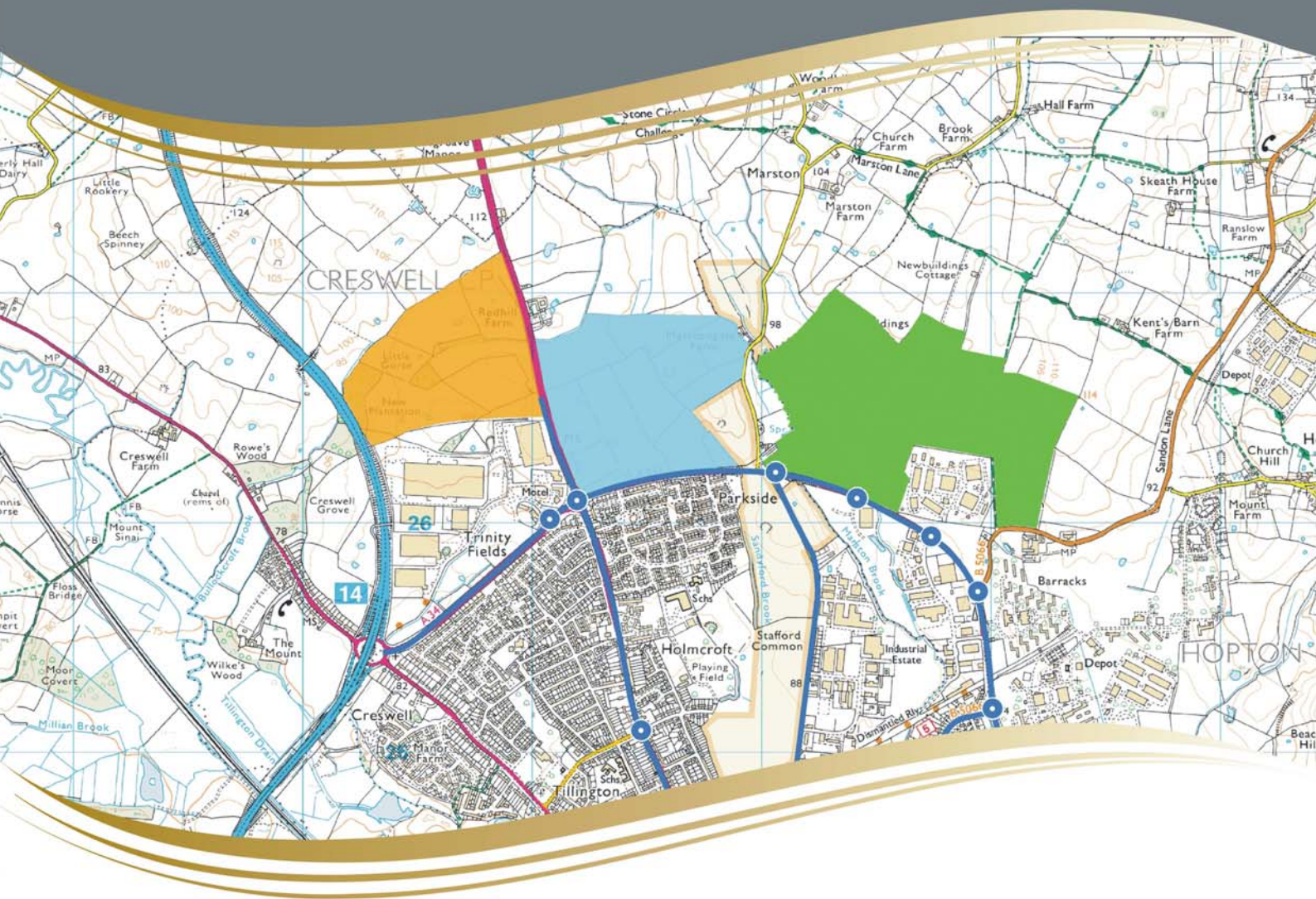


The Plan for Stafford Borough

Transport Evidence to Support a Northern Direction of Growth



June 2013

the knot unites



1. Purpose of Report

The purpose of this report is to:

- a) Summarise the strategic planning context for Stafford Town
- b) Summarise current conditions on the transport network in the north of Stafford
- c) Identify the new infrastructure necessary to make the northern direction of growth acceptable in transport terms by 2031, in the context of the wider transport strategy and the Plan for Stafford Borough

The report recommendations will need to align with the following two Priority Outcomes in the County Council's Strategic Plan:

1. Staffordshire's economy prospers and grows, together with jobs, skills, qualifications and aspirations to support it. This will be achieved by creating the infrastructure for a modern economy by:
 - Encouraging housing development of the right type in the right place
 - Maintaining and developing the highways and transportation networks needed to support business and communities
2. Staffordshire is a place where people can easily and safely access everyday facilities and activities through the highways and transport networks. This will be achieved by ensuring that our highways and transport strategies and programmes support economic prosperity, connectivity and equality of access by:
 - Promoting access to jobs, training, education and services
 - Promoting connectivity to help businesses access suppliers, markets and a workforce
 - Reducing congestion on our roads and mitigating the potential congestion caused by economic growth
 - Making 'access' a key consideration when planning new housing, employment sites, services and facilities
 - Promoting access to jobs, and key services and facilities
 - Providing an infrastructure which encourages active and sustainable travel

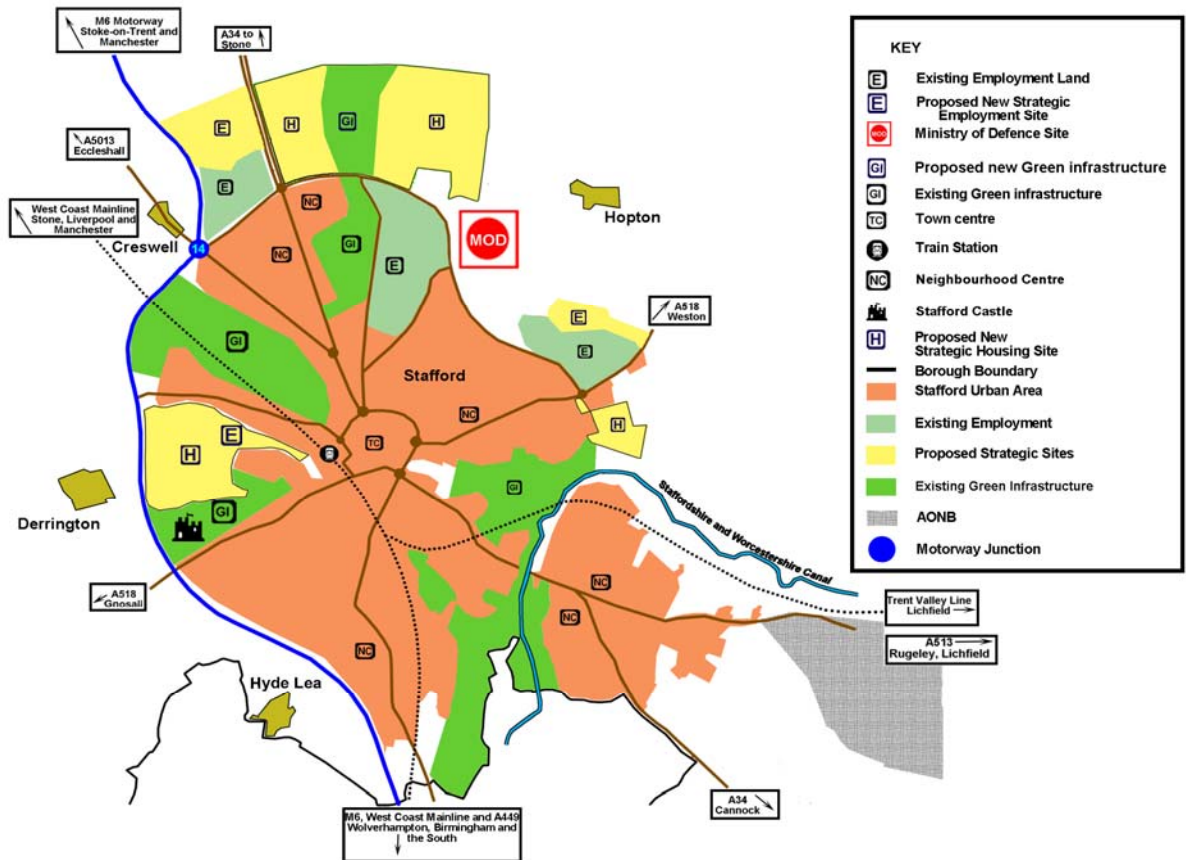
2. Strategic Planning Context

2.1 The Emerging Plan for Stafford Borough

Stafford Borough Council published its pre-submission version of The Plan for Stafford Borough in January 2013. In the period to 2031, the Borough Council proposes the delivery of 10,000 homes (500 per annum). Of these, 72% are proposed at Stafford with the majority on greenfield sites. Taking into account completions and commitments, new provision required in Stafford Town equates to 5,560 dwellings. New employment provision required in Stafford Town equates to 36 hectares over the Plan period. Strategic development locations for housing and employment for Stafford Town are shown in Figure 2.1.

Figure 2.1: Stafford Town Key Diagram

Stafford Town Key Diagram

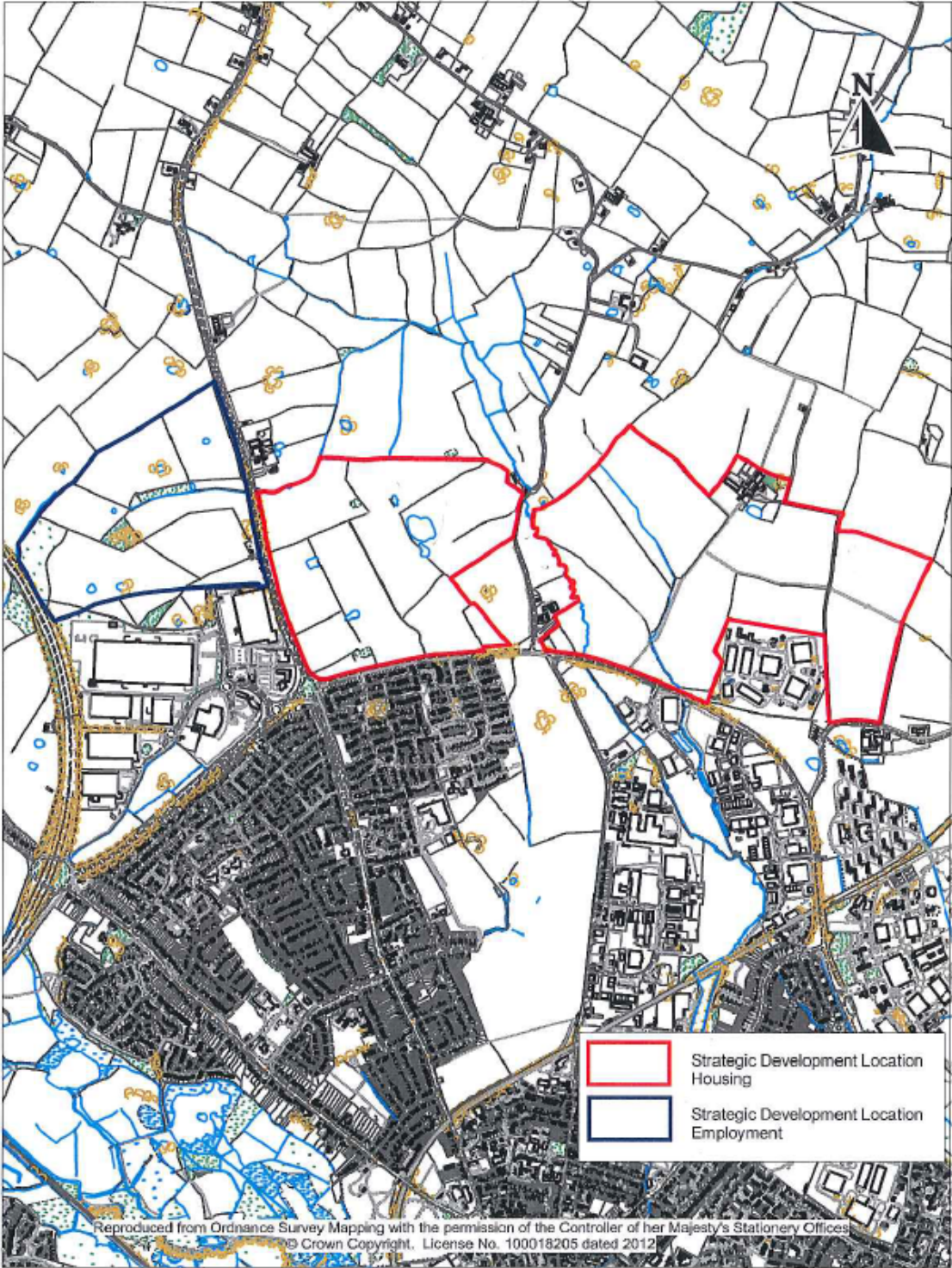


2.2 Northern Direction of Growth

A Strategic Development Location is proposed to the north of A513 Beaconside and east of the A34, beyond the main residential areas and west of the Ministry of Defence Beacon Barracks. The proposed development includes two housing sites delivering a total of 3,100 new homes. The Akzo Nobel site is for 1,100 dwellings with planning permission for 400 dwellings of these, subject to signing a Section 106 agreement. The Maximus site further east along Beaconside is for 2,000 dwellings. There are also employment sites to the North of Stafford that have planning permission. This includes a 1.7 hectare extension to the Primepoint employment area next to junction 14 of M6 and 26 hectares (gross) at Redhill Business Park located north of Primepoint to the west of A34. Figure 2.2 shows the boundary of the development sites. The impact of the approved 350 new homes at Beacon Barracks has also been taken into account within this study.

It is expected that the proposed alignment for HS2 will not prejudice this allocation and will form an eastern and northern boundary to the Strategic Development Location.

Figure 2.2: Development North of Stafford



The evidence provided in this report takes into account the Borough Council's emerging Policy for the North of Stafford in the Local Plan as follows:

POLICY STAFFORD 2 – NORTH OF STAFFORD

Within the area North of Stafford identified on the Policies Map, a sustainable, well designed mixed use development will be delivered by 2031. Any application for development on a part or the whole of this area must be preceded by, and consistent with, a Master Plan for the whole Strategic Development Location which has been submitted and agreed by the Council. Development must deliver the following key requirements:

Housing

- i. Delivery of approximately 3,100 new homes with 30% being affordable housing in the context of Policy C2 through a mix of housing types, tenures, sizes and styles with proportions of 2, 3 and 4 bedroomed properties in the context of Policy C1;
- ii. Provision to meet the needs of an ageing population through new extra care and specialist housing;

Employment

- iii. At least 36 hectares of new employment land with comprehensive links for a range of transport modes across the A34 to housing development areas;

Environment

- iv. A comprehensive drainage and flood management scheme will be delivered to enable development of the Strategic Development Location including measures to alleviate flooding and improve surface water management on Marston Brook and Sandyford Brook;
- v. The development will provide on-site renewable or low carbon energy solutions including associated infrastructure to facilitate site-wide renewable energy solutions in the context of Policy N2;
- vi. Necessary measures to avoid and mitigate the impact of development on the Cannock Chase Special Area of Conservation including Suitable Alternative Natural Greenspace will be provided;
- vii. Existing hedgerows and tree lines to be retained and enhanced to support the provision of a network of green infrastructure including wetlands and water corridors, play areas, green corridors allowing wildlife movement and access to open space;

Transport

- viii. An access, transport and travel plan strategy for the Strategic Development Location that maximises travel and accessibility by non-car transport modes via safe, attractive and conveniently designed street, pedestrian and cycling connections within the development and to Stafford town centre, nearby existing and new employment areas. The strategy shall identify road access points to the site and between the site and the existing settlement. It shall also identify construction access arrangements that do not disrupt existing residents and improvements to transport capacity along the A34, A513 Beaconside Road and the Redhill roundabout;
- ix. There will be an interconnected network of streets serving the development producing discernible and distinctive neighbourhoods and places integrated and linked to existing areas;

Design

- x. The development takes place on a 'neighbourhood' approach with the provision of a mix of uses including local retail facilities, social and physical infrastructure, a primary school, secondary education provision, a library service, health facilities and public open space;
- xi. Proposals must relate to the whole Strategic Development Location or, if less, do not in any way prejudice implementation of the whole development;
- xii. The development will be based on using sustainable construction methods in the context of Policy N2;

Infrastructure

- xiii. Highway capacity improvements, either through or around the perimeter of the site, or along Beaconside, will be required North of Stafford. Enhanced bus services and improved bus reliability, through bus priority, will be required along the A34 between the site and the town centre as well as real time bus passenger information, increased frequency of existing and new bus services;
- xiv. Suitable Alternative Natural Greenspace (SANGS) required through on-site / off-site provision / management at Cannock Chase;
- xv. Gas infrastructure serving the employment land north of Primepoint will be re-inforced. Gas infrastructure up-grading not required for the housing development other than standard connections into the system;
- xvi. Flood management scheme and less than greenfield surface water run-off to Sandyford Brook and Marston Brook through open water storage solutions, maximising opportunities for multifunctional open space provision;
- xvii. Electricity connections and sewage capacity improvements required to meet additional housing development;
- xviii. New primary school provision required as well as a new secondary school or extensions to existing secondary schools;
- xix. A new Destination Park including children's play areas and multi-use games areas in association with SANGs requirement if provided on-site;
- xx. Standard telecommunication connections will be provided to link to the Stafford exchange enabled with Superfast Fibre Access Broadband;
- xxi. Primary health care provision delivered by increased capacity at existing facilities.

Developer contributions will be required to provide the strategic infrastructure needed to achieve a comprehensive sustainable development at this Strategic Development Location.

3. Summary of High Level Transport Evidence to Support Stafford Growth Agenda

3.1 Introduction

Since 2007 the County and Borough Council's have actively engaged in planning for growth in Stafford Town. In 2008, Atkins consultants produced a SATURN transport model and undertook a Transport Study to help understand the impact of this growth. The model was used, together with Accession analysis, to assess the global traffic impact of housing growth of 7,000 and 10,000 dwellings, the relative merits of concentrating development in different locations, and employment growth of 17,000 to 20,000 new jobs.

The key conclusion to emerge from this work is that at peak times all growth options will significantly impact on the highway network. The accommodation of this level of development will require new strategic and local highway infrastructure, intensive sustainable transport improvements and initiatives that reduce the need to travel by car in peak periods.

The conclusions drawn from this assessment of the overall impact of 7,000 new dwellings are expected to be broadly consistent with the impact of the emerging Local Plan, which proposes a very similar level of growth and distribution. An additional assessment will be carried out to confirm this.

3.2 Assessment of Housing and Employment Growth Options

When comparing the options in overall transport terms, without considering the deliverability of new transport infrastructure, the most efficient way to provide 7,000 new dwellings and a growth in jobs of 17,274 in Stafford is to focus the majority of greenfield development in the north and the west. The most efficient way of increasing households by 10,000 and a growth in jobs of 20,237 in Stafford (again without road infrastructure improvements) is by focussing development in the west, north and south. To arrive at these conclusions, the options for housing growth were ranked against the strategic key performance indicators in Table 3.1 related to sustainability and highway capacity.

Table 3.1: Key Performance Criteria

Objective	Local Sub Objective
Impact on all users	Vehicle Hours
	Vehicle Kilometres
	Average Speed
	Average vehicle distance per trip
	Demand
Impact on strategic routes	Change in Flow on the M6
New Development Trips	Development Trip Vehicle Hours
	Development Trip Vehicle Kilometres
	Development Trip Average Speeds
	Development Trip average trip length
	Development Demand
Network Impacts	Junctions
	Links
Environmental Issues	Impact on CO2 emissions
	Impact on NOX emissions
Access to Existing Public Transport	Total Number of existing services passing the developments
	Direct access to Rail
Access to non motorised modes	Access to national cycle network

The overall number of vehicle hours is a measure of how long it takes users to complete their trips; the overall average speed gives an indication of how well the network keeps traffic moving; and the trip length indicator will change in response to the location of new developments and congestion on the network which can also result in suppressed trip making. With regard to the latter, increased levels of housing and employment opportunities in Stafford could result in reduced journey distances as there would be less need for long-distance commuting and increased levels of congestion can have a suppressing effect on trip making. Table 3.2 compares the growth options that have been assessed as part of this evidence base and picks out the salient points from the analysis.

Table 3.2: Traffic impact of land use options (with no new road infrastructure)

Option	Total jobs / dwellings	Location	Traffic Impact
1a	7,000 dwellings 17,274 net total jobs	North and west Development opportunities in the west tend to be closer to the town centre, encouraging travel by a choice of modes.	Lowest vehicle hours, vehicle kilometres and shortest average trip length compared to the other options 1b and 1c. There are localised impacts that affect certain sensitive links and junctions, but its overall impact is less compared to options 1b and 1c. Performs the best in terms of the proportion of development sites that can access the town centre in 15 minutes by cycling.
1b	7,000 dwellings 17,274 net total jobs	North and east	This option only performs best in terms of average speed of trips generated from new developments.
1c	7,000 dwellings 17,274 net total jobs	South and east	This option provides the best results in terms of the lowest number of links and junctions that have a volume to capacity ratio of over 85%. However development locations in the south and east of Stafford currently have limited public transport access.
2	10,000 dwellings 20,237 net total jobs	West, north and south	This option is generally the most efficient way of increasing houses and jobs in Stafford to this higher total, although its overall performance is only marginally better than options 3 and 4. However, the localised impact is greater because traffic is generated from fewer, but larger sites. It is also the least sustainable in terms of the distance of development sites to key services in the town centre.
3	10,000 dwellings 20,237 net total jobs	West, north and east	This option performs the weakest overall, although there is very little difference between the performance of options 3 and 4.
4	10,000 dwellings 20,237 net total jobs	West, south and east	This option is the weakest in terms of creating the highest overall vehicle kilometres. However it does not have the localised impact of large development sites in the north.

Even though the evidence concludes that the preferred focus for accommodating 7,000 dwellings is in the west and north, this option would also result in increased congestion on the network without the appropriate infrastructure in place. Option 1a includes 2,300 dwellings in the north and the main impacts recorded were as follows:

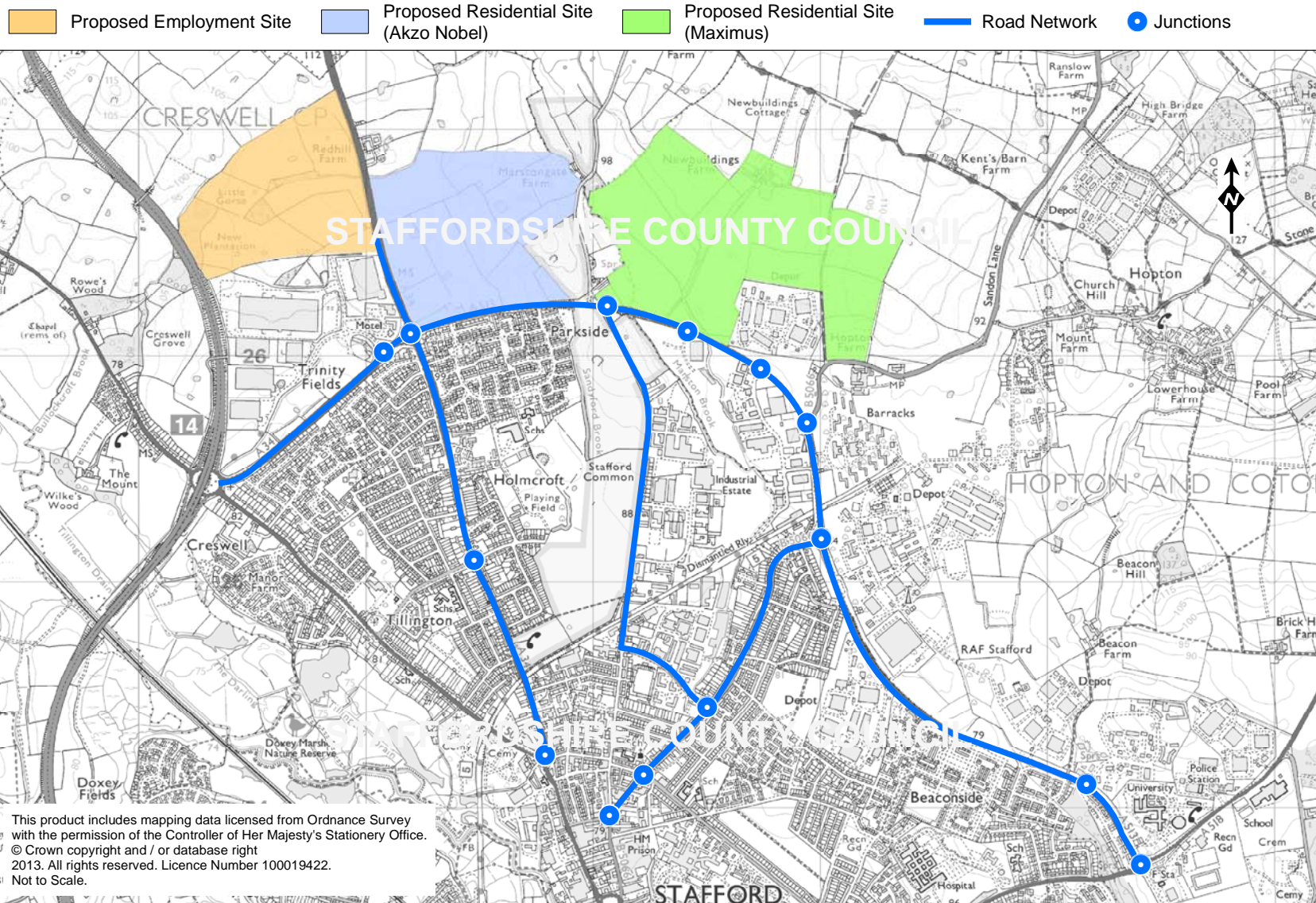
- Congestion is forecast to increase on the A518 Newport Road in the AM and PM peaks. Junctions along this route would become over capacity in both peaks.
- The A34 Stone Road / A513 Beaconside junction is predicted to experience an increase in delays on the east and west approaches in both peaks and reduced capacity on the A34 southbound approach in the PM peak.
- A5013 Eccleshall Road into Stafford is forecast to operate over capacity in the AM peak
- Other junctions to the north and west of the town centre would become over capacity as the volume of traffic increases.

4. Existing Transport Problems in the North of Stafford

4.1 Introduction

This section of the report provides a summary of existing transport problems in the study area identified in Figure 4.1, looking at journey time reliability, travel delays and safety.

Figure 4.1 : Study Area



4.2 Department for Transport GPS Trafficmaster Data 2010/11

An analysis of travelling conditions experienced by road users between September 2010 and August 2011 within the study area has been completed for the 8-9 AM peak and 5-6 PM peak using local traffic counts and Department for Transport GPS Trafficmaster data. Delays and travel times were estimated at 15 minute intervals within each of these hourly periods and delays were calculated by comparing night time journey times and off-peak journey times to peak hour journey times. Normalised delay is defined as the delay in seconds expressed as a percentage of free flow travel time. Delays below 100% mean that journeys are not twice as long during the AM peak as free flow travel conditions. Longer routes will experience higher free flow travel times because of the greater distance to cover. The reliability of individual routes has also been assessed and expressed as a % variability of the weekly average travel time in the peak hours. Basically the smaller the % value returned, the more 'reliable' the route is.

During the AM peak, the largest delays were experienced along Beaconside travelling eastbound. Between 0830 and 0845 normalised delays were 114% and the following quarter (0845 to 0900) increased to 128%. Beaconside travelling in a southbound direction is also the least reliable road during the AM peak producing a figure of 24%. The most reliable roads within the study area both have a figure of 6%; they are Beaconside during the AM peak travelling northbound and the A34 Link Road during the PM peak travelling westbound. These two routes join to provide a reliable link to the M6 motorway. The Stone Road travelling inbound also shows delays at 0830 to 0845 and 0845 to 0900 of 103% and 104% respectively. Within the route, delays are particularly visible as the A34 approaches the roundabout at Redhill.

The A34 Link Road, Common Road and Sandon Road do not experience significant delays during either peak. Beaconside and the Stone Road do not experience significant delays during the PM peak. Journeys along a number of routes within the study area may be described as unreliable during the PM peak. Beaconside has a variability result of 26% travelling southbound and 24% travelling northbound. Common Road travelling northbound has a figure of 24% and the A34 Link Road travelling eastbound shows 22%.

4.3 Accident Analysis

Table 4.1 shows that during the past five years from 1/1/2008 to 31/12/2012 there have been 167 injury accidents in the study area. Of these, 153 were classified as slight accidents and 11 were serious. The majority of accidents were recorded along the A34 between Redhill roundabout and Gaol Square, A513 Beaconside between A34 and A518 and Sandon Road south of Beaconside.

Table 4.1: Five Year Accident Summary

Location	Fatal	Serious	Slight	Total
A34 to M6 Link Road	0	2	3	5
A34 Redhill Roundabout	0	0	18	18
A34 Stone Road (Redhill roundabout to Gaol Square)	0	2	52	54
A513 Beaconside (A34 Redhill roundabout to A518 Weston Road roundabout)	0	5	28	33
A513 Beaconside/Common Road priority junction	0	0	8	8
A513 Beaconside/Sandon Road priority junction	0	0	8	8
Sandon Road North of A513 Beaconside	0	1	2	3
A513 Beaconside/Sandon Road traffic signals	0	0	6	6
Common Road (Sandon Road to A513 Beaconside)	0	0	6	6
Sandon Road (Gaol Square to A513 Beaconside)	0	1	21	22
A515 Weston Road/A513 Beaconside roundabout	0	0	4	4
Total	0	11	156	167

Studying the location and patterns reveals no common causality. Most of the causes were driver errors, e.g. failing to look properly, excessive speed, and poor turn or manoeuvre. One exception is the A513 Beaconside/Common Road junction which had 6 of the 8 accidents involving merging from the minor road. Drivers turning out of Common Road need to look over their right shoulder to observe vehicles on the A513 Beaconside. This is not ideal, especially as the A513 Beaconside vehicles can be travelling at speed, despite there being a 50 mph limit in force.

5. Sustainability of the North of Stafford Strategic Development Location

5.1 Public Transport

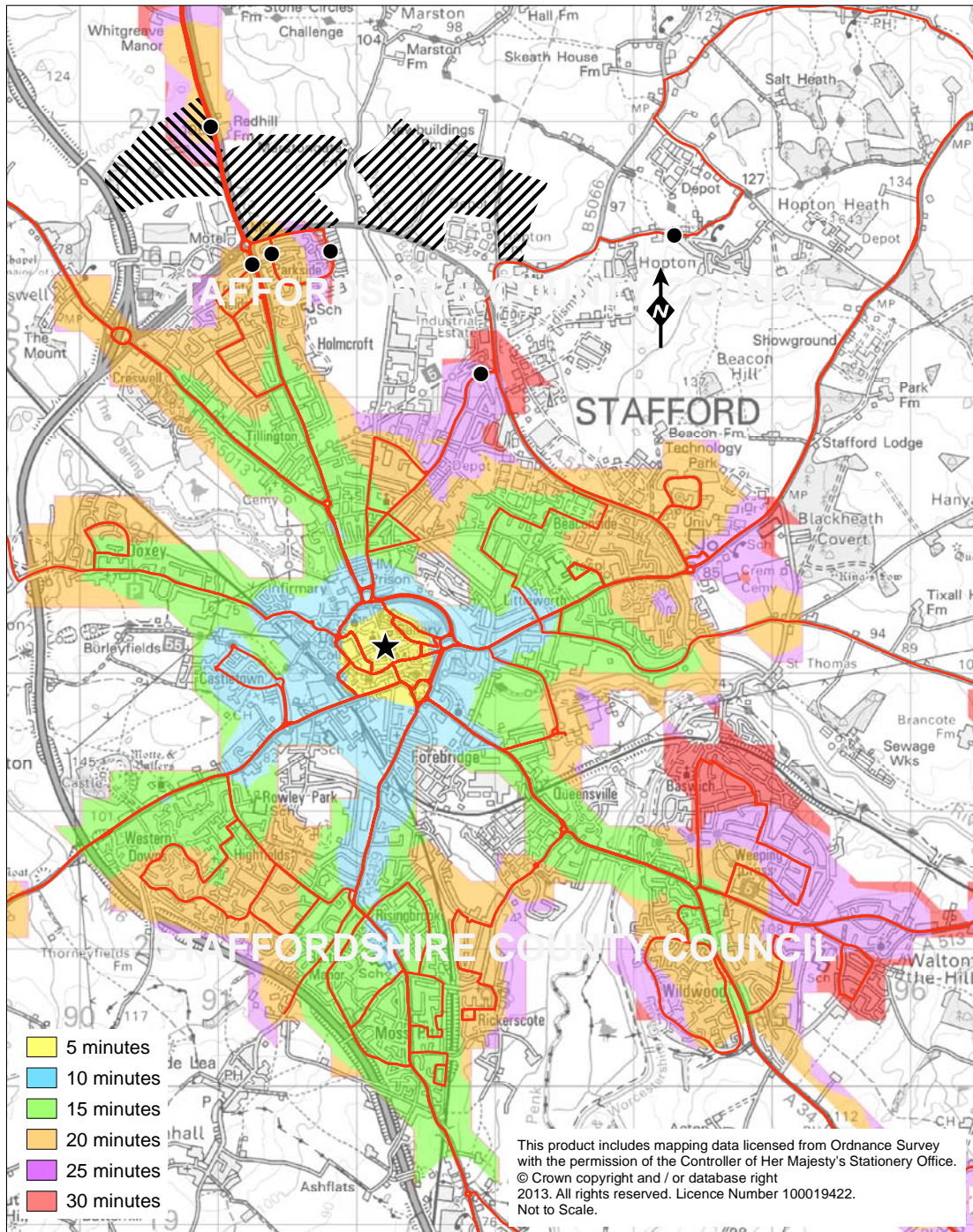
Figure 5.1 shows the bus journey times to Stafford based on bus services available in 2013 including walking to and waiting time at the bus stop. It indicates that the town centre is not currently very accessible from the North of Stafford Strategic Development Location by bus. The bus services that currently run close to the sites that have the potential to be extended include the following.

- Service 10, from Parkside to Stafford, operates every 15 minutes, Monday to Saturday, and every 60 minutes on a Sunday. The service can be accessed via Parkside Avenue and Beaconside.

- Service 101, from Hanley to Stafford, also operates every 15 minutes, Monday to Saturday, every 60 minutes on a Sunday and is accessed via Stone Road.
- 5 and 5a services operate to the east of the site and have a frequency of 120 minutes with no service on a Sunday. It is accessed via Sandon Road and Beaconside.

Figure 5.1 : Bus Journey Times to Stafford Town Centre
(including walking to and waiting time at bus stop)





 Proposed Northern Direction of Growth
  Bus Routes
  Bus Stops
  Town Centre

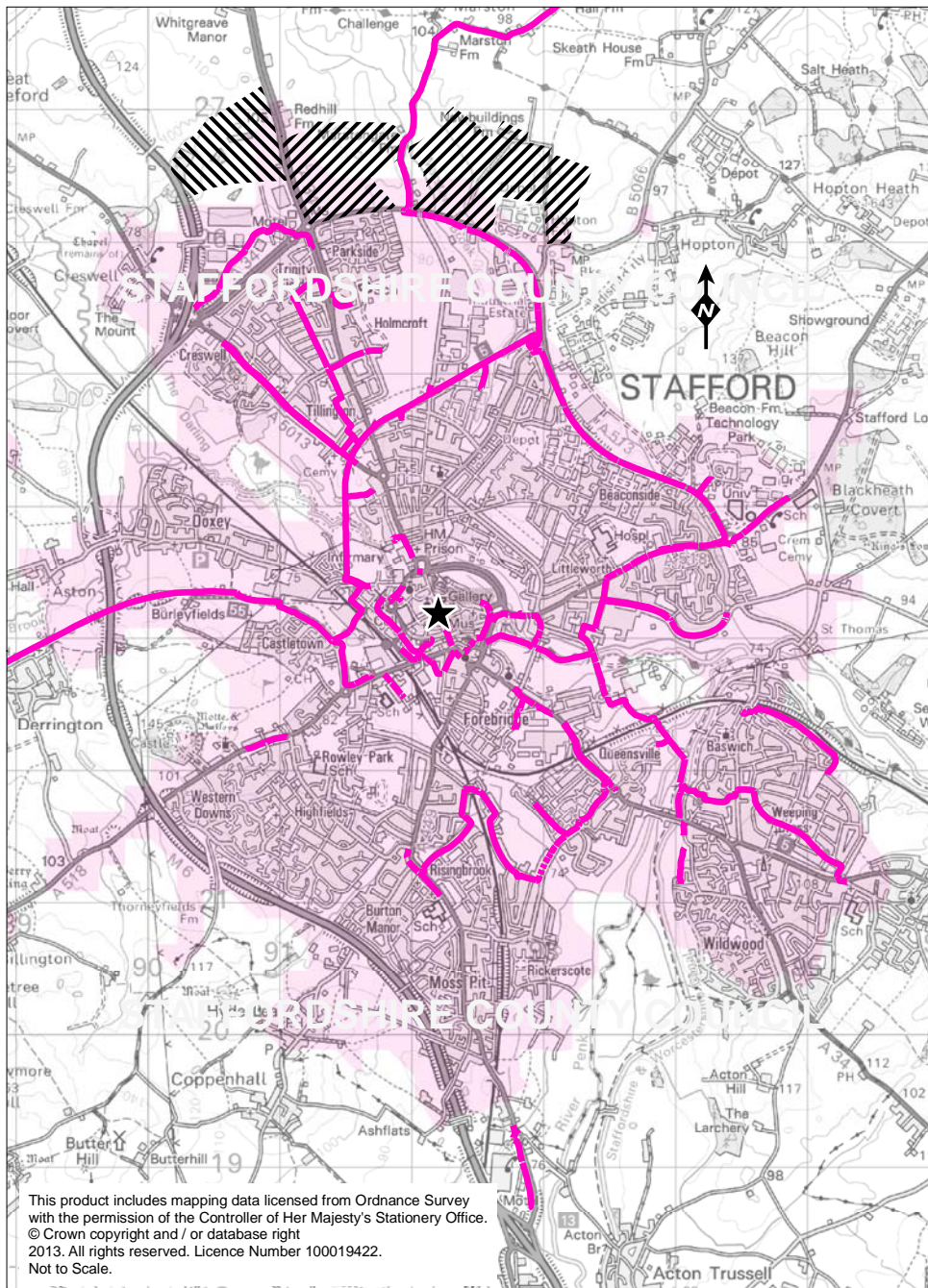


5.2 Cycle Provision

The existing cycle network is shown on Figure 5.2 together with the 20 minute cycle time contour from the town centre. Cycle routes exist along Beaconside and the Isabel Trail is an off-road route that extends from Beaconside to the town centre. However Figure 5.2 indicates that only a small proportion of the site is within a 5km / 20 minute cycle time of the town centre which is considered to be a reasonable cycling distance.

Figure 5.2 : Cycle Times to Stafford Town Centre

-  Proposed Northern Direction of Growth
-  Town Centre
-  20 Minute Cycle Time
-  Existing Cycle Network



5.3 Pedestrian Provision

Pedestrian access to the site already exists and it is expected that the sites will be fully permeable for pedestrians. Figure 5.3 shows that the town centre is not within a 30 minute walking times of the development sites. However there are local facilities within a 10/15 minute walking time as shown in Figure 5.4.

Figure 5.3 : Walking Times to Stafford Town Centre

▨ Proposed Northern Direction of Growth ★ Town Centre

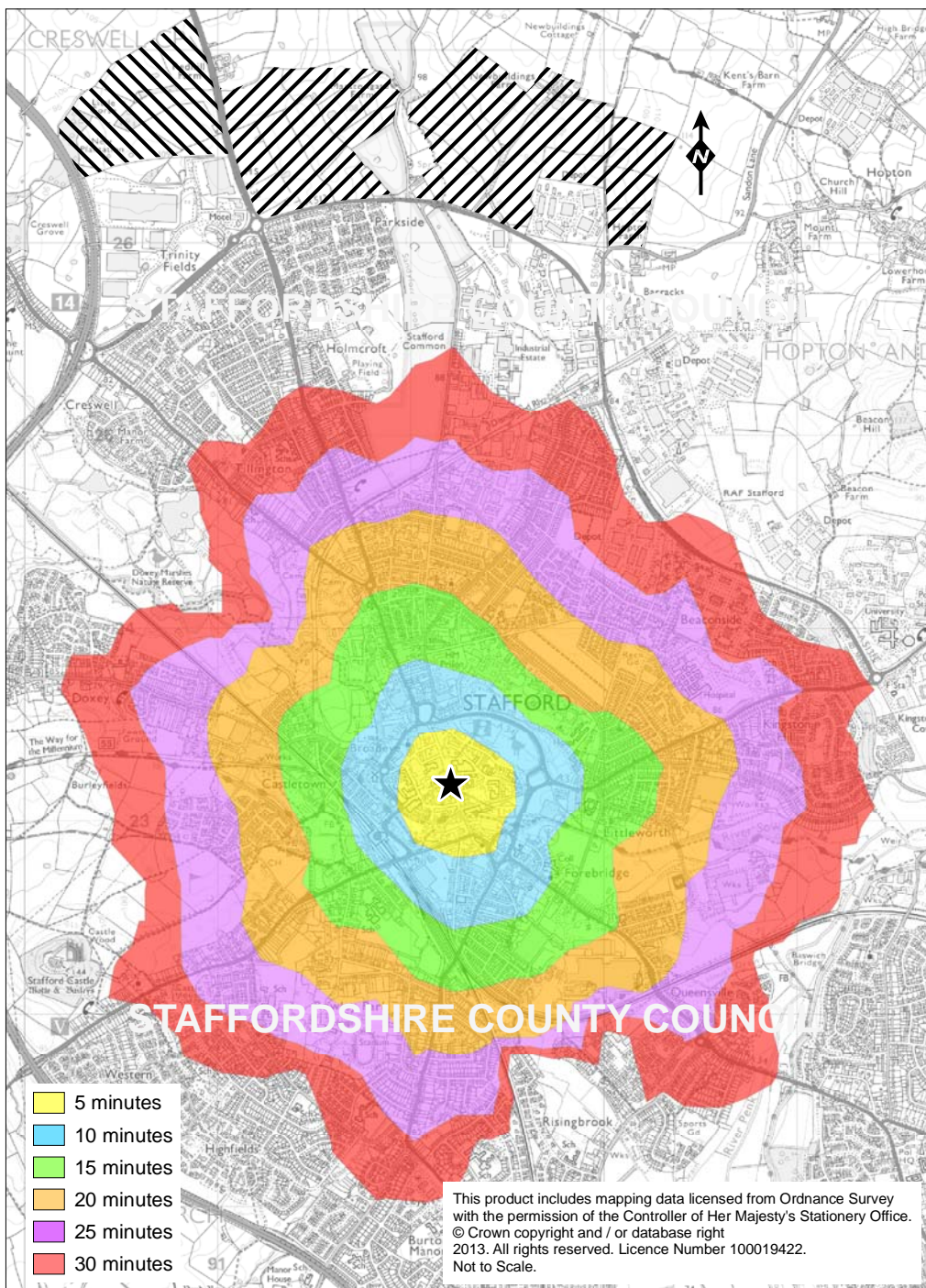
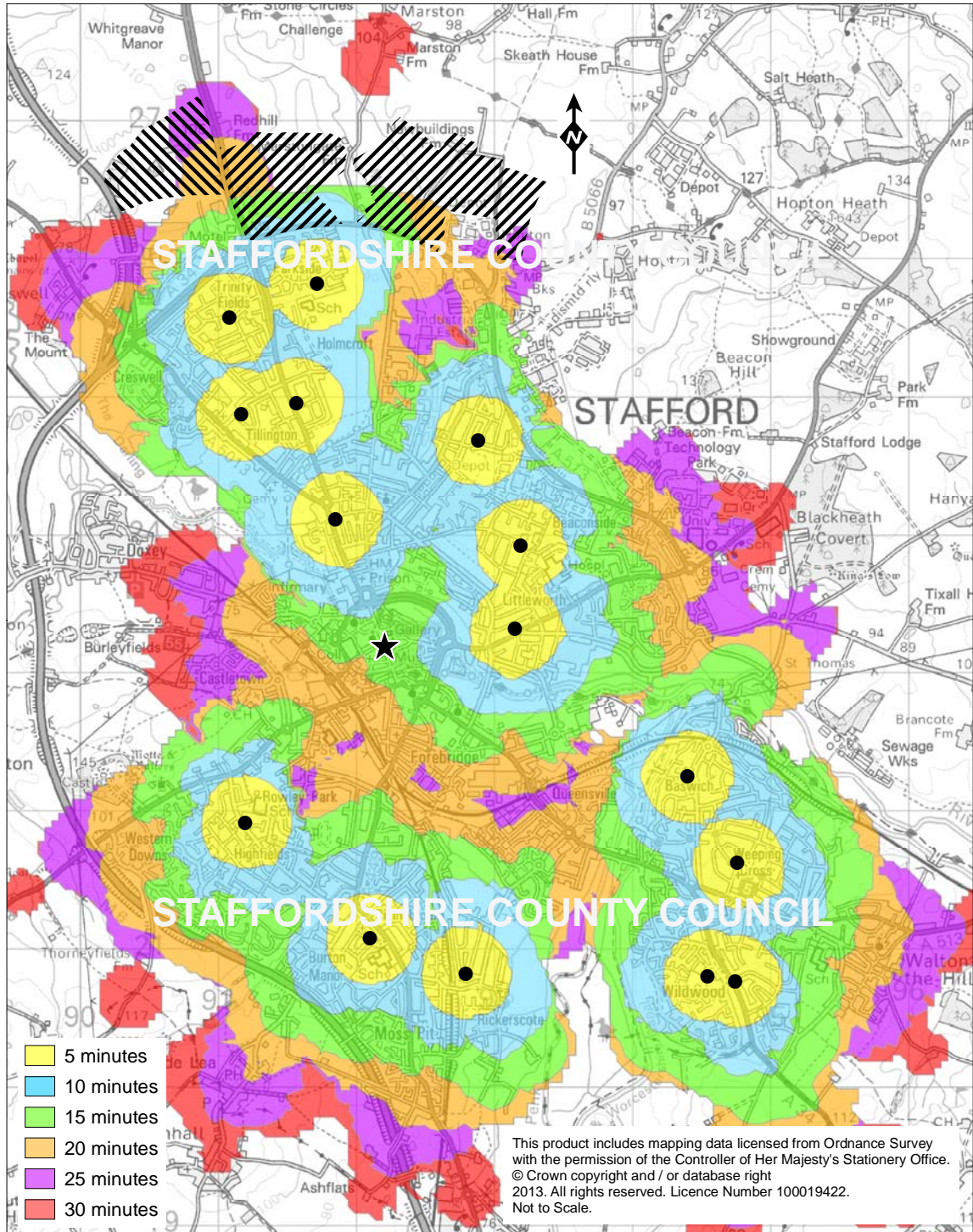


Figure 5.4 : Walking Times to Local Facilities

▨ Proposed Northern Direction of Growth ★ Town Centre ● Local Facilities



6. Traffic Impact of 2031 Land Use Proposals on the North of Stafford

6.1 Introduction

The potential traffic impact of the proposed allocation of 3,100 dwellings in North of Stafford and potential infrastructure options has been assessed using the Stafford SATURN model. The assessment focuses on the study area shown in Figure 4.1 which includes Beaconside, A34 north of the town centre, Sandon Road and Common Road. All committed land use developments in Stafford are included in the model, as listed in the Uncertainty Log in Appendix A, together with the following new highways proposed as part of the Western Access Improvements and Eastern Access Improvements:

- Stafford Western Access Route between Martin Drive and A34 Foregate Street as recommended in the Transport Evidence to Support a Western Direction of Growth
- A local distributor road between Beaconside and St Thomas Lane as recommended in the Indicative Economic Assessment of the County Council's protected line of the Eastern Distributor Road produced by Atkins consultants.

The assessment takes into account the predicted increase in traffic on Beaconside as a result of development proposals in the East of Stafford and the local distributor road. It also reflects the impact of development proposed in the west and the traffic impact of the Western Access Route junction on the A34.

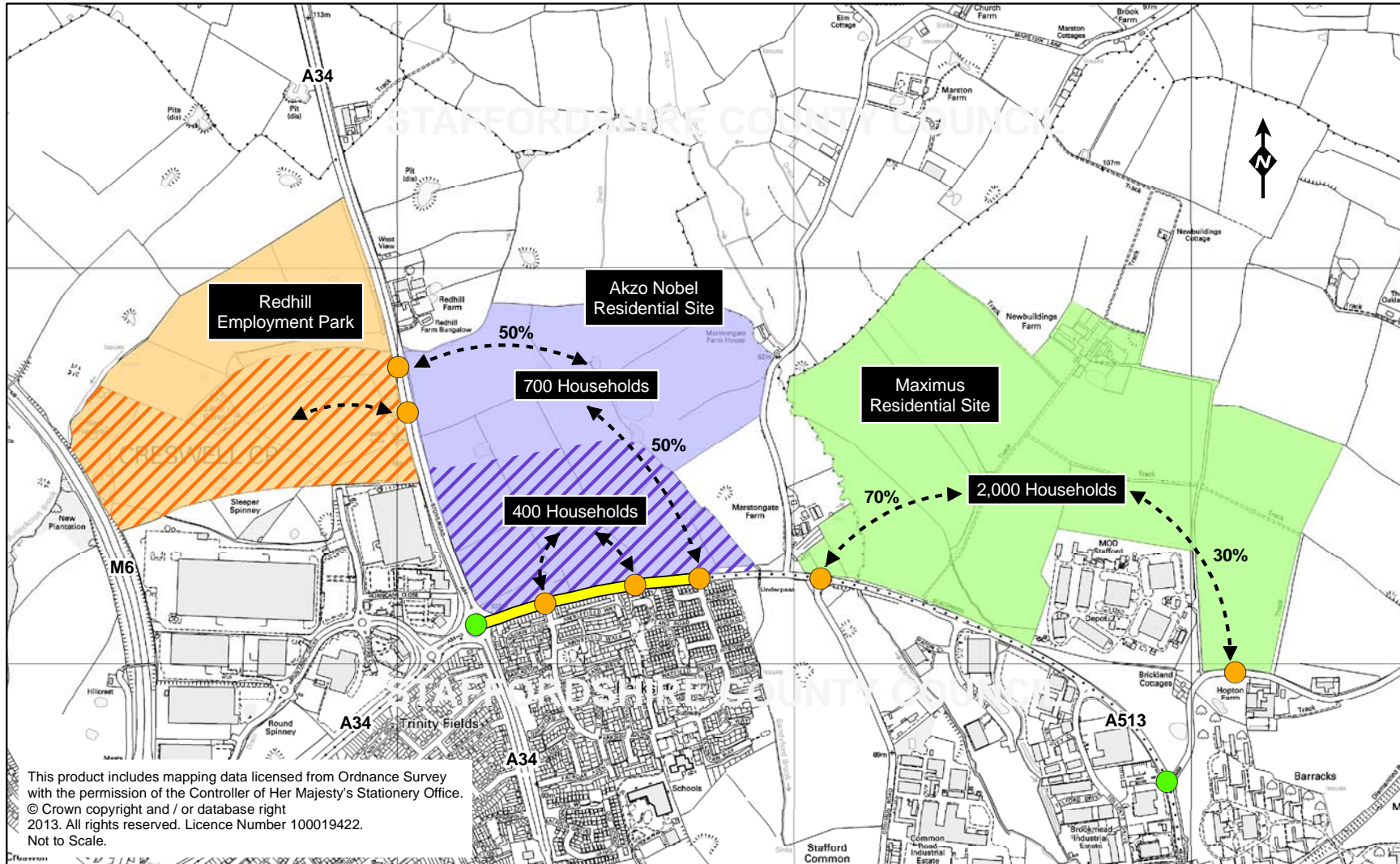
The 'do minimum' scenario for 2031 (shown on Figure 6.1) is comparable to the scenario proposed by the developers in the North of Stafford. It includes the following highway improvements in the North of Stafford and takes into account the proposals agreed as part of the outline planning permission for 400 dwelling on the Akzo Nobel site.

- A linked-signal system along Beaconside between A34 and Sandon Road (north)
- Dual carriageway (30 mph) between the A34 and the eastern entrance to Parkside and two new signalised junctions along this dual carriageway to access the 400 dwellings on the Akzo Nobel site.
- Signalisation of A34/A518 Redhill roundabout
- A new three arm roundabout on the A34 to provide access to the additional 700 dwellings on the Akzo Nobel site. This is currently expected to be approximately 200m north of the proposed new signalised access to Redhill Business Park, and it has been advised by the developer that this will serve around 50% of the 700 dwellings.
- A new staggered four arm signalised junction at the Parkside eastern entrance to access 50% of the 700 dwellings.
- Site access to 70% of the 2,000 new dwellings at the Common Road / Beaconside junction in the form of a four arm signal control junction designed to accommodate additional capacity, including separate right turn lanes.
- A new secondary priority junction on Sandon Road north of Beaconside serving 30% of the 2,000 dwelling site.

- Conversion of the Sandon Road (north) / Beaconside junction to signal control with extra approach lanes on Sandon Road and Beaconside (west).

Figure 6.1
Developer's Scenario

● Junction Improvements ● & ←→ Development Access ■ Proposed Dual Carriageway ▨ Planning Consent (Acquired) ▨ Planning Consent (Acquired)



The assessment assumes a residential trip rate of 0.577 in the AM peak and 0.633 in the PM peak which is considered to be relatively low, reflecting that the developers will invest in the provision of sustainable transport improvements for future residents.

Figures 6.2 and 6.3 show residential trip distributions applied which are based on 2001 Census data. The Maximus development site also proposes a supermarket on Beaconside opposite Tollgate Park which is likely to improve the sustainability of the development, but has not been modelled. However it is also likely that the supermarket will increase traffic flows on Beaconside as a result of additional car trips attracted from existing local residential areas and the 1,100 new dwellings on the Akzo Nobel site.

Paragraphs 6.2 to 6.4 summarise the 2031 forecast traffic conditions within the study area as a result of the scenario proposed by developers in the North of Stafford. Figures 6.4 and 6.5 visually illustrate where problems are likely to occur on the network at weekday peak times.

6.2 A513 Beaconside Corridor

Tables 6.1 and 6.2 summarise the 2031 forecast traffic conditions on Beaconside:

Table 6.1: 2031 Morning Peak Hour Conditions on Beaconside

Location on Beaconside	Maximum Traffic Flow (Vehicles per hour)	Ratio Flow / Capacity	Average Journey Time by direction (seconds)	Average Delay (seconds)
A34 to Parkside Eastern Entrance (with dualling)	2,672	42-51%	EB – 69 WB - 76	29 36
Parkside Eastern Entrance to Sandon Road (north)	2,485	79-101%	EB – 107 WB - 91	45 28
Sandon Road (north) to A518 Weston Road	2,362	74-96%	SB – 382 NB - 225	256 99
Total Beaconside			SEB – 558 NWB - 392	330 164

Table 6.2: 2031 Evening Peak Hour Conditions on Beaconside

Location on Beaconside	Maximum Traffic Flow (Vehicles per hour)	Ratio Flow / Capacity	Average Journey Time by direction (seconds)	Average Delay (seconds)
A34 to Parkside Eastern Entrance (with dualling)	2,319	37-45%	EB – 57 WB - 69	18 29
Parkside Eastern Entrance to Sandon Road (north)	2,267	79-93%	EB – 94 WB - 82	31 19
Sandon Road (north) to A518 Weston Road	2,146	79-88%	SB – 275 NB - 265	149 138
Total Beaconside			SEB – 426 NWB - 415	197 187

The highest flows along Beaconside occur in the AM peak hour. There are no capacity issues expected along the proposed new dualled section of Beaconside. However there are concerns about traffic levels between Parkside and Weston Road

particularly west of Common Road, west of Sandon Road (north), Sandon Road (north) to the Ministry of Defence and Dyson Way to A518. The worst delays are expected to be towards Weston Road in the AM peak with up to 5.5 minute delays (3.5 to 4 minutes free flow time).

6.3 A34 Corridor

Tables 6.3 and 6.4 summarise the 2031 forecast traffic conditions on A34:

Table 6.3: 2031 Morning Peak Hour Conditions on A34

Location on A34	Maximum Traffic Flow (Vehicles per hour)	Ratio Flow / Capacity	Average Journey Time by Direction (seconds)	Average Delay (seconds)
Stone Road site access to Redhill roundabout	3,884	53 - 65%	SB – 79 NB - 70	45 35
Redhill roundabout to Stone Road / Eccleshall Road junction	Dual – 1,863 Single – 2,022	30 - 32% 98 - 118%	SB – 234 NB - 212	98 55
Redhill junction to M6 (J14)	2,162	34%	WB – 49 EB - 68	6 25

Table 6.4: 2031 Evening Peak Hour Conditions on A34

Location on A34	Maximum Traffic Flow (Vehicles per hour)	Ratio Flow / Capacity	Average Journey Time by Direction (seconds)	Delay (seconds)
Stone Road site access to Redhill roundabout	3,933	58 - 66%	SB – 87 NB - 71	53 36
Redhill roundabout to Stone Road / Eccleshall Road junction	Dual – 1,840 Single–1,945	29 - 31% 96 - 113%	SB – 167 NB - 191	31 55
Redhill junction to M6 (J14)	2,198	33 - 34%	WB – 49 EB - 71	6 29

The highest flows are recorded in the PM peak north of Redhill roundabout but they do not result in capacity problems. The A34 south of Redhill operates well within capacity on the dual carriageway section close to Redhill, but suffers from congestion in both the AM and PM peaks towards the town centre. Delays are experienced on the route, particularly towards the town in the AM peak. Speeds recorded on the A34 are below the recommended speed limits.

6.4 Local Radial Route

Tables 6.5 and 6.6 summarise the 2031 forecast traffic conditions on the local radial routes of Common Road, Astonfields and Sandon Road:

Table 6.5: 2031 Morning Peak Hour Conditions on Local Radial Routes

Location	Maximum Traffic Flow (Vehicles per hour)	Ratio Flow / Capacity	Average Journey Time by Direction (seconds)	Average Delay (seconds)
Common Road and Astonfields Road	1,040	42 – 67%	SB – 156 NB - 167	20 31
Sandon Road (Beaconside to Astonfields Road)	1,081	63 – 68%	SB – 79 NB - 102	13 35
Sandon Road (Astonfields Road to Browning Street)	1,282	56 – 85%	SB – 101 NB - 77	51 27

Table 6.6: 2031 Evening Peak Hour Conditions on Local Radial Routes

Location	Maximum Traffic Flow (Vehicles per hour)	Ratio Flow / Capacity	Average Journey Time by Direction (seconds)	Average Delay (seconds)
Common Road and Astonfields Road	1,096	42 - 71%	SB – 152 NB – 171	15 35
Sandon Road (Beaconside to Astonfields Road)	1,475	74 - 93%	SB – 78 NB – 95	12 29
Sandon Road (Astonfields Road to Browning Street)	1,553	68 - 104%	SB – 83 NB - 80	32 30

No congestion is expected to be experienced on the Common Road, however there is likely to be traffic problems on Sandon Road in both the AM and PM peak hours, particularly closer to the town where there is more frontage activity and on-street parking. The heaviest recorded flows are in the evening peak hour on Sandon Road with average speeds of 20mph.

6.5 Distribution of New Housing Trips

The likely distribution of trips from the new housing sites has been assigned to the local highway network. Figure 6.2 indicates that the heaviest movement of new trips on Beaconside is likely to be west bound in the morning peak compared to the current morning peak demand which is towards employment locations in the east (e.g. Staffordshire Technology Park, University and Hospital). The impact of new trips on traffic conditions in an eastbound direction on Beaconside tends to be eased as a proportion of these new trips tend to disperse south onto routes towards town, in particular along the Common Road, and to a lesser extent Sandon Road and A34. Trips from the new housing sites also head towards the M6 and A34 north bound. On the whole, the evening peak hour, shown in Figure 6.3, indicates the opposite pattern of movement compared to the morning peak hour.

Figure 6.2: Distribution of New Trips in AM Peak (2031 Developer's Scenario)

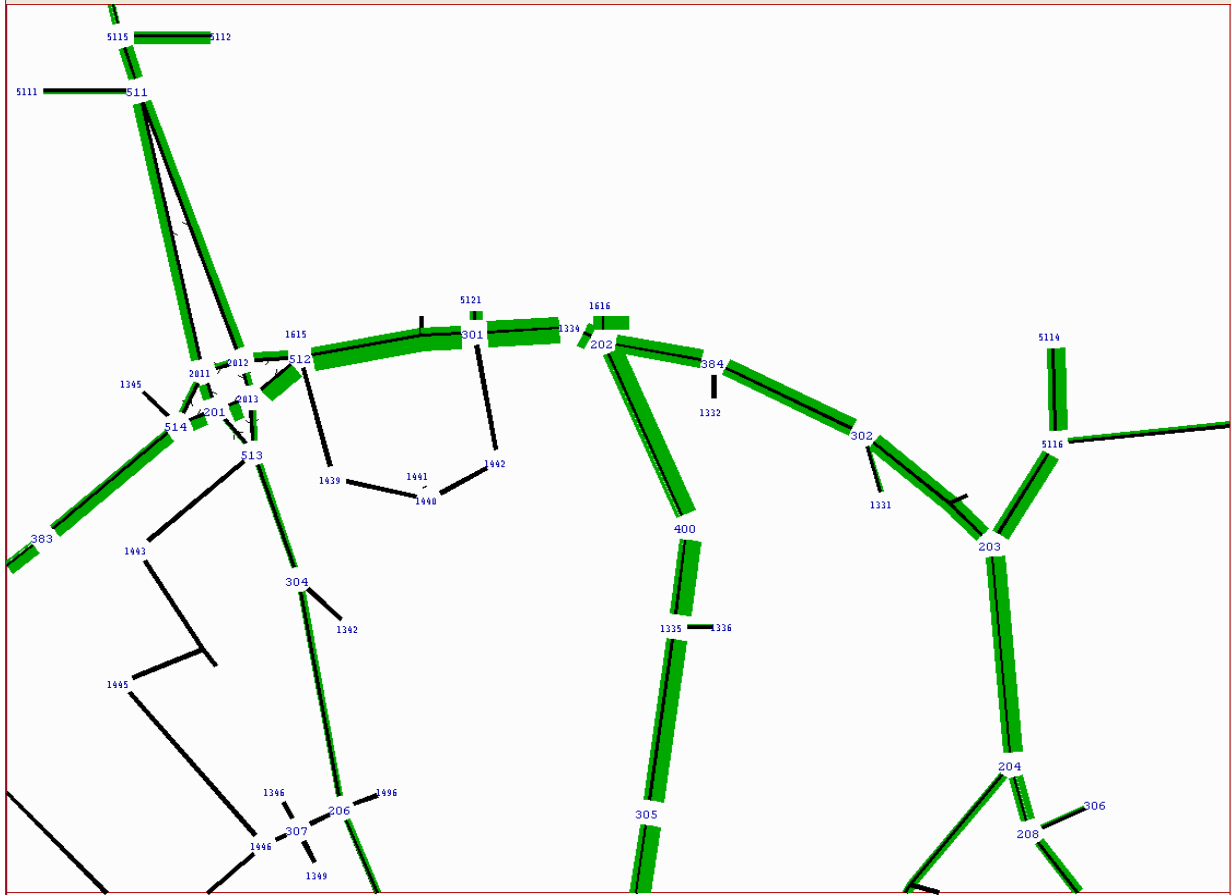


Figure 6.3: Distribution of New Trips in PM Peak (2031 Developer's Scenario)

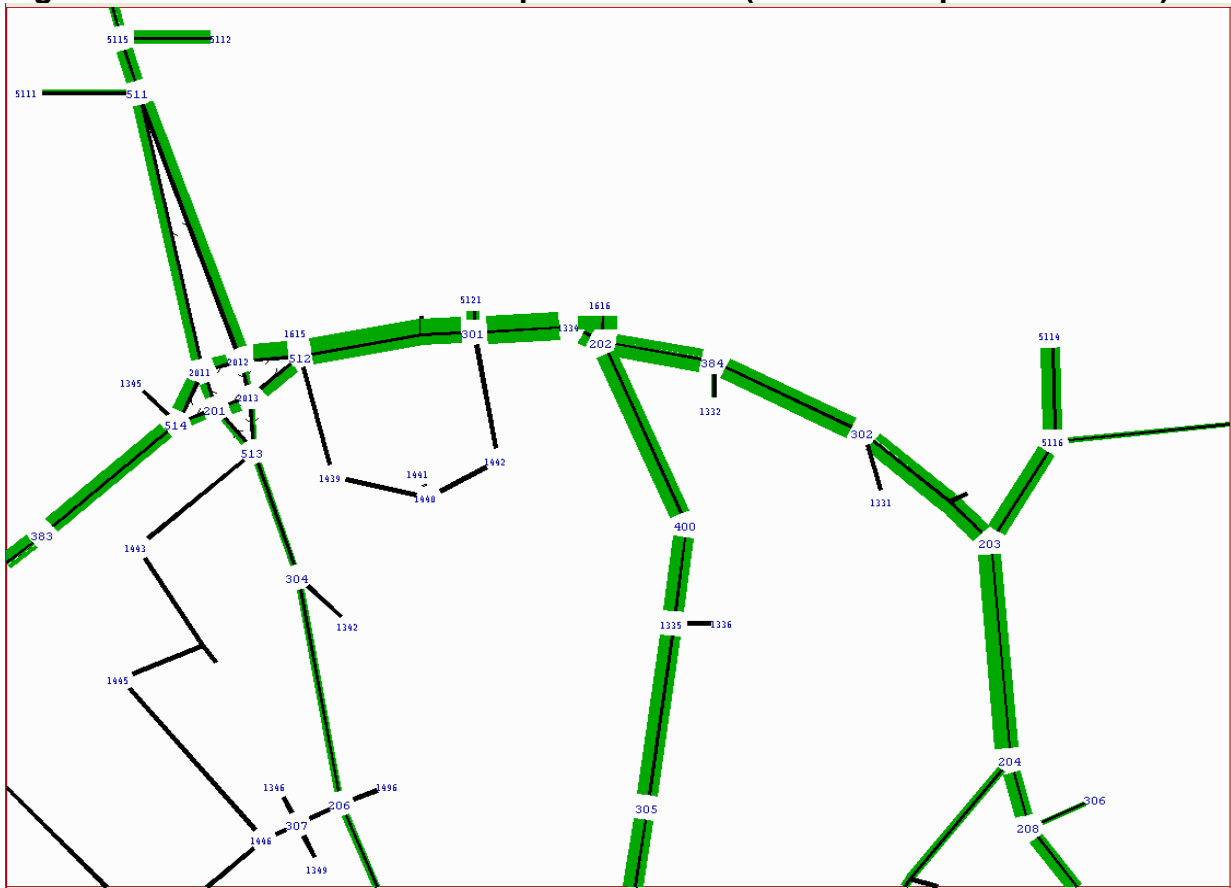


Figure 6.4: AM Link and Junction Stress

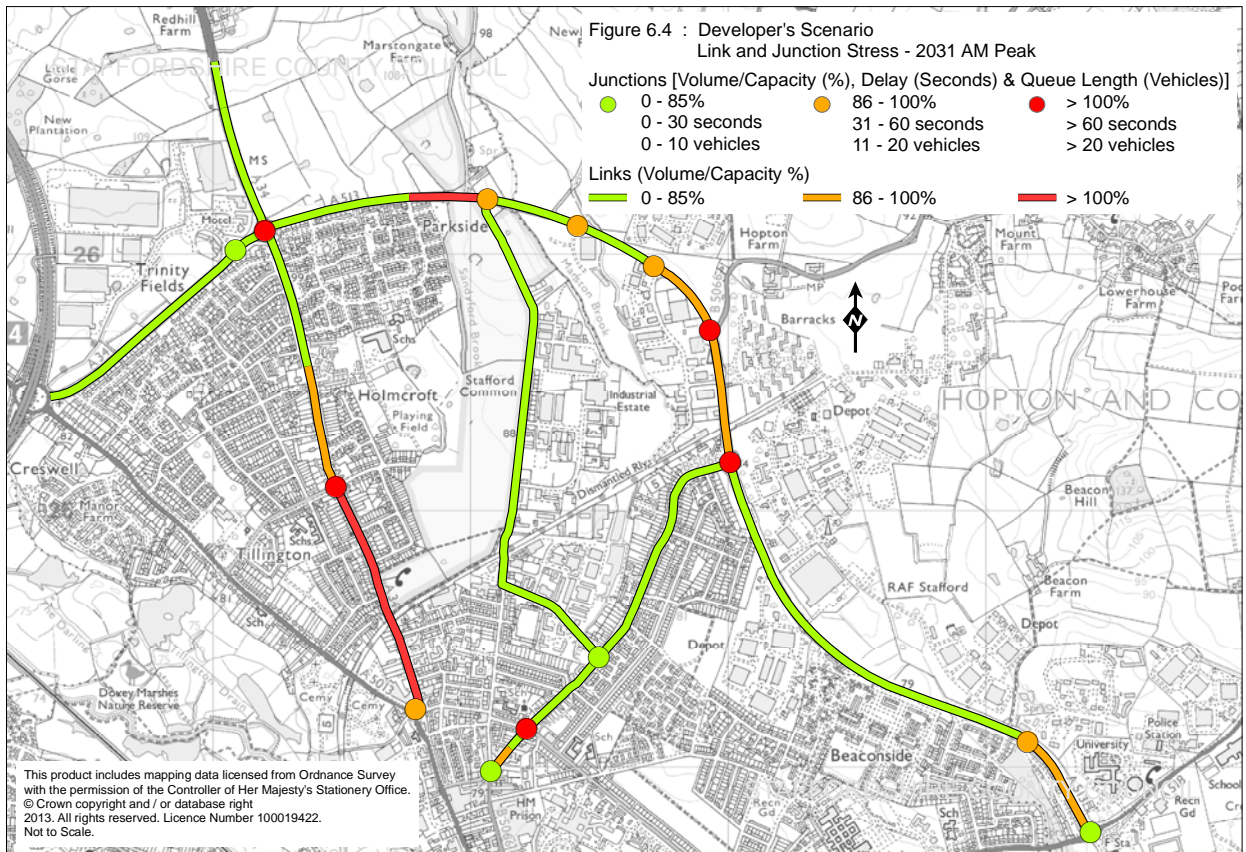
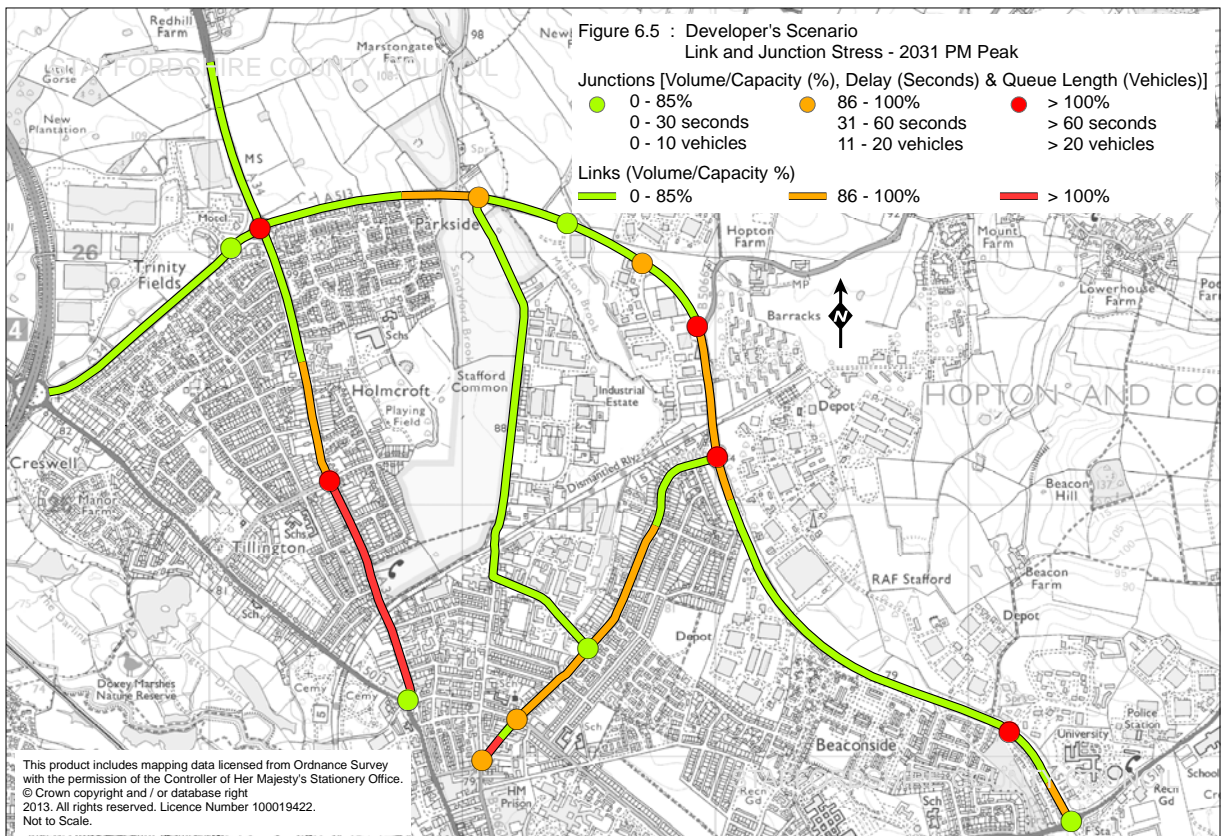


Figure 6.5: PM Link and Junction Stress



Summary of Traffic Impact of Developer's Scenario

- Highest recorded flows are on A34 north of Redhill
- Delays and congestion on A34 between Holmcroft Road and Eccleshall Road
- Worst delays expected on Beaconside in the direction of Weston Road in AM peak
- Traffic problems expected at all key junctions along Beaconside
- No traffic problems expected on Common Road
- Delays and congestion on Sandon Road (south) particularly in PM peak

7. Highway Infrastructure Options

7.1 Introduction

The Transport Strategy required to mitigate the impact of the northern direction of growth will include a combination of sustainable transport measures and highway infrastructure. Three highway infrastructure options have been considered and their impact is compared. These include:

- Extended Dual Carriageway to Sandon Road (north)
- Local Distributor Road A34 to Sandon Road (north)
- Shortened Local Distributor Road A34 to Common Road junction

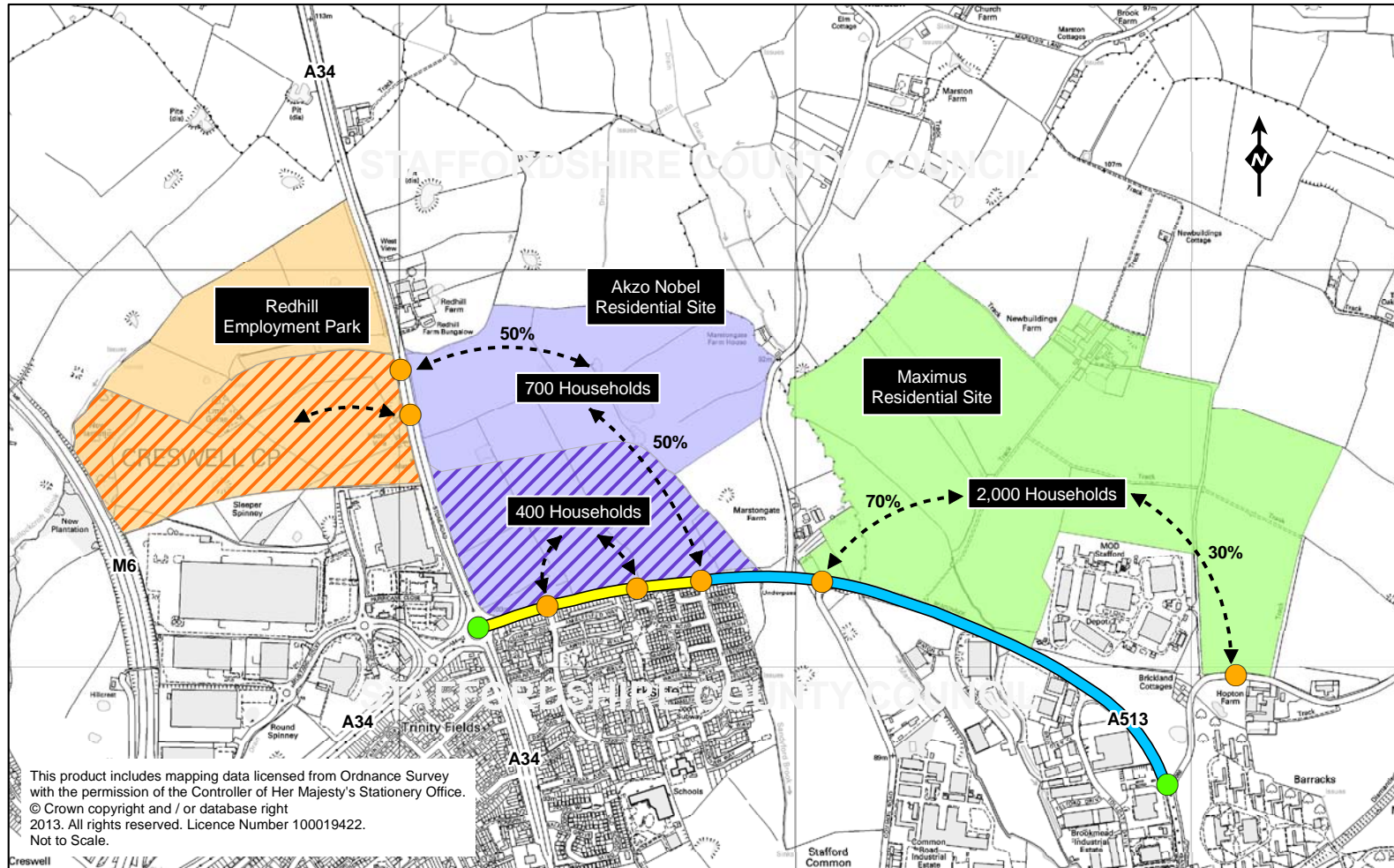
Direct access arrangements to the development sites, as described in paragraph 6.1, remain the same in all options.

7.2 Extended Dual Carriageway to Sandon Road (north)

This option is shown on Figure 7.1 and extends the dual carriageway to the junction with Sandon Road (north). In addition to all the other access improvements in the 'do-minimum / developer's scenario', separate turning lanes on Beaconside have been included at the Tollgate Park / Beaconside signalled junction. It is proposed that the dual carriageway has a speed limit of 30mph to reduce severance issues between the new developments and existing residential and local facilities to the south of Beaconside.

Figure 7.1
Extended Dual Carriageway to Sandon Road

● Junction Improvements ● & ↔ Development Access ■ Proposed Dual Carriageway ■ Proposed Dual Carriageway Extension ▨ Planning Consent (Acquired)



Traffic Impact of Extended Dual Carriageway

Figures 7.2 and 7.3 highlight how traffic flows are predicted to change in the AM and PM peaks in the study area when the extended dualling is introduced. Figures 7.4 and 7.5 indicate how these traffic flows will have an impact on network stress in the study area.

This option is expected to result in a slight decrease in flows along Beaconside and the proposed new dual carriageway, although overall flows are likely to remain high. This is because the reduced speed limit makes it a less attractive route for some journeys. In the AM peak hour there is expected to be a two-way reduction in flow of between 100 – 200 vehicles, however, these lower flows do not result in improved journey times due to the lower permitted speed limit.

Key junctions along Beaconside are expected to continue to experience delays, including Redhill roundabout. Traffic problems will be particularly evident between Sandon Road (north) and Sandon Road (south), and between Staffordshire Technology Park and Weston Road.

Traffic conditions along Sandon Road (south) are expected to be worse with an increase of 50-100 vehicles north bound in the AM peak. Congestion is also expected on the A34 in both the AM and PM on the single carriageway sections between Holmcroft and the Eccleshall Road junction.

Figure 7.2: Comparison with Developer's Scenario - Difference in AM peak hour flows (blue = decrease, green = increase)

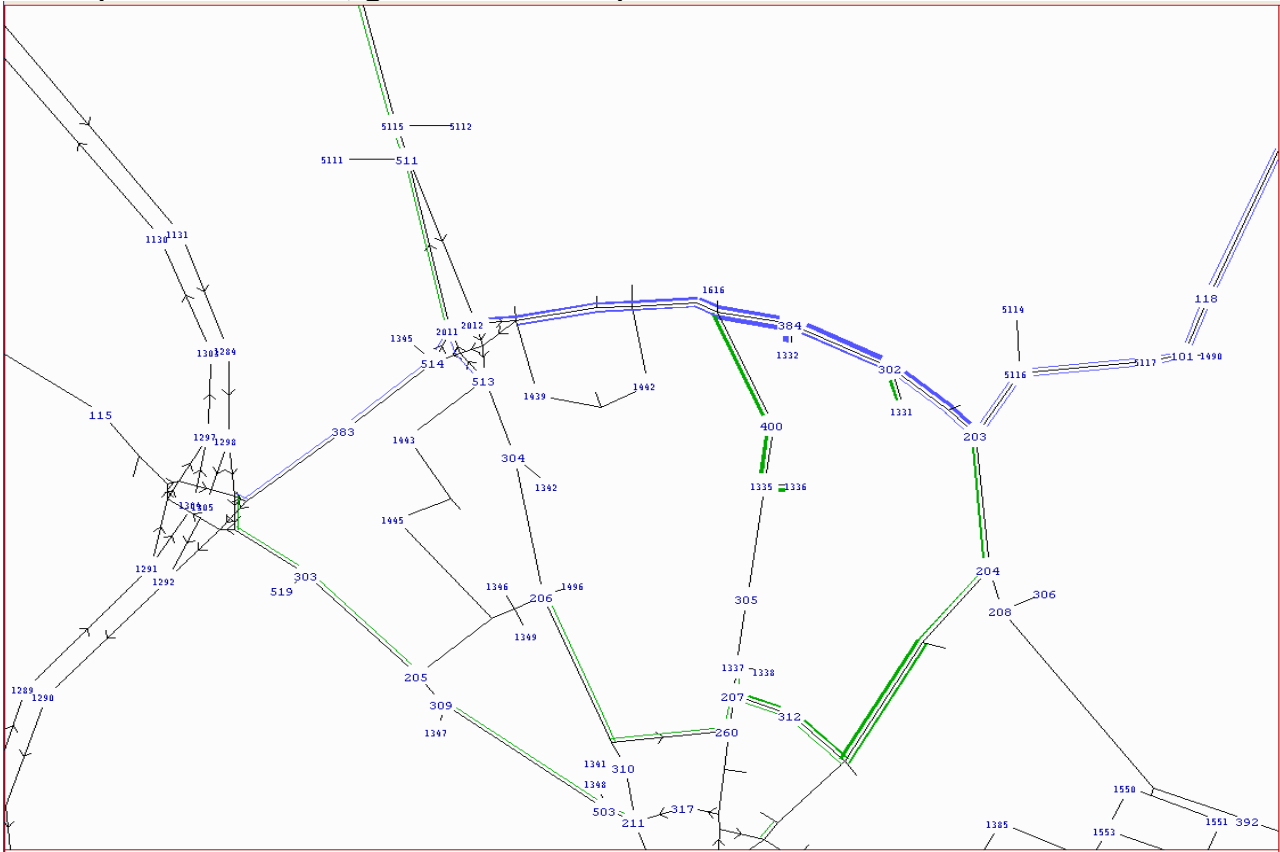


Figure 7.3: Comparison with Developer's Scenario - Difference in PM peak hour flows (blue = decrease, green = increase)

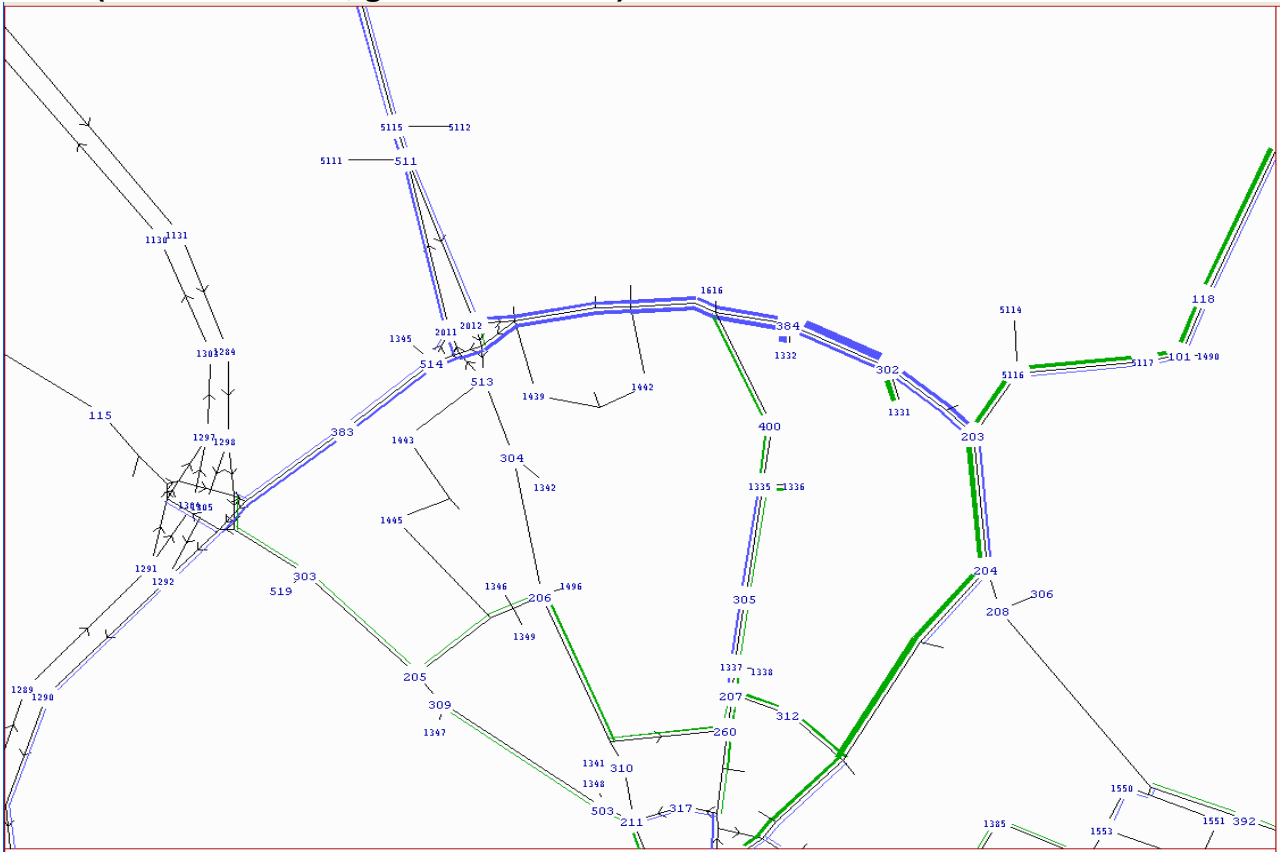


Figure 7.4: AM Link and Junction Stress

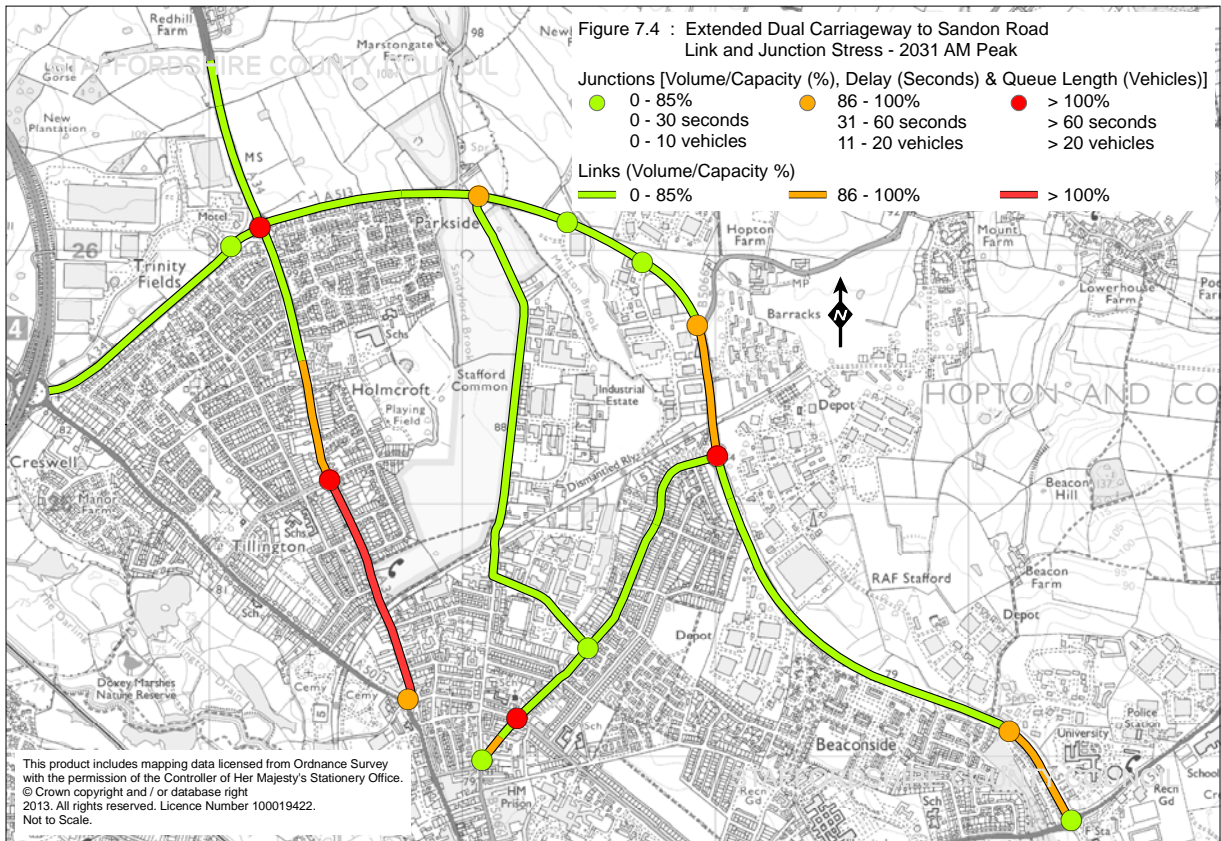
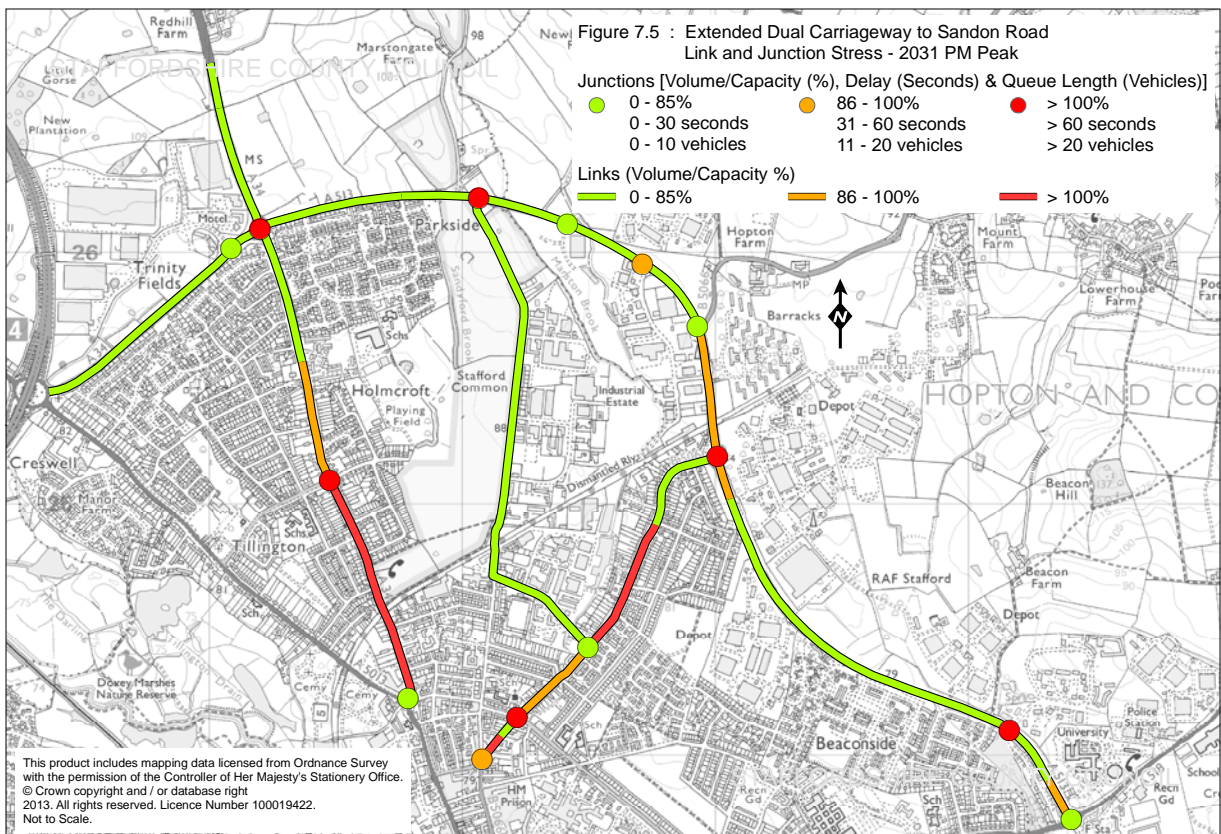


Figure 7.5: PM Link and Junction Stress

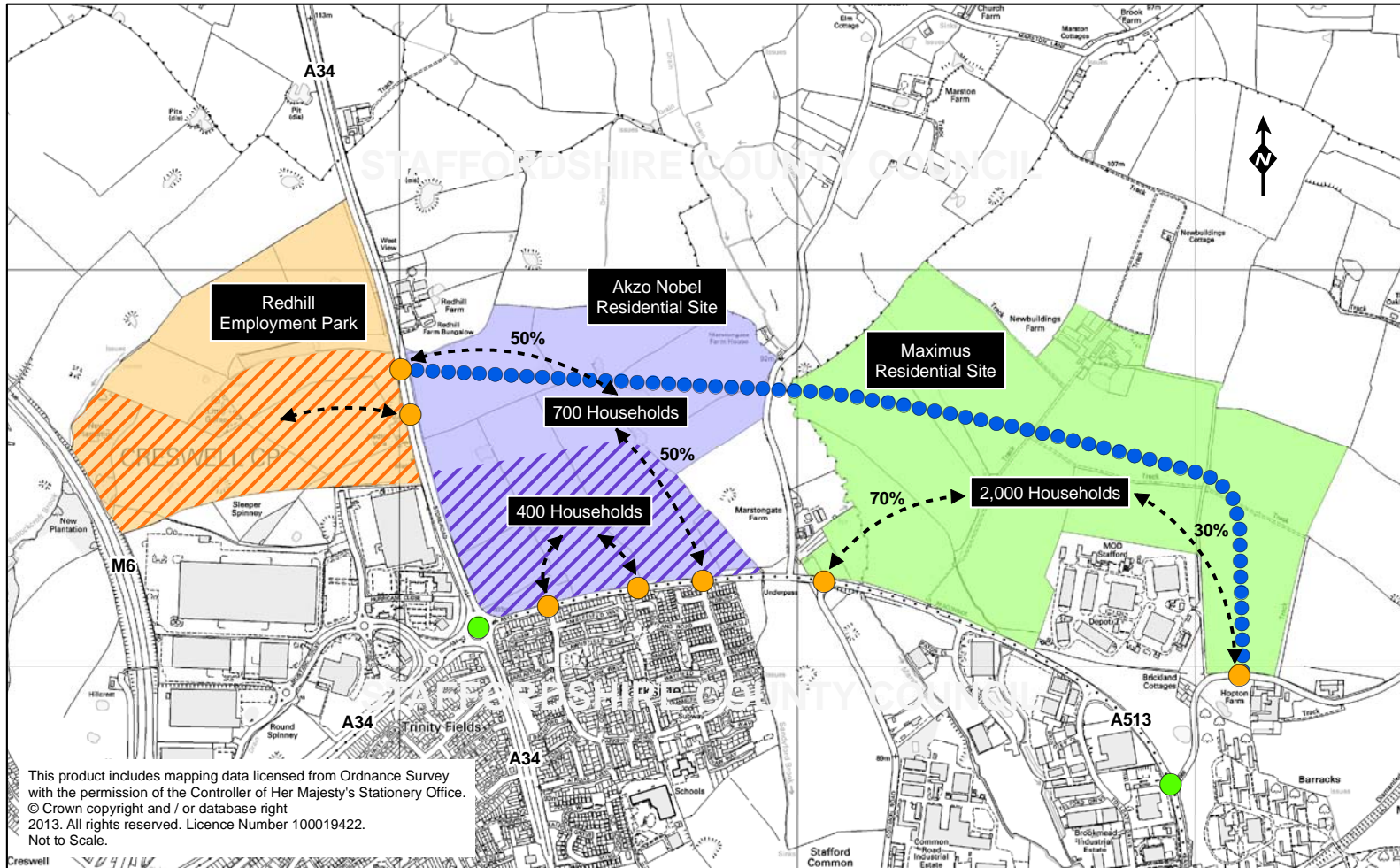


7.3 Local Distributor Road A34 to Sandon Road (north)

This option is shown on Figure 7.6 and includes provision of a new 7.3m wide single carriageway local distributor road through the development sites from the new A34 roundabout to Sandon Road (north). This could be designed to accommodate some frontage development. The proposed road will have priority over Sandon Road (north), with the junction at Beaconside proposed as a new roundabout, rather than signals. It is expected to directly serve 50% of the 700 dwelling site and 30% of the 2,000 dwelling site. Site access to 70% of the 2,000 new dwellings is retained at the new signal controlled junction at Common Road / Beaconside. All other access improvements in the 'do-minimum / developer's' scenario are retained, including the dual carriageway between A34 and the eastern entrance to Parkside.

Figure 7.6
Local Distributor Road, A34 to Sandon Road (North)

● Junction Improvements ● & ↔ Development Access ●●●● New Link Road ▨▨▨▨ Planning Consent (Acquired) ▨▨▨▨ Planning Consent (Acquired)



Traffic Impact of Local Distributor Road A34 to Sandon Road (north)

Figures 7.7 and 7.8 highlight how 'actual' traffic flows are predicted to change in the AM and PM peaks in the study area when this local distributor road is introduced. Figures 7.9 and 7.10 indicate how these traffic flows will have an impact on congestion in the study area.

A local distributor road would remove a substantial amount of vehicles from the A34 north of Redhill and Beaconside to Sandon Road (north). In the AM peak there is a two way flow reduction of around 600 vehicles along Beaconside and 700 in the PM peak. These lower flows will improve traffic speeds and journey times.

Significant improvements are expected at the Sandon Road (north) / Beaconside junction where a roundabout is proposed rather than traffic signals. A local distributor road would also improve conditions at the Common Road junction compared to the option of a dual carriageway.

Delays are still expected at Sandon Road (south) junction and traffic problems are likely between Sandon Road (north) and Sandon Road (south), and between Staffordshire Technology Park and Weston Road. Even though there is a reduction in traffic through the Redhill junction, there are still capacity problems with the current design proposed for the junction.

Evidence suggests that the problems expected to be experienced along Sandon Road (south) with the dual carriageway proposal are less likely with the local distributor road, however there are still likely to be traffic issues particularly closer to the town centre in the PM peak.

Congestion is also expected on the A34 in both the AM and PM on the single carriageway sections between Holmcroft and the Eccleshall Road junction.

Figure 7.7: Comparison with Developer's Scenario - Difference in AM peak hour flows (blue = decrease, green = increase)

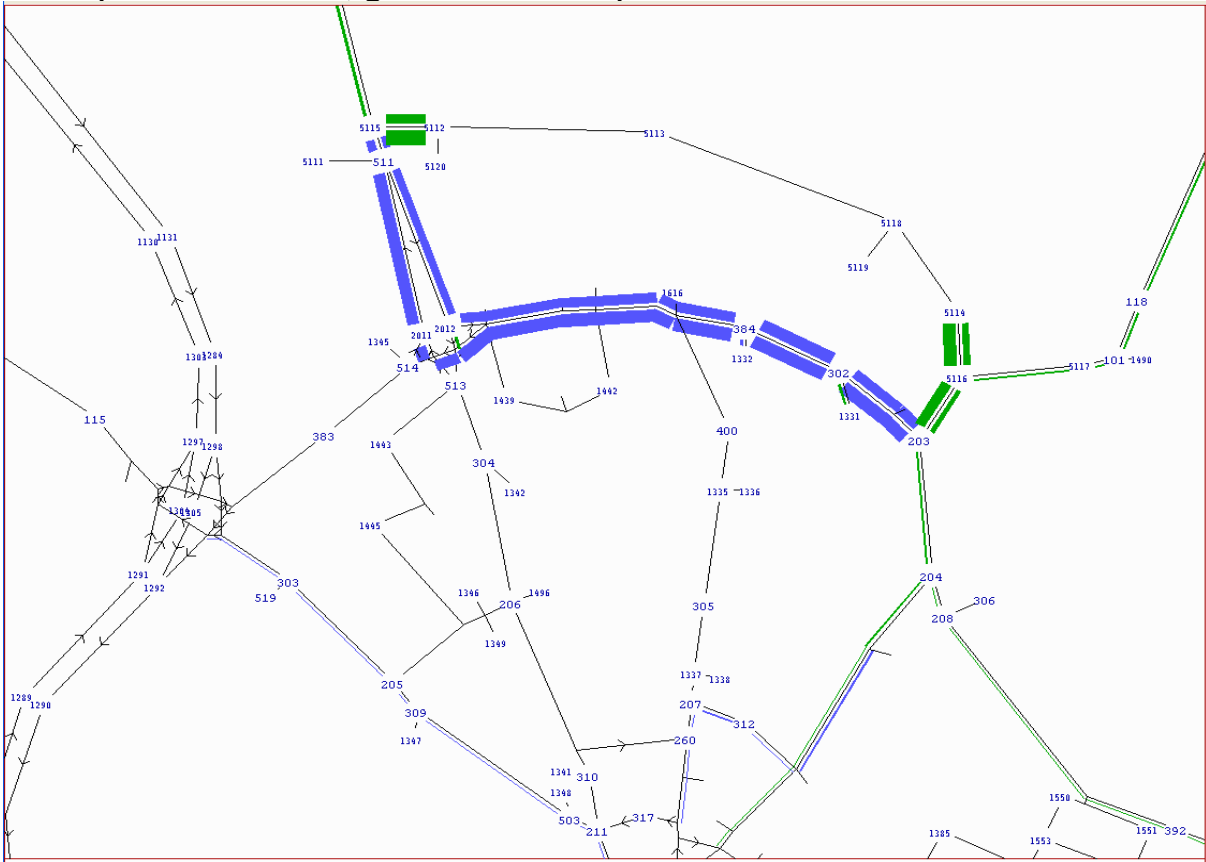


Figure 7.8: Comparison with Developer's Scenario - Difference in PM peak hour flows (blue = decrease, green = increase)

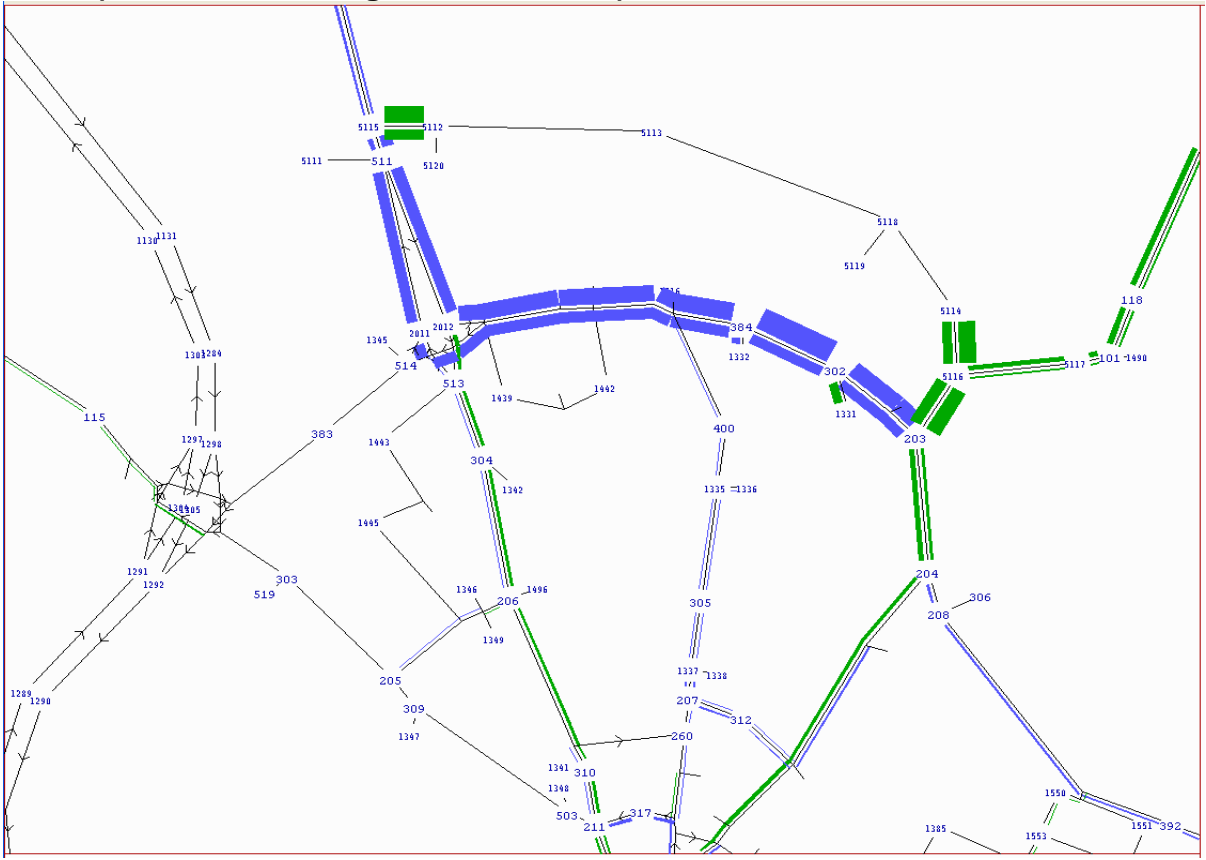


Figure 7.9: AM Link and Junction Stress

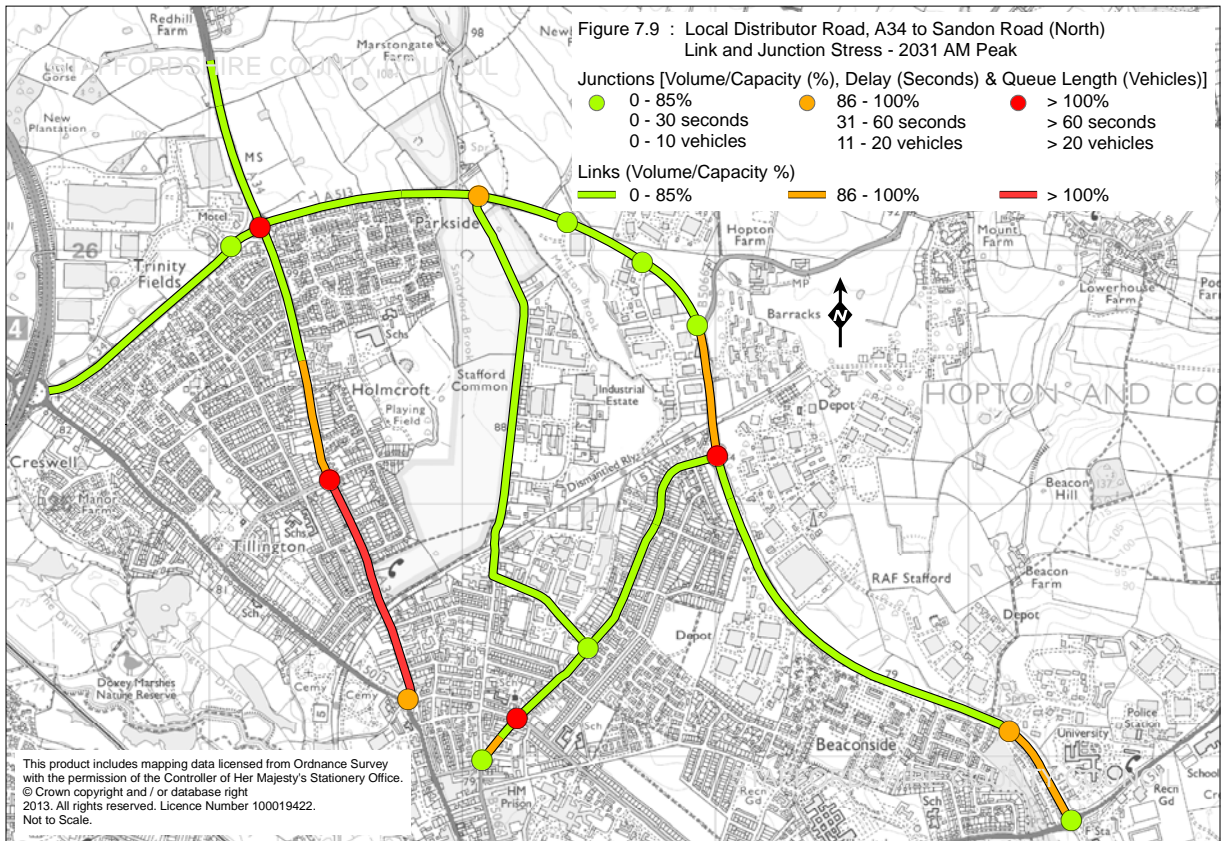
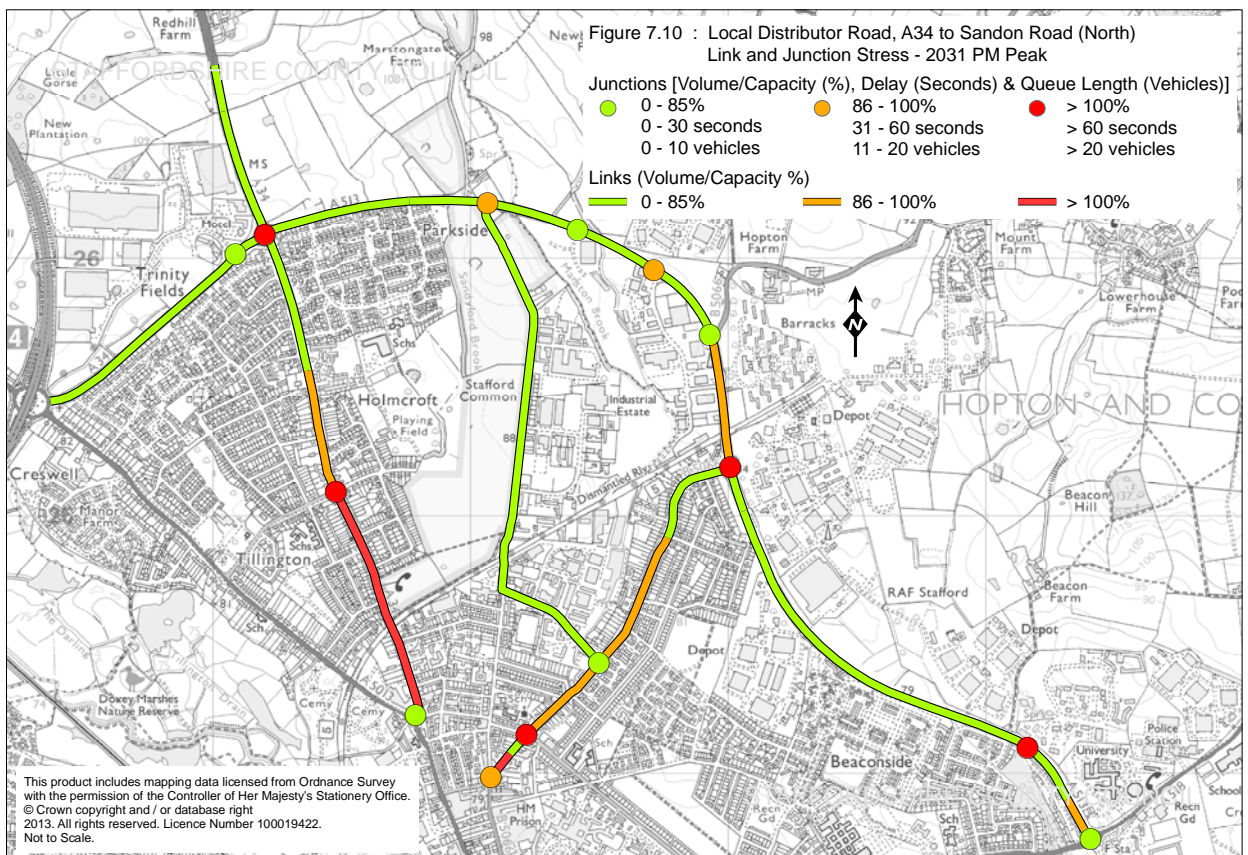


Figure 7.10: PM Link and Junction Stress



7.4 Shortened Local Distributor Road A34 to Common Road junction

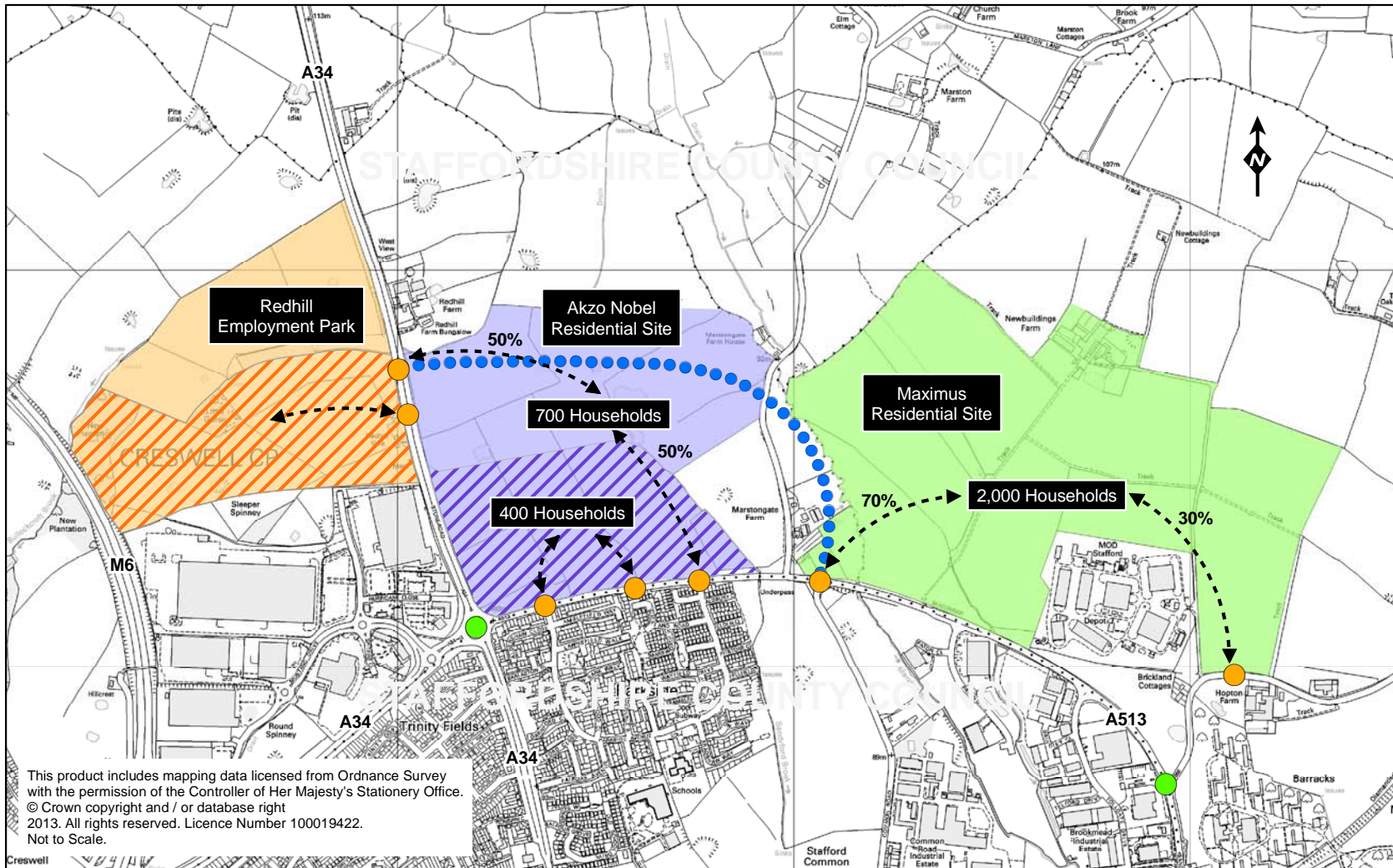
This option is shown on Figure 7.11 and includes a shortened local distributor road between the new A34 roundabout junction and Beaconside at the new signals with Common Road. An additional right turn lane has been included at these new signals to provide additional capacity. The distributor road only directly serves 50% of the 700 dwelling site as the remainder of the site will still be accessed via the new staggered four arm signalised junction at the Parkside eastern entrance, as requested by the developer. However, in practice if this scenario is developed further, the County Council would expect all 700 dwellings to be accessed off the local distributor road.

A lower order access road would provide a link from the distributor road to Sandon Road (north). Priority would be given to Sandon Road (north) rather than the distributor road and a roundabout is proposed at the junction with Beaconside. It is assumed that 70% of the 2,000 dwelling site would access onto the distributor road and 30% onto Sandon Road (north).

All other access improvements in the 'do-minimum / developer's scenario' are retained, including the dual carriageway between A34 and the eastern entrance to Parkside.

Figure 7.11
Shortened Local Distributor Road

● Junction Improvements ● & ←→ Development Access ●●●● New Link Road ▨▨▨▨ Planning Consent (Acquired) ▨▨▨▨ Planning Consent (Acquired)



Traffic Impact of Shortened Local Distributor Road

Figures 7.12 and 7.13 highlight how 'actual' traffic flows are predicted to change in the AM and PM peaks in the study area when this shorter local distributor road is introduced. Figures 7.14 and 7.15 indicate how these traffic flows will have an impact on congestion in the study area.

The introduction of a shorter distributor road reduces trips along A34 north of Redhill and Beaconside as far as Common Road. Traffic flows are expected to reduce by around 1,100 vehicles in both peak hours resulting in significantly improved speeds and journey times on these relieved sections. Traffic levels are higher on the shorter distributor road compared to the longer option. There is predicted to be a significant reduction in traffic flows through the Redhill junction between Beaconside and A34 north, although there are still capacity problems with the current design proposed for the junction.

High flows and associated reduced speeds are likely along the sections of Beaconside that are not bypassed by this option (Common Road to Sandon Road (north)). There are also likely to be problems at junctions along this section, particularly at Tollgate Park and Tollgate Drive. However, it is expected that Sandon Road (north) junction will operate well as a roundabout. Higher delays and reduced speeds are also considered likely on the rest of Beaconside as a result of more traffic being attracted to the shorter distributor road, with problems particularly highlighted between Sandon Road north and south and between Staffordshire Technology Park and Weston Road.

Congestion is expected on the A34 in both the AM and PM on the single carriageway sections between Holmcroft and the Eccleshall Road junction. However there may be an increased possibility that traffic flows may reduce on A34 south as more traffic may access the town centre via Common Road, although the extent of this re-routing is not considered to be significant.

There are likely to be traffic issues along Sandon Road (south) particularly closer to the town centre in the PM peak.

Figure 7.12: Comparison with Developer's Scenario - Difference in AM peak hour flows (blue = decrease, green = increase)

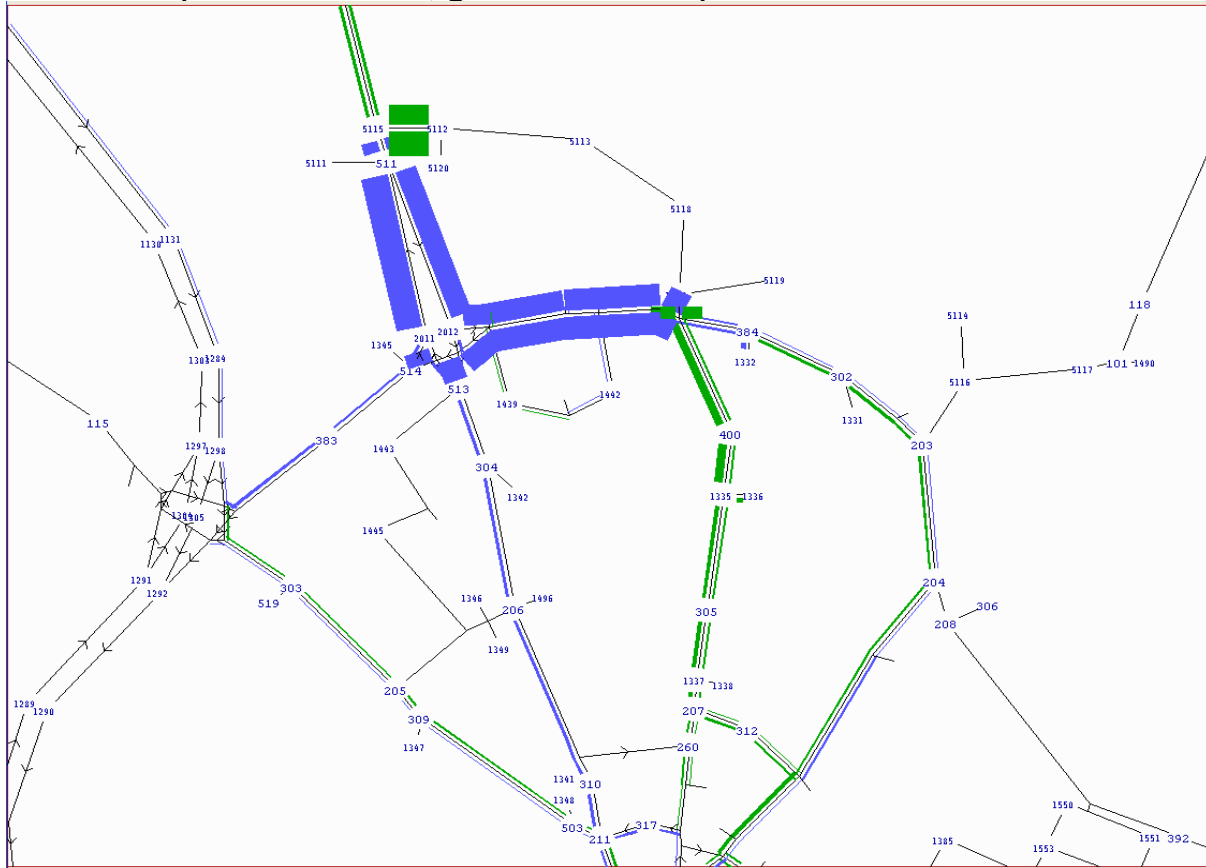


Figure 7.13: Comparison with Developer's Scenario - Difference in PM peak hour flows (blue = decrease, green = increase)

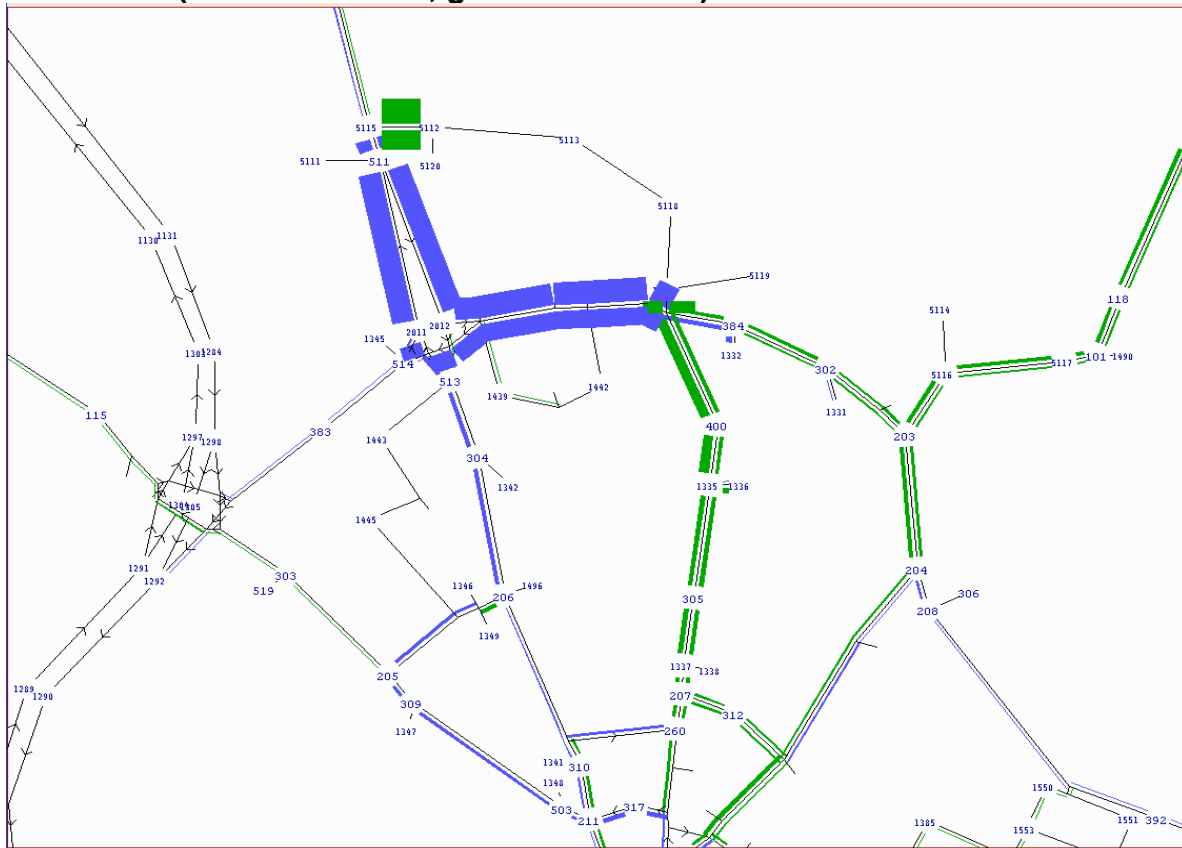


Figure 7.14: AM Link and Junction Stress

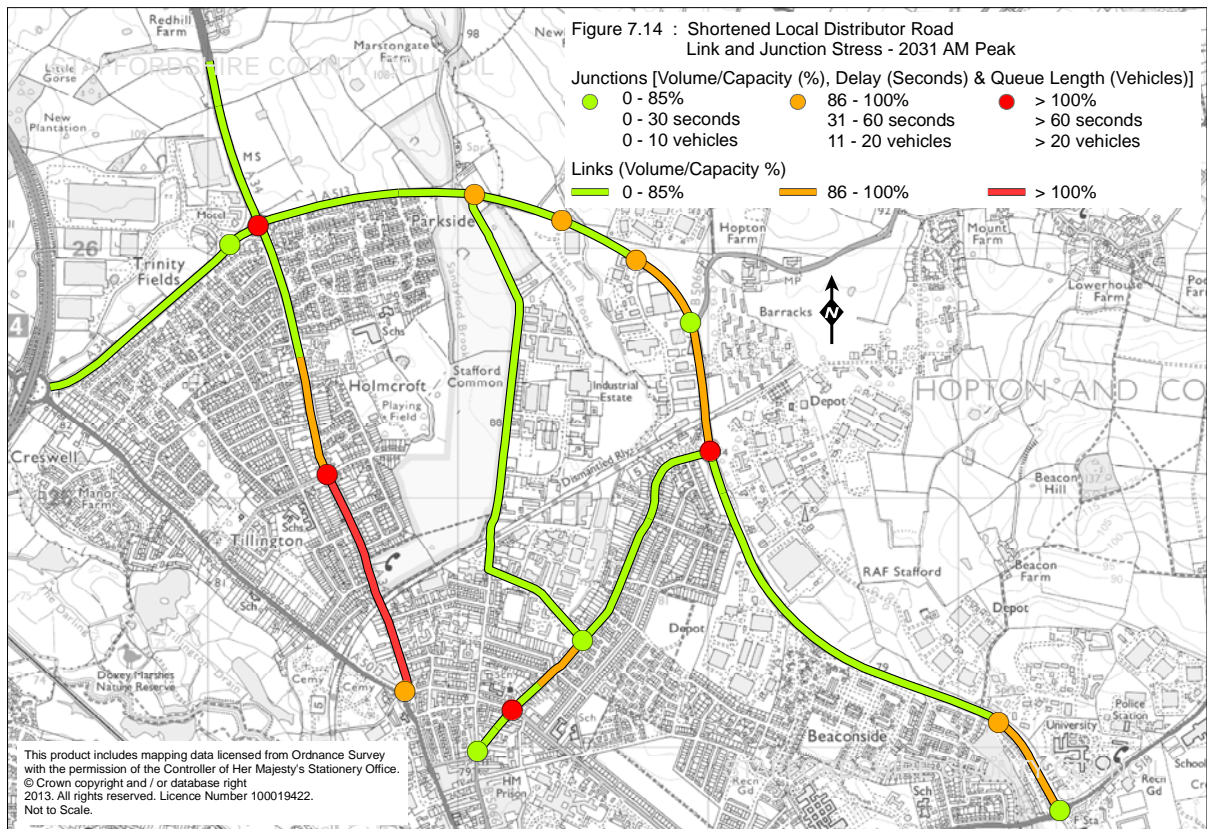
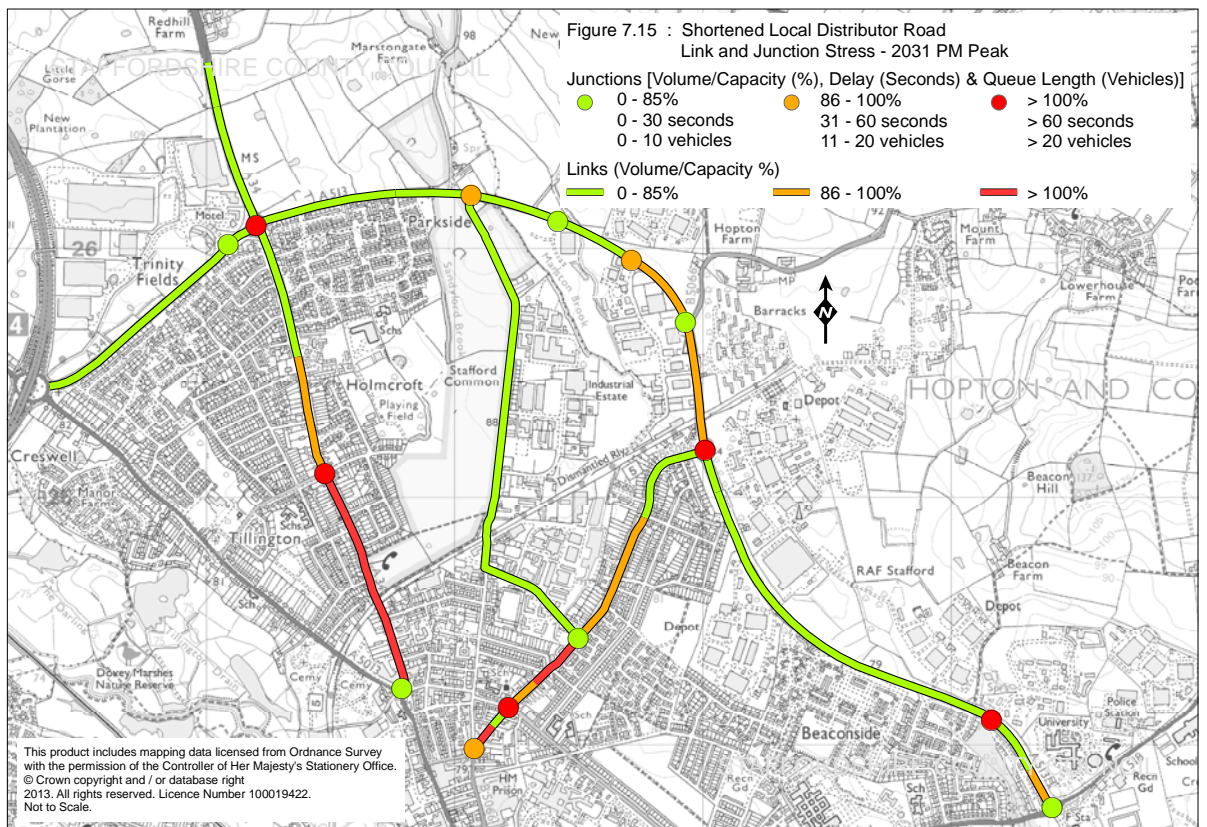


Figure 7.15: PM Link and Junction Stress



7.5 Summary

Table 7.1 provides an indication of how traffic flows differ in the study area as a result of implementing the proposed infrastructure options. It shows that there is a significant reduction on Beaconside when either option of the Local Distributor Road is provided.

Table 7.1: Maximum 2031 Traffic Flows (Vehicles per hour)

Location		Developer's Option	Extended Dualling	Local Distributor Road	Shortened Local Distributor Road
Beaconside - A34 to Parkside Eastern Entrance	AM	2,672	2,607	2,093	1,605
	PM	2,319	2,192	1,555	1,236
Beaconside - Parkside Eastern Entrance to Sandon Road (north)	AM	2,485	2,400	1,901	2,389
	PM	2,267	2,114	1,496	2,117
Beaconside - Sandon Road (north) to A518 Weston Road	AM	2,362	2,382	2,410	2,407
	PM	2,146	2,166	2,263	2,216
A34 Stone Road site access to Redhill roundabout	AM	3,884	3,888	3,416	2,722
	PM	3,933	3,883	3,200	2,648
A34 Redhill roundabout to Stone Road / Eccleshall Road junction	AM	2,022	2,022	2,017	1,943
	PM	1,945	1,977	1,926	1,914
Redhill junction to M6 (J14)	AM	2,162	2,130	2,166	2,117
	PM	2,198	2,149	2,170	2,151
Common Road and Astonfields	AM	1,040	1,065	1,038	1,152
	PM	1,096	1,097	1,044	1,260
Sandon Road (Beaconside to Astonfields Road)	AM	1,081	1,156	1,069	1,075
	PM	1,475	1,593	1,521	1,493
Sandon Road (Astonfields Road to Browning Street)	AM	1,282	1,282	1,286	1,316
	PM	1,553	1,598	1,588	1,584

In summary, traffic conditions forecast for 2031 that are common to all scenarios include:

- Congestion on Beaconside between Sandon Rd (north) and Sandon Rd (south)
- Congestion on Beaconside between Staffs Technology Park and Weston Rd
- Congestion on A34 between Holmcroft Road and Eccleshall Road
- Congestion on Sandon Road (south) particularly closer to town
- No traffic problems expected on Common Road

- Problems with the design currently proposed for Redhill junction
- Highest recorded flows are on A34 north of Redhill

Table 7.2 summarises the key differences on **Beaconside** between the options tested.

Table 7.2: Summary of Traffic Impact on Beaconside

Developer's Scenario	Extended Dual Carriageway to Sandon Road (north)
<ul style="list-style-type: none"> • AM average traffic flows 2,400 • Traffic problems expected at all key junctions along Beaconside 	<ul style="list-style-type: none"> • AM average traffic flows 2,300 • Traffic flows remain high on Beaconside • No significant delays along new dual carriageway • No improvement in journey times due to proposed 30mph speed limit • Junctions with significant delays include Common Road, Sandon Road (south) and Staffordshire Technology Park
Distributor road between A34 and Sandon Road (north)	Shortened distributor road to Common Road
<ul style="list-style-type: none"> • AM average traffic flows 1,900 • Facilitates provision of a high quality bus service through the sites • Reduced traffic flows of 600 / 750 between Redhill and Sandon Rd (north) improving traffic speeds and journey times and reducing severance • Reduced traffic flows through Redhill roundabout • New roundabout at Sandon Road (north) creates significant benefits • Junctions with significant delays include Sandon Road (south) and Staffordshire Technology Park 	<ul style="list-style-type: none"> • AM average traffic flows 2,000 • Reduced traffic flows of 1,100 between Redhill and Common Road improving traffic speeds and journey times and reducing severance • Traffic flows still high on sections not bypassed • Reduced traffic flows through Redhill roundabout • New roundabout at Sandon Road (north) creates significant benefits • Junctions with significant delays include Sandon Road (south) and Staffordshire Technology Park

8. Preferred Transport Strategy

8.1 Introduction

The Stafford Borough Integrated Transport Strategy to 2031 draws together the wider strategy for Stafford urban area as required to deliver growth proposals in Stafford Borough Council's emerging Local Plan. The Strategy aims to meet the following Economic Prosperity and Community objectives that are in line with the County Council's Strategic Plan.

ECONOMIC PROSPERITY

- Accommodate strategic employment and housing greenfield sites in Stafford, including potential new highway capacity
- Provide highway capacity and sustainable transport connectivity to support economic and retail growth in Stafford town centre
- Manage peak hour traffic levels and carbon emissions on Stafford's radial routes
- Support sustainable development in Stone that does not undermine the regeneration of North Staffordshire

COMMUNITIES

- Maintain the current condition and safety of the highway network
- Improve public transport connectivity and quality of life for local communities
- Raise awareness of environmental issues and encourage people to lead more sustainable lifestyles, helping to reduce carbon emissions

Measures in Stafford are expected to focus on the North, West and East of the urban area and within the town centre including the key interventions in Table 8.1, funded by a combination of public and private sector funds:

Table 8.1: Key interventions Proposed for Stafford Urban Area

Key Intervention	Public Funds	Private Funds
Stafford Northern highway capacity improvements		✓
Stafford Eastern Access Link (Beaconside to St Thomas Lane)		✓
Stafford Western Access Route (Castlefields to A34 Foregate)	✓	✓
Key junction / corridor capacity improvements:		
Blackheath Lane / A518 Weston Road	✓	✓
A34 Redhill roundabout	✓	✓
A513 Beaconside corridor	✓	✓
A34 corridor (Lichfield Rd gyratory to St Leonard's Ave)	✓	✓
Baswich Lane corridor	✓	
Baswich Walking and Cycling Route	✓	
Walking and cycling links to sustainable urban extensions		✓
New or extended bus services to sustainable urban extensions		✓
Town centre traffic management	✓	
Real time bus passenger information	✓	✓
Extensive travel planning and sustainable travel promotion	✓	✓
Community safety initiatives	✓	

8.2 Stafford Northern Access Improvements

Staffordshire County Council recommends that significant enhancements to the highway network are required in the North of Stafford if Stafford Borough Council's plan to deliver 3,100 new homes by 2031 is to be realised.

Evidence shows that the option currently being proposed by the developer will not satisfactorily mitigate the impact of additional vehicular demand in 2031. Extending the dual carriageway will provide some improvements, but the provision of a new local distributor road to Sandon Road (north) is likely to have additional benefits in terms of reduced flows on Beaconside. Logically a local distributor road will also provide a more attractive route for commercial bus services compared to the other access arrangements under consideration. However, even with a new distributor road there still remain problems at key junctions that can only be resolved through further junction improvements.

Evidence also shows that infrastructure alone will not remove all potential delays on the highway network. This means that it is important that any physical improvements are complemented by a change in travel behaviour and less reliance on the car for journeys, particularly in peak periods. A high quality bus service penetrating the site would significantly improve accessibility and bus connectivity as shown in Figure 8.1. Also the provision of local facilities will reduce the need to travel by car and help to contain trips within the site, as shown in Figure 8.2

Figure 8.1 : Impact of Proposed New Bus Service on Accessibility

 Proposed Northern Direction of Growth
  Town Centre
  Existing Bus Routes
  Bus Service Extension to Development

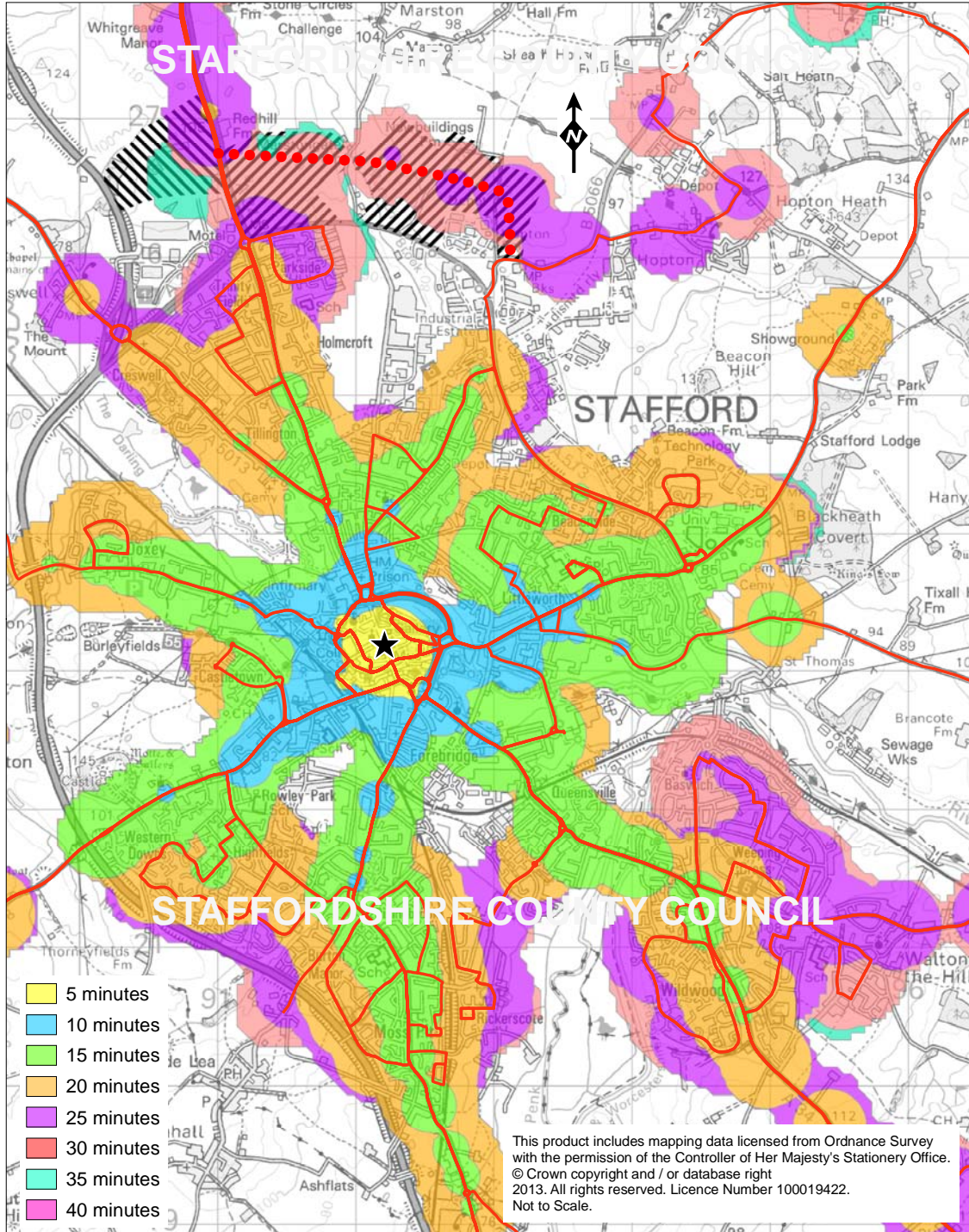
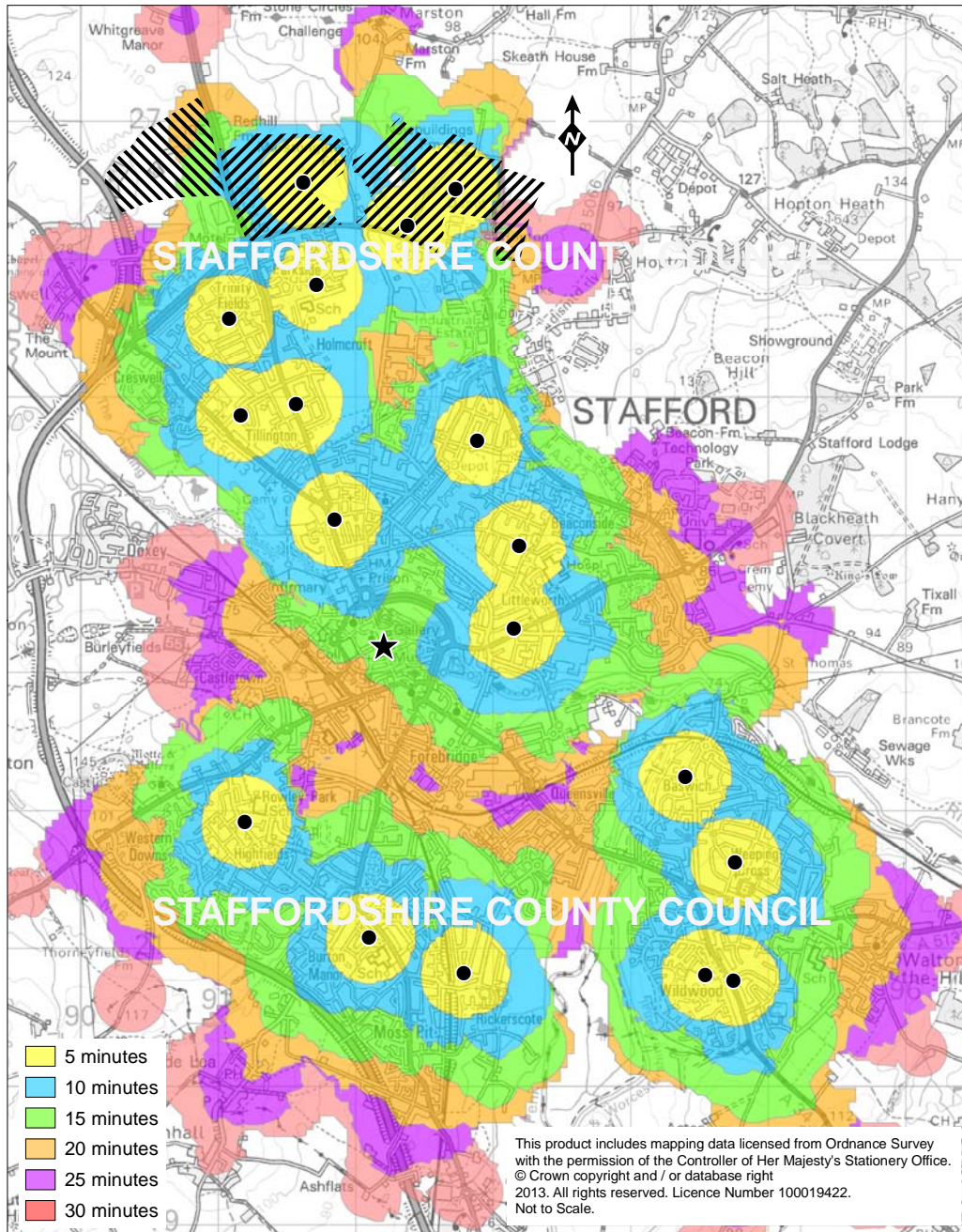


Figure 8.2 : Impact of Local Facilities on Accessibility (Walking only)

▨ Proposed Northern Direction of Growth ★ Town Centre ● Local Facilities



It is considered critical that there is a comprehensive Masterplan covering all 3,100 dwellings to ensure that connectivity is maximised between the development sites and to adjacent communities and facilities. This should preferably include a review and potential re-negotiation of the access arrangements agreed as part of the outline planning permission already secured for 400 of the 3,100 dwellings. This potentially extensive expansion to the urban area will change the boundary of Stafford and cannot be planned in a piecemeal manner.

Transport Assessments produced by individual developers must consider in detail the cumulative impact of the proposed 3,100 dwellings and the proposed mitigation measures need to be jointly agreed as part of a developer consortium, in line with the proposals recommended in this report. If after consideration of the potential for trip containment and sustainable travel residual impacts remain, these will have to be mitigated by off-site localised improvements.

In summary, it is recommended that the Stafford Northern Access Improvements are delivered, consisting of the following four Elements that are shown on Figure 8.3 and detailed in Table 8.2.

Table 8.2: Proposed Transport Strategy for North of Stafford

Element 1: Highway Capacity Improvements

Output	Outcome
North of Stafford capacity improvements. The County Council's preferred option is a local distributor road (A34 to Sandon Road (north))	<ul style="list-style-type: none"> • Beaconside traffic flows reduced by up to 750 • Improved bus access into the site • Improved journey times and traffic speeds • Better connectivity between development sites • Reduced severance between new and existing communities • Improved access to new facilities within the development sites • Reduced traffic impact on Parkside residents
Review of proposed signalisation of A34/A518 Redhill roundabout	<ul style="list-style-type: none"> • Reduced delays • Improved pedestrian connectivity
Consider potential to convert Redhill Business Park junction to 4 arm roundabout to serve housing development site	<ul style="list-style-type: none"> • Improve journey time reliability and reduce delays on the Stafford's strategic highway network
Minimise the number of new junctions on A518 Beaconside through joint Master planning of the 3,100 dwellings	<ul style="list-style-type: none"> • Improve journey time reliability and reduce delays on the Stafford's strategic highway network • Expected to be more acceptable to existing local communities
Linked traffic signal system along Beaconside	<ul style="list-style-type: none"> • Improve journey time reliability and reduce delays on the Stafford's strategic highway network
Safety and capacity improvements at Common Road junction	<ul style="list-style-type: none"> • Reduce accidents currently caused when traffic is merging from the minor road. • Volume / capacity ratio of less than 85%
New roundabout at Sandon Road (north) junction	<ul style="list-style-type: none"> • Minimise the number of signal junctions along Beaconside • Volume / capacity ratio of less than 85%
Staffordshire Technology Park / Beaconside junction and link capacity improvements	<ul style="list-style-type: none"> • Volume / capacity ratio of less than 85%
Capacity improvements between Sandon Road (north) and Sandon Road (south)	<ul style="list-style-type: none"> • Volume / capacity ratio of less than 85%

Element 2: Bus Connectivity

Output	Outcome
Site layout ensuring the majority of households are within a 350 metre walking distance of a bus stop	<ul style="list-style-type: none"> • Encourage modal shift from car to bus • Reduced traffic flows on Beaconside and routes to the town centre
New bus service making use of new local distributor road	<ul style="list-style-type: none"> • Improved accessibility as indicated on Figure 8.1
Real time bus passenger information within the development site and along routes to town	<ul style="list-style-type: none"> • Improved journey quality and reliability • Improved awareness of local bus services, encouraging modal shift from car
Bus priority on A34 Stone Road	<ul style="list-style-type: none"> • Improved journey time reliability for bus journeys to town • Potential modal shift from car to bus for journeys into town

Element 3: Enabling Active Travel

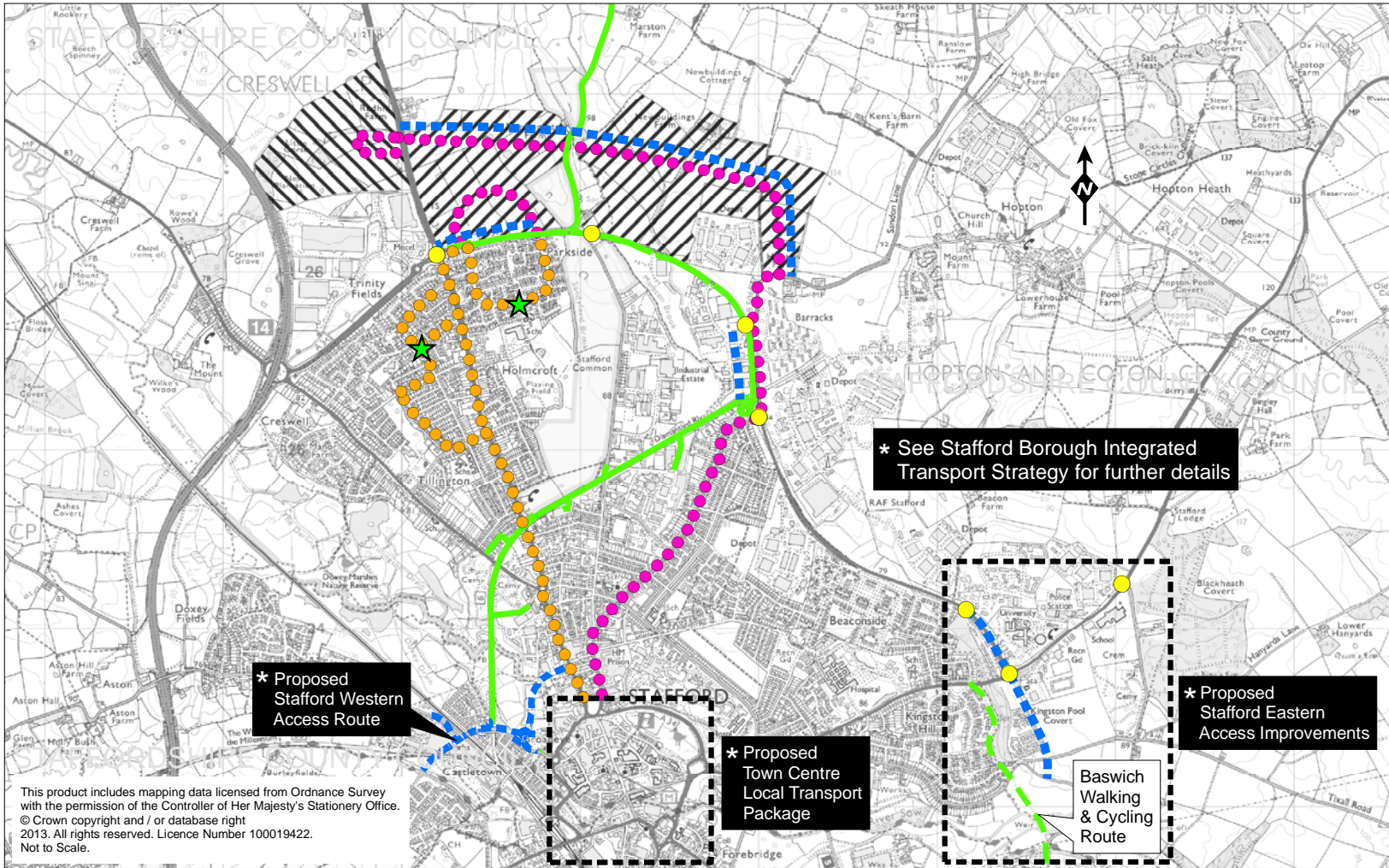
Output	Outcome
Local supermarket, social facilities and school provision appropriate to the scale of the full allocation, conveniently located by walking and cycling	<ul style="list-style-type: none"> • Improved accessibility to local facilities as indicated on Figure 8.2 • Improved quality of life for existing communities and enhanced quality of new development • Reduced car trips to Stafford town centre • Physical fitness and health benefits
Widespread walking and cycling permeability within and between the development sites	<ul style="list-style-type: none"> • Improved quality of life for existing communities and enhanced quality of new development • Reduced car trips to Stafford town centre • Physical fitness and health benefits
Convenient and safe pedestrian crossings on the A34 and A513 on the desire lines to existing local facilities	<ul style="list-style-type: none"> • Improved safety for pedestrians • Minimised vehicle / pedestrian conflict • Physical fitness and health benefits

Element 4: Sustainable Travel Promotion

Output	Outcome
Workplace Travel Plans promoting initiatives such as car sharing, sustainable travel, personalised journey planning, home working and flexible working hours.	<ul style="list-style-type: none"> • Reduced peak hour traffic levels • Physical fitness and health benefits • Reduced traffic delays for local businesses
Sustainable travel initiatives targeted at local residents include a combination of travel advice, discounted public transport tickets, better public transport information and local community events promoting walking and cycling.	<ul style="list-style-type: none"> • Local community benefits • Increased bus use • Reduced levels of traffic • Physical fitness and health benefits
Implementation of Schools Travel Plans.	<ul style="list-style-type: none"> • Reduced peak hour traffic levels • Reduced local parking issues • Physical fitness and health benefits

Figure 8.3 : Proposed Transport Strategy for North of Stafford

-  Development Sites
-  Real Time Passenger Information (RTPI) & Improved Bus Reliability
-  New Bus Service
-  Highway Improvements
-  National Cycle Network
-  Junction Improvements
-  Connectivity to Existing Centres



Appendix A: Uncertainty Log

Committed developments contained within these models have been identified using an 'Uncertainty Log'. The 'Uncertainty Log' includes an assessment of the uncertainty of each individual input by placing it into one of four categories, as defined in below (taken from WebTAG Guidance Note 3.15.5: 'The Treatment of Uncertainty in Model Forecasting'). It refines and updates the original log for the Western Access Route traffic model to ensure that the preferred option of Stafford Borough Council's development plan was modelled.

Classification of Future Inputs

Probability of the Input	Status
<p>Near certain</p> <p>The outcome will happen or there is a high probability that it will happen.</p>	<ul style="list-style-type: none"> • Intent announced by proponent to regulatory agencies. • Approved development proposals. • Projects under construction.
<p>More than likely</p> <p>The outcome is likely to happen but there is some uncertainty.</p>	<ul style="list-style-type: none"> • Submission of planning or consent application imminent. • Development application within the consent process.
<p>Reasonably foreseeable</p> <p>The outcome may happen, but there is significant uncertainty.</p>	<ul style="list-style-type: none"> • Identified within a development plan. • Not directly associated with the transport strategy/ scheme, but may occur if the strategy/scheme is implemented. • Development conditional upon the transport strategy/scheme proceeding. • Or, a committed policy goal, subject to tests (e.g. of deliverability) whose outcomes are subject to significant uncertainty.
<p>Hypothetical</p> <p>There is considerable uncertainty whether the outcome will ever happen.</p>	<ul style="list-style-type: none"> • Conjecture based upon currently available information. • Discussed on a conceptual basis. • One of a number of possible inputs in an initial consultation process. • Or, a policy aspiration.

Uncertainty Log

Zone Number	Development	Land Use	Size (Dwellings/ Ha GFA)	Uncertainty	Included in modelled years
Employment/Industry Developments					
2001	Former Riverside Recreation Site (A)	Industry	1.35 (inc. 180 space car park)	Reasonably Foreseeable	All
2002	Former Riverside Recreation Site (B)	Industry	0.17(inc. 584 space car park)	Reasonably Foreseeable	All
2005	Lammascote Road Leisure Centre	Industry	0.6	Near Certain	All
2006	Prime Point 14, J14 M6	Industry	1.7	Near Certain	All
2007	GEC A34 Lichfield Road	Industry	0.7	Near Certain	All
2008	Kingsmead / North Walls	Industry	0.67	Reasonably Foreseeable	All
2009	Tipping Street	Industry	1.8	Near Certain	All
2018	Tollgate Business Park	Industry	3.1	Near Certain	All
2019	Staffordshire Technology Park	Industry	0.2	Near Certain	All
2020	Greyfriars Industrial Estate	Industry	0.2	Near Certain	All
2021 / 2026	Land at Beacon Business Park	Industry	0.5	Near Certain	All
			1.6	More Than Likely	All
			7.8	More Than Likely	2031
2022	Moss Pit	Industry	0.3	Near Certain	All
2023	Common Road Industrial Estate	Industry	0.6	Reasonably Foreseeable	All
2024	Astonfields Industrial Estate	Industry	0.1	Reasonably Foreseeable	All
2025	17 Salter St	Industry	0.04	Near Certain	All
2013	East of Fairway	Industry	2.8	Near Certain	All
2015	East of Kingsway	Industry	2.8	Reasonably Foreseeable	2031
2017 / 2029	West of Stone Road A34	Industry	36	More Than Likely	25ha. by 2016
				Reasonably Foreseeable	36ha. by 2031
2027	Redevelopment of retail units West of Chell Road	Industry	6.76	Reasonably Foreseeable	All
2030	1 Form Entry Primary School to support Berona project	School	210 Pupils	Reasonably Foreseeable	All
Residential Developments					
2104	St Georges A	Houses	367	Near Certain	All
2107	Former Universal Grinding Wheel, Doxey Rd	Houses	150	Near Certain	All
2108	Former Staffordshire Police Headquarters	Houses	200	Near Certain	All
2109	GEC A34 Lichfield Road	Houses	181	Near Certain	All
2111	Friars Terrace	Houses	51	Near Certain	All
2124	Brunswick Terrace	Houses	59	Near Certain	All
2126	Derelict Land, Foregate Street	Houses	42	Near Certain	All
2127	The Former Eagle Inn & 14/14A Newport Road	Houses	32	Near Certain	All
2128	Land At Castle Wharf/Castle View/Castle Street, Castletown	Houses	24	Near Certain	All
2129	9 - 10 Salter Street	Houses	21	Near Certain	All
2130	Site Off Mill Bank	Houses	20	Near Certain	All
2131	Westgate, Bellasis Street	Houses	18	Near Certain	All
2132	88 Wolverhampton Road, Forebridge	Houses	18	Near Certain	All
2133	24 St Leonards Avenue, Queensville	Houses	15	Near Certain	All
2134	The Former Bed Centre, Rowley Street	Houses	15	Near Certain	All
2135	Westhorpe And The Laurels, Rowley Avenue	Houses	12	Near Certain	All
2136	16 & 17 Lichfield Road	Houses	12	Near Certain	All
2137	11-11A Princes Street	Houses	12	Near Certain	All
2138	Land At Albert Terrace	Houses	11	Near Certain	All
2139	St Thomas Priory	Houses	25	Near Certain	All
2140	18 - 20A Browning Street	Houses	10	Near Certain	All
2141	Land To Rear Of 7,9,11,13,15 Weeping Cross	Houses	9	Near Certain	All
2142	North Stafford Garage, Stone Road	Houses	8	Reasonably Foreseeable	All
2143	The Hawthorns, 27 Newport Road	Houses	6	Near Certain	All
2144	The Royal Oak, Rising Brook	Houses	6	Near Certain	All
2145	Former Staff Houses, Rotherwood Drive, Rowley Park	Houses	6	Near Certain	All
2146	Land Between 56 -57 Queensville Avenue	Houses	5	Near Certain	All
2147	176 Sandon Road	Houses	5	Near Certain	All
2151	Riverway	Houses	118	More Than Likely	All
2112 / 2152	Beaconside / A34 Stone Road	Houses	1100	More Than Likely	409 houses by 2016
				Reasonably Foreseeable	1100 houses by 2031
2113	North of Beaconside	Houses	2000	Reasonably Foreseeable	2031
2115	West of Baswich Lane	Houses	600	Reasonably Foreseeable	2031
2116	East of Fairway	Houses	265	Near Certain	All
2117	East of Stockton Lane	Houses	100	More Than Likely	All
2123	South of Doxey Road (Belway)	Houses	300	More Than Likely	100 houses by 2016
					300 houses by 2031
2122	Castlefields Burleyfields (Taylor Wimpey)	Houses	1340	Reasonably Foreseeable	100 houses by 2016 1340 houses by 2031
2148	Adjacent to South of Doxey Road (Taylor Wimpey)	Houses	300	Reasonably Foreseeable	100 houses by 2016 300 houses by 2031
2149	St Gobain (Belway)	Houses	150	Reasonably Foreseeable	2031
2150	St. Modwens	Houses	170	Reasonably Foreseeable	100 houses 2016
					170 houses by 2031
2153	Berona (MoD Housing)	Houses	400	Reasonably Foreseeable	All

For more information please contact:

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