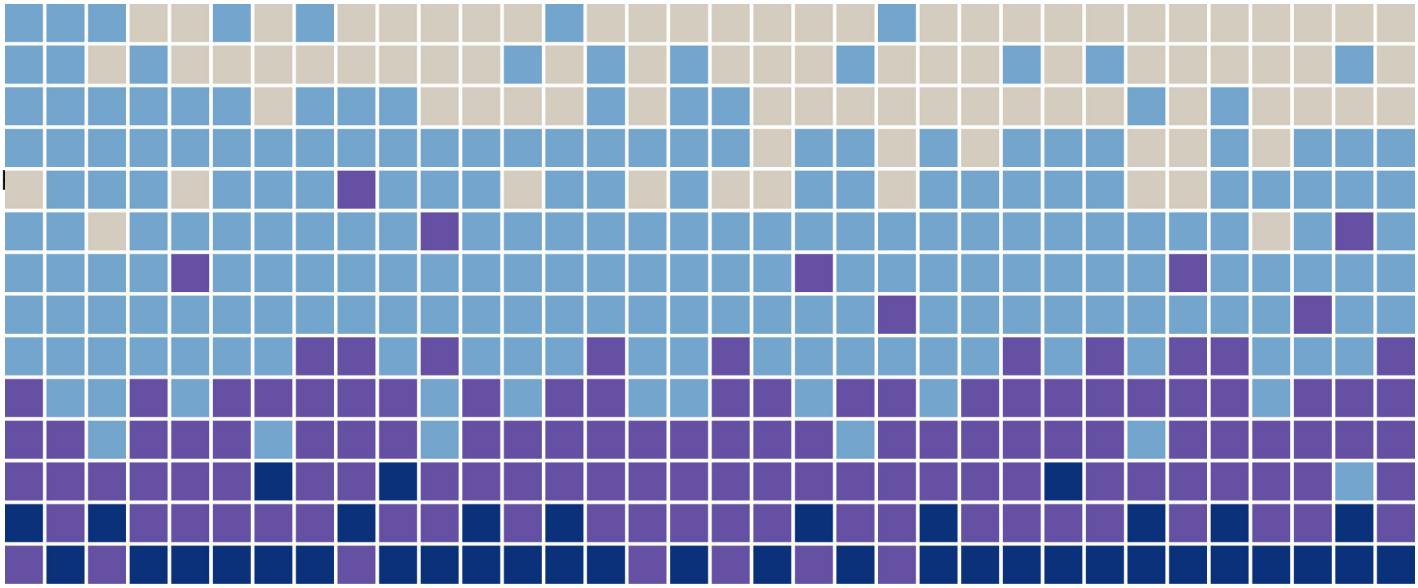

Winchester Local Development Framework Transport Assessment

Winchester City Council

November 2007

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1 Introduction

1.1 INTRODUCTION

1.1.1 Local Development Frameworks (LDF) are made up of a number of documents, commissioned and produced by the district council, which outline the spatial planning strategy for the local area. This new planning system assists in the management of how developments will take place in town and the countryside, which in combination with the Regional Spatial Strategy (RSS), will determine how the planning system shapes communities.

1.1.2 One of the component documents of the LDF is a 'Core Strategy'. This is a wide ranging document that summarises the issues associated with development across a planning district area. WSP has been commissioned to assist in the investigation of the transport related impacts of delivering the Local Development Framework housing target for Winchester City Council.

1.2 CONTEXT OF ASSESSMENT

1.2.1 This is study is intended as a high level strategic document at this stage, to assess the potential development clusters within the district. This study will be used in conjunction with other studies/evidence to make judgement on the most sustainable locations for development/growth.

1.2.2 In the context of this study it is stressed that if a potential location/cluster has been identified does not mean it will necessarily be allocated for development through the LDF, although some clusters do include developments that are already allocated or committed. In addition, any assessment of potential development locations within the document is based purely from an accessibility basis/impact on the strategic road network. Additional studies will be carried out to create a fuller picture for final allocation of development within the LDF.

1.2.3 This study only looks at the potential for housing development (as set out in the RSS approximate target of 12,240 residential units) and further work may be required separately to take account of growth in other uses if required. 'Potential' numbers for each cluster are derived by combining a number of potential development areas and are not intended to imply that all (or any) of the 'potential' is appropriate in other respects. It is likely to represent a 'maximum potential' option for each cluster.

1.2.4 Finally this study only looks at the situation within Winchester District, and not the traffic impact of developments in neighbouring authorities. There is an obligation for all districts to undertake their own LDF assessment, and this is being undertaken within the boarding district authorities of Basingstoke and Deane, Test Valley, East Hampshire, Eastleigh, Fareham, Portsmouth and Havant. It is beyond the scope of Winchester City Council to combine neighbouring assessments at this stage, given the nature of the Core Strategy and the fact that a number of broad development options will be consulted upon. However, regional assessments on housing provision are being undertaken by regional bodies such as the Partnership for Urban South Hampshire (PUSH).

1.2.5 As stipulated within the DfT Circular 02/2007, 'Planning and the Strategic Road Network' the Highways Agency will be invited to take part in the Local Development Frameworks process at an early stage and will be reviewing this study as a consultee to help ensure the development of sustainable and coherent proposals is achieved.

1.3 STUDY OBJECTIVES

1.3.1 The objective of this study is to investigate the impact of delivering the Local Development Framework (LDF) housing target for Winchester City Council of 12,240 new dwellings. The underlying objective for this study is the assessment of potential cluster areas for residential development in accordance with Government policy and sustainable principles. Locations for new housing are considered against the principal evaluation criteria of congestion, accessibility, sustainable transport and the impact on key routes. The area considered for the study and the principal highway network are shown in Figure 1.2 at the end of this section.

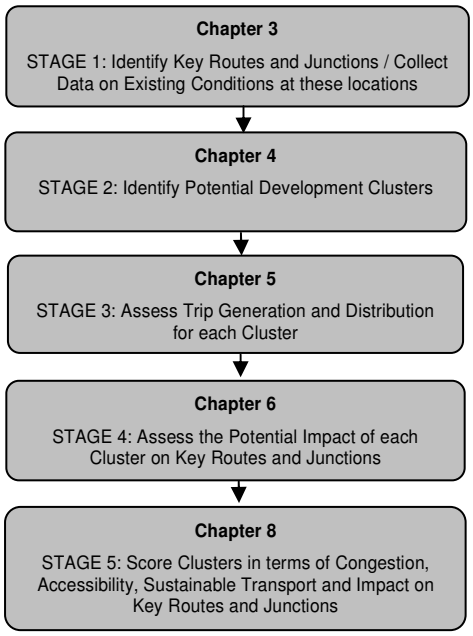
1.3.2 A sequential approach has been adopted for the study that takes into account:

- Amalgamation of potential residential development areas into a series of clusters
- Available traffic data as a means by which to assess the impact of new housing on the highway network
- Existing conditions in the AM Peak Hour on key routes and at key junctions
- Trip making characteristics associated with residents at each cluster site for the AM Peak Hour
- Consideration of Local Transport Plan policies and infrastructure projects
- Study work previously undertaken by Winchester City Council and Hampshire County Council
- Previous consideration of major development areas in the district
- The objectives associated with sub-regional policy initiatives such as PUSH (Partnership for Urban South Hampshire)
- A qualitative assessment of transport infrastructure and local amenities by residential cluster location

1.3.3 In terms of junction assessment within the study, analysis has been undertaken to quantify the amount of additional AM Peak traffic created at key junctions, from each of the potential residential development clusters. This has been to quantify the potential impact but not to carry out a detailed assessment of operational impact, which is likely to occur as development locations are firmed up and locations agreed for development through the Core Strategy and subsequent Development Plan Documents.

1.3.4 The final output of the study is a scoring of cluster areas to enable determination of appropriate locations, in transport terms, for which new housing can be considered. A sequential approach has been adopted for the study, illustrated by the process shown in Figure 1.1.

Figure 1.1 – Project Stages



1.4 REPORT STRUCTURE

1.4.1 The remainder of this report provides details on how the study has been progressed, it includes:

- Section 2 – Study methodology
- Section 3 – Identifying Key Routes and Junctions
- Section 4 – Identification of Clusters
- Section 5 – Trip Generation and Distribution
- Section 6 – Highway Network Impact
- Section 7 – Matrix Methodology
- Section 8 – Cluster Scoring
- Section 9 – Study Summary

Figure 1.2 Study Area

2 Study Methodology

2.1 INTRODUCTION

2.1.1 An outline to the approach adopted is provided below, with more details on the approach followed described in subsequent sections of this report.

STAGE 1 – IDENTIFICATION OF KEY ROUTES AND DATA COLLECTION

2.1.2 To enable an assessment of the impact of potential residential development it has first been necessary to establish those parts of the highway network most likely to be affected. Key routes in the Council district have been identified and agreed as the basis for assessment with the City Council.

2.1.3 Data has been obtained for the AM peak period for these routes and a benchmark assessment was carried out to determine the current level of traffic flow and congestion experienced. This provides a point of comparison against which to judge the impact of possible residential development. The AM peak only has been used as the basis of assessment as trips from residential developments are more concentrated in their time of occurrence than return trips.

STAGE 2 – IDENTITY POTENTIAL DEVELOPMENT CLUSTERS

2.1.4 The objective of the study is to assess the impact of development, of new housing, within a variety of locations within the Winchester District. To assist this process, potential development areas have been grouped into a series of clusters. This enables assessment of a wider location rather than particular potential and committed development areas and for the merits of the location as a whole to be assessed against highway network impact and policy compliance.

2.1.5 Currently committed residential development areas were identified through a review of planning documents, including the Local Plan and the Winchester District Annual Monitoring Report 2005-2006. Supplementary information was gained through consultation with Winchester City Council officers who were able to identify known potential development areas. This information was combined with a list of potential Major Development Areas (MDAs). The MDAs and other potential development areas were amalgamated into a series of clusters based on their geographic locations and proximity to likely transport corridors.

STAGE 3 – ASSESS TRIP GENERATION AND DISTRIBUTION FOR EACH CLUSTER

2.1.6 To determine the impact of potential new housing within cluster areas a review was undertaken of expected trip generation from the cluster. This has been based on similar known developments using the TRICS data base, which takes into account mode share splits. Trip distribution has been determined through analysis of Travel to Work census data from 2001. This is the latest available full dataset and therefore provides the most robust approach.

2.1.7 From this stage of the study it has been possible to determine the quantum of car based trips from potential new housing and the destination of trips in the AM peak period.

STAGE 4 – ASSESS THE POTENTIAL IMPACT OF EACH CLUSTER ON KEY ROUTES AND JUNCTIONS

2.1.8 To undertake this assessment a comparison has been made between existing traffic flows and capacities identified in Stage 2 with expected traffic flows generated by potential development at each cluster. This provided an indication of the effects of each cluster on the surrounding road network. This study has not looked in detail at mitigating this impact with demand management and softer measures.

STAGE 5 – SCORE CLUSTERS IN TERMS OF CONGESTION, ACCESSIBILITY, SUSTAINABLE TRANSPORT AND IMPACT ON KEY ROUTES AND JUNCTIONS

2.1.9 The final stage of the study scores each cluster in terms of the following factors:

- Congestion
- Accessibility
- Sustainable Transport
- Impact on Key Routes and Junctions, as identified in Stage 4.

2.1.10 To assist in determination of impact an assessment framework has been developed that takes into account key factors associated with trip generation, transport policy compliance and known transport improvements. This has included use of existing ACCESSION analysis on local services for the Winchester City Council area, as well as other information provided in Hampshire's Local Transport Plan (LTP) and other transport strategies.

3 Identifying Key Routes and Junctions

3.1 IDENTIFYING MAIN HIGHWAY ROUTE NETWORK

3.1.1 The main highway route network within the Winchester District was identified in consultation with Winchester District Council. This took into account the Highways Agency network within the district, the road hierarchy within the district and known commuter routes through the district. On identification of key routes the relevant highway authorities were contacted in order to identify what traffic flow data was available relative to each route.

3.1.2 To gain information on the local highway network Hampshire County Council (HCC) traffic management team was contacted and data requested. For data on the trunk road network, the Highway Authorities (HA) website TRADS was interrogated for traffic flows on the relevant motorway links and major A roads.

3.1.3 Table 3.1 below indicates the combined available main highway route data that was available through HCC and the HA. Exact locations of the ATC traffic count sites for data provided by HCC can be seen in **Figure 3.1**.

Table 3.1 – Available traffic data for main highway network within and around the Winchester District

HA Network		Local Authority Network (HCC)		
Motorway	Major A Roads	A Roads	B Roads	Minor Roads
M3 [J7 – J8]	A3(M)	A3	B2150	Morestead Road
M3 [J10 - J13]	A34	A30	B2177	
M27 [J5 - J12]	A303	A31	B3035	
		A32	B3037	
		A33	B3047	
		A272	B3049	
		A334	B3354	
		A3051	B3420	
		A3090		

3.2 IDENTIFICATION OF KEY ROUTE DATA FOR IMPACT STUDY

3.2.1 Having identified the main route network data available, and considering the location of the 11 identified clusters' (more details provided in Section 4 on their determination) key links were chosen for further analysis of future impact. Choices were based on those links identified as being likely to be important distributor routes to and from the clusters and/or being current known congestion hotspots.

3.2.2 A detailed list of traffic data used is indicated in Table 3.2 below.

Table 3.2 – Summary of selected key routes traffic data within Winchester District

Road Type	Link	Data Source
Motorway	M3 [J7 - J8]	HA
	M3 [J8 - J9]	HA
	M3 [J9 - J10]	HA
	M3 [J10 - J11]	HA
	M3 [J11 - J12]	HA
	M3 [J12 - J13]	HA
	M27 [J5 - J7]	HA
	M27 [J7 - J8]	HA
	M27 [J7 - J8]	HA
	M27 [J8 - J9]	HA
	M27 [J9 - J10]	HA
	M27 [J10 - J11]	HA
	M27 [J11 - J12]	HA
Major A Roads	A34 [A303-M3(J9)]	HA
	A303 [A34-M3(J8)]	HA
A Roads	A3	HCC
	A31	HCC
	A33	HCC
	A272	HCC
	A334	HCC
	A3051	HCC
B Roads	B3037	HCC
	B3354	HCC
Minor Roads	Morestead Road	HCC

3.2.3 Within the scope of this study it has not been possible to include all possible minor links, particularly given the availability of traffic data. Therefore the study has focused of major route ways, with the focus of minor links being on those highlighted in discussions with Winchester City Council as being of particular concern.

4 Identification of Clusters

4.1 INTRODUCTION

4.1.1 A preliminary stage of the agreed study methodology for the Winchester LDF Assessment was identification of a method for the clustering of potential development locations. This chapter outlines the proposed cluster methodology used and details the locations and quantum of potential development that has been identified.

4.2 IDENTIFICATION OF POTENTIAL DEVELOPMENT AREAS

4.2.1 The initial identification of possible and proposed residential development areas was achieved through the following resources:

- Interrogation of the Local Plan to identify the location and capacity of allocated residential development areas
- Investigation of the 'Winchester District Annual Monitoring Report 2005-2006' to identify 'Potential Outstanding (Windfall) Dwellings' for developments of 20 dwellings or greater. The identification of developments only greater then 20 dwellings was chosen as it is at this size that developments were considered to be significant, and likely to have some, if only minor, impact on its associated highway
- Discussions with Winchester City Council on the general identification of indicative future housing allocation capacity available within the District of Winchester

4.2.2 Outstanding dwellings identified through the Urban Capacity Study (UCS) were not included within the identification of developments with greater then 20 dwellings, due to the 2005/2006 results of this study currently being under review.

4.3 CLUSTER GROUP APPROACH TO TRANSPORT CONSIDERATIONS

4.3.1 A cluster group approach was used within this strategic study to group potential housing locations into land areas which exhibit similar characteristics and proximity to local infrastructure.

4.3.2 The individual locations identified using the above sources were grouped together into 11 'cluster groups'. Each 'cluster group' was formed of development areas within each town/village and in some cases these towns/villages were further grouped with neighbouring settlements. The rationale behind the grouping of the potential development locations was threefold. The clusters were formed by:

- Locations that were in close proximity to each other within the District
- Locations that could be potentially combined to produce a larger consolidated development
- Locations with similar attributes in terms of access to the strategic transport network

4.3.3 In terms of Winchester City, two clusters were formed to distinguish between those developments whose associated trips were likely to impact the M3 junction 9 (Winchester City North) and those likely to impact on M3 junction 11 (Winchester City South)

4.3.4 **Table 4.1** below identifies the committed and potential housing allocation created from the group of potential development locations within the 11 cluster areas. **Figure 4.1** illustrates their locations. The locations making up these clusters vary in their characteristics and include general potential future housing allocation areas as well as more specific residential development areas already with planning permission.

Table 4.1 – Committed and Potential Housing Allocation Contained Within Each Cluster

Cluster	Area	TYPE	Housing number		
			Low	Average	High
1	Micheldever Station	Committed Potential	35 12500	35 12500	35 12500
2	Kings Worthy/Headbourne Worthy	Committed Potential	29 700	29 750	29 800
3	Winchester City North	Committed Potential	2529 200	2529 300	2529 400
4	Winchester City South	Committed Potential	470 400	470 450	470 500
5	Alresford	Committed Potential	35 600	35 650	35 700
6	Colden Common/Twyford/Shawford	Committed Potential	44 700	44 850	44 1000
7	Bishops Waltham/Waltham Chase/Swanmore	Committed Potential	30 1100	30 1550	30 2000
8	Whiteley	Committed Potential	140 3000	140 3500	140 4000
9	Wickham/Knowle	Committed Potential	73 300	73 400	73 500
10	Denmead	Committed Potential	70 800	70 850	70 900
11	West of Waterlooville	Committed Potential	3000 0	3000 250	3000 500
		TOTAL Committed ***TOTAL Potential***	***6455*** ***20300***	***6455*** ***22050***	***6455*** ***23800***
		OVERALL TOTAL	**26755**	**28505**	**30255**

4.3.5 Within the above table, while committed developments may be conservative in number this has been offset by assumptions associated with other potential development allocation in order to give a more strategic and robust basis for analysis of development impact.

5 Trip Generation and Distribution

5.1 TRIP GENERATION

5.1.1 Before identifying trip generation, the number of housing units within each cluster was taken as the 'Average' development scenario as indicated within the housing allocation Table 4.1. A residential trip rate for use with all of the clusters was identified using the industry standard TRICS 2007(a) data base.

5.1.2 The database was interrogated specifically for housing developments in the South East and South West, so as to not to skew the data with London developments (which are likely to produce preferentially low trip rates). Having completed this interrogation a trip rate was calculated for generated trips as 0.41 trips per household in the AM Peak Hour and this was used for all clusters.

5.1.3 Generated trips only have been assessed within this study to take account of longer distance trips that occur in the peak hour, which are likely to have an impact on the strategic and principal road networks. Trips attracted to residential development have not been taken into account as within the morning peak period. These trips are typically locally based for servicing requirements or arise from trips to local facilities and amenities. The impact of these trips on the strategic and principal roads is therefore negligible.

5.1.4 This use of a single trip rate for all housing developments gives no consideration to any differences in trip rate that arise from a high proportion of affordable housing. The proportion of new housing stock this represents cannot be determined until planning consent has been granted and therefore has not been included as part of this study. The study provided is therefore representative of worse case scenario with the acceptance that trip rates from affordable housing is likely to be lower then the single trip rate used.

5.1.5 Consideration was given to using a reduced trip rate in the region of 0.2 (also calculated using TRICS) to differentiate the development of city centre high density developments within the clusters. However, on closer inspection of the character of the clusters it was identified that city centre high density developments were not likely to make up a high proportion of the potential residential development. In the City of Winchester there are currently only two plans for significant high density developments, Silver Hill and the site of the current Police HQ.

5.1.6 Based on the above, Table 5.1 indicates the calculated AM peak hour trips generated from each cluster onto the highway network.

Table 5.1 – Available traffic data on key routes within Winchester District

Cluster	Area	Housing number	Trip Rates AM Peak Hour Departures	Number of Trips AM Peak Hour
1	Micheldever Station	12535	0.41	5139
2	Kings Worthy/Headbourne Worthy	779	0.41	319
3	Winchester City North	2829	0.41	1160
4	Winchester City South	920	0.41	377
5	Alresford	685	0.41	281
6	Colden Common/Twyford/Shawford	894	0.41	367
7	Bishops Waltham/Waltham Chase/Swanmore	1580	0.41	648
8	Whiteley	3640	0.41	1492
9	Wickham/Knowle	473	0.41	194
10	Denmead	920	0.41	377
11	West of Waterlooville	3250	0.41	1333

5.2 TRIP DISTRIBUTION

5.2.1 Having identified the number of peak hour trips generated from each cluster the distribution of trips across the network has been identified. Trip distribution for vehicle trips from each clusters' potential residential development was calculated using 2001 Journey to Work Census data. To enable this calculation a census data ward needed to be selected as representative of each of the cluster. Table 5.2 below identifies the relevant ward chosen to identify likely trip distribution patterns originating from each cluster at peak travel times.

5.2.2 It should be noted that in the case of Micheldever Station there is currently very little housing within the local ward and therefore its associated ward would not provide an accurate representation of trip movements generated from a potential large residential development. To overcome this a representational trip distribution was calculated from the average of two local wards (one in Basingstoke, one in Winchester) which were identified as together being characteristic of Micheldever Station's potential future residential characteristics. The two wards chosen were Hatch Warren and Beggarswood (encompassing Basingstoke's western edge of town residential development) and St Bartholomew (one of Winchester's city centre wards).

Table 5.2 - Available traffic data on key routes within Winchester District

Cluster	Area	Census Data
1	Micheldever Station	Hatch Warren and Beggarswood/St Bartholomew
2	Kings Worthy/Headbourne Worthy	Kings Worthy
3	Winchester City North	St Barthomolew
4	Winchester City South	Olivers Battery & Badgers Farm
5	Alresford	The Alresfords
6	Colden Common/Twyford/Shawford	Colden Common & Twyford
7	Bishops Waltham/Waltham Chase/Swanmore	Bishops Waltham
8	Whiteley	Whiteley
9	Wickham/Knowle	Wickham
10	Denmead	Denmead
11	West of Waterlooville	Boarhunt & Southwick

5.2.3 The full results of the trip distribution can be found in Appendix B (Full trip distribution table). As expected the highest proportion of trips for each cluster are towards its major centre for retail and employment. These trip distributions have been used to assess the impact of developing in each cluster, and the associated impact on the highway network as described in Chapter 5.

6 Highway Network Impact

6.1.1 The first stage of the assessment of the impact on the network was to understand the route choices that residents would make to a number of destinations from each cluster. The destinations to be considered are those listed in Table 6.1 below. These destinations are the same as those used to assess the potential distribution of trips, as discussed in the previous section. The assessment has been carried out for individual sites to enable their relative impact to be assessed.

Table 6.1 – Areas Included in the Assessment of Route Choice

Category	Areas Included
Winchester Town	Built up area of Winchester
Winchester District	Rest of Winchester South, West, North and East
Hampshire Districts	Southampton, Eastleigh, Portsmouth, Fareham, Gosport, Havant, New Forest, Test Valley, Basingstoke and Deane, East Hampshire, Hart and Rushmoor
Neighbouring Counties	Surrey, West Sussex, Wiltshire, Dorset and Berkshire
London	
Rest of the UK	Rest of the UK West, North and East

6.1.2 The likely route choice was set out for each of the areas listed above for journeys from each of the 11 clusters. Online route planners were used to assist in devising each route. This approach has been based on use of trip distance as a proxy for travel time. Travel time and distance are the main factors associated with driver route choice, therefore this approach allows for distribution of trips across multiple routes taking into key trip determinants. The full list of route choices is given in **Appendix C**.

6.1.3 Once trips were assigned to routes an assessment was carried out to compare the existing traffic flows in the AM Peak Hour with the estimated level of capacity for each road. The results of this assessment for Motorway routes are shown in **Table 6.2**. The results for all other routes are given in **Appendix D**.

6.1.4 The assessment was based against the current year traffic data and this allows a comparison of development locations to be undertaken against known traffic flows, enabling the identification of suitable areas for housing development, in line with other LDF assessments within Hampshire. No future year assessment has been undertaken at this stage because to do so would require taking into account a number of variables, in regard to potential development, that are currently unknown (i.e. the scale of local development, its impact, capacity of the network to accommodate forecast growth etc). This would make the assessment at this strategic stage unnecessarily complicated when the adopted approach of current year analysis adequately enables a strategic identification of suitable areas for potential housing development, based on highway impact.

6.1.5 It should be noted that the impact on the motorway network, associated with potential developing in each cluster, has been assessed for the entire section of the motorway network (within the boundary of the Winchester District) related to motorway journeys from that cluster. For example for journeys from Winchester City North to Southampton the impact on the M3 between Junctions 9 – 14 has been assessed. The impact of potential development on junctions on the strategic network has been determined through a review of trips forecast to travel through each junction. The onus of detailed junction assessment has been deferred to subsequent stages of the planning process.

6.2 CURRENT SITUTATION

6.2.1 Table 6.2 details an assessment of traffic flow compared to capacity for the strategic road network. Typically, given the assessment that has been undertaken, links with a volume/capacity ratio greater than 90% will experience some form of congestion/delay. Links with a ratio greater than 100% will experience significant congestion/delay. This has been illustrated through the use of colour to highlight where either of these levels of relative congestion is met:

- Ratio of volume vs capacity > 90% =Amber
- Ratio of volume vs capacity > 100% =Red

6.2.2 From this it can be seen that two sections of the M3 and two sections of the M27 are close to capacity in the AM Peak Hour in the current situation.

Table 6.2 – Assessment of Traffic Flow v Capacity for the M3 and the M27

Road	Location	AM Peak Hour Flow	Estimated Capacity	Volume / Capacity
M3	Junction 7 - 8 SB	3075	5888	52%
	Junction 8 - 7 NB	4301	5888	73%
	Junction 8 - 9 SB	1846	3925	47%
	Junction 9 - 8 NB	2350	3925	60%
	Junction 9 - 10 SB	4339	5888	74%
	Junction 10 - 9 NB	5312	5888	90%
	Junction 10 - 11 SB	4339	5888	74%
	Junction 11 - 10 NB	5312	5888	90%
	Junction 11 - 12 SB	4656	5888	79%
	Junction 12 - 11 NB	4623	5888	79%
	Junction 12 - 13 SB	4891	5888	83%
	Junction 13 - 12 NB	4467	5888	76%
M27	Junction 5 - 7 EB	4866	5888	83%
	Junction 7 - 5 WB	5665	5888	96%
	Junction 7 - 8 EB	4629	5888	79%
	Junction 8 - 7 WB	4831	5888	82%
	Junction 8 - 9 EB	4544	5888	77%
	Junction 9 - 8 WB	3635	5888	62%
	Junction 9 - 10 EB	3933	5888	67%
	Junction 10 - 9 WB	4052	5888	69%
	Junction 10 - 11 EB	4653	5888	79%
	Junction 11 - 10 WB	4291	5888	73%
	Junction 11 - 12 EB	5515	5888	94%
	Junction 12 - 11 WB	4963	5888	84%

6.3 POTENTIAL RESIDENTIAL DEVELOPMENT IMPACT

6.3.1 The full assessment of the impact of each cluster on each highway link is given in Appendix D. This assessment has been based on an individual assessment of each potential development location. At later stages of the LDF process, once locations for development have been determined, it will be possible to carry out a cumulative impact of impact on the highway network.

6.3.2 A summary of the links on which there is a significant impact is provided in Table 6.3 below and Table 6.4 provides an indication of the relative increase in link based congestion.

Table 6.3 – Assessment of Cluster Impact on Highway Network

Volume/Capacity on the links	M3 Junction 8-7 NB	M3 Junction 10-9 NB	M3 Junction 11-10 NB	M3 Junction 11-12 SB	M3 Junction 12-13 SB	M27 Junction 7-5 WB	M27 Junction 8-7 WB	M27 Junction 11-12 EB	A3 Purbrook SB	A33 East Stratton SB	A303 (M3 Jn 8 - A34) EB
Existing Situation	73%	90%	90%	79%	83%	96%	82%	94%	50%	23%	64%
(1) Micheldever Station	73%			90%	94%			95%		94%	156%
(4) Winchester City South		94%	94%								
(6) Colden Common/Twyford/ Shawford		91%	91%								
(7) Bishops Waltham/Waltham Chase/Swanmore		91%	91%			97%		95%			
(8) Whiteley		93%	94%			109%	95%	98%			
(9) Wickham/ Knowle		91%	91%			97%					
(10) Denmead		91%	91%			97%					
(11) West of Waterlooville		91%	91%			100%			117%		

Table 6.4 – Increase in Relative Congestion on Highway Network

% increase V/C on the Links	M3 Junction 8-7 NB	M3 Junction 10-9 NB	M3 Junction 11-10 NB	M3 Junction 11-12 SB	M3 Junction 12-13 SB	M27 Junction 7-5 WB	M27 Junction 8-7 WB	M27 Junction 11-12 EB	A3 Purbrook SB	A33 East Stratton SB	A303 (M3 Jn 8 - A34) EB
(1) Micheldever Station	0.0%			14.2%	13.5%			1.6%		308.7%	143.8%
(4) Winchester City South		3.7%	3.9%								
(6) Colden Common/Twyford/ Shawford		1.2%	1.4%								
(7) Bishops Waltham/Waltham Chase/Swanmore		0.7%	0.7%			0.7%		1.1%			
(8) Whiteley		3.5%	4.6%			13.2%	15.5%	5.1%			
(9) Wickham/ Knowle		0.5%	0.5%			0.9%					
(10) Denmead		0.5%	0.5%			0.9%					
(11) West of Waterlooville		1.4%	1.4%			4.1%			134.1%		

6.3.3 From the data contained in tables 6.3 and 6.4 it can be seen that the following impacts are forecast to occur:

- Development at Micheldever Station would result in significant congestion on the A303 in particular and also on the M3 Junction 8 - 7. It would also contribute to an increase in congestion/delay on southbound links of the M3.
- Development at Whiteley results in significant congestion on the M27 on westbound movements towards Southampton and increases in congestion/delay on northbound sections of the M3 towards other employment centres.
- Development West of Waterlooville results in an increase in congestion/delay on the M27 and also on the A3. The later provides the principal form of southern egress from the development to employment centres, hence the forecast increase in congestion/delay

6.3.4 Other development locations result in relatively minor increases in congestion/delay that are unlikely to have a significant impact on network operation

6.4 TRAFFIC IMPACT AT JUNCTIONS

6.4.1 An assessment has been undertaken for the forecast number of trips generated by possible residential development locations at junctions on the strategic road network. As for impact on highway network links this has been based on the individual impact of potential development locations. Table 6.5 below details the additional trips that would travel through each of the strategic network junctions within the study area. The total amount of traffic at each junction includes journeys being

made to access (join) the network and also those leaving (exiting) to complete a trip from a potential residential location to an ultimate destination.

Table 6.5 – Additional Traffic on Junctions

Road	Location	1 - Micheldever Station	2 - Kings Worthy/ Headbourne Worthy	3 - Wincester City North	4 - Wincester City South	5 - Alresford	6 - Colden Common/ Twyford/ Shawford	7 - Bishop's Waltham/ Waltham Chase/ Swanmore	8 - Whiteley	9 - Wickham/Knowle	10 - Denmead	11 - West of Waterlooville
	Junction 4	77	4	17	6	0	2	5	9	0	3	0
	Junction 4A	175	7	40	13	0	3	3	12	0	2	0
	Junction 6	789	27	0	52	0	14	17	54	4	3	5
	Junction 7	1734	11	390	0	0	0	0	0	0	0	0
	Junction 8	0	0	0	0	0	0	0	0	0	0	0
	Junction 9	799	93	637	52	6	8	87	25	20	4	36
	Junction 10	0	0	204	0	38	4	0	0	0	0	0
	Junction 11	69	18	144	432	5	78	58	99	20	3	18
	Junction 12	0	0	0	0	0	30	0	0	0	0	0
	Junction 13	0	4	0	0	0	8	16	0	0	0	0
M3	Junction 14	488	27	498	147	22	26	35	374	26	21	116
	Junction 1	0	4	54	19	2	9	10	9	4	2	17
	Junction 5	0	0	0	0	0	0	0	0	3	0	0
	Junction 7	0	0	0	0	0	2	51	0	24	0	0
	Junction 8	0	0	0	0	0	0	0	0	0	0	0
	Junction 9	0	0	0	0	0	0	0	1012	0	0	0
	Junction 10	21	4	14	18	3	2	52	0	17	0	0
	Junction 11	0	0	0	0	0	0	0	0	23	0	0
M27	Junction 12	82	6	71	18	4	8	52	251	0	53	233

6.4.2 The assessment provided in Table 6.5 has established that the following is forecast to occur:

- Development at Micheldever Station would result in a significant number of additional trips at congestion hotspots within the district
- M3 Junction 9 would experience a significant increase in trips in the peak hour, principally as a result of residential development at Winchester City North
- Development at Whiteley would result in a significant increase in the number of trips at M27 Junction 9

6.4.3 More detailed analysis is required to determine how the impact of potential trips at these locations could be mitigated. This assessment will be undertaken following the public consultation on the Core Strategy.

7 Matrix Methodology

7.1 INTRODUCTION

7.1.1 An assessment framework was developed to analyse the potential of each cluster group in transport terms. The framework is based on a set of transport policy objectives derived from those used in the Hampshire County Council Local Transport Plan (LTP). The LTP process analysed regional and national objectives and from these established a series of transport objectives which related to Hampshire. This list of objectives has been adopted and refined for Winchester City Council's LDF assessment framework. The objectives used for this study are as follows:

- To increase accessibility to services
- To reduce impact and effect of congestion
- To widen travel choice to essential services by means other than the car
- To improve public transport

7.1.2 In addition to the above, the Hampshire County Council Local Transport Plan also focuses on Air Quality, which whilst not strictly relevant to transport there is an inverse link between travel and air quality. Winchester City Centre is an air quality management area and as such air quality has been considered, although not directly assessed, in relation to Winchester City Clusters.

7.1.3 To enable each cluster group to be scored against each of these objectives, allowing for a numerical comparison, and the identification of the most suitable locations for residential development, each cluster was assessed against the objectives through a series of indicators.

7.2 INDICATORS

7.2.1 Indicators were developed for each objective to assist in measuring the sustainability of each cluster site. The benefits of using indicators to assess the clusters against each objective are that:

- Indicators enable quantification of impact and inform how issues affect the selected objectives.
- Indicators allow the relative importance of different components of an objective to be measured

7.2.2 The list of quantitative derived indicators that have been used for each objective is shown in **Table 7.1** below.

Table 7.1 - Assessment Matrix

Winchester District LDF Transport Analysis - *Assessment Matrix*	
Objective	**Indicator**
Congestion	Congestion Hotspots
	Road Improvements
	Proximity to Cycle Route Network
Accessibility	Access to Retail Centres by Walk / Cycle
	Access to Employment Centres by Walk / Cycle
	Public Transport Access to Retail Centres
	Public Transport Access to Employment Centres
Public Transport	Viability of Bus Service Improvements
	LTP Identified Public Transport Improvements
	Proximity to Rail Stations

7.2.3 The above indicators will enable an examination of the current status of each objective relative to each cluster to enable the identification of how residential development of that cluster might impact or contribute to each of the transport objectives.

7.3 SCORING METHODOLOGY

7.3.1 To assess each cluster against the specified indicators a scoring system has been developed. A consistent scoring methodology has been used for all indicators to allow a total score to be identified for each cluster and final ranking to occur within an overall analysis framework. An explanation of the scoring methodology is given in Table 7.2 below:

Table 7.2 - Indicator Scoring

Indicator description	Score
The cluster will have a very positive impact on the transport objective	+ 2
The cluster will have a slightly positive impact on the transport objective	+1
The cluster will have a negligible or neutral impact on the transport objective.	0
The cluster will have a slightly negative impact on the transport objective	– 1
The cluster will have a very negative impact on the transport objective	– 2

7.3.2 Alongside each score a commentary has been provided to allow an explanation and justification behind the scoring given.

7.4 SCORING PER INDICATOR

7.4.1 The following section identifies and explains the inclusion of each of the indicators within the assessment, stating the assessment criteria used to judge each cluster against that indicator and how this relates to scoring each cluster within the above scoring methodology.

CONGESTION HOTSPOTS

7.4.2 Under the first indicator, clusters will be scored to take into account their proximity to known congestion hotspots.

7.4.3 Known hotspots as identified within Hampshire County Council's LTP (Page 186, Figure 5.153) include:

- The M3/ A34 junction at Winchester M3 and M27 at morning and evening peaks
- On approaches to and exits from the motorways at peak times
- Within and on access points to peninsulas, particularly the Gosport peninsula, at both peak and inter-peak times (impacting upon Junction 10 of the M27)
- Local peak hour congestion in Winchester

7.4.4 Based on each cluster's location relative to these hotspots and more specific local congestion in town centres and at other congestion points (based on local knowledge), scores will be assigned as indicated in Table 7.3 below:

Table 7.3 - **Congestion Hotspot Associated Scoring**

+2	No hotspots
+1	N / A
0	No hotspots in direct locality but routes to wider network will encounter major hotspots
-1	A significant or several minor hotspots
-2	Several significant hotspots

7.4.5 The location of the Congestion Hotspots is shown on Figure 7.1.

7.4.6 Score +1 is not used within the scoring as clusters close to hotspots can only be awarded a neutral (if minimal effect) or a negative score, thus if a cluster is not in close proximity to a hotspot then the score can only be a positive, and since this is likely to be less common the positive score of +2 is awarded to indicate the large benefits of this characteristic.

ROAD IMPROVEMENTS

7.4.7 Road improvements on key transport corridors will assist in increasing road capacity, reducing congestion and alleviating congestion hotspots. Within this indicator, clusters have been scored on their proximity to known road improvement schemes on key transport corridors.

7.4.8 Road improvement schemes were initially identified through the Solent Transport Strategy and then checked with Hampshire County Council to identify which of the highlighted road improvement schemes were currently programmed and which were longer term schemes which were currently aspirations with no known current start completion date. Through this process the following road improvement schemes, and their current status, were identified from the Solent Transport Strategy as being relevant to the Winchester District LDF process:

- **A3(M)/A27 Junction Improvements** - (Improvements have already commenced and are ongoing. Likely completed 2008/early 2009)
- **M3/A34 Junction Improvements** - (Currently an aspiration with no current funding allocation, developer contributions will be sort)
- **M27 Junction 7 and 8 Improvements** -(Currently an aspiration with the Highways Agency currently seeking developer funding)
- **Botley Bypass** - (Not in a programme as yet but the bypass is a going concern and HCC are looking for developer funding assistance)

7.4.9 The locations of these road improvements and more minor improvements, as identified in consultation with Winchester City Council, are shown in Figure 7.2.

7.4.10 Based on each cluster's location relative to the above road improvements and more minor improvements (as identified by Winchester City Council), scores have been assigned as indicated in Table 7.4 below:

Table 7.4 - Road Improvement Associated Scoring

+2	Major improvement currently in program of works
+1	Minor improvements / Major improvement scheme currently without funding
0	No improvements
-1	N / A
-2	N / A

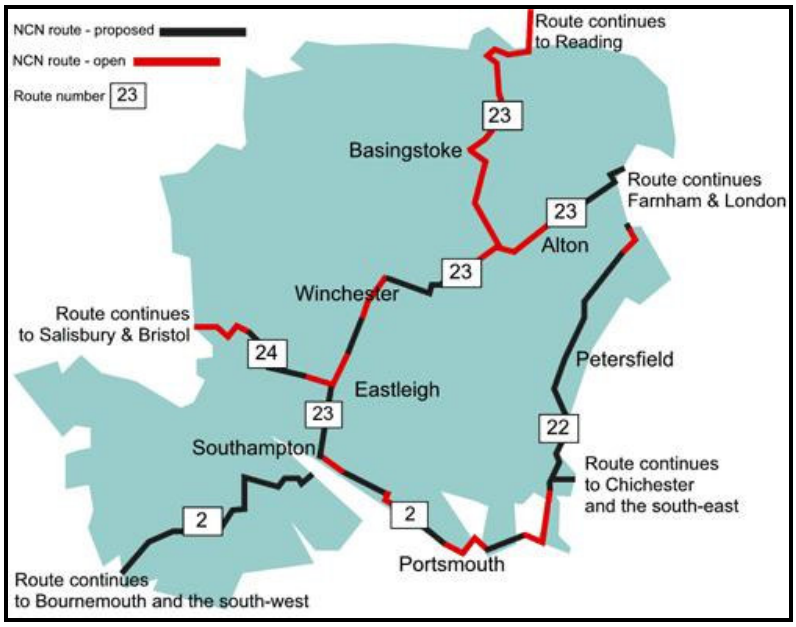
7.4.11 Negative scores have not been used when scoring this indicator because a lack of road improvements in the local vicinity of a cluster may be due to none being needed, rather than due to a lack of road improvements. A cluster that is close to a major congestion hotspot may also be close to a major improvement scheme, which will help alleviate congestion. A positive score within this indicator will therefore help to off set a negative score in regard to a clusters current local congestion, thus providing a more balanced view on future development in this cluster.

PROXIMITY TO THE NATIONAL CYCLE NETWORK

7.4.12 Proximity to the strategic cycle network (including the proposed future extensions to this network) is an indication of good provision for cycling in and around the local area and provides the ability to travel further and in a safe manner, on dedicated facilities. The greater the availability for people to cycle their peak time journeys, the greater the opportunity to reduce traffic congestion via these more

sustainable modes. Figure 7.3 below indicates the proposed and open national cycle route currently available through Hampshire and the Winchester District.

Figure 7.3 – National Cycle Network Through Hampshire (Source: Hants.gov.uk)



7.4.13 In connection with this indicator, an appreciation has also been made to the general cycle opportunities within each clusters location and the availability of 'safer' cycle routes and low flow roads within the local area. Reflection of these local cycle opportunities although not directly scored is noted within the commentary of each cluster given in Section 8 of this report.

7.4.14 Therefore, based on each cluster's location relative to the national foot/cycle route network scores have been assigned as indicated in Table 7.5 below:

Table 7.5 - Proximity to Cycle Network Associated Scoring

+2	Within 0-1km from the route network
+1	Within 1-2km of the route network
0	Greater then 2km / Not on the route network
-1	N / A
-2	N / A

7.4.15 In assessing proximity to the route network, scores have been assigned as a positive, not a negative, because a lack of access to the route cycle network may not necessarily indicate a low level of accessibility, simply a lack of route network availability. However being in close proximity to the national cycle route network may increase the likelihood of commuters cycling to work, due to the route network generally providing a better standard of cycle routes. Hence, the more people cycling to work the greater potential to reduce general traffic congestion at peak times.

ACCESS TO RETAIL CENTRES BY WALK/CYCLE

7.4.16 Shopping accounted for 20% of all trips by all transport modes in 2005 (RAC Foundation of Motoring, 2005). The average shopping distance for these trips was measured at 4.3 miles in 2003/03 (DfT, 2005) and over half (58%) of all car trips in the UK are under 5 miles, equal to a half hour cycle ride (DfT, 2005). In terms of accessibility via sustainable transport it is therefore important that clusters are assessed in terms of their accessibility to retail centres via walking and cycling to ensure increased uptake in these modes where possible.

7.4.17 Retail centres are taken as those identified within Hampshire County Councils Accession plots for the Winchester District area and do not include local centres which would be expected as part of any large residential development. Retail Centres were identified within the plots as follows:

- Winchester
- Eastleigh
- Fareham
- Waterlooville

7.4.18 DfT guidance indicates that the maximum acceptable walking and cycling distance for these modes to be 2km and 5km respectively. Based on these figures each cluster's location relative to their closest retail centre has been scored on the following criteria as indicated in Table 7.6 below:

Table 7.6 - Associated Scoring for Accessibility of Retail Centres by Foot/Cycle

+2	Within 2km from retail centre
+1	Within 2-5km of retail centre
0	N / A
-1	Greater then 5km from retail centre
-2	N / A

7.4.19 Those clusters within 2km of a retail centre afford residents the ability to walk and cycle to these amenities and thus gain the most positive scoring. Those clusters within 2km – 5km of a retail centre are likely to only attract cyclists, and not walkers, thus only a +1 is awarded. Clusters 5km or further from a retail centre are likely to only generate vehicle trips for the purposes of shopping thus such clusters are awarded a negative score.

ACCESS TO EMPLOYMENT CENTRES BY WALK/CYCLE

7.4.20 As stated above, DfT guidance indicates that the maximum acceptable walking and cycling distance for the mode of walking is 2km and for cycling 5km. this is equivalent to half an hour's journey time via each mode. Journeys for commuting and business travel within the UK make up 21% of all trips by all transport modes (RAC Foundation for Motoring, 2005) and thus accessibility to employment via walking and cycling is key to reducing single occupancy car use and hence peak hour congestion. Employment Centres were identified within the Accession plots as follows:

- Winchester
- Eastleigh
- Whiteley/Park Gate
- Fareham
- Waterlooville

7.4.21 Similarly to retail, each cluster's location relative to their nearest employment centre will be scored on the following criteria as indicated in Table 7.7 below:

Table 7.7 - Associated Scoring for Accessibility of Employment Centres by Foot/Cycle

+2	Within 2km from employment centre
+1	Within 2-5km of employment centre
0	N / A
-1	Greater then 5km from employment centre
-2	N / A

7.4.22 Those clusters within 2km of an employment centre afford residents the possibility to walk and cycle in their commute to these centres and thus gain the cluster the most positive score (+2). Those clusters within 2km – 5km of an employment centre are likely to only attract cyclists, and not walkers, thus only a +1 is awarded. Clusters 5km or further from a employment centre are likely to only generate vehicle trips for the commuting and business purposes and thus such clusters are awarded a negative score. Employment centres are taken as those identified within Hampshire County Councils Accession plots for the Winchester District area.

PUBLIC TRANSPORT ACCESS TO RETAIL CENTRES

7.4.23 Hampshire County Council, using the accessibility programme Accession, has previously conducted a public transport accessibility study of all homes within the district of Winchester relative to retail centres in and surrounding the district.

7.4.24 Using this previous Accession study (based on 2001 census data) each cluster's location relative to identified retail centres will be scored as indicated in Table 7.8 below:

Table 7.8 - Associated Scoring for Accessibility of Public Transport to Local Retail Centres

+2	Under 15 minutes on PT to access retail centre
+1	15 to 30 minutes on PT to access retail centre
0	Over 30 minutes on PT to access retail centre
-1	N / A
-2	No PT Access

7.4.25 The ranges given for each score category have been taken from those used within the Hampshire County Council Accession study on which this indictor will be judged.

PUBLIC TRANSPORT ACCESS TO EMPLOYMENT CENTRES

7.4.26 One of the core objectives of the LDF assessment framework is to improve public transport. Therefore it is vital that each cluster's accessibility to public transport is assessed in order to ensure that future residential developments are in the most accessible location to increase public transport mode shares within the district of Winchester.

7.4.27 Hampshire County Council, using the accessibility programme Accession, has previously conducted a public transport accessibility study of all homes within the district of Winchester relative to employment centres in and surrounding the district. Using this previous Accession study (based on 2001 census data) each cluster's location, relative to identified employment centres, will be scored as indicated in Table 7.9 below:

Table 7.9 Associated Scoring for Accessibility of Public Transport to Local Employment Centres

+2	Under 20 minutes on PT to access employment centre
+1	20 to 40 minutes on PT to access employment centre
0	Over 40 minutes on PT to access employment centre
-1	N / A
-2	No PT Access

CURRENT PROVISION OF LOCAL RETAIL

7.4.28 In order to fully assess the accessibility of a cluster we must also consider its accessibility and provision of local retail centres within the cluster itself. As previously stated, the average shopping distance has been measured at 4.3 miles in 2002/03 (DfT, 2005), so a number of retail trips may be accomplishable within the cluster itself if sufficient provision of retail is available. Winchester City Council have commissioned a retail and town centre uses study for the district (Nathaniel Lichfield and Partners, 'Winchester City Council – Retail and Town Centre Uses Study' (Sept 2007)) and within this study an audit of the retail centres within the district was conducted. Using the study as a basis each cluster will be scored as indicated in Table 7.10 below on its current local retail provision:

Table 7.10 Associated Scoring for Accessibility of Current Provision of Local Retail

+2	Over 50 retail units within/or adjoining the cluster
+1	10-50 retail units within the cluster
0	Less than 10 retail units within the cluster
-1	N / A
-2	N / A

7.4.29 Negative scores have not been used when scoring this indicator because a lack of local retail centres in the local vicinity of a cluster may be off set by its close location to a major retail centre which is equally beneficial. Conversely a cluster that is not near major retail centres and as such a reasonably large local retail centre has emerged will have its scores balanced in regard to accessibility to retail through positive scores available with this indicator.

VIABILITY OF BUS SERVICE IMPROVEMENTS

7.4.30 An indicator of the viability of public transport improvement provides the ability to assess how sustainable any extensions to the existing bus network, to serve each cluster, would be. To enable an assessment of this type it was assumed that a development of 500 households would be required to support one additional vehicle. This is based on the expected revenue level that would be required to cover the cost of one additional vehicle. It has also been assumed that one additional vehicle would be required for each additional 2km that a current bus service must journey from the network to serve the cluster. Hence the highest score for this indicator would be gained if the cluster was close to the route network or the potential development in that cluster was very large.

7.4.31 Using Hampshire County Council's mapping of the county wide current bus network, and the assumptions stated above, the following scoring criteria has been developed to assess this indicator, as shown in Table 7.11 below:

Table 7.11 Associated Scoring for viability of public transport improvements

+2	The cluster will support public transport improvements
+1	There is potential that the site could support public transport improvements
0	N / A
-1	The site will not support public transport improvements
-2	N / A

7.4.32 Any development at a reasonable scale is likely to require additional public transport improvement, however if the scale of development cannot support these improvements then additional funding will need to be found to supplement public transport provision in these area. Hence, clusters identified within these categories have been given a negative scoring while those clusters that can / have the likely potential to support public transport improvement have been given a positive score to indicate their suitability in this area. The decision between awarding a +2 or +1 score has been made on whether the cluster could definitely support PT improvement (+2), or would 'likely' be able to support PT improvements but would require further analysis at the development period (+1).

LTP IDENTIFIED PUBLIC TRANSPORT IMPROVEMENTS

7.4.33 Hampshire's Local Transport Plan identifies a number of public transport improvements which, if close to a cluster location, has the potential to increase the public transport accessibility of the site and public transport modal share, should it be developed. To ensure this is factored into the assessment of the clusters this indicator will score clusters on their proximity to already identified public transport improvement schemes.

7.4.34 Known public transport improvements relevant to the District of Winchester were initially identified within Hampshire County Councils LTP. These were then checked with Hampshire County Council as to their current status and expected time frame of delivery.

7.4.35 Through this process the following public transport improvement schemes, and their current delivery status, have been identified, and judged as being relevant to the Winchester District LDF process:

- **Botley Road bus link** – (Just outside of the Winchester District boundary, Southampton City Council are still keen to initiate this link but the scheme is currently on hold after the operator Solent Blue Line judged the link as currently un-commercial an operation)
- **Havant – Waterlooville, Quality bus partnership** – (Currently in the programme for this year (2007))
- **A3 Public Transport Corridoor improvements** – (ongoing improvements being made to the provision of Public Transport on the A3 Corridor)
- **Segensworth roundabout/Witherbed Lane link** – (Work commenced in September 2007 and is expected to last 6 months. The works will provide a new traffic signal controlled junction (with pedestrian and cycle facilities) at Segensworth Road and the new Witherbed Lane link will also provide an off road shared cycleway/footway and an equestrian pathway).
- **Swanwick, Yew Tree Drive bus link** – (The Bus link is currently under construction and due to open in November 2007)
- **Winchester Long Term PT Strategy** – (Under the project MIRACLES, three bus service buses and their related bus stops have been improved and updated (Services 1,5 & 6). A new bus station is planned in the longer term as is an additional vehicle parking deck at Winchester rail station and the updating of the station ticket office etc in connection with South West trains).
- **South of Winchester Park and Ride** – (Planned construction in 2008/09 this will create a third park and ride site for Winchester)

7.4.36 The locations of these public transport improvements are shown in Figure 7.2.

7.4.37 Based on each cluster's location relative to these public transport improvements, and more minor improvements identified by Winchester City Council, scores will be assigned as indicated in Table 7.12 below:

Table 7.12 - Public Transport Improvements Associated Scoring

+2	Major improvement
+1	Minor improvements
0	No improvements
-1	N / A
-2	N / A

7.4.38 Negative scores have not been used when scoring this indicator because a lack of public transport improvements in the local vicinity of a cluster may be due to none being needed, rather then due to a neglect of public transport improvements. Conversely a cluster that is currently not well served by public transport, but is in proximity of a major improvement scheme, will have its scores balanced in regard to public transport by the positive scores available with this indicator.

PROXIMITY TO RAIL STATIONS

7.4.39 The availability of a local rail station is likely to induce a significant uptake in rail travel within that cluster for peak hour commuter trips. This indicator judges the proximity of each cluster to a rail station.

7.4.40 Table 7.13 below indicates the scoring criteria associated with this indicator

Table 7.13 - **Associated Scoring for Judging Clusters Proximity to rail stations**

+2	Within 800m from rail station
+1	Within 2km from rail station
0	Within 5km from rail station
-1	N / A
-2	Nearest rail station greater then 5km away

7.4.41 Within the above scoring high accessibility of a rail station within this indicator has been judged to equal a cluster within 800m, equal to 10 minutes walk from that station. Reasonable accessibility has been judged as equal to a cluster being located 2km (25 minute walk) from the station and maximum acceptable distance being 5km (20 minute cycle). Beyond 5km requires rail users to travel by motorised transport to reach the station and thus earns a negative rating.

7.5 NEXT STAGE OF ASSESSMENT

7.5.1 Totals scores for each cluster will be obtained by aggregating the scores awarded against each of the above indicators. This assessment will inform the strategic allocation process and provide an assessment of the transport sustainability and the potential of each cluster to accommodate/mitigate potential future development. However, there may be additional overriding factors (not assessed in this study) as to why one cluster is less sustainable than another, and thus any ranking of scores should be viewed purely on a transport assessment basis.

8 Cluster Scoring

8.1 INTRODUCTION

8.1.1 This chapter sets out the scores awarded to each cluster based on the indicators identified in the previous section and associated scoring criteria. For each cluster a brief introduction to the cluster is given and key characteristics, both positive and negative, used to calculate the relative scores is set out. Below this statement a summary table indicates the scores awarded relative to each indicator with an overall score for that cluster.

8.1.2 Indicators assessing accessibility to major retail and employment centres via walking/cycling and public transport are similar in nature and thus have been half weighted. The total score for each cluster reflects this half weighting to avoid double counting and an over emphasis on 'Accessibility' to the detriment to scores given within the additional assessment areas of 'Congestion' and 'Public Transport'.

8.2 SCORING RESULTS

CLUSTER 1 – MICHELDEVER STATION

8.2.1 Cluster 1 (Micheldever Station) is located in the very north of the district and has the largest potential development capacity of any of the clusters with a total estimate of 12,500 residential units. The cluster's key feature is its close proximity to Micheldever Station which provides stopping service links south to major centres such as Winchester and Southampton and north to Basingstoke and London.

8.2.2 The cluster is not located near to any highlighted traffic hotspots. Its large development size means that the viability of improved bus services is very good due to the likely high demand such a development would provide for services to the local major centres of Winchester and Basingstoke.

8.2.3 Negative aspects associated with the cluster include its lack of potential cycle/walking access to current major centres of retail and employment as well as not being located along the cycle route network.

Table 8.1 – Cluster 1 Scoring

Cluster 1 – Micheldelver Station	
Indicator	**Matrix Score**
Congestion Hotspots	**+2**
Road Improvements	**0**
Proximity to Cycle Route Network	**0**
Access to Retail Centres by Walk/Cycle	**-1***
Access to Employment Centres by Walk/Cycle	**-1***
Public Transport Access to Retail Centres	**+1***
Public Transport Access to Employment Centres	**+1***
Provision of Local Retail	**0**
Viability of Bus Service Improvements	**+2**
LTP Identified Public Transport Improvements	**0**
Proximity to Rail Stations	**+2**
TOTAL	**6**

*** Half weighting applies to this indicator score**

CLUSTER 2 – KINGS WORTHY/HEADBOURNE WORTHY

8.2.4 Cluster 2 (Kings Worthy/ Headbourne Worthy) lies just north of the City of Winchester, just off of junction 9 of the M3. Junction 9 is a significant traffic hotspot as it provides access to both the M3 and the A34. Proposed junction improvements (as indicated within the Solent Transport Strategy) would create additional capacity and help ease current congestion issues at peak times but such improvements are currently only aspirations and require securing through developer funding.

8.2.5 Kings Worthy is very close to the National Cycle Route network (23) and is also within 2-5km of the retail and employment centres in and around the City of Winchester and connected via a number of local cycleways and lightly trafficked roads, making them accessible from the cluster by cycle or walking. Public Transport access is also good with frequent services to the centre of Winchester by bus and to outlying employment centres.

8.2.6 The practically of improving these bus services should this cluster be developed is good and the cluster should benefit from further improvements within Winchester's long term PT strategy. However, the cluster does not have its own rail station and rail users would need to travel into Winchester's centre to access the nearest rail station.

Table 8.2 – Cluster 2 Scoring

Cluster 2 – Kings Worthy / Headbourne Worthy	
Indicator	**Matrix Score**
Congestion Hotspots	**-1**
Road Improvements	**+1**
Proximity to Cycle Route Network	**+1**
Access to Retail Centres by Walk/Cycle	**+1***
Access to Employment Centres by Walk/Cycle	**+1***
Public Transport Access to Retail Centres	**+1***
Public Transport Access to Employment Centres	**+2***
Provision of Local Retail	**0**
Viability of Bus Service Improvements	**+2**
LTP Identified Public Transport Improvements	**+1**
Proximity to Rail Stations	**0**
TOTAL	**6.5**

*** Half weighting applies to this indicator score**

CLUSTER 3 – WINCHESTER CITY NORTH

8.2.7 Cluster 3 (Winchester North) covers potential development areas in the city of Winchester between junctions 9 and 10 of the M3. Both junctions are congestion hotspots with peak hour congestion. Proposed improvements planned for junction 9 within the Solent Transport strategy would create additional capacity and help ease current congestion issues at peak times but such improvements are currently only aspirations and require securing through developer funding.

8.2.8 Proximity to the Route Cycle Network is very good with route 23 passing through the cluster. Cycle and walking access to local major retail and employment centres is also very good with development areas being within 2km of such services and a good connection of local cycle routes within Winchester City. Due to the cluster encompassing the North of the City of Winchester, Public Transport access to retail and employment centres is excellent with the viability of improved services being supported within Winchester's long term LTP public transport strategy. Winchester rail station is also located within this cluster and provides frequent services in both rail directions, including very regular frequency to London.

Table 8.3 – Cluster 3 Scoring

Cluster 3 – Winchester City North	
Indicator	**Matrix Score**
Congestion Hotspots	**-2**
Road Improvements	**+1**
Proximity to Cycle Route Network	**+2**
Access to Retail Centres by Walk/Cycle	**+2***
Access to Employment Centres by Walk/Cycle	**+2***
Public Transport Access to Retail Centres	**+2***
Public Transport Access to Employment Centres	**+2***
Provision of Local Retail	**+2**
Viability of Bus Service Improvements	**+2**
LTP Identified Public Transport Improvements	**+2**
Proximity to Rail Stations	**+2**
TOTAL	**13**

*** Half weighting applies to this indicator score**

CLUSTER 4 – WINCHESTER CITY SOUTH

8.2.9 Cluster 4 (Winchester city south) covers the City of Winchester between Junctions 10 and 11 of the M3, which surrounds the clusters eastern and southern boundary. Both junctions experience congestion at peak times with no current plans to implement improvements as part of the Solent Transport Strategy.

8.2.10 As is the case in the north, Winchester City South also encompasses the National Route Cycle network (Route 23) and provides excellent access to local major retail and employment centres by both walking/cycling (through an good network of local cycle routes and low flow roads) and public transport. The cluster also has very good viability for improved public transport improvements through being incorporated within Winchester's long term public transport strategy, and through proposals for a South Winchester Park and Ride site.

8.2.11 The cluster is slightly further from the Winchester rail station than Cluster 3, but the station is still accessible via public transport or via bicycle.

Table 8.4 – Cluster 4 Scoring

Cluster 4 – Winchester City South	
Indicator	**Matrix Score**
Congestion Hotspots	**-2**
Road Improvements	**0**
Proximity to Cycle Route Network	**+2**
Access to Retail Centres by Walk/Cycle	**+2***
Access to Employment Centres by Walk/Cycle	**+2***
Public Transport Access to Retail Centres	**+2***
Public Transport Access to Employment Centres	**+2***
Provision of Local Retail	**+2**
Viability of Bus Service Improvements	**+2**
LTP Identified Public Transport Improvements	**+2**
Proximity to Rail Stations	**+1**
TOTAL	**11**

*** Half weighting applies to this indicator score**

CLUSTER 5 – ALRESFORD

8.2.12 The Alresford Cluster (Cluster 5) lies to the North East of the district of Winchester, and is accessed primarily from the A31. Alresford is not located directly near to any highlighted major or minor traffic hotspots.

8.2.13 The cluster is located on the National Cycle Route Network (Route 23) but the closest centres for major retail and employment are located in Winchester which is beyond the foot and cycle catchment area (greater then 5km from the cluster). However, Alresford itself has a very good range of local retail services, plus employment opportunities, which would well serve additional residential development in the area.

8.2.14 Public transport access to Winchester is possible via a current half-hourly service. The viability of improvements to this service is limited by the smaller size of potential development within this cluster, however, it is still possible due to the existing network already serving the area.

8.2.15 No public transport improvements are planned in the area within the LTP and Alresford has no mainline rail station. The cluster's nearest railway station is situated in Winchester, which is further then 5km away.

Table 8.5 – Cluster 5 Scoring

Cluster 5 – Alresford	
Indicator	**Matrix Score**
Congestion Hotspots	**+2**
Road Improvements	**0**
Proximity to Cycle Route Network	**+2**
Access to Retail Centres by Walk/Cycle	**-1***
Access to Employment Centres by Walk/Cycle	**-1***
Public Transport Access to Retail Centres	**+1***
Public Transport Access to Employment Centres	**+1***
Provision of Local Retail	**+2**
Viability of Bus Service Improvements	**+1**
LTP Identified Public Transport Improvements	**0**
Proximity to Rail Stations	**-2**
TOTAL	**5**

*** Half weighting applies to this indicator score**

CLUSTER 6 – COLDEN COMMON/ TWYFORD/ SHAWFORD

8.2.16 Cluster 6 (Colden Common / Twyford / Shawford) is located to the south of the City of Winchester, divided from it by the M3. Although set back from the motorway this cluster encompasses a key link between Bishopstoke, Bishops Waltham and the M3 (along the B3335 and B3354) and this cluster is affected by several minor traffic hotspots, for which no road improvements are planned within the Solent Transport Strategy.

8.2.17 Connecting onto the City of Winchester, the National Cycle Route Network (Route 23) runs through the cluster, helping to providing a good level of cycle access (within 2km-5km) to the retail and employment centres of Eastleigh and Winchester. Public transport access to both these major centres is also good for the majority of the cluster area. Services currently in operation provide good viability for improvement should the cluster be chosen for development. However, the LTP identified no proposed public transport improvements for the area. The cluster is within 800m from the Shawford rail station.

Table 8.6 – Cluster 6 Scoring

Cluster 6 – Colden Common / Twyford / Shawford	
Indicator	**Matrix Score**
Congestion Hotspots	**-1**
Road Improvements	**0**
Proximity to Cycle Route Network	**+2**
Access to Retail Centres by Walk/Cycle	**+1***
Access to Employment Centres by Walk/Cycle	**+1***
Public Transport Access to Retail Centres	**+1***
Public Transport Access to Employment Centres	**+1***
Provision of Local Retail	**0**
Viability of Bus Service Improvements	**+1**
LTP Identified Public Transport Improvements	**0**
Proximity to Rail Stations	**0**
TOTAL	**4**

*** Half weighting applies to this indicator score**

CLUSTER 7 – BISHOP'S WALTHAM/ WALTHAM CHASE/ SWANMORE

8.2.18 Cluster 7 (Bishops Waltham / Waltham Chase / Swanmore) is located in the middle of the southern half of the District of Winchester at the cross roads of the B2177 and B3035. Due to its more rural location (in comparison to the majority of other clusters) the cluster benefits from not being directly affected by highlighted traffic hotspots.

8.2.19 No major road improvements are planned in the area and due to its location centres of major retail and employment are greater then 5km away and thus unlikely to be reached by foot or cycle. However, in light of this fact Bishops Waltham has developed a sizable local retail centre which would well serve additional residential development within the cluster.

8.2.20 Public Transport access to major retail and (particularly) employment centres is possible from the cluster but journey times are over 30 minutes and are provided by an half-hourly service. However, there is the opportunity to improve the service, given the current network in the area.

8.2.21 No LTP public transport improvements are currently proposed for the cluster however the cluster is within 5km from Botley Rail Station.

Table 8.7 – Cluster 7 Scoring

Cluster 7 – Micheldelver Station	
Indicator	**Matrix Score**
Congestion Hotspots	**+2**
Road Improvements	**0**
Proximity to Cycle Route Network	**0**
Access to Retail Centres by Walk/Cycle	**-1***
Access to Employment Centres by Walk/Cycle	**-1***
Public Transport Access to Retail Centres	**0***
Public Transport Access to Employment Centres	**+1***
Provision of Local Retail	**+2**
Viability of Bus Service Improvements	**+1**
LTP Identified Public Transport Improvements	**0**
Proximity to Rail Stations	**0**
TOTAL	**4.5**

*** Half weighting applies to this indicator score**

CLUSTER 8 – WHITELEY

8.2.22 The Whiteley cluster (Cluster 8) is located on the south western boundary of the Winchester District and is accessible directly off Junction 9 of the M27. However, this junction is a significant traffic hotspot at peak times.

8.2.23 No improvements are current planned for Junction 9, but trips heading north from the cluster along the A3051 towards Botley would be assisted by the proposed Botley bypass. However, the scheme is not yet within a programme but is a going concern of HCC and will require developer funding assistance to proceed.

8.2.24 Accession plots indicate major retail centres are over 30 mins ride away via public transport from the cluster but employment centres are only under 20 minutes away due to out of town business parks in the local area, just off the M27 (Junction 9). Whitely also has a strong local retail presence which would benefit residential development within the cluster.

8.2.25 The cluster is not on the National Cycle Route Network and walking/cycling to the nearest major retail centre of Fareham would be unlikely due to the required crossing of the M27. However, due to employment centres existing on the Whiteley side of the motorway within 2km – 5km of the cluster, and the strong local retail presence within the cluster, there is the opportunity for these facilities to be reached via walking or cycling.

8.2.26 Due to the large potential unit development in the cluster (around 3500) and the current bus network within the cluster, viability of improved bus services is good. The LTP identifies two public transport improvements in the local area, namely, Botley Road/ Yew Tree Drive bus link (currently on hold) and Segensworth Roundabout's addition of a shared cycleway/footway/equestrian pathway to create a new Witherbed Lane link (Due for completion mid 2008).

8.2.27 The cluster's nearest rail station is in Swanwick which is within 2km of the cluster.

Table 8.8 – Cluster 8 Scoring

Cluster 8 – Whiteley	
Indicator	**Matrix Score**
Congestion Hotspots	-2
Road Improvements	+2
Proximity to Cycle Route Network	0
Access to Retail Centres by Walk/Cycle	0*
Access to Employment Centres by Walk/Cycle	+1*
Public Transport Access to Retail Centres	0*
Public Transport Access to Employment Centres	+2*
Provision of Local Retail	+2
Viability of Bus Service Improvements	+2
LTP Identified Public Transport Improvements	+2
Proximity to Rail Stations	+1
TOTAL	8.5

*** Half weighting applies to this indicator score**

CLUSTER 9 – WICKHAM/ KNOWLE

8.2.28 Cluster 9 (Wickham / Knowle) is located just east of Cluster 8 on the southern boundary of the Winchester District, just off Junction 10 of the M27 which is a significant traffic hotspot at peak times. An additional minor traffic hotspot also exists to the north of the cluster on the A334, the local access route to Southampton, meaning that currently both major routes out of the cluster currently experience congestion at peak times.

8.2.29 The cluster is located on the National Route Cycle Network (Route 2) and also offers the potential for walk/cycle access to the major retail and employment centres of Fareham (2km-5km away) through local cycle routes and low flow roads. Public transport access to these centres is also good with journey times taking only 15-30 minutes, and has potential for improvement based on the current network and close proximity to Fareham. There is no rail station within this cluster but the nearest station, Swanwick, is within 5km of the cluster.

Table 8.9 – Cluster 9 Scoring

Cluster 9 – Wickham / Knowle	
Indicator	**Matrix Score**
Congestion Hotspots	**-1**
Road Improvements	**0**
Proximity to Cycle Route Network	**+1**
Access to Retail Centres by Walk/Cycle	**+1***
Access to Employment Centres by Walk/Cycle	**+1***
Public Transport Access to Retail Centres	**+1***
Public Transport Access to Employment Centres	**+2***
Provision of Local Retail	**+1**
Viability of Bus Service Improvements	**+1**
LTP Identified Public Transport Improvements	**0**
Proximity to Rail Stations	**0**
TOTAL	**4.5**

*** Half weighting applies to this indicator score**

CLUSTER 10 – DENMEAD

8.2.30 Denmead is located towards the southeast corner of Winchester district, connected to the major road network via the B2150. Although there are no traffic hotspots in the close vicinity of the cluster, commuters are likely to encounter traffic hotspots on their way to joining the major road network. No road improvements are planned close to the cluster and the cluster is not served by the National Cycle Network although cycle links do exist along routes to the neighbouring centre of Waterlooville

8.2.31 The cluster has a reasonably sized local retail centre which serves Denmead but to access more major centres of employment and retail, residents of the cluster must travel to Waterlooville which is 5km from the cluster and as such is reachable distance through cycling as well as public transport.

8.2.32 The cluster is currently served by a fairly frequent bus service, which could be improved to serve additional residential development in this location. No LTP improvements are however currently planned in the local area and the cluster is situated greater than 5km from a rail station.

Table 8.10 – Cluster 10 Scoring

Cluster 10 – Denmead	
Indicator	**Matrix Score**
Congestion Hotspots	**0**
Road Improvements	**0**
Proximity to Cycle Route Network	**0**
Access to Retail Centres by Walk/Cycle	**+1***
Access to Employment Centres by Walk/Cycle	**+1***
Public Transport Access to Retail Centres	**+1***
Public Transport Access to Employment Centres	**+2***
Provision of Local Retail	**+1**
Viability of Bus Service Improvements	**+1**
LTP Identified Public Transport Improvements	**0**
Proximity to Rail Stations	**-2**
TOTAL	**2.5**

*** Half weighting applies to this indicator score**

CLUSTER 11 – WEST OF WATERLOOVILLE

8.2.33 West of Waterlooville is located on the south east corner of the Winchester district. The West of Waterlooville Cluster contains the designated Major Development Area (MDA1).

8.2.34 The cluster is close to A3(M)/A27 Junction and is on the A3 Corridor. Both of these locations have been identified as being traffic hotspots. Road improvements have already commenced on the A3(M)/A27 Junction (Likely completion 2008/09) and there are ongoing improvements being made to the provision of Public Transport on the A3 Corridor.

8.2.35 The cluster is not served by the National Cycle Route Network. However, cycling will still be a viable mode choice for journeys to major retail and employment centres in Waterlooville due to the reasonably short distance from the cluster to these locations and a good local network of cycle ways and footpaths. The cluster is not served by a rail station but is within 5km of Cosham station and is well served by public bus which has good viability of improvement given the strong current bus network and the scale of possible additional residential development.

Table 8.11 – Cluster 11 Scoring

Cluster 11 – West of Waterlooville	
Indicator	**Matrix Score**
Congestion Hotspots	**-1**
Road Improvements	**1**
Proximity to Cycle Route Network	**0**
Access to Retail Centres by Walk/Cycle	**+2***
Access to Employment Centres by Walk/Cycle	**+2***
Public Transport Access to Retail Centres	**+1***
Public Transport Access to Employment Centres	**+2***
Provision of Local Retail	**0**
Viability of Bus Service Improvements	**+2**
LTP Identified Public Transport Improvements	**+2**
Proximity to Rail Stations	**0**
TOTAL	**7.5**

*** Half weighting applies to this indicator score**

9 Study Summary

9.1 INTRODUCTION

9.1.1 The purpose of this study has been to carry out a review of potential locations for residential development to determine their suitability in terms of their compliance with transport policy objectives and impact on the strategic road network. Locations for residential development have been identified through a review of committed and potential development sites. These have been assessed for suitability against:

- A qualitative audit of clusters against policy assessment criteria
- The impact of potential residential development trips on the strategic road network
- The impact of potential residential development trips on key junctions within the Winchester District area

9.2 QUALITATIVE AUDIT OF CLUSTERS

9.2.1 A detailed review of cluster based compliance with transport policy criteria is provided in Section 8. A summary of the scores for each cluster against the criteria is provided in Table 9.1 below.

Table 9.1 Scoring of Clusters

Cluster	TOTAL	Congestion			Accessibility					Public Transport		
		Congestion Hotspots	Road Improvements	Proximity to Walk/Cycle Route Network	Access to Retail Centres by Walk/Cycle	Access to Employment Centres by Walk/Cycle	Public Transport Access to Retail Centres	Public Transport Access to Employment Centres	Provision of Local Retail	Viability of Public Transport Improvements	LTP Identified Public Transport Improvements	Proximity to Rail Stations
(3) Winchester City North	13	-2	1	2	2	2	2	2	2	2	2	2
(4) Winchester City South	11	-2	0	2	2	2	2	2	2	2	2	1
(8) Whiteley	8.5	-2	2	0	1	0	0	2	2	2	2	1
(11) West of Waterlooville	7.5	-1	1	0	2	2	1	2	0	2	2	0
(2) Kings Worthy/ Headbourne Worthy	6.5	-1	1	1	1	1	1	2	0	2	1	0
(1) Micheldever Station	6	2	0	0	-1	-1	1	1	0	2	0	2
(5) Alresford	5	2	0	2	-1	-1	1	1	2	1	0	-2
(7) Bishops Waltham/ Waltham Chase/ Swanmore	4.5	2	0	0	-1	-1	0	1	2	1	0	0
(9) Wickham/ Knowle	4.5	-1	0	1	1	1	1	2	1	1	0	0
(6) Colden Common/ Twyford/ Shawford	4	-1	0	2	1	1	1	1	0	1	0	0
(10) Denmead	2.5	0	0	0	1	1	1	2	1	1	0	-2
					HALF WEIGHTING							

9.2.2 The clusters in Winchester have achieved the highest scores due to the availability of local services, access to employment and retail centres and the opportunity for developments to be linked to public transport improvements. This is achieved through:

- Good Access by Walk, Cycle and Public Transport to key Retail and Employment Centres
- Potential to improve existing public transport provision to serve development in this cluster

- Proximity to Winchester Rail Station

9.2.3 Other potential development clusters that achieve higher scores are either additions to existing significant residential development with good opportunity for public transport enhancement and access to local services (Whiteley) or those locations which are close to well established centres (West of Waterlooville and Kingsworthy. Those clusters that have lower scores are at more remote locations to employment and retail centres, which also present a greater challenge to improve accessibility.

9.3 IMPACT ON HIGHWAY NETWORK OPERATION

9.3.1 This study has reviewed the forecast impact of individual development locations on the strategic network. It has been identified that development at Micheldever Station and Whiteley will result in a significant impact on the operation of the highway network. This is in part due to the size of the potential developments at these locations but also because trips generated by them occur on sections of the network that already experience a degree of stress. In addition the West of Waterlooville location results in increased stress on the A3 for southbound trips to the main employment centres associated with this location.

9.4 TRAFFIC IMPACT AT JUNCTIONS

9.4.1 An assessment has been undertaken for the forecast number of trips generated by possible residential development locations at junctions on the strategic road network. This has identified that:

- Development at Micheldever Station would result in a significant number of additional trips at congestion hotspots within the district
- M3 Junction 9 would experience a significant increase in trips in the peak hour, principally as a result of residential development at Winchester City North
- Development at Whiteley would result in a significant increase in the number of trips at M27 Junction 9

9.4.2 More detailed analysis is required to determine how the impact of potential trips at these locations could be mitigated. This assessment will be undertaken following the public consultation on the Core Strategy.

9.5 OVERALL SUMMARY

9.5.1 This study has provided a qualitative assessment of the relative merits of residential development at different locations within the Winchester District area, focused on sustainability criteria. This has taken into account the full amount of housing it may be possible to realise within the district to enable a subsequent decision on preferred locations for residential development. In addition an assessment has been undertaken to determine the likely impact of potential development on key routes within the district and on the HA road network. This latter assessment provides information by which stakeholders due to participate in LDF determination can an informed response.

9.5.2 In combination the assessments undertaken provide an evidence by which the relative transport merits of potential residential development locations can be assessed. This provides one of the elements necessary to determine preferred locations for residential development.

Figures (3.1, 4.1, 7.1 & 7.2) & Appendix

Appendix A Accessibility Plots for Employment and Retail Centres

Appendix B Trip Distribution from Clusters

Appendix C Route Choice from Clusters

Appendix D Traffic Impact on Highway Links