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ROMSEY MOVEMENT AND ACCESS STUDY REVIEW PHASE II

FINAL REPORT

Test Valley Borough Council
Planning Service
Test Valley Borough Council
Duttons Road
Romsey
SO51 8XG

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FINAL REPORT

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	Name	*Signature*	*Date*
Prepared by:	Neal Dyson	*Neal Dyson*	03-09-07
Checked:	Peter Syddall	*Peter Syddall*	18-09-07
Gifford Approved:	Ken Dudley	*Ken Dudley*	18-09-07

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Test Valley Borough Council
Planning Service
Test Valley Borough Council
Duttons Road
Romsey
SO51 8XG

Gifford
Carlton House
Ringwood Road
Woodlands
Southampton
SO40 7HT

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FINAL REPORT

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1. EXECUTIVE SUMMARY

Introduction

Gifford has been appointed by Test Valley Borough Council to conduct the second phase of the review of the Romsey Movement and Access Study (RMAS). The original RMAS was prepared in 1998. The first phase of reviewing RMAS was undertaken in 2006.

The submitted South East Plan requires approximately 3,910 dwellings to be provided in Southern Test Valley by 2026. Of these the Council considers approximately 3,000 dwellings need to be on green field sites. Six potential development sites within Romsey have been identified by Test Valley Borough Council to meet this requirement. A further seven development scenarios combining these development sites have also been identified by the Borough Council.

The purpose of the second phase review of the RMAS is to consider these development options for future residential development and to outline a strategy to inform future decisions on how transport issues should be dealt with. The second phase will provide a relative comparison of the impacts of the various development options and identify preferred development scenario(s). Mitigation measures to reduce the impact of preferred development scenario(s) will be considered.

The report sets out:

a) A methodology which has been used to assess the traffic impact of development scenarios.
b) The findings of the traffic impact assessment.
c) Appraisal frameworks which assess the development scenarios in terms of accessibility by walking, cycling and public transport.
d) A preferred development scenario.
e) Examination of the traffic impact of the preferred development scenario at key locations on the road network
f) Consideration of possible measures to mitigate the impact of the development
g) A review of the continuing relevance of the existing RMAS strategy

Development Sites

The various individual development sites that have been assessed are located to the north, east and south of the town:

- Abbotswood
- Ganger Farm
- Sandy Lane
- Halterworth
- Lower Whitenap
- Burma Road

The combinations of sites that have been assessed are as follows:

Site Combination	Sites Included
North	Ganger Farm/Sandy Lane
South 1	Lower Whitenap/Burma Road
South 2	Lower Whitenap
East and North 1	Halterworth/Sandy Lane
East and North 2	Halterworth/Ganger Farm
East and South	Halterworth/Lower Whitenap/Burma Road
South and North	Lower Whitenap/Ganger Farm

For the purposes of this study it has been assumed that the reserve site at Abbotswood will come forward before any of these combinations are implemented. Hence in assessing these combinations it has been assumed that Abbotswood will already exist.

Traffic Impact – Modelling Individual Sites

A model has been developed to enable assessment of the traffic impact of the development sites options and the combinations during the morning peak period. It enables trip generation and trip purpose estimates to be combined with development size. This traffic is then assigned via the Romsey road network to a selection of key destinations. The model adds traffic generated by development sites to a series of base traffic flows collected in 2007, which can be factored to a design year in order to simulate future traffic situations.

The assessment of the traffic impact of the development sites and combinations has considered the overall impact and also the impact on key routes, particularly where there are existing delays and/or queues at peak times. These are primarily Winchester Road, Southampton Road, Romsey Bypass, Botley Road and Alma Road and related junctions. It is noted that the predominant movement of traffic is related to journey to work trips and to the majority of trips heading south from Romsey.

Traffic Impact – Individual Sites

The assessment indicates that for the northern individual sites, Abbotswood, Ganger Farm and Sandy Lane, the main impacts are on Winchester Road, Braishfield Road and Highwood Lane. Sandy Lane also has an impact on Cupernham Lane and its junction with Winchester Road.

For Halterworth, the predominant southbound movements tend to avoid the main town network, making use of Luzborough Lane. Also, trips from the site are dispersed onto two corridors – Winchester Road and Botley Road/Luzborough Lane, reducing the concentration of impact. Nevertheless this site has an impact on Botley Road, the western section of Winchester Road and the Winchester Road/Halterworth Lane and Botley Road/Luzborough Lane junctions. There is also an impact on Alma Road as traffic travels through to reach destinations in the north of the town and other destinations to the north.

For Lower Whitenap, This site has the highest overall impact because it is the largest site. Again, the predominant southbound movements tend to avoid the main town network. There is a significant addition to traffic flows on Southampton Road towards the town and south towards Southampton and the M27 corridor. It has the largest impact on Alma Road, in part

because of its size, but also due to traffic travelling through to reach destinations in the north of the town and other destinations to the north.

Burma Road is the smallest development option site and has relatively modest impacts – primarily on The By Pass (By Pass Road) and Southampton Road routes and their junctions with Palmerston Street and Winchester Road.

Traffic Impact – Site Combinations

The North combination (Ganger Farm/Sandy Lane). This combination has a significant impact on the Winchester Road corridor, including its junctions with Cupernham Lane and Halterworth Lane. It generates increased flows along Highwood Lane, with implications for the Highwood Lane/Botley Road/Luzborough Lane junctions.

The South combinations (Lower Whitenap only, Lower Whitenap plus Burma Road) have significant impacts on the Southampton Road, Alma Road/Winchester Road (west) and The By Pass routes and related junctions. The impact of this combination on Alma Road is however less than the north combination impacts on Winchester Road. Southbound traffic avoids the main town routes.

The East and North combinations (Halterworth/Sandy Lane, Halterworth/Ganger Farm) have similar significant impacts on the Winchester Road, Halterworth/Highwood Lane and Botley Road corridors. The combination including Sandy Lane also impacts on Cupernham Lane and its junction with Winchester Road.

The East and South combination (Halterworth/Lower Whitenap/Burma Road) has significant impacts on the Southampton Road, Botley Road and Alma Road/Winchester Road routes. There are also impacts at the Halterworth/Highwood Lane junctions with Winchester Road and Botley Road.

The South and North combination (Lower Whitenap/Ganger Farm) has a significant affect across the town network, principally the Winchester Road, Alma Road, Southampton Road and Highwood Lane routes.

Accessibility

The accessibility to and from the development sites were considered in terms of access by walking, cycling and public transport (bus) to key destinations.

Burma Road has good walking accessibility to key destinations within the town, as does Lower Whitenap. Halterworth and Abbotswood also have reasonable accessibility. Sandy Lane and Ganger Farm have lower levels of walking accessibility.

Relative accessibility by cycling is similar to walking accessibility. All key destinations in Romsey are within reasonable distance of the various sites. Burma Road, Lower Whitenap and Abbotswood have higher levels of accessibility, Halterworth and Ganger Farm slightly lower. Sandy Lane has the lowest accessibility.

Burma Road and Halterworth have good overall access by bus. Abbotswood, Ganger Farm and Lower Whitenap have a reasonable level of accessibility. Sandy Lane appears to have the lowest level of access.

In looking at the combination of sites, the south and east combinations would appear to produce more accessible options. Combinations containing the north sites tend to rank lower and appear less accessible overall.

Overall Conclusions – Development Options

The south site combinations appear the most preferable options overall. There is the advantage of the predominant southbound traffic movements being able to avoid the town's internal road network. The south sites also exhibit relatively good accessibility. The south combination including Burma Road has the advantage of providing a proportion of the dwellings close to the town centre and associated facilities. However, there is the issue of the impact on Alma Road and Winchester Road (west) to consider. The east and south options also appear favourable, with again southbound traffic able to avoid the town's road network and generally favourable accessibility. This combination however does have an impact on the Botley Road Winchester Road, Alma Road and Highwood Lane corridors.

The north sites combination option increases traffic pressure on the Winchester Road corridor. There is also increased use of Highwood Lane with implications for associated junctions. Some north sites also have relatively lower accessibility. The south and north combination would appear to increase the overall spread of traffic impact, affecting the Winchester Road, Alma Road, Highwood Lane and Botley Road routes. The east and north sites also affect these routes, with particular impacts on the Winchester Road and Botley Road corridors and hence the Botley Road/Winchester Road junction.

It is therefore concluded that the preferred development option is the combination of south sites (Lower Whitenap and Burma Road, with Abbotswood assumed to have been taken forward in advance of other developments). This option has been taken forward for more detailed consideration of its impact and possible mitigation measures.

Assessment of the Preferred Combination Option

The assessment of the preferred option (Lower Whitenap, Burma Road in addition to Abbotswood) has highlighted where the traffic increases will have significant impacts on the local road network. The main impacts are focussed on Southampton Road, The By Pass, Winchester Road, Alma Road, Botley Road and to an extent the Halterworth Lane/Highwood Lane corridor.

Analysis of key junctions has assessed these traffic impacts and possible mitigation measures have been identified.

Mitigation Measures

There are opportunities to introduce traffic signal control at the Southampton Road/Winchester Road junction and to improve existing roundabouts at By Pass Road/Southampton Road (or consider traffic signal control at this junction) and at Luzborough Lane/Botley Road. Capacity assessments at the Winchester Road/Botley Road junction have highlighted that the Winchester Road will come under increasing pressure as a result of future traffic growth. The junction and accessibility improvements associated with the development of Abbotswood and included in the Local Plan remain relevant.

The improvements to the highway network needs to be balanced by enhancements to the public transport infrastructure/services and walking and cycling networks. This would include new or extended local bus routes serving the development sites, pedestrian and cycle access to Botley Road, the Whitenap/Tadburn areas and Mountbatten /School from Lower Whitenap, a pedestrian/cycle route on Southampton Road and pedestrian phases at new signal junctions.

Preferred Option - Conclusions

The infrastructure improvements and measures identified in this report should be taken forward as proposals to mitigate the impact of future traffic growth and development. There are specific issues that require further consideration as the preferred development option evolves and is firmed up:

- The optimum junction arrangement at By Pass Road/Southampton Road junction
- The form of traffic signal control at the Southampton Road/Winchester Road junction
- The limitations on improvements to the Winchester Road/Botley Road junction
- The form of junction improvements included in the Local Plan Review (including Winchester Road/Cupernham Lane) and proposed to be brought forward in association with development at Abbotswood
- Enhancements of public transport and walking and cycling routes to serve the proposed development sites

2. INTRODUCTION

2.1 Background

2.1.1 Gifford has been appointed by Test Valley Borough Council to conduct the second phase of the review of the Romsey Movement and Access Study (RMAS).

2.1.2 RMAS was prepared in 1998, and adopted strategies to improve alternatives to car use for local journeys, to design new development which does not encourage car use and to prepare the road network to cope with increased demands in order to avoid high levels of congestion. In wider terms the RMAS sought to safeguard the environment and maintain local accessibility.

2.1.3 Gifford was appointed to undertake a first phase review of RMAS in 2006. This first phase review comprised an analysis of information included in the original report, an assessment of the impact of implementation of the strategy, consideration of the relevance and appropriateness of the strategy, and a discussion of the need and options for changes to the strategy approach and future policy options.

2.1.4 The need to provide for residential development is outlined in the draft South East Plan, which is due to be adopted in 2008. This states that approximately 3,000 additional homes on Greenfield sites will be required in Southern Test Valley. Six potential development sites within Romsey have been identified by Test Valley Borough Council to contribute towards this requirement. A further 7 development scenarios combining these development sites have also been identified by the Borough Council.

2.1.5 The purpose of the second phase review of the RMAS is to consider these options for future residential development in and around Romsey, and additionally to outline a strategy to inform future decisions on how transport issues should be dealt with. The second phase will provide a relative comparison of the impacts of the various development options and identify preferred development scenario(s). Mitigation measures to reduce the impact of preferred development scenario(s) will be considered.

2.1.6 In summary, the second phase RMAS will:

h) Provide a quantitative measure of traffic impact for each development scenario being considered.
i) Explore the accessibility of the development scenarios for walking, cycling and public transport.
j) Rank development scenarios according to their relative traffic impact and accessibility, and recommend a preferred option.
k) Identify areas of the network which will be most affected by the preferred development scenario and explore mitigation measures which would minimise the impact and enhance the accessibility of the preferred scenario.
l) Consider whether the existing RMAS strategy and policy approach is still relevant given the level of proposed development.

2.2 Report Content

2.1.7 This report is set out as follows:

- Section 3 sets out the development options to be examined and assessed
- Section 4 describes the methodology used to assess the traffic impacts of the development options
- Section 5 describes the assumptions made in developing the traffic impact model.
- Section 6 highlights key network constraints relevant to the assessment of the traffic impact
- Section 7 contains the detailed assessment of the traffic impact of the development options
- Section 8 examines the relative accessibility of the development options in the context accessibility by public transport, walking and cycling
- Section 9 provides conclusions on the assessment of the development options
- Section 10 describes the more detailed assessment of the impacts of the preferred option, possible mitigation measures and a review of the RMAS strategy in the light of the assessment of the development options
- Section 11 provides overall conclusions and recommendations to the Review of RMAS Phase II

2.1.8 **The figures accompanying the report are presented as a separately bound document.**

3. DEVELOPMENT OPTIONS

3.1 Description

3.1.1 Six sites have been identified by Test Valley Borough Council as potential locations for residential development. These sites are located to the north, south and east of Romsey and are highlighted on **Figure 1**.

3.1.2 Anticipated sizes of each of these sites are indicated in **Table 1** below.

Table 1 Size of individual development sites

Development Site	Number of Units
Abbotswood	800
Ganger Farm	800
Sandy Lane	800
Halterworth	800
Lower Whitenap	1750
Burma Road	200

3.1.3 In addition to the individual sites, a number of combinations of these sites have been identified by Test Valley Borough Council and are shown in **Table 2** below. It is understood that Abbotswood is likely to proceed in advance of other development options, so for the purpose of this study it has been considered implemented and active in the initial design year of 2012. As such, Abbotswood is not listed in **Table 2** below, but traffic generated by it is incorporated into design year base traffic flows for all analyses of development scenarios which incorporate combinations of sites.

Table 2 Site combinations

Ref	Site Combination	Sites Included	Number of Units	Effective Number of Units (incl. Abbotswood)
a	North	Ganger Farm/Sandy Lane	1600	2400
b	South 1	Lower Whitenap/Burma Road	1950	2750
c	South 2	Lower Whitenap	1750	2550
d	East and North 1	Halterworth/Sandy Lane	1600	2400
e	East and North 2	Halterworth/Ganger Farm	1600	2400
f	East and South	Halterworth/Lower Whitenap/Burma Road	2750	3550
g	South and North	Lower Whitenap/Ganger Farm	2550	3350

4. ASSESSMENT METHODOLOGY FOR DEVELOPMENT OPTIONS

4.1 Traffic Modelling Approach

4.1.1 A requirement of this study is that a traffic model is used to assess the impact of potential development scenarios. A simple assignment model has been developed in-house by Gifford for the purposes of this study. The Romsey network is small and has limited route choice options and this together with a constraint on available time for model development and validation has led the project team to adopt this modelling approach, instead of a traditional macro or micro simulation traffic model. A further key aim of this modelling approach is to provide a transparent methodology, model outputs and forecasts for the reader.

4.1.2 The traffic model that has been developed enables trip generation and trip purpose estimates to be combined with development size, and assigns traffic to the Romsey network on manually generated routes to a selection of key destinations. The model adds traffic generated by development sites to a series of base traffic flows collected in 2007, which can be factored to a design year to simulate future traffic flows. The model is able to generate flow data disaggregated to individual turning flows across the network.

4.2 Modelled Time Period

4.2.1 Model forecasts are of an average weekday morning (AM) Peak period. Test Valley Borough Council have requested modelling of the peak period between 08:00 – 09:00. This time period has been used because it is a more concentrated peak period than the afternoon peak. It is also the critical time period for residential sites due to the high component of journey to work (JTW) trips which are generated at this time of day.

4.3 Acquisition of Traffic Data

4.3.1 A key input to the traffic model is a robust set of traffic data which accurately reflects network operation in the base year of 2007.

4.3.2 A review of existing traffic data made available from the phase 1 study has been undertaken, with suitable data extracted and factored to the base year using growth forecasts for the Romsey area derived from the National Trip End Model (NTEM) via the Trip End Model Presentation Program (TEMPRO) developed by the Department for Transport.

4.3.3 Extensive traffic data collection was undertaken between the hours of 08:00 – 10:00 on 16th, 17th and 18th April 2007 at a selection of junctions as shown by **Figure 2**. The weather on all 3 days was dry and bright and there were no incidents or disruptions likely to affect the survey results.

4.3.4 Base traffic flows in 2007 are shown in **Figure 3**.

4.4 Design Year

4.4.1 The traffic model is able to forecast flows for all design years from 2008-2026. Base flows are factored accordingly using growth forecasts from the NTEM. A design year of 2012 has been used to test and compare the development options.

4.4.2 2012 has been used as the design year in this study because it is assumed by this time that Abbotswood would be implemented. The same design year has been used when comparing the various combinations of development sites to enable a relative comparison between the individual sites and the combination options. There is reasonable degree of certainty up to 2012 in terms of traffic growth; the period beyond, up to 2026 is considerably less reliable. Also, a design year beyond 2012 would not affect the relative comparison, it would merely reduce the impacts of the options relative to the base (background flows).

4.5 Development of Modelled Network

4.5.1 A network comprised of the main nodes and links has been generated to represent Romsey. Nodes are placed at key junctions and destination points, and links are added to connect these nodes and represent key routes for travel through the Romsey network. Trips assigned by the model will be constrained to this network.

4.5.2 The modelled network is defined diagrammatically in **Figure 4**. This shows nodes notated as a series of turns using a, b and c nodes, and links notated using a and b nodes. Traffic data has been disaggregated into individual turns, so that there is a turning flow for each movement at each node in the network. Link flows are calculated by taking an average of flows moving in and out of the link. This configuration allows the traffic model to assess the impact of development scenarios on both links and junctions.

4.6 Derivation of Trip Destinations (Trip Attractors)

4.6.1 A series of key destination points both within and outside the Romsey network has been derived. These destinations are points of attraction to which trips generated by the development sites will travel to, and as such have been termed 'trip attractors'. Each destination point has been assigned at least 1 trip purpose category, and will primarily be concerned with attracting trips of these purposes. **Table 3** below shows all trip attractors which have been introduced into the modelled network.

Table 3 Trip Attractors in modelled network

	Trip Attractor	JTW	Educ	Shop	Social	Perso
WITHIN ROMSEY						
100	Premier Way Retail/Industrial Park	✓		✓		
101	Romsey Railway Station		✓	✓		
102	Budds Lane Industrial Estate	✓				
103	The Mountbatten School		✓			
104	Highwood (The Stroud School)	✓	✓			
105	Halterworth Community Primary School		✓			
106	Romsey Hospital	✓				✓
107	Cupernham Infant and Junior School	✓	✓			✓
109	Belbins/Yokesford Hill Industrial Park	✓				
110	Romsey Primary School		✓			
111	Romsey Rapids/Sports Centre	✓			✓	
112	The Romsey School		✓			
113	Romsey Industrial Estate	✓		✓		
114	Romsey Abbey Church of England School		✓			
115	Waitrose/Alma Road Car Park	✓		✓	✓	✓

	Trip Attractor	JTW	Educ	Shop	Social	Perso
WITHIN ROMSEY						
116	Broadwater Road/Crosfield Hall Car Park	✓		✓	✓	✓
117	Newton Lane Car Park	✓		✓	✓	✓
118	Lortemore Place Car Park	✓		✓	✓	✓
119	Town Centre JTW Area 1 – north	✓				
120	Town Centre JTW Area 2 – west	✓				✓
121	Town Centre JTW Area 3 – south	✓				
122	Town Centre JTW Area 4 – east	✓				
OUTSIDE ROMSEY						
200	Ampfield C of E Primary School		✓			
201	Awbridge Primary School		✓			
202	Braishfield Primary School		✓			
203	Tesco (Southampton)			✓		
204	Morrisons (Totton)			✓		
205	Sainsbury (Badger Farm)			✓		
206	Sainsbury (Lordshill)			✓		
207	Hedge End Retail Park			✓		
208	Eastleigh Retail Park			✓		
209	Southampton	✓		✓	✓	✓
210	Winchester	✓		✓	✓	✓
211	Portsmouth	✓		✓	✓	✓
212	Salisbury	✓		✓	✓	✓
213	ASDA Chandlers Ford/Eastleigh			✓		

Table 3 continued

Notes – JTW = JTW, Educ = Education, Shop = Shopping/retail, Social = Social/recreation, Perso = Personal business

4.6.2 The modelled network has 6 points of exit/entry (nodes 50 – 55) on A27 Bypass Road, A3057 Romsey Road, Botley Road, A3090 Winchester Road, Braishfield Road and Greatbridge Road respectively. Trips assigned to/from attractors outside the modelled network are assigned to/from one or more of these exit/entry points as appropriate.

4.7 Routeing

4.7.1 A series of routes has been defined between each development site and each attractor. Routes are notated as a sequence of nodes which define a path through the modelled network. During the assignment process the model assigns trips to all links and turns along these routes as necessary.

4.7.2 Origin/destination combinations can have up to 3 route options defined. In such cases, the model splits the total number of trips to be assigned in proportion to the length of each route. In this way the shortest route will carry more of the trips than longer alternatives. In some cases the shortest route between an origin/destination pair is known to not be the only route for a selection of trips. In these cases it is possible to manually control the division of trips to each of the 3 route options based on local knowledge.

4.8 Trip Generation

4.8.1 Trip generation has been estimated using the TRICS database software package (version 2007(a)). TRICS estimates numbers of trips which are generated by different types of sites throughout different time periods based on historical survey data. For residential sites TRICS produces a trip rate in vehicles per unit.

4.8.2 Uniform trip rates of 0.465 veh/unit and 0.15 veh/unit were used for trips leaving development sites and arriving at development sites respectively within the modelled time period. These rates were derived from a sample of 9 mixed residential sites.

4.9 Estimating Trip Distribution

Trip Purpose

4.9.1 The traffic model divides trips generated by the development sites into a series of home-based trip purposes in line with those used in the NTEM as listed below:

- Journey To Work
- Education
- Shopping
- Recreation/Social
- Personal Business (e.g. doctor's appointments)
- Other

4.9.2 Using factors from the NTEM, proportions of trips allocated to each trip purpose are variable in accordance with the selected design year.

4.9.3 Trip purpose 'other' encompasses TEMPRO categories employers business, visiting friends and relatives and holiday/day trip. These additional trip purposes are included in the model, however not explicitly distributed onto the network. Instead, these trips are assigned to/from a network exit/entry point in proportion to the inbound/outbound traffic flow at these points which has destination/origin within Romsey.

Journey to Work

4.9.4 JTW patterns have been derived from census data. All JTW trips with origin within Romsey were drawn from census data and then divided into two sets:

a) trips with destination within Romsey
b) trips with destination outside Romsey

4.9.5 JTW patterns are applied to generated JTW trips in order to distribute them onto the modelled network. JTW trips with destination within Romsey are assigned to attractors with a JTW trip purpose category, whereas JTW trips with destinations outside Romsey are assigned to appropriate network exit points.

Gravity Models

4.9.6 The traffic model uses simple gravity modelling techniques to distribute non-JTW trips onto the modelled network between development sites and attractor points.

4.9.7 For education attractors, a scoring process rates the size and educational performance of each attractor point and offsets this score against the distance from each development site. In this way the traffic model is able to allocate a proportion of education trips generated by a development site to each education attractor.

4.9.8 For shopping attractors, a scoring process rates the car parking capacity and retail opportunity at each attractor, and offsets this score against the distance from each development site. This scoring allows allocation of different proportions of trips to each shopping attractor point.

4.9.9 Attractor points categorised for personal business and social/recreation trip purposes are scored solely by distance from each development site.

4.10 Returning and Non-Returning Trips

4.10.1 Trips arriving at development sites are classed as either returning or non-returning trips. It is assumed that a percentage proportion of trips which leave development sites within the modelled time period will also return within this time period. The traffic model assigns these trips to a reverse of the route taken on the outbound trip (taking account of one-way links).

4.10.2 The traffic model also accounts for non-returning arrival trips. For simplicity, it is assumed that these trips are generated outside the modelled network, and as such are assigned to/from a network exit/entry point in proportion to the inbound/outbound traffic flow at these points which have a destination/origin within Romsey. This is a reasonable assumption as the majority of these trips are likely to originate outside the town, and the actual number of trips of this type is small within the modelled time period.

5. MODELLING ASSUMPTIONS

5.1 Trip Generation

5.5.1 **Table 4a** below shows the total number of trips generated by each development site, based on trips rates of 0.15 veh/unit and 0.465 veh/unit for arrival and departure trips respectively. Lower Whitenap is the largest development site and hence has significantly higher traffic generation.

5.5.2 **Table 4b** below shows the total number of trips generated by development site combinations. It should be noted that in considering the development combination options, Abbotswood is assumed to be implemented. Hence traffic generation figures for site combinations listed in **Table 4b** below do not include trips generated by the Abbotswood development, as these are already incorporated into design year base flows.

Table 4a Trips generated by individual development sites

Development Site	Arrivals	Departures
Abbotswood	120	372
Ganger Farm	120	372
Sandy Lane	120	372
Halterworth	120	372
Lower Whitenap	263	814
Burma Road	30	93

Table 4b Trips generated by development site combinations

Ref	Site Combination	Sites Included	Arrivals	Departures
a	North	Ganger Farm/Sandy Lane	240	744
b	South 1	Lower Whitenap/Burma Road	293	907
c	South 2	Lower Whitenap	263	814
d	East and North 1	Halterworth/Sandy Lane	240	744
e	East and North 2	Halterworth/Ganger Farm	240	744
f	East and South	Halterworth/Lower Whitenap/Burma Road	413	1279
g	South and North	Lower Whitenap/Ganger Farm	383	1186

5.2 Trip Purpose

5.2.1 **Table 5** below shows forecast splits by trip purpose for a design year of 2012 according to the NTEM developed by the Department for Transport.

Table 5 NTEM trip purpose splits for 2012

Trip Purpose	% Arrivals	% Departures
JTW	63.8	64.0
Education	10.2	9.6
Shopping	6.3	6.2
Recreation/Social	5.0	4.9
Personal Business	2.5	2.6
Other	12.2	12.7

5.2.2 **Table 6** applies forecast split by trip purpose for 2012 to generated trips for all development scenarios, thereby dividing generated trips by trip purpose.

Table 6 Generated trips, split by purpose for 2012

Development Scenario	JTW		Education		Shopping		Recreation/ Social		Personal Business		Other		Total	
	arr	dep	arr	dep	arr	dep	arr	dep	arr	dep	arr	dep	arr	dep
Abbotswood	77	238	12	36	8	23	6	18	3	10	15	47	120	372
Ganger Farm														
Sandy Lane														
Halterworth														
Lower Whitenap	168	521	27	78	17	50	13	40	7	21	32	103	263	814
Burma Road	19	60	3	9	2	6	2	5	1	2	4	12	30	93
North	153	476	24	71	15	46	12	36	6	19	29	94	240	744
South 1	187	580	30	87	18	56	15	44	7	24	36	115	293	907
South 2	168	521	27	78	17	50	13	40	7	21	32	103	263	814
East and North 1	153	476	24	71	15	46	12	36	6	19	29	94	240	744
East and North 2	153	476	24	71	15	46	12	36	6	19	29	94	240	744
East and South	263	819	42	123	26	79	21	63	10	33	50	162	413	1279
South and North	244	759	39	114	24	74	19	58	10	31	47	151	383	1186

Note: arr = arrivals, dep = departures

5.3 Journey to Work Data

5.3.1 JTW trips with origin within Romsey and destination outside Romsey have been derived from census data. The most significant destinations are listed in **Table 7** below, and these have been input into the model as the assumed destinations for JTW trips leaving the Romsey network in the modelled time period.

Table 7 Significant JTW patterns (from census data 01)

Area	Number of Trips	%
Southampton	1196	25
Eastleigh	607	13
New Forest	386	8
Test Valley	701	14
Winchester	735	15
Salisbury	120	2
Fareham	96	2
Basingstoke & Deane	66	14
Other areas	33	7

6. EXISTING NETWORK CONSTRAINTS

6.1 Base Traffic Flows (2007)

6.1.1 Traffic flows within Romsey in 2007 have been established by merging data from the RMAS Review Phase 1 and data from the traffic counts undertaken in April 2007. This has shown that high traffic flows (between 1300 and 2100 vehicles two way per hour) exist on the following roads in the modelled time period:

- Bypass Road eastbound towards the town
- Bypass Road in both directions between Southampton Road and Palmerston Street
- Southampton Road in both directions (predominantly northbound)
- Winchester Road in both directions
- Botley Road in both directions (close to Luzborough Lane)

6.1.2 Phase I of the Review identified that through traffic, between By Pass Road and the Straight Mile and between the By Pass and Southampton Road (south) is a significant issue affecting peak period flows.

6.2 Queue Lengths

6.2.1 Queue length surveys at selected key junctions in the Romsey network were also undertaken in April 2007. This has highlighted 6 junctions with observed queuing (i.e. queue of 10 vehicles or more) cars within the AM peak period. These junctions are listed below and displayed in **Figure 2.**

- Alma Road/Winchester Road signals
- Alma Road/Malmesbury Road/Station Road signals
- Winchester Road/Southampton Road/The Hundred roundabout
- Winchester Road/Botley Road
- Winchester Road/Cupernham Lane
- Palmerston Street/Romsey Bypass

6.3 Additional Constraints

6.3.1 The Winchester Road corridor is constrained by 2 low arched railway bridges which restrict the passing of some high sided vehicles. In many cases, tall vehicles need to move to the centre of the carriageway in order to pass beneath the bridges, thereby restricting traffic flow.

7. TRAFFIC IMPACT ANALYSIS

7.1 Analysis Methodology

7.1.1 Traffic impact has been assessed for an initial design year of 2012 for both individual sites and combinations of sites. Scenarios tested are clarified in **Table 8** below.

Table 8 Scenarios tested

Scenario	Scenario Name	Sites Included	Design Year
Individual Sites			2012
1	Abbotswood		
2	Ganger Farm		
3	Sandy Lane		
4	Halterworth		
5	Lower Whitenap		
6	Burma Road		
Combined Options			
7	North	Ganger Farm/Sandy Lane	
8	South 1	Lower Whitenap/Burma Road	
9	South 2	Lower Whitenap	
10	East and North 1	Halterworth/Sandy Lane	
11	East and North 2	Halterworth/Ganger Farm	
12	East and South	Halterworth/Lower Whitenap/Burma Road	
13	South and North	Lower Whitenap/Ganger Farm	

(note: all combinations include Abbotswood in 'base' flows)

7.1.2 The impact on a series of critical links that provide an indication of the performance of important routes within Romsey will be examined in more detail. These links are outlined in **Table 9** below.

Table 9 Critical Links

Link Refs	Link	Orientation
A-D	Winchester Road (various locations)	both directions
E-G	The Hundred (various locations)	both directions
H-I	Palmerston Street (various locations)	both directions
J	Alma Road	both directions
K	Greatbridge Road	both directions
L	Romsey Bypass	both directions
M	Southampton Road	northbound
N	Cupernham Lane	southbound
O	Fishlake Meadows	westbound
P	Highwood Lane	southbound
Q	Braishfield Road	southbound
R	Botley Road	westbound

7.1.3 Traffic impact is measured using four criteria:

- Increase in flow (vehicles)
- Total flow in design year (vehicles)
- Net percentage impact (on design year flows)
- GEH impact

7.1.4 The net percentage impact is derived by comparing the traffic flows including a development scenario with a base traffic flow. For scenarios incorporating individual sites (i.e. scenarios 1-6), the base traffic flow is taken to be equivalent to traffic flow in 2012 without any additional development. However for scenarios incorporating combinations of sites (i.e. scenarios 7-13), base traffic flow is equivalent to traffic flow in 2012 plus traffic generated by the Abbotswood development option.

7.1.5 The GEH statistic (named after G E Havers who invented the methodology) is a formula used in traffic modelling to compare traffic volumes. It is an empirical formula used to compare data which varies over a wide range. For example, dual carriageways might carry several thousands of vehicles per hour, whereas a residential street might carry only tens of vehicles per hour. The addition of 30 vehicles to each of these links will have a small impact on the high capacity dual carriageway but a large impact on the residential street. In this instance it is not possible to select a single percentage of variation that is acceptable for both volumes. Using a GEH statistic will smooth the perceived impact, providing a more consistent base for comparing impacts relative to existing flows. The formula for the GEH statistic is shown below:

$$GEH = \sqrt{\frac{2(M-C)^2}{M+C}}$$

(where M is the modelled traffic volume and C is the compared/real-world traffic volume.)

7.2 Traffic Impact - Individual Sites

7.2.1 A majority of trips generated by the development sites are JTW trips, and 81% of these trips leave the Romsey network in the modelled time period, drawn to larger neighbouring urban areas and the M27/M3 motorway links in the south. In contrast, there are relatively few trips attracted to the north of Romsey.

7.2.2 **Table 10** below shows the forecast flow in 2012 of each of the development sites, in addition to the impact of the development site in terms of absolute increase in flow, percentage impact and GEH impact. The following sections consider each of the development sites in turn.

Abbotswood/Ganger Farm/Sandy Lane (800 units each)

7.2.3 Abbotswood, Ganger Farm and Sandy Lane are medium sized development options comprising 800 units each. It has been forecast that they individually generate 372 trips leaving the site and 120 trips arriving at the site within the modelled time period.

7.2.4 These sites are all located to the north of Romsey, and as such in general terms have similar trip distribution across the modelled network. This is highlighted by a comparison of **Figures 5-7**.

7.2.5 The highest generated traffic flows are southbound on Braishfield Road and westbound on Winchester Road between Cupernham Lane and Southampton Road. For sites with access

points on Braishfield Road (Abbotswood and Ganger Farm) a majority of traffic enters/exits the sites at the Braishfield Road access, and this traffic is predominantly drawn to the south of the network via Winchester Road or Highwood Lane. Traffic entering/exiting at access points from Abbotswood and Sandy Lane sites along Sandy Lane also use Cupernham Lane to travel south. These sites allocate relatively small numbers of trips within the town centre area.

7.2.6 Due to low base flows, the Highwood Lane corridor experiences the highest traffic impact from trips generated by these northern sites. Similarly, the apparent high impact shown on routes near the sites on **Figures 8-10** are as a result of the semi-rural nature of the links surrounding the sites, and the low levels of flow before development in this part of the modelled network.

7.2.7 From the selection of critical links outlined in **Table 9**, Winchester Road, Braishfield Road and Highwood Lane experience the largest impact with average GEH values of 5.13, 4.76 and 11.09 respectively.

7.2.8 The junction of Braishfield Road/Woodley Lane is significantly affected by these development options. This junction additionally acts as an access point to the Ganger Farm development site. The following junctions are also affected by these development options:

- Braishfield Road/Winchester Road
- A3090 Winchester Road/Cupernham Lane
- Halterworth Lane/Highwood Lane
- Sandy Lane/Braishfield Road/Jermyns Lane

7.2.9 **Figures 11-13** show the forecast flows across Romsey in 2012 with each of these development options implemented individually. By comparison with the design year flows without development (**Figure 14**) it can be seen that the addition of these sites individually does not have a large effect on flows across the network, with the exception of the westbound sections of Winchester Road and southbound sections of Southampton Road, which are already carrying high volumes of traffic in the modelled time period.

Halterworth (800 units)

7.2.10 Halterworth is a medium sized development located to the east of Romsey. Comprised of 800 units, the site has been forecast to generate 372 and 120 trips departing and arriving at the site respectively within the modelled time period.

7.2.11 **Figure 15** shows the distribution of trips across the modelled network from the Halterworth development site. It can be seen that the trip distribution from this development option is spread across the network, but larger flows exist only in the southern and eastern sections. Traffic generated from this site is primarily attracted towards the south and east and as such has greatest impact on sections of Botley Road adjacent to the southern site access point and the Botley Road/Luzborough Lane roundabout. Luzborough Lane southbound and Winchester Road ('The Straight Mile') northbound carry traffic to the network exit points in the south and east. Additionally, traffic travelling to the town centre and to the north of the town or northern network exit points uses Alma Road.

7.2.12 The junctions of Botley Road/Luzborough Lane and Botley Road/Highwood Lane are significantly affected by this development option. It is anticipated that there would be a significant effect on right turn movements from Halterworth Lane onto Winchester Road, and right turn movements out of Halterworth Lane onto Botley Road may also be affected by the increased northbound flow on Botley Road. It is likely that the following junctions would be affected by this development option:

- Halterworth Lane/Winchester Road
- Botley Road/Winchester Road
- Winchester Road/The Hundred
- The Hundred/Alma Road

7.2.13 **Figure 16** shows the forecast flows across Romsey in 2012 with this development option implemented. By comparison with the design year flows without the development **(Figure 14)** and with reference to **Figure 17** it can be seen that the Halterworth development has a relatively small impact on the network. This is due to the wide spread of trips across the network, and the location of the site near to the southern and eastern network exit points. Additionally, the location of the site access points at the north and south ends of the development removes a convergence of all generated traffic in one location on the network. Despite this, the Botley Road/Luzborough Lane and Botley Road/Highwood Lane junctions remain significantly affected by the Halterworth development.

Lower Whitenap (1,750 units)

7.2.14 Lower Whitenap is the largest development option to be considered in this review. It is more than twice the size of the medium size options with a total of 1,750 units. As such it has a much higher estimated trip generation, however it benefits in some ways from being located at the south of Romsey, reducing the amount of generated traffic which has to travel through the network. This development option generates 814 departures and 263 arrivals within the modelled time period.

7.2.15 **Figure 18** shows the distribution of trips across the modelled network from the Lower Whitenap site. Generated traffic is found to be greatest on Southampton Road northbound, with traffic splitting between Southampton Road and A27 Bypass Road at the Southampton Road/Bypass Road roundabout. Traffic from this development uses the Winchester Road corridor predominantly in an eastbound direction. Highwood Lane/Halterworth Lane links are also used to carry traffic heading northbound/eastbound. Of all the individual development sites, Lower Whitenap has the greatest impact on Alma Road, with traffic using this route to access JTW attractors to the north of the town, and also in part because it is the largest development. Cupernham Lane, Braishfield Road and Sandy Lane are not used to a great extent by traffic from this development site.

7.2.16 From the selection of critical links outlined in **Table 9**, Southampton Road experiences a GEH value of 11.06, which is derived from a significant increase of 405 trips over the projected 2012 base traffic flow.

7.2.17 The increase in flow on Southampton Road northbound is estimated to increase turning flow at the Southampton Road/Romsey Bypass junction. Similarly the adjacent Winchester Road/Southampton Road junction and the Southampton Road/Luzborough Lane junction would both need to accommodate significant increases in throughput. In summary, junctions significantly affected by this development option are as follows:

- Southampton Road/Romsey Bypass roundabout
- Winchester Road/Southampton Road roundabout
- Southampton Road/Luzborough Lane roundabout

7.2.18 **Figure 19** shows the forecast flows across Romsey in 2012 with this development option implemented. **Figure 20** shows that this development option has significant impacts on Southampton Road, Romsey Bypass and Alma Road. Due to its large size and its location within the town, Lower Whitenap has the largest impact on town centre links of all the individual development sites being considered.

Burma Road

7.2.19 Burma Road is a small development site located just to the south of the town centre. It is comprised of 200 units, and has relatively little impact on the modelled network.

7.2.20 **Figure 21** shows the distribution of generated traffic due to this development and **Figure 22** shows the impact on the network. It can be seen that the largest increase in flow due to the development is found eastbound on Romsey Bypass towards the A3090 Bypass Road/A27 Southampton Road roundabout junction, with an increase of 63 trips within the modelled time period. This constitutes a 5% increase on projected 2012 flows along this link.

7.2.21 There are no junctions which are significantly affected by the Burma Road development, however the following junctions receive a moderate increase in flow as a result of the development:

- Romsey Bypass/Palmerston Street
- Southampton Road/Winchester Road

7.3 Traffic Impact – Site Combinations

7.3.1 This section assesses the impact of the development scenarios which include combinations of development options. It includes a summary of links and junctions significantly affected by the development scenario, and also quantifies the impact of each scenario by developing Relative Impact Scores (RIS).

7.3.2 Relative Impact Scoring seeks to quantify the impact of a development scenario across all links in the modelled network. The range of all link GEH values observed in the modelled network is divided into intervals, and a score is applied to each link according to which interval it falls within. Scoring is weighted so that higher GEHs attract higher scores. By adding up the total score of all links in the modelled network, an overall measure of the impact to the network is achieved. The application of the same scoring criteria to all development scenarios allows a direct comparison of the total scores to be made.

7.3.3 Since each development scenario being considered has a different number of units, it is necessary to additionally divide the RIS by the number of units to gain a measure of impact per dwelling.

All North (Ganger Farm/Sandy Lane - 1,600 units)

7.3.4 This development scenario is comprised of Sandy Lane and Ganger Farm sites, compared against base traffic flows which additionally incorporate the Abbotswood site. This scenario provides an additional 1600 units, on top of the 800 units already allocated by the inclusion of Abbotswood.

7.3.5 Trip distribution from this development scenario is shown in **Figure 23**. Large scale development in the north of the network places high levels of generated traffic onto smaller roads without high flows in the base year. As a result, net percentage impacts for many links in the north of the network are high. Due to the high demand to travel south and southeast out of Romsey, a high generation of trips to the north of the town places load on many of the critical links and junctions within the network. Critical links significantly affected by this development scenario are as shown in **Table 10** overleaf (see Table 9 (section 7.1.2) for link references):

Table 10 Critical links significantly affected by All North scenario

Link	Link Ref(s)	GEH	Net Impact %
Winchester Rd westbound	A, C, D	8.21 - 9.12	27 - 33
Highwood Ln southbound	P	8.29	46
Braishfield Rd southbound	Q	17.23	91

7.3.6 Other important links which are significantly affected by this development scenario are as follows:

Table 11 Other links significantly affected by All North scenario

Link	Direction	GEH	Net Impact %
Southampton Rd (Winchester Rd - Romsey Bypass)	Southbound	5.83	18
Botley Rd (Highwood Ln – Botley Rd/ Luzborough Ln)	Eastbound	6.29	24
School Rd	Southbound	10.87	71
Sandy Ln (Braishfield Rd)	Eastbound	12.97	86

7.3.7 Junctions which are significantly affected by this development scenario are as follows:

- Cupernham Lane/Winchester Road
- Winchester Road/Southampton Road roundabout
- Winchester Road/Botley Road roundabout
- Halterworth Lane/Highwood Lane
- Botley Road/Highwood Lane
- Winchester Road/Halterworth Lane
- Winchester Road/School Road
- Braishfield Road/Winchester Road
- Braishfield Road/Ganger Farm/Woodley Lane
- Sandy Lane/Braishfield Road/Jermyns Lane

7.3.8 **Figure 24** shows the total forecast flows across the network in 2012 with this development scenario added. By comparison to the base flows shown in **Figure 14** it can be seen that an increasing number of links across the network are carrying high traffic flows. The GEH map in **Figure 25** shows where these impacts are significant, including Winchester Road, Braishfield Road, Sandy Lane and Highwood Lane. **Figure 26** shows that the net percentage impact over design year base flows is focussed to the north east of the town on smaller, rural links.

7.3.9 **Table 12** below highlights the spread of impact for this development scenario. A majority of links in the modelled network have a GEH less than 5. This development attains a RIS of 212.

Table 12 Relative impact score – All North (2012)

Threshold GEH	Weighting	Number of Links	%	RIS
< 1	0	98	44	0
1 – 5	1	93	43	93
5 – 10	3	17	8	51
10 – 20	6	8	4	48
> 20	10	2	1	20
RIS				**212**

7.3.10 This development scenario is comprised of 1600 units, and as such gains a **RIS per unit of 0.13**.

7.3.11 It is important to note that compared to present base flows in 2007, the impact of this 'north' combination is magnified by the traffic generation in this part of the town in addition to that already created by the implementation of Abbotswood.

South 1 (Lower Whitenap/Burma Road – 1,950 units)

7.3.12 The South 1 development scenario includes Lower Whitenap and Burma Road development options which provide 1,950 units located to the south of the town (on top of base flows including Abbotswood).

7.3.13 Trip distribution from this development scenario is shown in **Figure 27**. The South 1 scenario places generated traffic onto links which experience high base flows, however South1 benefits

from being located near southern exit points in the network, minimising the impact from the high demand to leave the network in the south.

7.3.14 Critical links significantly affected by this development scenario are as follows (see **Table 9** (section 7.1.2) for link references):

Table 13 Critical links significantly affected by South 1 scenario

Link	Link Ref	GEH	Net Impact %
Southampton Rd northbound	M	11.20	36
Alma Rd northbound	J	5.04	21
Winchester Rd westbound	B	5.06	21
Winchester Rd eastbound	A	4.65	16
Romsey Bypass	L	4.65	14

7.3.15 Other important links which are significantly affected by this development scenario are as follows:

Table 14 Other links significantly affected by South 1 scenario

Link	Direction	GEH	Net Impact %
Southampton Rd (Romsey Bypass/Southampton Rd)	Northbound	8.02	26
Luzborough Ln Luzborough Ln/Southampton Rd	Eastbound	8.15	33

7.3.16 Junctions which are significantly affected by this development scenario are as follows:

- Romsey Bypass/Palmerston Street roundabout
- Romsey Bypass/Southampton Road/Knatchbull Close roundabout
- Southampton Road/Luzborough Lane roundabout
- Luzborough Lane/Botley Road roundabout
- Winchester Road/Southampton Road roundabout

Figure 28 shows the total forecast flows across the network in 2012 with this development scenario added. **Figure 29** shows the net percentage impact over design year base flows and shows impact to the south of the network, Winchester Road and in the town centre. The GEH map in **Figure 30** shows that the main impact is on Southampton Road, with impacts also on Luzborough Lane, Winchester Road (west) and Alma Road.

7.3.17 **Table 15** below highlights the spread of impact for this development scenario.

Table 15: Relative impact score – South 1 (2012)

Threshold GEH	Weighting	Number of Links	%	RIS
< 1	0	115	53	0
1 – 5	1	81	37	81
5 – 10	3	15	7	45
10 – 20	6	5	2	30
> 20	10	2	1	20
RIS				**176**

7.3.18 This development scenario is comprised of 1,950 units, and as such attains a **RIS per unit of 0.09**.

South 2 (Lower Whitenap – 1,750 units)

7.3.19 The South 2 development scenario includes the Lower Whitenap site on top of base flows including Abbotswood. This development scenario is one of the smaller options, providing 1,750 units.

7.3.20 The trip distribution from South 2 is similar to the South 1 scenario and is shown in **Figure 31**. As shown in **Figure 32**, impacts are greatest in south and west Romsey, with some use of northbound and eastbound corridors for trips leaving Romsey. This development does not compound the impact on routes which have experienced an increase in flow due to the earlier Abbotswood development, with the exception of Winchester Road near the roundabout junction with Southampton Road, and northbound flow on Braishfield Road. The impact on road links and junctions is similar to the South 1 option, as shown in paragraphs 7.3.14-7.3.16.

7.3.21 **Table 16** below shows that this development scenario has an RIS of 176.

Table 16 Relative impact score – South 2 (2012)

Threshold GEH	Weighting	Number of Links	%	RIS
< 1	0	115	53	0
1 – 5	1	81	37	81
5 – 10	3	15	7	45
10 – 20	6	5	2	30
> 20	10	2	1	20
RIS				**176**

7.3.22 This development scenario is comprised of 1750 units, and as such attains a **RIS per unit of 0.10**.

East and North 1 (Halterworth/Sandy Lane – 1,600 units)

7.3.23 This development scenario is comprised of Halterworth and Sandy Lane sites, compared against base traffic flows which incorporate the Abbotswood site. This scenario provides 1,600 units to the north and east of Romsey.

7.3.24 Trip distribution from this development scenario is shown in **Figure 33**. It can be seen that this scenario spreads generated traffic across all links in the network, but assign a relatively small amount of traffic to the western side of the network, including the town centre. Critical links significantly affected by this development scenario are as follows (see Table 9 (section 7.1.2) for link references):

Table 17 Critical links significantly affected by East and North 1 scenario

Link	Link Ref(s)	GEH	Net Impact %
Winchester Rd westbound	A, C	6.83	22
Braishfield Rd	Q	8.69	42

7.3.25 Other important links which are significantly affected by this development scenario are as follows in **Table 18**:

Table 18 Other links significantly affected by East and North 1 scenario

Link	Direction	GEH	Net Impact %
Botley Rd (Botley Rd/Highwood Ln – Botley Rd/Luzborough Ln)	Eastbound	8.29	32
Halterworth Ln (Halterworth Ln/Highwood Ln – Halterworth Ln/Winchester Rd)	Northbound	5.39	31
Highwood Ln (Halterworth Ln/Highwood Ln – northern entrance to Halterworth site)	Eastbound	5.10	27
School Rd (Braishfield Rd - Winchester Rd)	Southbound	6.24	38
Sandy Ln (from Braishfield Rd)	Eastbound	12.85	85

7.3.26 Junctions which are significantly affected by this development scenario are as follows:

- Luzborough Lane/Botley Road/Premier Way roundabout
- Botley Road/Highwood Lane
- Botley Road/Halterworth Lane
- Halterworth Lane/Highwood Lane
- Winchester Lane/Halterworth Lane
- Winchester Road/Botley Road
- Winchester Road/Cupernham Lane
- Winchester Road/Southampton Road
- Braishfield Road/Ganger Farm/Woodley Lane
- Sandy Lane/Braishfield Road/Jermyns Lane
- Braishfield Road/School Road

7.3.27 **Figure 34** shows the total forecast flows across the network in 2012 with this development scenario added. Some of the traffic generated by the northern component of this scenario is added along routes which have experienced additional traffic due to the earlier Abbotswood development, with the result that Sandy Lane, Braishfield Road and Halterworth/Highwood lane corridors are carrying high levels of traffic. Fishlake Meadows westbound is also forecast to carry a relatively high level of traffic due to this northern component. The eastern component causes an increase in flow along Botley Road, and both northern and eastern components have an impact westbound on Winchester Road and Romsey Bypass. Additionally, the scenario as a whole adds traffic to the Botley Road/Luzborough Lane roundabout. The net impact plot in **Figure 35** highlights that traffic impact is focussed on the east of the network. The significance of this impact relative to the background flows is displayed in the GEH map for this scenario **(Figure 36)**.

7.3.28 **Table 19** below shows the breakdown of the RIS of 197 for this development scenario.

Table 19 Relative impact score – East and North 1 (2012)

Threshold GEH	Weighting	Number of Links	%	RIS
< 1	0	90	41	0
1 – 5	1	108	50	108
5 – 10	3	13	6	39
10 – 20	6	5	2	30
> 20	10	2	1	20
RIS				**197**

7.3.29 This scenario has a **RIS per unit of 0.12**.

East and North 2 (Halterworth/Ganger Farm – 1,600 units)

7.3.30 The East and North 2 scenario has an identical traffic generation and similar trip distribution to the East and North 1 scenario (trip distribution from this development scenario is shown in **Figure 37**). The difference between these scenarios is in the placement of the northern component. The inclusion of Ganger Farm instead of Sandy Lane in this scenario reduces the traffic flow along Cupernham Lane and also along Sandy Lane west of Braishfield Road. Braishfield Road itself sees a greater impact from development at Ganger Farm since it is used by a majority of traffic travelling south. As with the East and North 1 scenario, two main corridors exist for travel south beyond Braishfield Road: Winchester Road and Halterworth Lane/Highwood Lane. Critical links significantly affected by this development are identical to the East and North scenario, with the exception of a greater impact on Braishfield Road, and are as follows (see Table 9 (section 7.1.2) for link references):

Table 20 Critical links significantly affected by East and North 2 scenario

Link	Link Ref(s)	GEH	Net Impact %
Winchester Rd westbound	A, C	6.83 – 6.87	22
Braishfield Rd	Q	10.55	52

7.3.31 Other important links which are significantly affected by this development scenario are as follows:

Table 21 Other links significantly affected by East and North 2 scenario

Link	Direction	GEH	Net Impact %
Botley Rd (Botley Rd/Halterworth Ln)	Westbound	5.57	31
Halterworth Ln	Both	5.44 – 5.53	26 - 32
Highwood Ln (Halterworth Ln/Highwood Ln – N Entrance to Halterworth Site)	Eastbound	5.59	30
School Rd	Southbound	6.09	37

7.3.32 Junctions which are significantly affected by this development scenario are as follows:

- Luzborough Lane/Botley Road/Premier Way roundabout
- Botley Road/Highwood Lane
- Botley Road/Halterworth Lane
- Halterworth Lane/Highwood Lane
- Winchester Road/Halterworth Lane
- A3090 Winchester Road/Botley Road
- A3057 Winchester Road/Southampton Road
- Braishfield Road/Ganger Farm/Woodley Lane
- Winchester Hill/Braishfield Road/Winchester Road

7.3.33 **Figure 38** shows the total forecast flows across the network in 2012 with this development scenario added. Winchester Road, Southampton Road and Romsey Bypass carry the highest traffic flow, with Braishfield Road, Botley Road, Fishlake Meadows, Cupernham Lane, Sandy Lane and the northern section of Halterworth Lane (adjacent to Winchester Road) all carrying medium-high flows. Table 22 below shows the spread of impact for this development scenario, which is also illustrated in **Figure 39**.

Table 22 Relative impact score – East and North 2 (2012)

Threshold GEH	Weighting	Number of Links	%	RIS
< 1	0	102	47	0
1 – 5	1	93	43	93
5 – 10	3	17	8	51
10 – 20	6	4	2	24
> 20	10	2	1	20
RIS				**188**

7.3.34 This scenario has a **RIS per unit of 0.12**.

East and South (Halterworth/Lower Whitenap/Burma Road – 2,750 units)

7.3.35 This development scenario is comprised of Halterworth, Lower Whitenap and Burma Road with a total of 2,750 units. This is the largest development scenario and has the greatest trip generation, however it is located near the southern/eastern edge of the network where demand to exit the network is greatest. This should minimise the need to travel through Romsey.

7.3.36 Trip distribution from this development scenario is shown in **Figure 40**. Critical links significantly affected by this development scenario are as follows in **Table 23** (see Table 9 (section 7.1.2) for link references):

Table 23 Critical links significantly affected by East and South scenario

Link	Link Ref(s)	GEH	Net Impact %
Winchester Rd	A, B, C	5.45 – 7.07	18 - 30
Alma Rd	J	6.47	27
Romsey Bypass	L	5.85	18
Southampton Rd	M	11.60	37

7.3.37 Other important links significantly affected by this development scenario are as follows:

Table 24 Other links significantly affected by East and South scenario

Link	Direction	GEH	Net Impact %
Luzborough Ln Luzborough Ln/Southampton Rd	Eastbound	9.34	40
Botley Rd (Botley Rd/Halterworth Ln)	Westbound	6.1	34
Halterworth Ln (Halterworth Ln/Highwood Ln)	Northbound	6.55	39

7.3.38 Junctions which are significantly affected by this development scenario are as follows:

- Romsey Bypass/Palmerston Street roundabout
- Romsey Bypass/Southampton Road roundabout
- Southampton Road/Luzborough Lane roundabout
- Luzborough Lane/Botley Road/Premier Way roundabout
- Botley Road/Highwood Lane
- Luzborough Lane/Whitenap Lane
- Botley Road/Halterworth Lane
- Halterworth Lane/Highwood Lane
- Winchester Road/Halterworth Lane
- Winchester Road/Botley Road
- Winchester Road/Southampton Road
- The Hundred/Alma Road/Winchester Road
- Alma Road/Station Road Signalized Junction
- Botley Road/Whitenap Lane

7.3.39 **Figure 41** shows the total forecast flows across the network in 2012 with this development scenario added. It can be seen that Southampton Road, Romsey Bypass, Winchester Road and Botley Road are all carrying high volumes of traffic. The impact plot shown in **Figure 42** shows that most of the modelled network receives an impact due to this development scenario, with the exception of Sandy Lane, Woodley Lane and Fishlake Meadows which all receive little or no traffic from the development sites. The GEH impact map in **Figure 43** however shows that the impact on links in the north of the network are not particularly significant relative to the impact on the southern and eastern parts of the network.

7.3.40 As shown in **Table 25** below, this development attains a RIS of 265.

Table 25 Relative impact score – East and South (2012)

Threshold GEH	Weighting	Number of Links	%	RIS
< 1	0	84	39	0
1 – 5	1	88	40	88
5 – 10	3	37	17	111
10 – 20	6	6	3	36
> 20	10	3	1	30
RIS				**265**

7.3.41 Despite the high impact of this scenario, when weighted against its size it has one of the lowest **RIS per unit of 0.10**.

South and North (Lower Whitenap/Ganger Farm – 2,550 units)

7.3.42 This development scenario is comprised of Lower Whitenap and Ganger Farm. With a total of 2,550 units, this is the second largest development scenario to be considered. This scenario places a load on both the northern and southern parts of the network.

7.3.43 **Figure 44** shows the trip distribution from these development sites, and it can be seen that the north of the network is largely unaffected. Critical links which are significantly affected are as follows (see Table 9 (section 7.1.2) for link references):

Table 26 Critical links significantly affected by South and North scenario

Link	Link Ref(s)	GEH	Net Impact %
Winchester Rd	A, B, C, D	5.32 – 6.32	17 – 26
Alma Rd	J	5.7	23
Romsey Bypass	L	5.47 – 11.33	17 – 36
Highwood Ln	P	5.27	28
Braishfield Rd	Q	10.55	52

7.3.44 Other important links significantly affected by this development scenario are as follows:

Table 27 Other links significantly affected by South and North scenario

Link	Direction	GEH	Net Impact %
Luzborough Ln Luzborough Ln/Southampton Rd	Eastbound	8.02	34

7.3.45 Junctions which are significantly affected by this development scenario are as follows:

- Romsey Bypass/Palmerston Street roundabout
- Romsey Bypass/Southampton Road roundabout
- Southampton Road/Luzborough Lane roundabout
- Luzborough Lane/Botley Road/Premier Way roundabout
- Botley Road/Highwood Lane
- Halterworth Lane/Highwood Lane
- Winchester Road/Halterworth Lane
- Winchester Road/Botley Road
- Winchester Road/Southampton Road
- The Hundred/Alma Road/Winchester Road
- Braishfield Road/Ganger Farm/Woodley Lane
- Winchester Hill/Braishfield Road/Winchester Road
- Cupernham Lane/Winchester Hill

7.3.46 **Figure 45** shows the total forecast flows across the network in 2012 with this development scenario added. The major corridors through the town (i.e. Winchester Road, Southampton Road) carry high levels of traffic. Additionally, Alma Road northbound sees a significant increase in traffic, as does Fishlake Meadows and Sandy Lane in a westbound direction. Impact from this development scenario is widely spread across the network, as shown in the net impact diagram in **Figure 46**. The GEH map in **Figure 47** highlights that the Winchester Road, Braishfield Road and Halterworth/Highwood Lane corridors have the most significant impact from this development scenario.

7.3.47 This development scenario attains the highest RIS of all the scenarios considered as shown in **Table 28** below.

Table 28 Relative impact score – South and North (2012)

Threshold GEH	Weighting	Number of Links	%	RIS
< 1	0	83	38	0
1 – 5	1	85	39	85
5 – 10	3	40	18	120
10 – 20	6	7	3	42
> 20	10	3	1	30
RIS				**277**

7.3.48 This scenario is comprised of 2,550 units, giving a **RIS per unit of 0.11**.

7.4 Summary of Traffic Impact

7.4.1 **Table 29** below summarises Relative Impact Scores for each of the development scenarios being considered. It can be seen that the mid-sized South 1 and South 2 developments present the smallest overall impact to the network with RIS of 176, and the large South and North development generates the largest impact to the network with a RIS of 277.

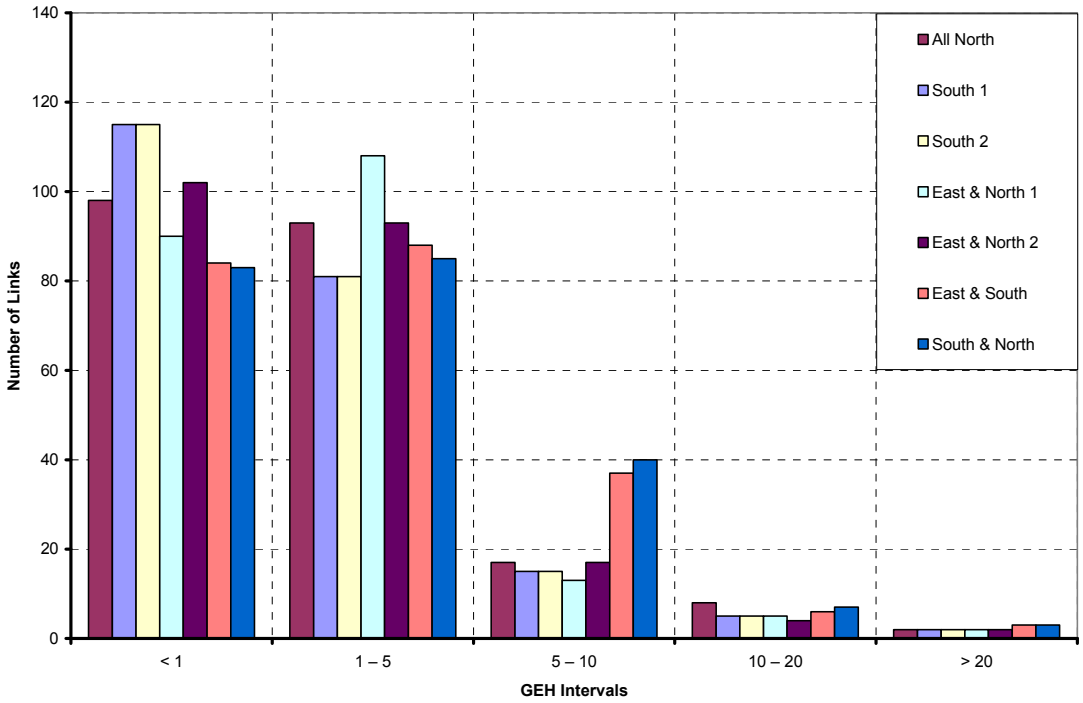
7.4.2 Weighted according to total development size, the South 1 scenario produces the lowest impact per unit, however it is noted that the larger East and South development produces a

similarly low impact per unit. Development in the north clearly generates the highest impact per unit.

Table 29 Summary of relative impact scores

Scenario	Number of Units	RIS (total)	RIS (per unit)
North	1600	212	0.13
South 1	1950	176	0.09
South 2	1750	176	0.10
East and North 1	1600	197	0.12
East and North 2	1600	188	0.12
East and South	2750	265	0.10
South and North	2550	277	0.11

7.4.3 **Graph A** below graphically shows the GEH spread for each scenario. It divides the range of GEH values into 5 intervals (or ranges). It displays the number of links in the modelled network for each development scenario which have a GEH within each of these intervals.



Graph A Relative spread of GEH for all development scenarios

7.4.4 From **Graph A** it can be seen that the East and South and South and North scenarios generate more instances of mid-high impact (i.e. GEH > 5) than other scenarios. South 1 and South 2 generate the highest number of instances of very low impact (i.e. GEH < 1) and East and North 1 generates the highest number of instances of low-mid impact (i.e. GEH 1 – 5).

7.4.5 **Table 30** below presents a summary of the impact from each scenario to the most critical links in the Romsey network. It can be seen that every scenario has a high impact on at least one of the critical links listed. Scenarios South 1 and South 2 have the least impact on the critical links listed.

Table 30 Summary of Impact on Critical Links

Critical Link	All North	South 1	South 2	East & North 1	East & North 2	East & South	South & North
Winchester Road (westbound) (towards jct with Southampton Rd)							
Winchester Road (eastbound) (from jct with Southampton Rd)							
Winchester Road (westbound) (from jct with Southampton Rd)							
Winchester Road (eastbound) (towards jct with Southampton Rd)							
Alma Road (northbound) (from jct with The Hundred/Winchester Rd)							
Alma Road (southbound) (towards jct with The Hundred/Winchester Rd)							
Romsey Bypass (eastbound) (towards jct with Southampton Rd)							
Southampton Road (northbound) (towards jct with Romsey Bypass)							
Highwood Lane (southbound) (towards jct with Botley Rd)							
Botley Road (westbound) (towards junction with Winchester Road)							

low (GEH < 3)	moderate (3 < GEH < 6)	high (GEH >6)

7.5 Conclusions – Traffic Impact

7.5.1 None of the development scenarios tested have a particularly less significant traffic impact, each having impact on different areas of the network. It is clear that the network surrounding a development site experiences the most significant impact, but the wider network impact is dependent on a site's position in the network. The high demand to travel south out of the network has been noticeable, and all development scenarios have had a significant impact on southern and eastern exit points.

7.5.2 It is important to note that demand to travel southwards means that traffic generated by development sites in the north will need to travel through Romsey, whereas site placement in the south reduces predominant southbound movements significantly. This is an advantage of scenarios with sites located in the south and especially given the pre-loading of traffic from the Abbotswood development.

7.5.3 Junctions exhibiting significant queuing in the AM Peak period were noted in **section 6.2**. The most considerable queuing occurs westbound on Winchester Road and northbound on Alma Road. Inbound flow on the Romsey Bypass also experiences moderate queuing at the Romsey Bypass/Palmerston Road mini-roundabout. All development scenarios considered will increase the level of flow through these junctions However analysis has shown that sites to the north of the town are most likely to have a large impact on the westbound flow on Winchester Road and a further, smaller northbound impact on Alma Road. Sites to the south will similarly generate an increase in flow on Alma Road, however the impact to Winchester Road will be less that that of northern sites, and predominantly in an eastbound direction.

7.5.4 In summary, it appears that:

- the north option tends to compound existing problems on the Winchester Road corridor including Cupernham Lane. It also generates increasing traffic flows along Highwood Lane which could create future problems in the Botley Road/Luzborough Lane area and at the Winchester Road/Halterworth Lane junction.
- the south options tend to reduce the overall impact on the town's road network by southbound traffic not entering the town. However, there are increasing flows on Alma Road.
- the east and north options have an impact on the Winchester Road corridor and also Botley Road. The increasing use of Highwood Lane raises issues again about possible future problems in the Botley Road/Luzborough Lane area and at the Winchester Road/Halterworth Lane junction.
- the east and south options provide the opportunity for southbound traffic to avoid the town's road network. However again there are impacts on Botley Road (and hence Winchester Road) and Alma Road.
- the south and north option would appear to have the advantage of some southbound traffic avoiding the town. However this combination tends to broaden the impact on the town's road network, affecting the Winchester Road corridor and Alma Road.

7.5.5 On balance, in traffic impact terms, the mid-sized South 1/South 2 development scenarios appear as the preferred options for the following reasons:

- overall lowest impact across the network
- lowest impact to identified critical links within the network
- lowest RIS per unit

8. ACCESSIBILITY BY WALKING, CYCLING AND PUBLIC TRANSPORT

8.1 Introduction

8.1.1 This section provides a comparison of the relative accessibility of the development site options to and from the key destinations (attractors), on the basis of walking, cycling and public transport modes. It should be emphasised that this assessment provides a broad basis for the comparison of the development options, rather than a detailed appraisal of accessibility. The various walking and cycling distances and access distances to bus services are approximate.

8.1.2 The section concludes with a discussion of the combination options for development.

8.1.3 It was noted in Phase 1 of the RMAS Review that there are existing proposals in the Local Plan Review and the Local Transport Plan aimed at improving access by walking, cycling and public transport. These include improved access to the bus and railway stations and proposals for the pedestrian and cycle networks.

8.2 Walking

8.2.1 The majority of the development option sites are located on the edge of Romsey, with the exception of the site at Burma Road which is located more centrally. **Figure 48** shows pedestrian and cycle routes and road crossings in Romsey, in the context of key destinations and development site options.

8.2.2 The average walk trip length (2005) according to the National Travel Survey (NTS) is 0.7 miles (1120m). According to the NTS 76% of the trips under 1mile (1600m) are walking trips. Furthermore Test Valley Borough Council in its Green Travel Plan (2004) underlines its commitment to promote walking for journeys under 1 mile.

8.2.3 Hence for the purposes of this analysis it is considered reasonable to compare the relative walking accessibility of the development options in terms of whether or not key destinations and land uses are within a 1 mile radius of the site options. The ‘crow-fly’ distance has been used as there are usually opportunities to use direct routes for walking (as opposed to adhering to traffic routes only). In addition it would be a complex and lengthy exercise to identify and measure all (off road) pedestrian routes.

8.2.4 There are seventeen key destinations identified within Romsey. These destinations include the Town Centre, Schools, Sports Centre, Romsey Rail and Bus Station as well as the main retail and employment sites.

8.2.5 Destinations are also grouped into 8 main land use categories: Primary Schools, Senior Schools, Hospital, Leisure, Rail station, Town Centre/bus station, Retail (Waitrose), and Employment.

8.2.6 The walking accessibility for the development sites is assessed and presented as follows:

- Firstly, **Table 31** shows how many key destinations are approximately 1 mile (1.6 Km) from the various development site options.
- Secondly, **Table 32** shows whether at least one key destination within a land use category is within about 1 mile from a development option site.
- Thirdly, conclusions are drawn based on the results presented in **Tables 31 and 32**. An overall appraisal is presented in **Table 33**.

Table 31 Development Site Options- Walking Accessibility to Key Destinations

Type	Key Destinations	Destinations within walking distance of 1 mile (1.6km)					
		Abbotswood	Ganger Farm	Sandy Lane	Halterworth	Lower Whitenap	Burma Road
S(P)	Romsey Abbey Church of England School						√
	Romsey Primary School	√			√	√	√
	Halterworth Community Primary School				√	√	√*
	Cupernham Infant and Junior School	√	√	√	√		
S(S)	The Romsey School						√
	The Mountbatten School				√	√	√*
	Highwood (The Stroud School)	√*	√		√		
H	Romsey Hospital	√			√	√	√
L	Romsey Rapids/Sports Centre				√*	√	√
Rail	Romsey Railway Station					√	√
TC/BS	Broadwater Road Car Park/Crosfield Hall Car Park					√	√
R	Waitrose/Alma Road Car Park					√	√
E	Duttons Road (JTW)						√
	Premier Way Retail/Industrial Park				√	√	
	Budds Lane Industrial Estate						√
	Romsey Industrial Estate	√*					√
	Belbins/Yokesford Hill Industrial Park	√		√			
**Number of Destinations within 1 mile		4(6)	2	2(3)	7(8)	9	11(13)

S(P) – Primary Schools
S(S) – Senior Schools
H - Health
L – Leisure
Rail – Railway station

TC/BS—Town Centre/bus station
R - Retail
E - Employment

notes:
√* - destination is just outside the 1 mile radius from the development site.
** the number in brackets e.g. 4(7) includes destinations just outside the 1 mile radius

Table 32 Walking accessibility to key land uses

Development Site	S(P)	S(S)	H	L	TC	R	E
Abbotswood							
Ganger Farm							
Sandy Lane							
Halterworth							
Lower Whitenap							
Burma Road							

note: S(P) = primary school, S(S) = secondary school, H = hospital, L = leisure, TC = town centre, R = retail (Waitrose), E = employment

Land use category within 1 mile radius of development site

Land use category over 1 mile radius from development site

8.3 Conclusion - Walking

8.3.1 Lower Whitenap and Burma Road sites appear to have good walking accessibility to all the key land uses. Burma Road site has access to 13 out of the 17 key destinations while Lower Whitenap has access to 9. Although Halterworth has access to 8 destinations it does not have access to 2 key land uses - Retail and the Town Centre. Abbotswood has access to 3 key land uses - Primary Schools, Health and Employment. Ganger Farm and Sandy Lane have relatively lower accessibility to secondary education, health, leisure, retail and the town centre. Additionally Ganger Farm has relatively lower access to employment sites. It should be noted however that the quality and attractiveness of available routes has not been examined.

8.3.2 In summary, Burma Road appears to have the highest level of walking accessibility followed by Lower Whitenap. Halterworth has a good overall rating while Abbotswood appears to have a relatively medium level of accessibility. Sandy Lane and Ganger Farm have relatively lower accessibility. This is illustrated in **Table 33**.

Table 33 Summary table for walking accessibility

	Land use categories within walking range	Destinations within walking range	Walking Accessibility
Abbotswood	3/8	6/17	
Ganger Farm	1/8	2/17	
Sandy Lane	2/8	3/17	
Halterworth	5/8	8/17	
Lower Whitenap	8/8	9/17	
Burma Road	8/8	13/17	

Lower Accessibility Higher Accessibility

8.4 Cycling

8.4.1 **Figure 48** shows pedestrian and cycle routes and road crossings in Romsey, in the context of key destinations and development site options.

8.4.2 The NTS indicates that the average cycling trip in 2005 was 2.4 miles (3.8km). Of the total number of cycle trips, 87% were below 5 miles, with 33% of them being between 2 and 5 miles.

8.4.3 The longest distance between a development site location and a key destination is some 2.6 miles (4km). Hence all key destinations are considered to be within cycling range of all the development site options. Therefore, for the purposes of this analysis it is considered reasonable to compare the relative cycling accessibility of the development options in terms of the approximate cycling distances. However, the suitability or attractiveness of on road routes have not been assessed.

8.4.4 The cycling accessibility for the development sites is assessed and presented as follows:

- Firstly, **Table 34** shows the distance by cycling between the various site options and the key destinations. Where off road cycle routes are available, e.g. Canal Walk, these have been taken into account. The distances are measured from an estimated centroid within the development sites. Approximate distances are used rounded to 0.5Km (0.3 mile), to allow for the likely variation in off road routes that cyclists might take.
- Secondly, **Table 35** shows the distance between the various site options and the nearest key destination within a land use category.
- Thirdly, conclusions are drawn based on the results presented in **Tables 34** and **35**. An overall appraisal is presented in **Table 36.**

Table 34 Distances between development sites and key destinations within Romsey

Type	Destinations/Attractors	Cycling Distance (km)					
		Abbotswood	Ganger Farm	Sandy Lane	Halterworth	Lower Whitenap	Burma Road
S(P)	Romsey Abbey Church of England School	2.5	3.0	3.5	3.5	2.0	1.0
	Romsey Primary School	1.5	2.0	2.0	3.0	2.0	1.0
	Halterworth Community Primary School	2.5	2.0	2.5	0.5	1.0	3.0
	Cupernham Infant and Junior School	1.0	1.0	2.0	2.0	2.5	2.0
S(S)	The Romsey School	2.0	3.0	3.0	3.5	2.5	1.5
	The Mountbatten School	3.0	3.5	4.0	1.0	1.0	2.0
	The Stroud School	2.5	2.0	2.5	0.5	2.5	3.5
H	Romsey Hospital	2.0	2.0	2.5	2.5	2	2.5
L	Romsey Rapids/Sports Centre	2.5	3.0	3.0	2.5	1.0	0.5
Rail	Romsey Railway Station	2.0	2.5	2.5	3.0	2.0	1.0
TC/BS	Broadwater Road Car Park/Crosfield Hall Car Park	2.5	3.0	3.5	3.0	1.5	0.5
R	Waitrose/Alma Road Car Park	2.0	2.5	3.0	3.0	1.5	1.0
E	Duttons Road	2.5	2.5	3.0	3.0	2.0	1.5
	Premier Way Retail/Industrial Park	4.0	3.5	4.0	1.0	2.0	3.5
	Budds Lane Industrial Estate	2.0	3.0	2.5	3.5	2.5	2.0
	Romsey Industrial Estate	2.0	2.5	2.5	4.0	2.5	3.5
	Belbins/Yokesford Hill Industrial Park	1.0	2.5	1.0	3.5	4.0	3.0
	Total (km) :	37.5	43.5	47	43	34.5	33
	Average Trip Length (km):	2.2	2.6	2.8	2.5	2.0	1.9

S(P) – Primary Schools
S(S) – Senior Schools
H - Health
L – Leisure
Rail – rail station

TC/BS—Town Centre/Bus station
R - Retail
E - Employment

Notes:
Distances are rounded to 0.5 Km
Distances in *italics* indicate that part of this route uses Canal Walk.

Table 35 Cycling accessibility to key land uses

Development Site	Distance (to nearest km)								
	S(P)	S(S)	H	L	TC	R	E	Total	Ranking
Abbotswood	1	2	2	2.5	2.5	2	1	13	
Ganger Farm	1	3	2	3	3	2.5	2.5	17	
Sandy Lane	2	3	2.5	3	3.5	3	1	18	
Halterworth	0.5	1	2.5	2.5	3	3	1	13.5	
Lower Whitenap	1	1	2	1	1.5	1.5	2	10	
Burma Road	1	1.5	2.5	0.5	0.5	1	2	9	

note: S(P) = primary school, S(S) = secondary school, H = hospital, L = leisure, TC = town centre, R = retail (Waitrose), E = employment

Lower Accessibility Higher Accessibility

8.5 Conclusion - Cycling

8.5.1 In summary Burma Road site appears to have the highest level of cycling accessibility. Lower Whitenap and Abbotswood sites have a high level of cycling accessibility. Abbotswood and other sites in the north east of the town are able to use Canal Walk. Ganger Farm and Halterworth sites have a medium level of accessibility while Sandy Lane site appears to have relatively the lowest level of cycling accessibility. This is illustrated in **Table 36**.

Table 36 Summary table for cycling accessibility

Development Site	Trip Length (km)	Rank*	Cycling Accessibility	Routes Using Canal Walk
Abbotswood	2.2	3		5
Ganger Farm	2.6	5		5
Sandy Lane	2.8	6		4
Halterworth	2.5	4		-
Lower Whitenap	2.0	2		-
Burma Road	1.9	1		1

Lower Accessibility Higher Accessibility

Notes: Rank of distance with 1 being shortest, 6 being longest.

8.6 Public Transport (Bus)

8.6.1 The bus network and bus stops in relation to the development site options are illustrated in **Figure 49.**

8.6.2 A distance of 800m (0.5 mile) to a bus stop is used as a measure in PTAL assessments of accessibility to bus stops. In addition a 10min, 800m walk (assuming a walking speed of 80m/min) is less than the 13 min walk that the NTS uses as an availability indicator for public transport services.

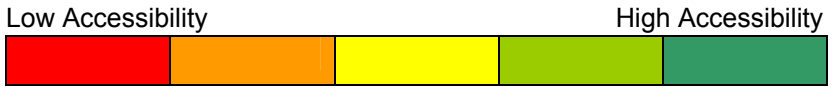
8.6.3 Hence for the purposes of this assessment a development site is considered to have access to existing bus services if there is a stop within 800 metres of the site boundary. The basis for comparison of the site options is as follows:

- Distance to nearest bus stop(s)
- Access to local and longer distance services
- Number of available services
- Availability of regular services
- Access to key longer distance destinations

8.6.4 The relative bus accessibility for the development site options is compared in **Table 37**.

Table 37 Summary table for public transport (bus) accessibility

Development Site	Distance to Site Boundary (m)	Long Distance Services				Local Services			Long Distance Overall Assessment	Local Overall Assessment	Overall Accessibility Assessment
		Number of Services	Number of Frequent Services	Distance (m)	Available Destinations	Number of Services	Number of Frequent Services	Distance (m)			
Abbotswood	400	1	1 Frequent	720	Winchester	2	1	Adjacent			
Ganger Farm	320-770	1	1 Frequent	50	Winchester	2	1	Adjacent			
Sandy Lane	370	-	-	-	-	2	1	Adjacent - 600			
Halterworth	280-580	4	3 Frequent	Adjacent - 200	Winchester, Eastleigh, Southampton	2	1	Adjacent - 740			
Lower Whitenap	230-640	4	2 Frequent	Adjacent - 200	Eastleigh, Southampton	2	-	180			
Burma Road	240	6	3 Frequent	Adjacent - 220	Eastleigh, Southampton, Salisbury, Winchester	2	1	220			



Notes:
Regular services are defined as having a day time frequency of at least one per hour
For Ganger Farm it is assumed there would be direct pedestrian access to Winchester Road
For Halterworth it is assumed that there would be direct pedestrian access to Botley Road

8.7 Conclusion – Public Transport (Bus)

8.7.1 Burma Road and Halterworth sites have good overall access to bus services. Abbotswood, Ganger Farm and Lower Whitenap appear to have an average level of public transport accessibility. Abbotswood has a relatively lengthy walk to long distance services but has good access to local services. Sandy Lane appears to have the relatively lowest level of public transport accessibility. The accessibility assessment is based on the existing bus network. Whilst it does not explicitly consider the potential for new or extended services, the examination of existing services does provide a relative indication of the ability to develop or extend the current network.

8.7.2 The actual walk distance to bus routes/stops will depend upon the site layout and location of development within the site. **Table 37** illustrates the possible range of walk distances within the various sites from an estimated 'centroid'.

8.7.3 Generally the Burma Road, Lower Whitenap and Halterworth sites rank relatively highly in terms of accessibility. Hence those combinations (south and east) including these sites would appear to produce more accessible options. Ganger Farm and Sandy Lane sites tend to rank lower and hence combinations of these northern sites would appear less accessible.

9. CONCLUSIONS AND RECOMMENDATIONS – DEVELOPMENT OPTIONS

9.1 Individual Development Options

Traffic Generation

9.1.1 The existing travel patterns indicate a predominant traffic movement towards destinations south of Romsey during the morning peak period, principally journey to work movements. Development options to the north of the town will therefore, on the basis that significant changes in employment destinations are unlikely, tend to add to traffic and associated queues along the Winchester Road corridor. These options also generate traffic along Highwood Lane similarly seeking to reach destinations to the south. This may have implications for the Botley Road/Highwood Lane and Botley Road/Luzborough Lane junctions given their proximity. The north sites (Abbotswood, Ganger Farm and Sandy Lane) increase flows on Braishfield Road. The Sandy Lane site increases southbound flows on Cupernham Lane, which currently experiences queuing onto Winchester Road.

9.1.2 The Halterworth site has access to both the Winchester Road and Botley Road corridors which tends to spread the impact. The predominant movement of southbound traffic can also avoid the town by use of Luzborough Lane. This may have implications for the Botley Road/Highwood Lane and Botley Road/Luzborough Lane junctions given their proximity. This site has some impact on the busy Winchester Road corridor, but less than the north sites. It also has an impact on Botley Road and Alma Road as generated traffic travels to destinations on the northern side of the town centre and destinations to the north. Alma Road and Winchester Road (west) currently experience queuing during the morning peak period.

9.1.3 The Lower Whitenap site is the largest of the individual sites and therefore has the highest traffic generation. However the predominant traffic generation towards destinations to the south can avoid the town network, reducing its relative local impact. However it has the greatest impact on Alma Road (in part because of its size). It also has a related impact on Southampton Road and Winchester Road (west).

9.1.4 The Burma Road site is the smallest site and hence the least impact. There are no significant impacts compared with the other, larger sites. However there would be localised impacts at The By Pass junctions with Palmerston Street and Southampton Road.

Accessibility to Local Key Destinations

9.1.5 Burma Road has good walking accessibility to key destinations, as does Lower Whitenap. Halterworth and Abbotswood also have reasonable accessibility. Sandy Lane and Ganger Farm have lower levels of walking accessibility.

9.1.6 Relative accessibility by cycling is similar to walking accessibility. All key destinations in Romsey are within reasonable distance of the various sites. Burma Road, Lower Whitenap and Abbotswood have higher levels of accessibility, Halterworth and Ganger Farm slightly lower. Sandy Lane has the lowest accessibility. Clearly however actual cycle use would be influenced by the standard and attractiveness of available routes.

9.1.7 Burma Road and Halterworth have good overall access by bus. Abbotswood, Ganger Farm and Lower Whitenap have a reasonable level of accessibility. Sandy Lane appears to have the lowest level of access.

Overall Conclusions – Individual Sites

9.1.8 Clearly the Burma Road site has the least traffic impact because of its size; it also has good overall accessibility. Lower Whitenap has the largest overall impact because of its size, but the predominant southbound traffic movement does not impact on the town's road network. However there are impacts on Alma Road and part of Winchester Road. Lower Whitenap has a reasonable level of overall accessibility. Halterworth has impacts on the Winchester Road and Botley Road corridors, plus Alma Road. Again, however southbound traffic can avoid the town's road network. Abbotswood and Ganger Farm have similar traffic impacts, including along the Winchester Road corridor. Abbotswood has a good level of accessibility, but Ganger Farm has a lower level of access. Sandy Lane has similar traffic impacts to Abbotswood and Ganger Farm, but more of an impact on Cupernham Lane. It also has the lowest overall accessibility.

9.1.9 Hence it would appear that Burma Road and Lower Whitenap are the more preferable individual development options, but the impact of Lower Whitenap on the Alma Road corridor is an issue to consider.

9.2 Development Site Combinations

Traffic Generation

9.2.1 The various combinations tend, not surprisingly to reduce the distinction between the development choices and 'spread' the impacts across various corridors.

9.2.2 The north option tends to compound existing problems on the Winchester Road corridor including Cupernham Lane. It also generates increasing traffic flows along Highwood Lane which could create future problems in the Botley Road/Luzborough Lane area and at the Winchester Road/Halterworth Lane junction.

9.2.3 The south options tend to reduce the overall impact on the town's road network by southbound traffic not entering the town. However, there are increasing flows on Alma Road.

9.2.4 The east and north options have an impact on the Winchester Road corridor and also Botley Road. The increasing use of Highwood Lane raises issues again about possible future problems in the Botley Road/Luzborough Lane area and at the Winchester Road/Halterworth Lane junction.

9.2.5 The east and south options provide the opportunity for southbound traffic to avoid the town's road network. However again there are impacts on Botley Road (and hence Winchester Road) and Alma Road.

9.2.6 The south and north option would appear to have the advantage of some southbound traffic avoiding the town. However this combination tends to broaden the impact on the town's road network, affecting the Winchester Road corridor, Botley Road and Alma Road.

Accessibility to Local Key Destinations

9.2.7 Generally the Burma Road, Lower Whitenap and Halterworth sites rank relatively highly in terms of accessibility. Hence those combinations (south and east) including these sites would appear to produce more accessible options. Ganger Farm and Sandy Lane sites tend to rank lower and hence combinations of these northern sites would appear less accessible.

Overall Conclusions – Site Combinations

9.2.8 The south site combinations appear the most preferable options overall. There is the advantage of the predominant southbound traffic movements being able to avoid the town's internal road network. The south sites also exhibit relatively good accessibility. The south combination including Burma Road has the advantage of providing a proportion of the dwellings close to the town centre and associated facilities. However, there is the issue of the impact on Alma Road and Winchester Road (west) to consider. The east and south options also appear favourable, with again southbound traffic able to avoid the town's road network and generally favourable accessibility. This combination however does have an impact on the Botley Road Winchester Road, Alma Road and Highwood Lane corridors.

9.2.9 The north sites combination option increases traffic pressure on the Winchester Road corridor. There is also increased use of Highwood Lane with implications for associated junctions. Some north sites also have relatively lower accessibility. The south and north combination would appear to increase the overall spread of traffic impact, affecting the Winchester Road, Alma Road, Highwood Lane and Botley Road routes. The east and north sites also affect these routes, with particular impacts on the Winchester Road and Botley Road corridors and hence the Botley Road/Winchester Road junction.

9.2.10 It is therefore concluded that, in transport terms, the preferred development option is the combination of south sites (Lower Whitenap and Burma Road). This option is taken forward in the following section for more detailed consideration of its impact and possible mitigation measures.

10. ASSESSMENT OF SUGGESTED PREFERRED OPTION

10.1 Introduction

10.1.1 The assessment of the various development options has indicated that the combination 'south sites' – Lower Whitenap and Burma Road – should be taken forward for further consideration as the preferred option. These sites and assumed vehicle accesses are shown on **Figure 1**. This section of the report presents:

- An analysis of the traffic impacts at key junctions and possible modifications or improvements, where needed, to help mitigate those impacts.
- An assessment of measures related to sustainable modes that again would help to mitigate impacts of the development and promote travel choices
- A review of the RMAS strategy in the context of the emerging proposals and measures related to the preferred development option.

10.1.2 The analysis of the preferred development has assumed that Abbotswood will proceed. The Local Plan Review proposes transport improvements to accommodate this development. Reference is made to these proposals under the relevant headings.

10.2 Traffic Impact and Mitigation Measures

Key Junctions

10.2.1 A detailed capacity assessment of the local highway network has been carried out at the key junctions contained within the study area. This included the following junctions:

- Malmesbury Road / A3057 Alma Road Traffic Signals
- Winchester Road / A3057 Alma Road Traffic Signals
- Southampton Road / Winchester Road Roundabout
- A27 Southampton Road / Bypass Road Roundabout
- A3057 Southampton Road / A27 Luzborough Lane Roundabout
- A27 Luzborough Lane / Botley Road Roundabout

10.2.2 In addition, the Winchester Road/Botley Road mini roundabout has been assessed because it is a critical link on the Winchester Road corridor where opportunities for improvements are very constrained.

10.2.3 The junction assessments have been carried out using standard transportation computer software ARCADY for roundabout junctions and LINSIG for signal junctions. The geometric parameters of junctions have been taken off Ordnance Survey mapping together with junction photographs and some measurements taken on site with respect to the white line markings and lanes.

10.2.4 Traffic signal information was obtained from Hampshire County Council to include method of control, inter-greens, phasing and staging. Frequency of pedestrian demand calls was also obtained from the surveys undertaken in July 2007.

Definitions of Capacity

10.2.5 The capacities of the roundabouts and traffic signal junctions, as calculated through the computer software programs are expressed in slightly different terms. For roundabouts, the term 'maximum ratio of flow to capacity (RFC)' is used. When an RFC value of 0.85 is reached the junction is nearing capacity and over capacity with a value above 1.00. For traffic signals the term 'degree of saturation (DoS)' is used. When a value of 90% is reached the junction is nearing capacity and over capacity beyond 100%.

10.2.6 The predicted junction analysis results for future year situations (i.e. with traffic growth and/or development), as quoted in the following sections, should be treated with caution. They provide a good indicator at this time of emerging future peak period issues and problems rather than an exact prediction of queue lengths and capacities. The actual future conditions (beyond 2012) will depend on a wide range of factors including travel choices, work patterns and behaviour, the timing and phasing of proposed development in Southern Test Valley and the location of residential, employment and developments in surrounding areas.

Base Models

10.2.7 A base model of each junction was constructed and then calibrated to queue length survey data collected on site. The intercept correction facility in ARCADY was used for calibration of the roundabout to the local data. All traffic flows were input from the data collected from the series of Manual Classified Count surveys which were undertaken in July 2007. **Table 38** provides a summary of each junction performance and **Table 39** provides a summary of the calibration exercise. The calibration was based on the available queue length data.

Table 38 : Summary of 2007 Base Model Output Results

Junction	Peak	Arm	Queue	Max RFC or DoS
1: Malmesbury Road / A3057 Alma	AM	Alma Road (South)	7 pcu	69.2%
Road Traffic Signals		Malmesbury Road (North)	4 pcu	47.1%
2: Winchester Road / A3057 Alma	AM	Alma Road – Left Turn	4 pcu	34.8%
Road Traffic Signals		Winchester Road (East)	7 pcu	64.2%
		The Hundred (West)	5 pcu	63.9%
3: Southampton Road /	AM	Winchester Road (West)	Max. 11 veh (6 avg)	0.951
Winchester Road Roundabout		Winchester Road (East)	Max. 11 veh (6 avg)	0.942
		Southampton Road (South)	Max. 2 veh (1 avg)	0.679
4: Southampton Road / Bypass	AM	Bypass Road (West)	Max. 4 veh (3 avg)	0.800
Road Roundabout		Southampton Road (North)	Max. 3 veh (2 avg)	0.774
		Southampton Road (South)	Max. 4 veh (3 avg)	0.783
5: A3057 Southampton Road / A27	AM	Southampton Road (North)	Max. 2 (1 avg)	0.603
Luzborough Lane Roundabout		Luzborough Lane (East)	Max. 1 (1 avg)	0.515
		Southampton Road (South)	Max. 2 (2 avg)	0.703
6: A27 Luzborough Lane / Botley Road	AM	Luzborough Lane (West)	Max. 1 (1 avg)	0.480
Roundabout		Botley Road (North)	Max. 5 (3 avg)	0.828
		A27 Botley Road (East)	Max. 4 (3 avg)	0.818
		Premier Way	Max. 0 (0 avg)	0.068
11. Winchester Road/ Botley Road	AM	Winchester Road west	Max. 4 (2 avg)	0.791
		Winchester Road east	Max. 12 (6 avg)	0.949
		Botley Road	Max. 10 (5 avg)	0.949

Note: 1.DoS is the degree of saturation for a signalised lane approach, 100% represents an arm at capacity.
2. RFC is the ratio of flow to capacity on an arm. 1.000 represents an arm at capacity.

Table 39: Summary of 2007 Base Model Calibration

Junction	Peak	Arm	Modelled Queue	Surveyed queue (averaged over hour)
1: Malmesbury Road / A3057 Alma Road Traffic Signals	AM	Alma Road (South)	7 pcu	7
		Malmesbury Road (North)	4 pcu	5
3: Southampton Road / Winchester Road Roundabout	AM	Winchester Road (West)	Max.11 veh (6 avg)	Max.10 veh (6 avg)
		Winchester Road (East)	Max.11 veh (6 avg)	Max.10 veh (6 avg)
		Southampton Road (South)	Max.2 veh (1 avg)	Max.6 veh (2 avg)
4: Southampton Road / Bypass Road Roundabout	AM	Bypass Road (West)	Max.4 veh (3 avg)	Max.6 veh (3 avg)
		Southampton Road (North)	Max.3 veh (2 avg)	Max.7 veh (3 avg)
		Southampton Road (South)	Max.4 veh (3 avg)	Max.4 veh (2 avg)
6: A27 Luzborough Lane / Botley Road Roundabout	AM	Botley Road (North)	Max.5 (3 avg)	Max.9 (4 avg)
11. Winchester Road/ Botley Road mini roundabout	AM	Winchester Road west	Max. 4 (2 avg)	
		Winchester Road east	Max. 12 (6 avg)	Max.13 (7 avg)
		Botley Road	Max. 10 (5 avg)	Max.14(6 avg)

10.2.8 The base model results reveal that both traffic signal junctions retain a good reserve capacity on all arms during the AM peak hour. However, it can be seen that the Winchester Road / Southampton Road roundabout is at capacity on two approaches. The Southampton Road / Bypass Road Roundabout has a small degree of reserve capacity on the three main approaches, with short queues present. Similarly, the Southampton Road / Luzborough Lane roundabout operates with a reasonable reserve capacity but with little queuing or delay. The Luzborough Lane / Botley Road Roundabout has reserve capacity however only a small degree on the Botley Road (north) and A27 Botley Road (East) arms. The Winchester Road / Botley Road junction is at capacity on the Winchester Road (east) and the Botley Road arms.

Junction Assessment Models

10.2.9 The calibrated junction models were tested in the 2012 year both with and without the preferred development option using the flows derived from the RMAS phase II spreadsheet model. The 2012 base flows include the Abbotswood development. The 2012 base plus preferred development include the Lower Whitenap and Burma Road sites. The roundabout geometry was assumed to remain the same as per the base models, with the only change resulting from the additional site access arm added to the Southampton Road / Luzborough Road Roundabout. A summary of the junction capacity results is given in **Table 40**.

Table 40: Summary of 2012 Do Minimum and Do Something Model Output Results

Junction	Peak	Arm	2012 base		2012 base plus preferred development	
			Max Queue	Max RFC or DoS	Max Queue	Max RFC or DoS
1: Malmesbury Road / A3057 Alma Road Traffic Signals	AM	Alma Road (South)	8	75.7%	12	89.9%
		Malmesbury Road (North)	5	50.1%	5	52.8%
2: Winchester Road / A3057 Alma Road Traffic Signals	AM	Alma Road (North) – Left Turn	4	36.6%	4	38.6%
		Winchester Road (East)	8	70.9%	10	81.3%
		The Hundred (West)	6	70.6%	7	81.6%
3: Southampton Road / Winchester Road Roundabout	AM	Winchester Road (West)	40	1.130	120	1.573
		Winchester Road (East)	75	1.130	77	1.122
		Southampton Road (South)	3	0.748	13	0.942
4: Southampton Road / Bypass Road Roundabout	AM	Bypass Road (West)	7	0.880	55	1.065
		Southampton Road (North)	9	0.911	29	1.011
		Southampton Road (South)	1	0.864	130	1.161
5: A3057 Southampton Road / A27 Luzborough Lane Roundabout	AM	Southampton Road (North)	2	0.678	2	0.687
		Luzborough Lane (East)	1	0.584	2	0.699
		Southampton Road (South)	3	0.763	5	0.829
		Site Access	-	-	1	0.593
6: A27 Luzborough Lane / Botley Road Roundabout	AM	Luzborough Lane (West)	1	0.528	2	0.714
		Botley Road (North)	21	1.002	68	1.158
		A27 Botley Road (East)	7	0.890	9	0.911
		Premier Way	0	0.079	0	0.081
11. Winchester Road/ Botley Road	AM	Winchester Road west	6	0.873	25	1.002
		Winchester Road east	96	1.202	124	1.263
		Botley Road	27	1.057	30	1.070

Note: 1.DoS is the degree of saturation for a signalised lane approach, 100% represents an arm at capacity
2. RFC is the ratio of flow to capacity on an arm. 1.000 represents an arm at capacity.

10.2.10 The summary results in **Table 40** reveal that the two signalled junctions would remain within capacity in the 2012 year, both with and without the preferred development.

10.2.11 The Winchester Road / Southampton Road Roundabout is well over capacity, with significant queuing expected on Winchester Road both with and without the addition of development traffic.

10.2.12 The model results illustrate that the Bypass Road / Southampton Road Roundabout would be close to capacity without the preferred development option in 2012 and would become overcapacity with the development, with the greatest queue expected on the A27 Southampton Road (South) approach.

10.2.13 With respect to the Southampton Road / Luzborough Road Roundabout junction, it can be seen that the junction retains a good degree of reserve capacity both with and without development traffic and the introduction of the fourth arm onto the junction to serve the proposed development can be accommodated.

10.2.14 It can be seen that the Luzborough Lane / Botley Road junction remains within capacity on all arms apart from Botley Road (North) where the arm is at capacity without development in 2012, becoming overcapacity with the addition of development traffic.

10.2.15 The model results show that the Winchester Road / Botley Road junction is at capacity on the Winchester Road west arm and significantly over capacity on the other two arms, with significant queuing on Winchester Road east, in 2012 without development. All arms are over capacity in 2012 with the preferred development, with extensive queuing on the Winchester Road east arm.

Mitigation Measures

10.2.16 In order to address the junction capacity issues identified above in 2012, each junction was inspected to determine if any mitigation measures were possible to improve capacity and safety at the critical junctions. The junctions were tested with the 2012 base plus the preferred development.

Southampton Road / Winchester Road Roundabout

10.2.17 A potential replacement traffic signal scheme would appear to be possible at this location, subject to detailed design, highway verge confirmation, service location and any access issues to the Plaza. There are two possible layouts. Preliminary sketched layouts are given in **Figures A and B** below. It can be seen that this junction would also allow for some controlled pedestrian movements.

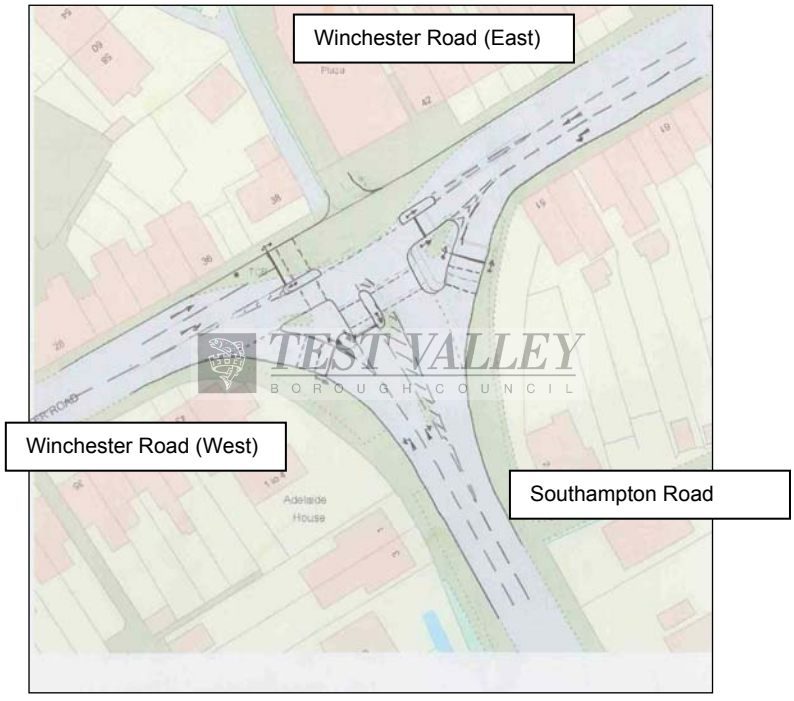


Figure A - Sketch layout of Traffic Signals at the Southampton Road / Winchester Road junction

Figure B - Sketch layout of Alternative Traffic Signals Arrangement at the Southampton Road / Winchester Road junction

10.2.18 The capacity of these layouts have been tested using LINSIG with the draft model results given in **Table 41**. It can be seen that, although this junction is likely to be at capacity, the junction performance is considerably better than highlighted in **Table 40.** The two alternative schemes produce similar results. The performance of this junction would be further optimised by linking its operation with the traffic signals at the Winchester Road/Alma Road junction.

Table 41 : 2012 AM Peak 2012 base with development Results for Traffic Signals At Winchester Rd / Southampton Rd junction

Peak	Arm	Figure A		Figure B	
		Modelled Queue	DoS	Modelled Queue	DoS
AM	Winchester Road (West)	13	89.7%	12	85.4%
	Winchester Road (East)	13	97.4%	14	86.2%
	Southampton Road (South)	27	100.2%	24	86.3%

10.2.19 The suggested layouts have implications for the access to the Plaza which will require careful consideration.

Southampton Road / Bypass Road Roundabout

10.2.20 Options to improve this roundabout would appear to be limited mainly due to the constricted approaches to the junction and the need to provide acceptable roundabout approach geometries (entry path deflection). However, it may be possible to widen the A27 Southampton Road (South) approach slightly by reducing the size of the deflection island, as this approach does appear to have a smaller entry width than the other two main approaches. The revised modelling results are given below in **Table 42**.

Table 42 : 2012 AM Peak Revised 2012 base with development Results for Southampton Rd / Bypass Rd Junction

Peak	Arm	Modelled Queue	RFC
AM	Bypass Road (West)	76	1.111
	Southampton Road (North)	25	0.999
	Southampton Road (South)	58	1.054

10.2.21 It can be seen that providing a wider two-lane approach on Southampton Road (South) reduces the queue, however, the queue on Bypass Road increases, whilst the queue on Southampton Road (North), towards the Plaza roundabout, slightly reduces. With development at Lower Whitenap (and Burma Road) there will be a need to provide adequate pedestrian and cycle crossing provision in the vicinity of this junction. This may involve a review of the existing pedestrian crossing facilities on Southampton Road (south) and By Pass Road and/or new provision on Southampton Road (north).

10.2.22 The potential for traffic signal control at this junction has also been explored. Due to the high conflicting right turning flows at the junction the layout would need to accommodate flared multiple lane entries where possible which is likely to require some additional land particularly on the Southampton Road (South) approach. A possible layout is shown in **Figure C**. **Table 43** provides a summary of the expected junction performance.

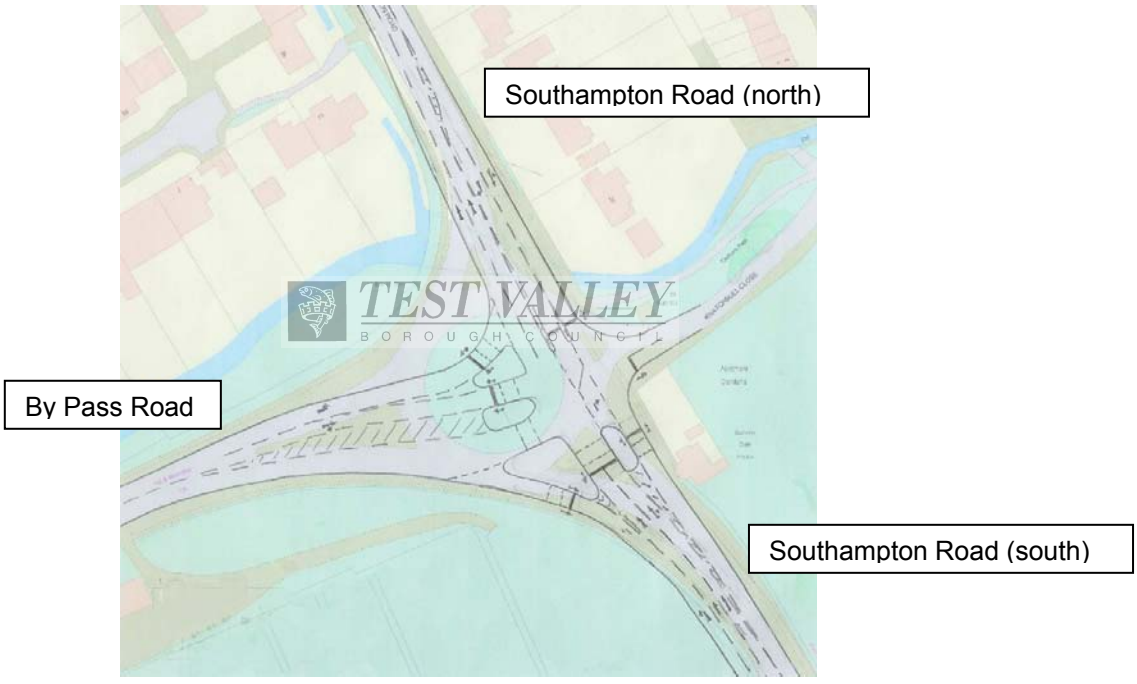


Figure C - Sketch layout of Traffic Signals at the Southampton Road / By Pass Road junction

Table 43 : 2012 AM Peak 2012 base with development results for Traffic Signal Control at Southampton Rd / Bypass Rd Junction

Peak	Arm	Modelled Queue	Degree of Saturation
AM	Bypass Road (West)	36	111.8%
	Southampton Road (North)	33	113.1%
	Southampton Road (South)	46	111.2%

10.2.23 It can be seen that a signalled junction is likely to be over-capacity on each arm and hence would not represent a significant improvement when compared to the overall performance of the roundabout junction, with the widened two lane approach on Southampton Road (south). The queues on Southampton Road (south) and particularly The By Pass are reduced, but the longer queue on the Southampton Road (north) approach may lead to queues extending through the Winchester Road/Southampton Road junction.

10.2.24 Again, with development at Lower Whitenap and Burma Road there will be a need to make provision for adequate pedestrian and cycle crossing facilities at/near this junction.

A27 Luzborough Lane / Botley Road Roundabout

10.2.25 The modelling results illustrated that the Botley Road (North) arm is likely to be over capacity with the addition of development traffic. It would appear possible to widen this arm to provide a longer two lane section on the approach. **Figure D** provides a draft sketched layout of a potential two lane approach, which would need to tie into the Highwood Lane priority junction. The revised modelling results with the new geometry are given below in **Table 44**.

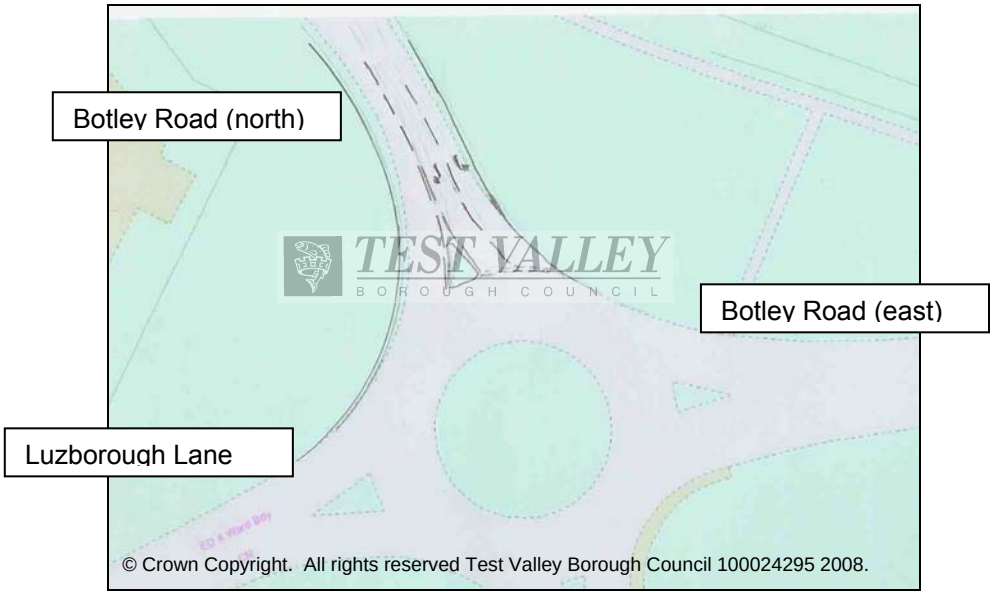


Figure D - Sketch Layout of Improvements to Luzborough Lane / Botley Road Junction

Table 44 : 2012 AM Peak Revised 2012 base with development results for Luzborough Lane / Botley Rd Junction

Peak	Arm	Modelled Queue	RFC
AM	Luzborough Lane (West)	3	0.714
	Botley Road (North)	7	0.890
	A27 Botley Road (East)	11	0.931
	Premier Way	0	0.083

10.2.26 It can be seen that the capacity of the Botley Road (North) arm is increased such that the arm becomes below capacity in the 2012 AM peak. However, it can be seen that this extra capacity makes the performance of the A27 Botley Road (east) slightly worse. If the level of performance of the A27 Botley Road arm becomes an issue then it should be possible to change the white line hatching on this arm to provide a right turn lane (currently there is only one lane with the remainder hatched off), subject to safety considerations.

Winchester Road/Botley Road

10.2.27 This mini roundabout is predicted to be over capacity in 2012 with or without the preferred development option. The highway land and carriageway width are very limited in this location with no real opportunities for capacity improvement. There is no highway width to increase entry width capacities at the roundabout.

10.2.28 There is a significant right turn movement from Winchester Road west to Botley Road. Conversion of this junction to signal control would need to include a right turn lane or as a minimum, sufficient width ('storage') within the junction for some right turners. There appears to be insufficient space for either of these options without additional carriageway width or highway land. Without this provision a signal controlled junction would operate over capacity as illustrated in **Table 45**.

10.2.29 Its performance is compared against that of the mini roundabout in **Table 45**. It can be seen that the junction would operate less satisfactorily under signal control than the existing mini roundabout. In 2012 the queueing with signals has significantly increased on Winchester Road west and Botley Road. Queuing on Winchester Road east is less with signal control. If there were to be room for right turners from Winchester Road west to Botley Road there would be less, but still significant queuing.

10.2.30 To increase the available road width/space and capacity there may be a need to consider more extensive measures at this junction, such as alterations to the railway bridge.

Table 45 AM Peak Traffic Signal Control at Winchester Road/Botley Road

Arm	Junction Type	2007		2012 base		2012 base with preferred development	
		Modelled Queue	DoS	Modelled Queue	DoS	Modelled Queue	DoS
Winchester Road (West)	Signals	116 [23]	124.9% [88.2%]	227 [69]	166.5% [108.3%]	304 [123]	188.0% [118.9%]
	Mini Roundabout	4		6		25	
Winchester Road (East)	Signals	10 [12]	55.6% [62.8]	13 [17]	65.5% [74.7%]	13 [38.6]	66.0% [107.6%]
	Mini Roundabout	12		96		124	
Botley Road	Signals	63 [16]	121.5% [91.1%]	121 [39]	158.2% [107.6%]	147 [62]	182.1% [118.7%]
	Mini Roundabout	10		27		30	

Note: the performance of the signal junction with limited road space allowed for right turners (Winchester Road west to Botley Road) is shown in square brackets [ ]

10.3 Traffic Impact and Mitigation Measures - Conclusions

10.3.1 The growth in general traffic to 2012 and the proposed development has been shown to be likely to lead to some of the key junctions nearing or exceeding capacity. It is concluded that the following improvements could be undertaken:

- **Southampton Road/Winchester Road.** The existing roundabout is predicted to be well over capacity by 2012. A traffic signal controlled scheme should be considered for this junction. Access to the Plaza would require careful consideration.
- **Southampton Road/By Pass Road.** As a minimum, the northbound Southampton Road entry to the roundabout should be widened. Capacity could be improved by increasing the overall size of the roundabout. Widening of The By Pass and Southampton Road to provide two eastbound and two northbound lanes respectively into the roundabout would also provide some benefit. As an alternative, consideration could be given to changing the junction to traffic signal control. The queuing on The By Pass approach to the junction would be less than with the minimum roundabout improvement, but potentially longer on the Southampton Road (north) approach. The benefits may therefore not merit the significant cost of major alterations at this junction. It is suggested that more detailed examination of options at this junction is undertaken before confirming the preferred option.
- **Luzborough Lane/Botley Road.** The capacity of this roundabout can be improved thorough increasing the length of the two lane entry on Botley Road (north). Examination of the interaction of this junction with the Botley Road/Highwood Lane junction would be appropriate at the detailed design stage.
- **Winchester Road/Botley Road.** There are significant capacity issues arising from future traffic growth and the proposed development, at this junction. There appear to be no 'straightforward' options to improve the overall capacity at this junction, including traffic signal control. To increase capacity more extensive measures may be necessary.

10.4 Abbotswood Mitigation Measures

10.4.1 The Borough Local Plan (2006) includes junction improvement proposals to be associated with Abbotswood, notably at Winchester Road/Cupernham Lane, Winchester Road/Braishfield Road, Winchester Road/Botley Road and Winchester Road/Halterworth Lane.

10.4.2 Consideration of improvements at these junctions (and the other related junctions) remains valid in relation to this development. However there are capacity issues arising from future traffic growth and the proposed development, at the Winchester Road/Botley Road junction as identified in paragraph 10.2.28. The optimum form of these improvements will need to be considered in the context of detailed development proposals.

10.4.3 The 32/33 bus service currently serves the north east area of Romsey. This service should be modified and extended into the site. The site is well placed to link in with the pedestrian routes through adjacent, existing development and the pedestrian/cycle route via Canal Walk.

10.5 Walking, Cycling and Public Transport Accessibility Measures

10.5.1 It was concluded as part of the assessment of the development options that the Lower Whitenap site (and Abbotswood) has relatively good accessibility. The Burma Road site is well located close to the town centre, its services and facilities. To further improve its accessibility the Lower Whitenap site would benefit from walking and cycling access to Botley Road, the Whitenap/Tadburn areas and Mountbatten School. There should be an off road cycle path along Southampton Road to provide links to the town and also southwards as part of routes towards Nursling and Rownhams/Southampton.

10.5.2 There should also be consideration of improvements to the public transport infrastructure/services, such as a local bus service connecting the Lower Whitenap site to other areas of the town and town centre and the possibility of services to areas further afield, such as Eastleigh or Southampton, diverting through the Lower Whitenap site.

10.5.3 Planning Applications for development on the proposed sites should be accompanied by Residential Travel Plans.

10.6 RMAS Strategy

Accessiblity

10.6.1 The key general objective of promoting and encouraging the use of travel modes other than the car of course remains valid in seeking to manage and reduce the transport impact of both existing and future development. The significant increase in dwellings (and hence population) proposed for Romsey, coupled with the constraints placed on highway improvements strengthens and supports this approach. The accessibility of the proposed developments will be increased through the improvements to public transport infrastructure/services and the walking and cycling networks in the locality of the sites as suggested in this report.

Traffic Impact

10.6.2 There will be a need for more traffic signal control as envisaged in the original RMAS Strategy but the full extent of this form of control needs to be considered in more detail, in the context of what form of junction best suits traffic flows and turning proportions (and what can be physically achieved) at particular junctions.

10.6.3 It is considered that traffic signal control should be introduced at The Plaza (Southampton Road/Winchester Road) as proposed in RMAS. The merits of retaining the roundabout at Southampton Road/The By Pass or its replacement by a signal junction requires further examination. With development at Lower Whitenap and Burma Road there would be the need to ensure adequate pedestrian and cycle crossing provision near the Southampton Road/By Pass Road junction. The Winchester Road/Botley Road is likely to experience increasing congestion at peak periods and to provide additional capacity a more extensive solution may be required. The Luzborough Lane/Botley Road roundabout can be modified to improve capacity.

10.6.4 A series of junction improvements are proposed in the Local Plan Review, associated with development at Abbotswood. These junction improvements remain relevant. The optimum form of these improvements will be confirmed through detailed consideration when development proposals for this site are brought forward.

11. RMAS REVIEW PHASE II – OVERALL CONCLUSIONS AND RECOMMENDATIONS

11.1 Conclusions

11.1.1 The assessment of the individual site development options has suggested that development to the south of the town would be the preferred option in terms of accessibility and mitigating the traffic impacts. Sites on the east side of the town also ranked relatively highly.

11.1.2 The assessment of the combination site options (which assumed that Abbotswood would proceed) also favoured the south sites, with Lower Whitenap and Burma Road emerging as the preferred option, providing a significant, high level of housing.

11.1.3 The assessments have indicated that key junctions in the town will come under increasing pressure in the future from 'background' traffic growth and development proposals. Through traffic was highlighted as an issue in phase I of the RMAS Review.

11.1.4 The assessments have highlighted where the traffic increases will have significant impacts on the local road network. The main impacts are focussed on Southampton Road, The By Pass, Winchester Road, Alma Road, Botley Road and to an extent the Halterworth Lane/Highwood Lane corridor.

11.1.5 The improvements to the highway network need to be balanced by enhancements to the public transport and walking and cycling networks. There are proposals in the Local Plan Review and the Local Transport Plan to improve access by walking, cycling and public transport.

11.1.6 There are suggested accessibility improvements related to the preferred development. This would include: enhancements to public transport infrastructure/services connected to the development sites; pedestrian and cycle access to Botley Road from Lower Whitenap; a pedestrian/cycle route on Southampton Road; and pedestrian phases at new signal junctions.

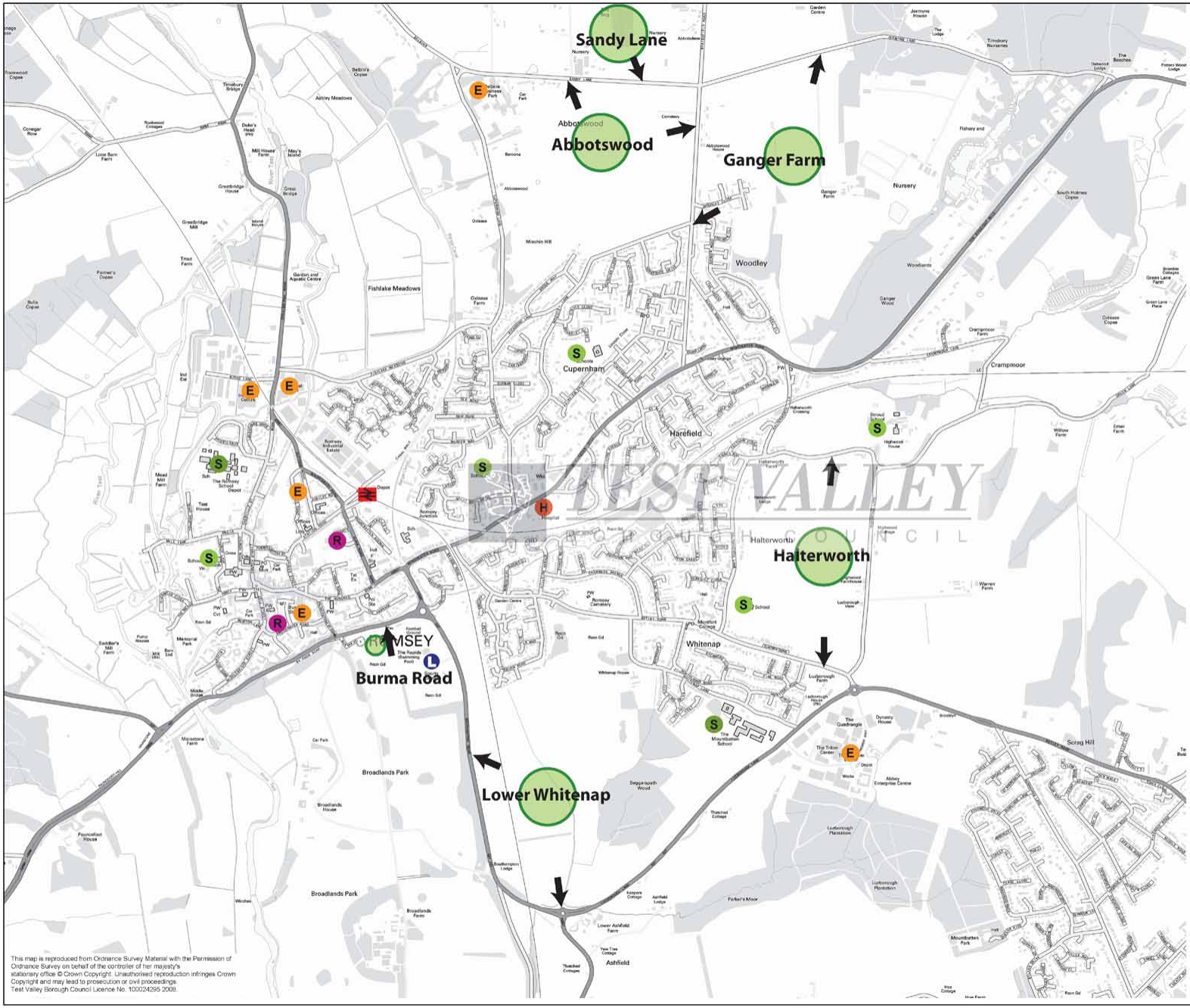
11.1.7 Analysis of key junctions has assessed the traffic impacts and possible mitigation measures. There are opportunities to introduce traffic signal control at the Southampton Road/Winchester Road junction and alterations at other existing roundabouts. Capacity assessments at the Winchester Road/Botley Road junction have highlighted that the Winchester Road will come under increasing pressure as a result of future traffic growth. The form of the junction improvements proposed in association with development at Abbotswood, as included in the Local Plan Review, will be need to be considered in more detail.

11.2 Recommendations

11.2.1 The infrastructure improvements and measures identified in this report (Sections 10.3 – 10.6) should be taken forward for further consideration as proposals to mitigate the impact of future traffic growth and development. The suggested range of measures is illustrated on **Figure 50.**

11.2.2 There are specific issues that require further consideration:

- The optimum junction arrangement at the Southampton Road/By Pass Road junction
- The form of traffic signal control at the Southampton Road/Winchester Road junction
- The limitations on improvements to the Winchester Road/Botley Road junction
- Enhancements of public transport infrastructure/services and walking and cycling routes to serve the proposed development sites.



Legend

- Vehicle Access (assumed)
- Development Sites
- Rail Station
- Primary School
- Secondary School
- Hospital
- Leisure & Recreation
- Retail
- Employment

Rev.	Drawn	Chkd.	Approvd	Date	Description
	KEVANS	PSYDALL	PSYDALL	31.05.07	

Client

Test Valley Borough Council

Project

RMAS Review Phase II

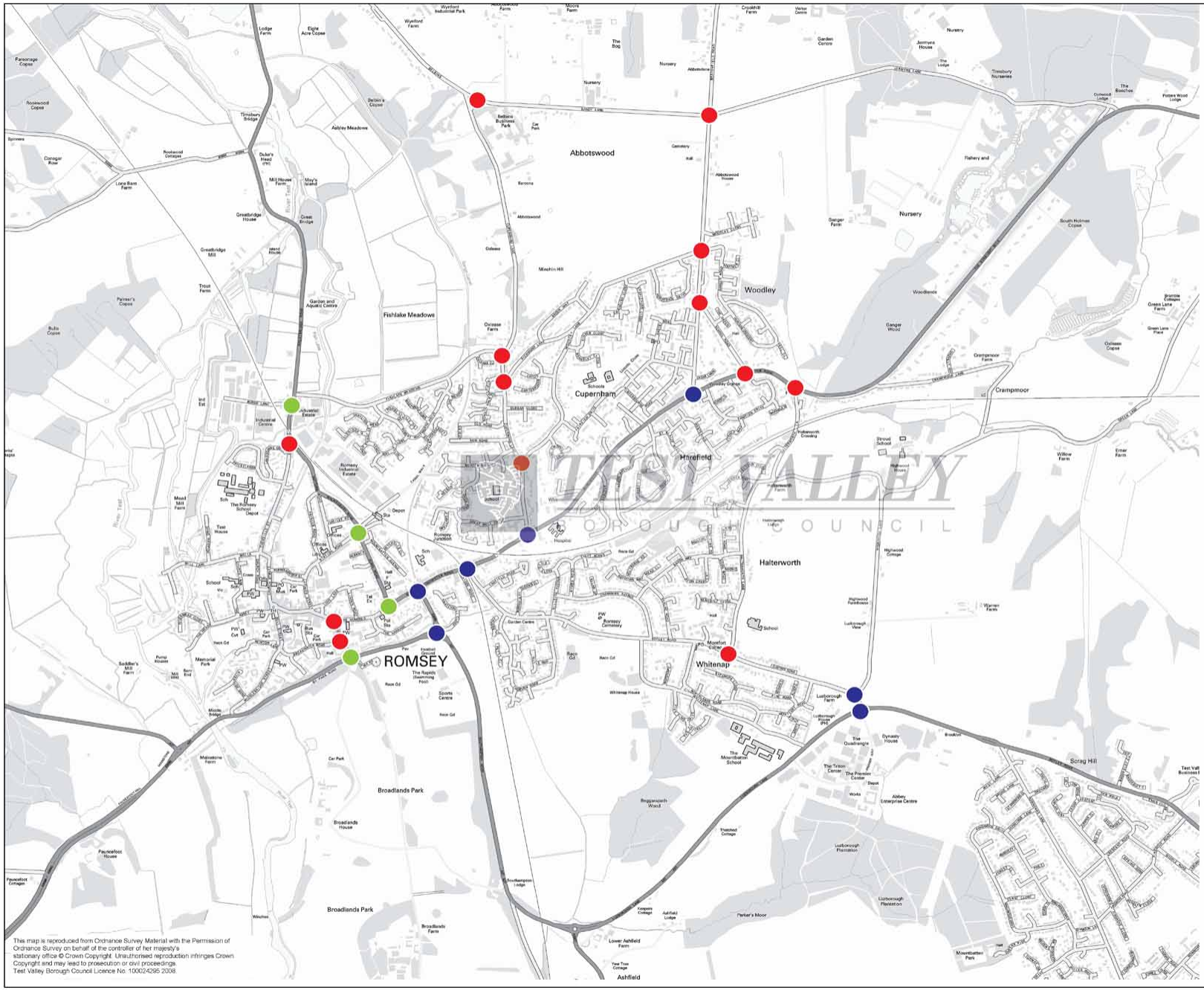
Figure Title

Development Site Locations and Key Destinations

Gifford
Carlton House, Ringwood Road, Woodlands, Southampton, Hampshire SO40 7HT
Tel : 023 8081 7500 Fax : 023 8081 7600 www.gifford.uk.com

Scale (at A3)	Date	Drawn
NTS	14/09/2007	KEVANS

Figure no.	rev.
Figure 1	



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Legend

- Turning Count
- Queue Length
- Turning Count & Queue Length

Rev.	Drawn	Chkd.	Apprvd	Date	Description
	N.DYSON	P.BYDALL	P.BYDALL	16/07/07	

Client

Test Valley Borough Council

Project

RMAS Review Phase II

Figure Title

Traffic Survey Locations (Apr 2007)

Gifford

Carlton House, Ringwood Road, Woodlands, Southampton, Hampshire SO40 7HT
Tel.: 023 8081 7500 Fax: 023 8081 7800 www.gifford.uk.com

Scale (at A3)	Date	Drawn
NTS	16/07/07	NAD

Figure no. Figure 2 rev.

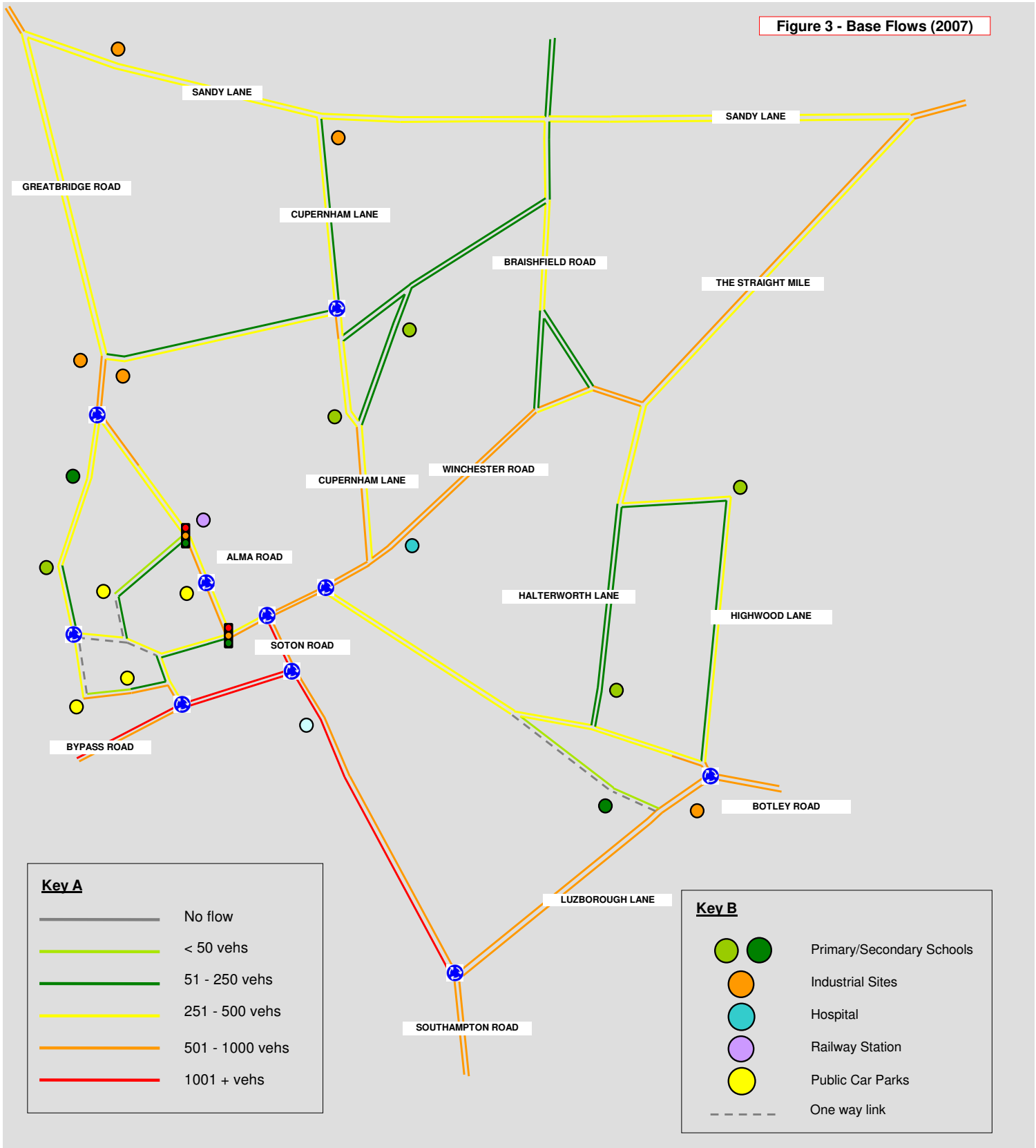
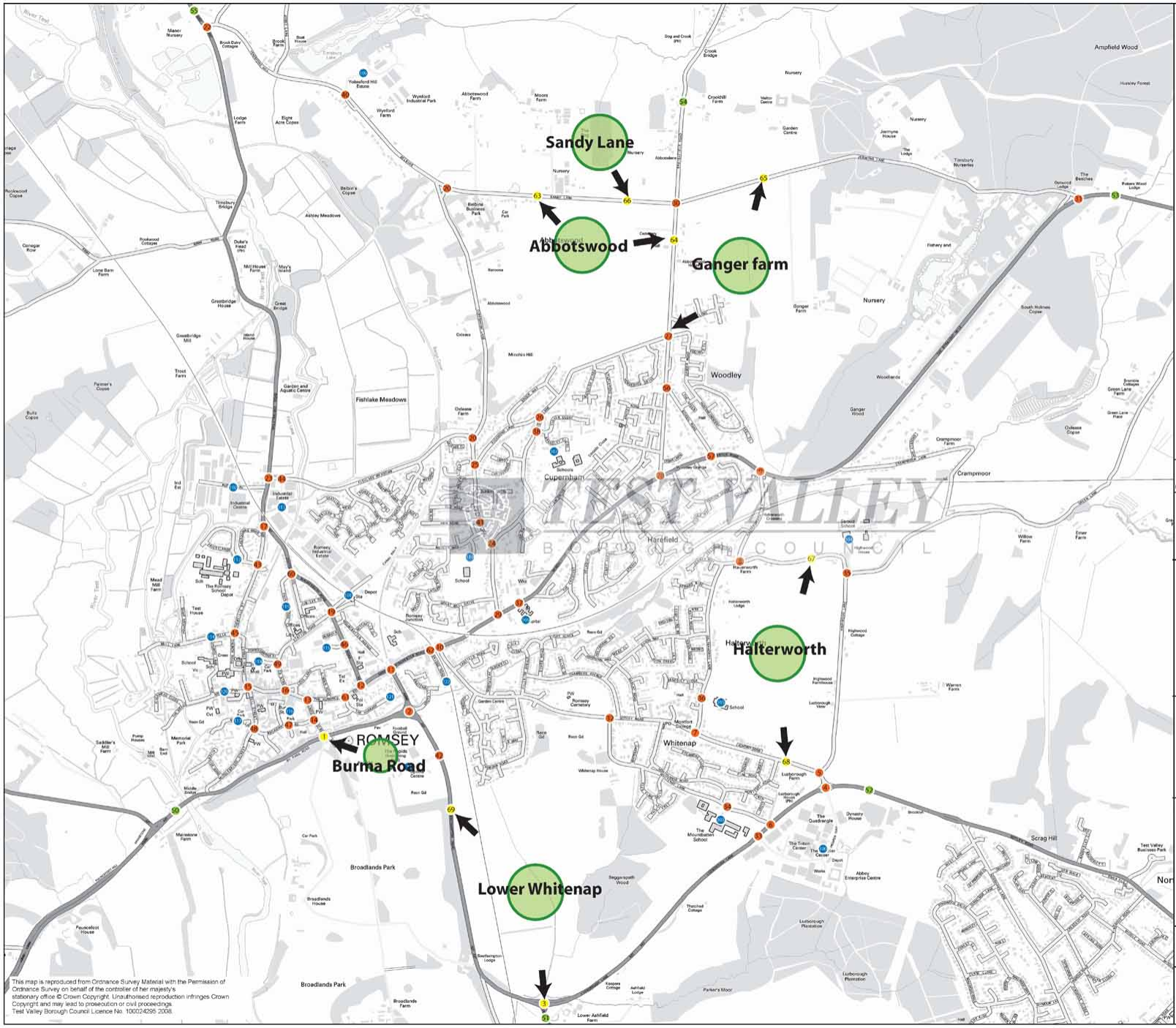


Figure 3 - Base Flows (2007)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link



Legend

- 23 Junction
- 53 Entry/exit point
- 104 Destination point
- 1 Development site access point
- Development sites
- Vehicle access (assumed)

Rev.	Drawn	Chkd.	Apprvd.	Date	Description
	NJD/SON	PSP/DALL	PSP/DALL	16.08.07	

Client

Test Valley Borough Council

Project

RMAS Review Phase II

Figure Title

Modelled Network

Gifford

Carlton House, Ringwood Road, Woodlands, Southampton, Hampshire SO40 7HT
Tel : 023 8081 7500 Fax : 023 8081 7600 www.gifford.uk.com

Scale (at A3)	Date	Drawn
NTS	16/07/07	NAD

Figure no. Figure 4 rev.

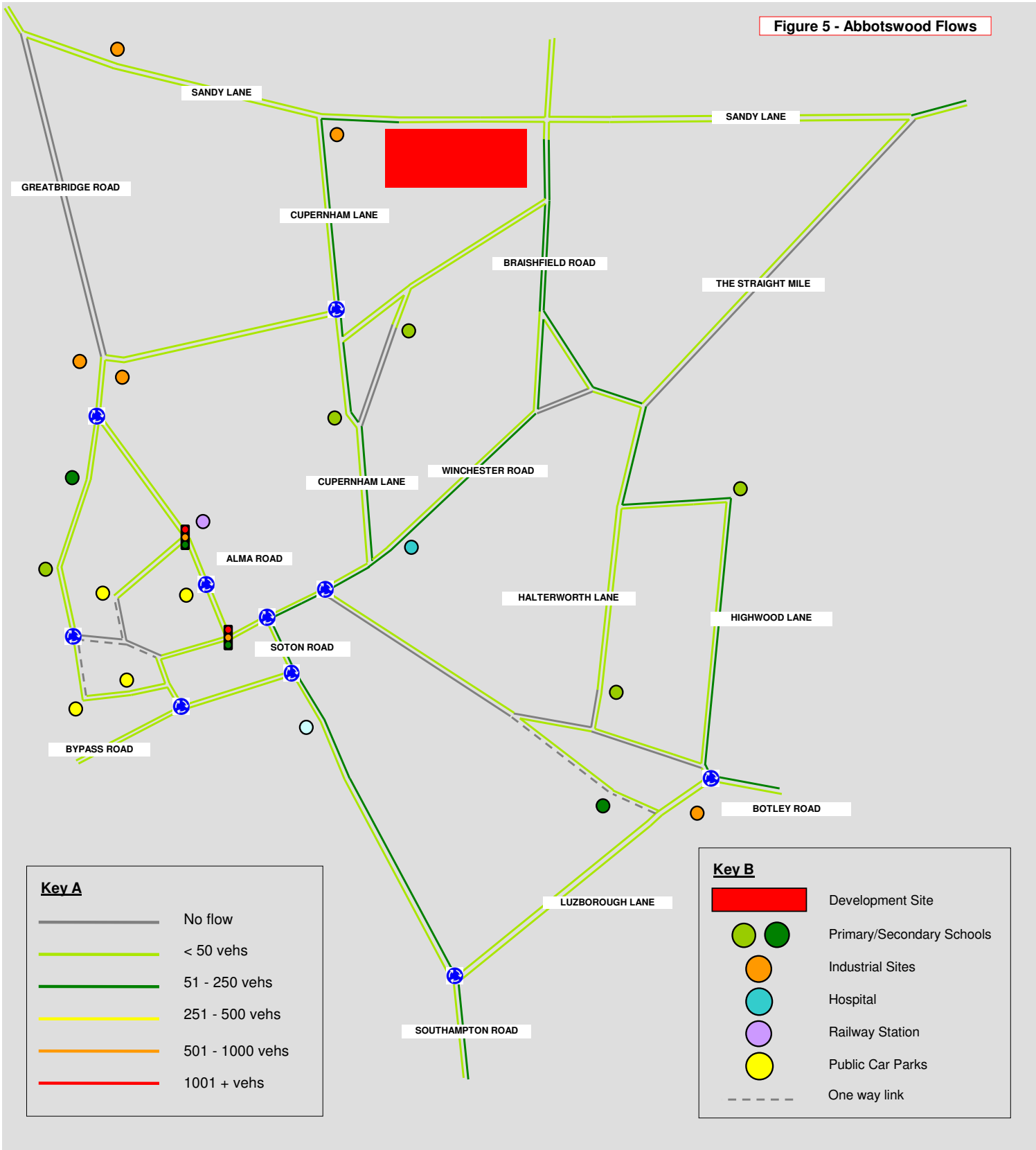


Figure 5 - Abbotswood Flows
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

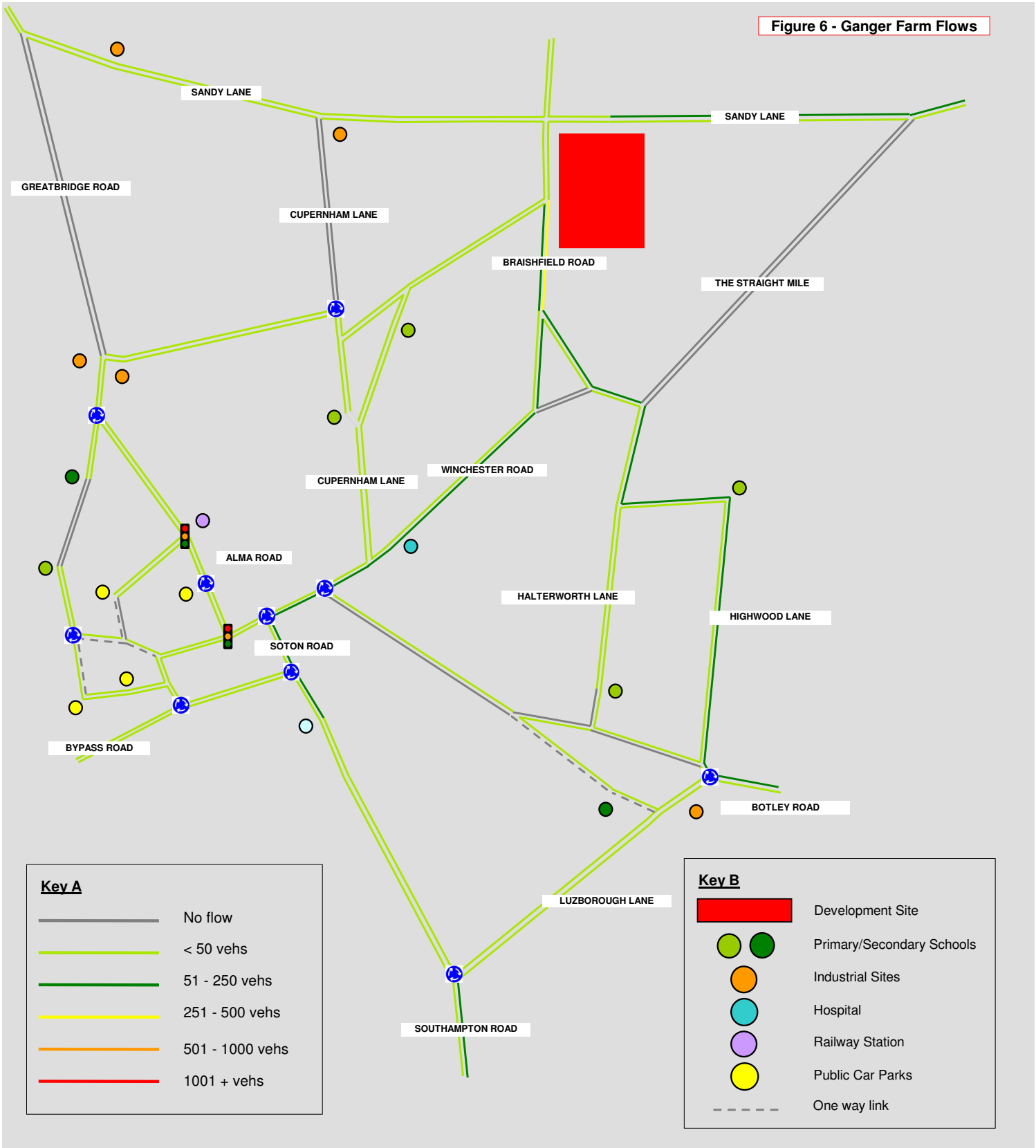


Figure 6 - Ganger Farm Flows
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

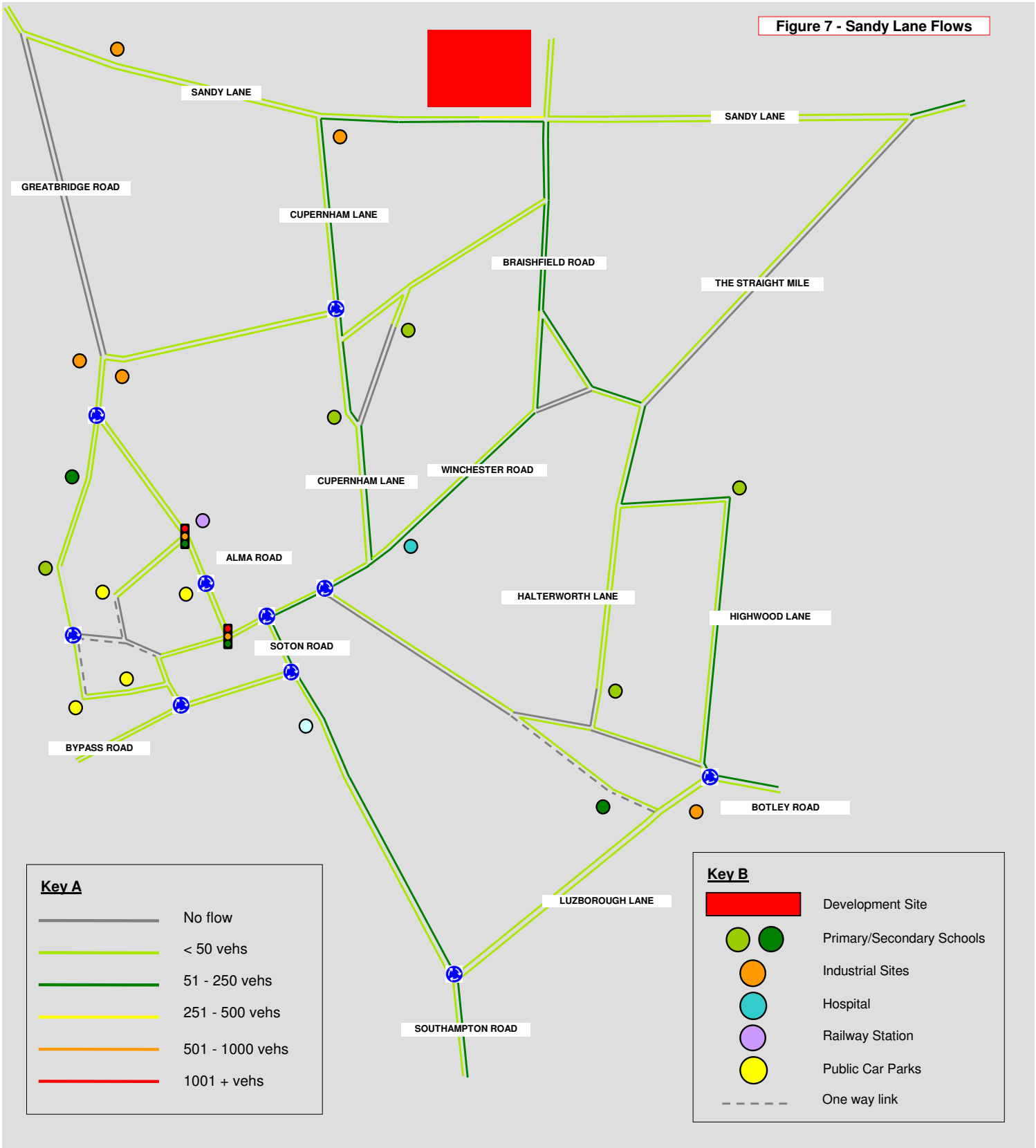


Figure 7 - Sandy Lane Flows
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Significant Impacts: Abbotswood Site

Road	Direction	Impact %
Winchester Road (between Botley Rd and Southampton Rd)	Westbound	13
Winchester Road (between Botley Rd and Cupernham Lane)	Westbound	16
The Hundred	Westbound	12
Cupernham Lane (adjacent to Winchester Rd)	Southbound	14
Highwood Lane	Southbound	22
Braishfield Road	Southbound	41

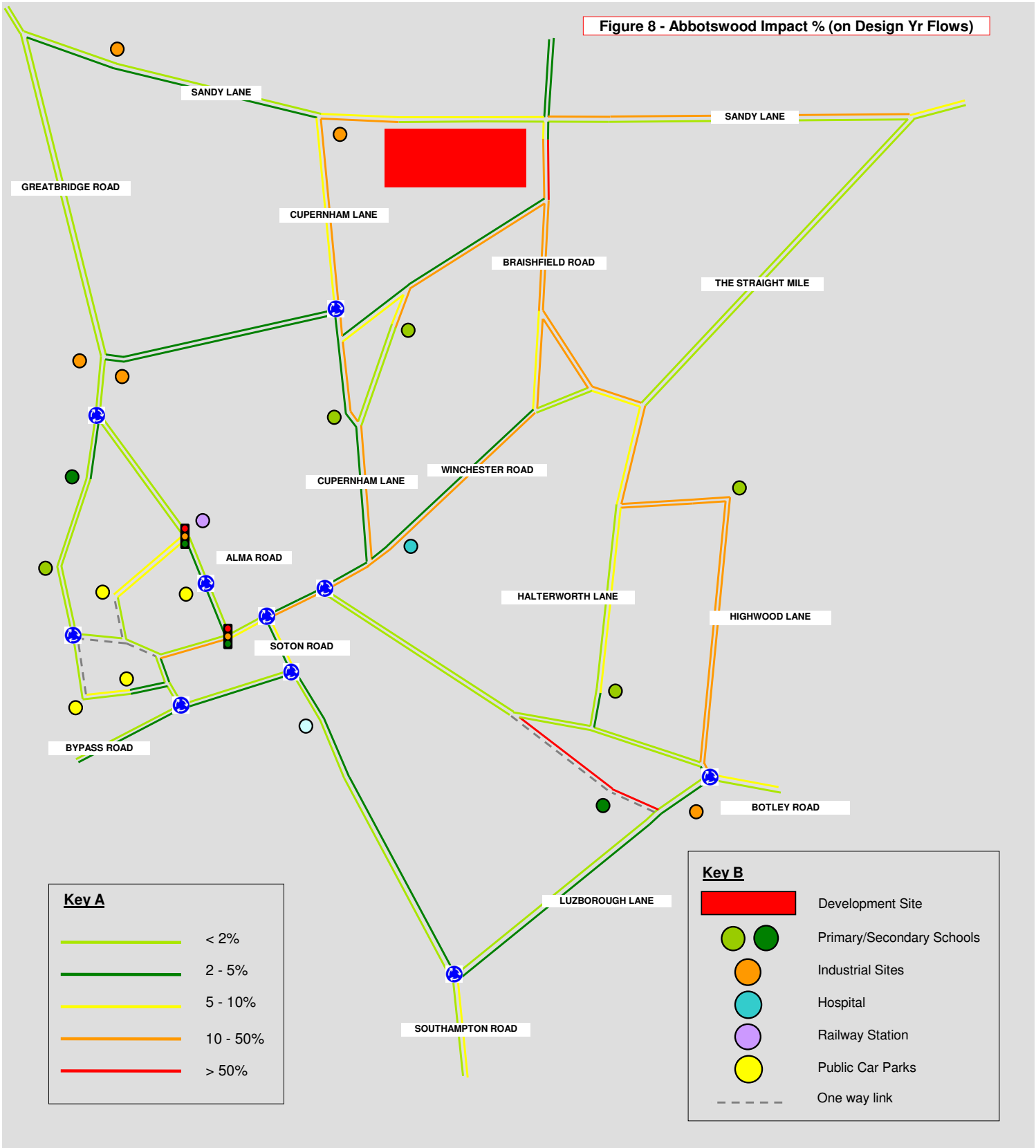


Figure 8 - Abbotswood Impact % (on Design Yr Flows)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 2%
2 - 5%
5 - 10%
10 - 50%
> 50%
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Significant Impacts: Ganger Farm Site

Road	Direction	Impact %
Winchester Road (between Botley Rd and Southampton Rd)	Westbound	13
Winchester Road (between Botley Rd and Cupernham Lane)	Westbound	16
The Hundred	Westbound	12
Highwood Lane	Southbound	25
Braishfield Road	Southbound	51

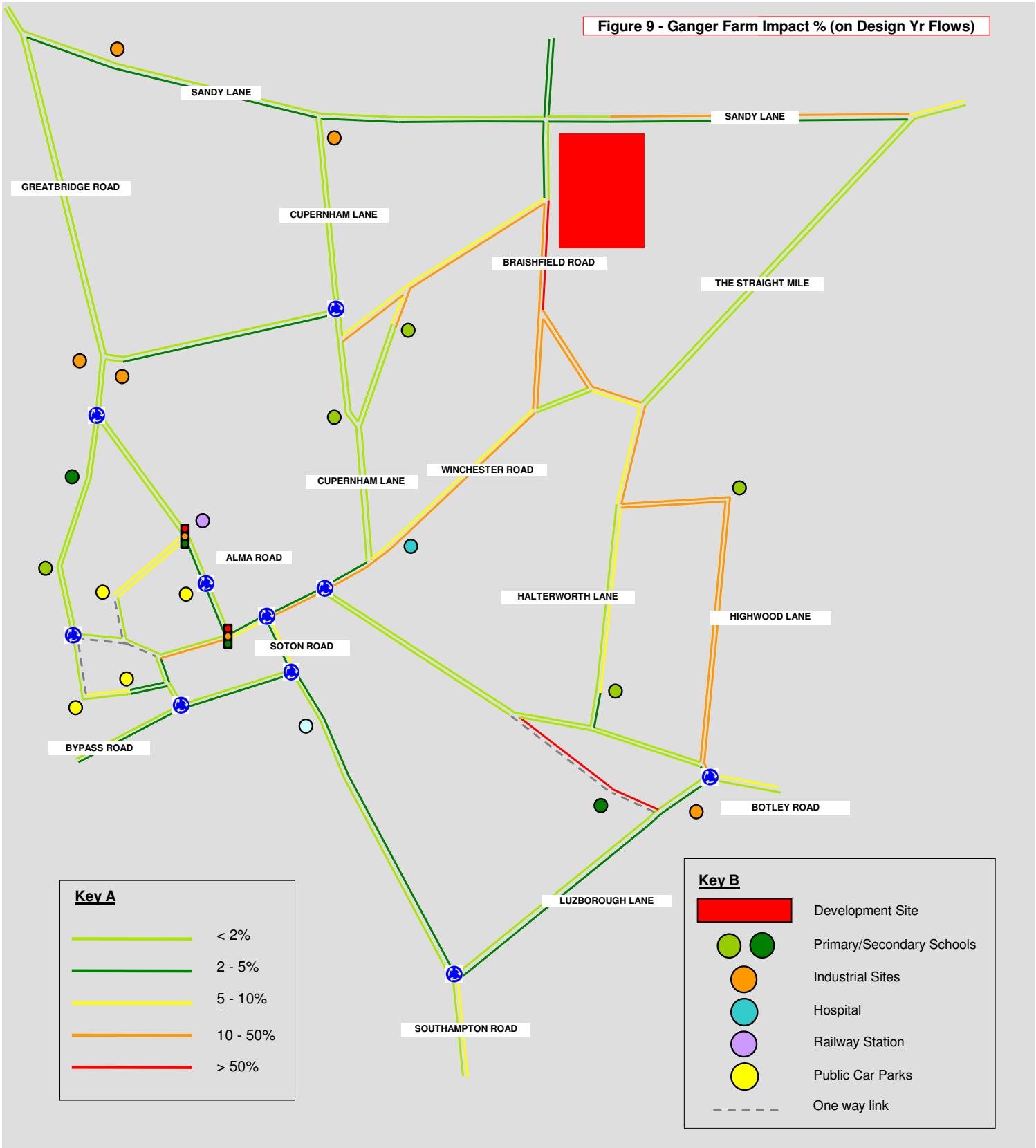


Figure 9 - Ganger Farm Impact % (on Design Yr Flows)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 2%
2 - 5%
5 - 10%
10 - 50%
> 50%
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Significant Impacts: Sandy Lane Site

Road	Direction	Impact %
Winchester Road (between Botley Rd and Southampton Rd)	Westbound	13
Winchester Road (between Botley Rd and Cupernham Lane)	Westbound	16
The Hundred	Westbound	12
Cupernham Lane (adjacent to Winchester Rd)	Southbound	14
Highwood Lane	Southbound	22
Braishfield Road	Southbound	41

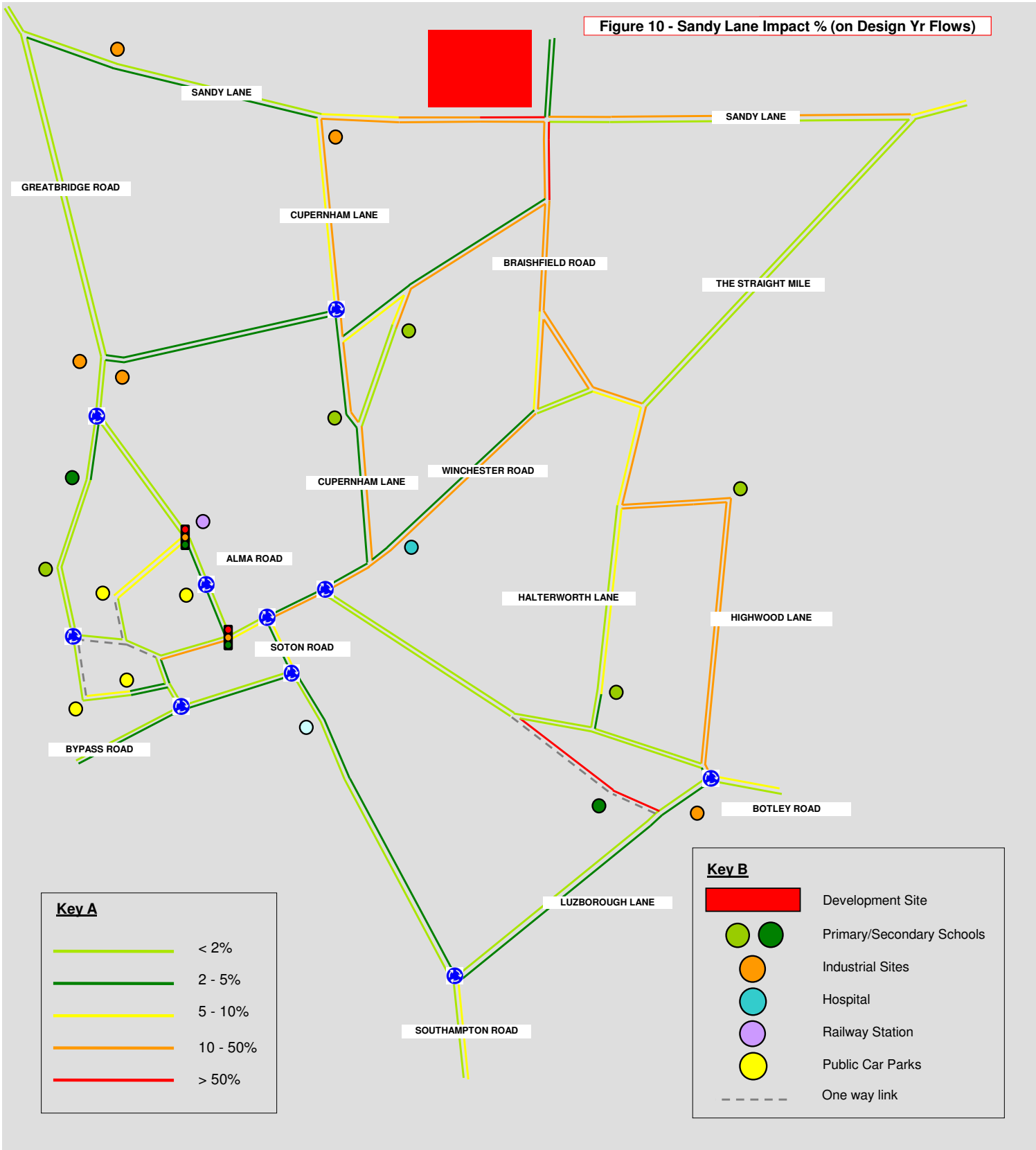


Figure 10 - Sandy Lane Impact % (on Design Yr Flows)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 2%
2 - 5%
5 - 10%
10 - 50%
> 50%
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

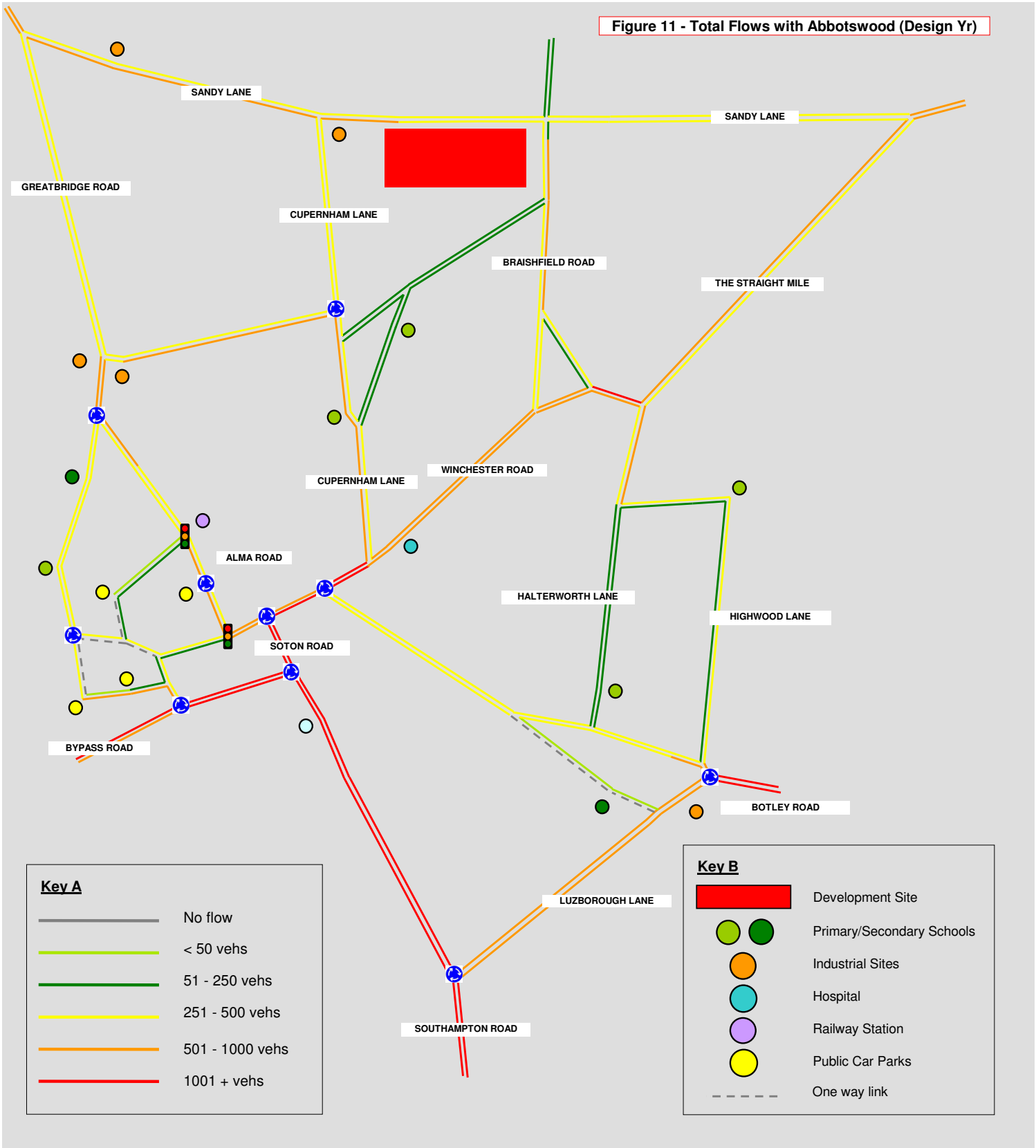


Figure 11 - Total Flows with Abbotswood (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

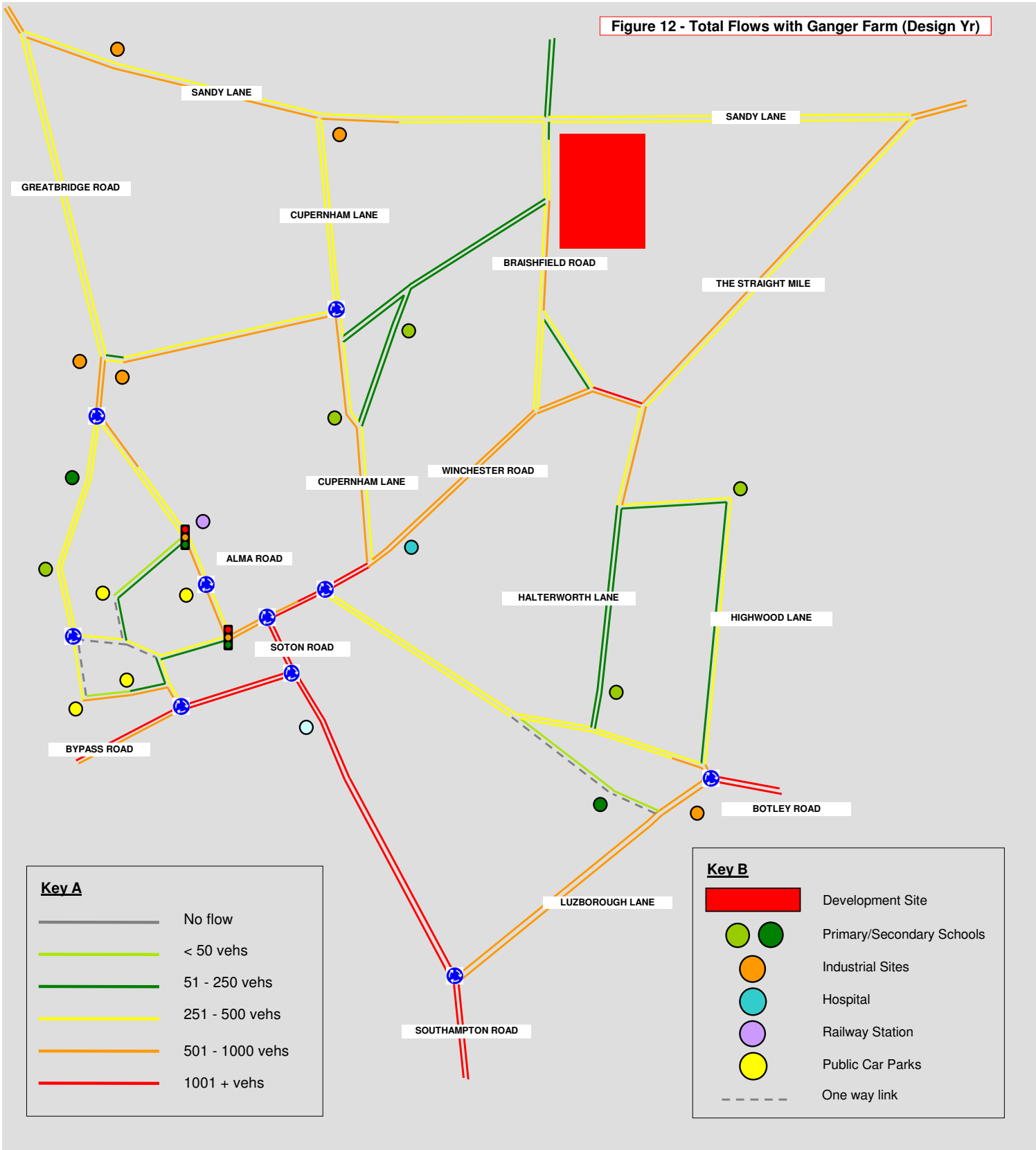


Figure 12 - Total Flows with Ganger Farm (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

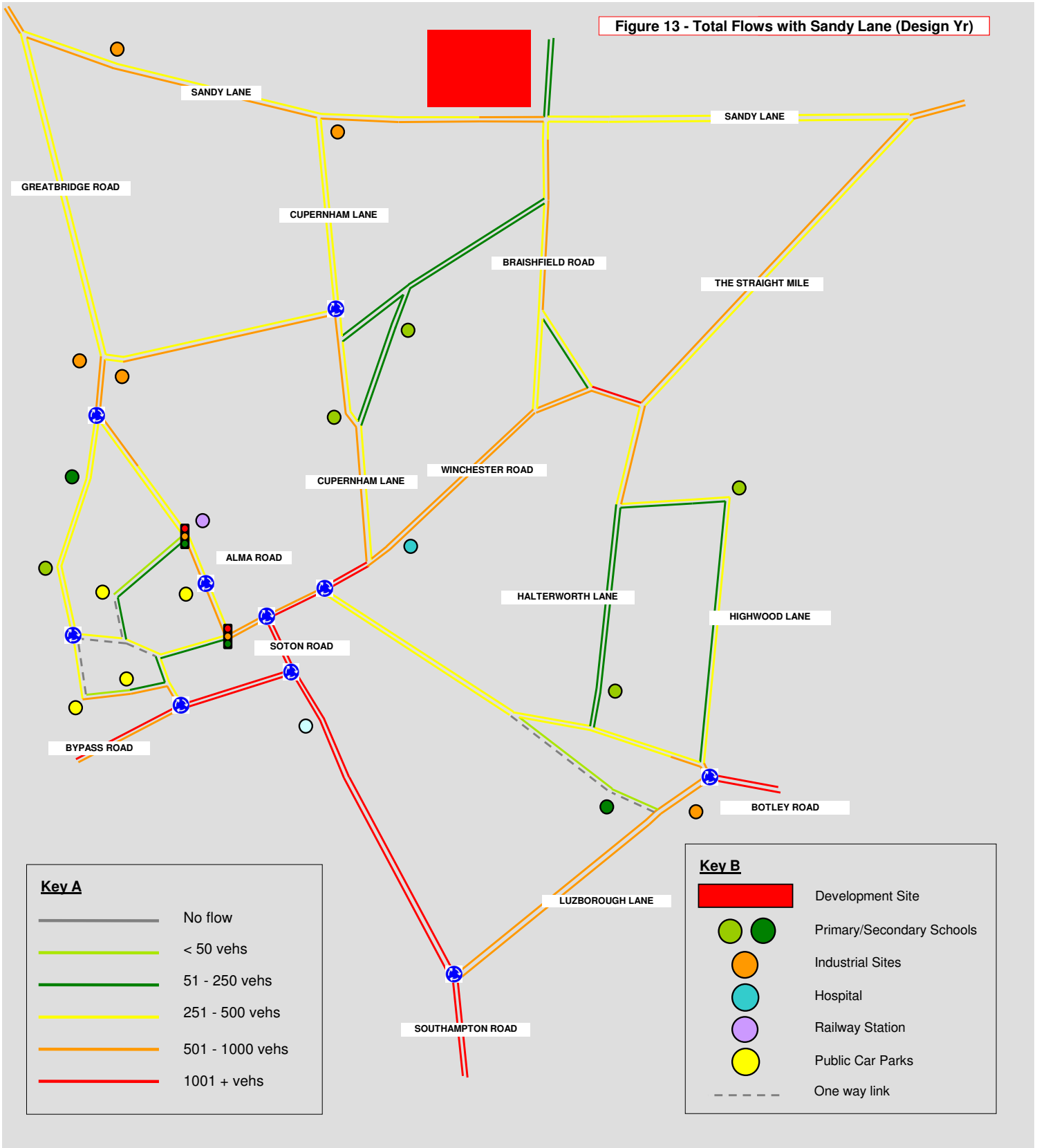


Figure 13 - Total Flows with Sandy Lane (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

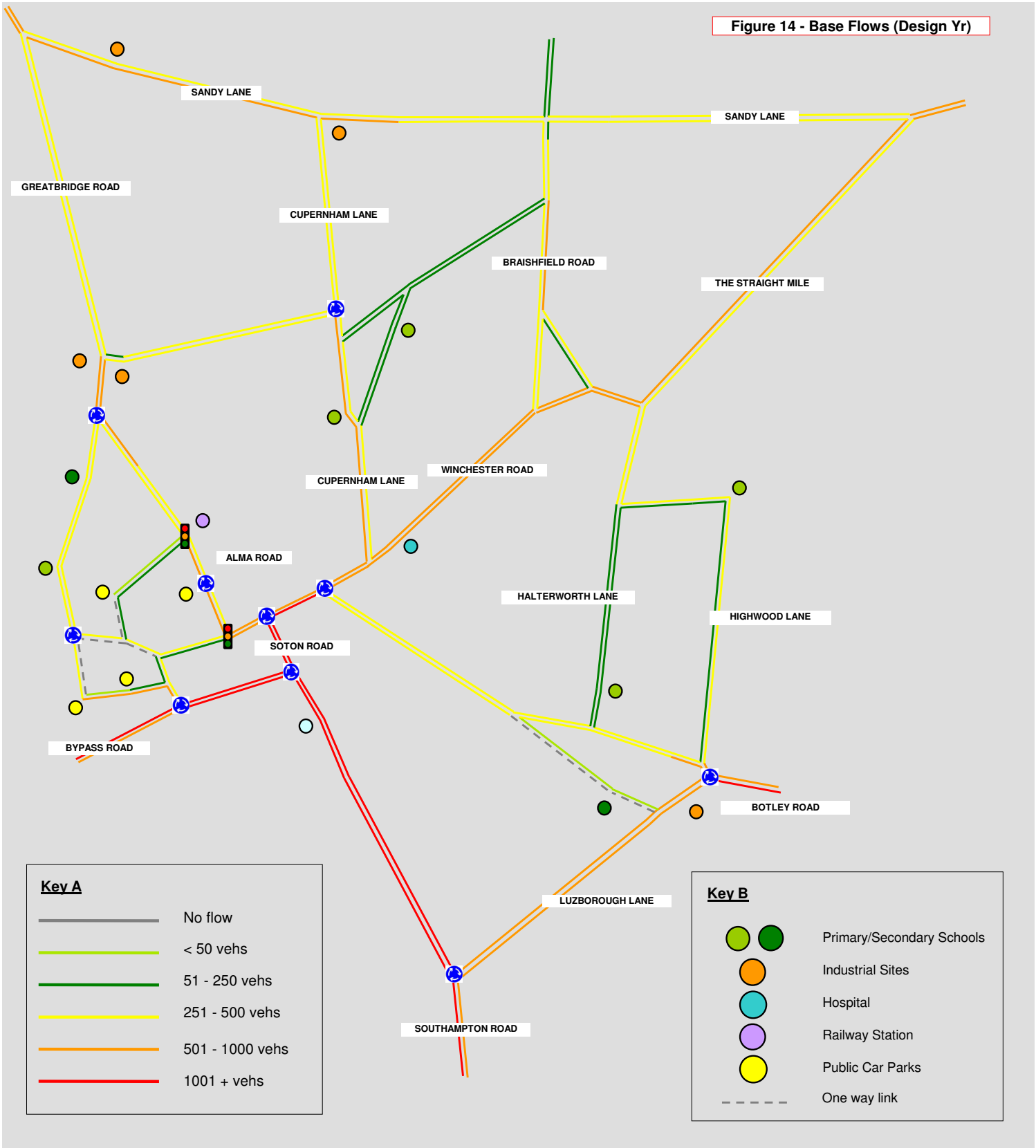
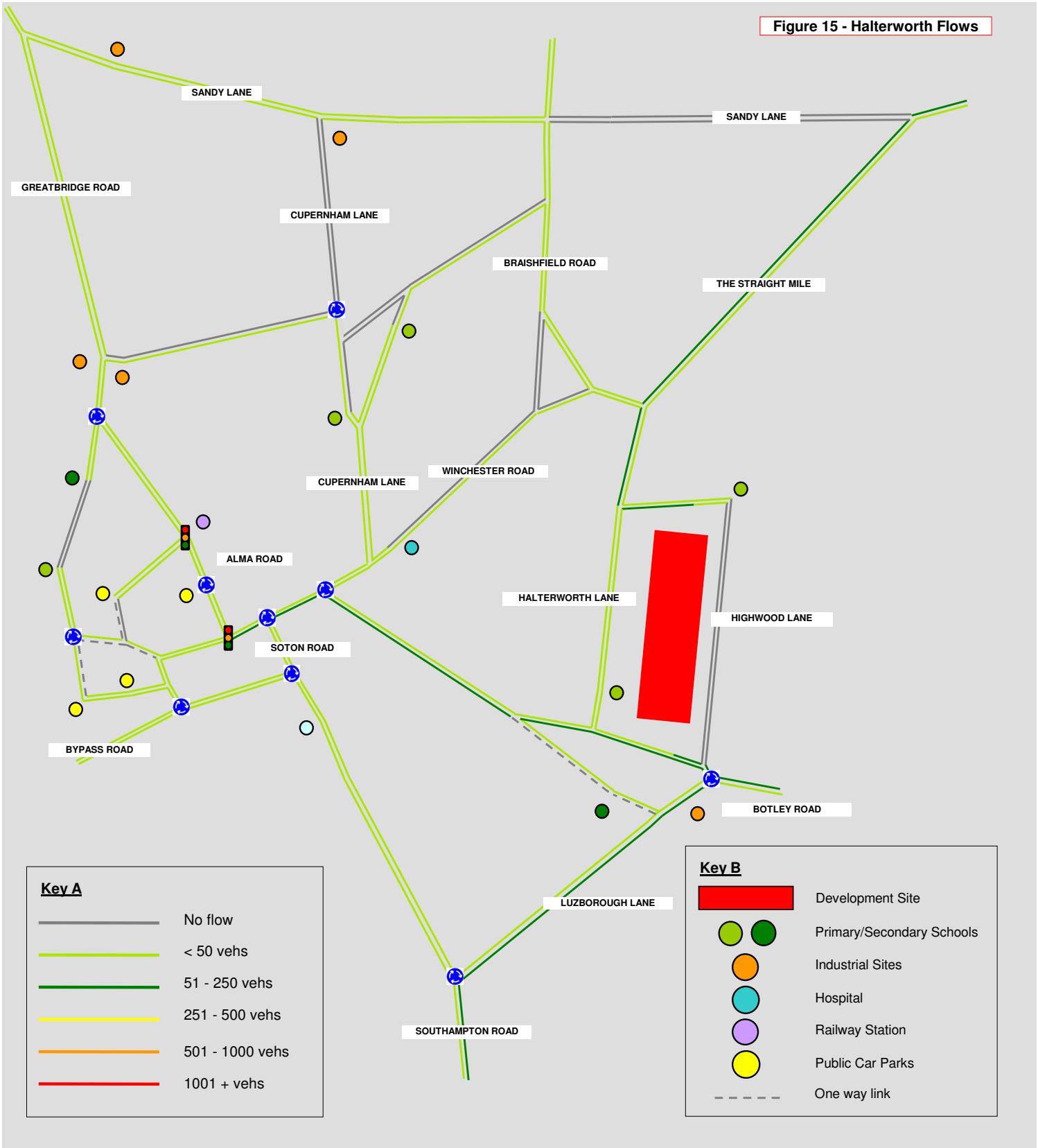


Figure 14 - Base Flows (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Figure 15 - Halterworth Flows



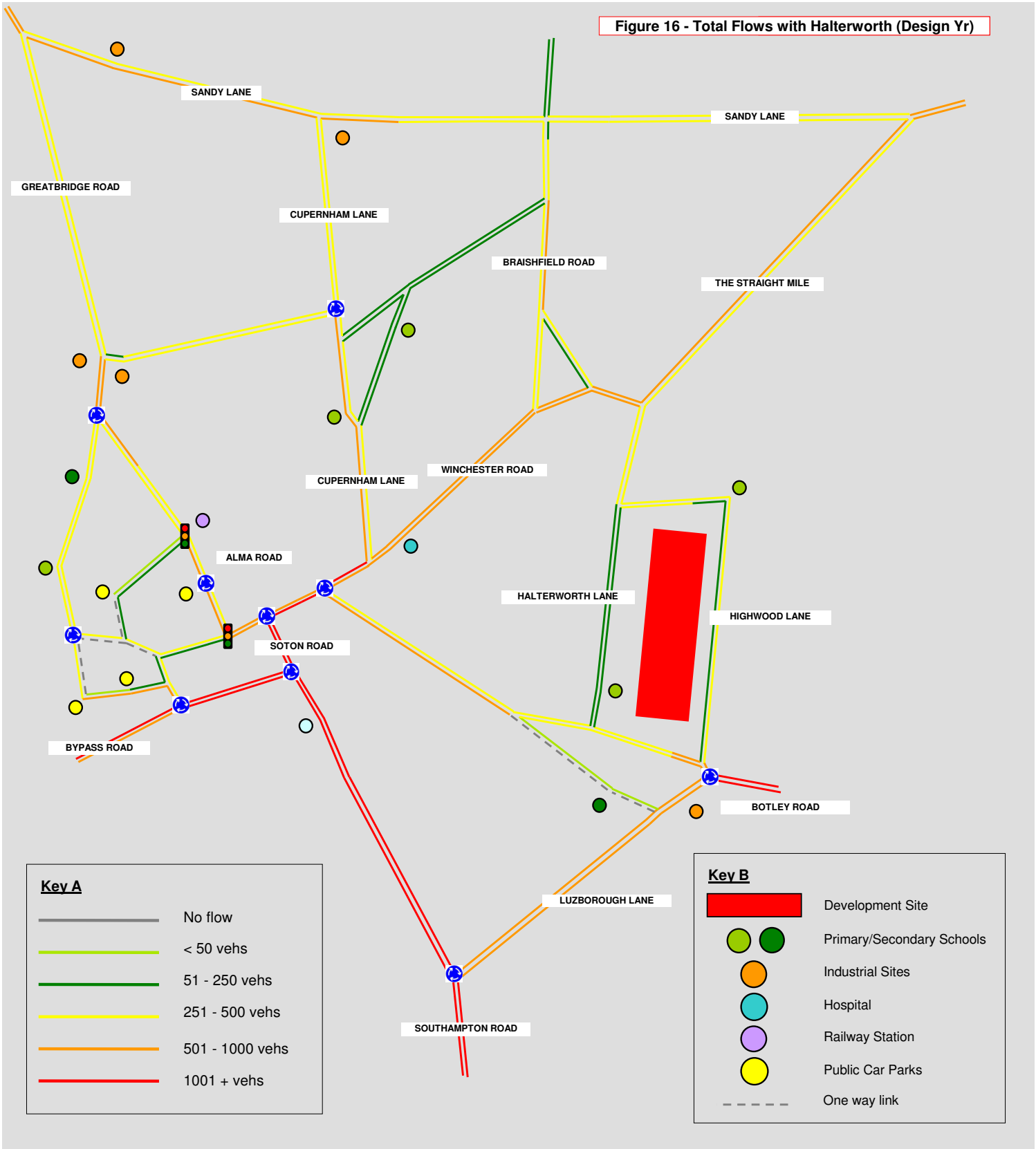


Figure 16 - Total Flows with Halterworth (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Significant Impacts: Halterworth Site

Road	Direction	Impact %
The Hundred	Westbound	13
Botley Road	Westbound	21

Figure 17 - Halterworth Impact % (on Design Yr Flows)

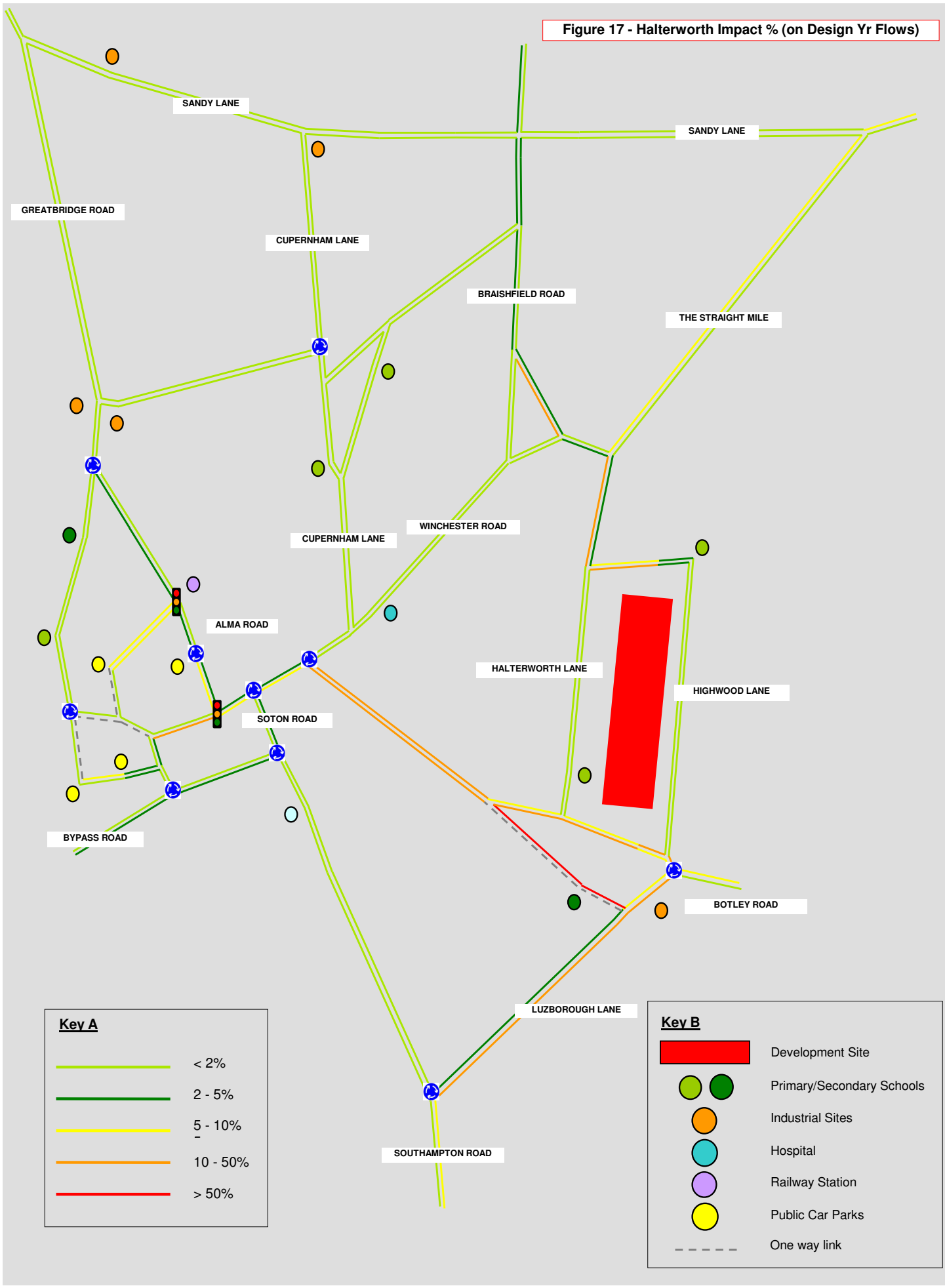
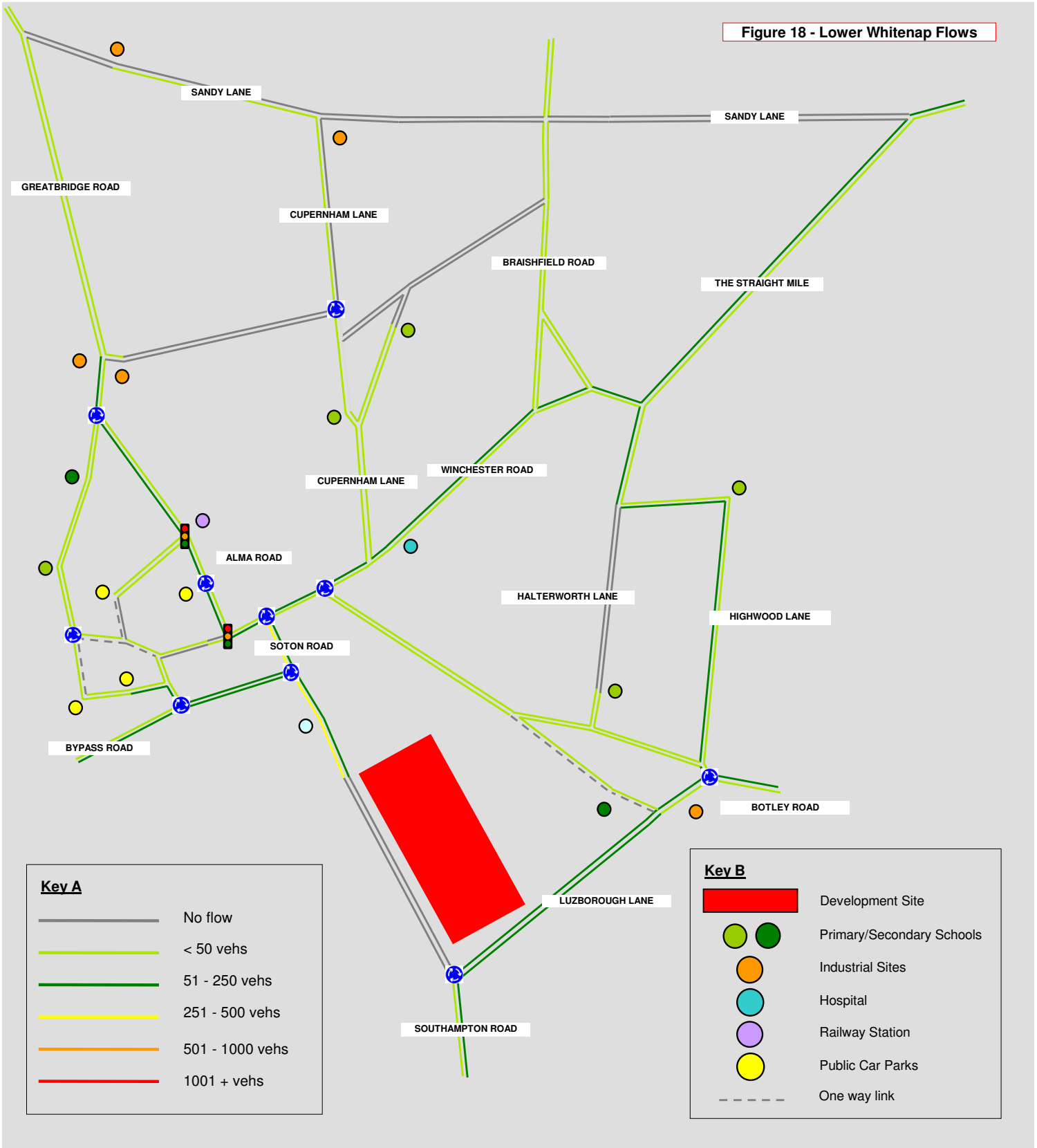


Figure 18 - Lower Whitenap Flows



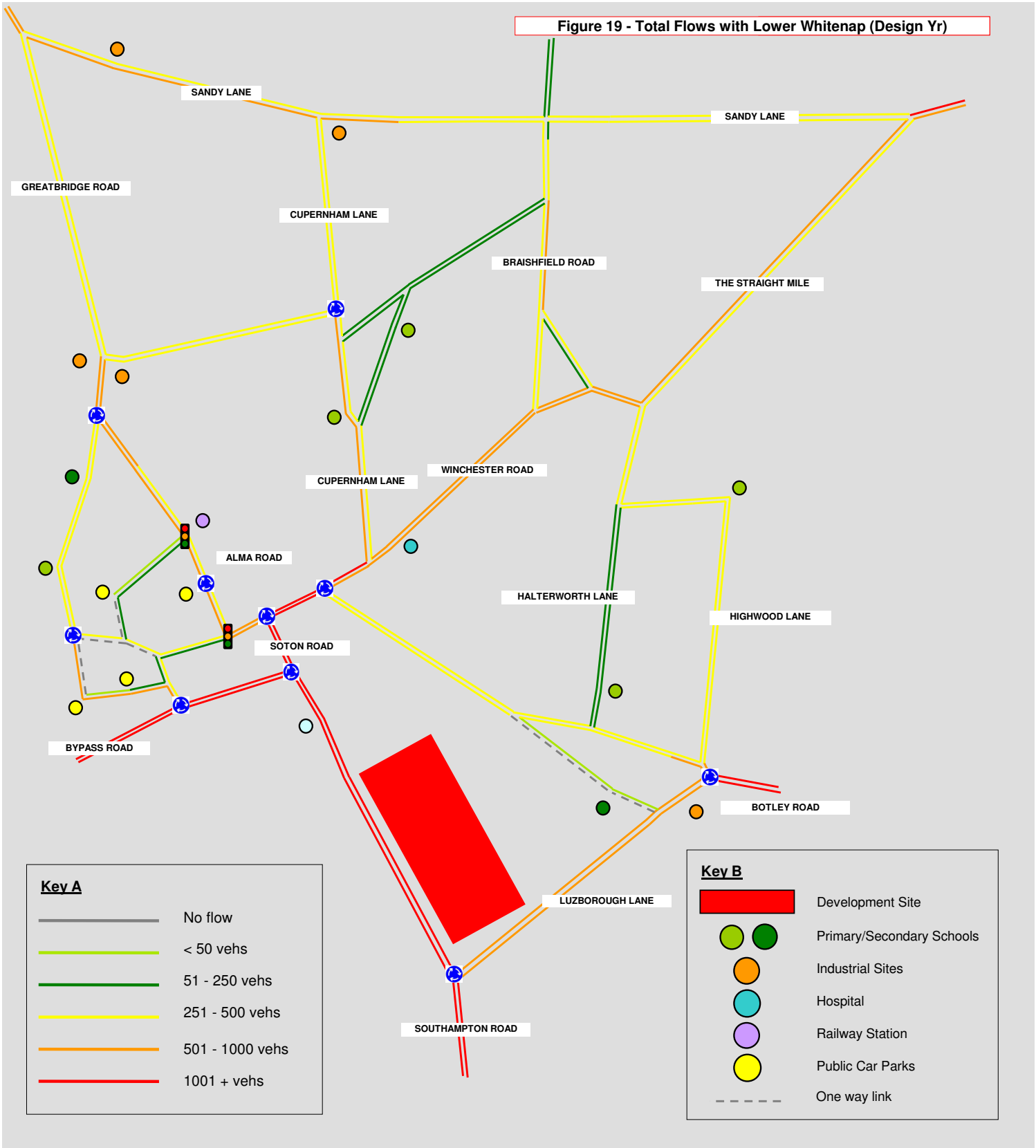
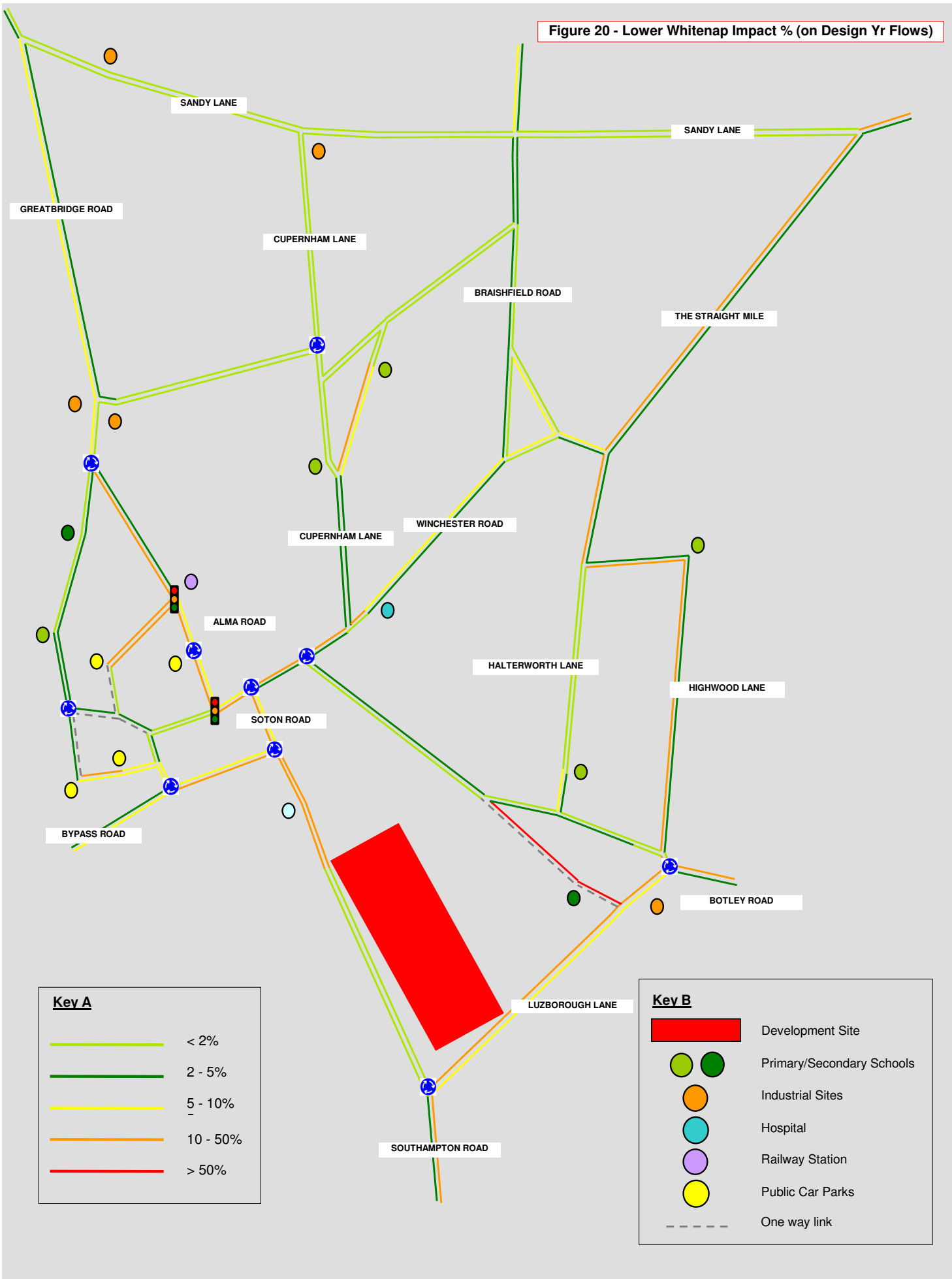


Figure 19 - Total Flows with Lower Whitenap (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Significant Impacts: Lower Whitenap

Road	Direction	Impact %
Winchester Road (between Southampton Rd and Botley Rd)	Eastbound	14
Winchester Road (between Alma Rd and Southampton Rd)	Westbound	20
Winchester Road (between Botley Rd and Cupernham Lane)	Eastbound	11
Alma Road	Northbound	19
Romsey Bypass (between Southampton Rd and Palmerston St)	Westbound	13
Southampton Road (between Romsey Rapids and Bypass Rd)	Northbound	35

Figure 20 - Lower Whitenap Impact % (on Design Yr Flows)



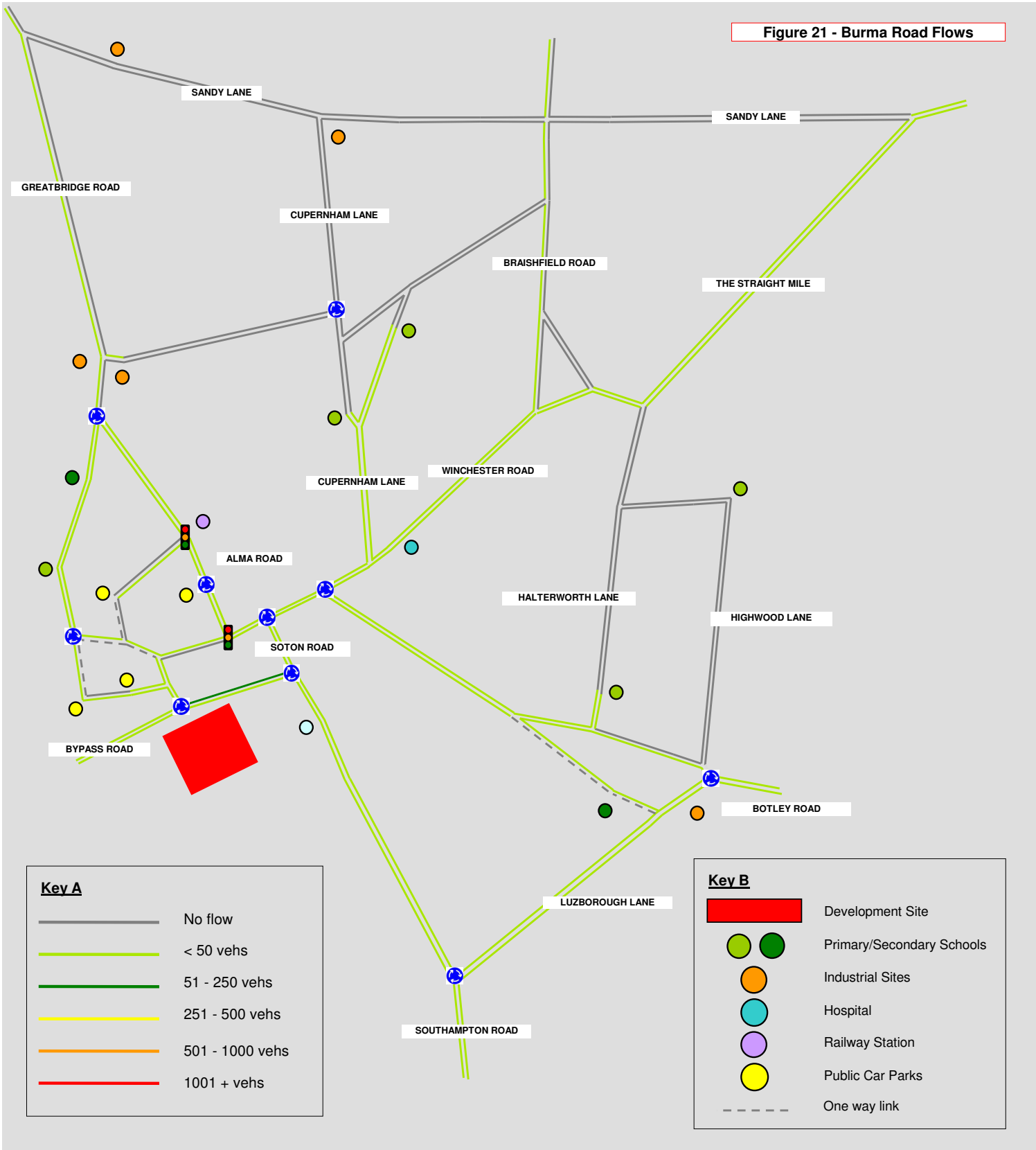


Figure 21 - Burma Road Flows
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

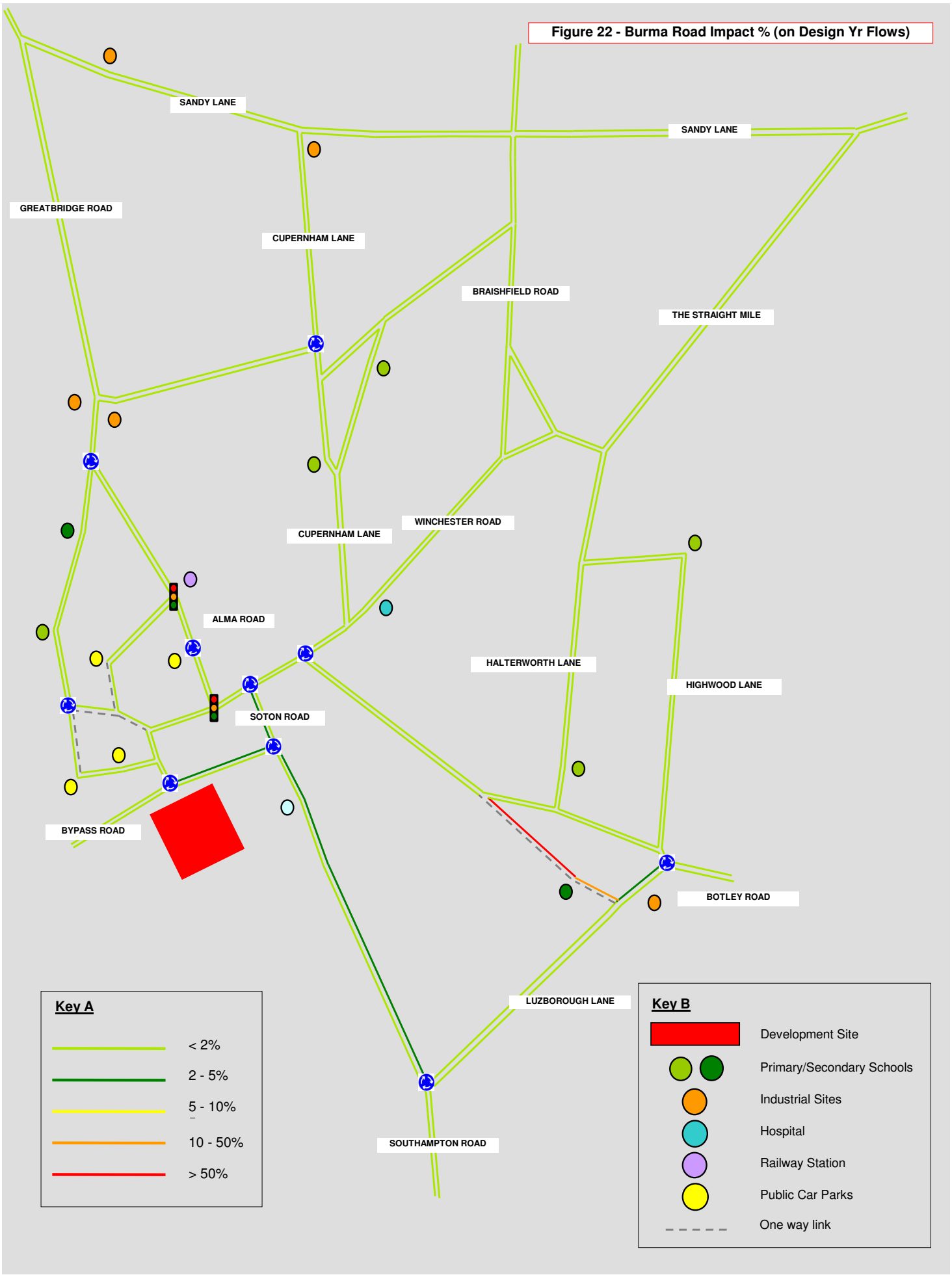


Figure 22 - Burma Road Impact % (on Design Yr Flows)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 2%
2 - 5%
5 - 10%
10 - 50%
> 50%
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

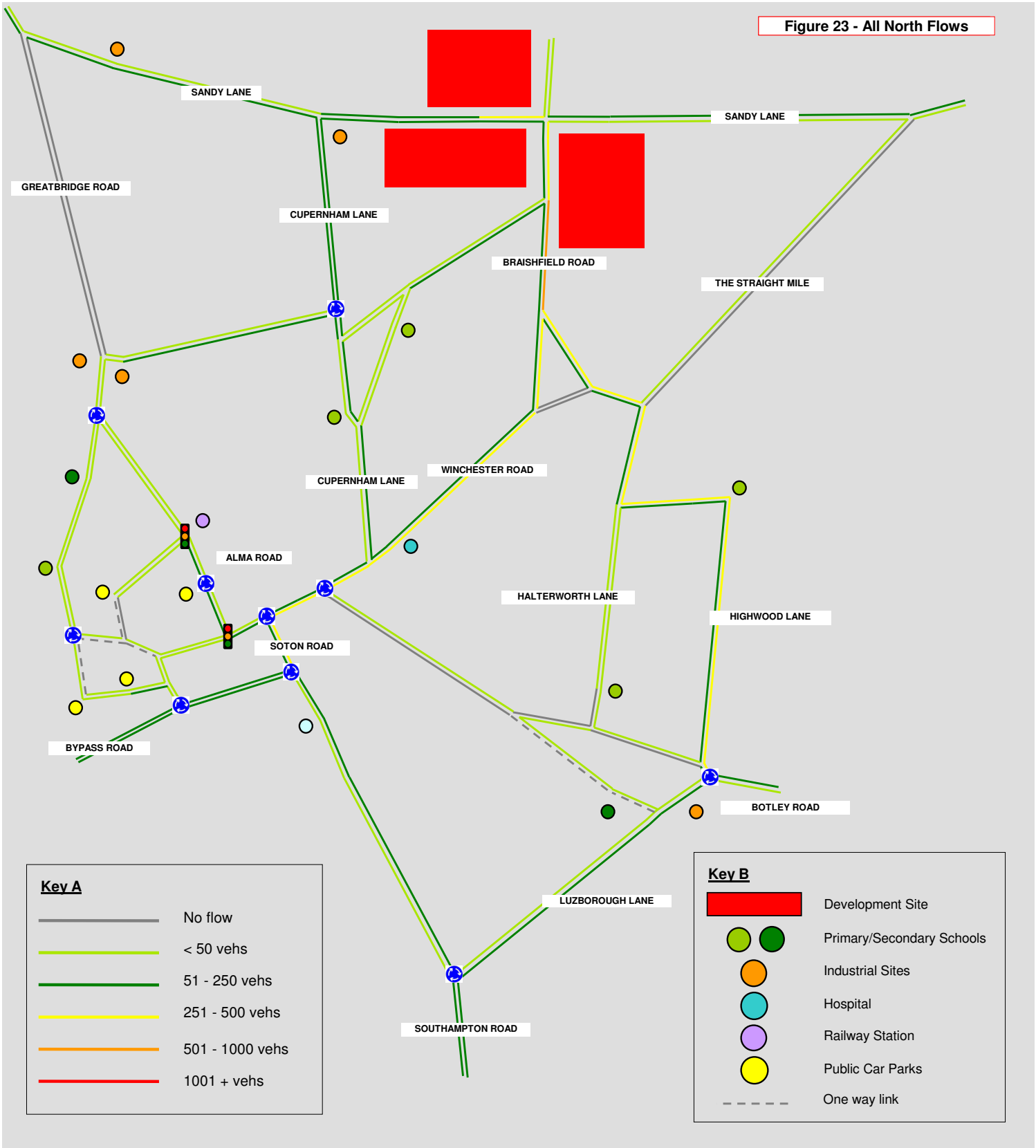


Figure 23 - All North Flows
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

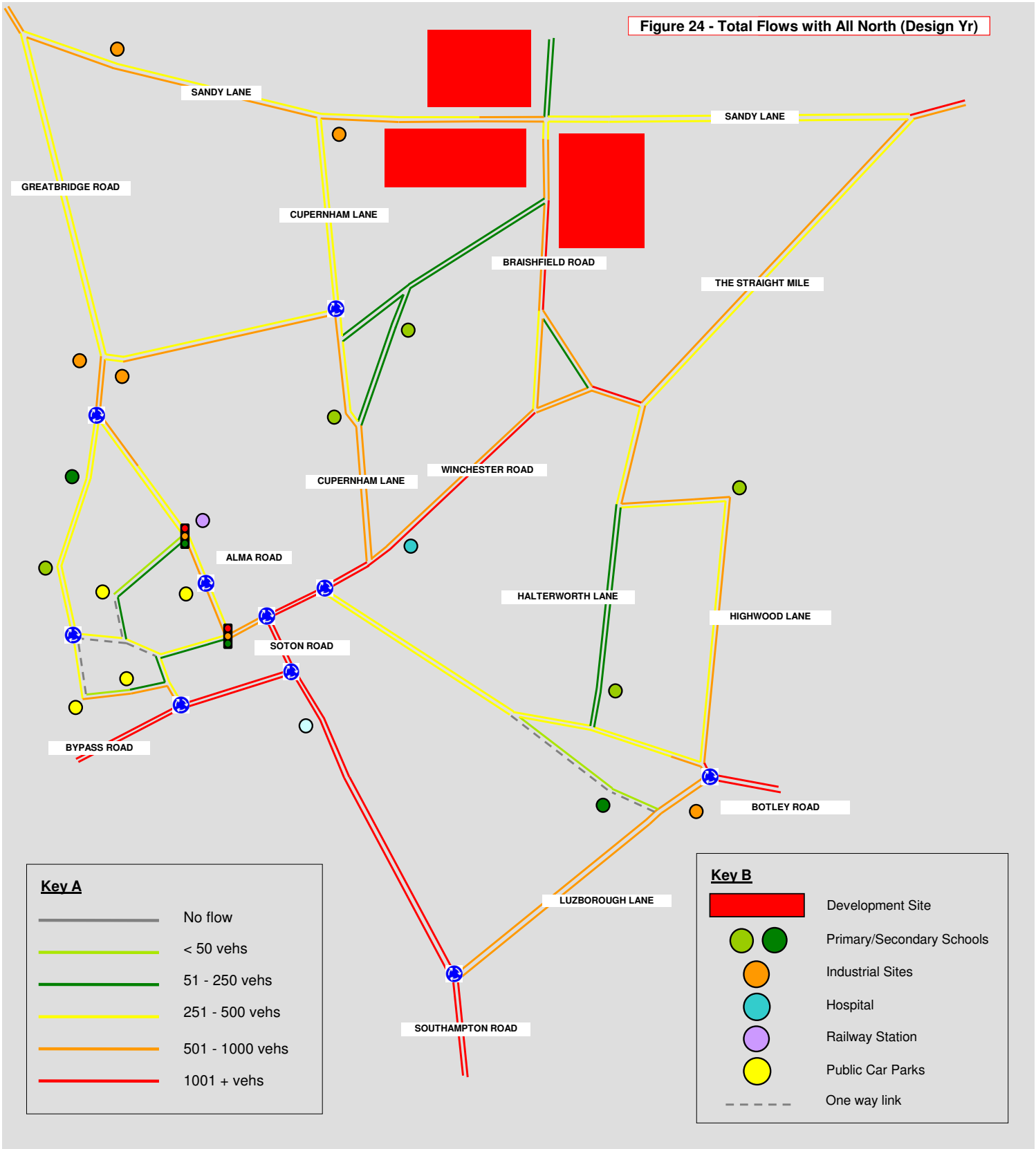


Figure 24 - Total Flows with All North (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

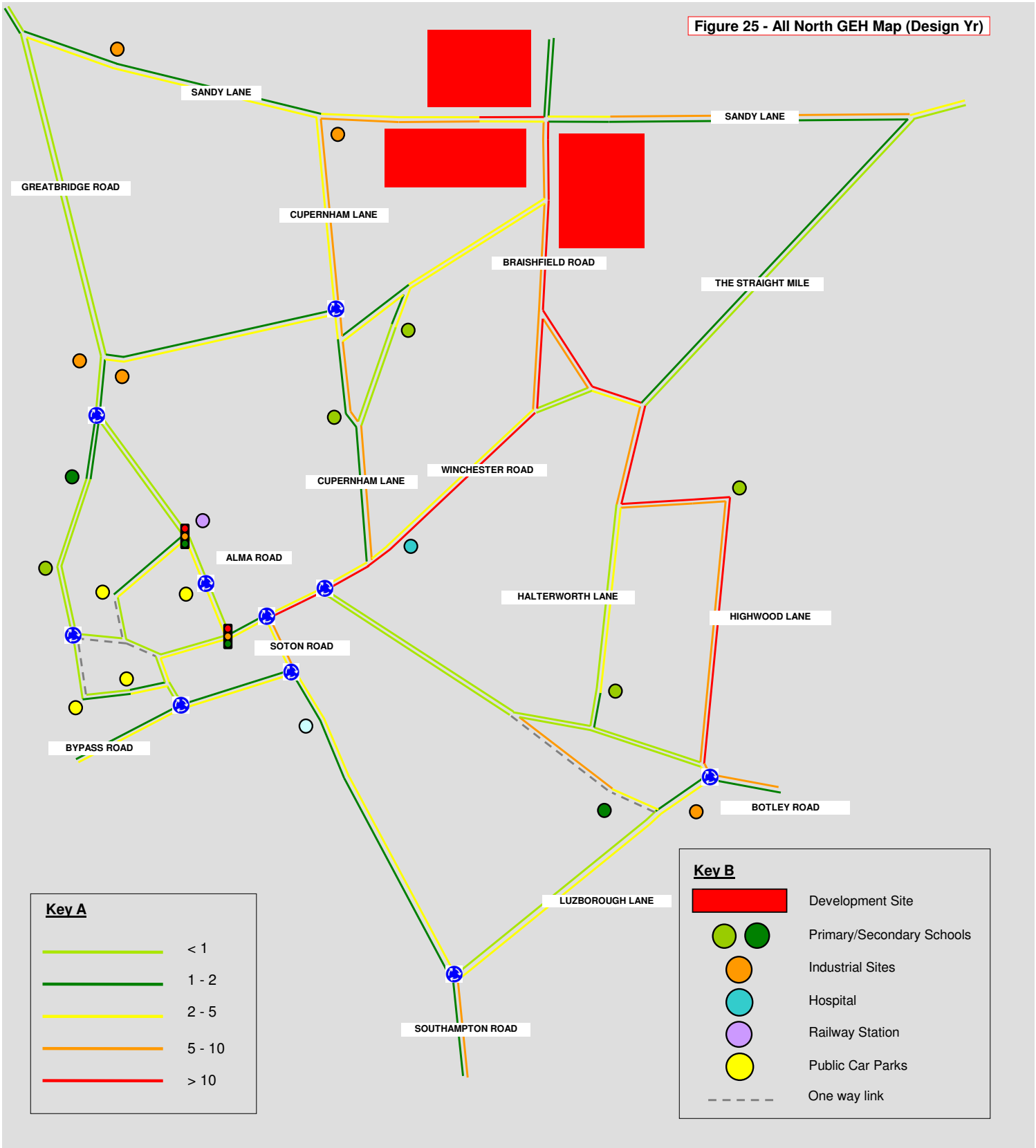


Figure 25 - All North GEH Map (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 1
1 - 2
2 - 5
5 - 10
> 10
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

All North Scenario

Road	Direction	Impact %
Winchester Road (between Southampton Rd and Bridge Rd)	Westbound	27
Winchester Road (between Southampton Rd and Bridge Rd)	Eastbound	10
Winchester Road (between Alma Rd and Southampton Rd)	Westbound	13
Winchester Road (between Bridge Rd and Botley Rd)	Westbound	27
Winchester Road (between Bridge Rd and Botley Rd)	Eastbound	10
Winchester Road (between Botley Rd and Cupernham Lane)	Westbound	33
The Hundred (between Palmerston St and The Harrage)	Westbound	23
The Hundred (between Alma Rd and The Harrage)	Westbound	22
Cupernham Lane (adjacent to Winchester Rd)	Southbound	14
Highwood Lane	Southbound	46
Braishfield Road	Southbound	91

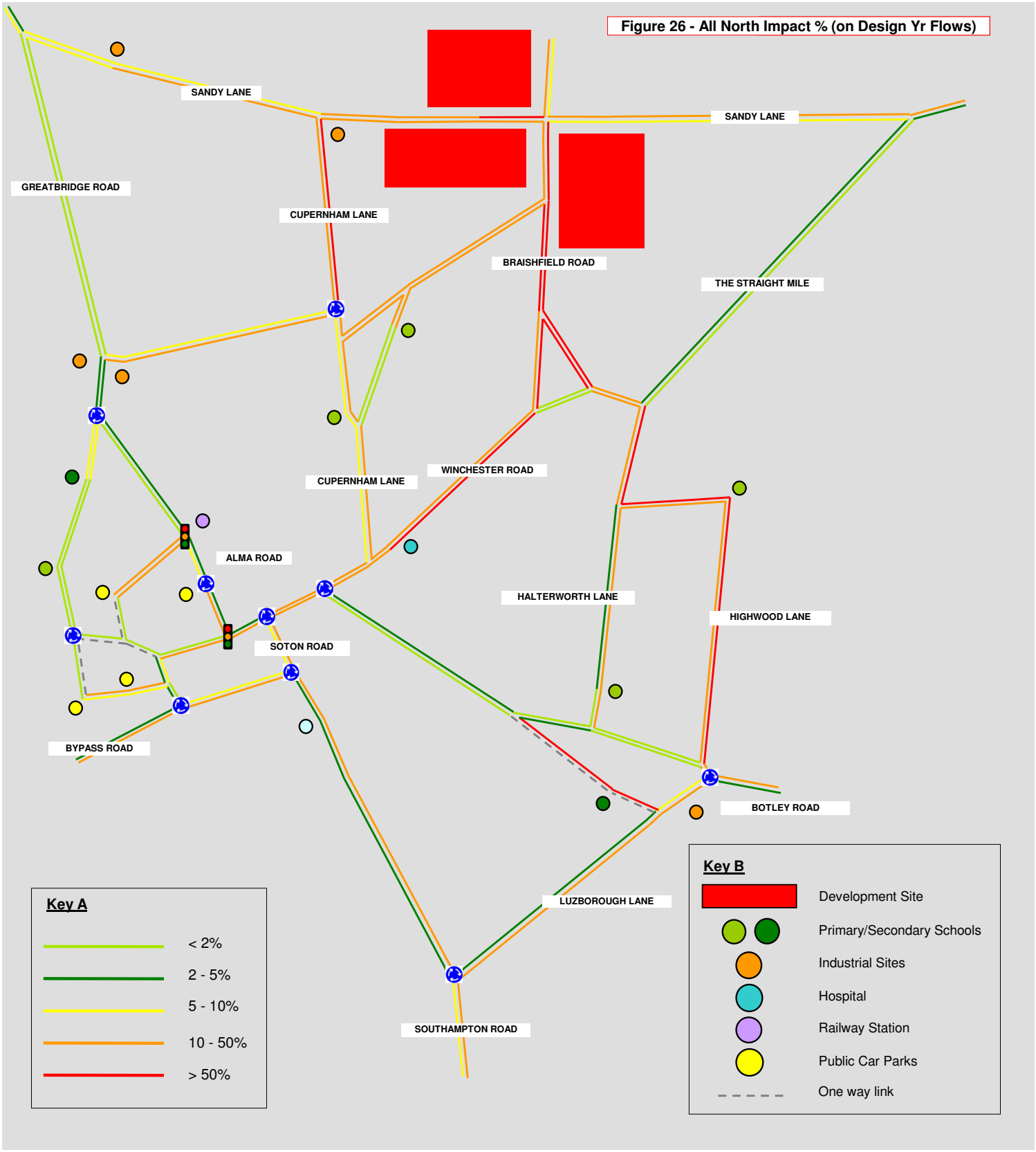


Figure 26 - All North Impact % (on Design Yr Flows)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 2%
2 - 5%
5 - 10%
10 - 50%
> 50%
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

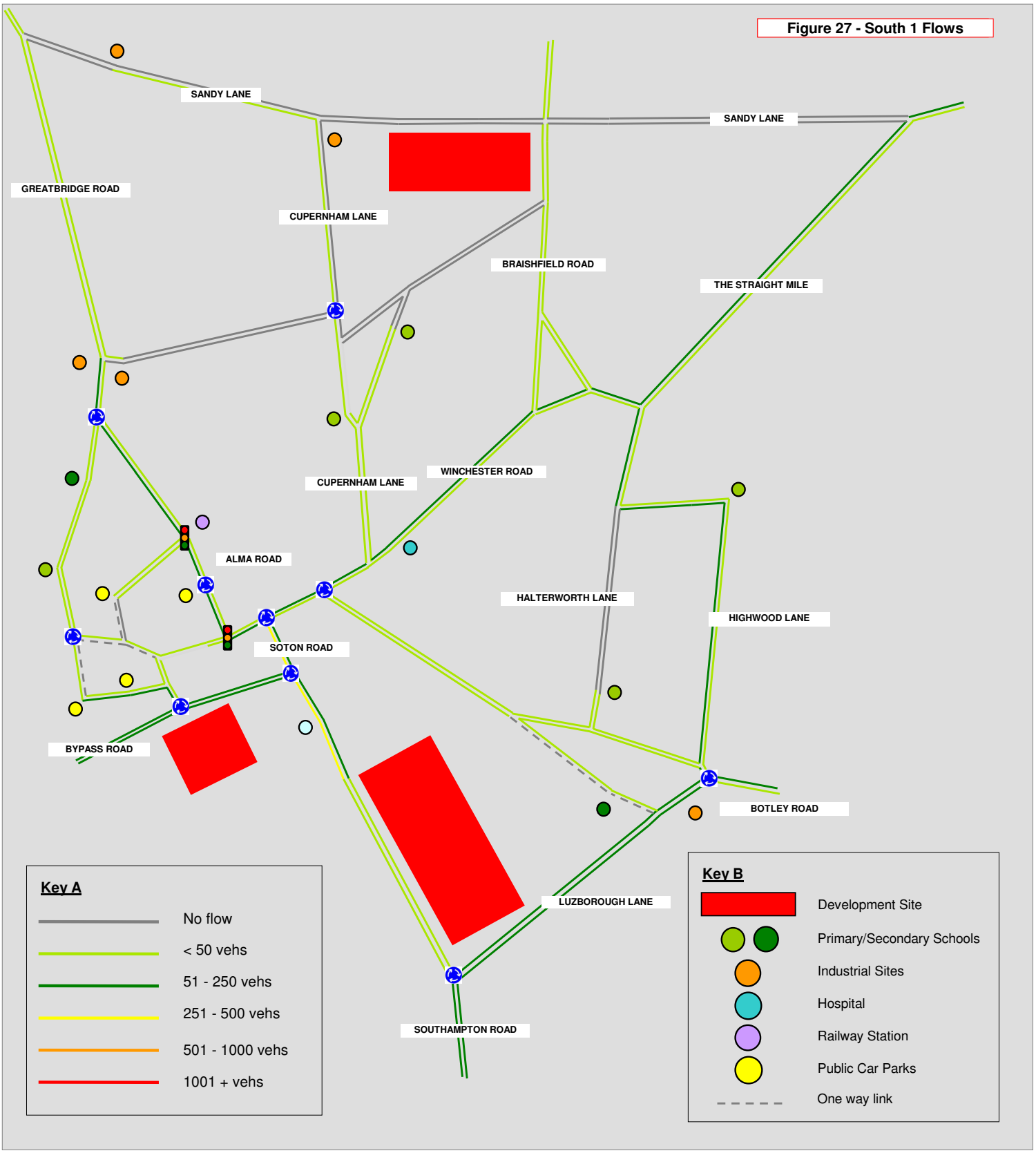


Figure 27 - South 1 Flows
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

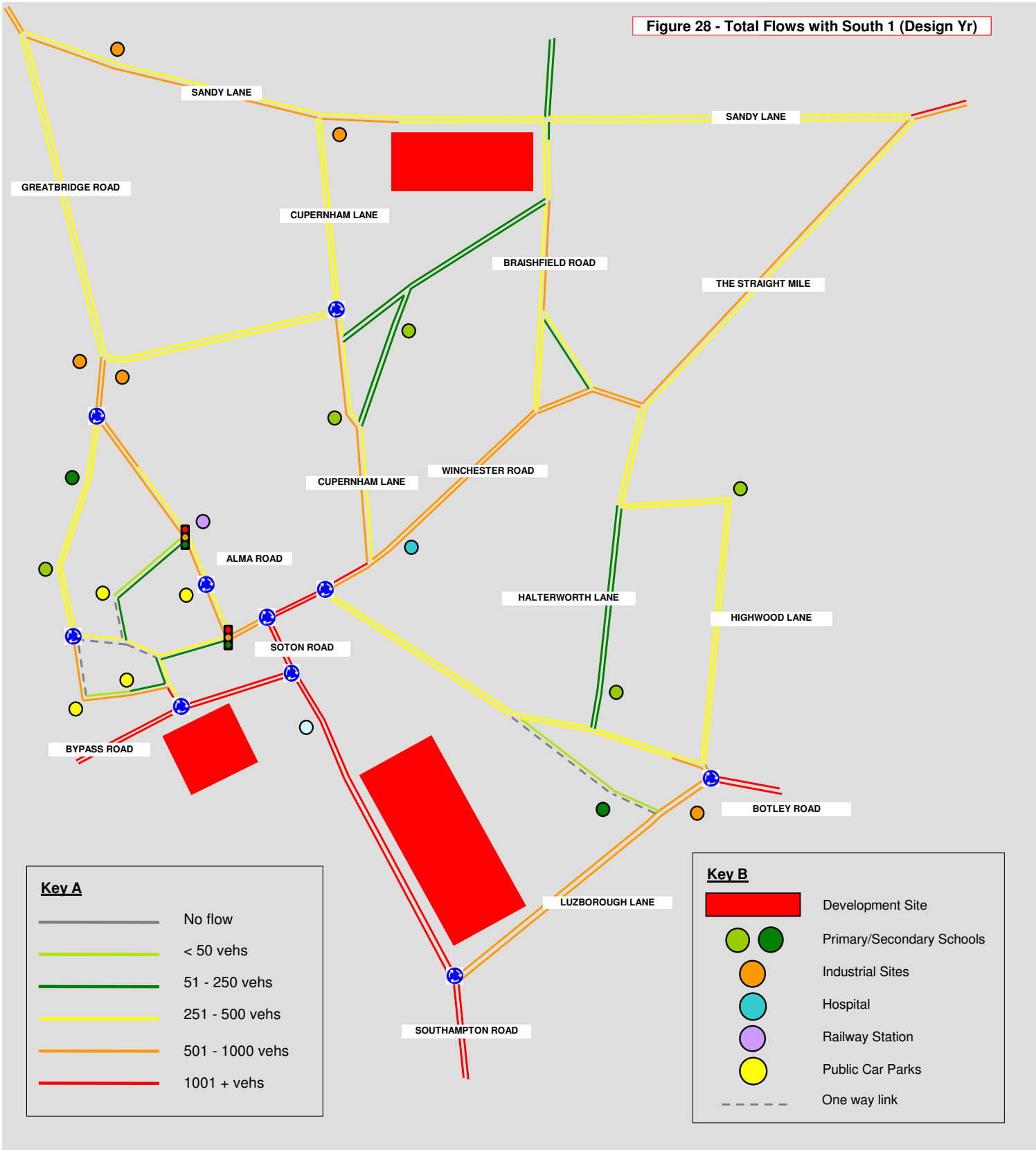


Figure 28 - Total Flows with South 1 (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Significant Impacts: South 1 Scenario

Road	Direction	Impact %
Winchester Road (between Southampton Rd and Botley Rd)	Eastbound	16
Winchester Road (between Alma Rd and Southampton Rd)	Westbound	21
Winchester Road (between Botley Rd and Cupernham Lane)	Eastbound	13
Alma Road	Northbound	21
Alma Road	Southbound	10
Greatbridge Road	Northbound	10
Romsey Bypass (between Palmerston St and Southampton Rd)	Eastbound	11
Romsey Bypass (between Southampton Rd and Palmerston St)	Westbound	14
Southampton Road (between Romsey Rapids and Bypass Rd)	Northbound	36

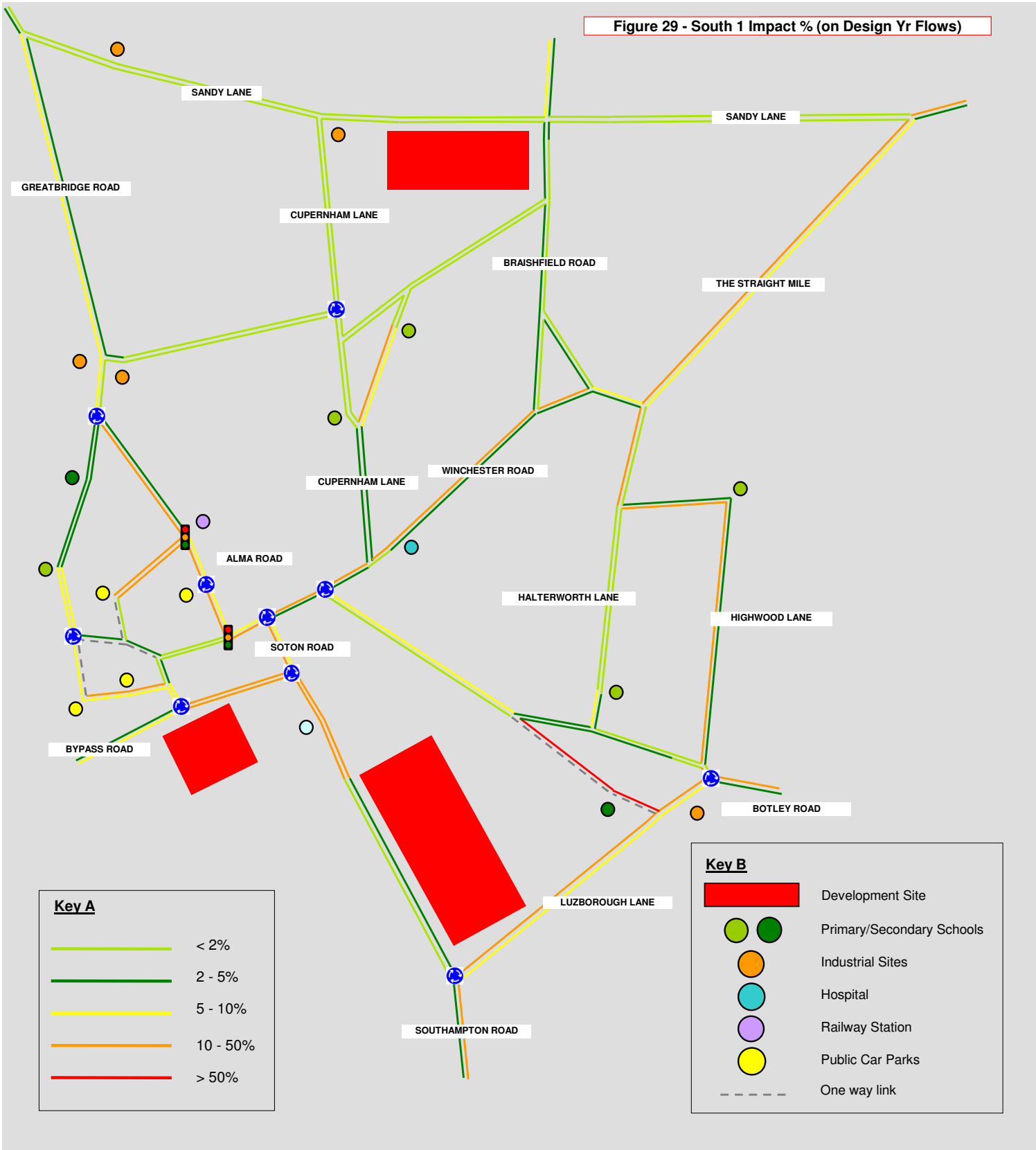


Figure 29 - South 1 Impact % (on Design Yr Flows)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 2%
2 - 5%
5 - 10%
10 - 50%
> 50%
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

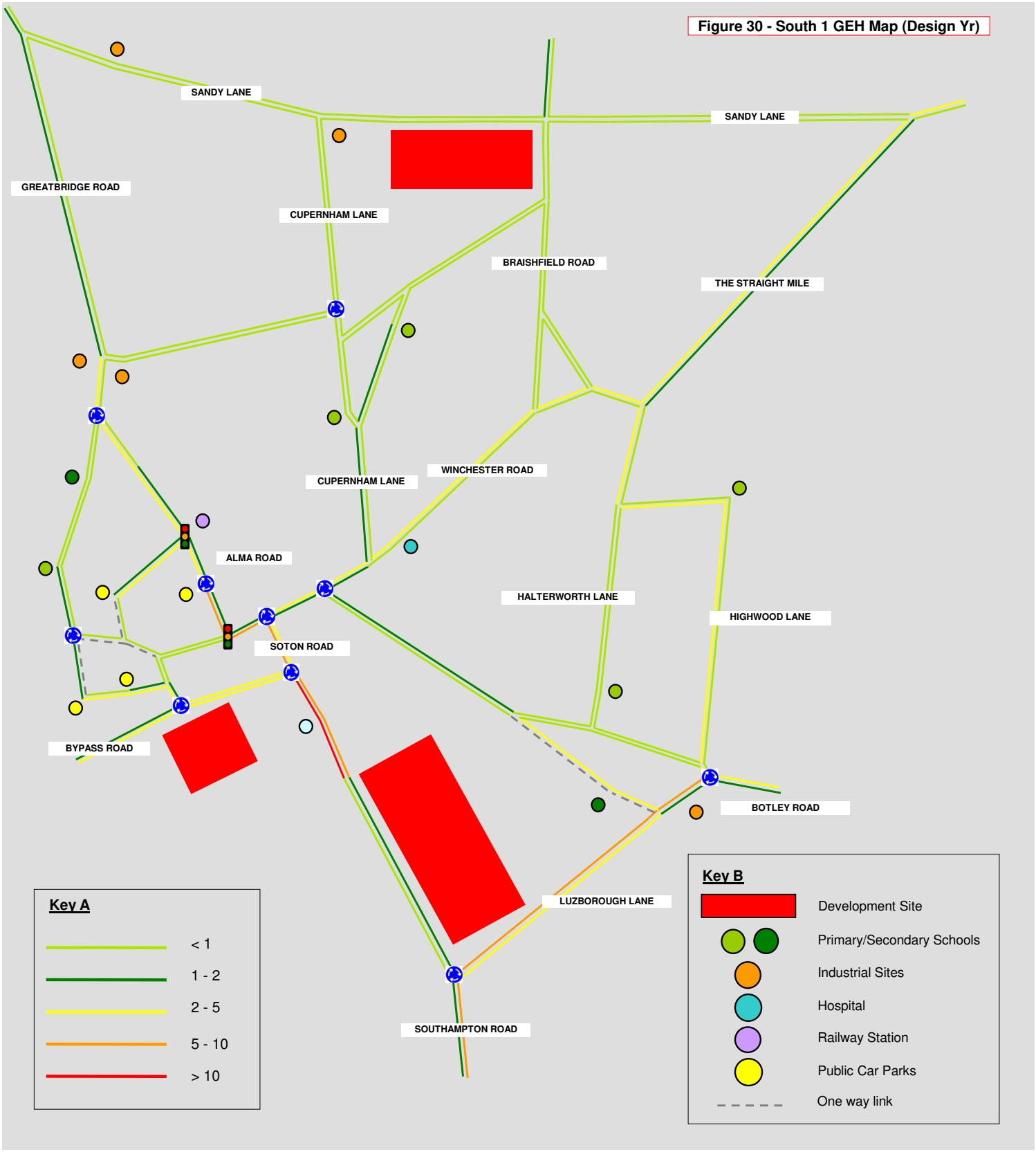


Figure 30 - South 1 GEH Map (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 1
1 - 2
2 - 5
5 - 10
> 10
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

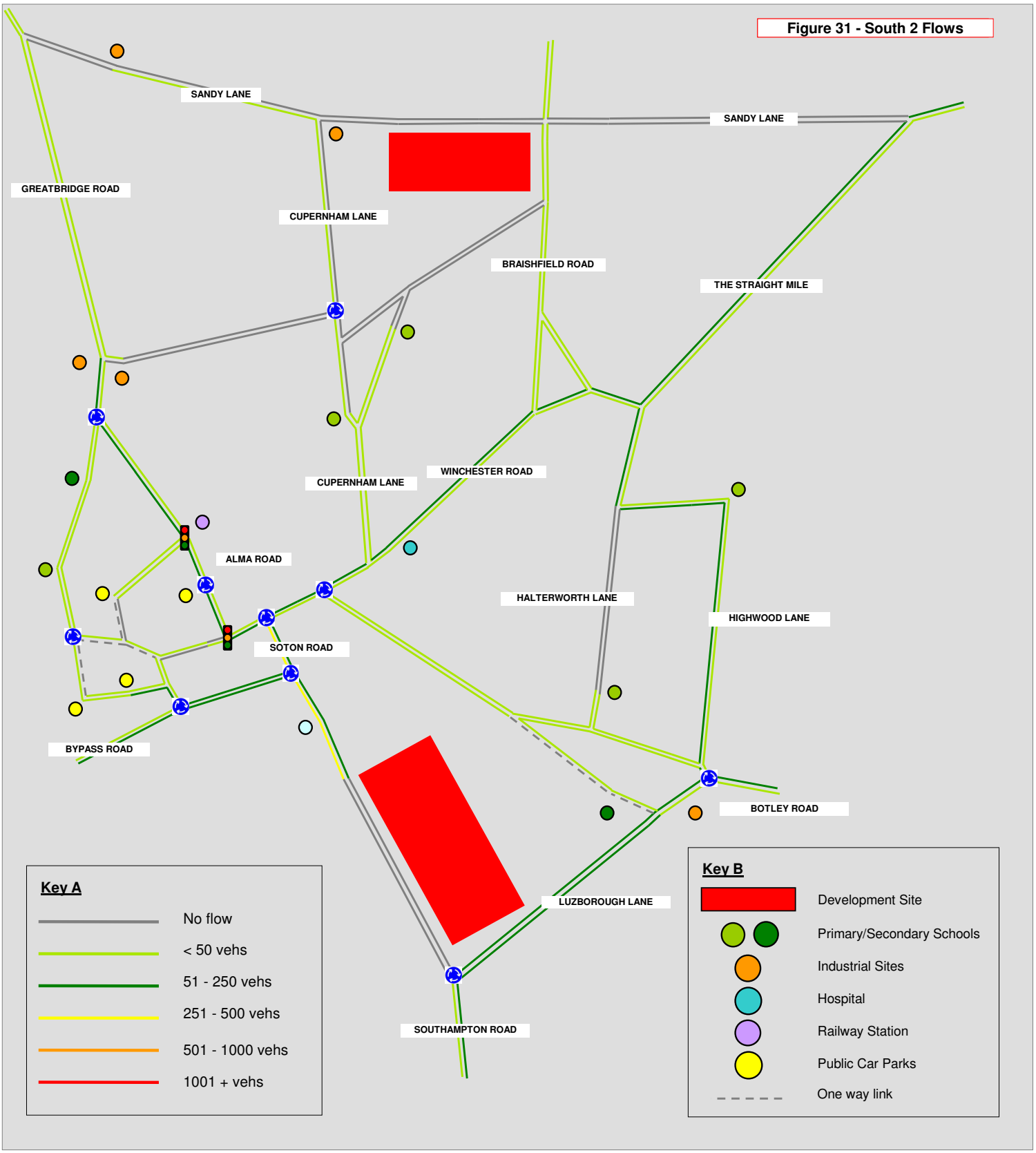
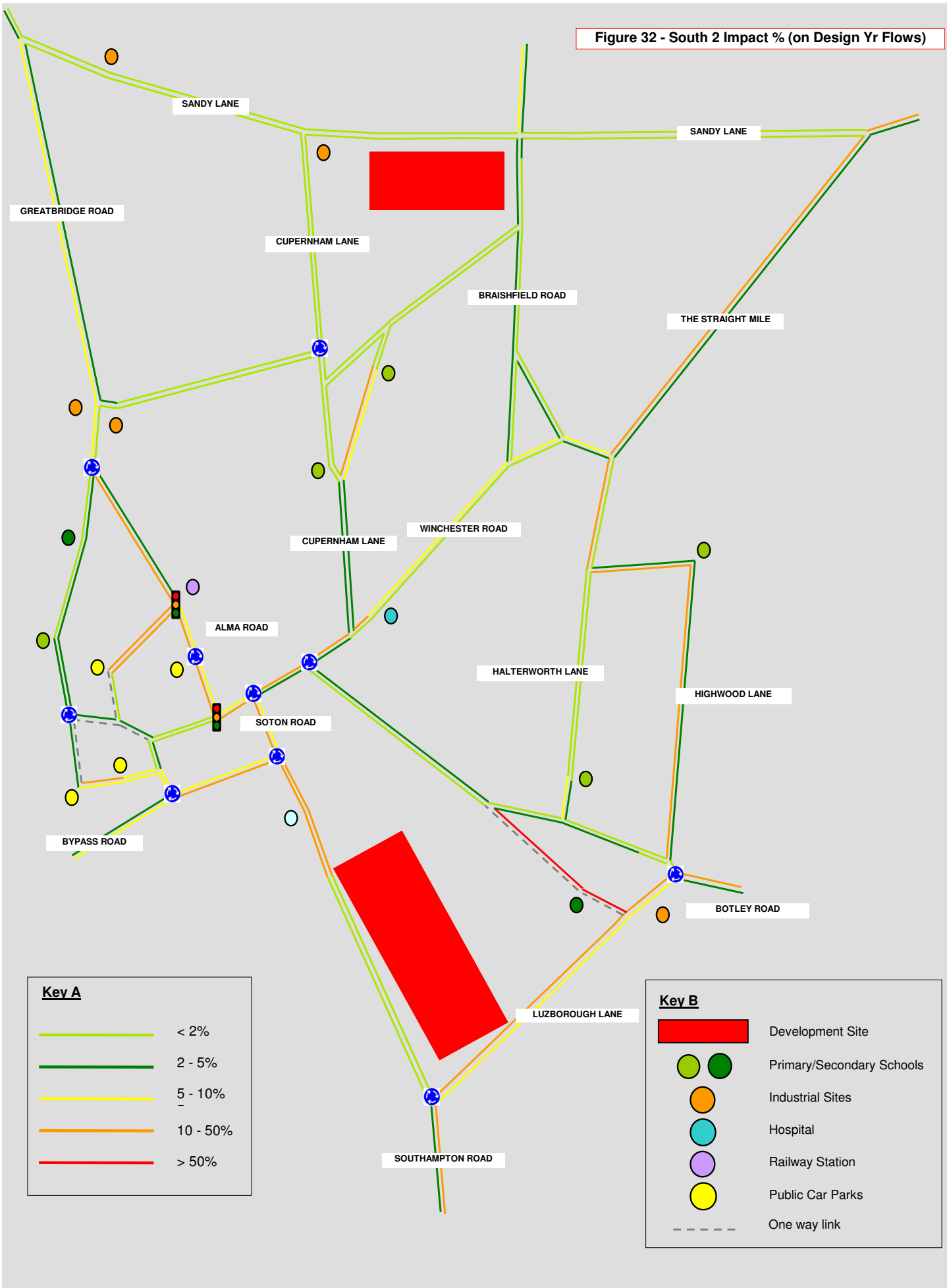


Figure 31 - South 2 Flows
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Significant Impacts: South 2 Scenario

Road	Direction	Impact %
Winchester Road (between Southampton Rd and Botley Rd)	Eastbound	14
Winchester Road (between Alma Rd and Southampton Rd)	Westbound	20
Winchester Road (between Botley Rd and Cupernham Lane)	Eastbound	11
Alma Road	Northbound	19
Romsey Bypass (between Southampton Rd and Palmerston St)	Westbound	13
Southampton Road (between Romsey Rapids and Bypass Rd)	Northbound	35

Figure 32 - South 2 Impact % (on Design Yr Flows)



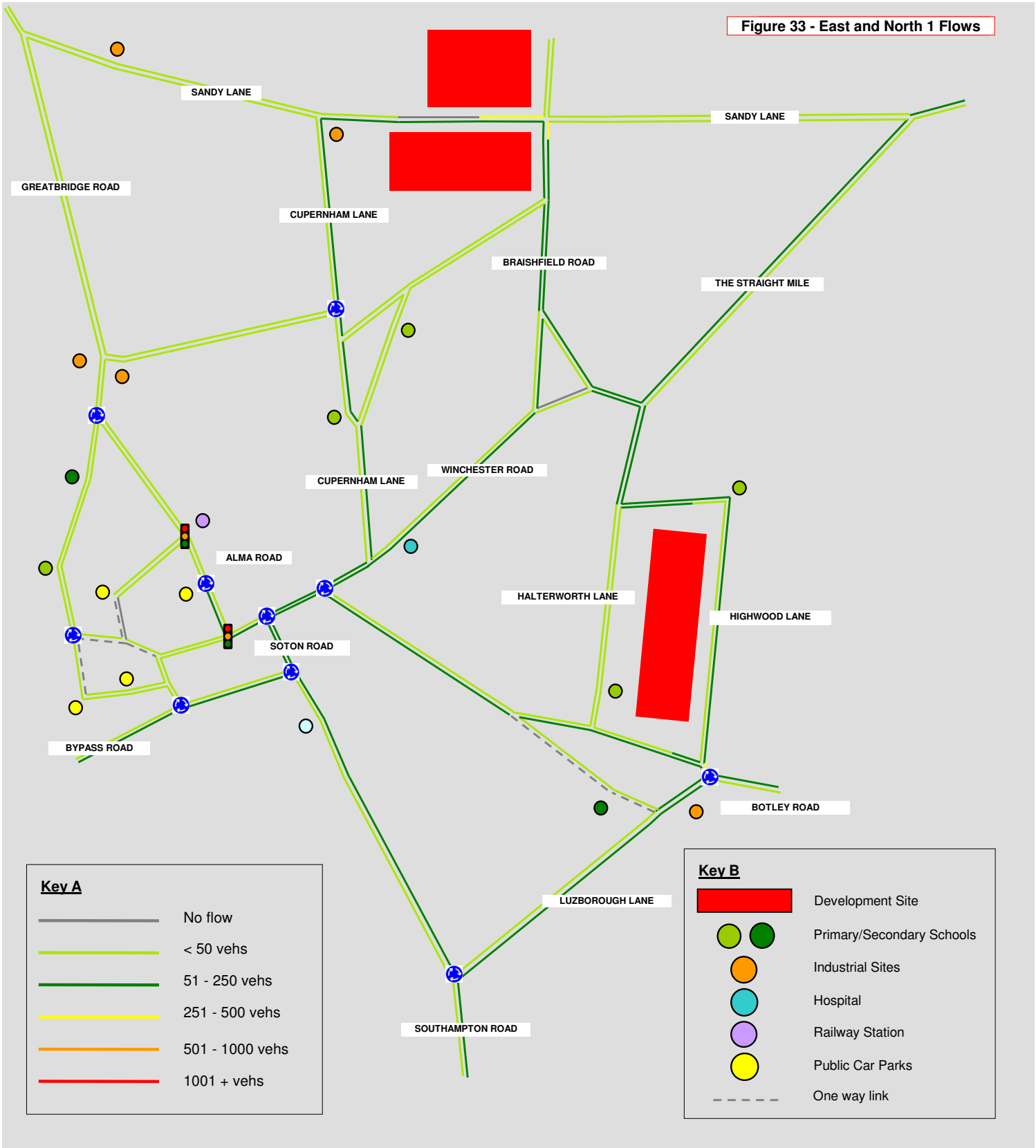


Figure 33 - East and North 1 Flows
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

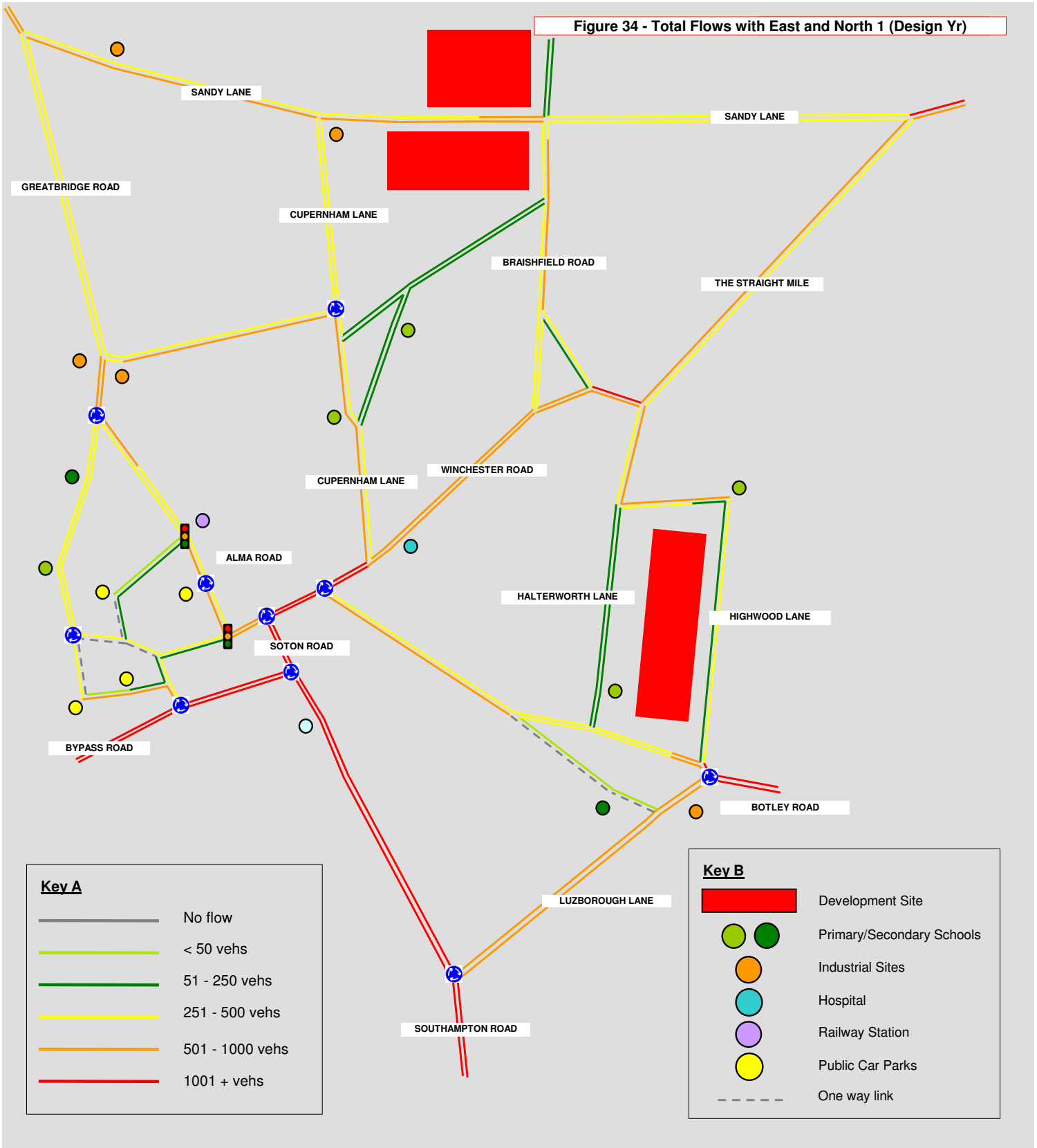


Figure 34 - Total Flows with East and North 1 (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Significant Impacts: East and North 1 Scenario

Road	Direction	Impact %
Winchester Road (between Botley Rd and Southampton Rd)	Westbound	22
Winchester Road (between Alma Rd and Southampton Rd)	Westbound	15
Winchester Road (between Botley Rd and Cupernham Lane)	Westbound	17
The Hundred	Westbound	25
Alma Road	Northbound	10
Cupernham Lane (adjacent to Winchester Rd)	Southbound	14
Highwood Lane	Southbound	22
Braishfield Road	Southbound	42
Botley Road	Westbound	21

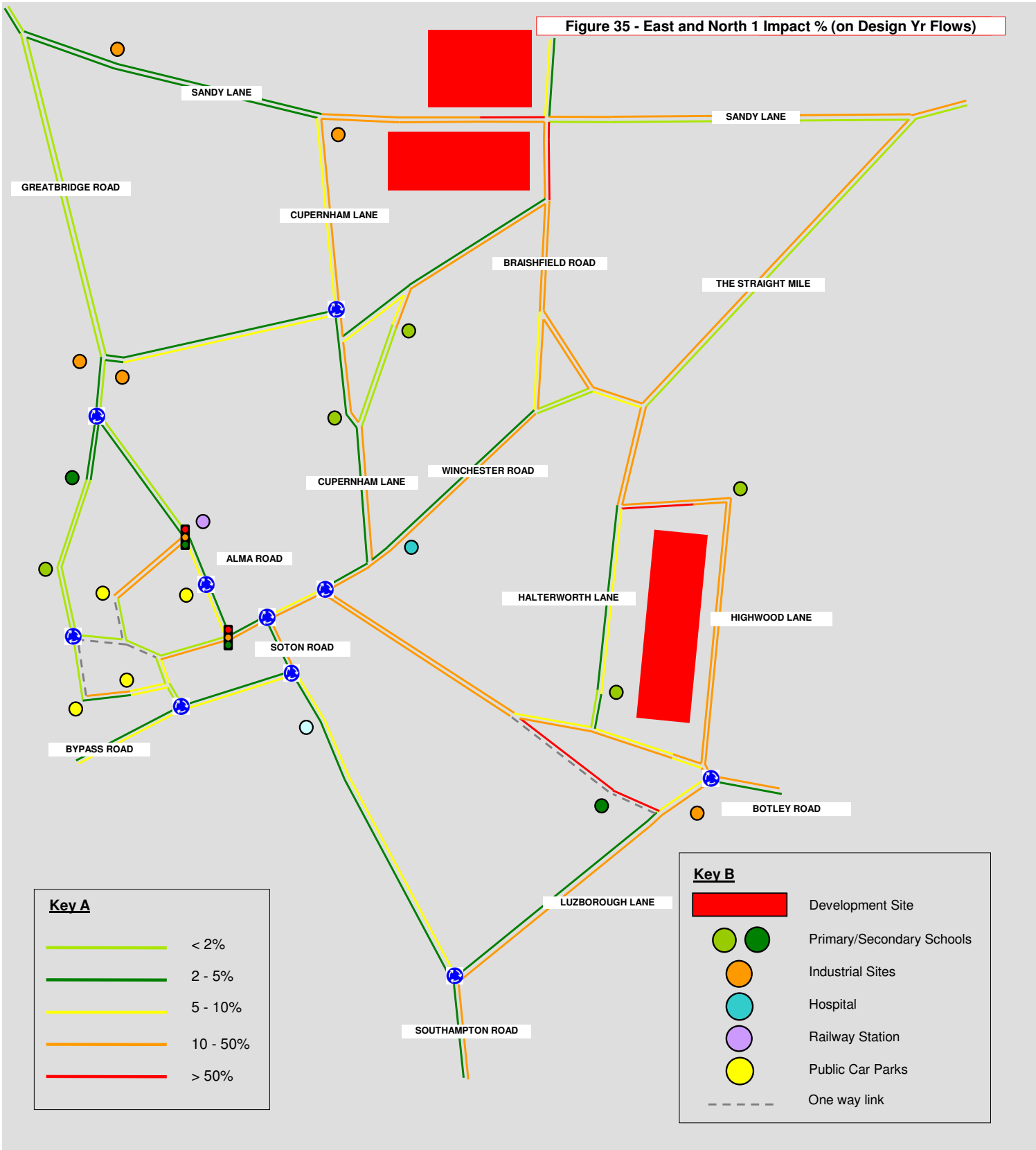


Figure 35 - East and North 1 Impact % (on Design Yr Flows)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 2%
2 - 5%
5 - 10%
10 - 50%
> 50%
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

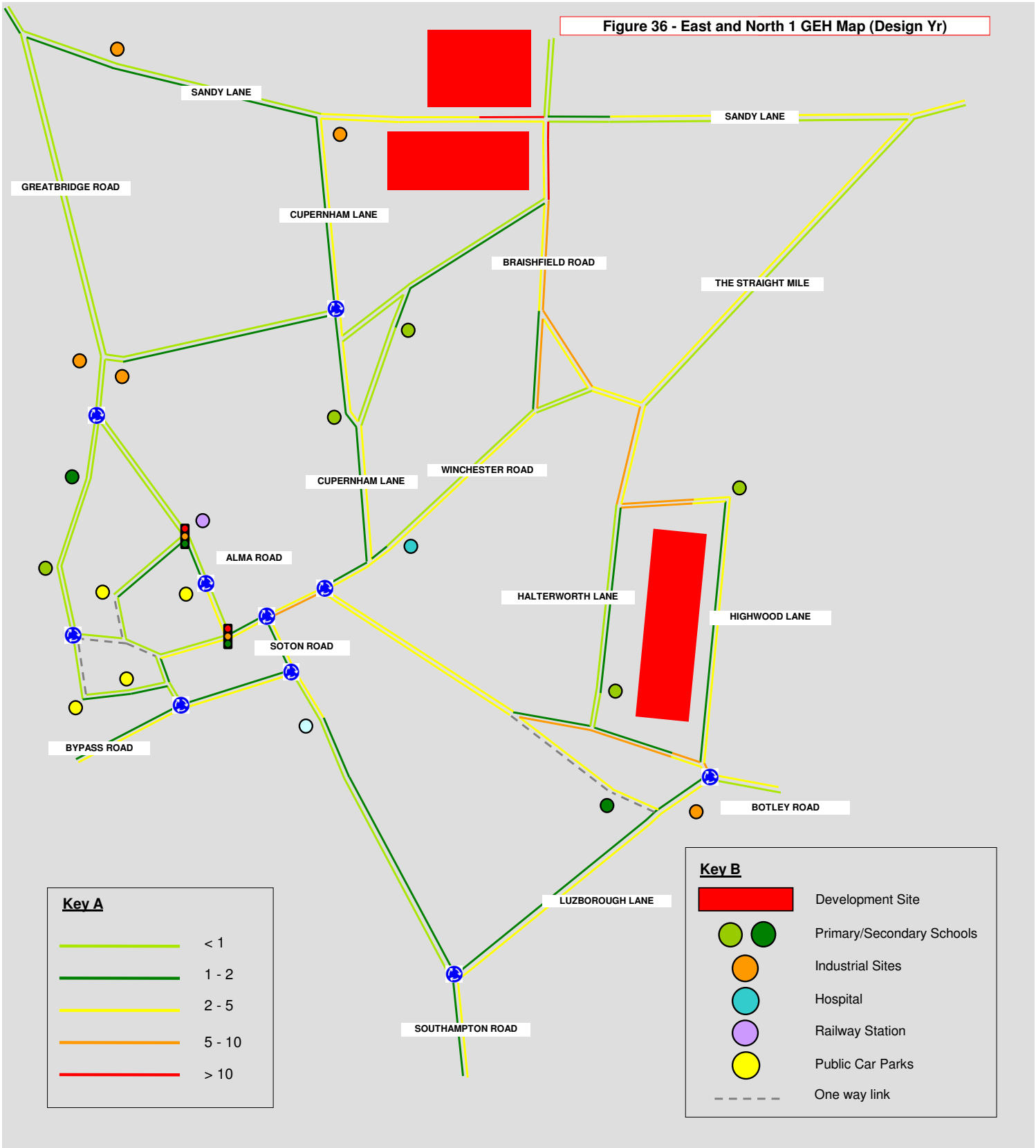
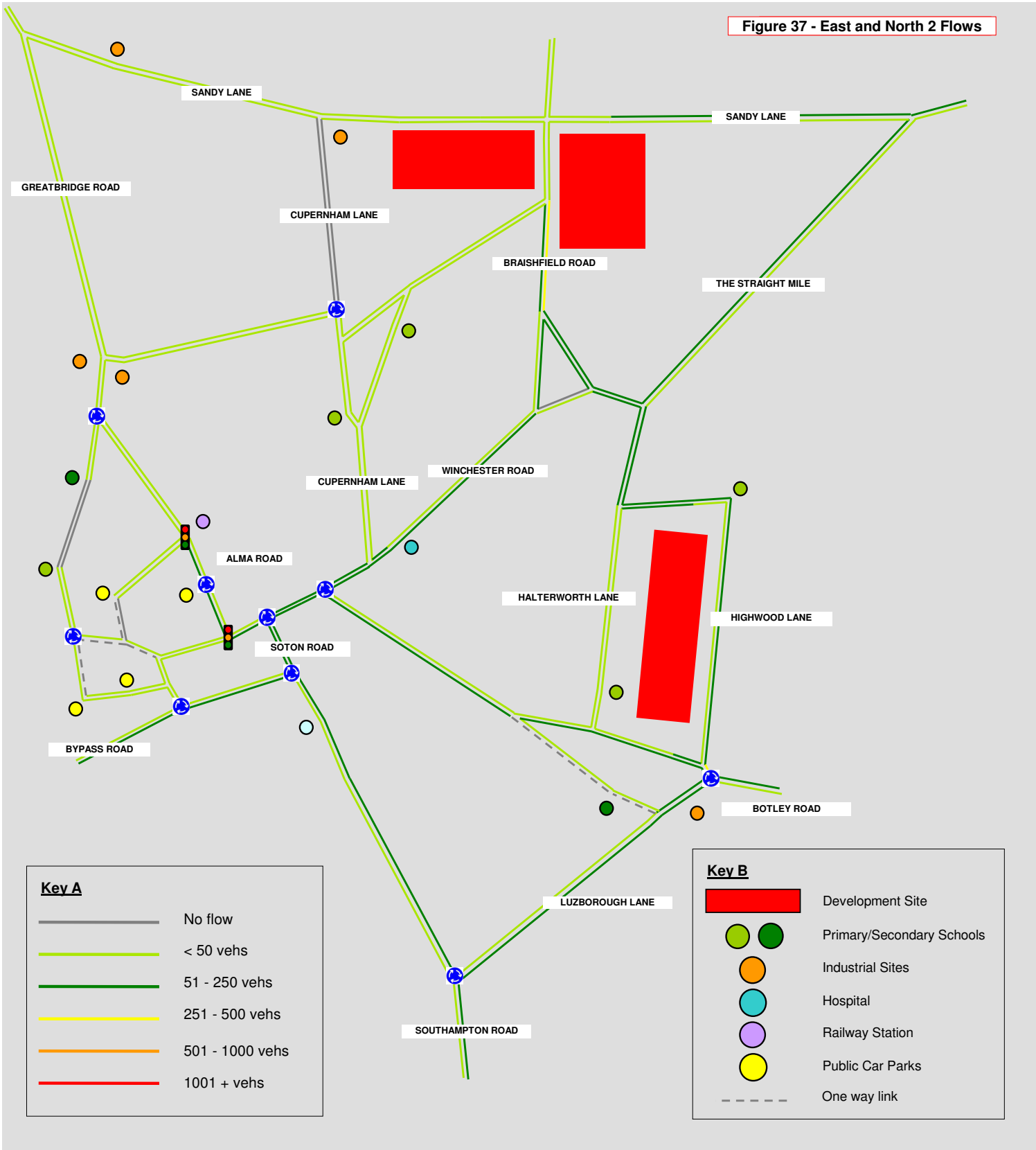


Figure 36 - East and North 1 GEH Map (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 1
1 - 2
2 - 5
5 - 10
> 10
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Figure 37 - East and North 2 Flows



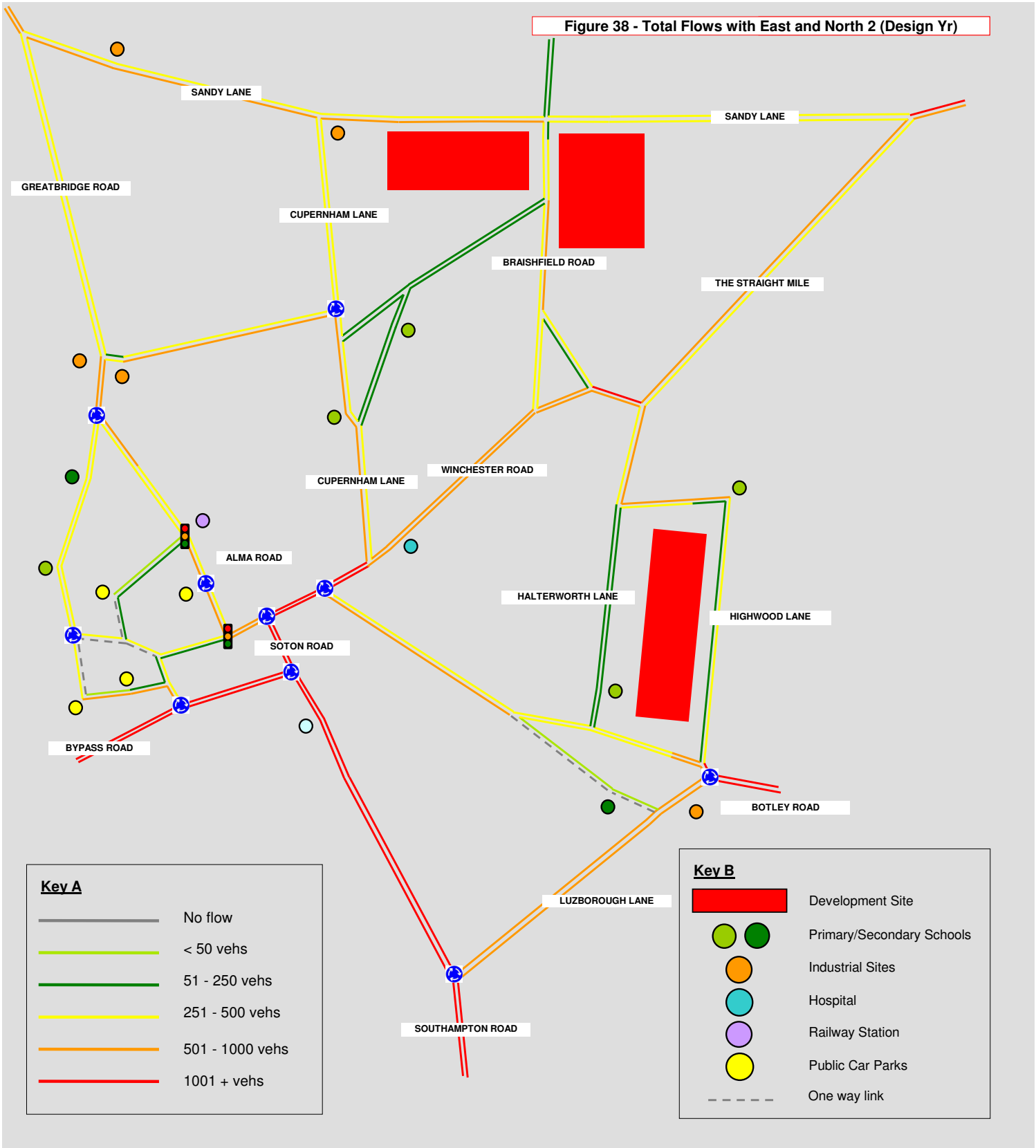


Figure 38 - Total Flows with East and North 2 (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Significant Impacts: East and North 2 Scenario

Road	Direction	Impact %
Winchester Road (between Botley Rd and Southampton Rd)	Westbound	22
Winchester Road (between Alma Rd and Southampton Rd)	Westbound	16
Winchester Road (between Botley Rd and Cupernham Lane)	Westbound	17
The Hundred	Westbound	25
Alma Road	Northbound	11
Highwood Lane	Southbound	25
Braishfield Road	Southbound	52
Botley Road	Westbound	21

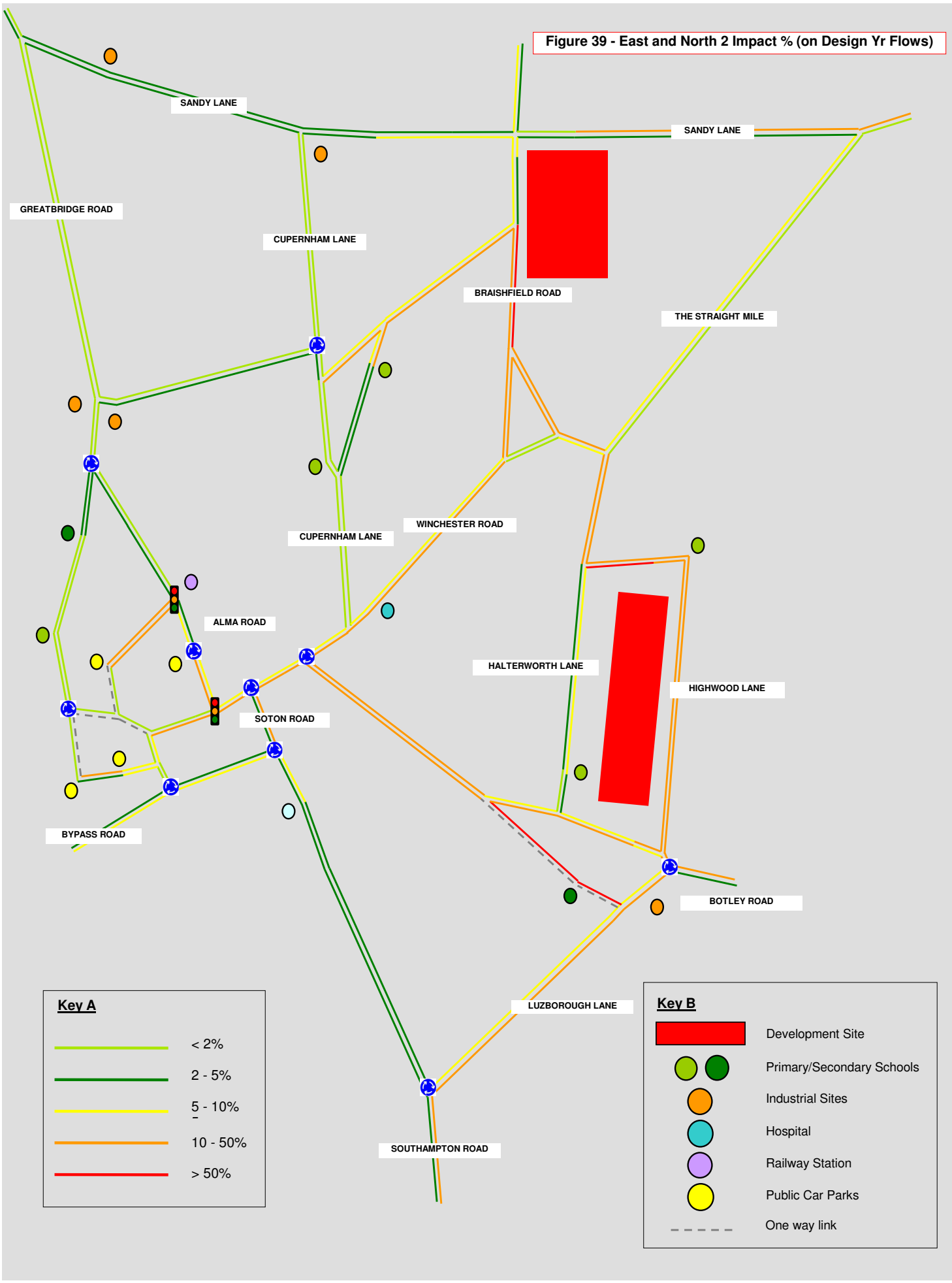


Figure 39 - East and North 2 Impact % (on Design Yr Flows)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 2%
2 - 5%
5 - 10%
10 - 50%
> 50%
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

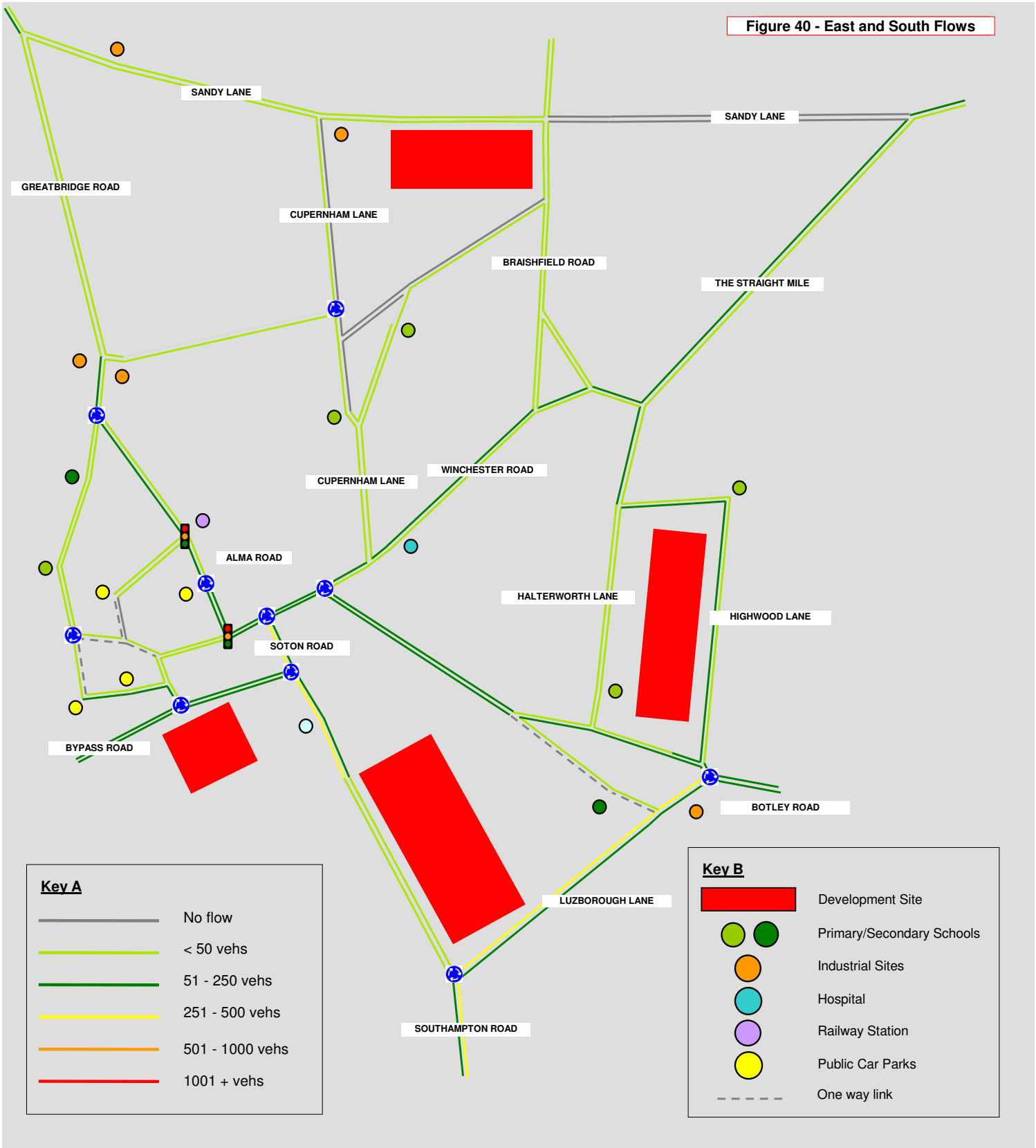


Figure 40 - East and South Flows
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

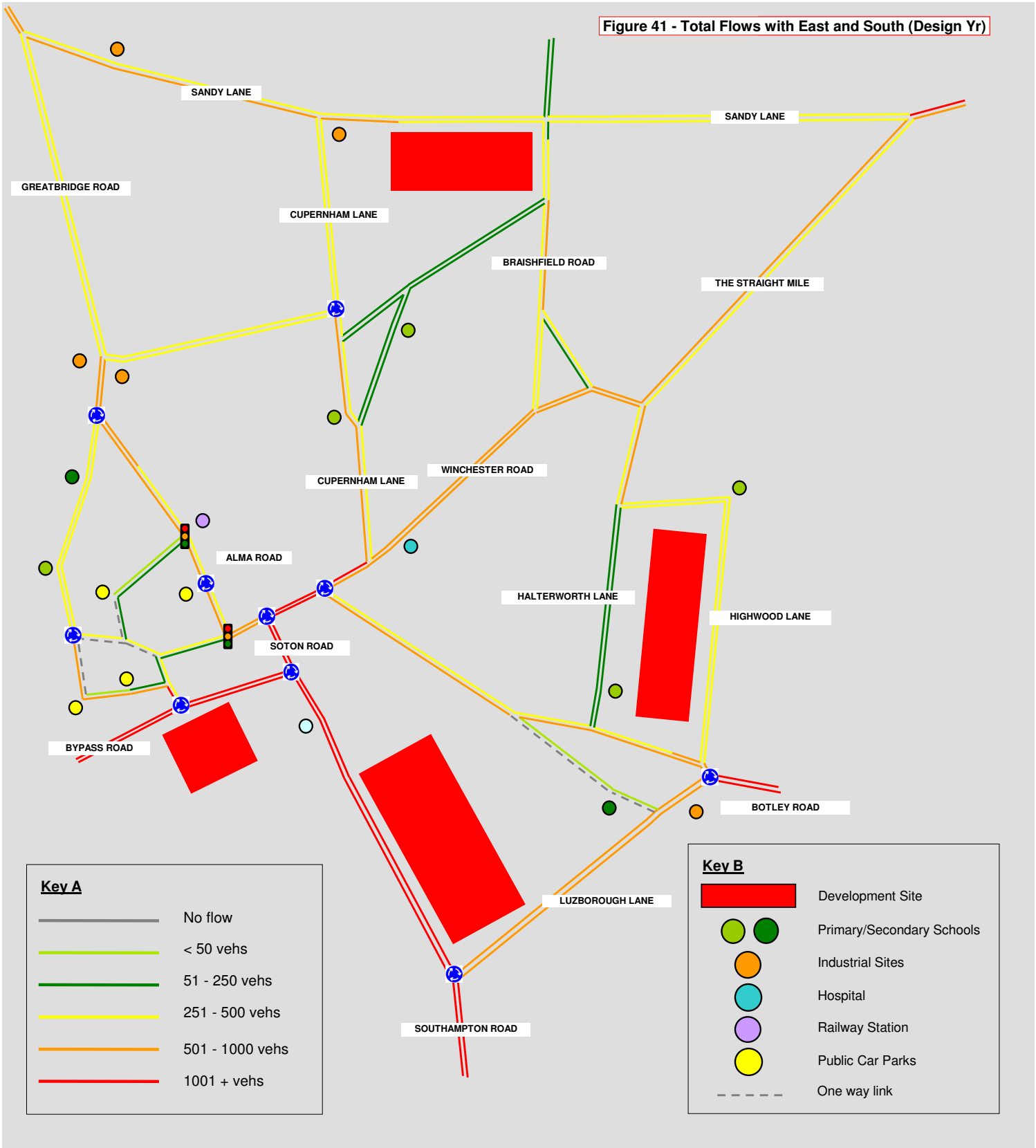


Figure 41 - Total Flows with East and South (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

Significant Impacts: East and South Scenario

Road	Direction	Impact %
Winchester Road (between Botley Rd and Southampton Rd)	Westbound	13
Winchester Road (between Southampton Rd and Botley Rd)	Eastbound	19
Winchester Road (between Alma Rd and Southampton Rd)	Eastbound	11
Winchester Road (between Southampton Rd and Alma Rd)	Westbound	30
Winchester Road (between Botley Rd and Cupernham Lane)	Eastbound	13
The Hundred	Westbound	14
Palmerston Street	Northbound	10
Alma Road	Northbound	27
Alma Road	Southbound	13
Greatbridge Road	Northbound	12
Romsey Bypass (between Palmerston St and Southampton Rd)	Eastbound	13
Romsey Bypass (between Southampton Rd and Palmerston St)	Westbound	18
Southampton Road (between Romsey Rapids and Bypass Rd)	Northbound	37
Botley Road	Westbound	23

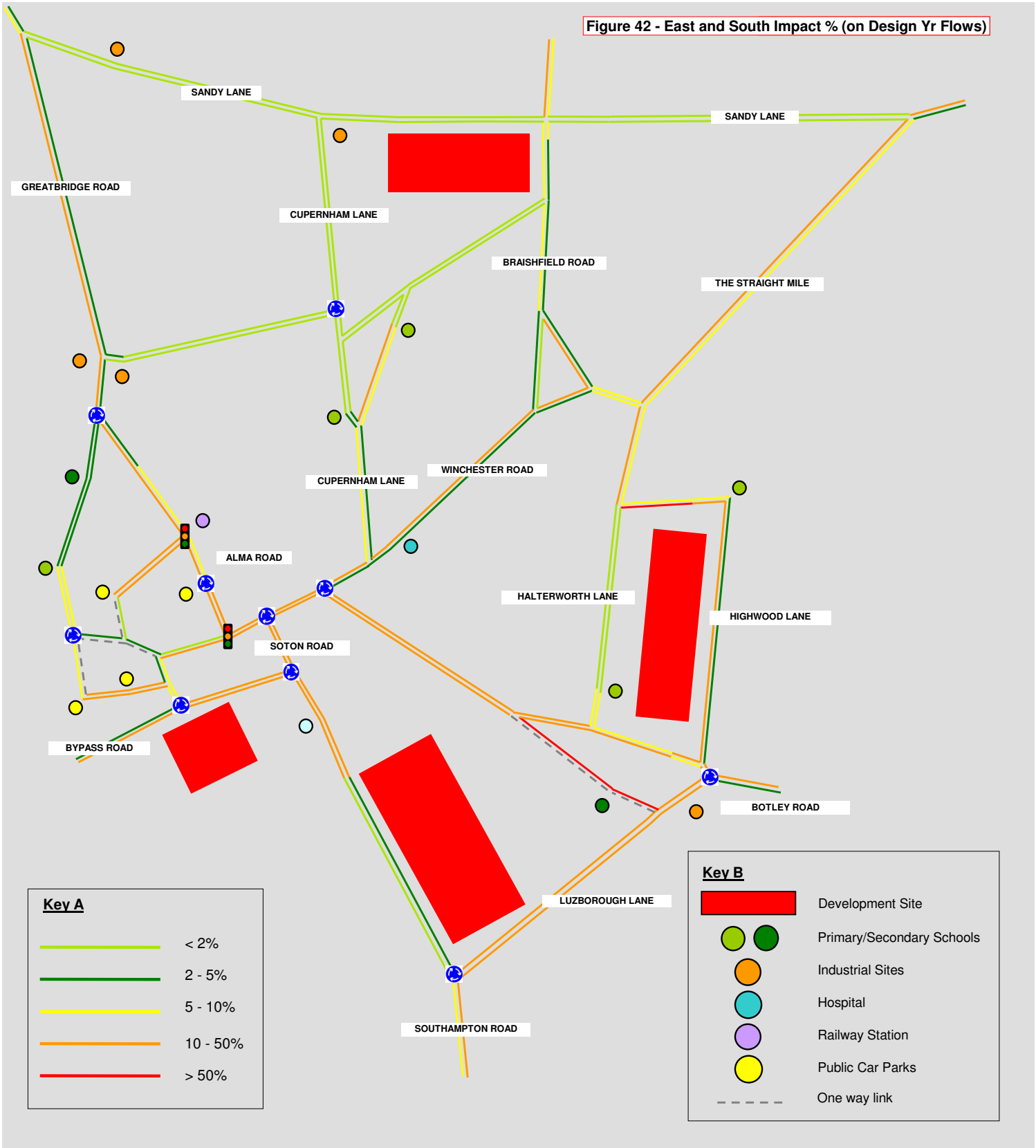


Figure 42 - East and South Impact % (on Design Yr Flows)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 2%
2 - 5%
5 - 10%
10 - 50%
> 50%
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

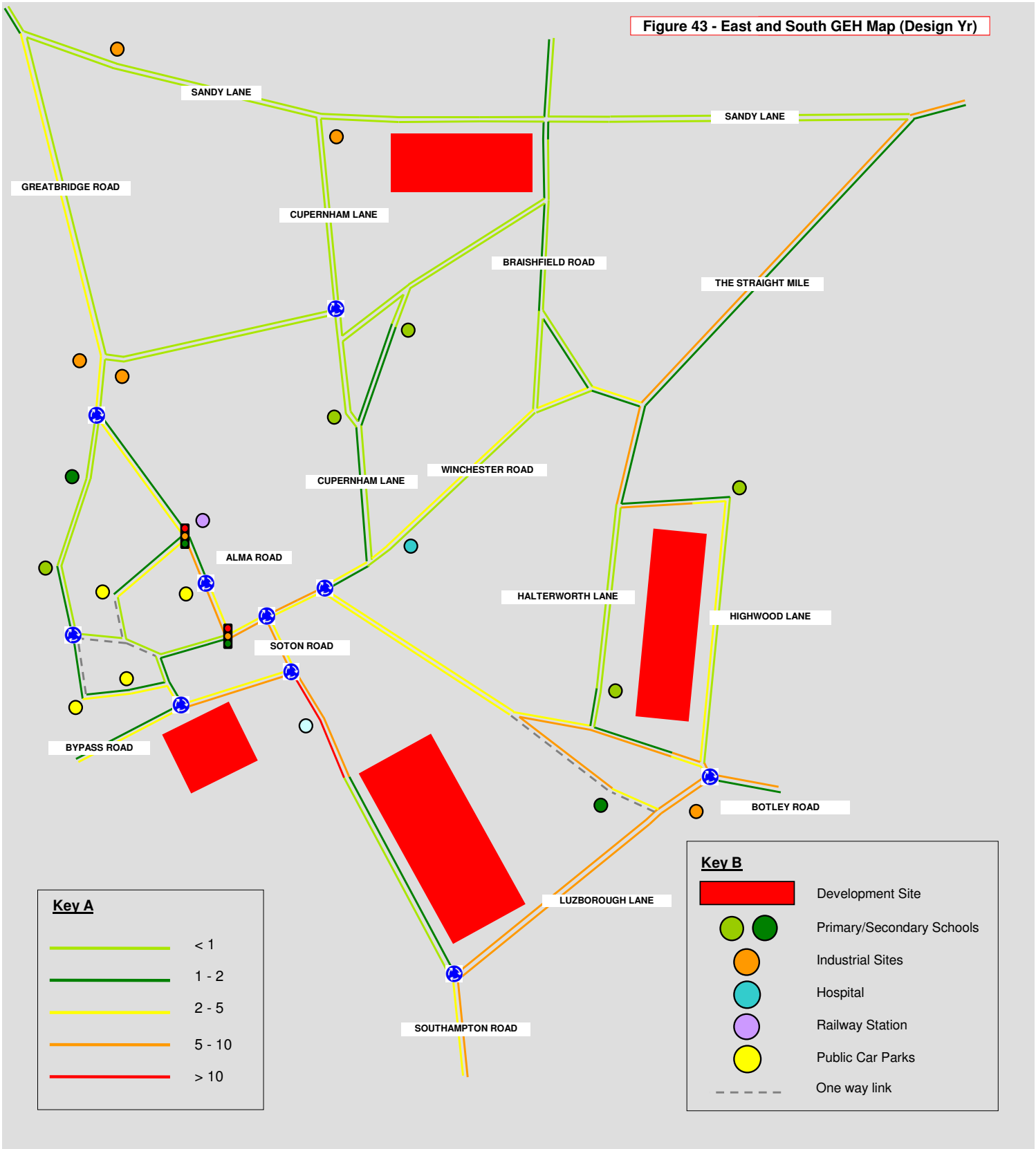


Figure 43 - East and South GEH Map (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 1
1 - 2
2 - 5
5 - 10
> 10
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

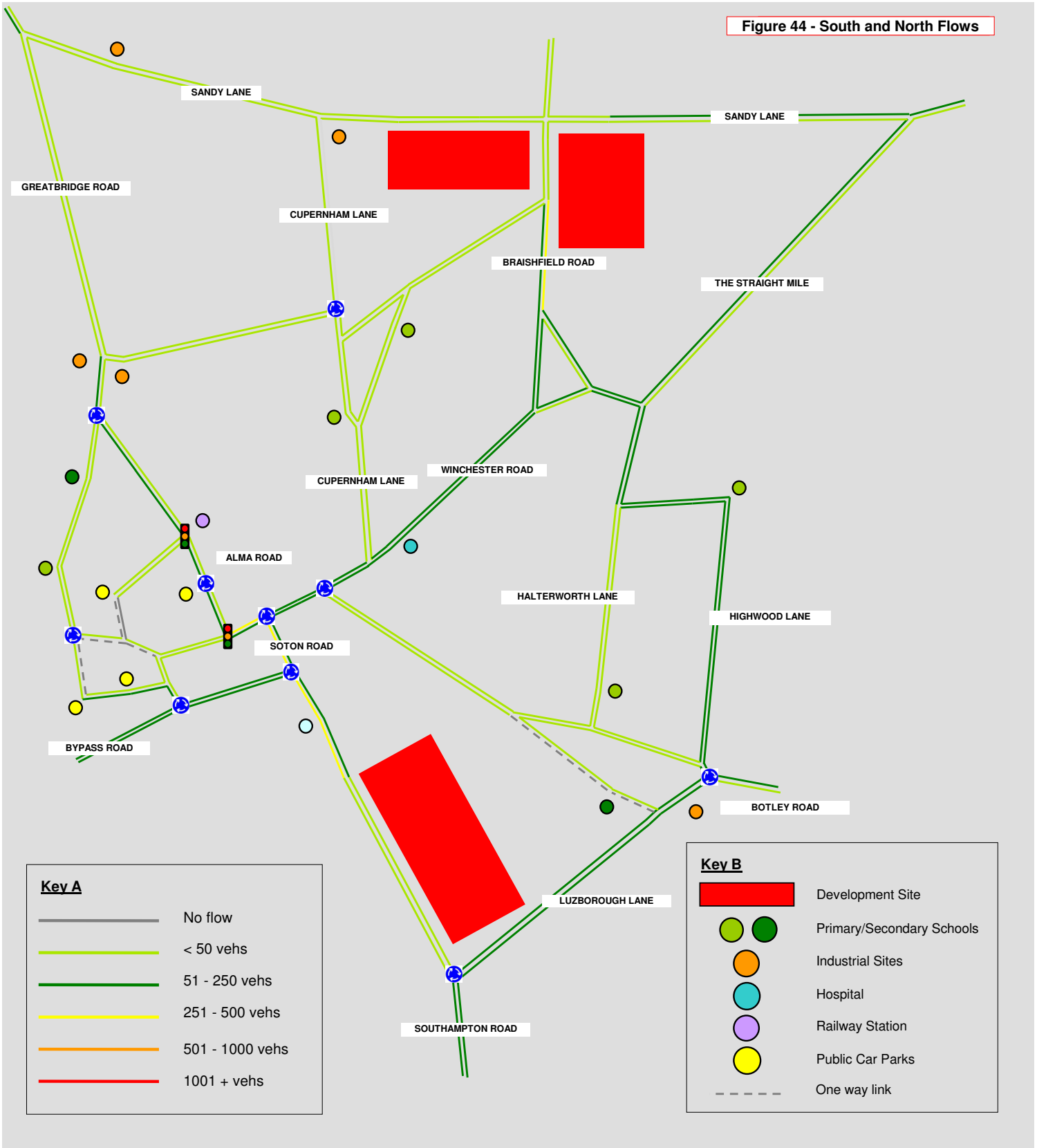


Figure 44 - South and North Flows
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

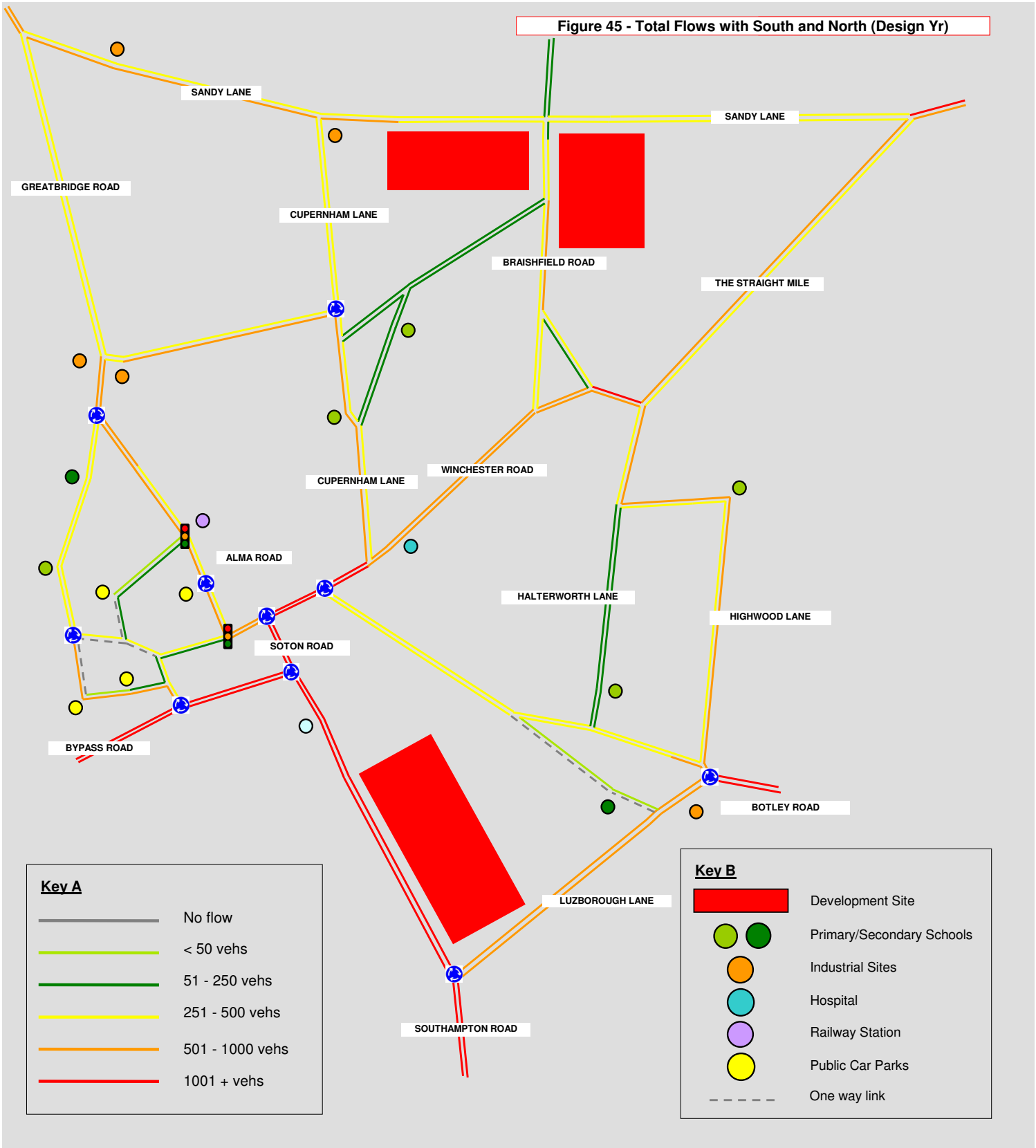


Figure 45 - Total Flows with South and North (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
No flow
< 50 vehs
51 - 250 vehs
251 - 500 vehs
501 - 1000 vehs
1001 + vehs
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

South and North Scenario

Road	Direction	Impact %
Winchester Road (between Southampton Rd and Bridge Rd)	Westbound	17
Winchester Road (between Southampton Rd and Bridge Rd)	Eastbound	19
Winchester Road (between Alma Rd and Southampton Rd)	Eastbound	10
Winchester Road (between Alma Rd and Southampton Rd)	Westbound	26
Winchester Road (between Bridge Rd and Botley Rd)	Westbound	17
Winchester Road (between Bridge Rd and Botley Rd)	Eastbound	18
Winchester Road (between Botley Rd and Cupernham Lane)	Eastbound	16
Winchester Road (between Botley Rd and Cupernham Lane)	Westbound	20
The Hundred (between Palmerston St and The Harrage)	Westbound	12
The Hundred (between Alma Rd and The Harrage)	Westbound	13
Alma Road	Northbound	23
Alma Road	Southbound	11
Romsey Bypass (between Palmerston St and Southampton Rd)	Westbound	17
Southampton Road (between Romsey Rapids and Bypass Rd)	Northbound	36
Highwood Lane	Southbound	28
Braishfield Road	Southbound	52

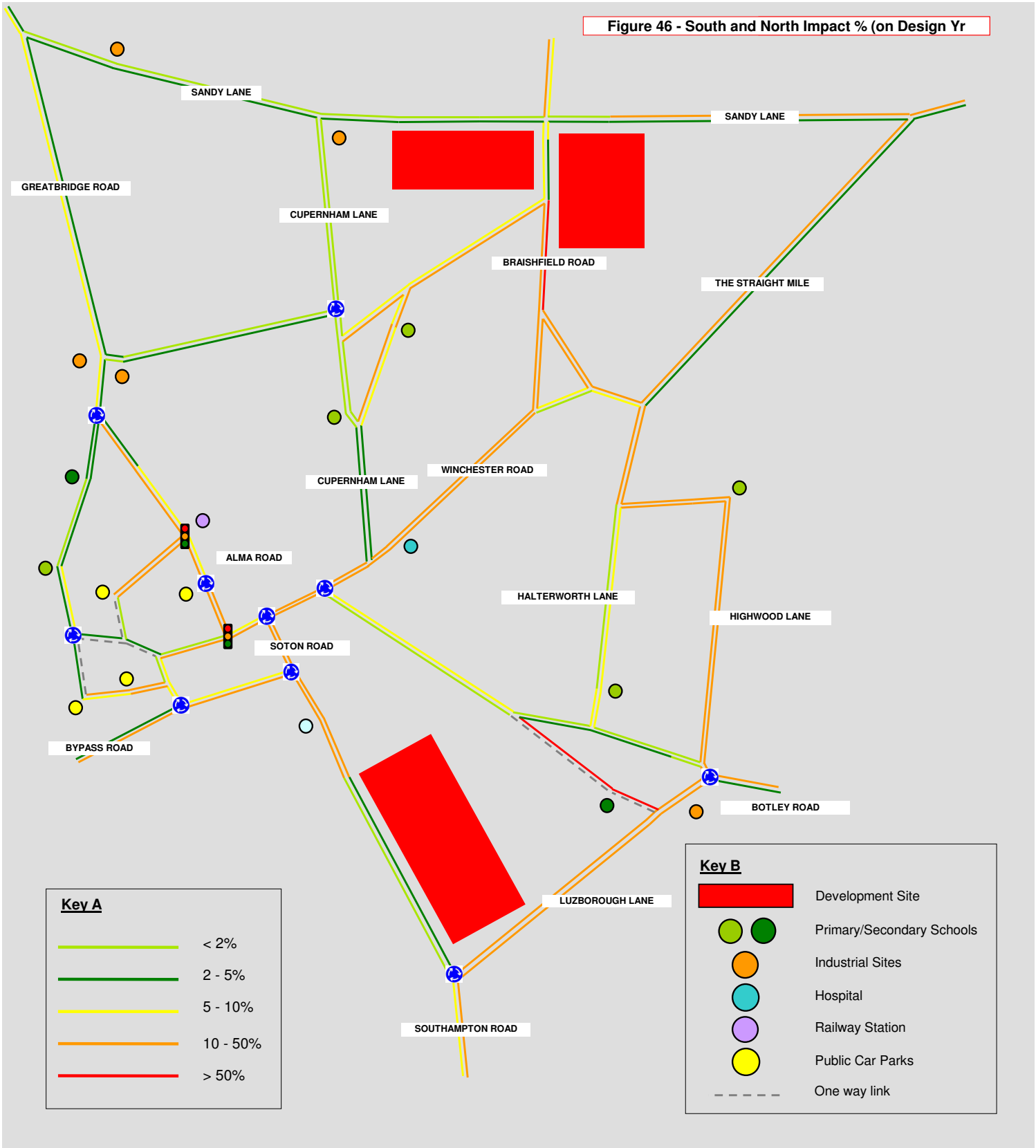


Figure 46 - South and North Impact % (on Design Yr
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 2%
2 - 5%
5 - 10%
10 - 50%
> 50%
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link

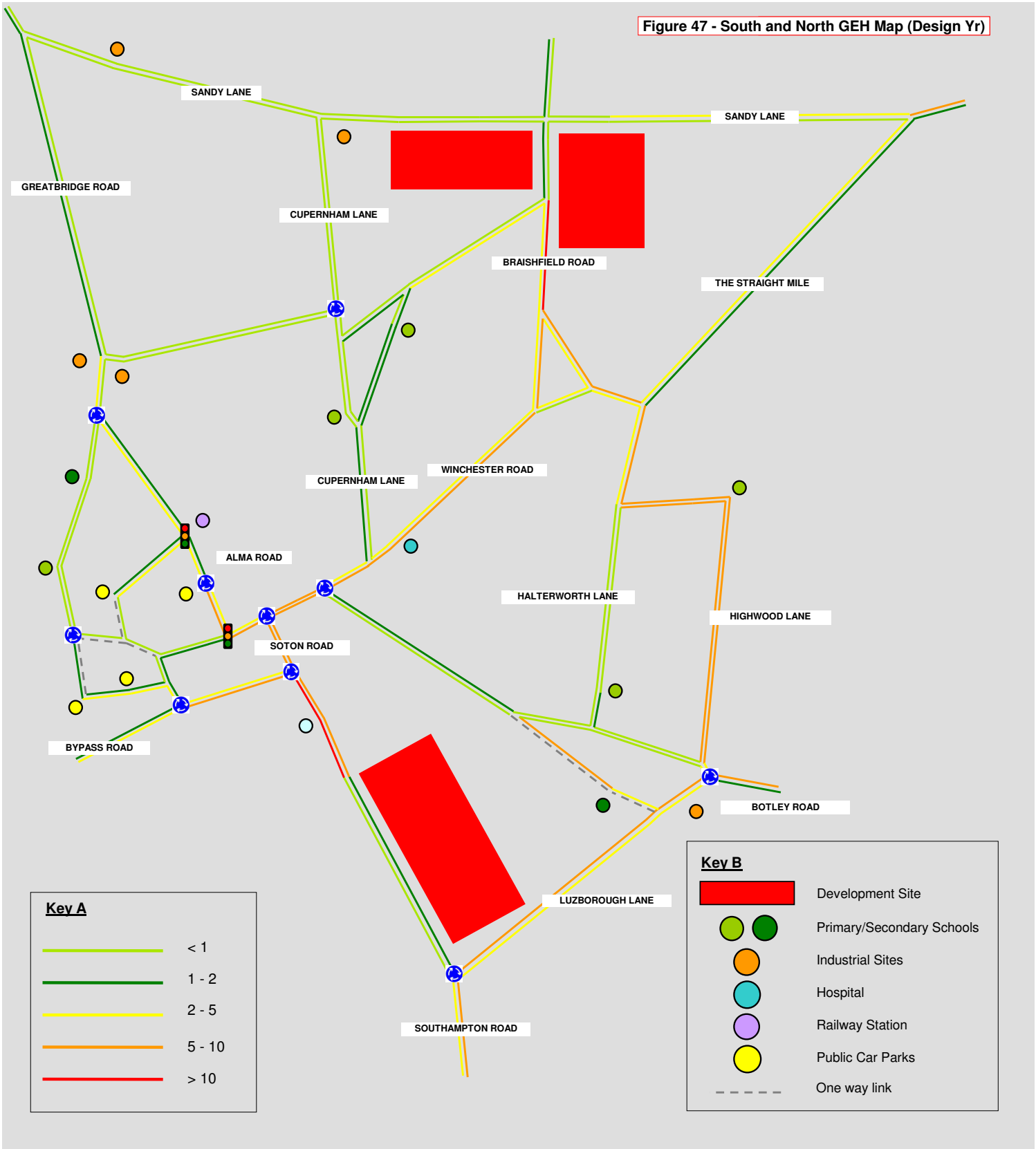
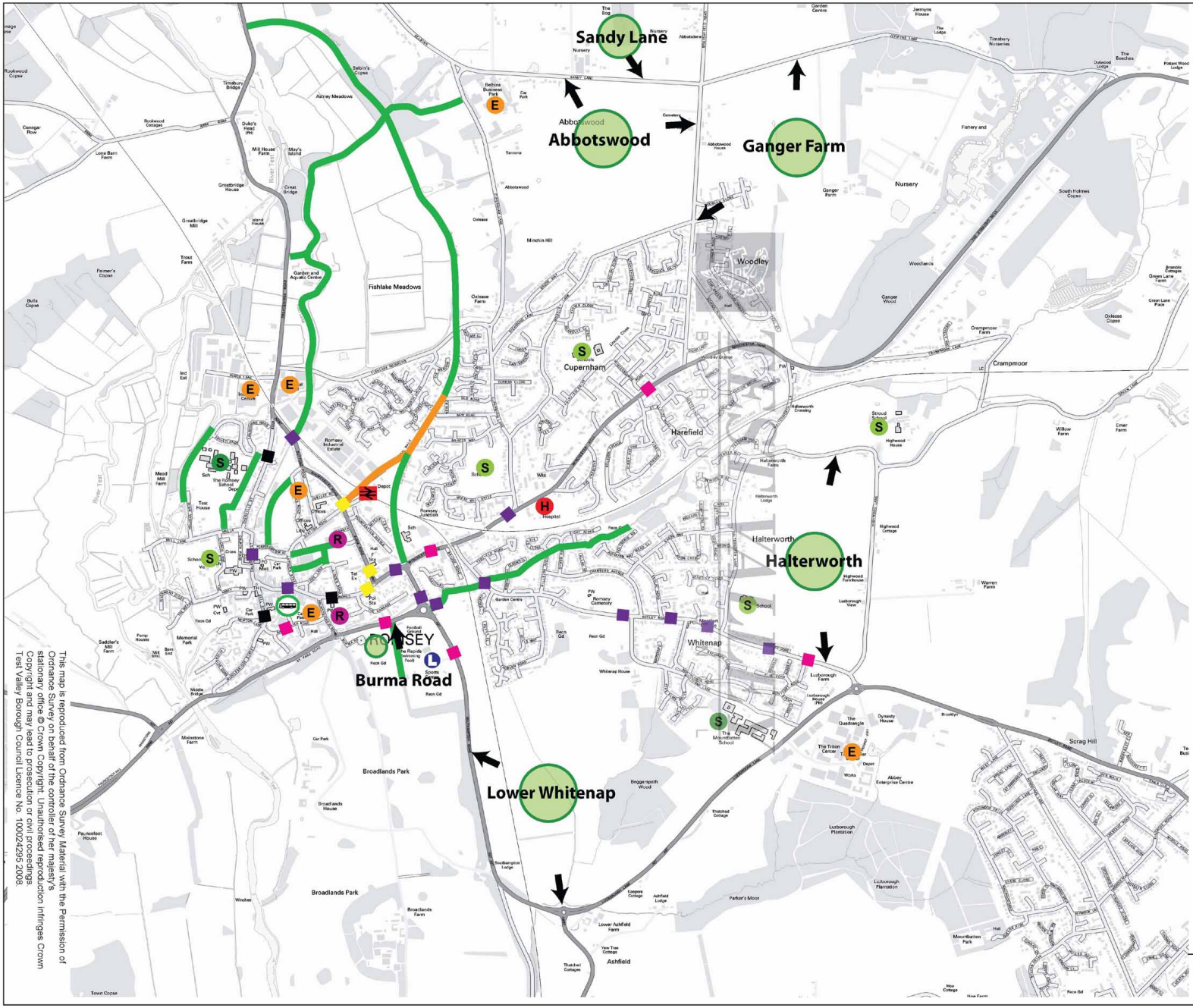


Figure 47 - South and North GEH Map (Design Yr)
SANDY LANE
SANDY LANE
GREATBRIDGE ROAD
CUPERNHAM LANE
BRAISHFIELD ROAD
THE STRAIGHT MILE
CUPERNHAM LANE
WINCHESTER ROAD
ALMA ROAD
HALTERWORTH LANE
HIGHWOOD LANE
SOTON ROAD
BYPASS ROAD
BOTLEY ROAD
LUZBOROUGH LANE
SOUTHAMPTON ROAD
Key A
< 1
1 - 2
2 - 5
5 - 10
> 10
Key B
Development Site
Primary/Secondary Schools
Industrial Sites
Hospital
Railway Station
Public Car Parks
One way link



Legend

- Vehicle Access (assumed)
- Development Sites
- Rail Station
- Bus Station
- Primary School
- Secondary School
- Hospital
- Leisure & Recreation
- Retail
- Employment
- Zebra Crossing
- Pelican/Puffin Crossing
- Pedestrian Phase in traffic lights
- Uncontrolled Crossing
- Pedestrian Route
- Pedestrian/Cycle Route

Rev.	Drawn	Chkd.	Apprvd	Date	Description
	KEVANS	PWYDALL	PWYDALL	31.05.07	

Client

Test Valley Borough Council

Project

RMAS Review Phase II

Figure Title

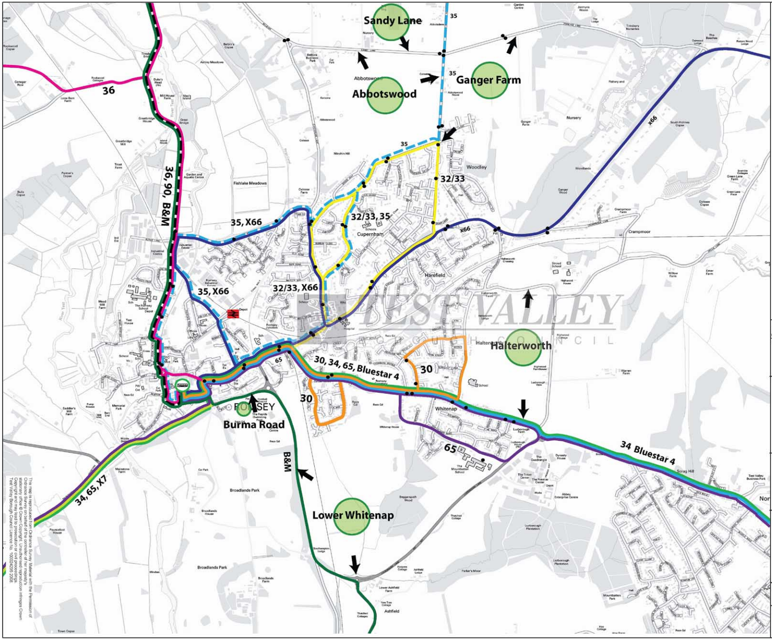
Pedestrian & Cycle Provision

Gifford

Carlton House, Ringwood Road, Woodlands, Southampton, Hampshire SO40 7HT
Tel : 023 8081 7500 Fax : 023 8081 7600 www.gifford.uk.com

Scale (at A3)	Date	Drawn
NTS	31/05/2007	KEVANS

Figure no. Figure 48 rev.



Legend

- 34 W&D Romsey - Eastleigh
- 30 W&D Romsey - Halterworth
- 65 Romsey - Eastleigh
- BlueStar 4 Romsey - Southampton
- 36 W&D Romsey - Salisbury
- 32/33 W&D Romsey Town Service
- X7 W&D Salisbury - Southampton
- Broughton & Mottisfont Village Bus
- X66 Stagecoach Romsey - Winchester
- 90 W&D Romsey - Broughton
- 35 W&D Romsey - Braishfield
- Rail Station
- Bus Station
- Bus Stop
- Development Sites
- Vehicle access (assumed)

Rev.	Drawn	Chkd.	Apprvd.	Date	Description
	KEVANS	P.BYDALL	P.BYDALL	17.07.07	

Client

Test Valley Borough Council

Project

RMAS Review Phase II

Figure Title

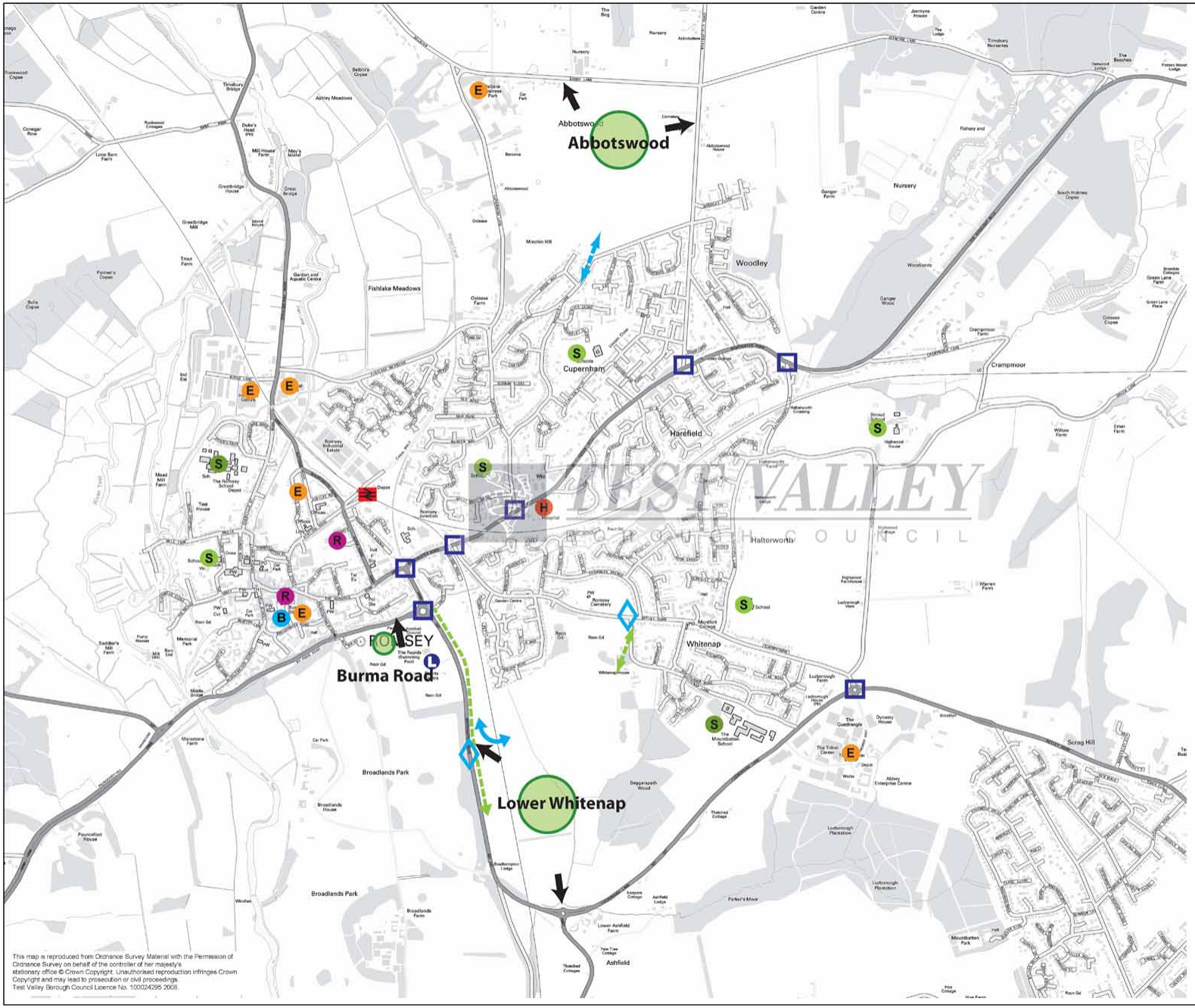
Bus Routes and Stops

Gifford

Carlton House, Ringwood Road, Woodlands, Southampton, Hampshire SO40 7HT
Tel : 023 8081 7500 Fax : 023 8081 7600 www.gifford.uk.com

Scale (at A3)	Date	Drawn
NTS	16/07/07	KEVANS

Figure no.	rev.
Figure 49	



Legend

- Vehicle Access (assumed)
- Development Sites
- Rail Station
- Bus Station
- Primary School
- Secondary School
- Hospital
- Leisure & Recreation
- Retail
- Employment
- Junction Improvements
- Connection to longer distance bus services
- Bus, pedestrian and cycle connection
- New/enhanced local bus connections
- Pedestrian and cycle connection
- Pedestrian/cycle route

NB There will be additional junction alterations associated with development at Abbotswood

Description

Client

Test Valley Borough Council

Project

RMAS Review Phase II

Figure Title

Suggested Range of Measures

Gifford
Carlton House, Ringwood Road, Woodlands, Southampton, Hampshire SO40 7HT
Tel : 023 8081 7500 Fax : 023 8081 7600 www.gifford.uk.com

Scale (at A3)	Date	Drawn
NTS	29/10/2007	Nan

Figure no. Figure 50 rev.