts Bridge, which is less than 6.75m, meaning the theoretical capacity of this section is 900 vehicles per hour. There is potential to improve the capacity of this link by widening the carriageway to the south between the existing bridge on Whitedown Lane north of the Butts Bridge junction to Chawton Park Road. With the implementation of a potential widening scheme (to a minimum highway width of 6.75 metres) it is predicted that the southern section of Whitedown Lane would operate under theoretical capacity (based on the guidance stated in DMRB TA 79/99) in all scenarios with a maximum RFC of 0.91 in the AM Peak Hour with the Northern Link Road Scheme. However, any proposed carriageway widening would result in the removal of a mature tree outside the French Horn public house and the loss of grass verge.

Selborne Road is predicted to be just over practical capacity in Scenario 2, with the Butts Bridge Strategic Scheme, with the Northern Link Road, and with the A31/B3004 Strategic Scheme with predicted RFCs of 0.87, 0.87, 0.89 and 0.86 respectively.

Normandy Street is also predicted to be just over practical capacity with an RFC of 0.86 in Scenario 2, with the Butts Bridge Strategic Scheme and with the Western Bypass. These results should be interpreted with caution as they are derived from the same traffic flows that were used in the junction capacity assessments for the existing situation that predicted long queues that have not been observed on site.

As both Selborne Road and Normandy Street are predicted to be only just over practical capacity and within theoretical capacity it is not anticipated that local improvement schemes would be required

16.2. PM Peak Hour Link Capacity Assessments

The PM Peak hour link capacity assessment summary is shown in Table 16-2. All of the links analysed in the existing scenario operate below capacity. The highest RFC is predicted for the southern section of Whitedown Lane at 0.78, followed by Normandy Street with 0.72.

In the future scenarios only Whitedown Lane (between Chawton Park Road and Butts Bridge) is predicted to exceed 0.85 RFC.

This same southern section of Whitedown Lane is predicted to be over theoretical capacity in Scenario 2, with the Butts Bridge Strategic Scheme, the Northern Link Road and with the A31 / B3004 Strategic Scheme. The introduction of the Western Bypass significantly reduces the volume of traffic on Whitedown Lane and reduces the predicted RFC to 0.66. Localised widening of Whitedown Lane between Butts Bridge and Chawton Park Road would increase the theoretical capacity of the road and it would then operate within practical capacity in all future scenarios with a maximum RFC of 0.8 with the Northern Bypass Strategic Scheme. However, as noted above, any proposed carriageway widening would result in the removal of a mature tree outside the French Horn public house and the loss of grass verge.

London Road is at practical capacity with an RFC of 0.84 in Scenario 2, with the Butts Bridge Strategic Scheme and with the Western Bypass. As London Road is at practical capacity it is not anticipated that local improvement schemes would be required.

Summary

The link capacity assessments have highlighted potential capacity issues with future development flows. Whitedown Lane exceeds theoretical capacity in the AM and PM Peak Hours. The key issue is on Whitedown Lane and therefore further research into the capacity constraints along the road have been carried out. These showed that the capacity is restricted along one narrow section between Butts Bridge and Chawton Park Road. Localised widening of this section would increase theoretical capacity which would result in the road being predicted to operate within theoretical capacity in all future scenarios.

Table 16-1 AM Peak Hour Link Capacity Results

Road Name	Classification	Existing	Scenario 1	Scenario 2	Western Bypass	Butts Bridge	Northern Link Road	A31/ B3004 Strategic Scheme
Whitedown Lane (South of Chawton Park Road)	UAP3	0.86	1.05	1.10	0.67	1.10	1.13	1.09
Whitedown Lane (South of Basingstoke Road)	UAP3	0.57	0.66	0.70	0.39	0.70	0.71	0.69
A339	UAP3	0.65	0.69	0.72	0.52	0.72	0.72	0.71
Basingstoke Road (B3349)	UAP3	0.67	0.78	0.81	0.58	0.81	0.84	0.80
Selborne Road	UAP2	0.71	0.83	0.87	0.64	0.87	0.89	0.86
Draymans Way	UAP4	0.53	0.56	0.57	0.57	0.57	0.57	0.57
Butts Road	UAP3	0.65	0.70	0.73	0.73	0.73	0.73	0.71
Normandy Street	UAP3	0.79	0.85	0.86	0.86	0.86	0.86	0.87
London Road	UAP3	0.68	0.83	0.84	0.83	0.84	0.80	0.79
Montecchio Way	UAP2	0.67	0.79	0.82	0.07	0.82	0.80	0.74
New Odiham Road	UAP3	0.45	0.46	0.48	0.48	0.48	0.48	0.48
Old Odiham Road	UAP3	0.24	0.29	0.30	0.30	0.30	0.30	0.30
Wilsom Road	UAP3	0.55	0.64	0.67	0.67	0.67	0.67	0.71

Table 16-2 PM Peak Hour Link Capacity Results

Road Name	Classification	Existing	Scenario 1	Scenario 2	Western Bypass	Butts Bridge	Northern Link Road	A31/ B3004 Strategic Scheme
Whitedown Lane (South of Chawton Park Road)	UAP3	0.78	0.97	1.02	0.66	1.02	1.06	1.02
Whitedown Lane (South of Basingstoke Road)	UAP3	0.50	0.58	0.61	0.34	0.61	0.64	0.61
A339	UAP3	0.45	0.61	0.62	0.47	0.62	0.63	0.62
Basingstoke Road (B3349)	UAP3	0.62	0.72	0.75	0.54	0.75	0.80	0.75
Selborne Road	UAP2	0.60	0.73	0.77	0.58	0.77	0.80	0.75
Draymans Way	UAP4	0.51	0.54	0.54	0.54	0.54	0.54	0.54
Butts Road	UAP3	0.57	0.63	0.67	0.67	0.67	0.67	0.65
Normandy Street	UAP3	0.72	0.78	0.79	0.79	0.79	0.79	0.79
London Road	UAP3	0.66	0.83	0.84	0.84	0.84	0.79	0.81
Montecchio Way	UAP2	0.59	0.71	0.75	0.75	0.75	0.71	0.70
New Odiham Road	UAP3	0.55	0.56	0.58	0.58	0.58	0.58	0.58
Old Odiham Road	UAP3	0.23	0.27	0.28	0.28	0.28	0.27	0.28
Wilsom Road	UAP3	0.45	0.52	0.55	0.55	0.55	0.55	0.63

17. Sustainable Transport Strategy

17.1. Overview

Any new development should be progressed in a sustainable manner and this is a key element of planning policy. Therefore, provision of good sustainable transport facilities and good access to these facilities is required. It is also clear that, as indicated within this report, highway improvements alone will be insufficient to mitigate the impact of the numerous potential developments and measures will need to be implemented which will reduce the number of vehicles being generated by the developments. Therefore, a Sustainable Travel Strategy should be developed under which travel related sustainability objectives across the development sites should be delivered. This section sets out suggested measures for walking, cycling and public transport to be incorporated within a Sustainable Travel Strategy for Alton.

17.1.1. Walking and Cycling

Objectives

- Provide walking and cycling routes from new developments to key amenities, Alton town centre and key public transport routes.
- Ensure walking provision is in place before new developments are completed to allow for sustainable travel choices to be made from occupation.
- Increase cycle routes and stands across Alton from the current low level of provision.
- New residential development to have a travel plan which provides challenging but achievable targets to ensure travel by sustainable modes is available and considered as a viable option for local trips.

Challenges

- Balancing the road space requirements for all transport modes with the need to reduce traffic congestion.

Recommendations

Potential cycle and pedestrian routes providing links from new sites to the current transport network, key amenities and to public transport are shown in Figure 17-1. The potential routes shown are indicative of the routes that are most likely to be used and focus should therefore be centered in these areas to introduce or improve the walking and cycling provision. These would provide access from the developments onto the core existing cycle and pedestrian infrastructure. The key network identified consists of the main routes in the town plus quieter routes. It is recommended that the following cycling and walking schemes are considered as part of the Sustainable Transport Strategy for Alton:

Cycling

- On the main roads cycle lanes should be implemented where possible. Where this is not feasible the prominence of these cycle routes could be enhanced through signing and implementation of cycle logo markings.
- At the existing and proposed signalised junctions advanced stop lines should be provided.
- On the quiet routes the cycle measures are likely to consist of cycle signs and markings.
- Off-road routes should be provided for Safer Routes to Schools.
- Cycle parking provision should be increased within the Town Centre and at key employment centres including Mill Lane.
- At Alton Station, cycle parking should be increased, perhaps with the introduction of a ‘Cycle Hub’ providing covered and secure parking with access to cycle maintenance equipment.

Walking

- Widen existing narrow footways, where possible.
- Resurface poor quality footways and footpaths.
- Provide better lighting on poorly lit footpaths.

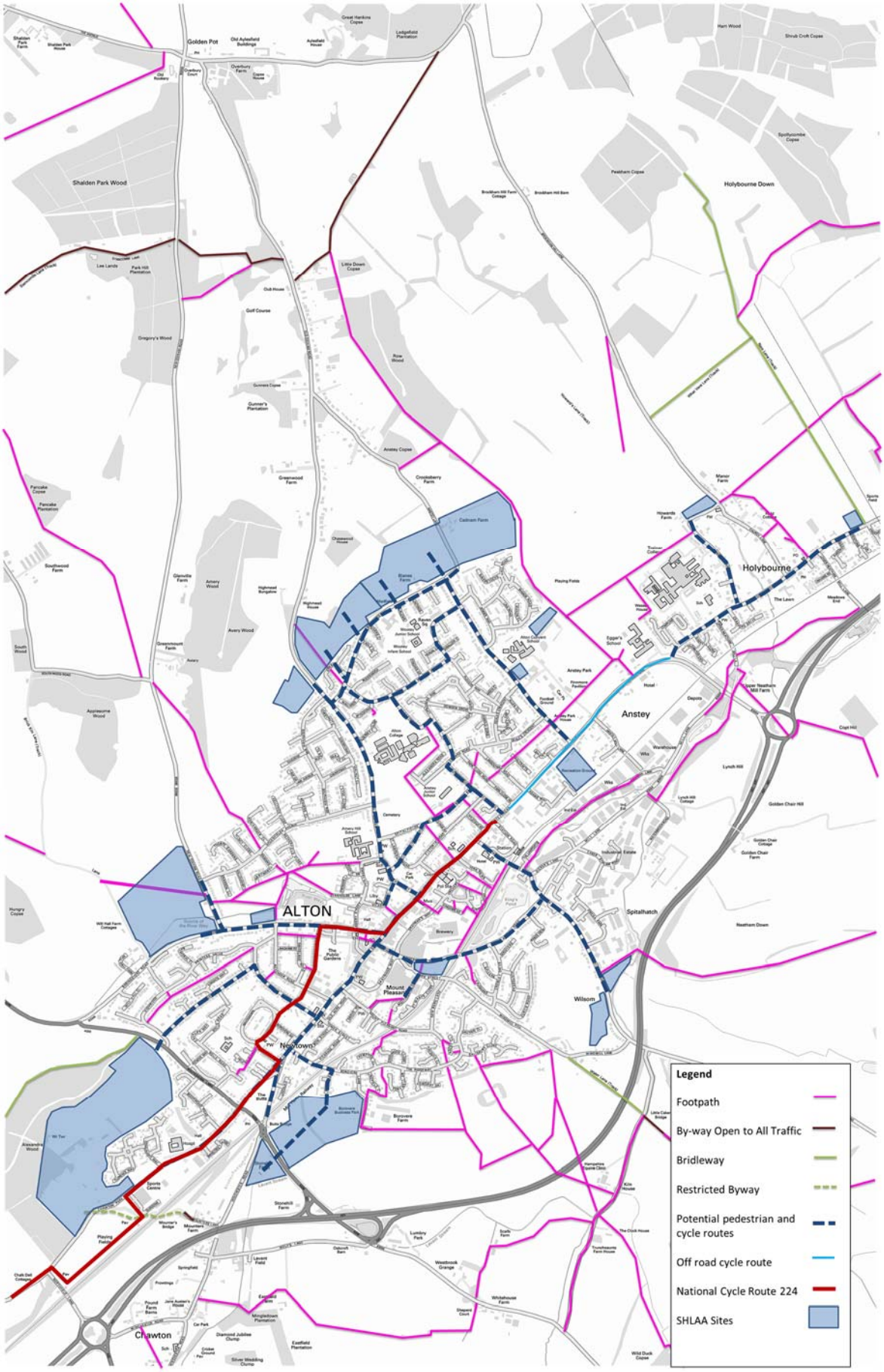
- Provide more opportunities for pedestrians to cross whether this is by introducing pedestrian refuges at key crossing points or by providing crossings at key locations including:
  - Butts Bridge.
  - Whitedown Lane.
  - Normandy Street – Anstey Road.
- New footpaths / footways – particularly linking the proposed developments to the existing pedestrian network.
- Introduce wayfinding / signing highlighting pedestrian routes.

New developments schemes should provide a travel plan that is in line with the EHDC's Local Development Framework Transport Assessment. For residential developments this should include measures such as Personal Travel Planning and establishing car clubs. For large employment areas a Transport Management Association should be set up in order to encourage sustainable modes of transport and decrease the reliance on private vehicle use. An overview of the suggested soft mitigation measures include:

- Travel plan guidance for new developments.
- Integrating taxis into travel plans.
- Demand Management, including demand management restraint measures, e.g. parking: availability, pricing, and preferential parking for high occupancy and/or low emissions vehicles.
- Planned Development Locations Smarter Measures, e.g. Personal Travel Planning for residential development.
- Establishing Car Clubs.
- Set up Transport Management Associations (TMA) for large employment areas.

Utilising the above measures can decrease reliance on private vehicles and encourage a shift to sustainable modes (walking and cycling) and public transport. Therefore, they can play a valuable role in alleviating projected increases in congestion and network saturation.

Figure 17-1 Potential Cycle and Pedestrian Routes



17.1.2. Public Transport

Objectives

- Ensure bus services are accessible to new developments by either providing new routes or re-routing current services.
- Ensure bus stops and routes are in place before new developments are completed to allow for sustainable travel choices to be made from occupation.
- Increase bus and rail usage for trips that are currently / could be taken by car.

Challenges

- It is anticipated that demand for bus services would increase as residential development increases, which may lead to a requirement for more bus services or a potentially greater frequency on existing routes which are currently low.
- Ensure bus services incorporate new large sites into their routes and are integrated with train arrival and departure times at Alton station.

Recommendations

- Improve multimodal interchange at Alton Station.
- Improve drop off area to allow cars to drop-off passengers without impacting on passing traffic at the station.
- Increased / improved cycle parking at Alton Station.
- Provide new bus stops with shelters, seating, timetables, and real time passenger information at proposed development sites.
- Provide new bus stops at key employment areas including Mill Lane industrial estate.
- Diversion of bus routes / introduction of new routes (detailed below).

Potential bus routes that could service the new developments are shown in Figure 17-2. These could be achieved either by re-routing existing routes, creating additional routes for existing services (that is similar routes with a slight variation to the route within certain areas) or by the creation of new services. However there are severe constraints to being able to divert services which are run commercially.

Treloar Development

Two existing services, Routes 38 and 64, already operate along Chawton Park Road which is the main access point for the Treloar Development. These provide accessible bus services for the south and west of the site into the centre of Alton and the railway station. A new bus service along Whitedown Lane would provide greater access to sustainable transport, particularly for residents in the north and east of the site. This service could be provided by rerouting one of the existing services onto Whitedown Lane and then along Basingstoke Road into the town centre.

Borovere Farm Development

A service along Borovere Lane and The Ridgeway would provide an accessible sustainable travel option of residents in the north and east of the site. This route could then link round to join the existing Route 13.

Will Hall Farm

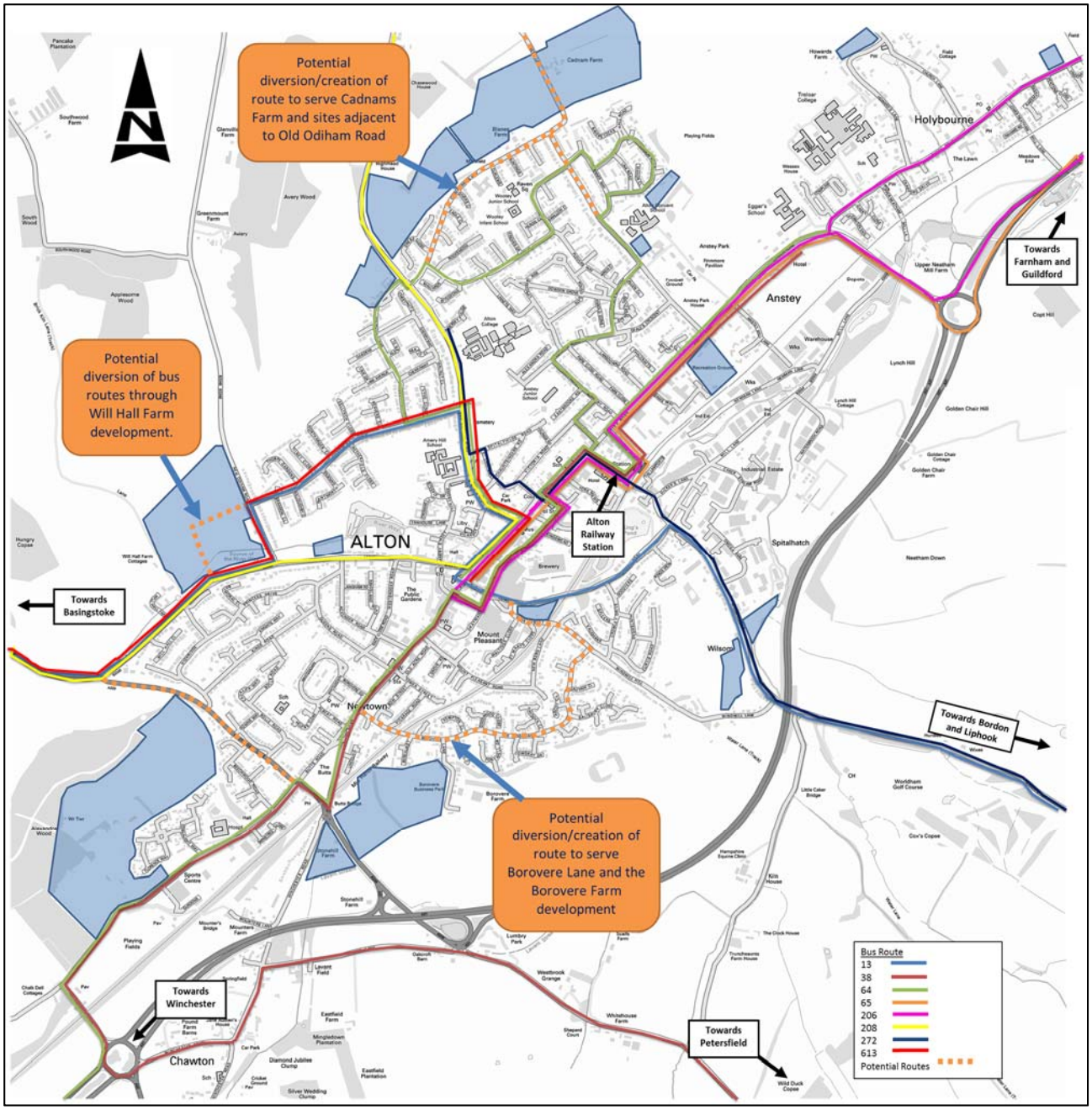
Bus routes 13, 208 and 613 pass along the perimeter of the Will Hall Farm development site, however, the northern and north western areas of the site are a significant distance from the existing bus routes. It is suggested that a service, possibly Route 13, is redirected through the Will Hall Farm site to ensure adequate accessibility to public transport is achieved.

Cadnams Farm Development and sites adjacent to Old Odiham Road

The creation of a circular route or the rerouting of an existing route along Gilbert White Way would provide greater accessibility to bus services for residents at the Cadnam Farm development and sites adjacent to Old Odiham Road. Currently Route 64 serves the residential area to the south of Gilbert White Way (just south of the proposed developments). The Route 64 service could be enhanced by creating a Route 64A that follows the existing route and a Route 64B that follows the majority of the existing route but in the vicinity of Wooteys Way continues on Anstey Lane to serve Gilbert White Way and the new developments.

In addition to the re-routing or creation of new bus services the frequency of the bus services should also be reviewed with a view to increasing the frequency once development has been built. This would encourage greater use of the services by providing greater flexibility in movement and helps reduce the reliance on private vehicles.

Figure 17-2 Potential Bus Routes



18. Appraisal and Funding

18.1. Scheme appraisal

A scheme appraisal has been developed to undertake an initial high level assessment of the Strategic Schemes using the information that is available to date. The Department for Transport's (DfT) Early Assessment and Sifting Tool (EAST) Guidance has been used to inform the appraisal. As stated in the guidance:

"EAST is a decision support tool that has been developed to quickly summarise and present evidence on options on a clear and consistent format. It provides decision makers with relevant, high level, information to help them form an early view of how options perform and compare.

The tool can be used to:

- *Help refine options by highlighting adverse impacts or unanticipated consequences;*
- *Compare options, for example, within or across modes, geographical areas and networks;*
- *Identify trade-offs between objectives aiding package development;*
- *Filter the number of options, i.e. discount non-runners early on to ease the appraisal burden and avoid resources being spent unnecessarily; and*
- *Identify key uncertainties in the analysis and areas where further appraisal effort should focus."*

As a result, Local Authorities tend to use the EAST guidance as a step in the early stages of projects. Using relevant criteria identified in the EAST guidance, and in discussion with HCC, an appraisal framework for the Alton strategic schemes has been developed. The criteria are summarised below:

- **Scale of Impact** – this criteria considers to what extent the scheme alleviates the identified problem. In this case, the problem is defined as the future traffic congestion predicted at junctions in Alton and the resultant impacts on other modes.
- **Connectivity** – this considers the impact of the scheme on journey time for general traffic (including freight).
- **Pedestrian Severance** – this considers how the scheme would impact on pedestrian movement.
- **Cyclist Severance** – this considers how the scheme would impact on the movement cyclists.
- **Natural Environment, Heritage and Landscape** – this considers the impact on the physical and cultural characteristics of the land and includes:
  - The man-made historic environment.
  - The sense of identity and place.
  - The impact on biodiversity and water.
- **Expected Value for Money** – this is a high level judgement on the expected benefits of the scheme in comparison to the anticipated scheme costs.
- **Affordability** – this considers the ability of the scheme to be delivered based on the available budget and budget period.

The scoring is based on a scale from -3 to +3 with the following assumptions:

Table 18-1 Appraisal Scoring

Score	Impact
+3	Significant benefit
+2	Moderate benefit
+1	Some benefit
0	Neutral impact
-1	Some dis-benefit
-2	Moderate dis-benefit
-3	Significant dis-benefit

The assessment of the impact on congestion and journey times is based on a comparison of the junction capacity assessment results for Scenario 2 with Local Schemes and Scenario 2 with Local Schemes plus the relevant Strategic Scheme. The proposed Connector Road has been considered in isolation. However, if it were included together with the Western Bypass or the Northern Link Road the benefits / dis-benefits and total score are likely to change. It is expected that an appraisal considering the Connector Road with the Western Bypass or the Northern Link Road would result in an improved score. It should be noted that this is a high level assessment commensurate with the stage of the project and the total score can be used as an initial indication of the likely outcome of any future business case preparation.

Table 18-2 Appraisal of Strategic Schemes

Scheme	Appraisal Criteria								Total Score
	Feasibility Criteria						Economic Criteria		
	Scale of Impact	Connectivity	Pedestrian Severance	Cyclist Severance	Natural Environment, Heritage and Landscape	Sub Total	Expected Value for Money	Affordability	
Western Bypass Option 1	+3 • Some reduction in congestion at Butts Bridge • Reduced congestion at the Chawton Park Road / Whitedown Lane junction.	+3 • Improved journey times along A339, including improved journey times at Butts Bridge	+2 • Reduced traffic flow on Whitedown Lane should reduce severance • No specific pedestrian facilities included along bypass • Some pedestrian routes would now cross the new bypass	+3 • Reduced traffic flow on Whitedown Lane and at Butts Bridge should reduce severance • No specific cycle facilities included along bypass • Although route could be used by cyclists it would be a longer route	-3 • Significant loss of green space and ancient woodland	+8	-1 • Reduced congestion • Improved journey times • Reduced severance • Cost: £40-55m	-2 • Difficulty in achieving funding within study period	**+5**
Western Bypass Option 2	+3 • Some reduction in congestion at Butts Bridge • Reduced congestion at the Chawton Park Road / Whitedown Lane junction	+3 • Improved journey times along A339, including improved journey times at Butts Bridge	+2 • Reduced traffic flow on Whitedown Lane should reduce severance • No specific pedestrian facilities included along bypass • Some pedestrian routes would now cross the new bypass	+3 • Reduced traffic flow on Whitedown Lane and at Butts Bridge should reduce severance • No specific cycle facilities included along bypass • Although route could be used by cyclists it would be a longer route	-3 • Significant loss of green space and ancient woodland	+8	-1 • Reduced congestion • Improved journey times • Reduced severance • Cost: £35-50m	-2 • Difficulty in achieving funding within study period	**+5**
Butts Bridge – Option 3	+2 • Reduced congestion at Butts Bridge	+2 • Improved journey times at Butts Bridge	+1 • New controlled crossing on Whitedown Lane • New footway	+1 • Reduced congestion through Butts Bridge • No major change for cyclists	-2 • Removal of mature trees required • Impact on setting of conservation area and listed builiding	+4	+1 • Reduced congestion at Butts Bridge • Improved journey times through Butts Bridge • Cost: £8-10m	+1 • Potential to achieve funding for the scheme within study period	**+6**
A31 / B3004 junction Option 1 (Full Grade Separated)	+1 • Some reduction in congestion in town centre • Improved access to A31	+1 • Some improvement in journey times in town centre	0 • No major change for pedestrians	0 • Some reduction in congestion in town centre • No major change for cyclists	-2 • Moderate loss of agricultural land	0	+1 • Some reduction in congestion • Some improvement in journey times • Cost: £20-25m	-1 • Potential difficulty in achieving funding within study period	**0**
A31 / B3004 junction Option 2 (Compact Grade Separated)	+1 • Some reduction in congestion in town centre • Improved access to A31	+1 • Some improvement in journey times in town centre	0 • No major change for pedestrians	0 • Some reduction in congestion in town centre • No major change for cyclists	-1 • Reduced area of agricultural land affected compared to Option 1	+1	+1 • Some reduction in congestion • Some improvement in journey times • Cost: £10-12m	+1 • Potential to achieve funding for the scheme within study period	**+3**
Northern Link Road	0 • Overall little change to level of congestion across the town centre but makes Butts Bridge slightly worse	0 • Overall little change in journey times across the town centre	0 • No major change for pedestrians	0 • No major change for cyclists	-2 • significant loss of open land and high visual impact	-2	-2 • Limited reduction in congestion • Limited improvement in journey times • Cost: £60-80m	-3 • Significant difficulty in achieving funding within study period	**-7**

Scheme	Appraisal Criteria								Total Score
	Feasibility Criteria						Economic Criteria		
	Scale of Impact	Connectivity	Pedestrian Severance	Cyclist Severance	Natural Environment, Heritage and Landscape	Sub Total	Expected Value for Money	Affordability	
Connector Road	0 • Overall little change to level of congestion across the town centre	0 • Overall little change in journey times across the town centre	0 • No major change for pedestrians	0 • No major change for cyclists	-2 • Moderate loss of green space and small area of SINC affected	-2	-1 • Limited reduction in congestion • Limited improvement in journey times • Cost: £8-12m	+1 • Potential to achieve funding for the scheme within study period	**-2**

The results of this high level appraisal of the strategic schemes indicates that:

- The Western Bypass options deliver the most transport benefits but at a relatively high cost and with the greatest environmental impacts.
- The proposed Butts Bridge Option 3 scheme offers somewhat greater value for money as it is expected to deliver improvements to the operation of this key junction in the town at relatively low cost. The negative impact of the scheme is also limited compared to the other Strategic Schemes but equally the benefits are relatively local.
- The A31 / B3004 junction Option 2 (compact grade separated junction) is also anticipated to deliver some benefits by permitting B3004 traffic to connect with the A31 without passing through the town.. There may be some barriers to delivery as third party land would be required and the scheme would result in a loss of agricultural land. However, in Option 2 the impact of the scheme is more limited in comparison to Option 1 (full grade separated junction). Given the volume of traffic anticipated to use the junction it is expected that the smaller Option 2 design would deliver the same benefits as the larger Option 1 scheme but at a lower cost.
- It is expected that a Western Bypass would result in improvements in the operation of the local network, particularly at Butts Bridge and along the A339 corridor. The scheme would also reduce the severance caused by the A339. However, these benefits are offset by the significant impact on the environment and the estimated high scheme costs. The results of the appraisal indicate that further work would need to be undertaken on the expected level of demand for a Western Bypass and estimated costs would need to be refined to understand if a positive business case would be realised within the study timeframe.
- In isolation the Northern Link Road does not offer sufficient benefit to warrant the significant cost required to deliver the scheme, which would also impact on the local environment.
- Whilst the estimated costs to implement the Connector Road are relatively low the benefits of the scheme in isolation are limited. However, if the Western Bypass or Northern Link Road were to be taken forward the benefit of implementing the Connector Road to relieve congestion in the town, especially on Basingstoke Road, may mean the scheme is viable. This would need to be assessed further should either of the other schemes be progressed.

18.2. Scheme Funding Options

The package of measures included in the transport strategy developed for Alton to support local growth will require considerable investment in the local infrastructure. There are a range of funding sources that can be explored to deliver these schemes and these are outline below.

18.2.1. Community Infrastructure Levy

EHDC currently use Section 106 (S106) agreements to secure financial contributions from a developer, which can be used to fund highway improvements or public transport services. EHDC intends to adopt a Community Infrastructure Levy (CIL) Charging Schedule on 1 April 2015 and this will largely replace the S106 agreements. To understand the level of funding that may be achieved with the level of housing growth assumed in Alton under Scenario 1 and 2 it is assumed that the CIL would apply. In accordance with CIL different rates will be set for residential development for different geographical zones:

- Zone 1 relates to the land to the north of the South Downs National Park (excluding Whitehill & Bordon).
- Zone 2 relates to the Southern Parishes (or land to the south of SDNP).
- Zone 3 relates to Whitehill & Bordon excluding the Eco-Town.
- Zone 4 relates to the Eco-Town growth area.

The proposed residential developments for Alton fall within Zone 1 for which the proposed CIL is £150 per sqm. An approximate calculation has been made to understand the rough order of magnitude of the CIL should the level of housing development in Scenario 1 and 2 be realised. The calculation has assumed the following and the calculations are in Table 18-3:

- 110 sqm per house. This is working on the assumption that 25% of market housing will be each 2, 3, 4 and 5 bedroom in size and therefore the average internal floor area is 110 sqm.
- 30% of the CIL will be allocated to transport infrastructure. This assumption is based purely on discussions with HCC and provides only an indication of the amount of funding which could be available for transport schemes. Ultimately EHDC Councillors will make the decision on how much CIL is allocated to transport infrastructure as opposed to other infrastructure such as education and leisure.

Table 18-3 CIL Calculation

Residential Development	No. Houses	Area per house (sqm)	Total Area (sqm)	CIL (£/sqm)	Total Levy (£)	Transport Infrastructure Improvement Schemes (%)	Total Transport levy from development (£)
Scenario 1	1,667	110	183,370	£150.00	£27,505,500	30%	£8,251,650
Scenario 2	2,100	110	231,000	£150.00	£34,650,000	30%	£10,395,000

Based on the approximate calculations above the potential level of funding achieved through the CIL Draft Charging Schedule are:

- Scenario 1 (1,667 houses): £8.25m; and
- Scenario 2 (2,100 houses): £10.4m.

The estimated level of funding has been validated by applying the HCC Transport Contributions Policy. Assuming all houses in Scenario 1 and 2 are on average 2-3 bed dwellings the contribution per dwelling is £3,745. This would result in a total developer contribution of £6.25m in Scenario 1 and £7.85m in Scenario 2, which is broadly similar to that calculated using the CIL assumptions above.

However, these estimates of funding do not account for the fact that some of the residential units will be affordable housing which is zero rated as far as CIL is concerned. The proportion of affordable housing to be delivered as part of the housing sites is subject to negotiation, but the figure given in the JCS is 40%. Accordingly the funding estimates above should be factored down to reflect this, reducing the potential level of funding achieved through CIL to:

- Scenario 1 (1,667 houses): £4.95m; and
- Scenario 2 (2,100 houses): £6.24m.

Based on the appraisal of the Local Schemes and Strategic Schemes the following has been identified:

- A Western Bypass would provide the greatest transport benefits including benefits to the Butts Bridge junction. However, the estimated cost to deliver the scheme is high and there is a significant impact on the environment.
- Local schemes are required to support housing growth. An allowance of £2.75m has been made for the cost of delivering the local transport schemes. Those local transport schemes listed in Table 10-1 which form part of a planning application will be delivered by the developer and will not need CIL funding. However, the local transport schemes alone are not sufficient to accommodate the additional traffic and consequently strategic schemes are required.
- The Butts Bridge Option 3 proposal scheme offers the greatest value for money.
- The A31 / B3004 junction Option 2 (compact grade separated junction) is also anticipated to deliver some benefits.
- There are limited benefits to implementing the Northern Link Road and Connector Road.

On the basis that the local transport schemes will be delivered by developers as part of the planning applications for housing sites, the CIL funding could be used to deliver the strategic schemes. It is unlikely that any of the strategic schemes will be able to be delivered solely through CIL receipts.. Therefore, in order to deliver any of the Strategic Schemes further funding sources need to be considered over and above the CIL and some options include:

- DfT Grant Funding from the Central Government as part of the devolved Local Major Schemes budget.
- Council Capital in the form of current capital on account or from future asset sales.
- Public Works Loan Board.
- Local Enterprise Partnership (LEP) funding.

18.2.2. DfT Grant Funding

Whilst Central Government funding is typically distributed through the LEPs funding is sometimes made available directly from the DfT. Recent examples include Pinch Point funding and for 2015 there is the devolved Local Major Scheme budget. It is worthy of note that Portsmouth City Council secured £19.5m (out of £30m) from DfT's Major Scheme Funding to deliver Tipner interchange and Park and Ride. The aim of the scheme was development enablement at Tipner as without the interchange the land could not be unlocked. In addition, there was wider benefits associated with the Park and Ride that need to be considered as a factor in the award. The key elements of the schemes were:

- 1,600 dwellings.
- 800m² local shopping.
- Community facilities (630m² community centre and 300m² surgery).
- A 150 bedroom 3-star hotel.
- 25,000m² office development.
- 2,400m² of commercial development as listed buildings in heritage quarter.

Given the relatively large scale of development associated with the scheme it is thought that significant benefits for the strategic schemes in Alton would need to be demonstrated to achieve direct funding from the DfT for schemes in Alton. Facilitating the level of housing development in Scenario 1 or 2 alone may not be sufficient to generate the benefits required for DfT funding.

18.2.3. Local Government Funding

An application can be made for submission to Hampshire County Council or East Hampshire District Council for Capital Scheme funding from local resources and would require submission of an outline business case. However, as local government funding is in general being reduced the level of funding that may be achieved is likely to be limited.

18.2.4. Public Works Loan Board

An application for a loan from the Public Works Loan Board (PWLB) could be made to secure some capital to deliver the proposed schemes. The PWLB lends to town and parish councils in England and applicants need a borrowing approval from the Department for Communities and Local Government. The amount of the loan is likely to be small and therefore would not be able to fund any highway improvement schemes.

18.2.5. Local Enterprise Partnership Funding

The Enterprise M3 LEP includes Alton and is is a public/private partnership set up to support and sustain economic growth at a local level. The EM3 LEP has been successful in securing Central Government funding and therefore this LEP is a potential route to securing funding for Alton. There are two main streams for funding one is through the Enterprise M3 Growth Deal and the other through the Local Transport Body.

The Enterprise M3 Growth Deal

The Enterprise M3 Growth Deal is worth £118million to support economic growth totalling 5,000 jobs and 3,000 homes. £35million of this funding is coming on stream in 2015/16. The Enterprise M3 LEP partners and central Government have agreed to co-invest in numerous development schemes including:

- Enterprise M3 Local Sustainable Transport - This package of £20.7m covers capital transport improvements with a strong focus on improving the quality of sustainable forms of transport e.g. railway station access.
- Basingstoke North Corridor A340 - Partial dualling of the A340 that will reduce business based congestion and unlock housing development in the Basingstoke area.

Local Transport Body

Enterprise M3, in conjunction with the two Highways Authorities at Surrey and Hampshire, established the Enterprise M3 Local Transport Body (EM3 LTB) at the end of 2012. The primary role of local transport bodies is to agree, manage and oversee the delivery of a prioritised programme of transport schemes from 2015 onwards. The EM3 LTB submitted a provisional list of prioritised major transport infrastructure schemes to the DfT on 31 July 2013, based on a minimum funding allocation of £24.3m, over the period 2015/16 to 2018/19.

Applications for funding are assessed using the following key criteria:

- Expected Economic Benefits (transport and scheme related).
- Expected Economic Benefits (economic growth related)
- Socio-distributional impacts.
- Environmental impacts.
- Scheme feasibility and deliverability.

The assessment utilises local indicators in order to provide contextual details for economic growth, transport effects and regeneration impact with regards to the proposed schemes. Application for funding can be applied for independently for each scheme or they can be placed into a package of complimentary measures in one application. In order to maximise the success of achieving funding it is recommended that funding is applied for through separate packages in phases.

Further inquiries into funding post 2018/19 for the EM3 Growth Deal and LTB should be undertaken in order to consider them as suitable options for additional funding as the EM3 LEP is thought to offer the most productive route to secure funding. Nonetheless, a sound business case for the scheme for which funding is being sought will be required based on economic growth as well as delivery of residential development.

19. Conclusions and Recommendations

19.1. Context

Atkins has been appointed by Hampshire County Council (HCC) and East Hampshire District Council (EHDC) to develop a high level transport strategy for Alton to cater for the potential increase in travel demand generated by future housing development in and around the town. This report has assessed the transport implications of the residential development of sites identified within the East Hampshire District Council's Strategic Housing Land Availability Assessment (SHLAA) as well as wider growth within the sub-region to outline, at a high level, the necessary transport improvements and interventions to support the development.

19.2. Approach

This report has examined the existing situation by using survey data from previous studies as well as using data from traffic and transport surveys commission as part of this study. Two potential future development scenarios have been investigated and are as follows:

- A 'Full development scenario' of 1,667 units including all those sites for which a planning application had been granted and where there are committed developments. The term "committed" in this context is defined as those sites that are reasonably certain to proceed as set out in local planning documents (such as the JCS and Strategic Housing Land Availability Assessment (SHLAA)) and therefore includes sites for which planning consent has not yet been obtained. In addition to the housing units in Alton, 3,209 units from sites in nearby towns of Four Marks, Medstead, Bentley, Whitehill and Bordon were included in this scenario.
- A 'Full development plus 26% scenario" which equates to 2,100 units. This also includes 4,044 units (3,209 units plus 26%) from sites in nearby towns of Four Marks, Medstead, Bentley, Whitehill and Bordon. The scenario would assume that traffic flows are uplifted and the trip distribution developed for the 'Full development scenario' would be retained.

19.3. Junction and Link Capacity Assessments

Junction capacity assessments have been undertaken at 12 existing junctions within Alton for the existing scenario as well as the future development scenarios.

Existing

The results have highlighted that there are currently three junctions where the practical capacity is exceeded during either the AM or PM Peak Hours, namely:

- Draymans Way / Turk Street.
- Anstey Lane / Anstey Road.
- Paper Mill Lane / Mill Lane / Wilsom Road / Ashdell Road.

There are a further four junctions where theoretical capacity is met in the existing situation, namely:

- Whitedown Lane / Basingstoke Road.
- Butts Bridge.
- Normandy Street / Orchard Lane.
- Montecchio Way / Mill Lane.

Scenario 1 (1667 dwellings)

Assigning the Scenario 1 related traffic to the network highlights that the following junctions are predicted to exceed practical capacity on one or more arms:

- Basingstoke Road / New Odiham Road.
- Draymans Way / Turk Street.
- Montecchio Way / London Road.

Furthermore, the following junctions are predicted to exceed theoretical capacity:

- Whitedown Lane / Basingstoke Road;
- Chawton Park Road / Whitedown Lane;
- Butts Bridge;
- Normandy Street / Orchard Lane;
- Paper Mill Lane / Mill Lane;
- Anstey Lane / Anstey Road; and
- Montecchio Way / Mill Lane.

Scenario 2 (2100 dwellings)

Assigning the Scenario 2 related traffic to the network highlights that the following junctions are predicted to exceed practical capacity on one or more arms:

- Basingstoke Road / New Odiham Road.
- Draymans Way / Turk Street.
- Montecchio Way / London Road.
- Chawton Park Road / Whitedown Lane.

Furthermore, the following junctions are predicted to exceed theoretical capacity:

- Whitedown Lane / Basingstoke Road.
- Chawton Park Road / Whitedown Lane.
- Butts Bridge.
- Normandy Street / Orchard Lane.
- Paper Mill Lane / Mill Lane.
- Anstey Lane / Anstey Road.
- Montecchio Way / Mill Lane.

19.4. Impact of Local Schemes

Submitted in conjunction with various planning applications within Alton are a range of local schemes aimed to improve the following junctions:

- Montecchio Way / Mill Lane.
- Paper Mill Lane / Mill Lane.
- Anstey Lane / Anstey Road.
- Basingstoke Road / New Odiham Road (to be reviewed by HCC)
- Chawton Park Road / Whitedown Lane.(to be reviewed by HCC)
- Basingstoke Road / Whitedown Lane (the proposed layout here has been developed by Atkins as part of this study).

The results indicate that in all but one case (Basingstoke Road / New Odiham Road), the local schemes provide improvement at the junctions where they are aimed to but they do not provide a total solution for Alton as a whole.

At the Basingstoke Road / New Odiham Road the junction capacity assessments show that the performance of this junction worsens in both development scenarios. Therefore negotiations are underway to secure a financial contribution towards an improvement instead of implementing the proposed priority junction layout. it is recommended that any development related funds are retained whilst an alternative proposal is developed that is capable of accommodating the travel demands of development in the long term as well as the short term.

It should be noted that for the Chawton Park Road / Whitedown Lane junction, although there is some improvement with the proposed layout, the scheme has not been approved by HCC for implementation and a further study is required to develop a solution for the junction taking account of any solution adopted for the Butts Bridge junction.

Accordingly all schemes are recommended for implementation except the Basingstoke Road / New Odiham Road scheme and the Chawton Park Road / Whitedown Lane scheme.

19.5. Strategic Scheme Review

There are four Strategic Schemes that have been considered in addition to the local schemes. The assessment of each strategic scheme assumes that each of the local schemes described in this report are in place. The feasibility of these strategic schemes has been summarised below.

Western Bypass

The Western Bypass proposals involve providing a link from Northfield Lane / Chawton Park Road in the south west of Alton to the Basingstoke Road / Whitedown Lane junction further north. As this is a high level study two indicative alignments for this route have been developed and if this scheme were to be taken forward more detailed investigation on the most appropriate alignment and design assumptions would be required.

The benefit of introducing a Western Bypass is significant in that it removes a large amount of traffic from Whitedown Lane and the Butts Bridge junction which would be welcomed. However, despite this reduction in traffic, the Butts Bridge junction is still predicted to be over capacity in Scenario 2, albeit the queues at the junction would be less than are experienced today. The benefits are also focussed predominantly on the western side of the town and significant reductions in traffic are not predicted across central and eastern Alton.

The currently estimated cost of the scheme is high, ranging from £35m - £55m depending on which of the indicative routes is taken and also the steepness of the slopes implemented for the cuttings to the side of the road. It should also be noted that these routes cross a number of important land designations, including ancient woodland, and therefore the ability to construct a new road may be compromised.

Despite the potential benefits of the scheme, the costs and the land take required may limit the feasibility of the indicative options. There may be alternative alignments, both vertical and horizontal, which could result in different environmental impact and lower construction cost.

In the interim, this scheme should be retained and funding opportunities investigated along with further analysis to validate the results of the Western bypass assessment as set out in this report starting with the commissioning of an up to date Origin and Destination survey. Completion and analysis of the survey plus consideration of funding commitments to support work on alternative alignments with optimised cost estimates and environmental impacts will provide greater information on which to consider next steps.

Butts Bridge Strategic Scheme

Three options have been proposed within this study for the Butts Bridge Strategic Scheme. After consultation with stakeholders, Option 3 has been taken forward as the only viable option as Option 1 and 2 both involve land take on Butts Green which is common land given to the Town Council to safeguard and forms part of a conservation area.

Option 3 involves the replacement of the existing double roundabout with a single, elongated roundabout. This option also involves providing a new bridge under the Watercress Line to allow a more consistent two-way flow on Whitedown Lane. The cost of the scheme has been estimated to be in the region of £8m - £10m and is one of the lowest cost Strategic Schemes developed as part of this study.

The benefits brought about by the scheme are significant in that the new roundabout design greatly increases capacity at the junction. The additional bridge under the Watercress Line allows for vehicles to approach the roundabout from Whitedown Lane (Southbound) through the existing bridge more efficiently and in a safe manner. The new bridge will also allow for vehicles to exit the roundabout onto Whitedown Lane without the need to give way to southbound traffic, and subsequently queueing and blocking back onto the roundabout.

Despite the benefits of the Option 3 scheme, the junction is still predicted to be over-capacity although significantly less so than with the current layout. The performance of the scheme is similar to the current layout with the Western Bypass in one of the peak hours and better than the Western Bypass in the other peak hour. The cost of the scheme is much less than the Western Bypass (and the Northern Link Road) and around 20% less than the A31 / B3004 Strategic Scheme and accordingly represents the best value for money given the benefits that it provides to the key junction in the town.

It is recommended that for any further assessments at Butts Bridge a micro-simulation model is used as this would allow the detailed interaction between this junction and the Chawton Park Road / Whitedown Lane to be assessed with more accuracy including the impact of queues originating at one of the junctions on the

operation of the other. Additional work is required to to develop a solution for the junction taking into account any solution adopted for the Butts Bridge junction.

A31 / B3004 Strategic Scheme

Two potential schemes have been developed to feasibility level for a new grade separated junction of the A31 and the B3004. The aim of the scheme is to provide a direct connection between the A31 and B3004 enabling through traffic to avoid the town and to redistribute traffic within and approaching Alton to relieve pressure on the other key junctions leading to and from the A31..

The cheaper of the two scheme options provides a compact grade separated junction for an estimated £10m - £12m. The larger full grade separated junction is estimated to cost £20m - £25m.

Both junctions provide similar benefits in that they bring some improvements in junction performance across central and eastern Alton. This is due to a reduction in traffic from the Whitehill Bordon area arriving at Alton via Wilsom Road and then travelling through the town to get onto the A31. Some traffic from central Alton travelling to the A31 will be redistributed to the new junction and removed from the Butts Bridge junction as well as key junctions in the east including Montecchio Way / Mill Lane.

Northern Link Road

The Northern Link Road provides a 1.1km link between New Odiham Road and Old Odiham Road. This proposed link would provide an additional route in an east-west orientation to the north of Alton and would help alleviate any traffic stresses experienced on Greenfields Avenue caused by current traffic as well as any potential traffic increases as a result of development in the surrounding areas.

The cost of the scheme is estimated to be between £60m - £80m depending on the steepness of the slopes of the cuttings to the side of the road and the environmental impact is likely to be very significant.

The benefits of introducing this scheme in isolation are relatively minor with some traffic redirecting towards Butts Bridge rather than travelling through eastern Alton. However, there is the potential for combination with the proposed Connector Road leading from New Odiham Road to the Basingstoke Road / Whitedown Lane junction which would improve the scheme benefits (albeit at a significantly increased cost).

Proposed Connector Road

This link is approximately 1km long and provides a connection between the proposed the Northern Link Road and the Basingstoke Road / Whitedown Lane junction/potential Western Bypass.

The cost of the scheme is estimated to be £8m - £12m.

In isolation the proposed Connector Road will provide little benefit but in combination with the Northern Link Road it would help to provide a more direct link from the Cadnam Farm area to the Basingstoke Road / Whitedown Lane junction and onto the A339. This would remove traffic through central and western Alton.

Implementing the Connector Road in conjunction with both the Western by pass and the Northern Link Road would provide significant benefit although the cost for the three sections is estimated to be between £103m and £147m which is not considered realistic in terms of attracting the necessary funding (and also in terms of environmental impact).

19.6. Proposed Strategy

19.6.1. Local and Strategic Scheme Recommendations

It is recommended that to support the proposed development within Alton, the proposed Local Schemes should be implemented except the Basingstoke Road / New Odiham Road scheme and the Chawton Park Road / Whitedown Lane scheme

In addition to these Local Schemes, Strategic Schemes are also required to allow for additional traffic associated with the residential development scenarios. This report has highlighted the pros and cons of the Strategic Schemes currently being considered and it is recommended that a combination of schemes would provide the best solution. The recommendations are as follows:

- A Western Bypass would provide significant transport benefits therefore funding opportunities should be investigated. However, the routing of the bypass would be contentious and would need further analysis. In particular, as a first step a revised Origin and Destination survey should be carried out to validate the results of the Western Bypass assessment. Completion and analysis of the survey plus consideration of funding commitments to support work on alternative alignments with optimised cost estimates and environmental impacts will provide greater information on which to consider next steps.
- The implementation of a new layout at the Butts Bridge junction is recommended as a result of findings from this report. It is advised that Option 3 is taken forward as this provides the greatest benefit and least impact on the adjacent Butts Green. It also offers the greatest value for money. Cost of £8-10m.
- The A31 / B3004 compact grade separated junction would also deliver some benefit across central and eastern Alton as well as Butts Bridge and is a relatively low cost scheme compared to the Western Bypass and Northern Link Road. Therefore, if funding is available it is recommended that this scheme is also delivered. Cost of £10-12m.
- The Connector Road would also deliver some benefit by relieving congestion at the Basingstoke / New Odiham Road if it were connected with a Western Bypass or a Northern Link Road.

All Local and Strategic Schemes would need to be accompanied by a package of measures to encourage use of sustainable modes of travel and suppress the demand for movement by motor vehicle.

19.6.2. Sustainable Travel Strategy

Walking and Cycling

It is recommended that the existing cycle route from Chawton Park Road to the High Street is extended towards Holybourne. It is also recommended that new walking and cycling routes are improved or introduced to provide links from existing and proposed developments to the current footpath / cycle network. This will ensure that there are viable sustainable options for travel to and from key amenities, bus stops, Alton railway station, and the town centre.

Public Transport

Bus services in Alton cover the vast majority of current communities across the town. However, bus frequency is relatively low. It is anticipated that the proposed developments will increase demand for bus travel which may require increased bus frequency. The new developments may also require the diversion of current bus routes or the creation of new routes in order to serve the development sites fully. As the internal road layouts of the sites have not yet been determined in all cases, there may be opportunity to route buses through sites to ensure these routes are highly accessible to new residents.

19.7. Scheme Funding

There are number of options to provide funding for the various local and strategic schemes proposed in Alton.

EHDC intends to adopt and implement a Community Infrastructure Levy (CIL) Charging Schedule on 1 April 2015 and this will largely replace the S106 agreements. It is estimated that a 30% allocation of CIL will provide funding of £4.95m with the Scenario 1 development (1,667 units) and £6.24m with the Scenario 2 level of development (2,100 units). This figures assume 40% of the units are affordable housing which zero rated as far as CIL is concerned.

The funding generated by CIL would not be able to fully fund a Strategic Scheme. Therefore, additional funding sources should be considered. This may be through:

- DfT grant funding.
- Local Government funding.
- Public Works Loan Board.
- Local Enterprise Partnership.

It is expected that the LEP would provide the most realistic source for securing additional funding to deliver some of the measures recommended in this strategy. However there would need to be a strong business case linked to economic benefits.

Appendices

Appendix A. Survey Data

Appendix B. Trip Rates

Appendix C. Local Scheme Plans

Appendix D. Strategic Scheme Plans

Appendix E. Origin – Destination survey

Appendix F. Flow Diagrams

Appendix G. Modelling results

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