



Solihull Town Centre Strategy

Direction Paper No. 5

Movement and Accessibility

June 2006

Prepared by GVA Grimley LLP and Mott MacDonald

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Executive Summary

Purpose of Direction Paper

This is one of six Direction Papers and provides information on traffic issues and their implications for the emerging town centre strategy.

Solihull town centre, as a focus for employment, shopping, health, education and leisure activities, has grown enormously over the past 30 – 40 years. In 2001, around 9,100 people commuted into the town centre to work (excluding the major employment destinations north of the Warwick Road) and a survey conducted around the town centre in 2005 suggested that during the morning peak period alone, almost 20,000 persons travelled into Solihull or passed through it, by all modes of transport. Journeys in private cars accounted for over 80% of these journeys which is not surprising given that Solihull has one of the largest rates of car ownership in the country – reflecting the high per capita of its residents. In recent years, the inexorable growth in car commuting into the centre has been curtailed through the imposition of more stringent car parking standards and policies by the local authority, and marked improvements in the quality of public transport, but there is ample evidence that the lack of capacity in the roads system feeding the centre is now acting as a significant constraint on the accessibility of the centre. A major element of this Position Report deals with the shortcomings of the highway network and will set out in detail both the location and extent of traffic bottlenecks within the highway network.

Future developments within the town centre must, therefore, be undertaken sustainably as far as movement to, from and within the centre is concerned. Only by implementing integrated land use and transport policies, will the dependence on the car for the majority of trips be broken – and this can only be achieved by a fundamental shift in travel behaviour. Future development strategies for the Borough must be rigorously underpinned with sustainable, feasible and attractive transport facilities including walking, cycling and public transport modes. Reduction in the use of the car will also lead to improvements in the environment by ensuring less congestion, better air quality and increased safety for pedestrians.

Baseline and Strategic Issues

In transport policy terms, central, regional and local government policies all seek to achieve a more balanced and sustainable strategy in the provision of transport to encourage less reliance on the car as the principle mode of transport in favour of the more environmentally friendly options of public transport, cycling and walking. In this way, higher densities of development can be achieved without the need for even greater numbers of parking spaces and major road improvements. Indeed, the identification of development options within the centre is predicated on the lack of suitable highway capacity improvements on the network serving the centre. However, even bearing in mind these policy drivers, the private car will always represent the most popular transport mode of choice, and a balance must be achieved which accommodates the car within the emerging master plan for the centre.

The key movement issues which currently affect the centre are:

- Currently around 68% of people commute by car into Solihull centre during the morning peak in comparison to around 61% nationally. More encouragingly, 25% of people travel to the centre by public transport compared to only 15% nationally.
- Cycling and walking trips are much lower in Solihull centre compared to England as whole which may be related the lack of adjacent housing or the poor quality of walking and cycling facilities.
- The highways network around Solihull centre is currently congested with most routes operating at between 15 and 30kph during the peaks. Long traffic queues are frequently reported on key junctions adjacent to the centre. Targets for congestion set within the Local Transport Plan suggest that traffic flows are expected to increase by 4% between 2004 and 2011, with a commensurate increase in levels of congestion.
- Overall, parking provision within the centre is adequate for most of the year, and for most trip purposes. However, saturation levels in parking are observed at peak times of the year, such as the pre-Christmas peak. There is little spare capacity however to support further major developments within the centre, and additional parking must be provided alongside each phase of development.
- There does not appear to be a major accident problem within the centre. However, a number of locations exhibit small clusters of similar accident types, such as Poplar Road and the Warwick Road / Lode Lane roundabout, which should be addressed during the emerging planning stages.
- Consultation with key stakeholders will further help to identify those issues which current affect both people who travel into Solihull centre or who live adjacent to it. The

consultation will also focus on suitable measures for addressing emerging movement problems associated with development opportunities within Solihull and elsewhere within the Borough.

Implications for Growth

Given the clearly identified constraints on new highway infrastructure identified by the Borough, a great deal of consideration will need to be given to the promotion of non-car travel opportunities. This can be achieved by in a number of ways:

- Improvements in the quality, reliability and location of public transport facilities. Public transport within the country suffers from an image problem and is too often seen as the mode of last resort. Public transport providers in the West Midlands have made great strides in recent years in improving the quality of services, but the current bus/rail interchange is too far from the centre of activity within Solihull and the pedestrian linkages between them are not attractive. An opportunity exists to relocate the rail/bus interchange closer to the town centre, and to link it with the current parking facilities on Monkspath Hall Road. The study will analyse the implications for this option, both in accessibility and capital cost terms to determine the feasibility of such an outcome.
- Carefully considering the parking demand for any new development within the centre, and how this can be ameliorated by existing spare capacity elsewhere. The creation of additional parking spaces aligned to current permissible parking rates may in the long-term be counter-productive if there is insufficient highway capacity to service the spaces, and a programme of demand management involving traffic engineering measures will be considered to maximise capacity on the roads around and within the centre.
- A pragmatic approach in delivering new transport infrastructure such that the commercial success of any new development is not jeopardised by its lack of accessibility to all types of user. This will be delivered by a balanced programme of measures which will address walking, cycling, public transport, car and freight trips.

The transport planning input to the emerging town centre proposals will be done holistically alongside the economic and urban design elements to ensure that accessibility and sustainability objectives are fully met and addressed.

Delivery and Implementation

The baseline report identifies the current status of travel and movement within the centre, and has identified a number of potential outputs which could be considered within the urban design framework and option development stages. In addition to the aspirations of the Council for the development of the centre as a whole, the study must also accommodate those of existing

landowners and property managers who are seeking to improve the quality and offer within specific town centre developments. Chief of these is Mell Square which is seeking to maintain its market share by improving and modernising both the buildings and the ambience around them, and the study team are working closely with the owners and operators to ensure that an integrated solution is offered to the Borough.

As previously discussed, any programmed redevelopment must be staged alongside the necessary improvements within the transport system to minimise the lag in either demand or take-up. The lack of opportunity to recommend major highways improvements on the surrounding network will require careful consideration is given to alternative transport modes, and consultation with the key stakeholders is a crucial element within this debate. The study will look at funding opportunities for new transport infrastructure within the overall master planning process.

1 Introduction

Purpose of Direction Paper

- 1.1 This Directions Paper draws together the key findings from a review of baseline documents and accessibility and vehicle movement issues in Solihull.
- 1.2 The paper is structured as follows:
- **Section 2:** Existing transport patterns;
 - **Section 3:** Key implications for the Emerging Town Centre Strategy;
- 1.3 This Directions Paper is one of six papers that form a robust evidence base for the Solihull Town Centre Study. The other papers are:
- 1. Development and Property
 - 2. Retail Policy Considerations;
 - 3. Town Centre Health Check
 - 4. Public Sector Assets;
 - 6. Urban Design Analysis; and finally
- 1.4 There is a clear recognition that the economic performance of the town centre is crucial to the growth and prosperity of the Borough, and that an efficient, safe, reliable and sustainable transport system is of fundamental importance in making this happen.
- 1.5 The new Regional Spatial Strategy (RSS) lists Solihull as one of the 25 strategic centres within the West Midlands which should be the focus for the majority of new retail, leisure and employment developments over the period to 2021. This policy supports guidance issued by the Office of the Deputy Prime Minister (ODPM) in 2005 broadly recommending a 'town centre first' approach, giving added impetus to the need for maintaining Solihull centre as the focus of economic activity within the Borough.
- 1.6 In the context of transport and movement, the study brief calls for a transport and accessibility assessment focussing on current and future public transport provision, car parking and sustainable transport links. The transport baseline report identifies the current movement and access issues confronting the Borough which will need to be addressed within the overall master planning framework to deliver an integrated and holistic solution at the conclusion of the study.

1.7 The Chapter 2 summarises the current status of transport and movement within the town centre within specific topic headings. These topics are:

- Current travel characteristics
- Network conditions and traffic flows
- Historical trends
- Congestion
- Car parking supply and demand
- Public transport provision.
- Accessibility
- Traffic accidents
- Crime
- New developments.
- Walking and Cycling

1.8 Summaries of each topic are given within chapter 2 and the background data for each topic area is contained within the appendices to the report.

2 Existing Transport Patterns

Current Travel Characteristics

- 2.1 Solihull has one of the highest car ownership rates in the country at 1.28 cars per household compared to 0.96 for the West Midlands and 1.11 for England. St Alphege ward, adjacent to the town centre, has a staggering 1.63 cars per household. The private car, therefore, represents the dominant mode of transport within much of Solihull. It is arguable that for many years, development policy within Solihull has both encouraged and reflected this trend with the inevitable consequences of increasing levels of traffic congestion and pressure on parking. Comparisons of car ownership now and in 1991 suggest that there has been around a 10% increase within Solihull, which is roughly comparable to elsewhere in the country.
- 2.2 The dominance of the car as the preferred mode of transport is reflected in journeys to work to Solihull. Around 68% of people travelled to work within the centre by car in 2001 rising to over 70% for the Borough as a whole, compared to around 58% for Birmingham and 61% for England as a whole. More positively, however, almost 22% of people who travelled to the centre for work did so by bus which is almost 3 times higher than both the West Midlands and national rates. Walking and cycling is not well represented in the centre with only around 7% of people travelling to work by those modes, compared to about double that level for the West Midlands and for the rest of the country. The reasons behind the low returns for walking and cycling are not clear, but may be associated with the lack of housing in easy walking distance of the centre, the high car ownership within adjacent wards, the relative easy of access to car parking spaces and the absence of good walk links to the centre.
- 2.3 Solihull draws its workforce from a wide catchment area, but there are particular concentrations around Monkspath to the south, Knowle and Dorridge to the east, Shirley to the west and Elmdon Heath/Olton to the north. Most significantly, however, an analysis of home location by mode of travel indicates that persons living closest to the centre are the least likely to travel by public transport, again reflecting the high levels of car ownership within these affluent districts. This picture is reinforced when considering the split between white and blue collar workers travelling into the centre. Over 85% of the workforce can be described as 'white collar' reflecting the importance of Solihull as a professional, administrative and managerial centre – but further strengthening the importance of the car as the preferred means of travel.

2.4 Network Conditions and Traffic Flows

Traffic Flows

2.5 Traffic data is available for over 30 locations within the centre dating between 2003 and 2006. Traffic flows extracted from the counts has been mapped and is shown in Appendix 2 of this report. Almost 27,000 vehicles enter and leave the centre during the morning peak period (0730-0930), with Warwick Road East, Warwick Road West and Monkspath Hall Road all carrying over 1,000 vehicles per hour in the inbound direction. At these flow levels, there is very little spare capacity on these key links, and queues and delays are a frequent occurrence. Four other routes exhibit flow levels only marginally less than 1,000 vehicles per hour inbound – those at Hampton Lane, Lode Lane, Blossomfield Road and Church Hill Road – and together they constitute all major routes into the centre. PM peak outbound flows are almost identical to their AM equivalents.

2.6 Almost all of these key routes intersect at only five junctions, namely:

- Warwick Road West / Lode Lane
- Blossomfield Road / Streetsbrook Road / Lode Lane / Station Road / Princes Way
- Monkspath Hall Road / Princes Way
- Homer Road / Church Hill Road / Princes Way
- Hampton Lane / Warwick Road / New Road (staggered).

2.7 There is clear evidence (which is discussed later in the report) that these intersections are currently either at capacity, or close to it, during peak periods, which will have serious ramifications for the further development of the town centre should current levels of car usage or existing land use patterns within the centre be maintained.

Travel Purpose

2.8 Travel data by trip purpose has been derived from the West Midlands PRISM strategic transport model based on roadside interview data collected in 2001 and 2002. For private vehicle modes, commuting trips into the centre are the dominant purpose representing 58% of all trips during the morning peak. These are the trips which have the greatest impact on the town centre roads and on the demand for parking as they tend to occupy a space for 8 hours or more. Although business trips account for around 14%-15% of all movements to and from the centre during the peak, their impact is commensurately less than that of commuting trips as they tend to park for a shorter duration. The levels of car-based education trips are also

relatively high within the centre at about 10%, but this simply reflects the numerous schools and colleges adjacent to the centre, and the high car ownership levels within their catchment areas.

- 2.9 In traffic restraint terms, controlling the flow of private vehicles for any of these trip purposes will not be easy or straightforward. The success of businesses often depends on their ability to attract and retain key workers, and the availability of a parking space is seen as an attractive incentive in this respect; similarly with education trips. The relaxation of traditional schools catchments area within the local authority sector, and the need to be able to attract pupils from a wide geographical background in the private and further education sectors, does not encourage trips by sustainable modes without great effort on the part of the transport and planning authorities. It is likely that the development of more widespread and robust travel plans will need to be adopted as part of the master planning exercise, and then rigorously enforced, once implemented. The consultation exercise will be an invaluable means of bringing home this point, and it is hoped that key stakeholders will support any such initiatives which emerge during the development of options for the centre.

Historical Trends

- 2.10 Every two years, a programme of manual traffic surveys is carried out on a cordon around the town centre during the AM and off-peak periods. This is supported by a simultaneous week-long programme of automatic traffic counts (ATC's) which provides continuously monitored traffic data in 15-minute periods inbound and outbound during the survey week. The manual surveys consist of classified vehicle counts and both car and bus occupancy surveys, which, when combined with the ATC results, provide extremely accurate estimates of the numbers of vehicles and persons entering the centre by mode. The survey does not provide origin destination information. These surveys have been conducted biennially since the late 1970's and represent an invaluable source of transport trend data for the town centre. The data in Appendix 3 contains only the results for the last 10 year period but, interestingly, shows that there has been very little growth in the number of vehicles crossing the cordon during the AM, PM and off-peak periods since 1995. The reasons behind this trend is not clear, but it is likely to relate to the capacity of the highway network having been reached in 1995, and the inability of the roads servicing the town centre to carry additional traffic. During the last ten years, the Council has made a number of major changes to the town centre roads, including the pedestrianisation of High Street and the provision of additional traffic signals and crossing facilities to improve traffic flows and road safety, and these changes will inevitably have had the effect of negating increases in capacity elsewhere on the centre's roads.
- 2.11 If this is the case, then considerable thought and effort will need to be applied within the emerging master plan to ensure that suggested new developments will be both accessible and viable; and the means for achieving this will be discussed in a later chapter.

Congestion

- 2.12 Congestion can be defined as the reduction in the levels of services of a road as a consequence of traffic demand exceeding the capacity of the road. Put simply, as traffic flow levels approach the capacity of a section of road, speeds will fall and queues will develop. Congestion is now common throughout the entire conurbation, and recent studies suggest that the cost to the community in time lost and fuel used etc. is now approaching around £2 billion per year. The levels of congestion are greatest during the two peak periods but increasingly, congestion is becoming an issue on Saturday – particularly in and around major retail centres such as Solihull.
- 2.13 Congestion is measured using software developed by Mott MacDonald for the West Midlands Authorities Local Transport Plan monitoring from GPS-based records derived from in-car satellite navigation systems and security tracking devices. The software measures vehicle speeds from hundreds of thousands of consecutive GPS points on the highway network, and calculates mean values for each 50 metre section by direction. Appendix 4 contains the mapped results for Solihull by time period.
- 2.14 The results confirm observations and anecdotal evidence about the extent of congestion on the Borough's roads – particularly those adjacent to the town centre. The mapped results clearly show that the majority of roads adjacent to the centre are congested with speed predominantly below 30 kph across most of them. Many sections show speeds of less than 15 kph during the critical peak hours – and Warwick Road, Homer Road, Lode Lane, Hampton Lane and Poplar Road and particularly worthy of mention in this context.
- 2.15 The management of congestion is important to the Borough in two respects:
- To support the future development of the town centre in line with the aspirations of the Council and retain the role of Solihull as a regional commercial and retail centre.
 - To meet the emerging targets for the 2005 West Midlands Local transport Plan to restrict the growth in traffic between 2004 and 2011 to 4%, and limit the growth in congestion levels to 5% during the same period.
- 2.16 Increasing levels of traffic congestion is an inevitable consequence of the growth in traffic flows – particularly if no additional capacity can be provided to accommodate it. It therefore follows that only by somehow limiting or managing the growth in traffic flow levels, can the commensurate growth in congestion be held in check. This implies that an increase in the numbers of persons who can be encouraged to use alternative, more sustainable, modes of transport to travel into the centre is not only desirable, but essential.

Car Parking Supply and Demand

- 2.17 There are generally three types of car parking provision, excluding private residential parking:
- Public Off-Street Parking,
 - Public On-Street Parking (both controlled and uncontrolled), and
 - Private Non-Residential Parking.
- 2.18 Public off-street parking refers to purpose-built off-street car parks which can be owned and/or managed both by the local authority and by private companies (such as National Car Parks, for example) and for which a charge is made based on duration of stay. Whilst not normally including supermarket or other retail facilities, Solihull town centre has a Morrison's Superstore, the car park to which is available to the general public for a fee if not shopping at the store. The Morrison's car park offers around 350 parking spaces for both shoppers and visitors.
- 2.19 There are a very limited number of on-street spaces available to motorists (excluding disabled badge holders) within the centre. Although no definitive evidence was available, an estimate of around 60 spaces has been made with the majority being in the service road adjacent to Station Road. In addition, on-street parking is severely restricted in residential roads adjacent to the centre to avoid disruption and inconvenience to householders in the affected roads.
- 2.20 Private non-residential parking refers to car parks provided by businesses and private premises for the sole use of employees and visitors. Again, there is no available evidence for the quantum of PNR spaces within the centre, but it is likely to approximate if not exceed the numbers of public off-street spaces. The table below sets out an estimate of the numbers of parking spaces within the town centre, together with their hours of operation.

Car Park Capacities and Operating Times

Car Park Location	Number of Spaces	Opening Hours
Lode Lane	486	7.40am to 9pm
Dominion Court	100 weekdays 200 weekends	8am to 6pm
Church Hill	127	24 hour
Marks and Spencer's	569	7.40am to 9pm
Mell Square	950	7pm to 9pm
Council House	174 weekends only	24 hour
Princes Way	245 weekdays 435 weekends	24 hour
Touchwood	670	24 hour
John Lewis	1050	8.30 am to 11pm
Monkspath Hall	1043	8 am to 6 pm
TOTAL	5240 weekdays 5704 weekends	

- 2.21 Excluding the Morrison's car park, there are currently around 5,240 car parking spaces within the town centre, rising to 5,700 on Saturday when a number of private car parks become available to the general public. A breakdown of car park utilisation is given in Appendix 5 of this report.

Car Parking Charges

- 2.22 Car parking charges vary according to the location of the car park and the role it is expected to fulfil – either for short stay (e.g. shopping) visitors or for long stay (e.g. employees) motorists. On average, the cost of staying for between 6-8 hours in a short-stay car park is currently around £8 compared with £2.60 in the Monkspath long-stay car park.

Car Parking Patterns

2.23 Car park usage – Average Weekday

Data from the Borough Council suggests that during the week, there is spare capacity in the short stay car parks apart from Touchwood which is normally full by mid afternoon. Of the 5,240 spaces in the centre, around 3,400 are taken up during the early afternoon peak. There is, however, great pressure on long stay spaces and the Monkspath car park is around 80% full on most working days.

2.24 Car park usage – Average Saturday

The reverse situation occurs on Saturday when the majority of town centre car parks are full by mid afternoon, and the Monkspath car park is only 10% occupied. Of the 5704 available spaces, over 4,000 are occupied at 3.00 PM.

2.25 Car park usage – Busiest Saturday

2.26 The Saturday preceding Christmas is generally considered to be the busiest day in the year in Solihull centre. Of the 4,000 short-stay spaces, around 3,600 were occupied between 11.00 AM and 4.00 PM. The long stay car park at Monkspath was only 20% occupied.

2.27 Analysis of the car parking data suggests that, although there is some spare parking capacity within the centre for most of the time, some car parks are not being fully utilised either because of the cost of parking or because of their location. Further anecdotal evidence also suggests that Prince's Way car park is under-utilised because it is not considered safe during darkness hours, and the Lode Lane car park has difficult ingress and egress at peak times.

2.28 The emerging picture of current parking patterns can give some comfort to the Council in the sense that there is some spare capacity which could be utilised with the judicious application of better car park signing, and the use of more flexible charging regimes. For example, Monkspath car park could have a low all-day charge on Saturday which would attract motorists from the premium priced car parks within the centre, and both the Lode Lane and Prince's way car parks could have lower parking charges during the week. Several car parks could introduce early bird schemes. The availability of parking spaces is of course critical in minimising the number of additional spaces associated with new developments within the centre, which in turn will meet planning guidelines on parking at new developments whilst accommodating those employees who have little alternative but to travel to work by car. The car parking demand models created for the study will be extensively used in testing the recommended parking rates for each development during the master planning exercise to ensure that the final option will offer a feasible number of spaces.

Current Car Parking Standards

- 2.29 Appendix 5 contains a summary of the Borough's latest parking standards for new developments which are broadly in line with those in PPG13 and are maximum standards. The most critical elements are likely to be retail and business uses which attract the highest parking rates. New retail uses, for example, could require 1 space per 20 square metres and the standard for larger new office developments is 1 space per 30 square metres.
- 2.30 The challenge facing the authority is to keep parking standards at a minimum level without prejudicing the viability of any new developments. There has already been discussion within this report that the highway network is very congested at peak times, and the proliferation of new and available car parking can only exacerbate matters. Later chapters in this report deal with the way in which public transport and other sustainable modes can contribute towards reducing the dependency on the car as preferred mode, and further justify providing a reduced parking provision.

Public Transport Provision

- 2.31 Every two years, Solihull Borough Council carries out a travel survey across a cordon around the town centre. The results from the car surveys are discussed in Section 3.3 of this report. Between 1995 and 2005, there has been a 10% increase in the numbers of persons travelling into Solihull by public transport. However, almost all of this increase can be attributed to train trips – arrivals by bus have hardly changed over the 10 year period. The table below shows the trend in public transport travel since 1995. Currently, around 20% of people arrive in Solihull by public transport.

Public Transport Trips into Solihull during the Morning Peak Period – 1995 to 2005

	Average Weekday					
	0730-0930					
Mode	1995	1997	1999	2001	2003	2005
Bus Trips	3187	3264	3354	3289	3590	3290
Train Trips	176	250	319	374	406	453
Total Public Transport Trips	3363	3514	3673	3663	3996	3743

- 2.32 The number of bus passengers has remained fairly constant despite a fall in the actual number of buses arriving in Solihull. In 1999, 439 buses arrived between 0730 and 1230 which fell dramatically in 2001 to 365 during the same time period. Since then, total bus numbers have gradually increased to 404 in 2005 which unfortunately coincided with an

apparent fall in patronage. Whether or not the rising trend in bus numbers is maintained remains to be seen.

- 2.33 Rail continues to be the success story with around a 300% increase in ridership since 1999. This is in all probability a reflection of the improvement in the services to London Marylebone and Birmingham, and the availability of a large park-and-ride car park adjacent to the station with 288 spaces. Surveys carried out by Centro indicate that the car park is now fully utilised for most of the day with an average length of stay of almost 6 hours. A recent survey of car park users indicates that, although most users live relatively close to the station, a number of users travel to Solihull from South Birmingham, Redditch and Sutton Coldfield – presumably to take advantage of the limited stop Chiltern services to Warwick and London. Central Trains currently operate around 76 services each day into Solihull and Chiltern Trains runs around 36 services per day in each direction.
- 2.34 There are two major bus hubs within Solihull centre – the railway station and Station Road/Poplar Road with most services stopping at both hubs. As both of these hubs are located in the western half of the centre, services to the east and south are not so common. Public transport passengers are thus faced with a relatively long walk – particularly so for rail passengers – which may act as a deterrent to the greater use of public transport within the centre in future if not addressed. The expansion of the centre of Solihull may, therefore, act as the stimulus in improving the accessibility of the centre by bus and train by physically relocating the rail station to a point nearest to the centres of activity, and creating a new bus/rail interchange with a direct link into the town centre. The most appropriate location for the new station would be adjacent to Monkspath Hall Road which would also link into the long-stay car park. A covered pedestrian bridge connecting the rail station to the town centre could then be provided giving a climate-controlled environment between the station and the town centre via Touchwood Court. Although the engineering feasibility study is outside the scope of this report, initial discussions would indicate that there are not likely to be insuperable difficulties in implementing this proposal.

Accessibility

- 2.35 The Department for Transport (DfT) has made accessibility a keystone of its transport policy guidelines in a bid to encourage the location of new development within existing centres at the expense of out-of-town locations. These policy directives are reinforced within the Regional Spatial Strategy, and both are reflected within Solihull's Unitary Development Plan and emerging Local Development Framework. Accessibility is defined at its simplest level as the ability of people to travel to a given point within a defined period. In public transport terms, access to the system is determined by the location of bus stops and rail stations, and it follows therefore that 'accessibility' to a centre is heavily dependant on its proximity to stops and stations.

- 2.36 In recent years, a number of accessibility modelling tools have been developed to assist in the creation of travel time isochrones for both private and public transport. The West Midlands Authorities jointly created the PTAMS (Public Transport Accessibility Modelling System) model for just this purpose, and the model has been extensively used within this study to help generate the catchment areas for trips into and out of the centre during the peak periods. The software uses the most recent public transport digital bus timetable database to generate the isochrones, and can model interchanges between any public transport mode (bus/train/tram). Because the system uses real timetable data (rather than default travel times and interchange penalties), it produces extremely accurate profiles of travel time. In addition, the system allows changes to existing services (such as increases in frequency), amendments to existing routes and the creation of new routes. As the bus stop or rail station is the actual loading point for the network, the system creates a 400 metre buffer round each bus stop (800 metres for a rail station) as a proxy for the distance people are prepared to walk to or from a stop.
- 2.37 PTAMS also contains a private mode accessibility modelling tool which uses link speeds derived from the CJAMS congestion database. Car isochrones are not restricted to entry points on to the network (other than the roads themselves) and therefore much simpler to build.

Public Transport Isochrones

- 2.38 To generate the base-line case for current levels of accessibility into the centre, a number of destinations within the centre were modelled to provide a comprehensive picture of how the catchment areas vary with each destination. The public transport destinations are:
- Mell Square
 - Solihull Station
 - Prince's Way near Monkspath Hall Road. (potential site of new interchange).
- 2.39 Each site was modelled for three time periods:
- Arriving between 0730-0930 weekday
 - Departing between 1600-1800 weekday
 - Arriving 1100-1300 Saturday

Private Mode Isochrones

2.40 The destinations for the private mode isochrones are:

- Solihull Station Car Park
- Lode Lane Car Park
- Touchwood Car Park
- Monkspath Car Park

2.41 Off-peak drive times have been generated for the 10, 20 and 30 minute travel time bands.

Populations within Private Mode Isochrones

Population figures			
	0-10 Minutes	0-20 Minutes	0-30 Minutes
Monkspath	118,688	678,993	2,109,066
Lode Lane	144,450	800,555	2,303,539
Touchwood	122,528	751,043	2,245,516
Station	144,133	735,501	2,184,939

The mapped results of the accessibility modelling exercise are contained in Appendix 7

Catchment Profiles

2.42 The main conclusion from the comparison of bus and car isochrones is that the centre is accessible to 10 times more people by car than public transport for the same travel time. In other words, around 11,500 people live within a 10 minute bus journey of the centre compared to 119,000 by car. In addition, the car profiles are much more concentric than the bus ones as cars are not restricted to fixed routes, and also benefit enormously from the proximity of the motorways network. The benefits of travel to work by car are therefore clearly demonstrated in this exercise and further reinforce the reasons behind the growing number of cars on the Borough's roads, and the increases in congestion as a consequence. The table showing the comparison of catchment areas by location is shown below.

Comparative Populations with Public Transport Isochrones

Population figures					
		0-10 Minutes	0-20 Minutes	0-30 Minutes	0-40 Minutes
Solihull Centre	Morning Peak (0730-0900)	11,426	100,932	257,233	441,209
	Evening Peak (1600-1800)	10,934	97,153	227,905	409,831
	Saturday (1100-1300)	9,259	98,824	247,541	438,427
New Railway Station	Morning Peak (0730-0900)	1,786	25,984	61,252	118,468
	Evening Peak (1600-1800)	831	12,074	67,147	143,259
	Saturday (1100-1300)	1,179	18,920	54,727	141,058
Solihull Station	Morning Peak (0730-0900)	9,783	100,472	266,792	485,623
	Evening Peak (1600-1800)	9,369	88,168	235,991	427,295
	Saturday (1100-1300)	7,248	87,531	247,928	438,967

2.43 The public transport profiles are interesting from two perspectives:

- The proximity to the railway station extends the catchment areas along the routes of the rail lines significantly, although the extent of the isochrone is ultimately determined by the timetabled 'wait' times when changing service. The greater the frequency of buses and trains, the wider will be the catchment area.
- If the current catchment profiles for the railway station is used as a proxy for the proposed new location, around 4 times more people will have accessibility to that point than they currently do at present on Saturday (439,000 compared to 141,00), assuming the unwillingness to walk less than 800 metres.

2.44 This exercise has reinforced the perceived benefits of travelling by car to Solihull rather than by public transport, and highlights the difficulties likely to be faced by the Council in persuading (or coercing) motorists to switch to alternative modes of travel. The differences in travel time between car and bus increase almost exponentially with increasing travel time, and it is likely, therefore, that people living closest to the centre will be more amenable to change rather than those living some distance away.

2.45 On a more positive note, the presence of the railway station has a significant impact on the shape of the catchment profiles, and it is likely that an increasing focus will be placed on improving the service even further to present a very attractive option to the car for trips into Solihull. As services speed up, and road journeys slow down, rail could provide a very real alternative for many car commuters who do not use their car for work. The great drawback, however, is that Solihull is served by a single line, and the benefits to improved services will still be linear. There may be opportunities to

exploit this by considering additional park-and-ride facilities along the line (for example, expanding existing facilities or the creation of new facilities such as those at Warwick Parkway) but it will depend on the availability of suitable sites near existing rail stations, or the feasibility of creating a new station to serve both Solihull and Birmingham (such as Brinsford on the Wolverhampton to Crewe Line). There is also possible opportunities to develop park-and-ride facilities to support other modes of public transport, such as a bus and park-and-ride interchange between Dorridge and Solihull.

Traffic Accidents

- 2.46 Traffic accidents are an indication of stress within the highway network – high levels of flow and congestion often causes erratic driving behaviour through impatience which in turn generates accidents. Poor design also contributes to accidents, whether this be at road junctions, entrances to car parks or unsafe pedestrian facilities. Existing patterns of road accidents can be a valuable pointer to some aspect of the road network which is inherently unsafe, and should therefore be addressed as part of the master planning process.
- 2.47 An examination of the five year accident record for the centre suggests that, overall, there is not a serious accident problem. Of the 112 reported accidents, 97 of them have been 'slight', and the remainder 'serious'. There have been no reported 'fatal' accidents during this time.
- 2.48 There are a small number of accident 'blackspots' with larger than expected numbers of accidents coinciding, not unexpectedly, with the major junctions. Potentially the most difficult site is on Poplar Road where, although it is a low speed environment, the majority of casualties are pedestrians. For this site, the most appropriate solution would be to remove those vehicles which currently access the Marks and Spencer car park to a new access point on Warwick Road – a solution currently being considered by Consultants acting for the owners of Mell Square.

Crime

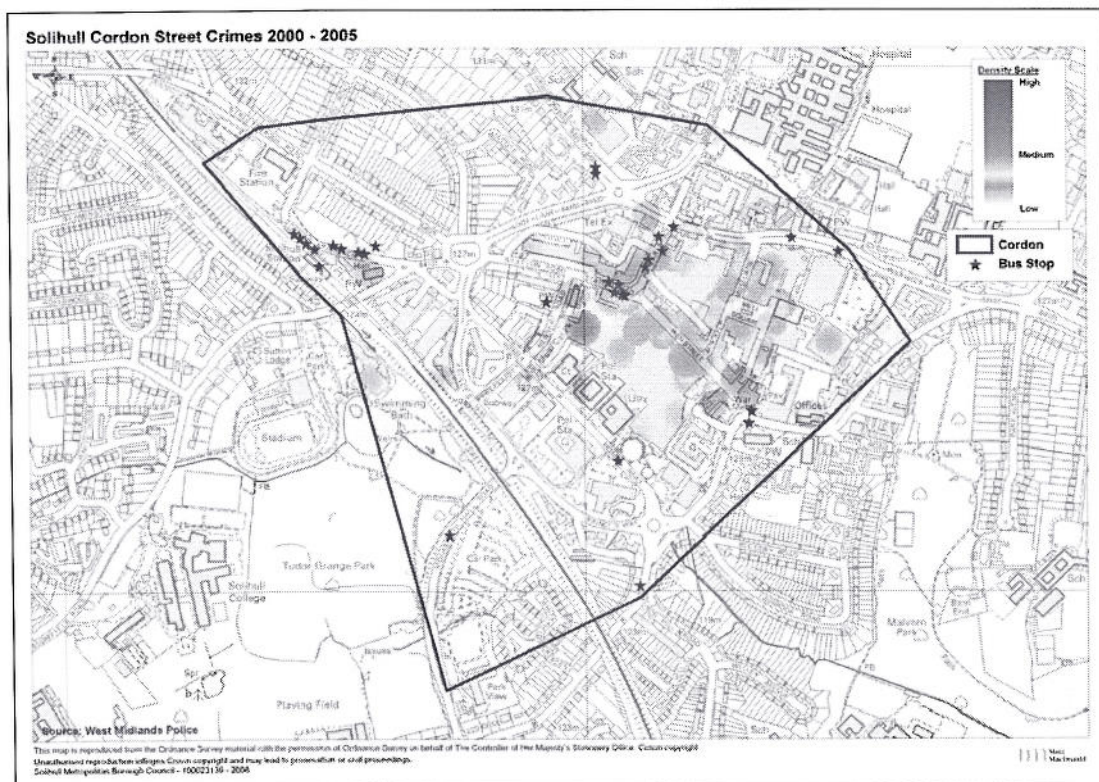
- 2.49 Crime, and the fear of crime, has a pernicious influence of people's perception of a place. In some parts of the conurbation, people are frightened to leave their homes at night, or wait at bus stops or even walk along quiet streets or through parks. Quite often the fear is unjustified but exposure to the risk is often sufficient to dissuade people from returning to that place.

2.50 There are a number of generic crime types which relate to centres of activity such as Solihull which can be used as both a measure of the level of crime activity, and as input into the design process with the intention of minimising their incidence. These crime types are:

- Crimes against persons outside the home (GBH, ABH, Theft, Sexual Offences etc).
- Crimes against vehicles (Theft, vandalism etc)
- Crimes within car parks.

Table 2.1 shows the incidence of reported street crimes within Solihull centre between 2000 and 2005.

Table 2.1 Density Plot of Reported Street Crimes in Solihull Centre 2000-2005



The pattern of street crime suggests that the majority of reported crimes are focussed on the town centre itself and will inevitably be associated with the proliferation of pubs and clubs in the area. Outside the core, there are very low levels of reported street crime. Perversely, the pattern of crime is beneficial to the Council given its very concentration. It should be possible to patrol the area with relatively small numbers of police, and extend the use of CCTV systems which can be provided (discreetly) within the overall urban design framework.

Of more concern is the pattern of crimes in car parks. The analysis of the data suggests that crime is most prevalent within a number of private sector establishments such as hotels, shopping centres and office blocks where there are often concentrations of vehicles during the hours of darkness, and where security measures are not as comprehensive as they are in some of the local authority car parks. It is likely, however, that the situation is well known to the proprietors of these establishments, who will be taking the necessary remedial actions.

The Transport Impact of Other New Developments

2.51 The redevelopment of the town centre is proceeding alongside a large number of other developments, both within the Borough or in close proximity to it, which will impact on the transport proposals for the centre. A number of these developments will be of regional significance and, if implemented, will add large numbers of additional trips to the network. Chief of these new development proposals are:

- Birmingham Airport and the NEC.
- Birmingham Business Park
- Blythe Valley Business Park
- North Solihull Regeneration Area (Chelmsley Wood).
- British Gas Site, Wharf Lane.
- Shirley Centre

2.52 The Borough is fortunate in that it has assisted in the development of the regional PRISM transport model and can therefore assess relatively easily the numbers of additional trips on the network, and where capacity problems are likely to occur. It is important to point out that PRISM does not yet contain additional trip data for the town centre, but that it can be added once the final option has been agreed.

Appendix 10 contains the summary of all proposed new developments within Solihull.

2.53 PRISM predicts that by 2011, an additional 4,960 car trips will be generated during the AM peak hour, and 3,398 during the PM peak hour. Obviously, not all of these trips will affect the town centre roads, but a significant proportion will. Work is currently going on to identify the quanta of additional trips on key links within the town centre network, and the results of this exercise will inform the emerging town centre transport proposals.

Walking and Cycling

2.54 Solihull MBC has produced a Cycling Strategy to:

- Coordinate all policies and programmes of action which assist in promoting cycling as an attractive, safe and sustainable form of transport for all standards of cyclist.
- Identify the objectives, targets and mechanisms to be adopted by the council in its attempt to further promote cycling.
- To contribute to meeting the overall Local Transport Objectives within the West Midlands.

2.55 Cycling into the town centre is limited to the main roads. Cycle parking is provided at Touchwood Car Park. There is a cycle link between the Rail Station along Blossomfield Road to the Town Centre which has been built due to demand highlighted in the Cycling Strategy.

2.56 Solihull MBC is focused on encouraging walking but at the present this predominately child road safety training and safer routes to school.

2.57 Pedestrian facilities in the town centre are good with High Street and Mell square being pedestrianised. This creates a safe vehicle free environment along with Touchwood for people to access facilities. On a number of the Strategic pedestrian routes into the town centre there are a number of point where the link is poor these include access across Warwick Road and access from Blossomfield Road across the roundabout with Streetsbrook Road and Lode Lane.

2.58 In conclusion there are a number of issues that need to be addressed to improve facilities for cyclists and pedestrians. The most important issue is to create better cyclist and pedestrian access into and around the town centre, including better access into the town centre across the road barrier with Warwick Road and Lode Lane. The town centre itself would benefit from the expansion of the local pedestrian environment, including better lighting and seating at bus stops and secure cycle parking for commuters.

3 Key Implications for the Emerging Town Centre Strategy

3.1 The transport baseline report has identified a number of key issues which will influence the emerging town centre strategy. The following list, although not comprehensive, summarises those areas of greatest potential impact.

- The current levels of congestion within the network at peak times – particularly on those links which serve the town centre.
- The apparent lack of any current means whereby more road capacity can be provided.
- The need to restrain use of the private car in favour of more sustainable modes of travel whilst promoting the viability of the centre.
- Better use of existing car parking through improved signing and pricing policies.
- Improvements in the existing network through traffic management techniques to make the roads safer and more efficient.
- Careful consideration given to the benefits of relocating the rail and bus stations near to the centre of activity.

1. Travel Characteristics

The following sections provide an overview of the travel characteristics of the residents and people working in the Solihull Town Centre. Information has also been provided at the ward level (St Alphege), district level (Solihull), city level (Birmingham) and county level (West Midlands) for comparison purposes. Figure 1.1 illustrates the location of these boundaries with respect to the Solihull Town Centre. It is worth noting that this information was sourced from the latest census and the current demographic data and area characteristics may have changed since 2001.

Figure 1.1: Plot of Solihull Boundaries



1.1. Residential Car Ownership Rates

2001 Car Ownership Rates

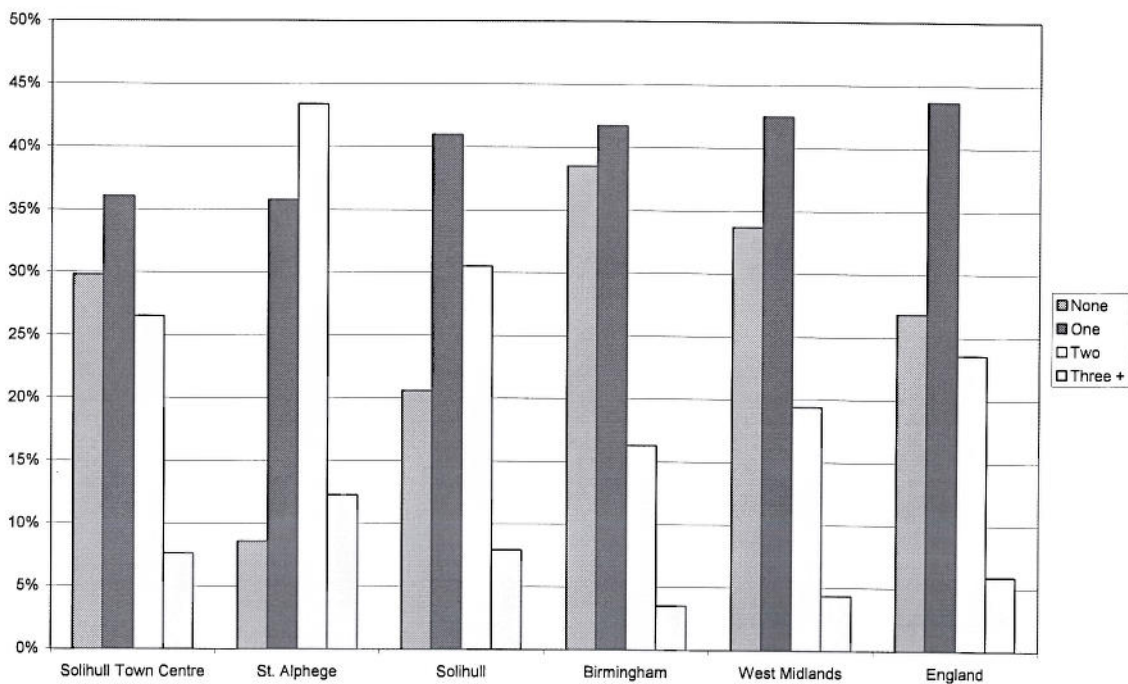
The car ownership patterns in Table 1.1 and illustrated in Figure 1.2 show that the ward of St Alphege has a very high rate of car dependency. Both the ward of St Alphege and district of Solihull have on average more cars per household than both the West Midlands and the rest of England. A total of 92% of households in the ward of St Alphege have more than one car, 12% of households have 3 or more cars and it has an average of 1.63 cars per household (in comparison to 62%, 3.5% and 0.86 cars per household respectively in Birmingham).

Table 1.1: Residential Car or Van Ownership, 2001

Region	Households	% of Households with Cars or Vans				Cars per Household
		None	One	Two	Three +	
<i>Solihull Town Centre</i>	513	29.8%	36.1%	26.5%	7.6%	1.15
<i>St. Alphege</i>	5,505	8.6%	35.8%	43.4%	12.3%	1.63
<i>Solihull</i>	80,930	20.6%	41.0%	30.5%	7.9%	1.28
<i>Birmingham</i>	390,792	38.5%	41.7%	16.3%	3.5%	0.86
<i>West Midlands</i>	1,032,943	33.7%	42.5%	19.4%	4.4%	0.96
<i>England</i>	20,451,427	26.8%	43.7%	23.6%	5.9%	1.11

Source: ONS 2001 Census of Population @Crown Copyright

Figure 1.2: Typical Household Car Ownership Data, 2001



Historical Car Ownership Trends

Table 1.2 shows the car ownership patterns collected in the 1991 Census. As in the 2001 data, it shows that the St Alphege has had a high rate of car dependency over an extended period of time. It is worth noting that there were minor differences in the census boundaries between the 1991 and 2001 census and the figures in Table 1.2 refer to the zones that best represent the 2001 boundaries.

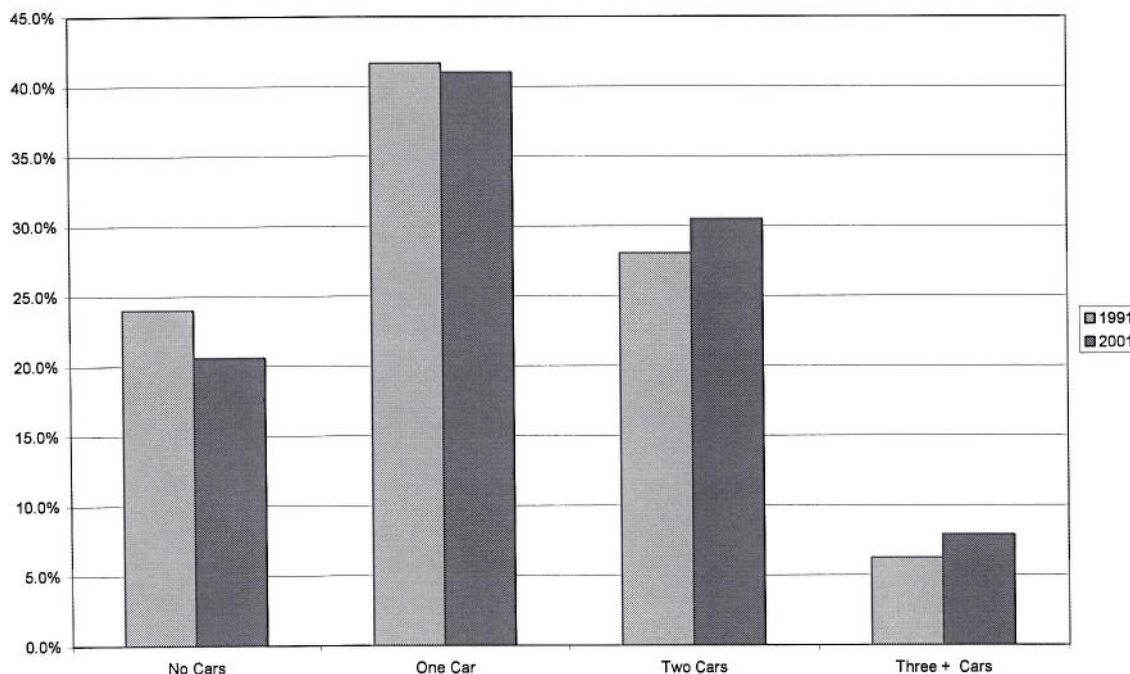
Table 1.2: Residential Car or Van Ownership, 1991

Region	Households	% of Households with Cars or Vans				Cars per Household
		None	One	Two	Three +	
<i>Solihull Town Centre</i>	661	16.5%	40.1%	37.7%	5.7%	1.34
<i>St. Alphege</i>	4,783	9.4%	35.7%	45.0%	9.9%	1.56
<i>Solihull</i>	76,403	24.0%	41.7%	28.1%	6.2%	1.17
<i>Birmingham</i>	374,079	45.1%	39.2%	13.3%	2.5%	0.73
<i>West Midlands</i>	990,664	39.8%	41.1%	16.0%	3.2%	0.83
<i>England</i>	18,765,583	32.4%	43.6%	19.8%	4.2%	0.96

Source: ONS 1991 Census of Population @Crown Copyright

Figure 1.3 plots a comparison between the 1991 and 2001 car ownership patterns in the district of Solihull. It shows that in the ten years up to 2001, the numbers of households with no cars has declined and the numbers of households with more than 3 cars has increased in Solihull. Both of these trends highlight an increasing level of car dependency, possibly escalating the congestion problems in the area.

Figure 1.3: Solihull District Car Ownership Trends by Household

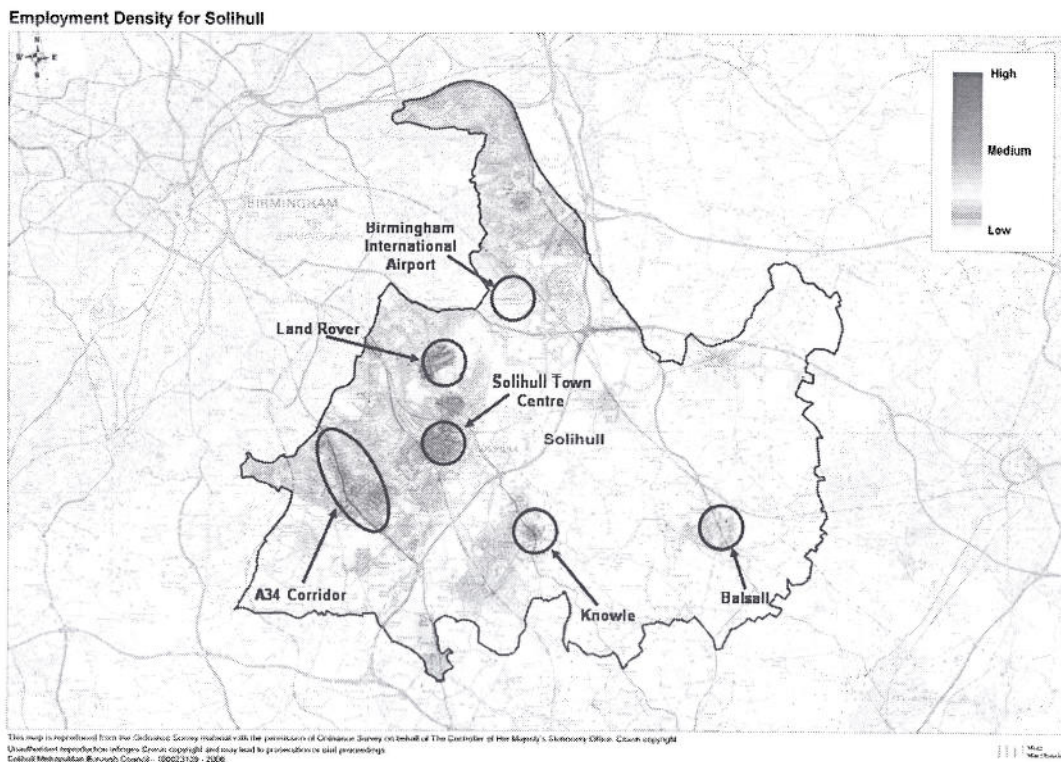


This data displayed in this section show that the Solihull region has a high level of car ownership. The dependence of car usage in the area equates to increased levels of congestion in the town centre and hence detrimental to progress development.

Local Employment Patterns

Figure 1.4 shows the local employment centres in the Solihull district. Several local areas are highlighted, including the Solihull Town Centre, the Land Rover motor works, the A34 Corridor and to a lesser degree Knowle and Balsall. The Solihull town centre is one of the largest retail centres in the area with a large employment base. It attracts workers from all over the district and further afield. This highlights the importance of the town centre as a major centre of economic activity and an attractor of work trips. The travel patterns of workers in the Solihull Town Centre are discussed in more detail in Section 0.

Figure 1.4: Employment Density in Solihull



Journey to Work

The data in Table 1.3 and Figure 1.5 relates to work-based travel and the modes used to go to the workplace. The results show that private car/taxi is by far the most dominant mode of use to the Solihull Town Centre and makes up 67.3% of all journey to work trips, which is much greater than the Birmingham average at 58.5%.

A majority of the difference between Solihull Town Centre and Birmingham journey to work trips is taken up by journeys on foot (5.6% compared to 8.8%), which suggests that fewer local residents work in the local area. Also, less people work from home in the Solihull Town Centre (0.4% compared to 7.5%) but this is not unexpected as the town centre does not include many residential areas.

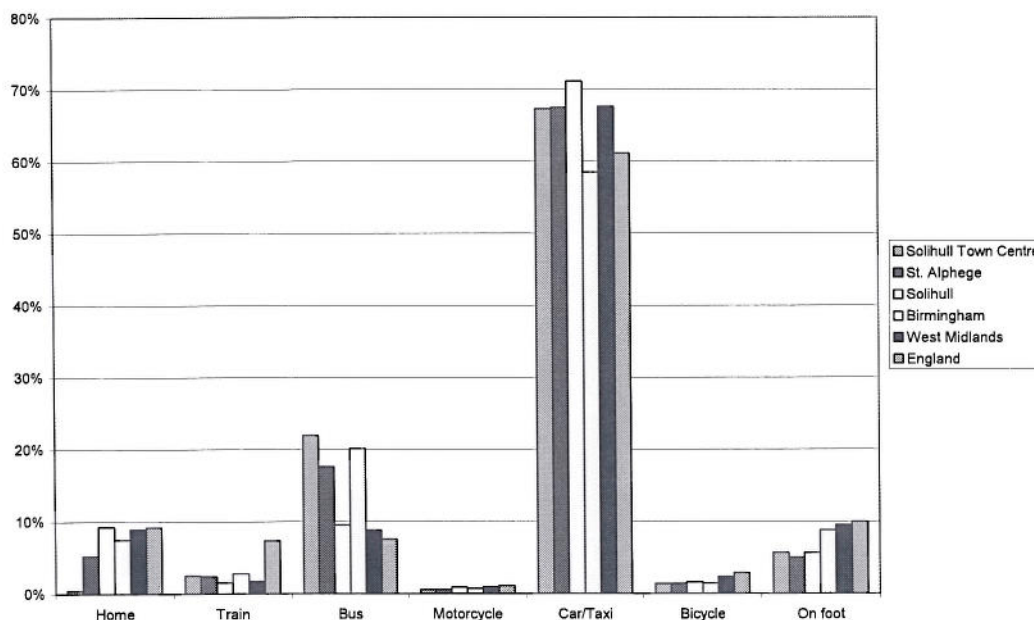
The Solihull district when compared to the whole of the West Midlands has relatively high proportion of work journeys made in the car (71.1% compared to 67.6%) and relatively low proportion of work journeys made on foot (5.6% compared to 9.5%).

Table 1.3: Travel to Work by Mode of Transport, 2001

Region	Employed 16-74	% of all people aged 16-74 in employment						
		Home	Train	Bus	Motor cycle	Car/ Taxi	Bicycle	On foot
<i>Solihull Town Centre</i>	9,144	0.4%	2.4%	21.9%	0.5%	67.3%	1.3%	5.6%
<i>St. Alphege</i>	13,379	5.2%	2.4%	17.6%	0.5%	67.5%	1.4%	5.0%
<i>Solihull</i>	92,514	9.2%	1.5%	9.5%	0.8%	71.1%	1.6%	5.6%
<i>Birmingham</i>	367,141	7.5%	2.8%	20.1%	0.7%	58.5%	1.4%	8.8%
<i>West Midlands</i>	2,334,567	8.9%	1.7%	8.8%	0.9%	67.6%	2.3%	9.5%
<i>England</i>	22,376,120	9.2%	7.4%	7.5%	1.1%	61.1%	2.8%	10.0%

Source: ONS 2001 Census of Population @Crown Copyright.

Figure 1.5: Travel to Work by Mode of Transport, 2001



This data shows that a majority of journey to work trips are private vehicles. The Solihull region has a high percentage of car journey to work trips and this increased level of car usage increases congestion in the region.

Figure 1.6 shows the where the Solihull Town Centre workers live. Many workers travel considerable distance to access their places of employment. The residential catchments between Birmingham and Solihull provide the majority workers in Solihull. Relatively few workers seem to travel from east of the M42, except from around Knowle. There are also sizable catchments of Solihull workers in the Castle Bromwich area wedged between the M6 and the Birmingham to Coventry train line.

Figure 1.7 illustrates the breakdown of all the Solihull Town Centre workers, including the mode of transport used to get to their Solihull workplace. Table 1.3 identifies that only 2% of the 9,000 workers travel to the Solihull Town Centre by train. These train trips were not included in the Figure 1.7, however most of these journey to work trips originated along the Birmingham to Dorridge train line, between Solihull and Birmingham Snow Hill Stations.

Figure 1.7 shows that there is a disproportionate amount of car trips from areas close to the Solihull Town Centre, especially the Hillfield area just south of the town centre. Bus usage seems to be concentrated along the major corridors between Birmingham and Solihull and includes very few short trips. This could be explained by the fixed fare pricing structure (as opposed to a distance base fare structure) which tends to discourage bus usage on short trips.

Figure 1.8 shows where the Solihull Town Centre blue and white collar workers live. This plot includes all modes of travel and highlights some significant differences. The blue collar workers are far more concentrated in town centres such as Solihull, South East Birmingham, West Bromwich and Longbridge. The white collar workers come from a far even spread of regions, including many regions where there are few blue collar workers such as Coventry, Sutton Coldfield, etc. The white collar workers are concentrated in smaller areas including Solihull and South East Birmingham.

Figure 1.6: Locations of Residence of Workers in the Solihull Town Centre

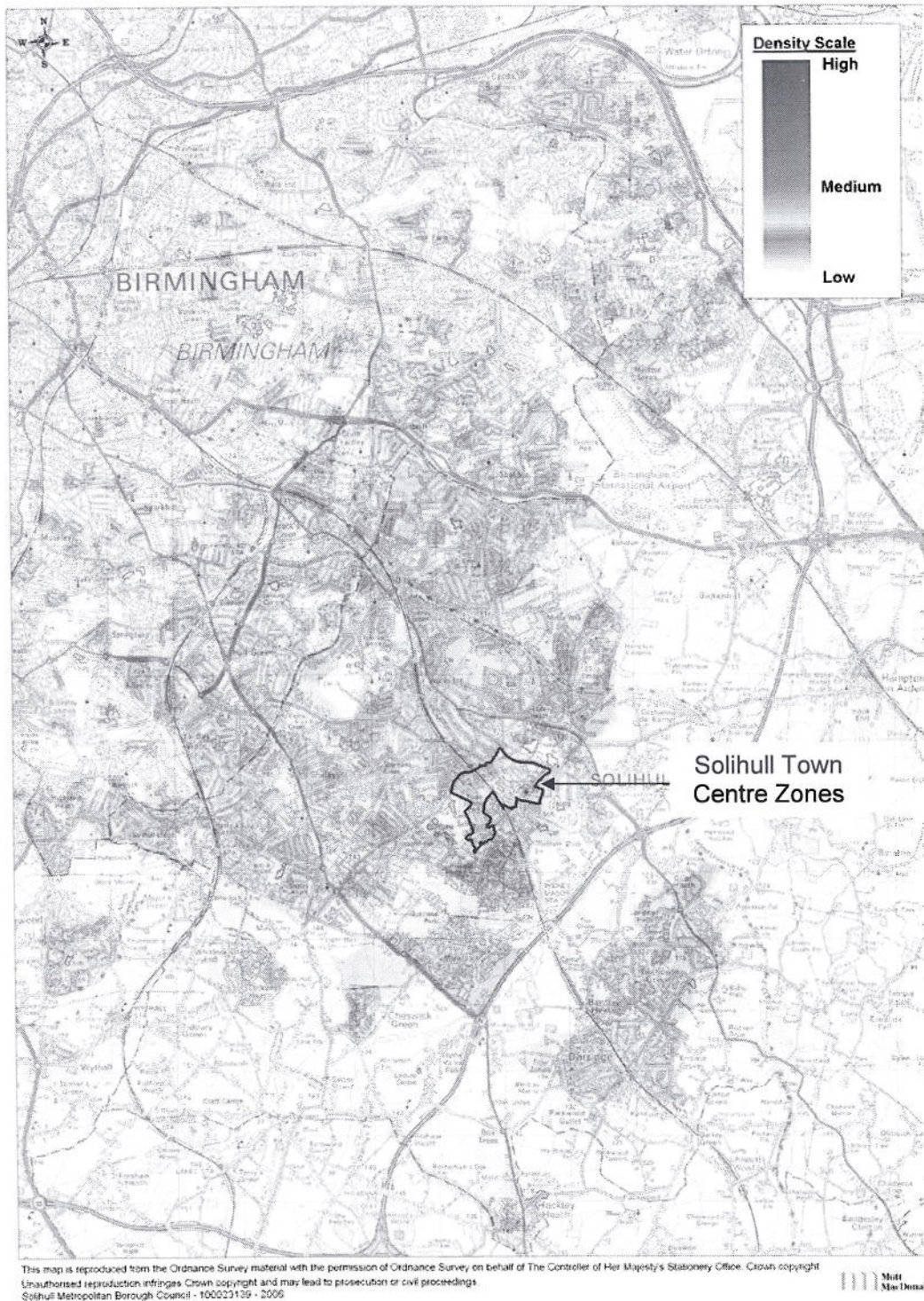


Figure 1.7: Locations of Residence of Workers in the Solihull Town Centre by Mode of Access

Car Access to Work

Bus Access to Work

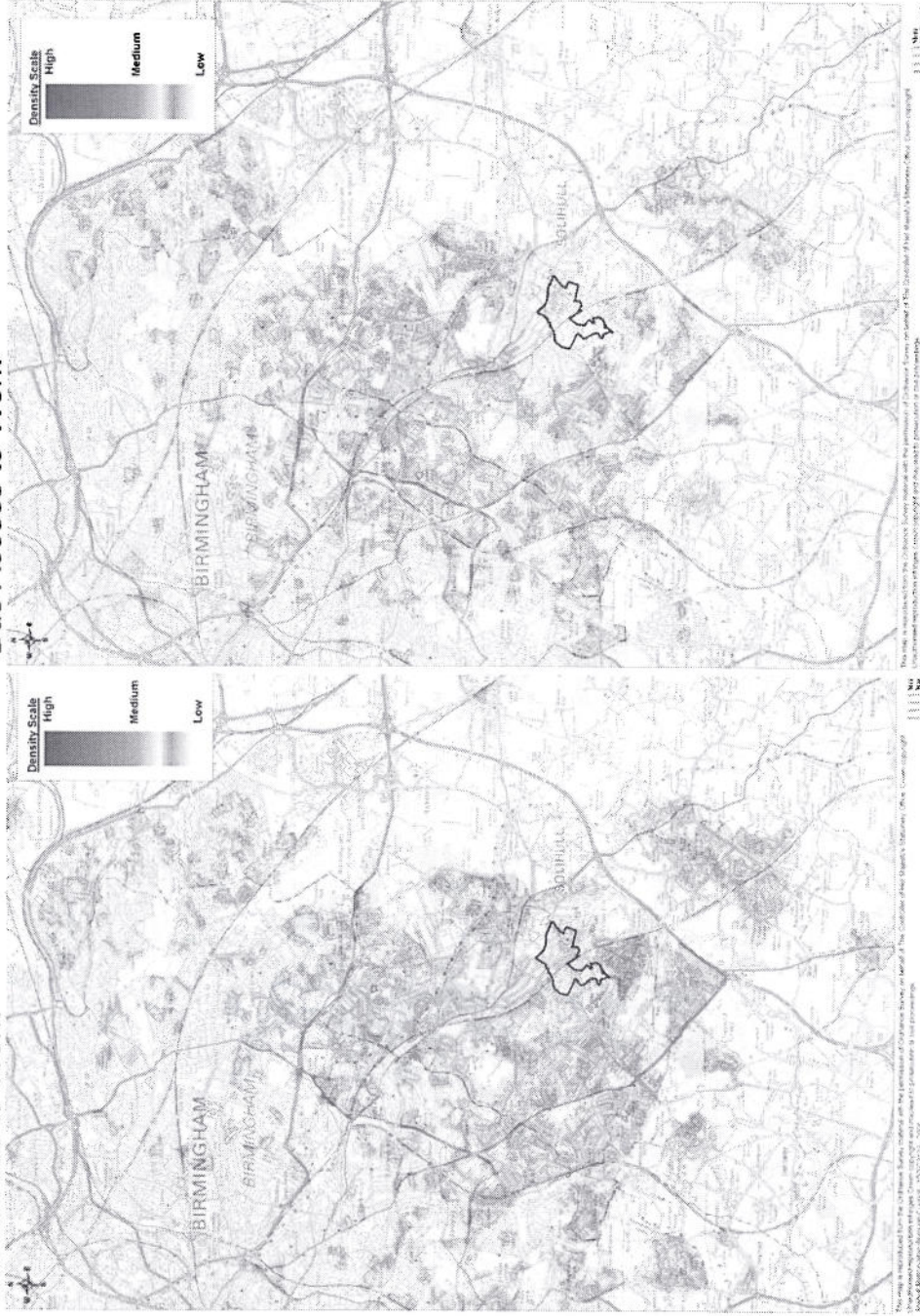
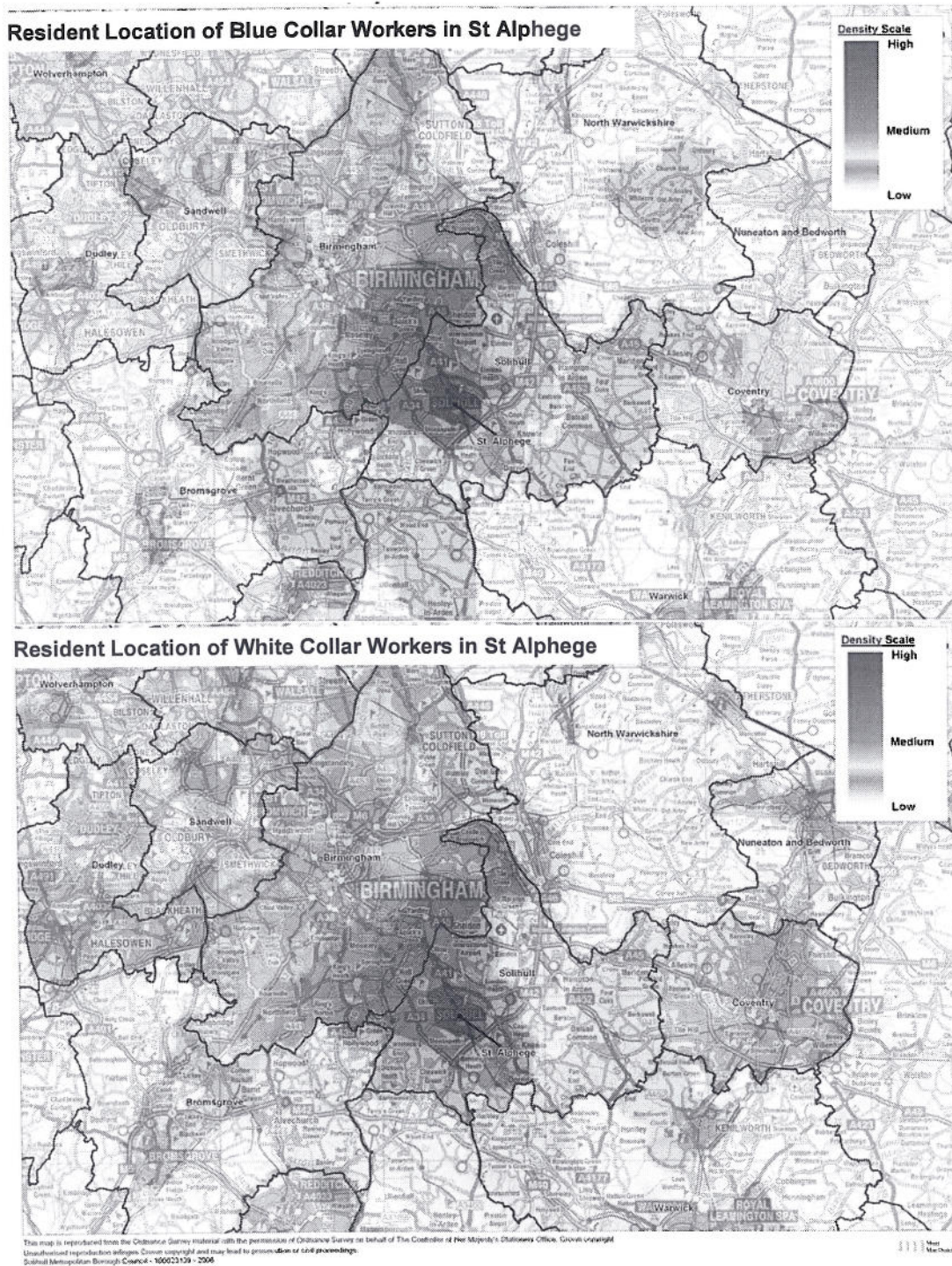


Figure 1.8: Journey to Work to the Solihull Town Centre, Comparison by Blue and White Collar Workers



2. Network Condition

Network Condition

Existing Traffic Flows

Recent manual classified and automatic traffic counts were sourced from the SPECTRUM database held by Mott MacDonald on behalf of the West Midlands metropolitan authorities. Traffic data in the Solihull Town Centre was extracted for 30 different locations. The most recent traffic counts at each point were used and these usually dated from 2005 surveys. All counts were obtained from surveys between 2003 and 2005 in order to provide a large sample of counts.

Figure 2.1, Figure 2.2 and Figure 2.3 shows the average weekday traffic flows in the Solihull Town Centre in the AM peak, off peak and PM peak respectively. Figure 2.4 shows the average weekday traffic flows between 0700 and 1900.

The AM peak traffic flows shown in Figure 2.1 are typically representative of a busy commercial centre. The AM peak traffic flows are directional, with the peak direction being towards the Solihull Town Centre. All of the approach roads to the Solihull Town Centre (including Warwick Road East, Hampton Lane, Lode Lane, Warwick Road West, Blossomfield Road, Monkspath Hall Road, and Church Hill Road) are single carriageways with flared junctions and one lane in each direction.

Table 2.1 shows the average weekday traffic flows in the AM and PM peak hour in the peak direction. It shows that Monkspath Hall Road has the highest inbound traffic flows in the AM peak. All inbound routes in the AM peak and outbound routes in the PM peak experience traffic levels in the vicinity of 1,000 vehicles per hour, implying that these roads are operating at or near capacity, resulting in high levels of congestion.

Table 2.1: Peak Hour Weekday Traffic Volumes (in the Peak Direction)

	AM Peak (vph) Inbound Direction	PM Peak (vph) Outbound Direction
Warwick Road East	1110	1280
Hampton Lane	950	990
Lode Lane	960	960
Warwick Road West	1030	1150
Blossomfield Road	930	950
Monkspath Hall Road	1320	1150
Church Hill Road	810	660

As the approach roads are operating at capacity in the peak direction in the peak hours, there is little scope for additional traffic in the peak hours. Any additional increase in traffic would simply not be able to access the Solihull Town Centre in the peak hour. If things are left unchanged, extra demand for the road network can only be through the occurrence of peak spreading. Beyond that, extra demand can only be catered for by improving the capacity of the existing road network or increasing the attractiveness of public transport.

Figure 3.5 and Figure 3.6 show the Saturday peak hour (assumed to be between 1300 and 1400) and the average Saturday traffic flows between 0700 and 1900 respectively. The traffic flows in the Saturday peak hour are as high as or higher than the weekday peak hour flows in several town centre locations, including along Warwick Road and Lode Lane. Thus, many of the problems experienced by weekend travellers are the same problems experienced by commuter traffic in the weekday peaks. The extension of weekend trading and any expansion of the retail in the Solihull Town Centre will increase the levels of traffic creating similar congestion levels as experienced in the weekday AM peak. This increase in Saturday congestion will reduce the attraction to future retail developments in the Solihull Town Centre. It is safe to say that consumers will be deterred from travelling to the town centre for their regular weekly or intermittent shopping trips.

Trip Purpose

The PRISM model was developed as the strategic multi-modal model of the West Midlands metropolitan authorities. It was completed in 2004 and is calibrated and validated to 2001 survey data. A copy of the PRISM model development and validation report can be seen in the section titled 'Reports' on the website: www.prism-wm.com.

The Base Case 2001 PRISM model was used to provide an estimation of the trip purpose split for all vehicles originating and terminating at the Solihull Town Centre. The result of the PRISM evaluation can be seen in Table 2.2 and Table 2.3. Table 2.2 displays the indicative car and lorry person trips originating and Table 2.3 displays the vehicle person trips terminating at the Solihull Town Centre.

The results in Table 2.2 show that in the PM peak, the majority of vehicle person trips (58%) leaving the Solihull Town Centre are commuters, whereas Table 2.3 shows that in the AM peak, the majority of vehicle person trips (55%) to the Solihull Town Centre are commuters.

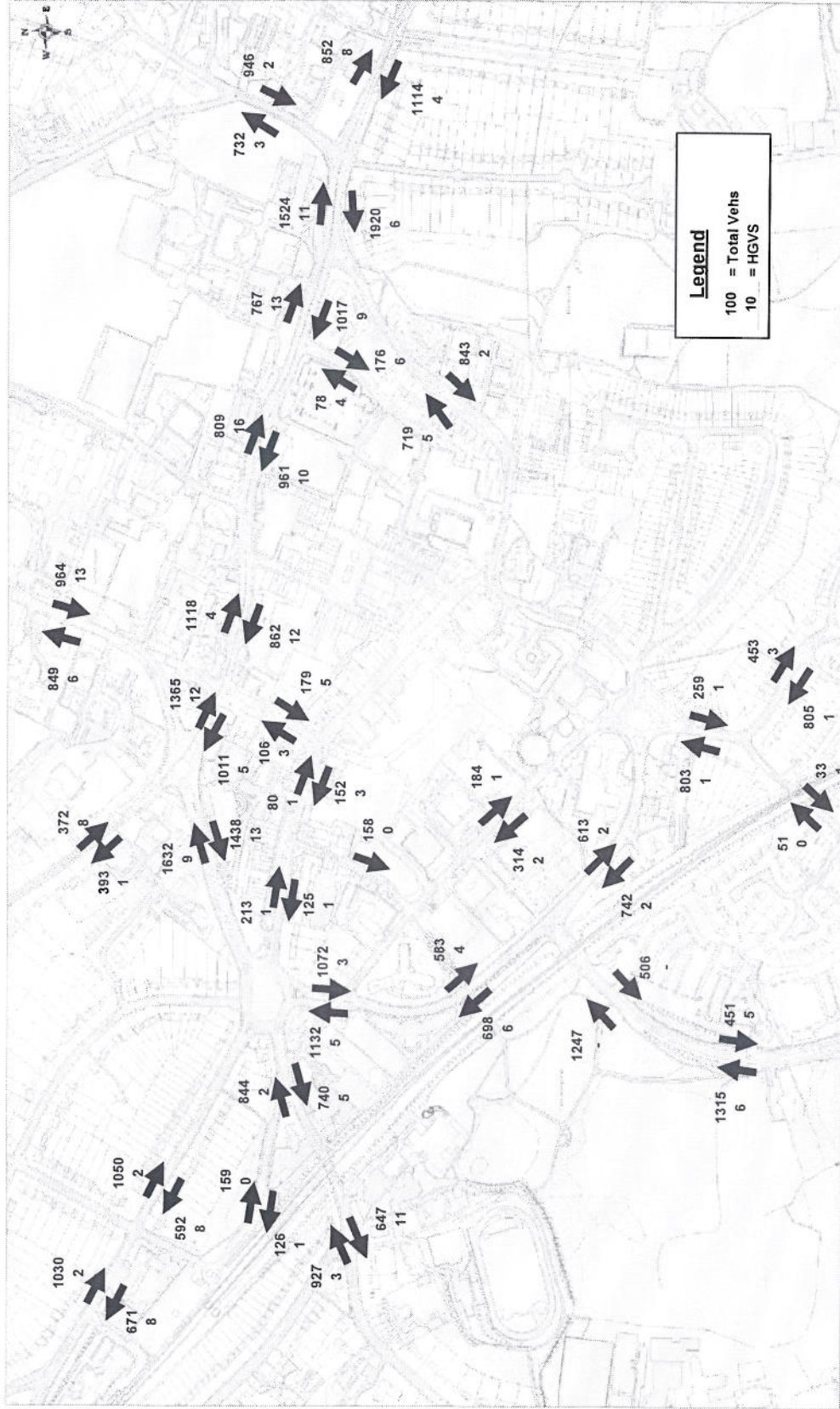
Table 2.2: Trip Purpose Split, Person Trips Originating from the Solihull Town Centre (2001)

	Origin						TOTAL
	Car Business	Car Commute	Car Education	Car Others	LGV	HGV	
AM Peak	15%	32%	18%	29%	4%	1%	100%
Inter-peak	9%	12%	2%	73%	3%	1%	100%
PM Peak	8%	55%	6%	30%	2%	0%	100%

Table 2.3: Trip Purpose Split, Person Trips Terminating at the Solihull Town Centre (2001)

	Destination						TOTAL
	Car Business	Car Commute	Car Education	Car Others	LGV	HGV	
AM Peak	14%	58%	10%	15%	3%	0%	100%
Inter-peak	10%	4%	4%	80%	2%	1%	100%
PM Peak	12%	37%	6%	40%	4%	1%	100%

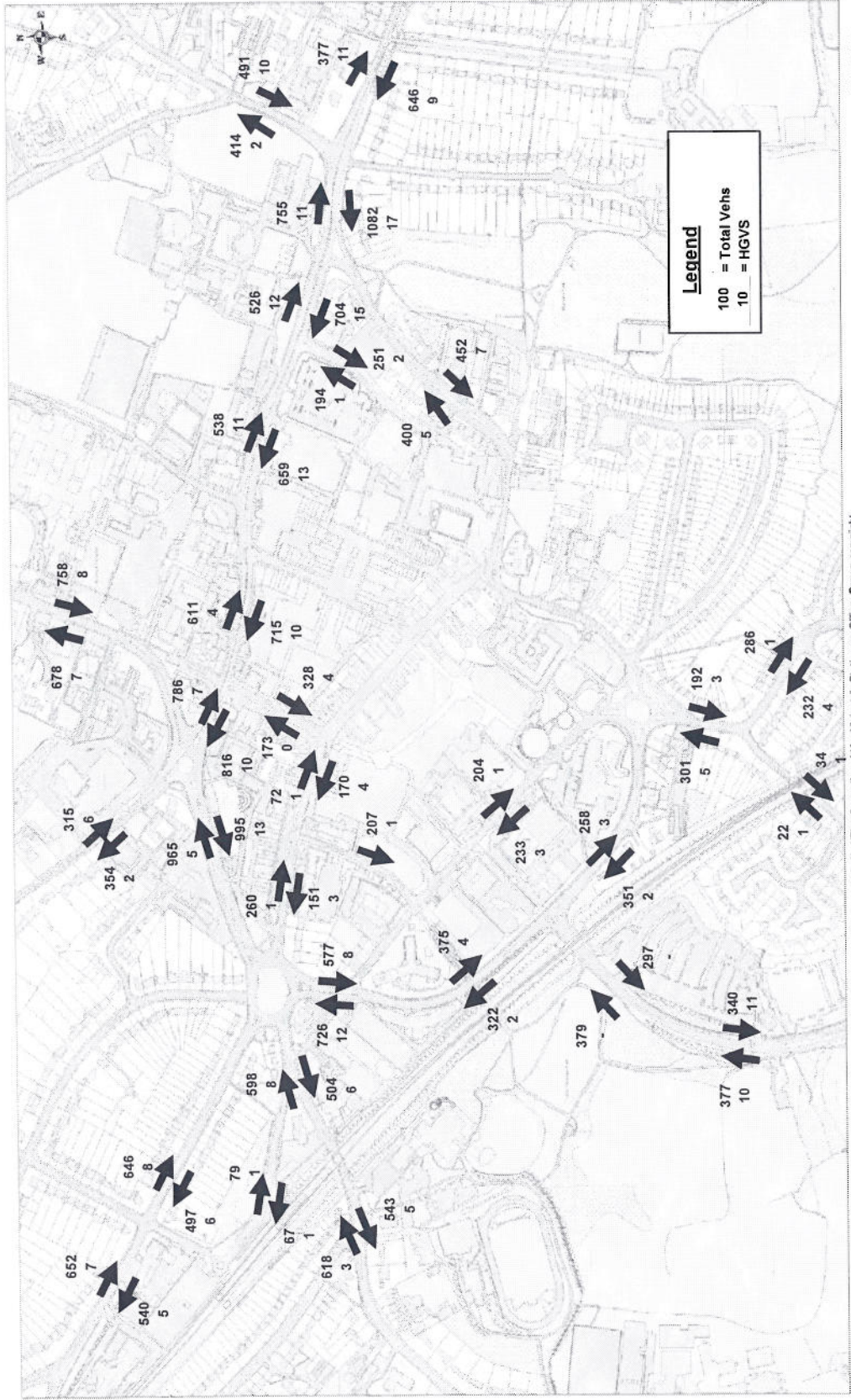
Figure 2.1: AM Peak Traffic Count Summary (0800 to 0900)



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Solihull Metropolitan Borough Council - 100023139 - 2006

Mott
MacDonald

Figure 2.2: Off Peak Traffic Count Summary (1000 to 1100)



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Figure 2.3: PM Peak Traffic Count Summary (1700 to 1800)

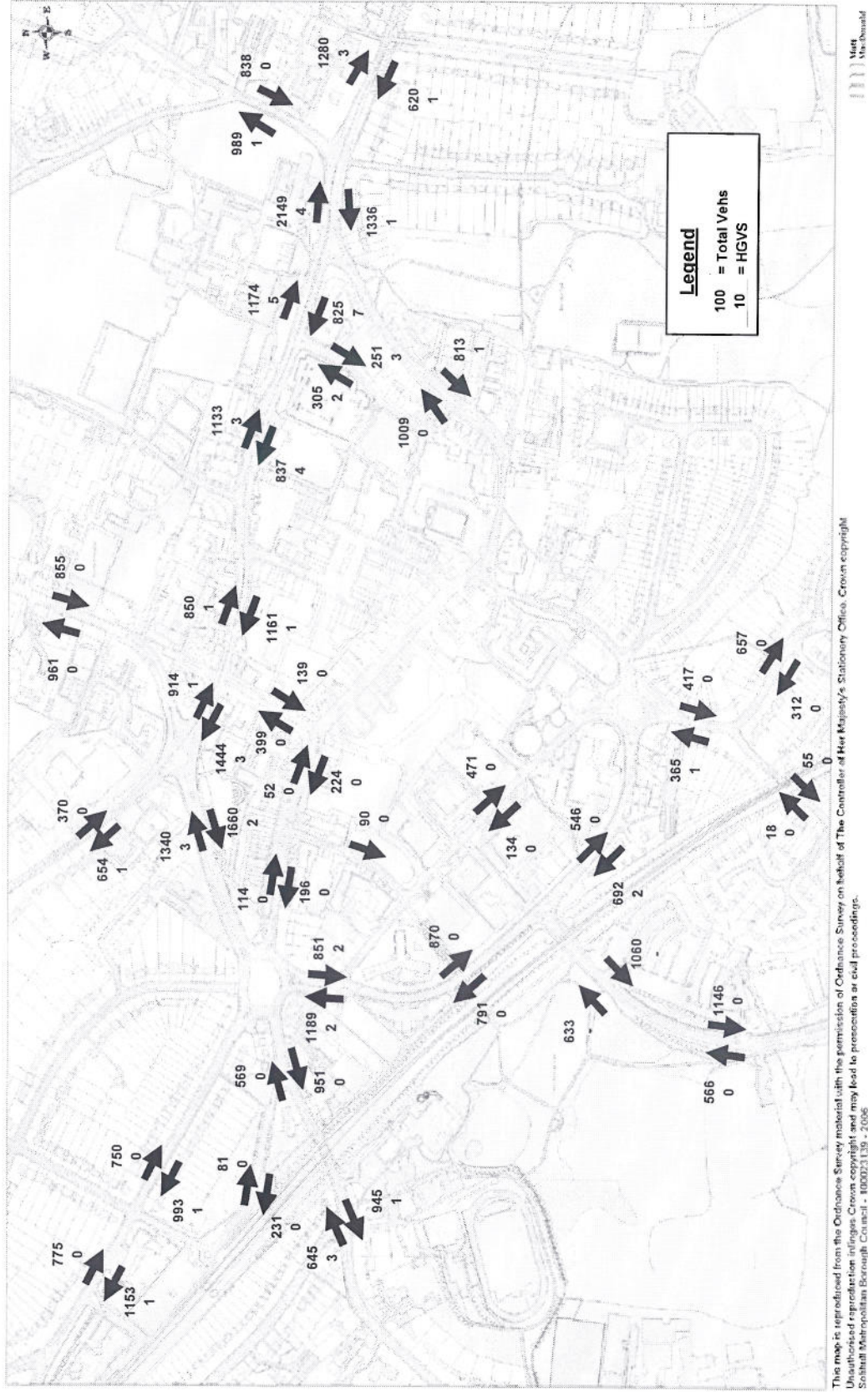


Figure 2.4: 12 Hour Traffic Count Summary (0700 to 1900)

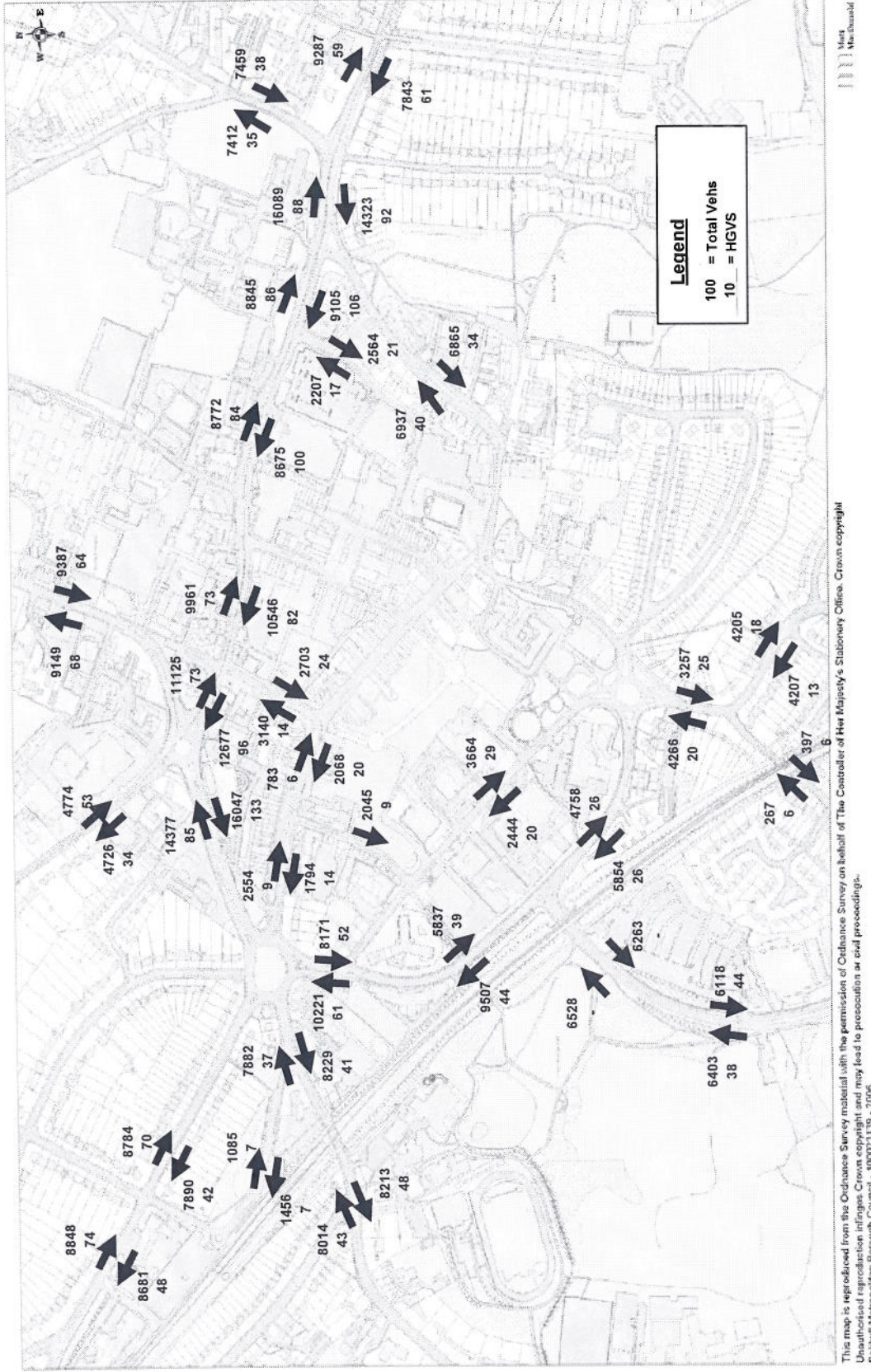


Figure 3.5: Saturday Traffic Count Summary (1300 to 1400)

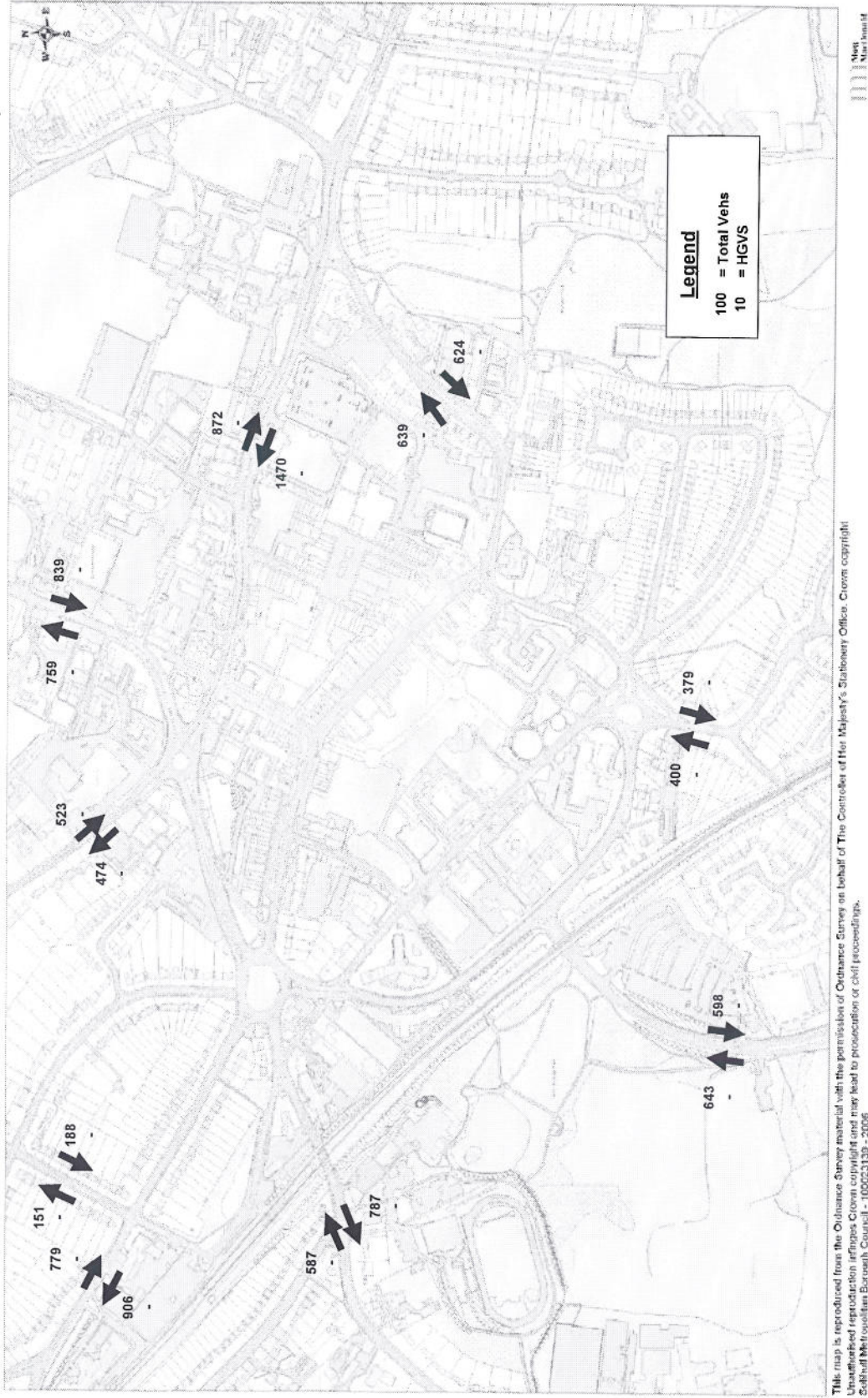
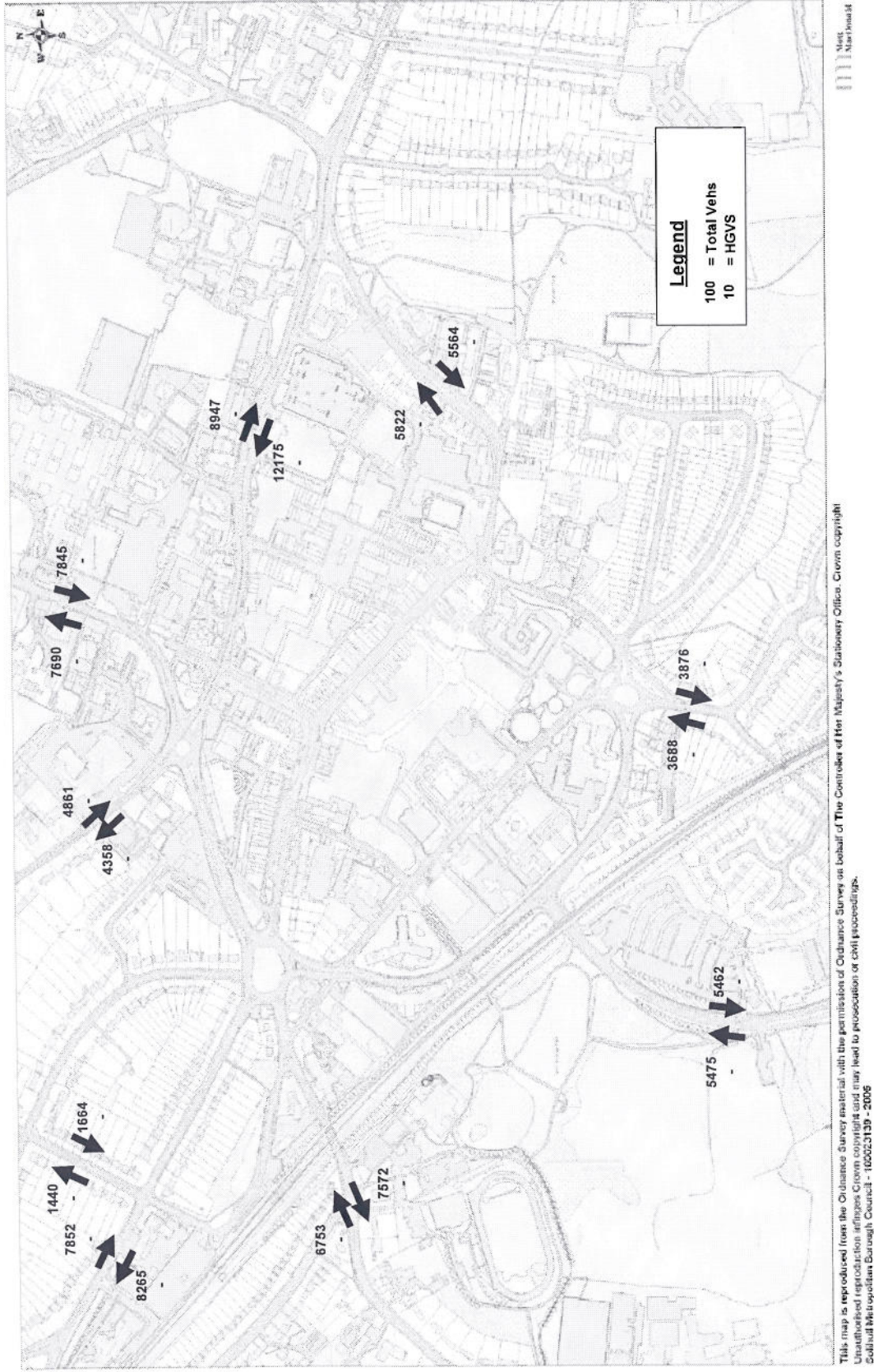


Figure 3.6: Saturday 12 Hour Traffic Count Summary (0700 to 1900)

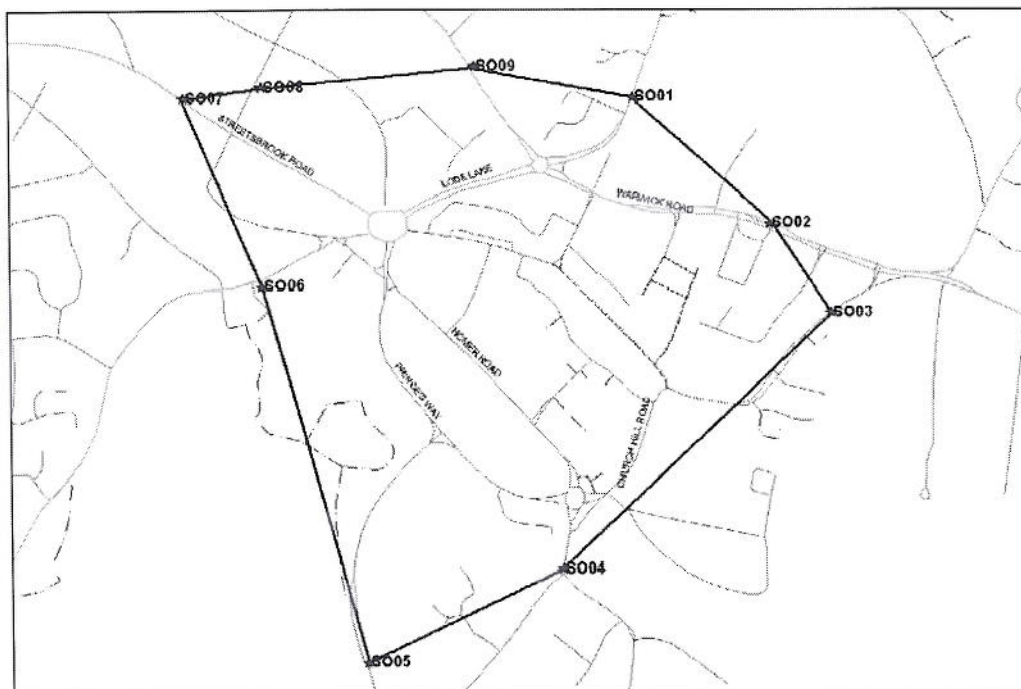


3. Historical Traffic Flows (Solihull Cordon Survey)

The Solihull Cordon Survey report was conducted as part of the Local Transport Plan monitoring process and was completed in December 2005. The survey report monitored the effects of transport policy and provided a detailed view of weekday vehicular activity into the Solihull Town Centre between 1995 and 2005. The traffic surveys were undertaken by Solihull Borough Council and Mott MacDonald.

The red dot points in Figure 3.1 show the locations of the nine cordon points around the Solihull Town Centre.

Figure 3.1: Location of Automatic Traffic Count Sites around Solihull



Morning Peak

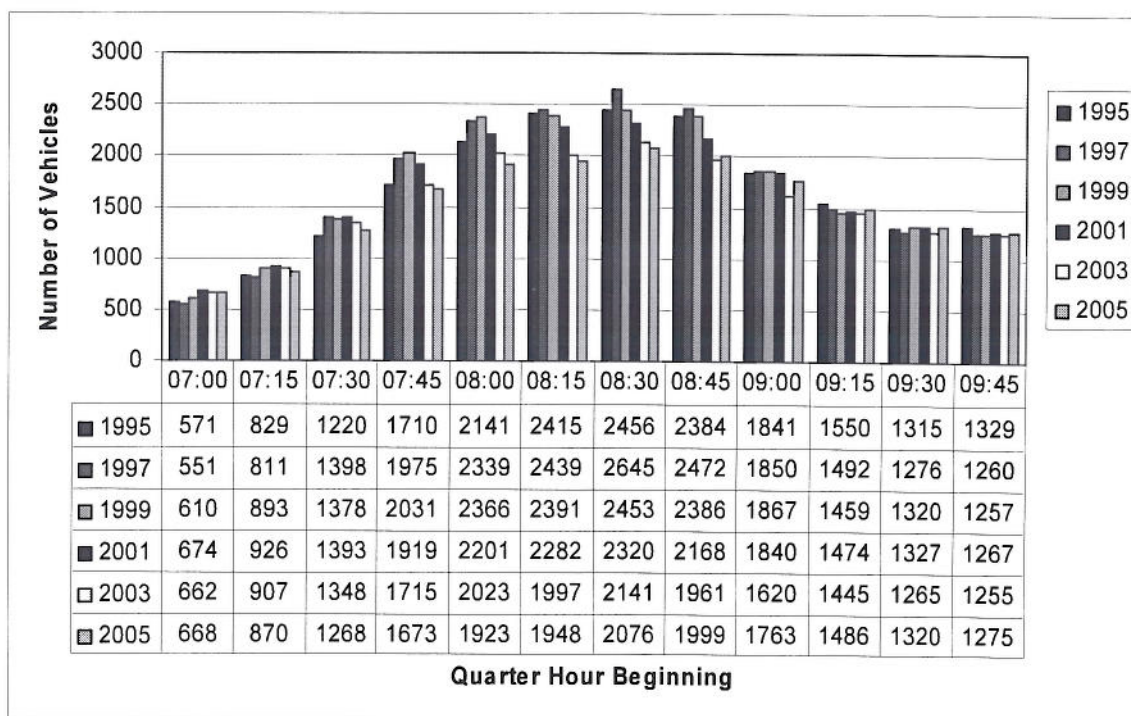
Table 3.1 shows the number of inbound and outbound vehicles crossing the cordon boundary in the AM peak. It shows that both inbound and outbound traffic level in the AM peak 2 hours has decreased slightly since 2001.

Table 3.1: Number of vehicles crossing the cordon in the Morning Peak (07.30 – 09.30)

	1995	1997	1999	2001	2003	2005
Inbound Total Cordon Vehicles	15,717	16,606	16,331	15,597	14,250	14,136
Outbound Total Cordon Vehicles	10,158	10,875	11,009	10,176	9,972	9,772

Figure 3.2 shows the historical traffic flow trends over the 10 years leading up to 2005 and is broken down by 15 minute periods. It highlights the reduction in inbound traffic flows crossing the cordon over since 2001 in the AM peak. However, Figure 3.2 shows that this trend is balanced by small increases in the shoulders of the peak, implying peak spreading is beginning to effect access to the Solihull Town Centre.

Figure 3.2: Inbound Vehicles by Quarter Hour (07.00-10.00)



Off Peak

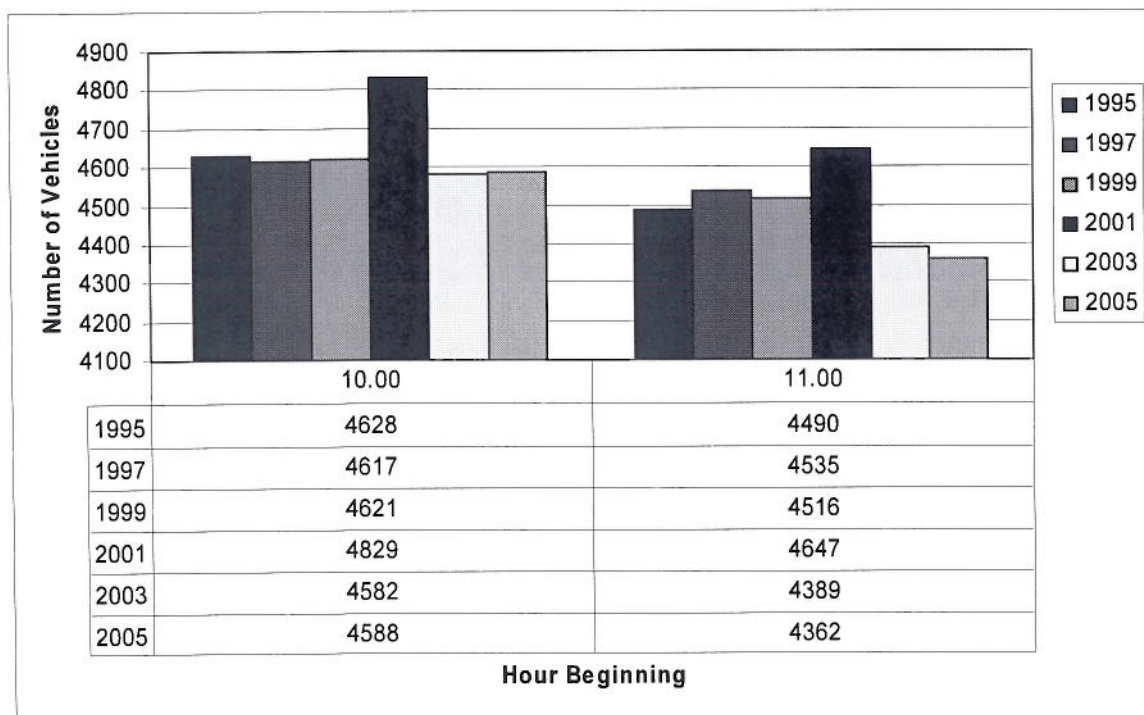
Table 3.2 shows the number of inbound and outbound vehicles crossing the cordon boundary between 10am and midday. It shows that both inbound and outbound traffic flows between 10am and midday remained relatively stable since 2003.

Table 3.2: Number of vehicles crossing the cordon in the Morning Off-Peak Period (10.00-12.00)

	1995	1997	1999	2001	2003	2005
Inbound Total Cordon Vehicles	9,118	9,152	9,137	9,476	8,971	8,950
Outbound Total Cordon Vehicles	8,603	8,563	8,679	8,084	8,243	7,947

Figure 3.3 shows the historical traffic flow trends between 1995 and 2005 by 1 hour periods. It highlights the relative stability in traffic flows, with exception of the year 2001.

Figure 3.3: Off-Peak Inbound Vehicles by Hour (10.00-12.00)



Evening Peak

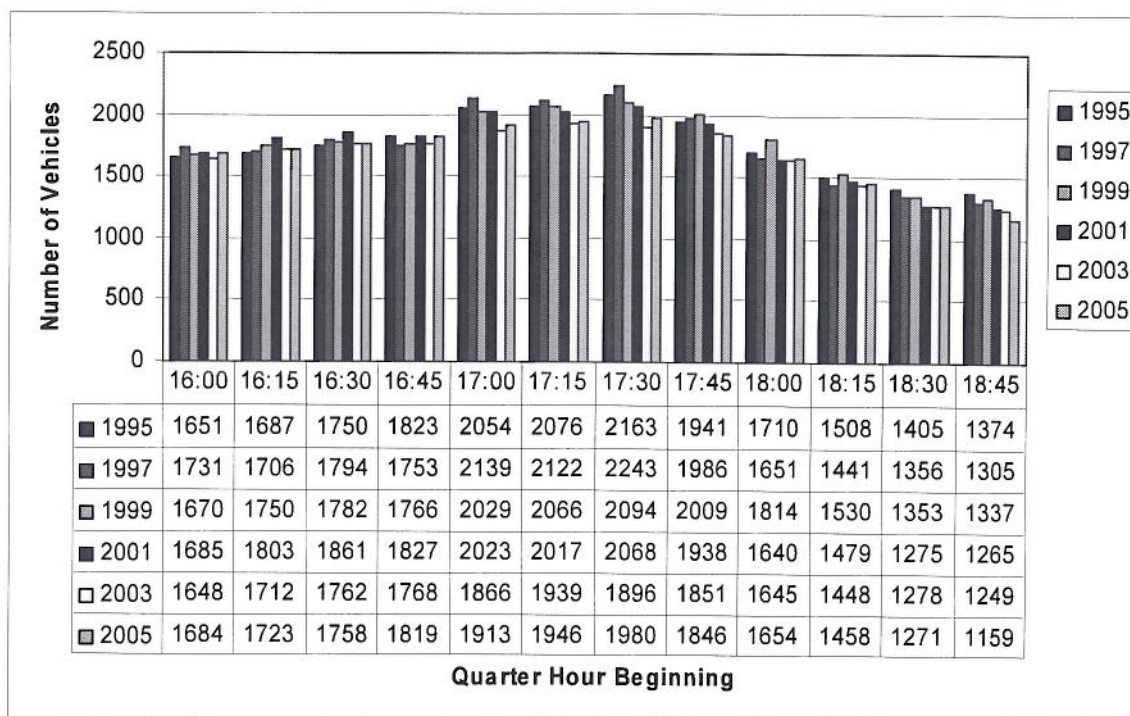
Table 3.3 shows the number of inbound and outbound vehicles crossing the cordon boundary between 10am and midday. It shows that both inbound and outbound traffic level in the PM peak 2 hours has decreased slightly since 2001.

Table 3.3: Number of vehicles crossing the cordon in the Evening PM Peak Period (16.00-18.00)

	1995	1997	1999	2001	2003	2005
Inbound Total Cordon Vehicles	11,883	11,712	11,511	11,270	10,982	10,702
Outbound Total Cordon Vehicles	15,145	15,474	15,166	15,222	14,442	14,669

Figure 3.4 shows the historical traffic flow trends over the 10 years leading up to 2005 and is broken down by 15 minute periods. It highlights the reduction in inbound traffic flows crossing the cordon between 17:00 and 18:00. However, it also shows an increase in traffic flows between 16:00 and 17:00.

Figure 3.4: Inbound Vehicles by Quarter Hour (16.00-19.00)



Saturday

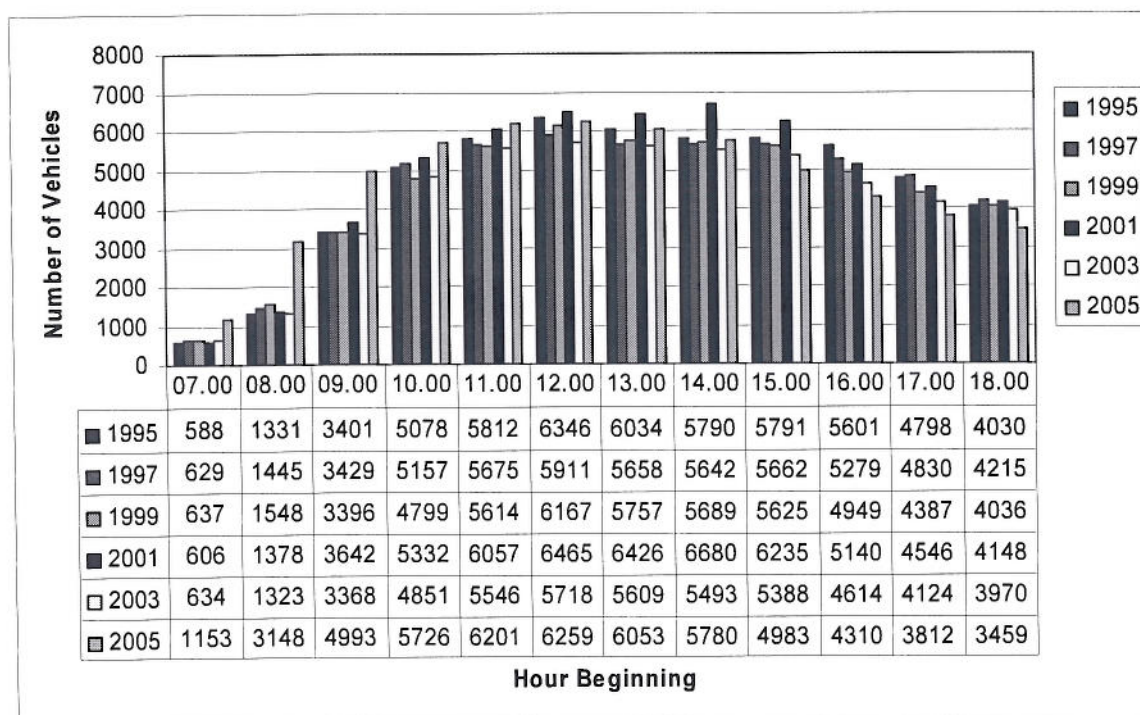
Table 3.4 shows the number of inbound and outbound vehicles crossing the cordon boundary on Saturday between 7am and 7pm. It shows that both inbound and outbound traffic flows have remained relatively stable since over the 10 year up to 2005. However there has been a recent increase in inbound and outbound traffic flows between 2003 and 2005. This could be attributed to an increase in weekend trading and the completion of the Touchwood retail development at the end of 2001.

Table 3.4: Number of vehicles crossing the cordon on Saturday (07.00-19.00)

	1995	1997	1999	2001	2003	2005
Inbound Total Cordon Vehicles	54,600	53,532	52,604	56,655	50,638	55,877
Outbound Total Cordon Vehicles	52,476	52,747	51,837	50,722	49,907	53,432

Figure 3.5 and Figure 3.6 show the inbound and outbound historical traffic flow trends over the 10 years leading up to 2005 and are broken down by 1 hour periods. These graphs both demonstrate typical Saturday traffic flow patterns of a busy commercial centre. Figure 3.5 highlights a dramatic increase in inbound traffic flows crossing the cordon between 07:00 and 10:00.

Figure 3.5: Saturday Inbound Vehicles (07.00-19.00)



4. Congestion

Introduction

Traffic congestion is caused by high levels of traffic and is typically encountered in the morning and evening peaks. Traffic congestion has negative effects on society as a whole. It reduces the travel times across the road network and in turn increases the environmental impacts of each vehicle. As part of the Local Transport Plan process, the DfT is recommending that congestion is monitored using the C-JAMS system. The CJAMS database is discussed in more detail in the following section.

C-JAMS

Background

The C-JAMS (Congestion and Journey-time Acquisition and Monitoring System) technology was developed in 2002 and is now used nationally by the DfT and HA as the primary source of data for the urban network. The C-JAMS data processing method uses advanced map matching and routing to match vehicle GPS based data to digital representation of the road network and then reconstructs vehicle paths to calculate their speeds. These speeds are then attributed to the roads to build up a detailed database of traffic conditions across the road network. The following sections describe the C-JAMS results around the Solihull Town Centre.

Congestion Results

The following set of diagrams shows the average traffic speeds for different time periods and different vehicular modes of travel between August 2004 and August 2005. Figure 4.1 shows the average weekday car and LGV speeds in the AM peak hour, while Figure 4.2 shows the average weekday HGV speeds for the same time period. Figure 4.3 shows the average weekday car and LGV speeds in the PM peak hour. The equivalent HGV plot has not been included because there is insufficient GPS coverage in the PM peak.

These plots show that in both the AM and PM peaks, a majority of the vehicular traffic in and around the Solihull Town Centre is, on average, travelling below 30 km/h. In the AM peak, most of the town centre experiences very low speeds caused by severe congestion. While this may not be uncommon in a commercial centre such as Solihull, in the AM peak many of the approaches to the town centre also experience average speeds below 30 km/h and some localised areas average less than 15 km/h. These areas include the approaches from the South West along Streetsbrook Road and North of the town centre along Lode Lane and Solihull Bypass. The congestion in the PM peak is not as bad as in the AM peak. However in the PM peak, the Solihull Town Centre and the main departure roads have sections where the average speed is less than 15 km/h.

Figure 4.4 shows the average car and LGV speeds for Saturday between 10am and midday. Over these 2 hours, the Solihull Town Centre experiences levels of congestion approximately equal to that of commuter traffic in the weekday morning peak.

Figure 4.2 shows the average weekday HGV speeds for the AM peak period. On average, the speeds of lorries are lower than cars in the same sections of roads. It illustrates that lorries suffer the effects of congestion even more so than cars.

Congestion Analysis Conclusions

These average speed plots emphasize the severe congestion currently experienced around the Solihull Town Centre. They show that the existing road network is already performing at or near capacity. Due to the confined nature of the area, there is little room for simple expansion of the road network, either through increasing the width and capacity of the carriageway or through the construction new roads. Thus, it can be assumed that there is only remedial scope for road network improvement.

There is little doubt that the existing level of congestion in the area is a barrier to land use development.

Figure 4.1: AM Peak Hour Average Traffic Speeds for Cars and LGVs Around Solihull

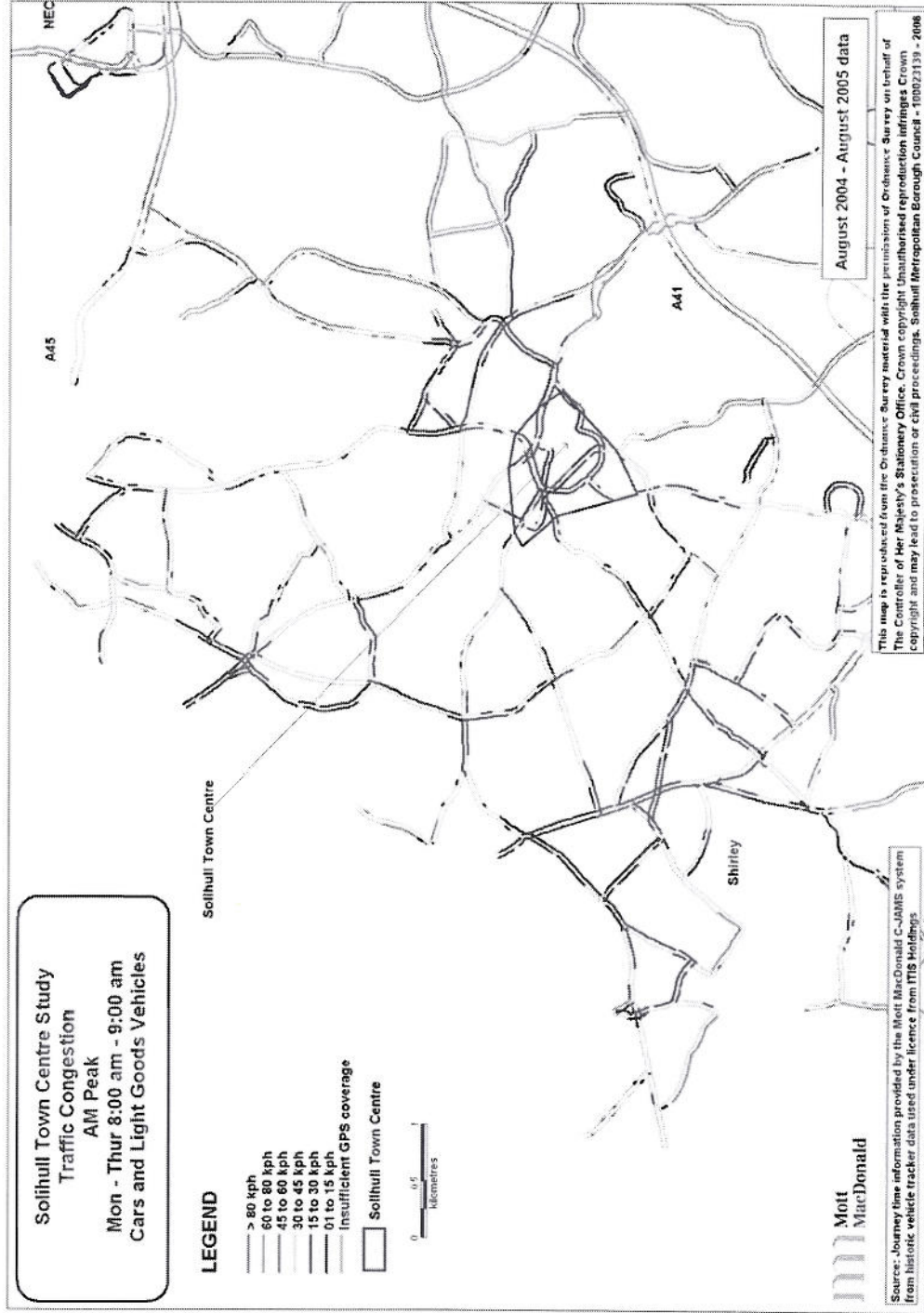


Figure 4.2: AM Peak Hour Average Traffic Speeds for HGVs Around Solihull

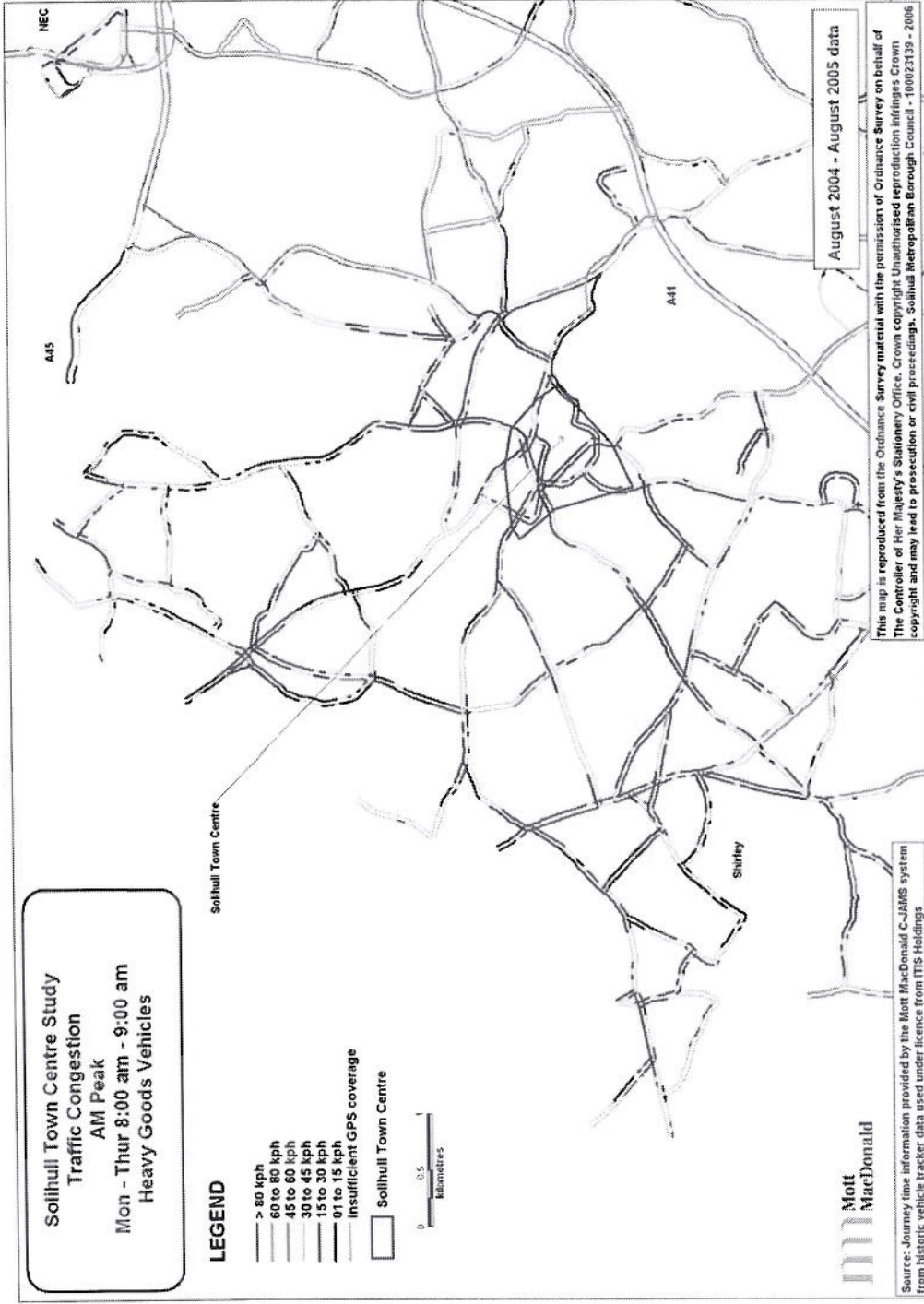


Figure 4.3: PM Peak Hour Average Traffic Speeds for Cars and LGVs Around Solihull

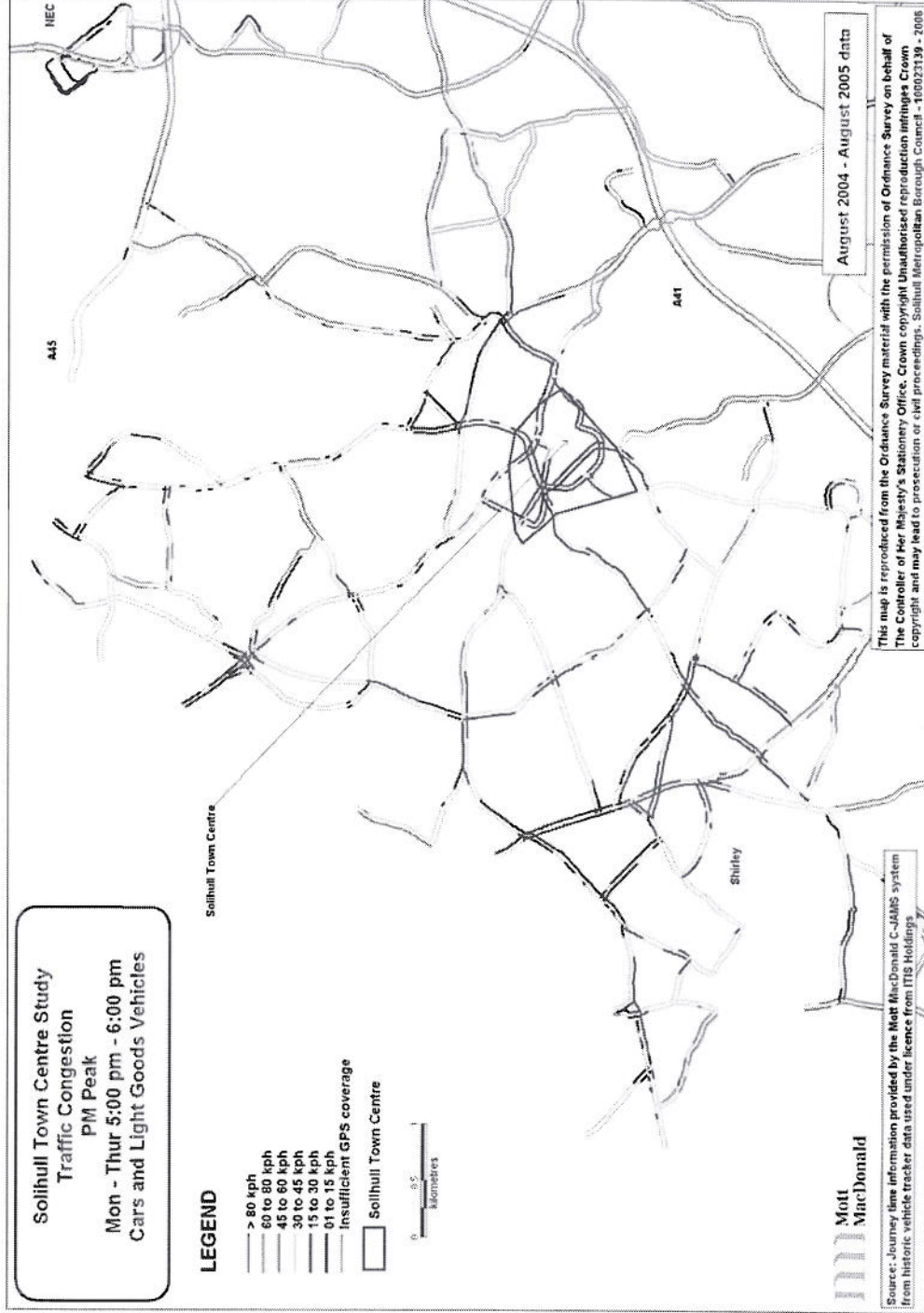
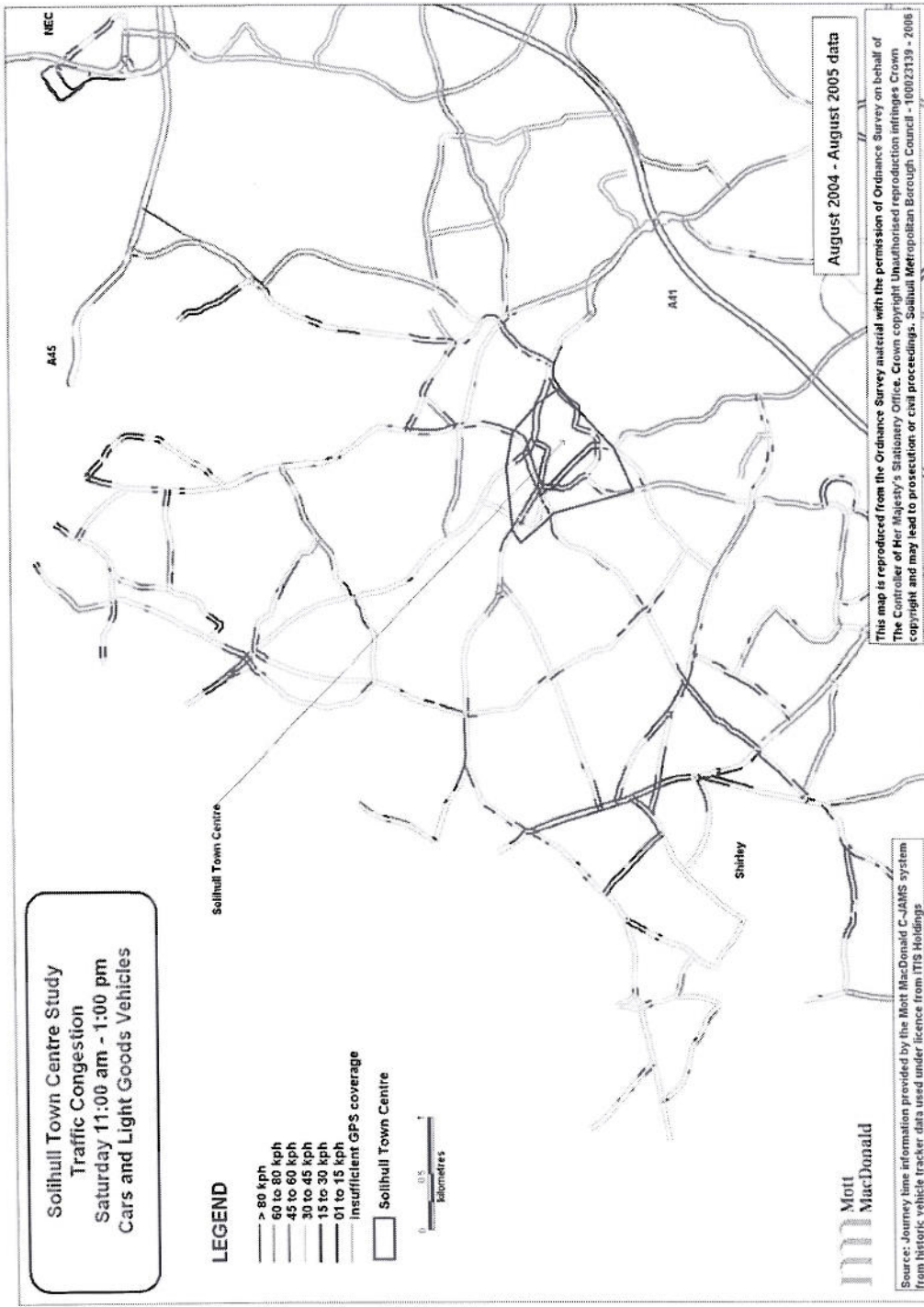


Figure 4.4: Saturday Average Traffic Speeds for Cars and LGVs Around Solihull



5. Solihull Town Centre – Car Parking

Introduction

The availability of car parking at different locations is an important issue when analysing the development potential within town centres. Important issues include the location of the car parks, the number of car parking spaces, the price of car parking and the ease of accessibility to the car parks. Also, town centre car parking requirements can be categorised as public off-street parking (such as shopping centre car parks) and private non residential parking (such as underground office block car parks).

Solihull Town Centre Car Parks

Figure 5.1 shows the location of the public off-street parks in Solihull Town Centre. There are eleven major off-street car parks in the Solihull Town Centre these are well spread across the retail areas. Note that many of the car parks are multi-storey and their capacity does not relate directly to the coverage shown in this Figure 5.1.

Figure 5.1: Location of car parks in Solihull Town Centre



Table 5.1 shows the number of spaces and the opening times for the public car parks. Note that the rail station park and ride car park is discussed in detail in the public transport chapter in Appendix F. The John Lewis, Mell Square and Monkspath Hall public car parks have the largest car park capacities, however they are not open throughout the night.

Table 5.1: Car Park Capacities and Opening Times

Car Park Description	Number of Spaces	Opening Hours
Lode Lane	486	7.40am to 9pm
Dominion Court	100 weekdays 200 weekends	8am to 6pm
Church Hill	127	24 hour
Marks and Spencer's	569	7.40am to 9pm
Mell Square	950	7pm to 9pm
Council House	174 weekends only	24 hour
Princes Way	245 weekdays 435 weekends	24 hour
Touchwood	670	24 hour
John Lewis	1050	8.30 am to 11pm
Monkspath Hall	1043	8 am to 6 pm
<i>TOTAL</i>	<i>5240 weekdays</i> <i>5704 weekends</i>	

All of the car parks in the Solihull Town Centre require payment during the standard opening hours. The prices of parking do not vary significantly across all of the car parks. Table 5.2 shows the average price of parking in Solihull Town Centre. Most town centre car parks cost between £6 and £10 for 6+ hours. The exception is the Monkspath Hall car park which only costs £2.60 for 6+ hours. However, this car park is the furthest from the town centre and has a free shuttle bus with a frequency of 10 minutes during the morning and evening peak.

Table 5.2: Average price of car parking in Solihull Town Centre

Duration	Cost
Up to 1 hour	£0.90
1-2 hours	£1.50
2-3 hours	£2.20
3-4 hours	£2.80
4-5 hours	£3.80
5-6 hours	£5.00
6-8 hours	£8.00
8-12 hours	£10.00
12 + hours	£14.00
Night rate after 6pm	£1.00

Solihull MBC has provided data from the VMS system at each car park for September and December 2005. This VMS system registers each vehicle that enters and exits the car park and enables a profile of accumulation to be determined. The duration of stay data from Lode Lane, Marks and Spencer's and Mell Square car parks have been provided for the months of February and March 2006. Note that no VMS system information was available for the Touchwood and John Lewis car parks.

Car Park Data Results

Car Park Data – Average Weekday

Figure 5.2 shows the combined ins and outs, combined accumulation and combined total number spaces available for all the car parks in the Solihull Town Centre during an average weekday in September.

Figure 5.2: Average Weekday Combined Car Park Profiles

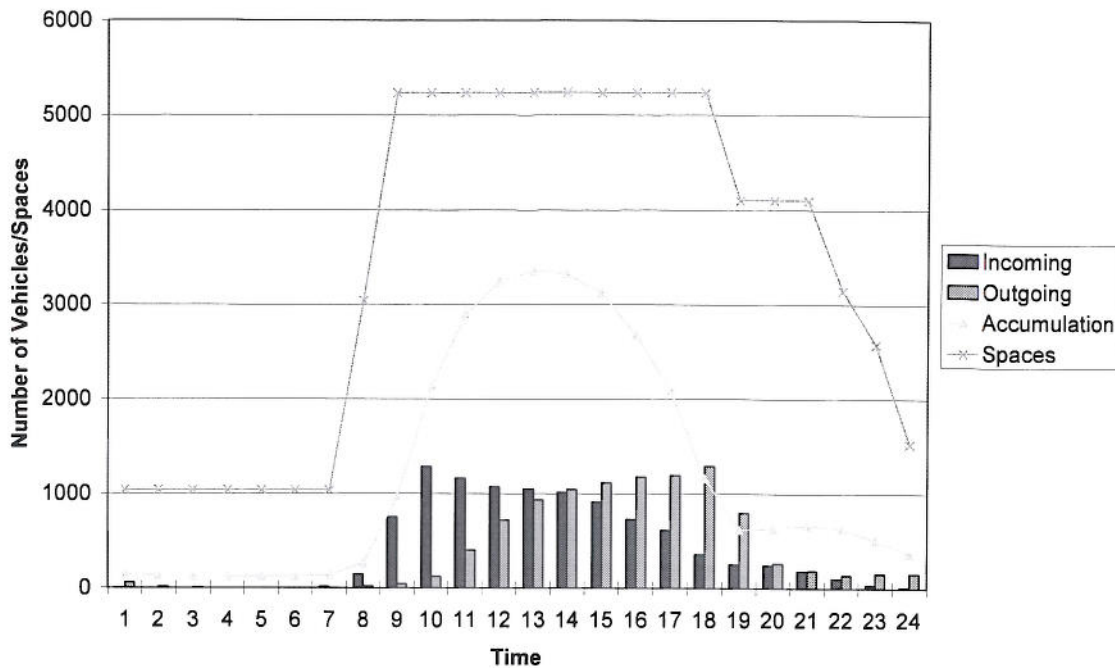


Figure 5.2 shows that on that an average weekday, the Solihull Town Centre has spare capacity of approximately 1,800 parking spaces (~35%) when the current accumulation is at its peak. The total number of spaces at all of the car parks is 5,240 during the day. While this indicates spare parking capacity, it does not tell us whether this capacity is evenly spread across the network, or whether they are all in the one car park. The following car park accumulation results identify the spare capacity at individual car parks.

Table 5.3 summarises weekday car park usage and provides estimates of the number of car parks available during the cumulative peaks. On a typical weekday in the Solihull Town Centre, approximately 30% of the car parking spaces remain vacant throughout the day. This equates to approximately 1,650 free car parking spaces. Three car parks can be classified as full on a typical weekday. These include the Church Hill and Touchwood car parks in the south east of the Town Centre and Dominion Court in the north west.

Table 5.3: Typical Weekday Car Park Usage Rates

Car Park Description	Car Park Weekday Usage	Number of Weekday Spaces	Estimated Weekday Spare Capacity
Lode Lane	30%	486	310
Dominion Court	FULL	100	0
Church Hill	ALMOST FULL	127	10
Marks and Spencer's	60%	569	200
Mell Square	55%	950	380
Princes Way	40%	245	130
Touchwood	FULL	670	0
John Lewis	50%	1050	470
Monkspath Hall	80%	1043	150
TOTAL		5240	1650

Table 5.3 shows that the existing car parking spaces in the Solihull Town Centre are under utilised. This could be due to problems with accessing the existing sites and the excessive weekday peak hour congestion approaching the Town Centre. Monkspath Hall Car Park is approximately 80% full during the day this would be expected as it is the cheapest car park in the Town Centre, however it is also the car park furthest from the commercial and retail area. Dominion Court is full from the time it opens. Solihull Council has reconfirmed that Lode Lane and Princes Way are currently drastically underutilised.

The next nine plots, Figure 5.3 to Figure 5.11, show the accumulation profile of each individual car park (where available) in the Solihull Town Centre on a typical weekday in September. These plots have been constructed using the VMS data provided by Solihull and is summarised in Table 5.3.

Figure 5.3: Lode Lane Car Park Average Weekday.

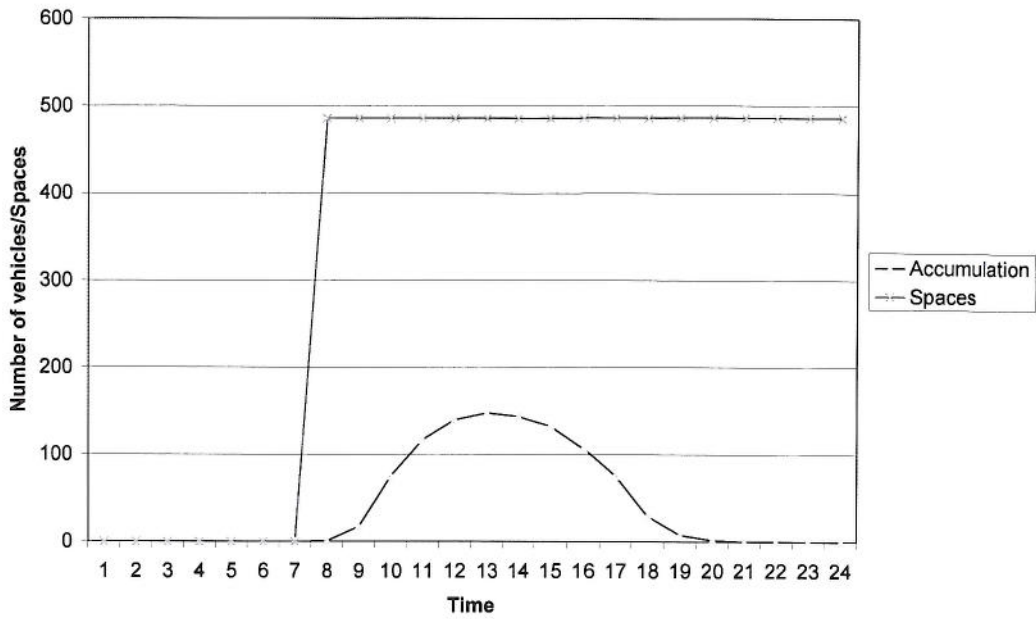


Figure 5.4: Monkspath Hall Car Park Average Weekday

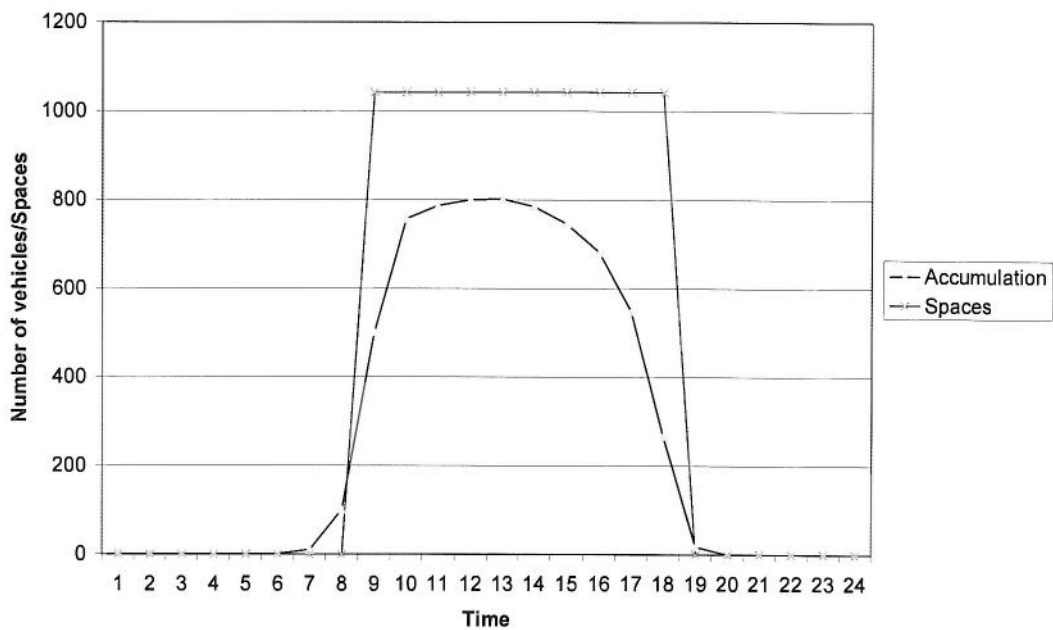


Figure 5.5: Marks and Spencer's Car Park Average Weekday

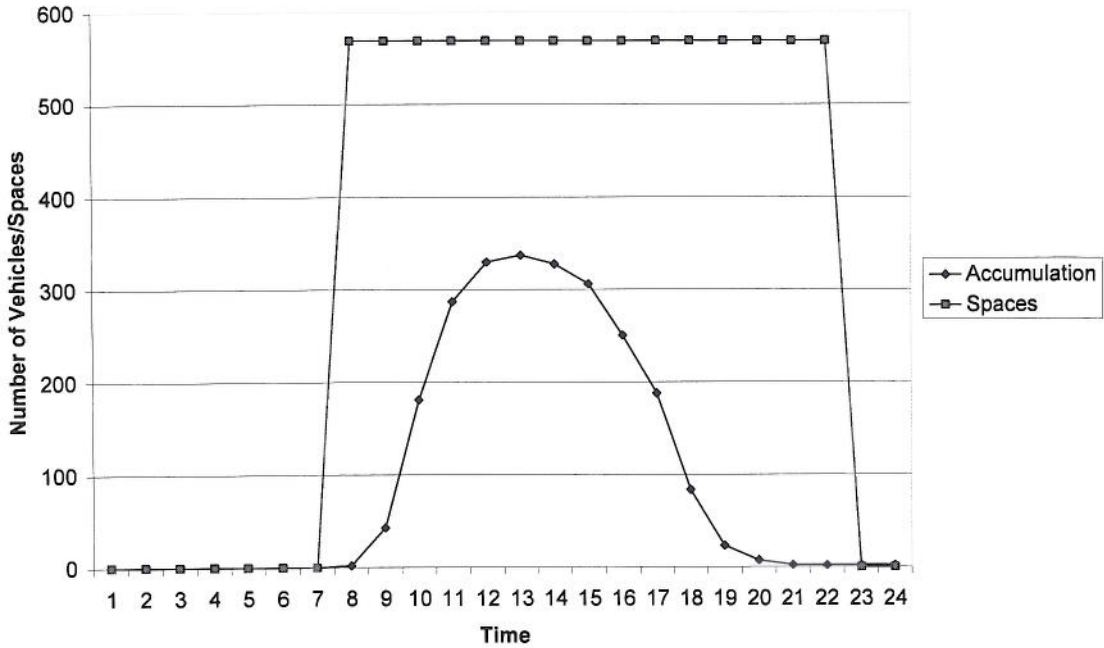


Figure 5.6: Mell Square Car Park Average Weekday

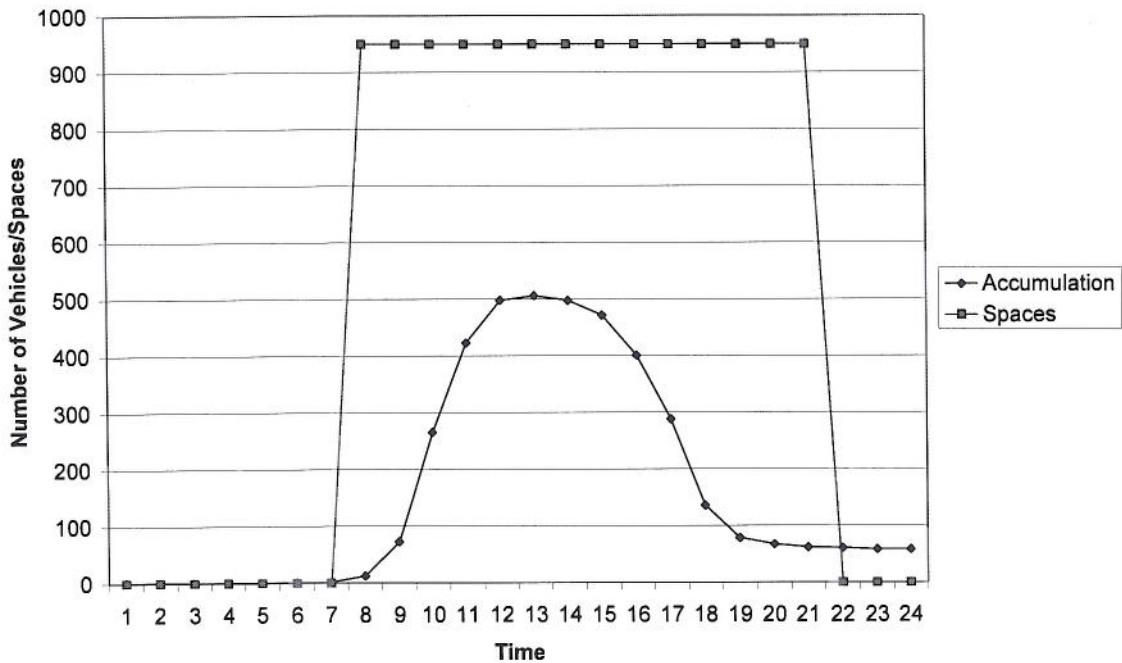


Figure 5.7: John Lewis Car Park Average Weekday

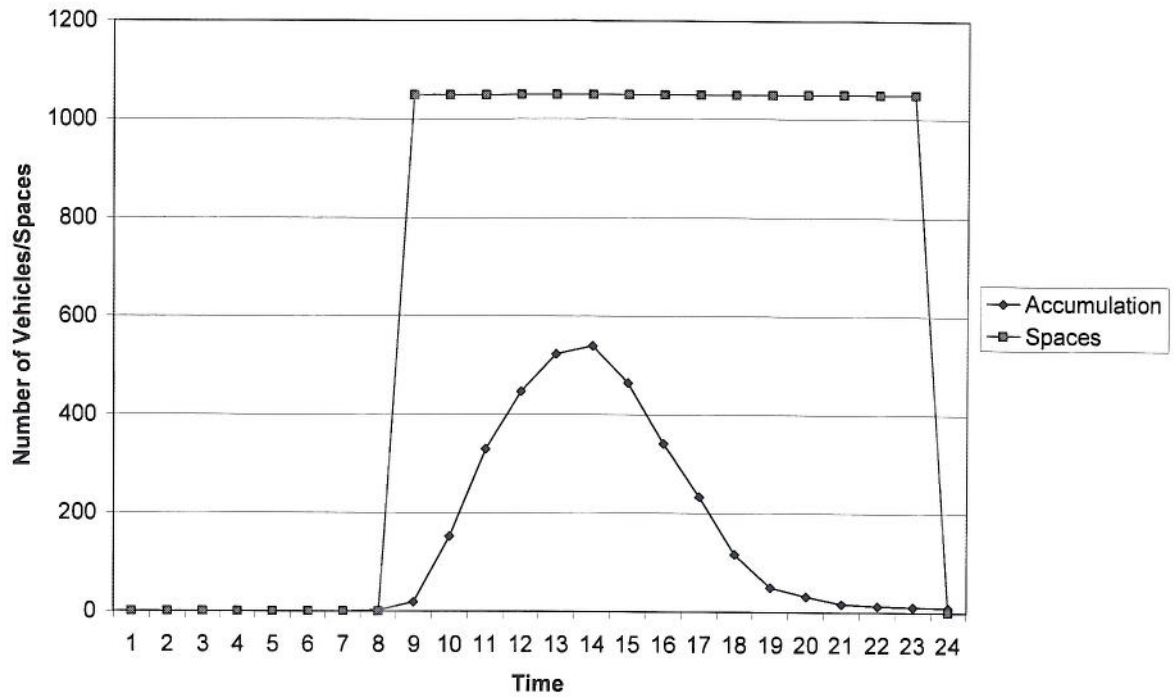


Figure 5.8: Touchwood Car Park Average Weekday

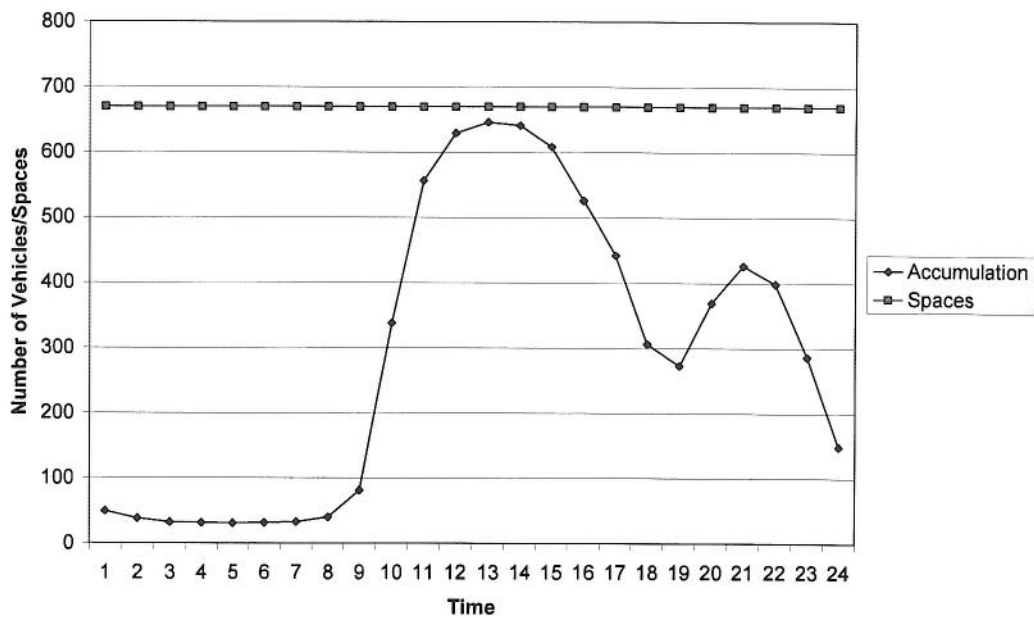


Figure 5.9: Dominion Court Car Park Average Weekday

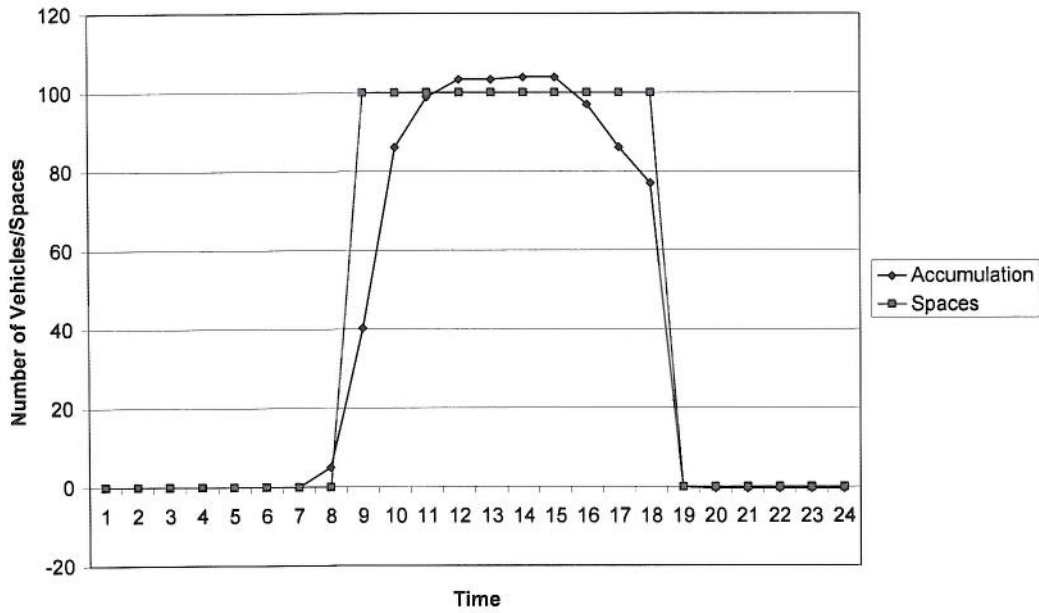


Figure 5.10: Princes Way Car Park Average Weekday

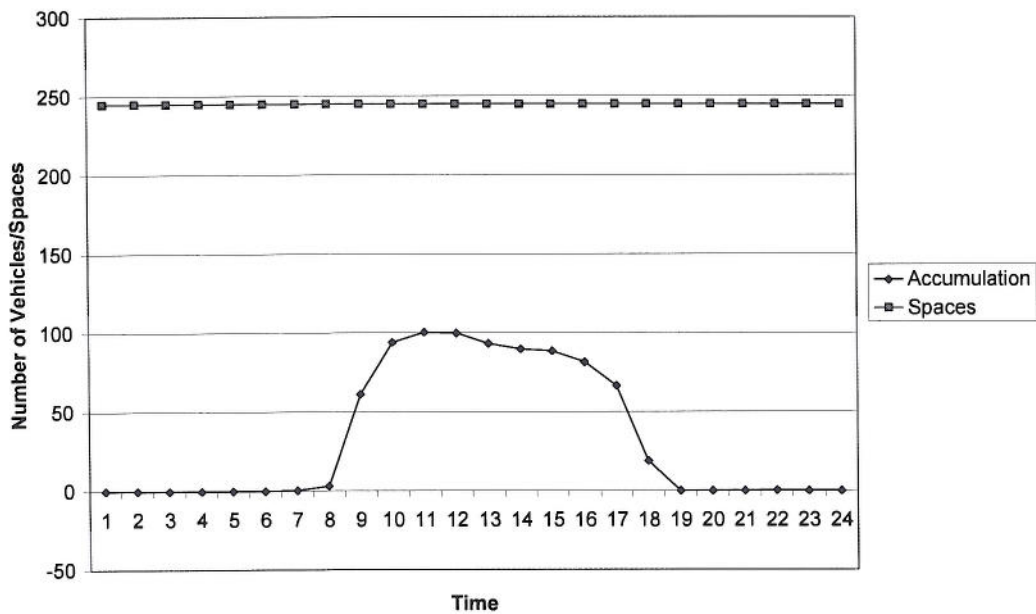
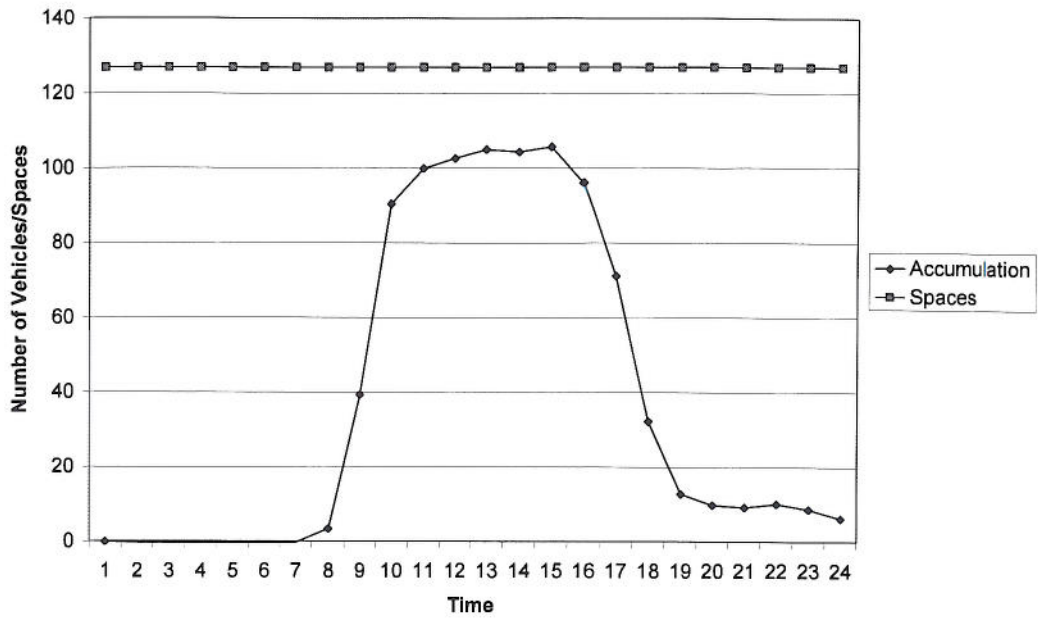


Figure 5.11: Church Hill Car Park Average Weekday



Car Park Data – Average Saturday

Figure 5.12 shows the combined ins and outs, combined accumulation and combined total number spaces available for all the car parks in the Solihull Town Centre during an average Saturday in September.

Figure 5.12: Average Saturday Combined Car Park Profiles

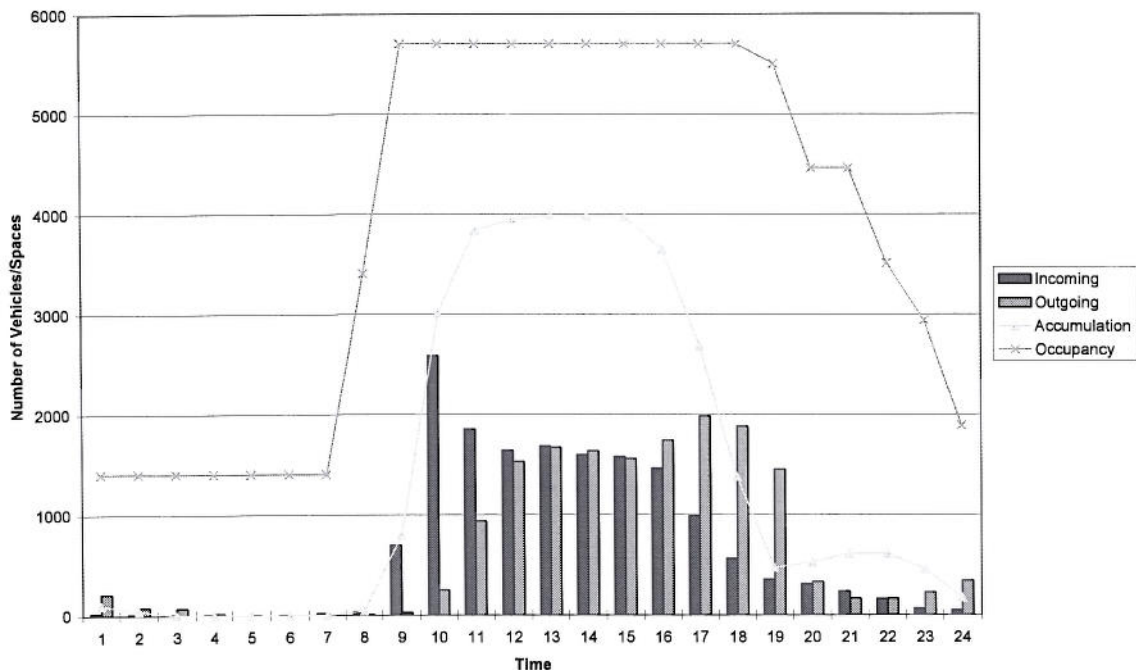


Figure 5.12 shows that on that an average Saturday, the Solihull Town Centre has spare capacity of approximately 1,700 parking spaces (~30%) when the current accumulation is at its peak. The total number of spaces at all of the car parks is 5,704 during the day, almost 300 more spaces than during the week.

Table 5.4 summarises Saturday car park usage and provides estimates of the number of car parks available during the cumulative peaks. On a typical Saturday in the Solihull Town Centre, approximately 20% of the car parking spaces remain vacant throughout the day. This equates to approximately 1,290 free car parking spaces. Six car parks can be classified as reaching capacity on a typical Saturday. These include the Dominion Court, Church Hill, Marks and Spencer’s, Mell Square, Touchwood and John Lewis car parks. However the Princes Way and Monkspath Hall car parks are heavily under utilised on a typical Saturday. This is due to the relative distance of the car parks from the shopping in the town centre and the seclusion and lighting problems at the Princes Way car park.

Table 5.4: Typical Saturday Car Park Usage Rates

Car Park Description	Car Park Saturday Usage	Number of Saturday Spaces	Estimated Saturday Spare Capacity
Lode Lane	75%	486	100
Dominion Court	FULL	200	0
Church Hill	FULL	127	0
Marks and Spencer's	FULL	569	0
Mell Square	FULL	950	0
Council House	70%	174	40
Princes Way	10%	435	370
Touchwood	FULL	670	0
John Lewis	FULL	1050	0
Monkspath Hall	20%	1043	780
TOTAL		5704	1290

The following car park accumulation results identify the spare capacity at individual car parks.

The next plots, Figure 5.13 to Figure 5.21, show the accumulation profile of each individual car park (where available) in the Solihull Town Centre on a typical Saturday in September. These plots have been constructed using the VMS data provided by Solihull and is summarised in Table 5.4.

Figure 5.13: Lode Lane Car Park Average Saturday

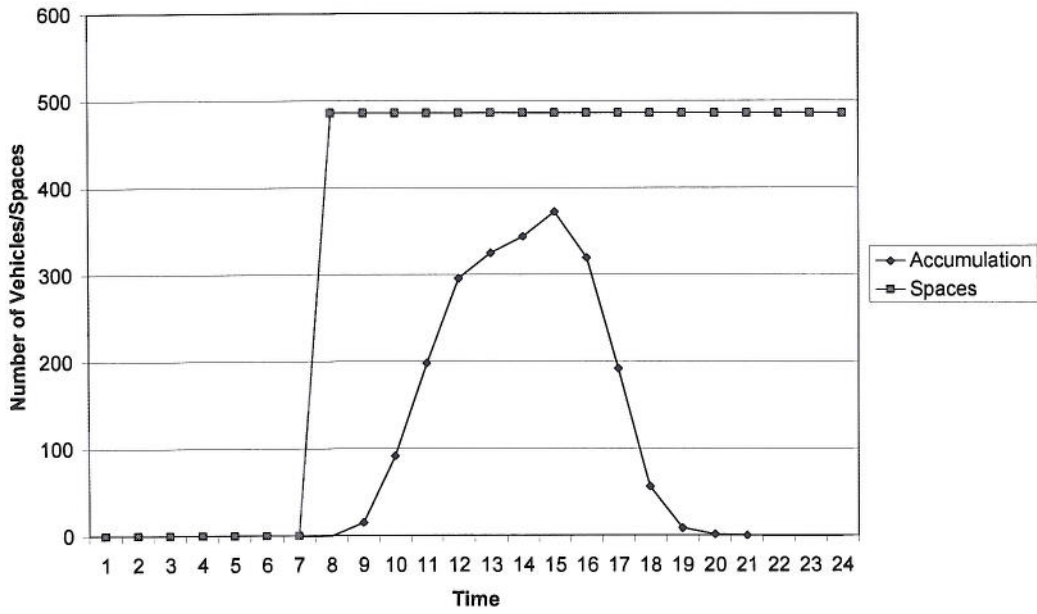


Figure 5.14: Monkspath Hall Car Park Average Saturday

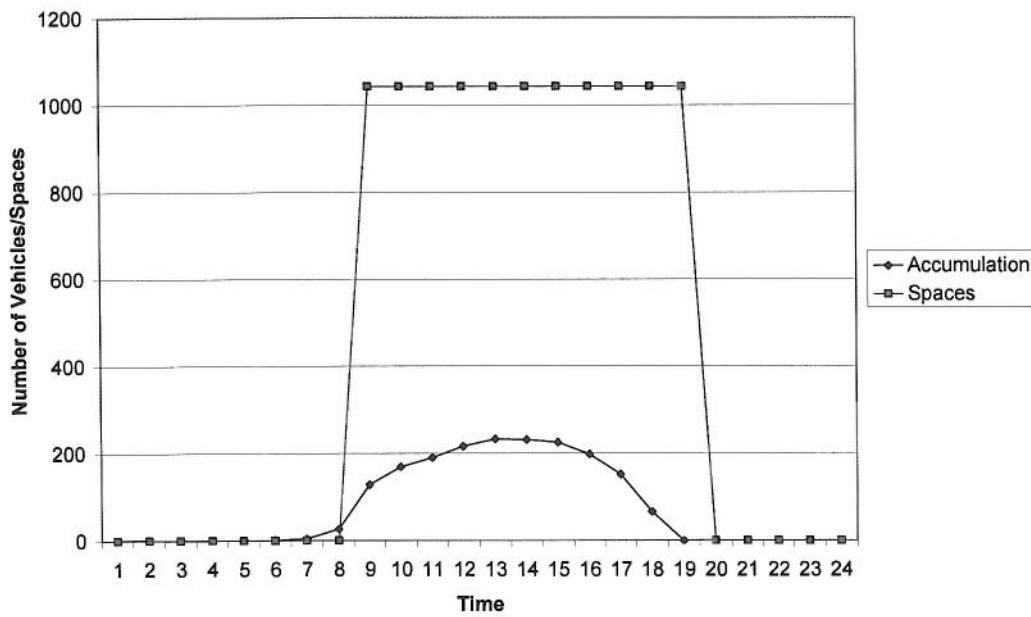


Figure 5.15: Marks and Spencer's Car Park Average Saturday

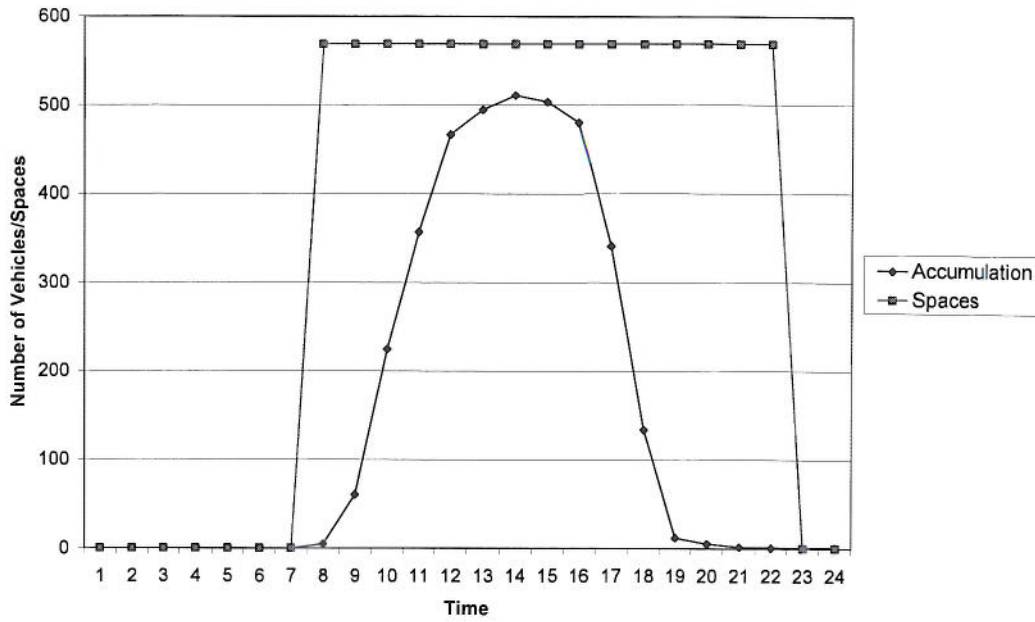


Figure 5.16: Mell Square Car Park Average Saturday

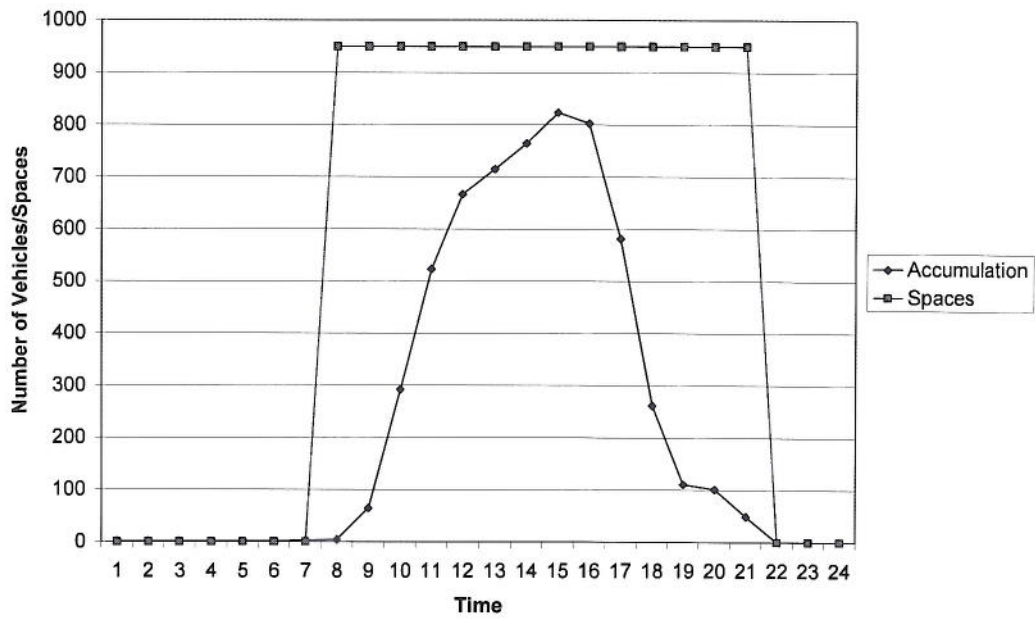


Figure 5.17: John Lewis Car Park Average Saturday

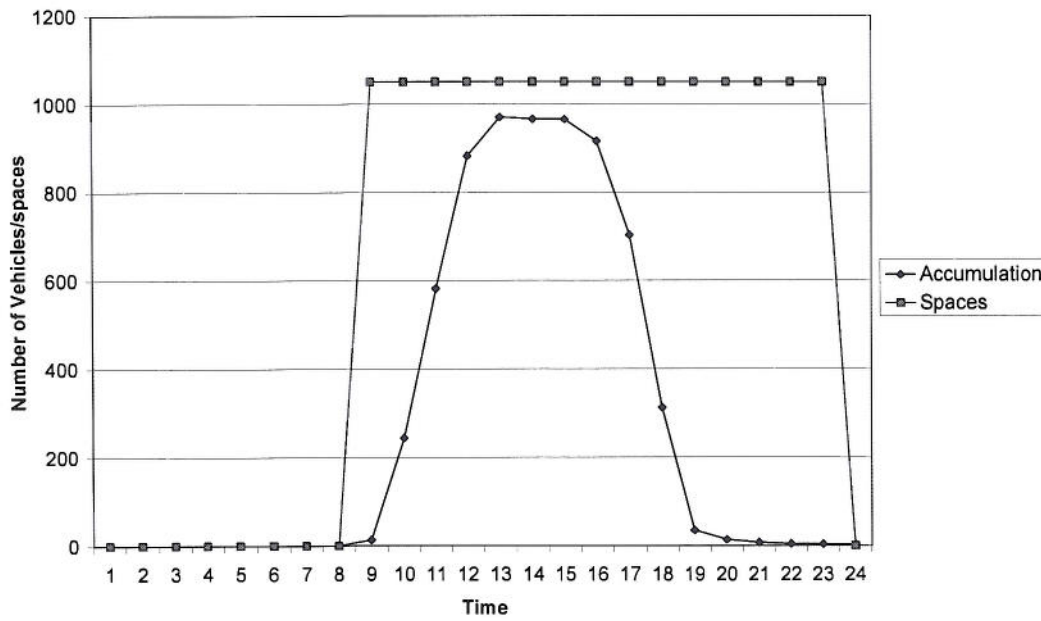


Figure 5.18: Touchwood Car Park Average Saturday

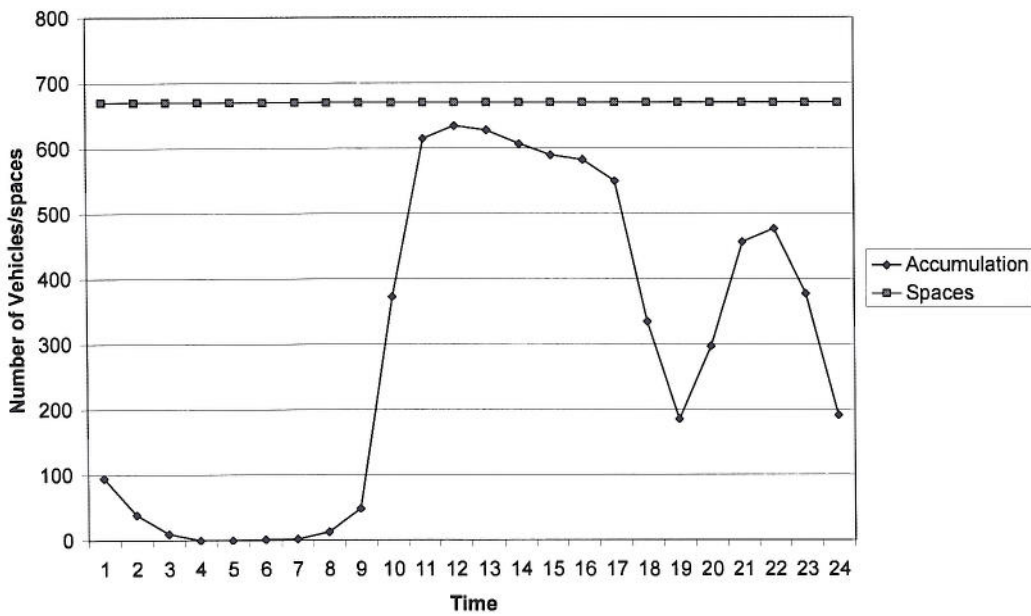


Figure 5.19: Dominion Court Car Park Average Saturday

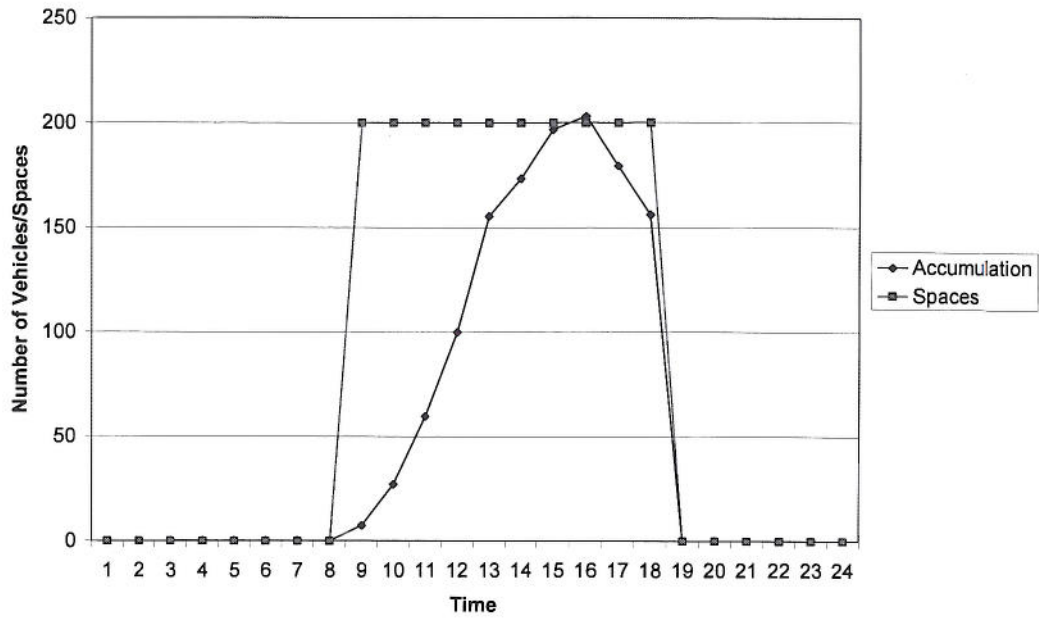


Figure 5.20: Princes Way Car Park Average Saturday

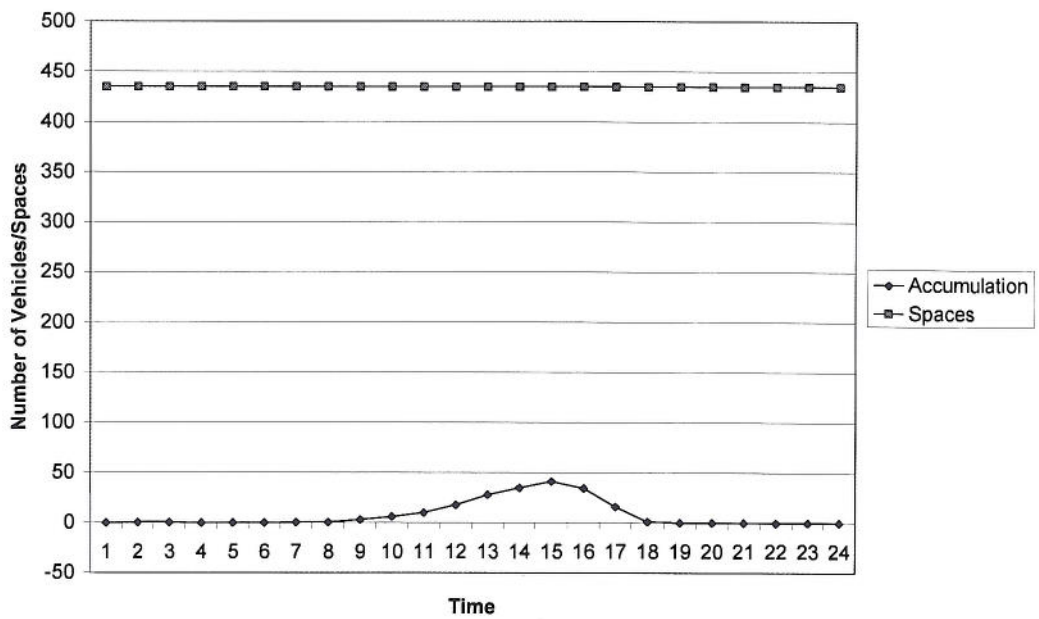
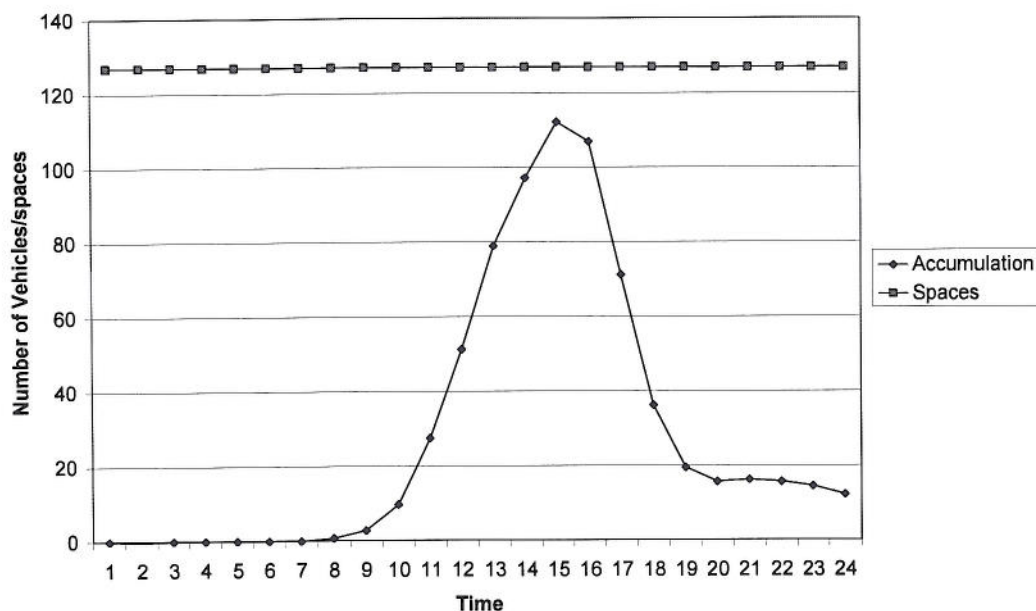


Figure 5.21: Church Hill Car Park Average Saturday



Car Park Data Comparison

Table 5.5 compares a typical weekday and Saturday the car parking usage levels. It shows that the Dominion Court, Church Hill, Touchwood car parks reach capacity on weekdays and on Saturday. Monkspath Hall car park is primarily used by commuters during the week as it has the advantage that it is cheaper, it is well serviced by public transport, it is only a short walk to the town centre and consumers avoid the congestion in the town centre. However, Lode Lane and Princes Way are always underutilised. Lode Lane has access issues that are caused by congestion in the area, whereas Princes Way is quite secluded, away from the town centre and has lighting and security issues in the evening.

Table 5.5: Comparison of Weekday and Saturday Car Park Usage

Car Park Description	Car Park Weekday Usage	Car Park Saturday Usage
Lode Lane	30%	75%
Dominion Court	FULL	FULL
Church Hill	ALMOST FULL	FULL
Marks and Spencer's	60%	FULL
Mell Square	55%	FULL
Council House	N/A	70%
Princes Way	40%	10%
Touchwood	FULL	FULL
John Lewis	50%	FULL
Monkspath Hall	80%	20%

Car Park Data – Peak Saturday (17th December 2005)

Figure 5.22 shows the combined ins and outs, combined accumulation and combined total number spaces available for all the car parks in the Solihull Town Centre for the Saturday before Christmas. The Saturday analysed is the 17th December and the car parks were busier than Saturday 24th.

Figure 5.22 shows that on an extreme day, there is still car parking capacity within the Solihull Town Centre car parking facilities. This is totally expected as there would be extra shopping trips into Solihull during the Christmas season.

Figure 5.22: Total Car Park Profiles for all car parks for 17th December 2005

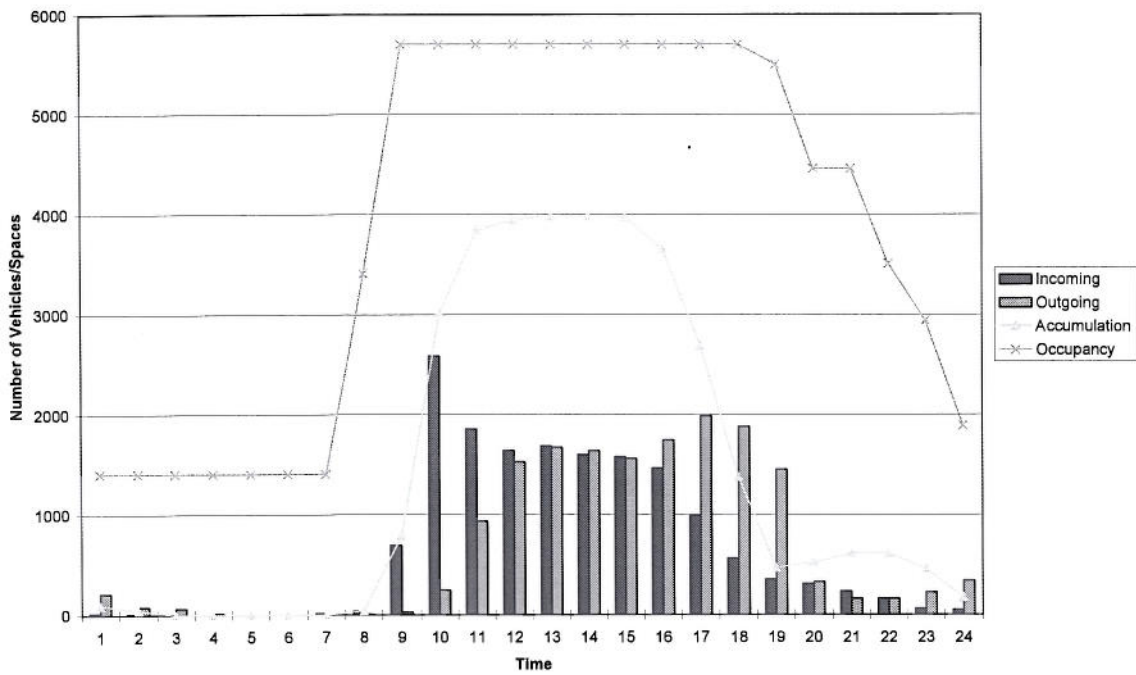


Figure 5.23: Total Car Park Profiles for all car parks for 17th December 2005 (excluding Monkspath Hall Car Pak)

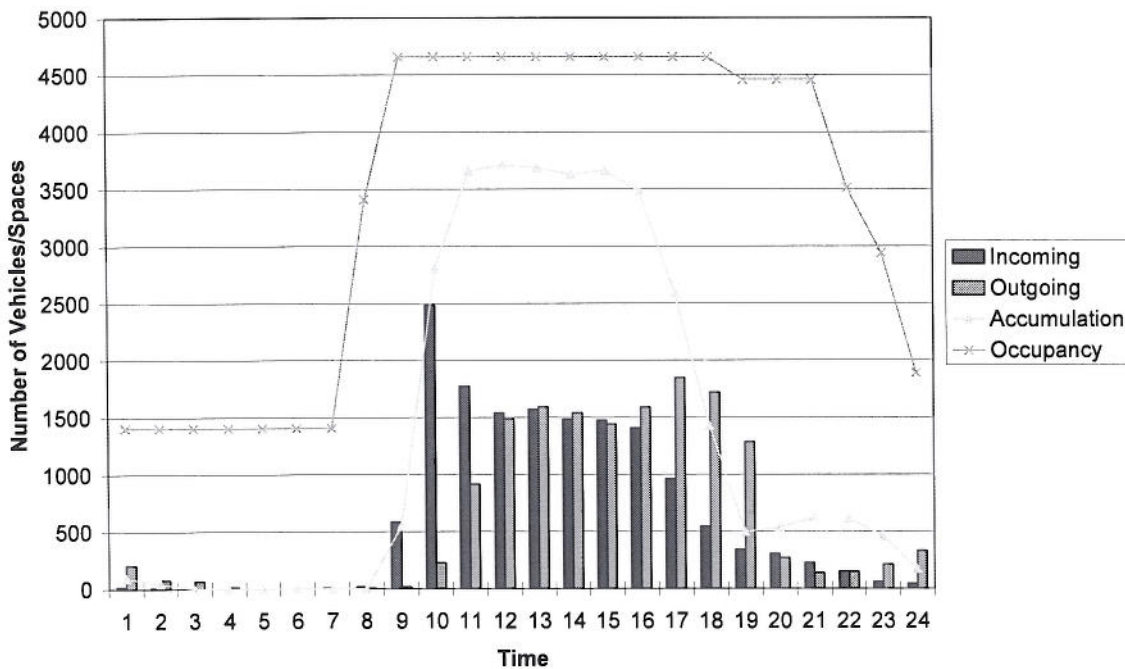


Figure 5.24 indicates that the car parks in the town centre (excluding Monkspath Hall car park) are at capacity for most of the day, between 11am and 5pm. This is due to the extra shopping associate with the Christmas season. It highlights a high car dependency for Christmas shopping.

Figure 5.24 does not include Monkspath Hall Car Park as it is the only car park in the Town Centre that is not full that day. This again shows the usage of Monkspath Hall to be mainly workers during the week and not a car park used significantly by shoppers.

Duration of Stay

Solihull MBC also provided duration of stay data for February and March 2006 at three town centre car parks including Lode Lane, Marks and Spencer's and Mell Square car parks.

Figure 5.24: Duration of Stay at Mell Square, Lode Lane and Marks and Spencer's Car Parks for an Average Weekday.

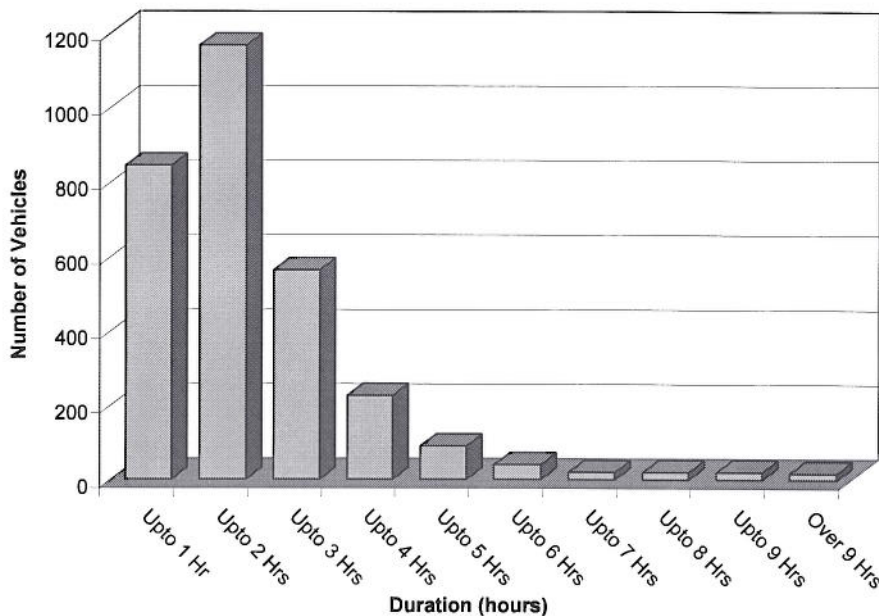


Figure 5.25: Duration of Stay at Mell Square, Lode Lane and Marks and Spencer's Car Parks for an Average Friday.

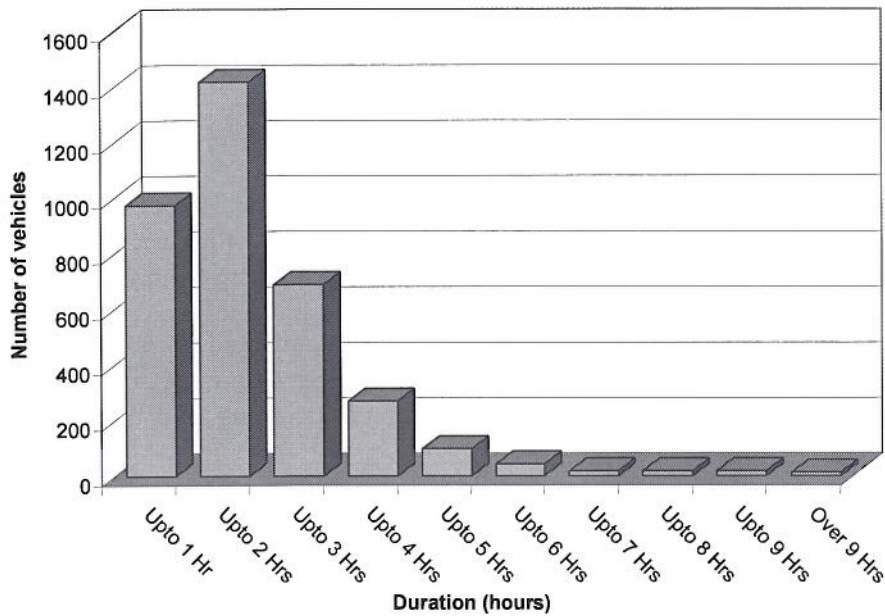


Figure 5.26: Duration of Stay at Mell Square, Lode Lane and Marks and Spencer's Car Parks for an Average Saturday.

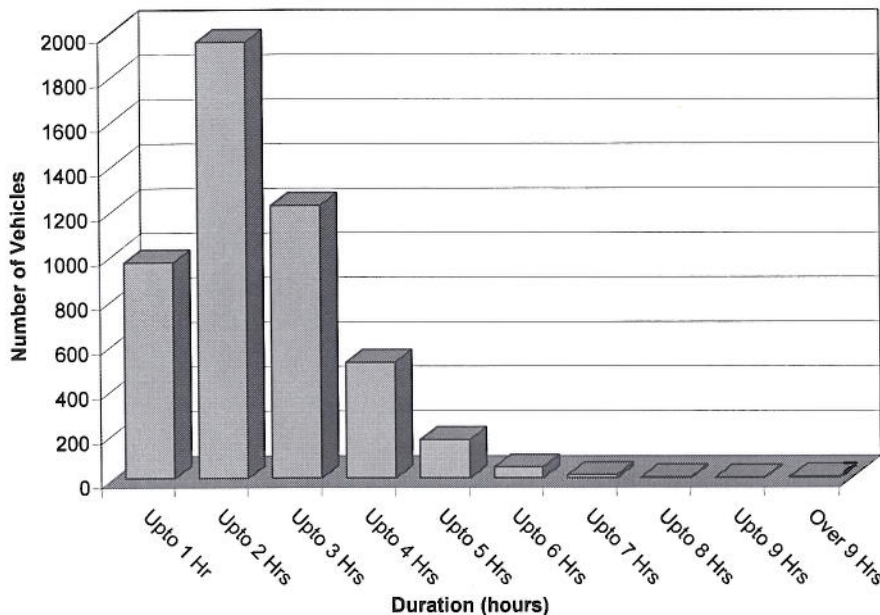


Figure 5.24 to Figure 5.26 show that at these three car parks the majority of people stay for less than 2 hours. The number of vehicles that stay over 6 hours is very small for an average weekday, an average Friday and an average Saturday. Saturday has the greatest number of vehicles, but has the smallest number of vehicles staying over 6 hours. This shows that a majority of people parking in the Solihull Town Centre on a Saturday are probably shoppers.

Other car parking in the Town Centre

Morrison's car park is owned by Morrison's for use by its customers. This car park currently has approximately 350 spaces. Recent site observations show that this car park is full on Saturday and there are also access problems with vehicles often queuing from George Road.

Figure 5.27 shows the car park accumulation from a survey conducted on Friday 26 March 1993 and the Morrison's (formally Safeway) site. Although the data is not recent, it shows that car park is consistently utilised and there is a lot of incoming and outgoing traffic throughout the day.

Figure 5.27: Morrison's (formally Safeway) Car Park Accumulation (Friday)

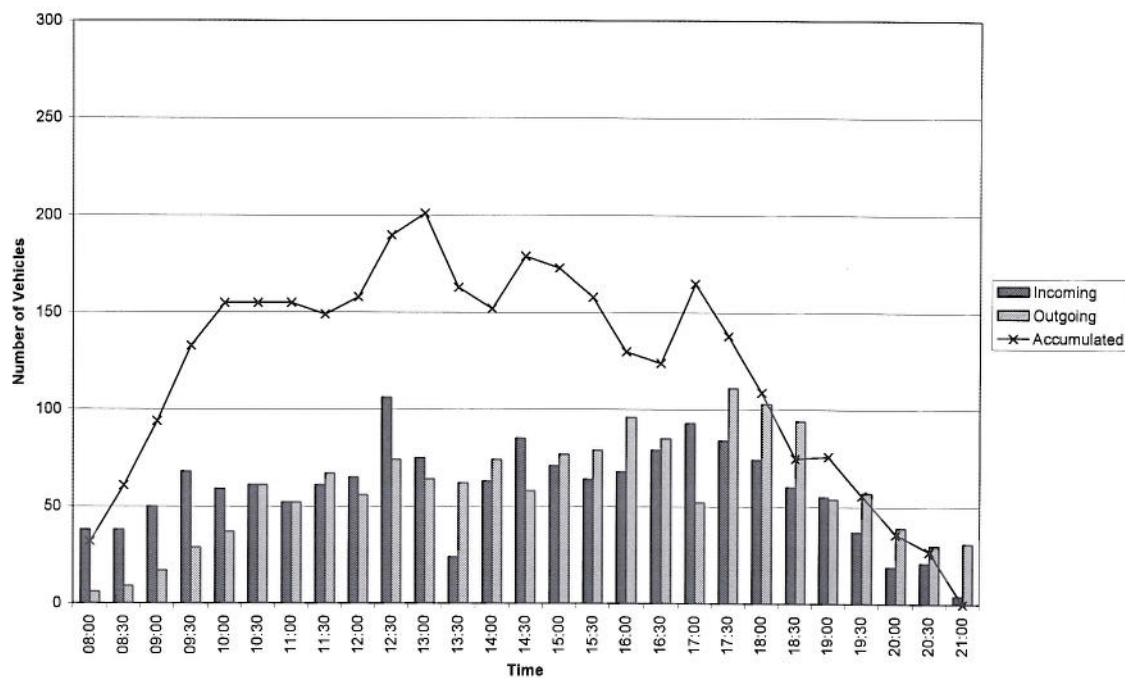
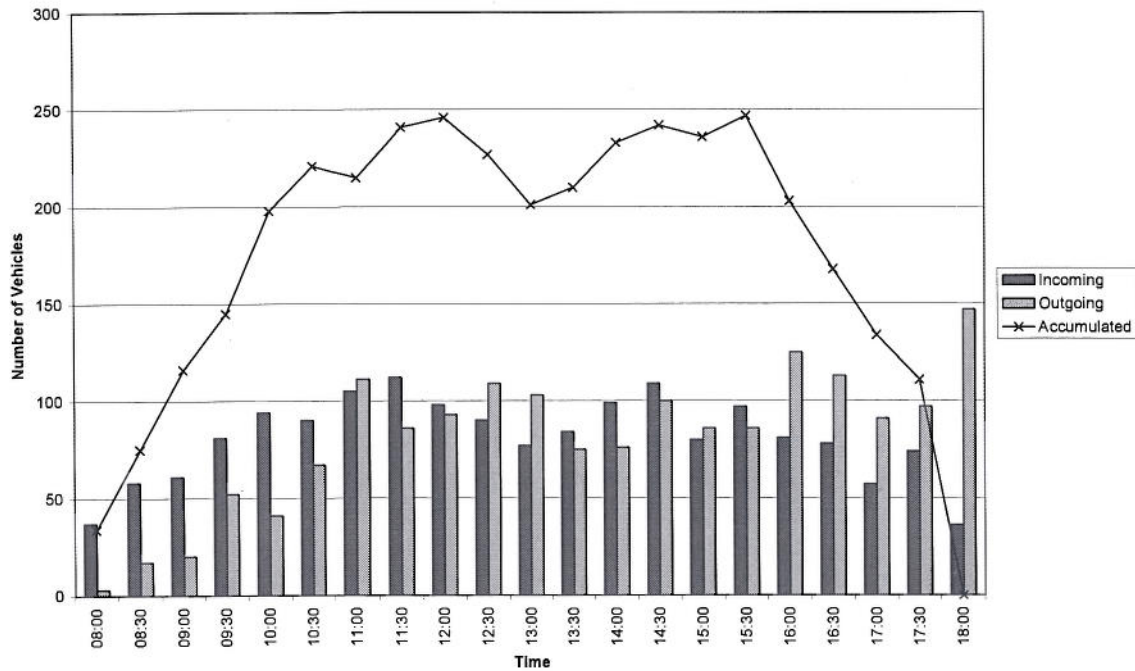


Figure 5.28 shows the car park accumulation from a survey conducted on Saturday 27 March 1993 and the same site. This shows that, in comparison to the Friday data, the car park is more heavily used and peaks at around 250 vehicles in the car park at several points throughout the day.

Figure 5.28: Morrison's (formally Safeway) Car Park Accumulation (Saturday)



In general, there are not lot opportunities for public on-street car parking. The major on-street parking spaces in the Solihull Town Centre are listed in Table 5.6 which includes the approximate number spaces available.

Table 5.6: On Street Parking from observations

Street Name	Number of spaces	Number free
Station Road	44	4
service rd off Warwick Rd	15	0

Table 5.7 provides an indication of the scale of the major private non-residential parking spaces (such as office block car parks) in the Solihull Town Centre. This information is based upon site observations as an accurate estimate of the total private non-residential parking spaces is difficult to obtain.

Table 5.7: Private parking approximate numbers

Street Name	Number of spaces
Behind Poplar Rd and Station Rd	123
Off Herbert Road	105
Off Homer Road	507

Parking Standards

The parking standards listed below are taken from the draft document “Supplementary Planning Document – Vehicle Parking Standards and Green Travel Plans”, by Solihull MBC (February 2006).

These standards have been developed in line with the 2006 UDP which was adopted in February 2006. Parking standards for different land uses are summarised in Table 5.8.

Table 5.8: Summary of the Parking Standards

Land Use Type	Parking Standard
A1 Shops Food Retail Non-Food Retail Over 1,000m ²	1 space per 14 m ² 1:20 m ²
A2 Financial and Professional Services	1 space per 25 m ²
A3/A4/A5 Restaurant & Cafes/Drinking Establishments/Hot Food Takeaway	Range from 1 space per 4 customers to zero in some town centres
B1 Business Below 1900 m ² 1900 m ² – 2500 m ² 2500 m ² – 24000 m ² 24000 m ² – 28000 m ² over 28000 m ²	1 space per 23 m ² 83 spaces maximum 1 space per 30 m ² 800 spaces maximum 1 space per 35 m ²
B2-B8 General Industry/Warehousing	1 space per 40 m ² plus any office components as per B1 plus space for servicing
C1 Hotels and Hostels (sui generis)	1 space per bedroom, plus separate evaluation of A3, conference and other facilities open to non-residents
C2 Residential Institutions	Each case to be decided on its merits by agreement with LPA.
C3 Dwelling Houses	An average of 2 spaces per dwelling unit (excluding integral garages), unless at highly accessible locations such as town centres where only one space per unit will be permitted. Exceptionally, for sites with a main road frontage, two spaces per unit may be required on road safety grounds.
D1 Non-Residential Institutions Primary Schools (Including nursery units) Secondary Education Higher and Further Education	2 spaces per classroom, plus whatever additional provision may be deemed necessary to ensure the operation of the approved Travel Plan 1½ spaces per 2 staff or as determined by agreed travel plan 1 space per 2 staff plus 1 space per 15 students on roll
D2 Assembly and Leisure. Theatres/Nightclubs (sui generis) General Over 1000m ² Cinemas & Conference facilities Over 1000m ²	1 space per 22 m ² 1 per 5 seats

Source: Supplementary Planning Guidance - Vehicle Parking Standards and Green Travel Plans (Draft), by Solihull MBC (February 2006)

6. Public Transport

Bus Routes

Local Bus Route Coverage

Figure 6.1: Buses Travelling through the Solihull Town Centre

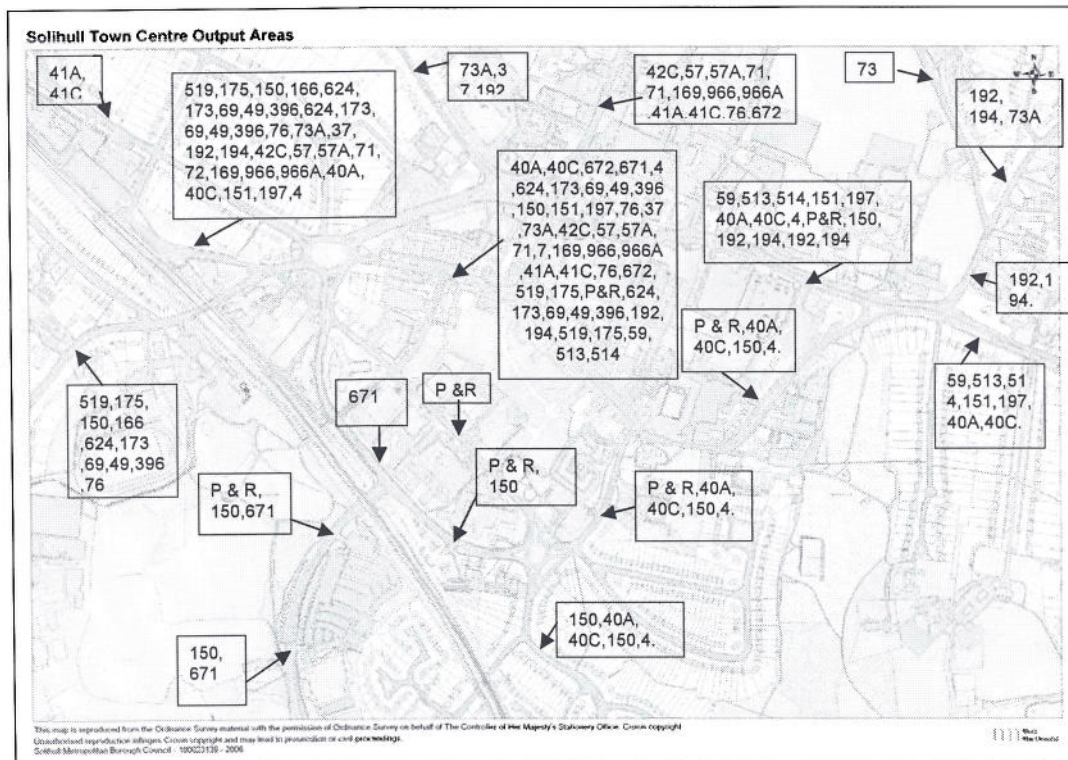


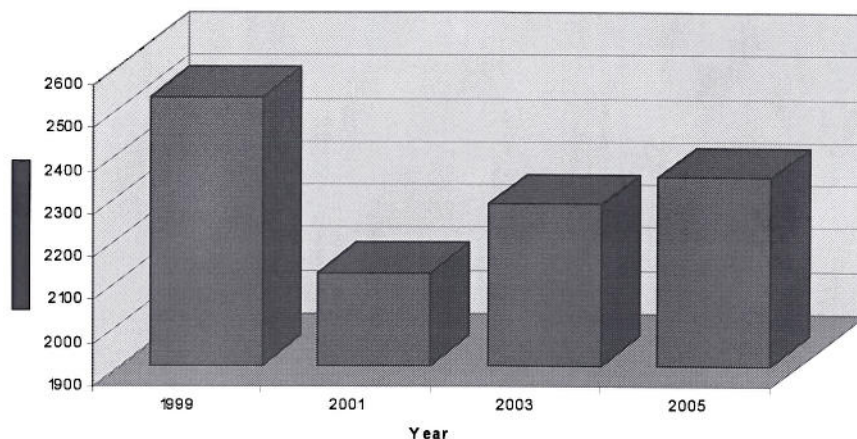
Figure 6.1 shows the numbers of the buses that travel through Solihull Town Centre. This shows that all of the services travel along and stop at Poplar Road and Station Road. The majority of services then continue their journey along Station Approach and to the bus interchange opposite the rail station.

Table 6.1 and Figure 6.2 are taken from the results of the Bus Cordon Survey undertaken by Mott MacDonald in September 2005. This information has been provided by Centro. Table 6.1 shows the number of inbound buses for four separate years including 1999, 2001, 2003 and 2005.

Table 6.1: Number of buses Inbound to the Solihull Town Centre

Site No.	Average Weekday 0700-1230				Saturday 0700-1230				Total Weekly (5 weekdays plus Saturday)			
	1999	2001	2003	2005	1999	2001	2003	2005	1999	2001	2003	2005
Streetsbrook Road	18	16	14	11	13	15	11	9	103	95	81	64
Warwick Road North	65	51	51	63	49	44	38	50	374	299	293	365
Lode Lane	146	142	144	148	113	115	114	117	843	825	834	857
Warwick Road South	86	51	66	59	64	40	50	46	494	295	380	341
Church Hill Road	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Monkspath Hall Road	5	5	5	5	4	4	4	4	29	29	29	29
Blossomfield Road	119	100	115	118	86	72	83	92	681	572	658	682
Total	439	365	395	404	329	290	300	318	2524	2115	2275	2338

Figure 6.2: Total inbound number of buses by year



The graph in Figure 6.2 shows that the number of buses each week that travel into Solihull has varied since 1999. There was a big decline in the number of buses between 1999 and 2001, however this has recently been increasing from 2,115 in 2001 to 2,338 in 2005. Note that over 35% of all inbound buses travelling into the town centre via Lode Lane.

Bus Frequencies

The schematic diagram in Figure 6.3 shows the approximate number of buses using each road within the Solihull Town Centre. This data was obtained from the timetables produced by Travel West Midlands and other smaller bus companies. The timetables were then analysed to obtain the number of buses that are timetabled to stop at the locations in the Town Centre in the AM peak, between 08.00 and 09.00. The number of buses stopping at a particular location were then summed and located on a schematic of the roads in the town centre.

Figure 6.3: Number of buses in Solihull Town Centre AM peak (8 – 9am)

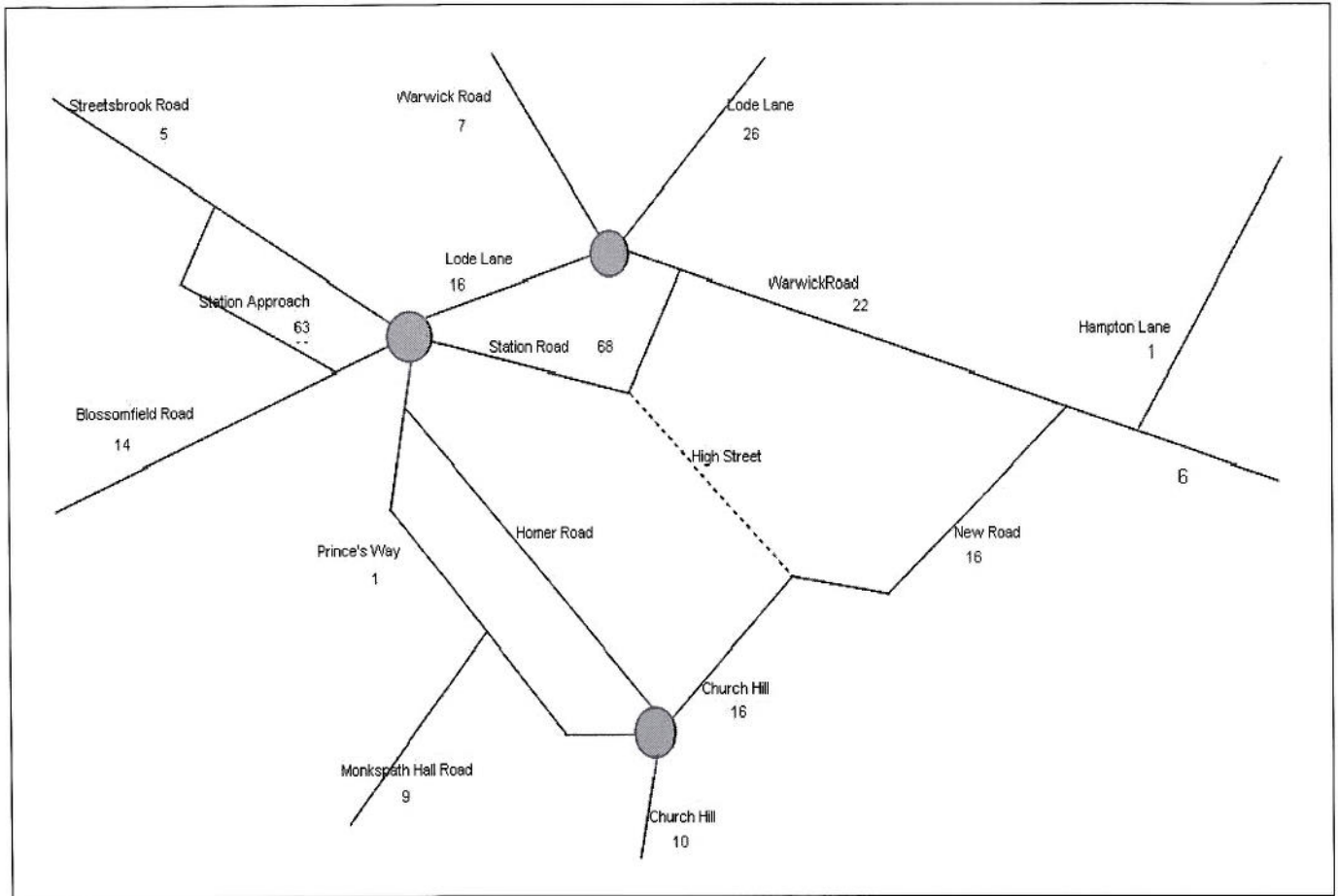


Figure 6.3 shows an approximate number of buses that will travel on the roads in Solihull Town Centre during the morning peak hour (8-9am). The evening peak is not shown as it is similar to the AM peak. This shows that the greatest number of buses travel via the town centre bus interchange at Poplar Road and Station Road. Similar numbers of buses also travel via the Station Approach to the rail station bus interchange. Figure 6.3 indicates that there are two major locations where bus stops are located in the Town Centre these are at the bus interchange by Solihull rail station and along Station Road and Poplar Road in the centre of the town.

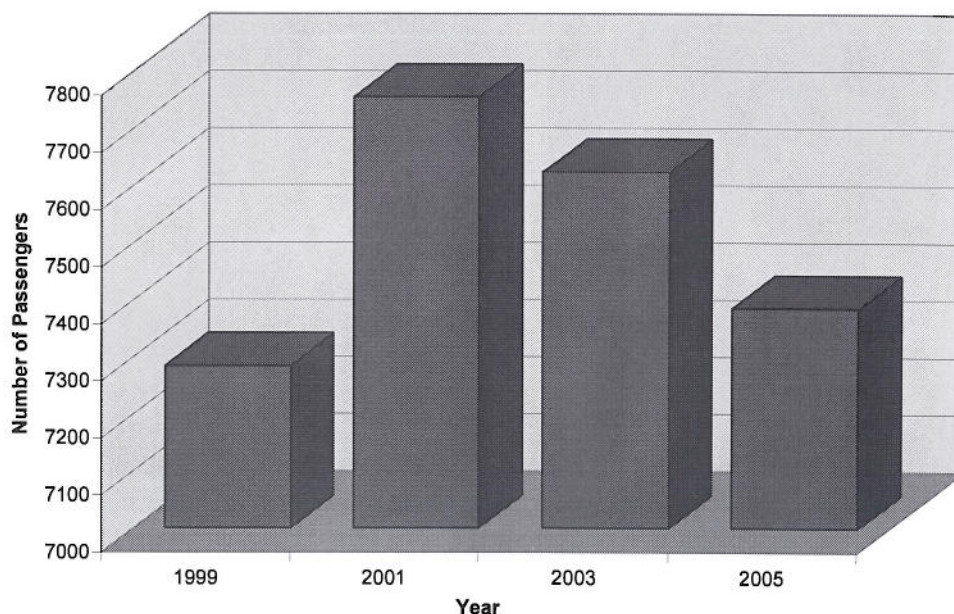
Bus passengers

Table 6.2 and Figure 6.4 show the number of inbound passengers calculated using the Bus Cordon Survey 2005 with the final results being provided by Centro.

Table 6.2: Inbound bus passengers

Site No.	Average Weekday 0700-1230				Saturday 0700-1230				Total Weekly (5 weekdays plus Saturday)			
	1999	2001	2003	2005	1999	2001	2003	2005	1999	2001	2003	2005
Streetsbrook Road	324	323	252	162	197	222	165	102	1817	1837	1425	912
Warwick Road North	1193	1366	1287	1329	725	938	843	838	6690	7768	7278	7483
<i>Lode Lane</i>	<i>2884</i>	<i>3060</i>	<i>3228</i>	<i>3289</i>	<i>1700</i>	<i>2140</i>	<i>2125</i>	<i>1983</i>	<i>16120</i>	<i>17440</i>	<i>18265</i>	<i>18428</i>
Warwick Road South	752	534	556	486	457	367	364	307	4217	3037	3144	2737
Church Hill Road	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Monkspath Hall Road	63	63	78	68	38	43	51	43	353	358	441	383
Blossomfield Road	2069	2409	2223	2052	1310	1617	1445	1385	11655	13662	12560	11645
Total	7285	7755	7624	7386	4427	5327	4993	4658	40852	44102	43113	41588

Figure 6.4: Total Average Weekday Inbound bus passengers



The data in Table 6.2 and Figure 6.4 show that since 2001 the number of average weekday bus passengers has been consistently decreasing. There was a major increase in bus patronage levels between 1999 and 2001 (which interestingly coincides with a decrease in bus services to the city centre), however since 2001, there has been a consistent downward trend in patronage levels.

Figure 6.5: Bus occupancies inbound to Solihull Town Centre

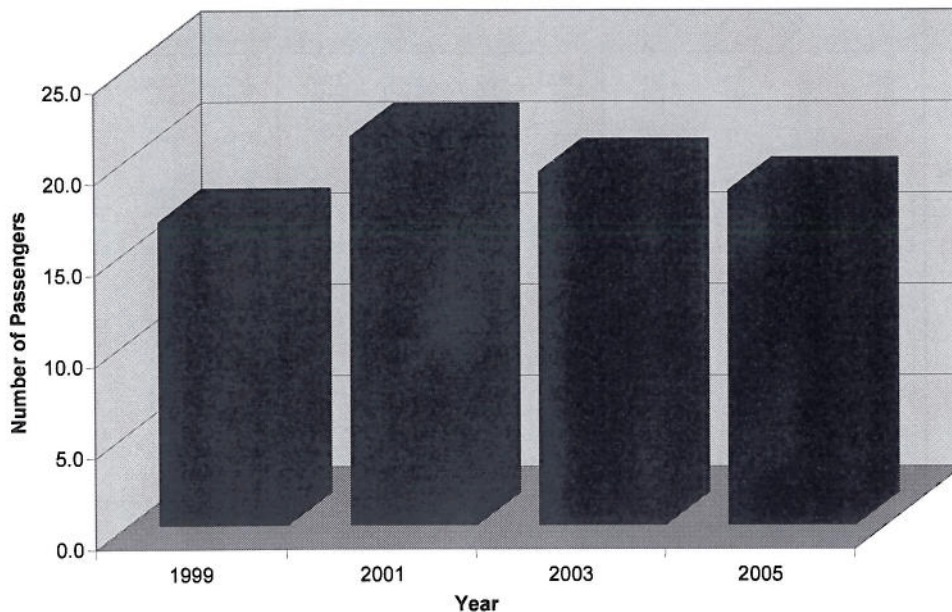


Figure 6.5 shows the average occupancy of buses travelling into the Solihull Town Centre. The average occupancy of buses has also experienced a steady decline since 2001. This is not unexpected as it has already been shown that there was an increase in buses and a decline in patronage over the same period, resulting in a lower average occupancy. This worrying trend is not just experienced in the Solihull region. Centro's monitoring report for the West Midlands claims that overall bus passenger journeys have declined by approximately 6% since 2001.

Rail Services

The Solihull rail station is located on a major rail line between Kidderminster and London Marylebone. There are a number of rail services that stop at the Solihull station, these include:

- Central trains services between Kidderminster and Dorridge via Birmingham Snow Hill (approximately 76 daily services each way)
- Chilton Railways service between Kidderminster and London Marylebone via Birmingham Snow Hill, Leamington Spa and Warwick Parkway. There are approximately 26 services a day travelling between Solihull and London Marylebone and an additional 5 services a day travelling as far as Leamington Spa. In the other direction there are approximately 38 services between Solihull and Birmingham Snow Hill with 8 of these services travelling as far as Kidderminster and Stourbridge.

Table 6.3 shows the results of a passenger survey undertaken by Centro in 2004. Centro surveyed the number of passengers boarding and alighting at the Solihull Station.

Table 6.3: Solihull Rail Station Boarding and Alighting Results

November-2004	BOARDERS				ALIGHTERS				TOTAL			
	Weekday	Saturday	Sunday	Weekly Total	Weekday	Saturday	Sunday	Weekly Total	Weekday	Saturday	Sunday	Weekly Total
To/From Birmingham												
Central	1320	792	105	7497	907	890	129	5554	2227	1682	234	13051
Chiltern	331	229	112	1996	653	244	110	3619	984	473	222	5615
Total	1651	1021	217	9493	1560	1134	239	9173	3211	2155	456	18666
To/From Leamington Spa												
Central	57	88	5	378	184	88	3	1011	241	176	8	1389
Chiltern	393	215	168	2348	388	214	129	2283	781	429	297	4631
Total	450	303	173	2726	572	302	132	3294	1022	605	305	6020
Total	2101	1324	390	12219	2132	1436	371	12467	4233	2760	761	24686
Total Central	1377	880	110	7875	1091	978	132	6565	2468	1858	242	14440
Total Chiltern	724	444	280	4344	1041	458	239	5902	1765	902	519	10246
Grand Total	2101	1324	390	12219	2132	1436	371	12467	4233	2760	761	24686
Central as % Total	65.5%	66.5%	28.2%	64.4%	51.2%	68.1%	35.6%	52.7%	58.3%	67.3%	31.8%	58.5%
Chiltern as % Total	34.5%	33.5%	71.8%	35.6%	48.8%	31.9%	64.4%	47.3%	41.7%	32.7%	68.2%	41.5%

Table 6.3 indicates that the majority of train passengers travel to and from Birmingham, as opposed to Leamington Spa and London Marylebone,

An average weekday sees 2,100 passengers board and 2,130 passengers egress train services at the Solihull Station,

Most passengers use Central Trains during the week and on Saturday, however the Chiltern services are more heavily used on Sunday.

Park and Ride Usage

Solihull Station has a large car park for the use of rail passengers. This facility is an important car park located just outside the town centre as it caters for links to public transport. Passengers can access the station after parking their car in the car park (park-and-ride) or after being dropped off (kiss-and-ride).

Table 6.4 shows the park-and-ride utilisation data. Mott MacDonald undertook a park-and-ride usage survey in 2004 on behalf of Centro. The number of spaces at the Solihull Station car park and the rates of usage of the car park are shown in Table 6.4. It illustrates that the site is consistently full and may be improved through the inclusion of additional car parking spaces.

Table 6.4: Solihull Station Park and Ride Usage

	No. cars	Capacity (Mar 2004)
2004 November	284	288
December	285	288
2005 January	279	288
February	272	288
March	255	288
April	283	288
May	282	288
June	286	288
July	235	288
August	213	288
September	285	288
October	282	288
November	282	288

Further surveys were conducted at the Solihull Station Car Park on 28th September 2004. The main results for Solihull Station car park survey are shown in the tables below.

The total numbers of spaces, by classification, in the car park at the time of the survey are shown in Table 6.5. The main car park has capacity for 276 vehicles and 14 can park in front of the station.

Table 6.5: Spaces Available at Solihull Station Car Park (by category)

Location	General	Disabled	Parent & child	Staff	Other (limit of 20 mins)	Total
Solihull - main Car Park	276	0	0	0	0	276
Front of station	0	3	0	2	9	14

Table 6.6 shows a summary of the length of stay and average occupancy results at the Solihull Station Car Park. It shows that the Solihull Station car park is well used for rail travel with an average length of stay of 6 hours. The maximum number of vehicles parked show that there is demand for a larger parking facility.

Table 6.6: Vehicle survey results for Solihull Station Car Park

Cars at start	survey entry	Survey exit	max parked	cars at end	Entry - Avg. Occupancy	Exit - Avg. Occupancy	Average stay
27	458	377	335	108	1.4	1.39	05:59

Table 6.5 and Table 6.6 show that Solihull Station car park is well used for rail travel with an average stay of nearly 6 hours, from the number of maximum vehicles parked it can be seen that would take the car park over capacity.

Figure 6.6 shows the origins of passengers who used the Solihull Station car park. It shows that many passengers live in the Solihull area, however many also live around Warwick.

Figure 6.6: Origin of users of the Park and Ride from post back questionnaires



Model Split

Centro has provided data from the cordon survey on the model split of people travelling into Solihull. This is shown in Table 6.7 and plotted in Figure 6.7.

Table 6.7: Inbound model split taken from the Bus Cordon Survey 2005

Trip	Average Weekday 0730-0930					
	1995	1997	1999	2001	2003	2005
Bus Trips	3187	3264	3354	3289	3590	3290
Train Trips	176	250	319	374	406	453
Total Public Transport Trips	3363	3514	3673	3663	3996	3743
Estimated Car Trips	19380	19036	19552	18167	16672	16302
Total Trips	22743	22550	23225	21830	20668	20045
Bus Modal Share	14.01%	14.47%	14.40%	15.10%	17.40%	16.40%
Train Modal Share	0.77%	1.11%	1.40%	1.70%	2.00%	2.30%
Public Transport Modal Share	14.79%	15.58%	15.80%	16.80%	19.30%	18.70%
Car Modal Share	85.21%	84.42%	84.20%	83.20%	80.70%	81.30%

Figure 6.7: Total inbound trips 1995 to 2005

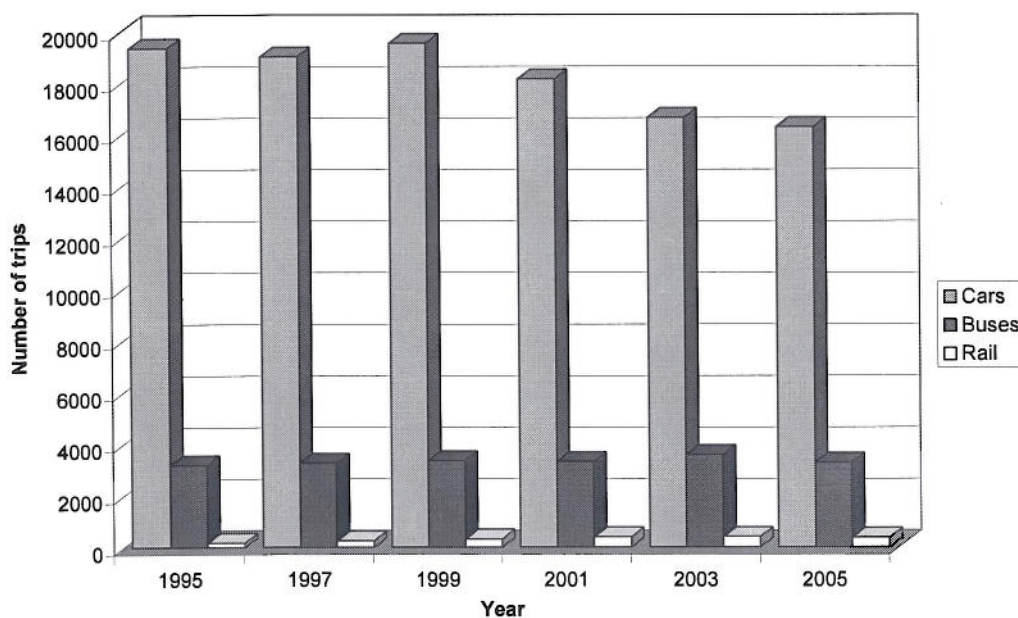


Table 6.7 and Figure 6.7 show the changes in trips into the Solihull Town Centre between 1995 and 2005. Note that they do not represent all trips (as walking, cycling, LGVs and HGVs are not included and cars may have higher occupancy levels) but they show all car and public transport passenger trips. They show that the percentage of car trips has decreased slightly from 85.2% to 81.3% and the percentage of trips by public transport has in response increased from 14.8% to 18.7%.

Table 6.8: PRISM Model Origin and Destination Trips from Solihull

	Origin				Destination			
	Car	LGV/HGV	PT	TOTAL	Car	LGV/HGV	PT	TOTAL
AM Peak 2001	54%	3%	42%	100%	74%	4%	22%	100%
AM Peak 2011	61%	4%	34%	100%	76%	4%	20%	100%
Inter Peak 2001	76%	4%	20%	100%	61%	3%	36%	100%
Inter Peak 2011	78%	4%	17%	100%	64%	3%	33%	100%

Table 6.8 shows the AM and inter peak model shift calculated from the PRISM model. Note that the PRISM model was developed as the strategic multi-modal model of the West Midlands metropolitan authorities. It was completed in 2004 and is calibrated and validated to 2001 survey data. Table 6.8 indicates that in the AM peak in 2001, 22% of people arriving in Solihull (either by car, LGV/HGV or public transport) travel by public transport.

7. Accessibility of Solihull Town Centre by Public Transport

Summary

The public transport contours have been produced to give an idea of the current public transport accessibility in Solihull Town Centre. These contours were produced using the PTAMS software

These demonstrate the current accessibility to locations in Solihull. The locations chosen were the town centre, the current rail station at Solihull, and the proposed new location for the rail station.

The drive time isochrones were produced using the Drive time software and show the distance that can be travelled based on speed limits.

PTAMS Public Transport Software

Accessibility contours were produced using Mott Macdonald's PTAMS software. This software produces travel time isochrones using the bus, rail and metro timetable database for the West Midlands. The rail database covers the UK in addition to the West Midlands.

Introduction

This report has been prepared at the request of Solihull MBC. It summarises a comparison of public transport access to locations in Solihull Town Centre during various time periods. All assumptions used in the analysis were derived from the wider accessibility analysis undertaken for the West Midlands LTP2. There is also private transport accessibility isochrones based on Drive time. This will produce isochrones based on speed limits.

Modelling Parameters and Data for Public Transport

The contours produced were for 10, 20 30 and 40 minute travel times. This will give the accessibility contours for people arriving at or departing from the destinations for up to 40 minutes travel time by public transport. This includes walk time to the stop and wait time at the stop.

A 400m access to bus and an 800m access to rail were used. This was used to reflect the distance people are prepared to walk for when undertaking this kind of journey.

One interchange was allowed to prevent public transport journeys that are unrealistic.

Three location 'sets' were considered, these were:

- Solihull centre: This set was 3 destination points considered together (Mell Square, Junction between Station Road and Herbert Street and Touchwood Shopping centre) These destinations were considered together in this run of the model.
- Location for new rail station location: Public transport accessibility was considered using the location for the proposed new rail station.

- Current location of Solihull Station: Public transport accessibility was considered using the existing location of Solihull rail station and interchange. This destination was run to give an indicative view of the level of accessibility that would be available if a Solihull interchange was built at the location of the proposed new rail station location site.

The public transport data for the West Midlands was obtained through the DfT via their website (<http://www.nptdr.org.uk/>). This website is maintained to provide up to date information for use in the accessibility planning process, which is part of the LTP process.

Time Periods and Direction Modelled

The following time periods was chosen to assess the accessibility.

Arriving between: 0730-0830 Weekdays

Departing between: 1600-1800 Weekdays

Arriving: between: 1100-1300 Saturday

These reflect the commuting hours arriving and departing during the week, and peak shopping hours on Saturday.

These time periods were run for each destination set.

Modelling Parameters and Data for Private Transport

The Drive time isochrones are based on Speed limits of the road network.

Isochrones were produces for the following locations:

- Entrance to Solihull Station park and ride
- Entrance to Lode Lane Car Park
- Entrance to Touchwood Car Park
- Entrance to Monkspath Car Park

The time intervals for the isochrones were set to 10, 20 and 30 minutes travel time.

Public Transport Accessibility Maps

Figure 7.1: Accessibility by Public Transport to Solihull Centre: Arrival between 11 AM and 1 PM Saturday

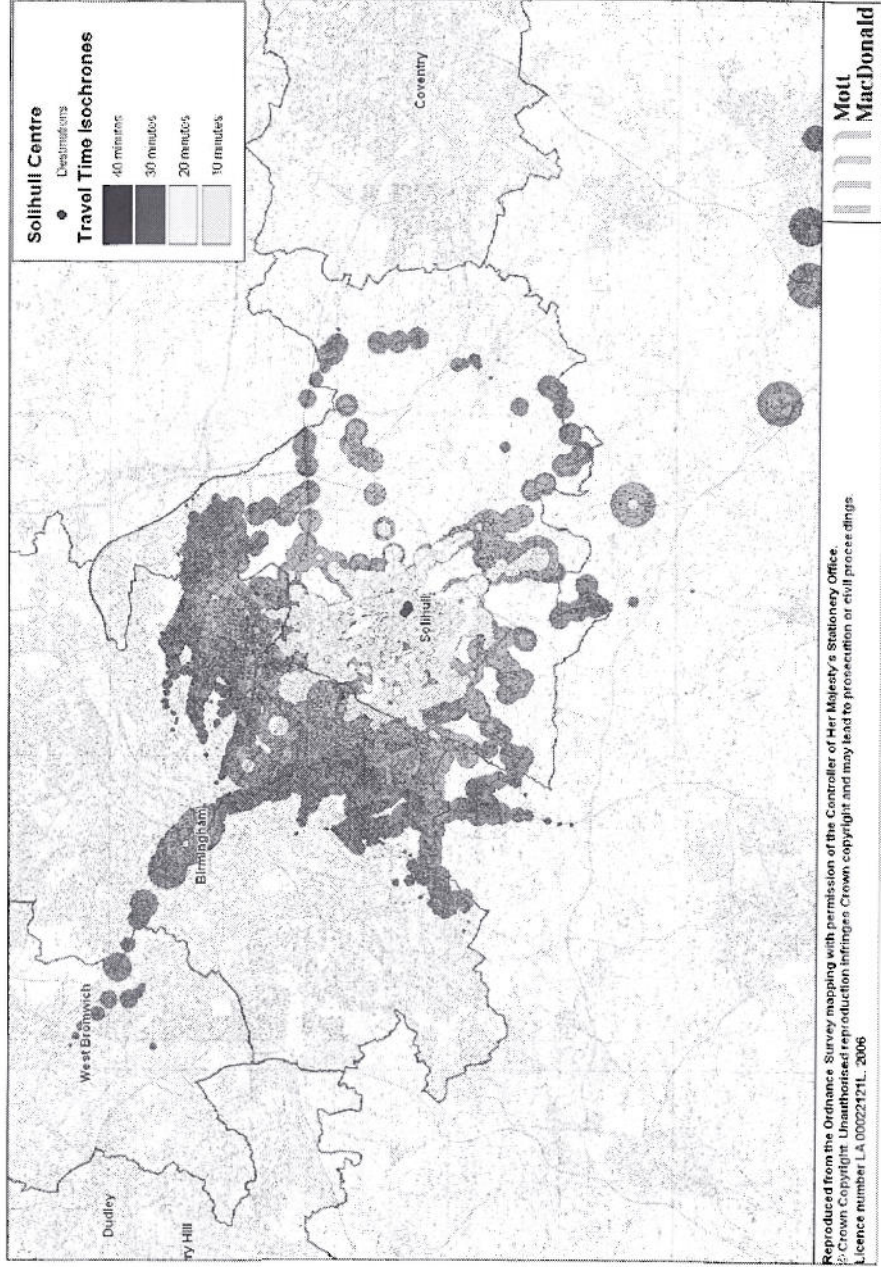


Figure 7.2: Accessibility by Public Transport to Existing Solihull Station Interchange: Arrival between 7:30 AM and 9:30 AM Weekdays

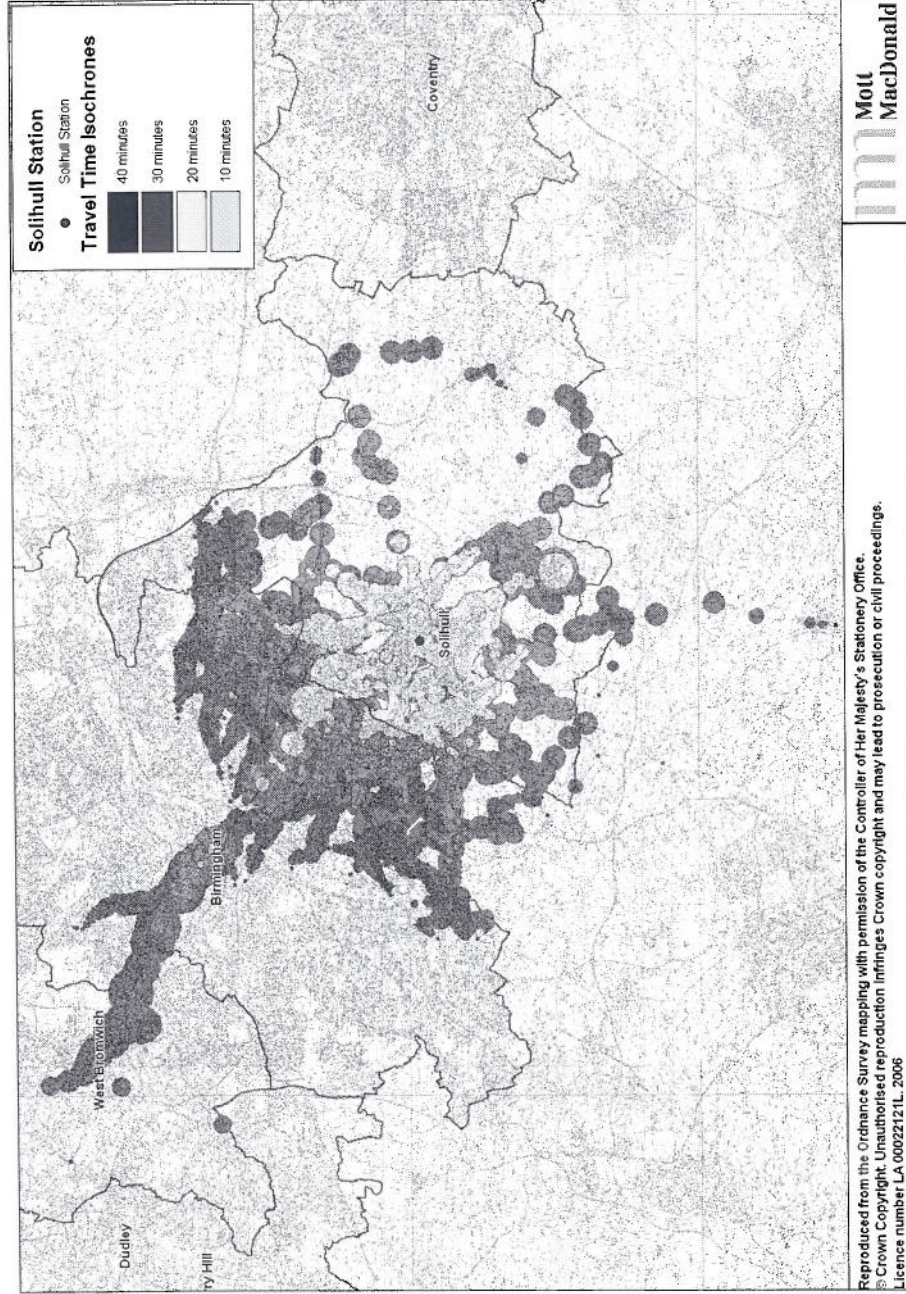


Figure 7.3: Accessibility by Public Transport to Existing Solihull Station Interchange: Departure between 4 PM and 6 PM Weekdays

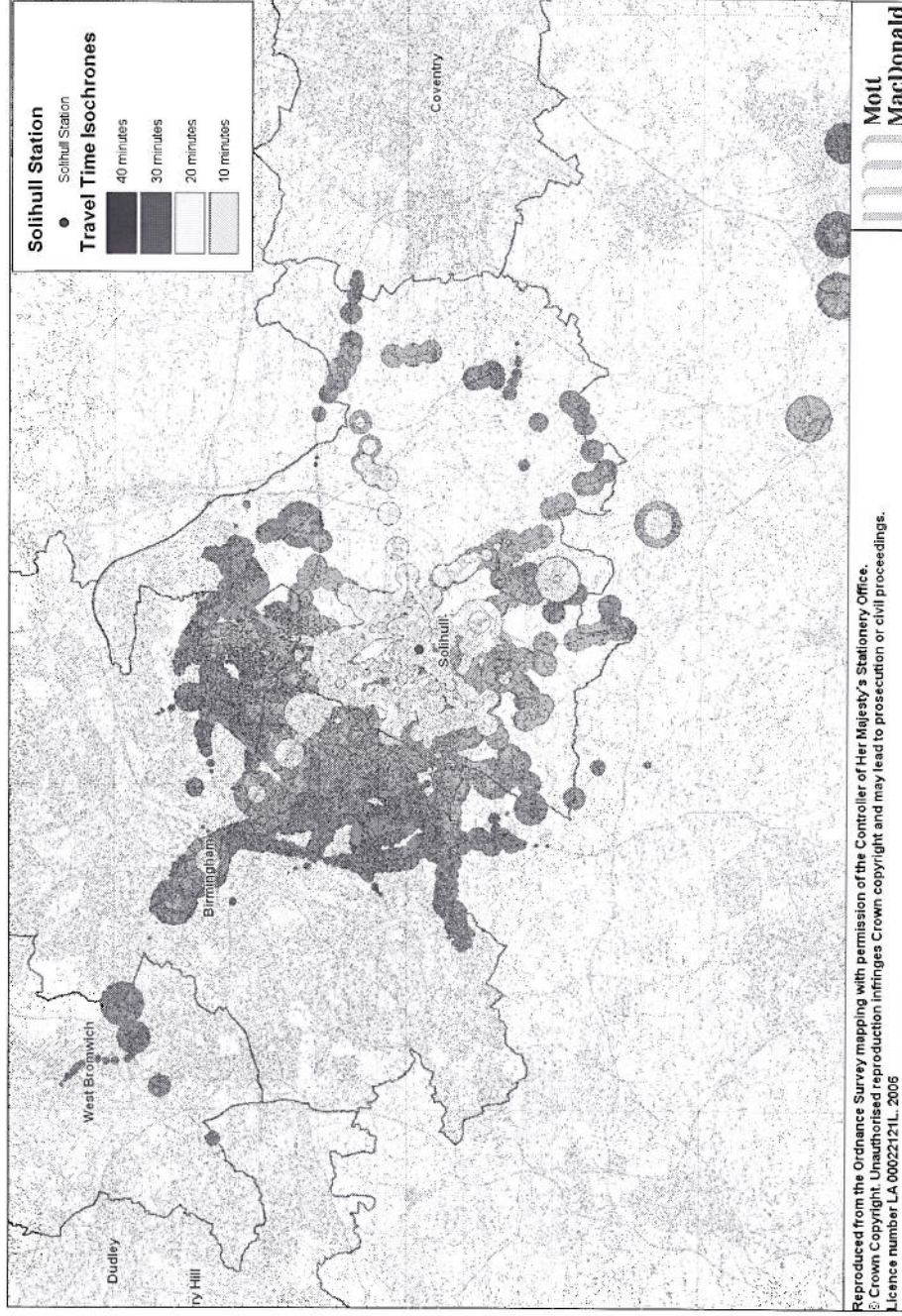


Figure 7.4: Accessibility by Public Transport to Existing Solihull Station Interchange: Arrival between 11 AM and 1 PM Saturday

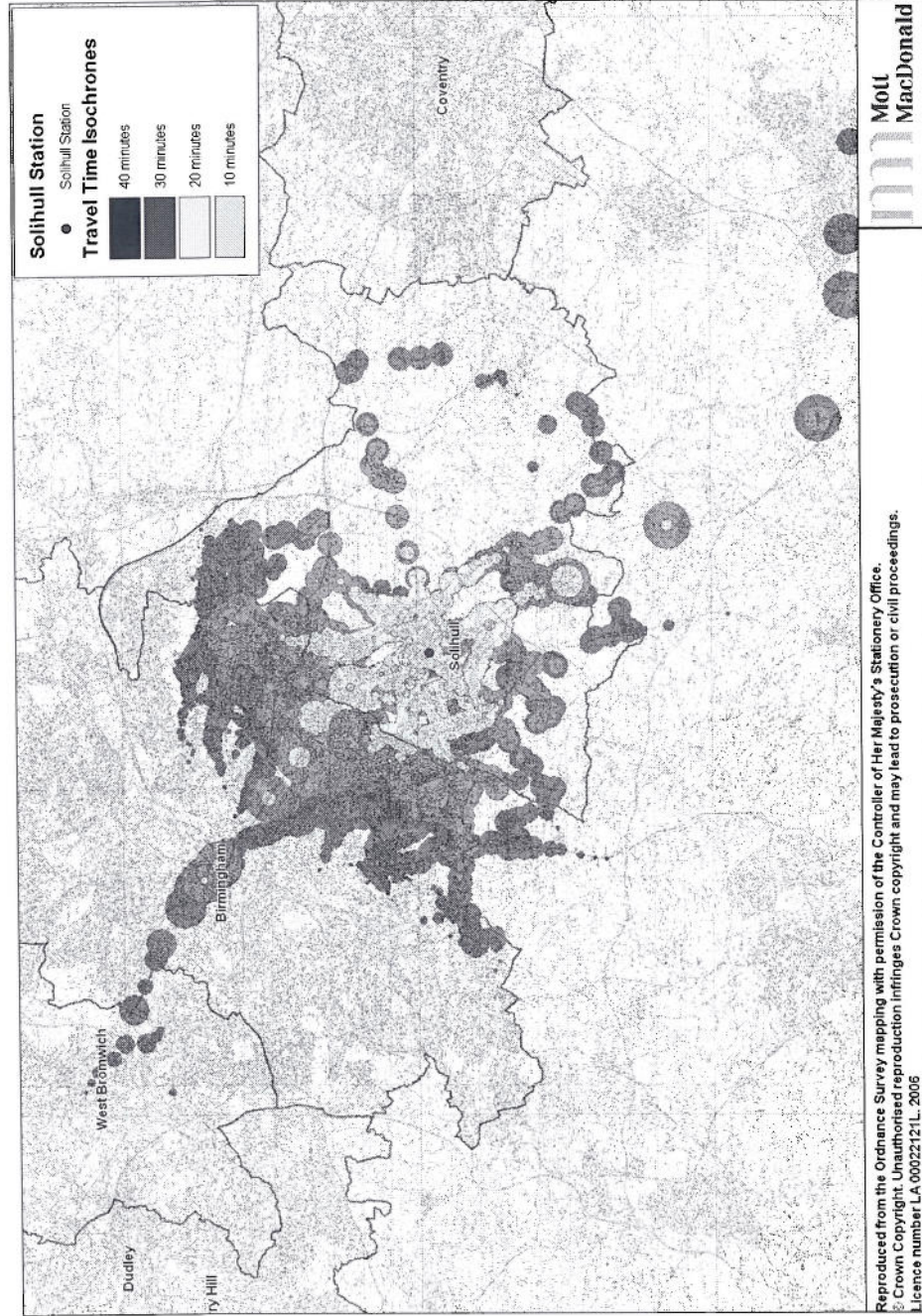


Figure 7.5: Accessibility by Public Transport to Proposed New Location for Rail Station: Arrival between 7:30 AM and 9:30 AM Weekdays

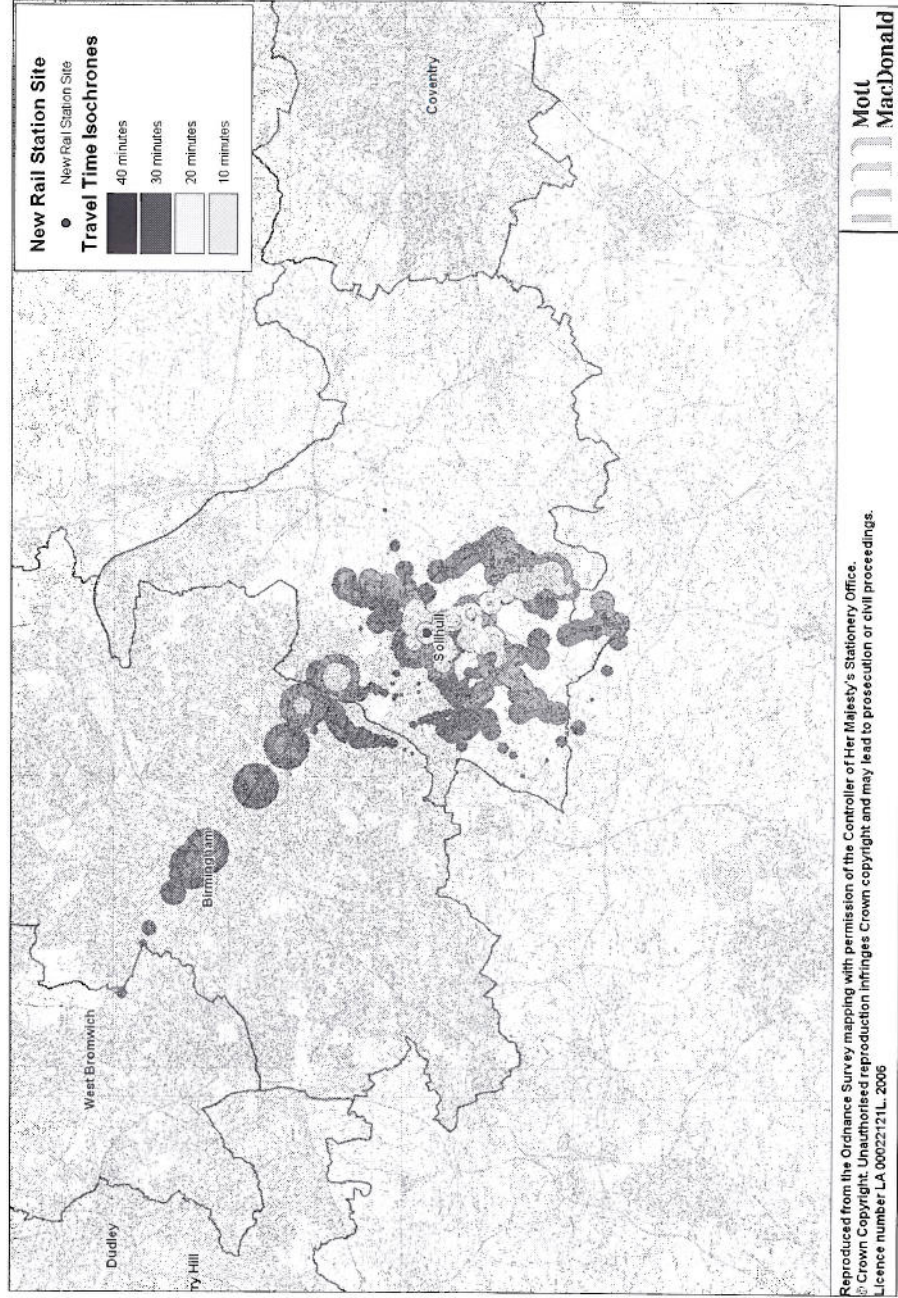


Figure 7.6: Accessibility by Public Transport to Proposed New Location for Rail Station: Departure between 4 PM and 6 PM Weekdays

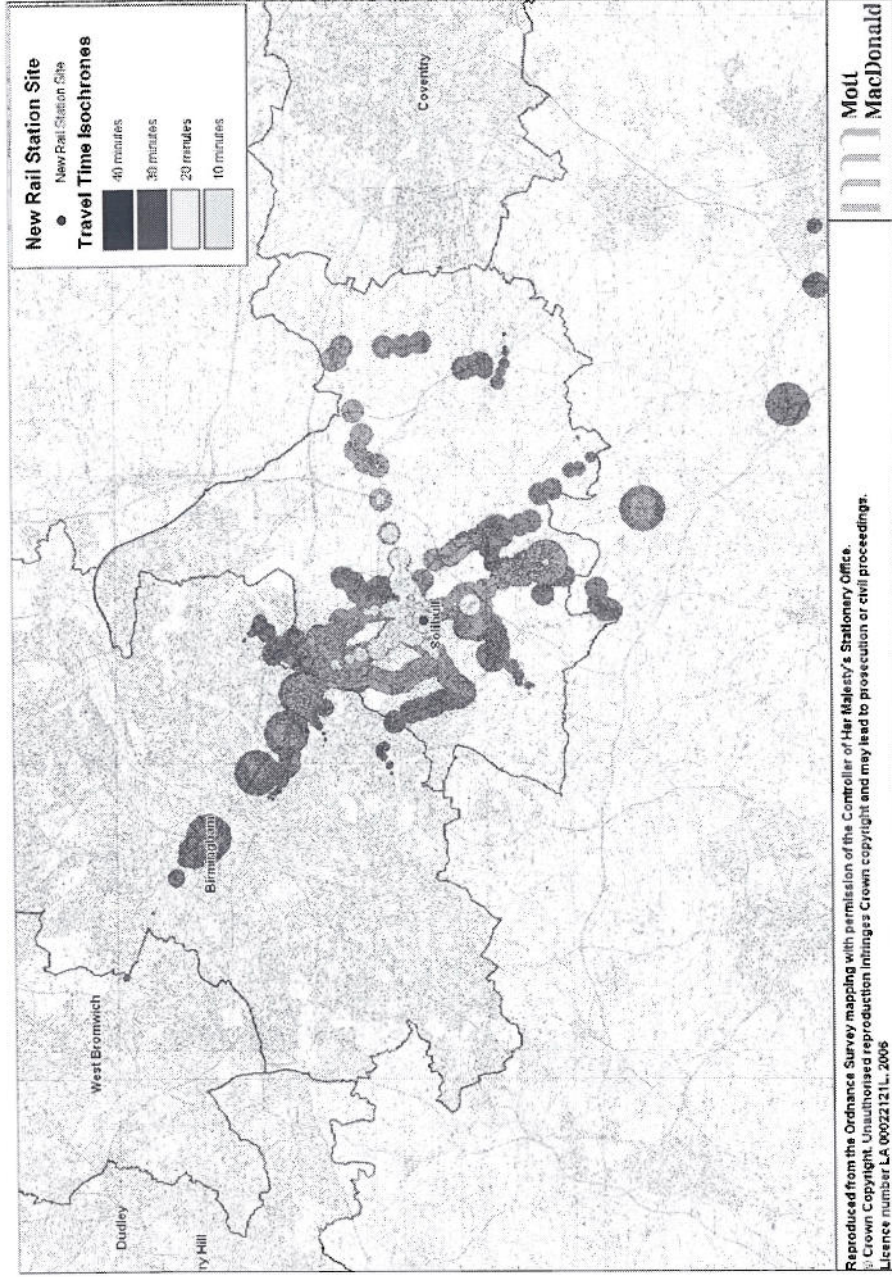
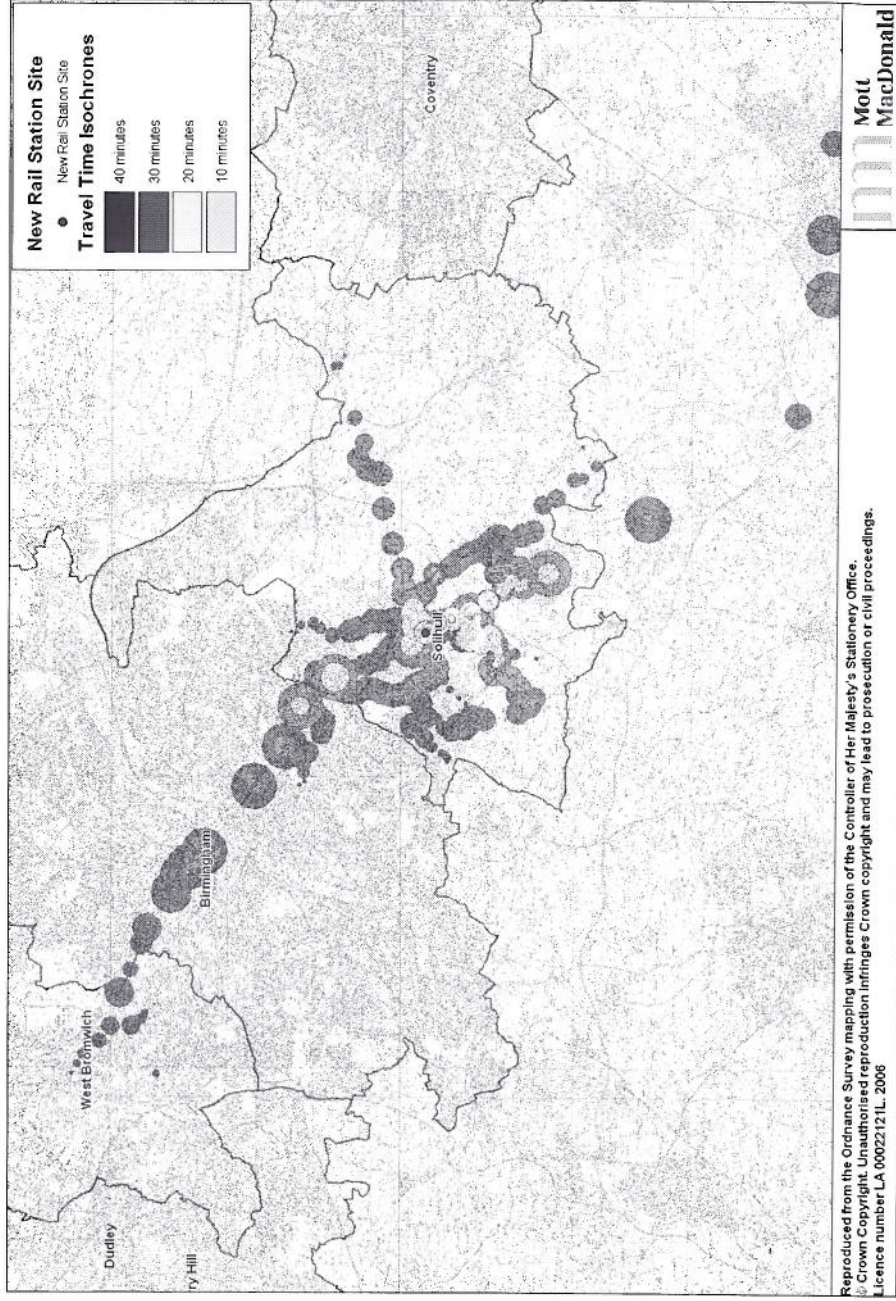


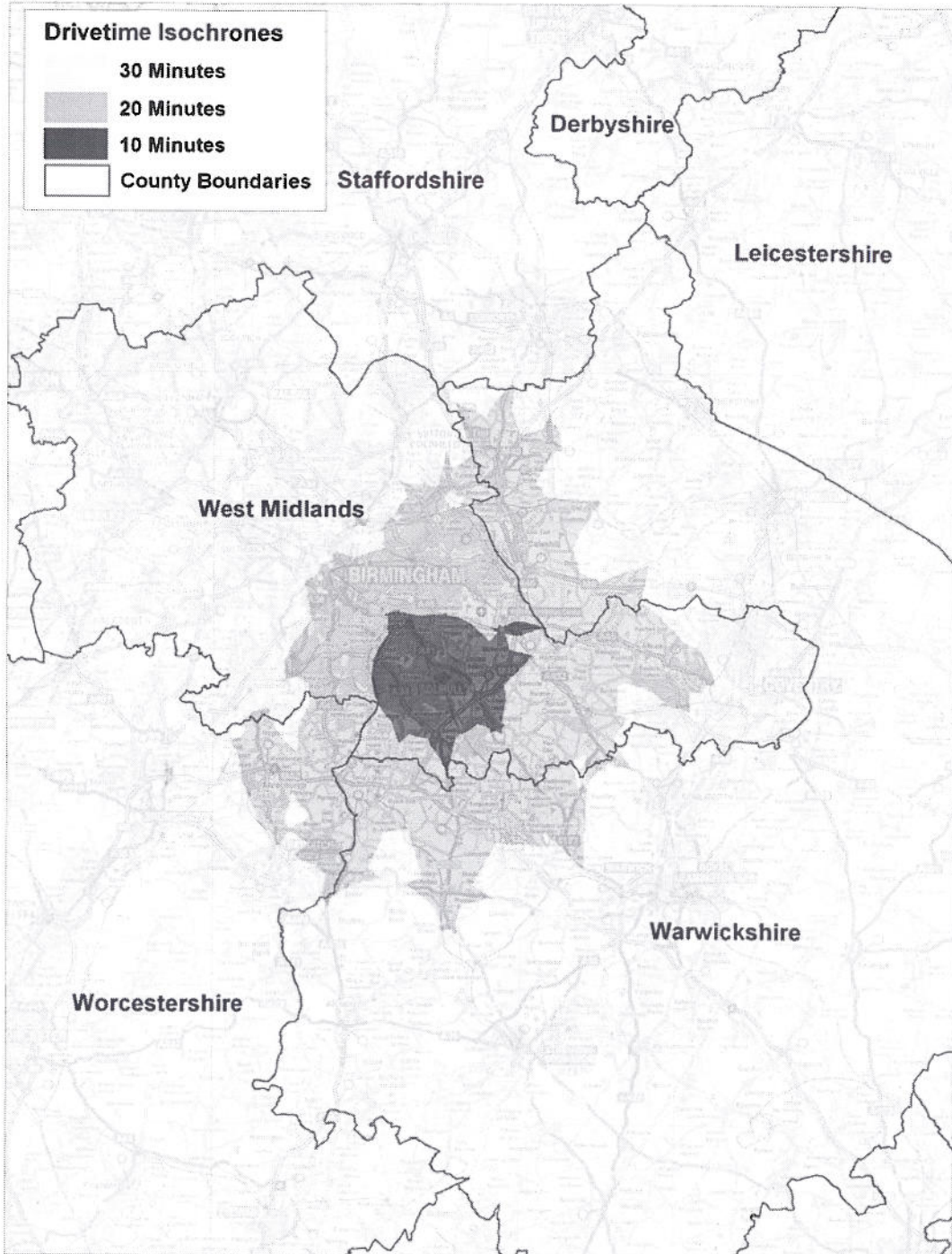
Figure 7.7: Accessibility by Public Transport to Proposed New Location for Rail Station: Arrival between 11 AM and 1 PM Saturday



Private Mode Accessibility Maps

Figure 7.8: Accessibility by Private Transport to Rail Park and Ride based on road Speed Limits

10, 20 & 30 Minute Off Peak Drivetime Isochrones from Station Car Park



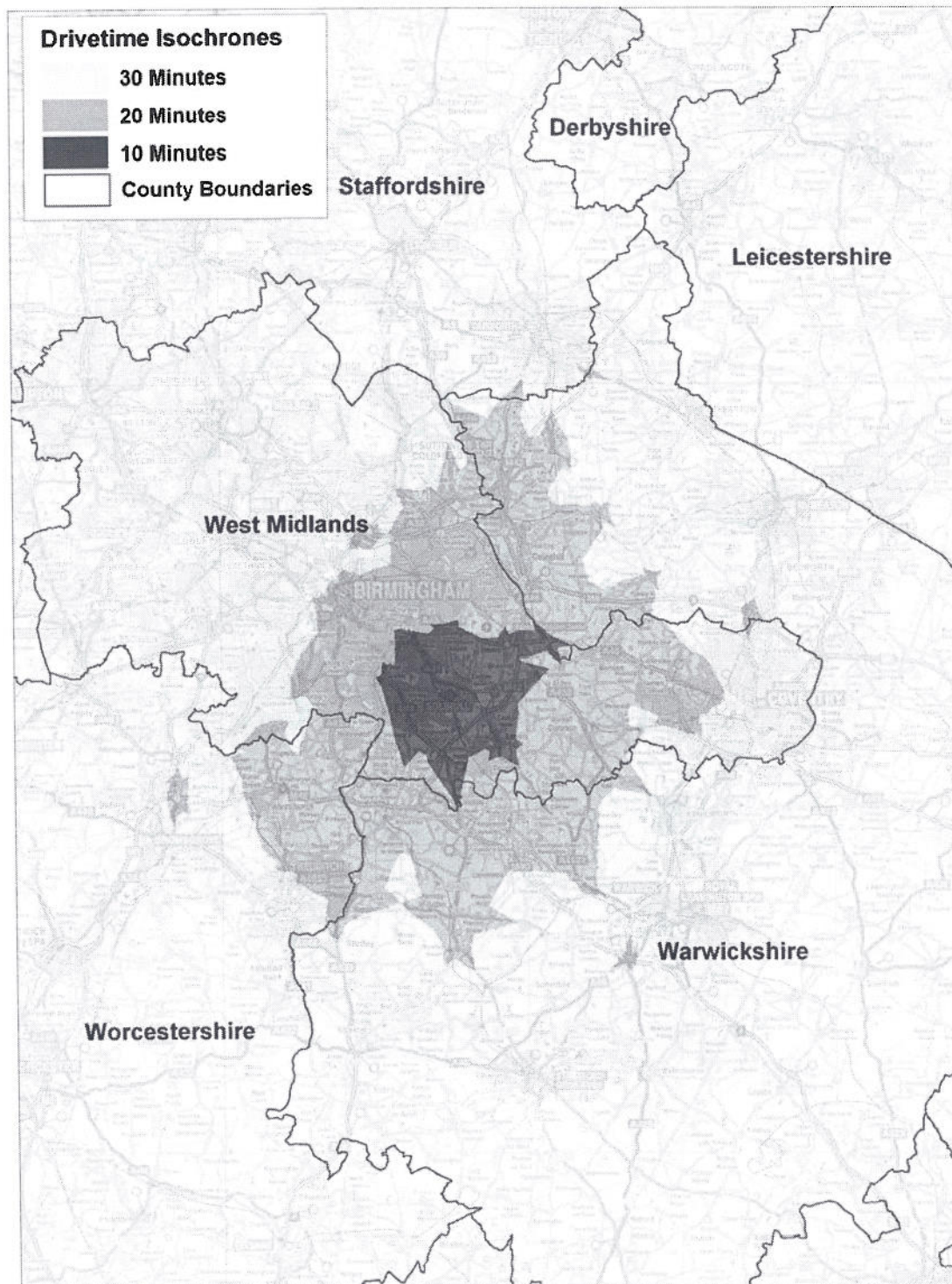
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Figure 7.9: Accessibility by Private Transport to Lode Lane Car Park based on road Speed Limits

10, 20 & 30 Minute Off Peak Drivetime Isochrones from Lode Lane Car Park



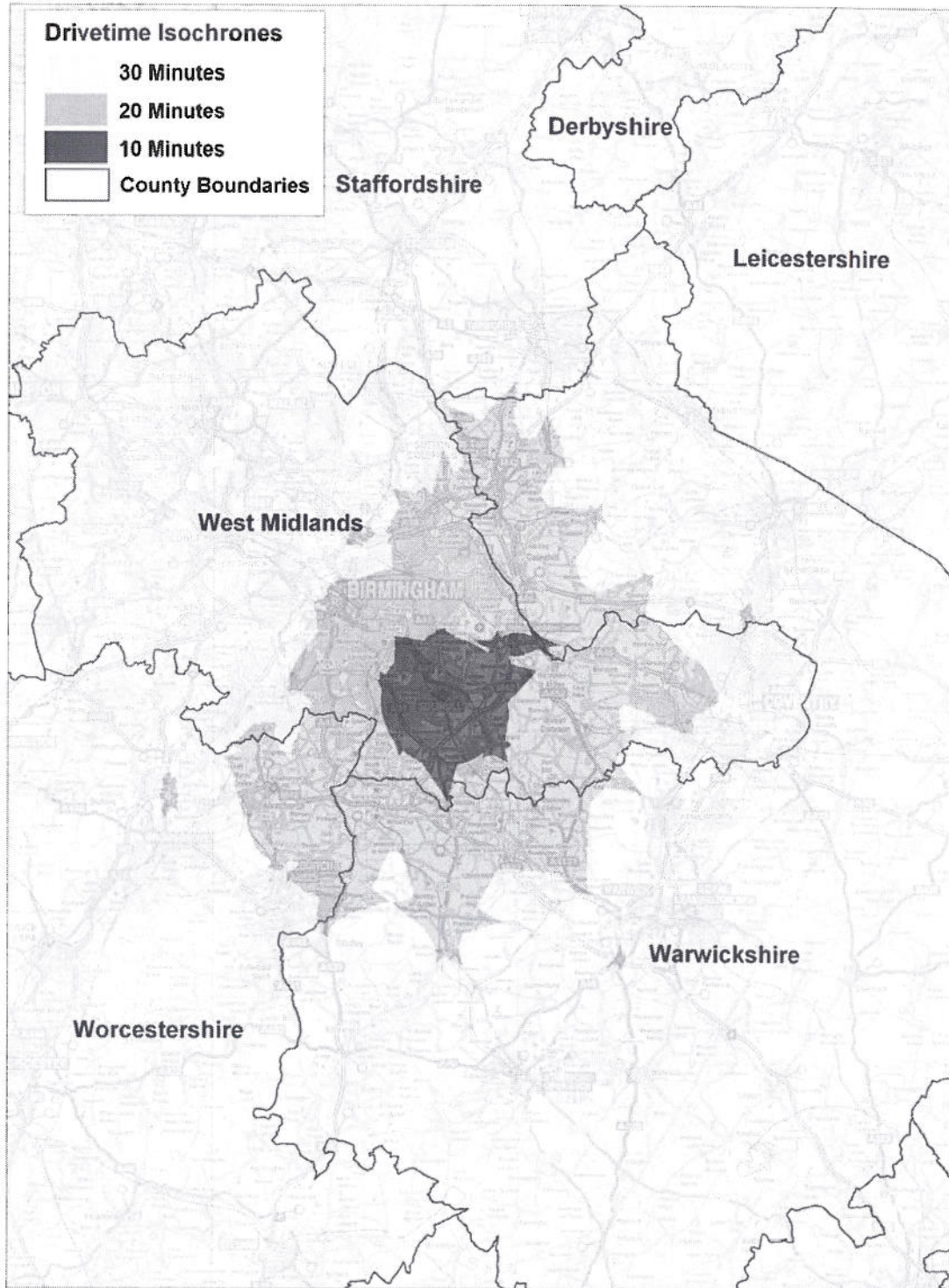
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Figure 7.10: Accessibility by Private Transport to Touchwood Car Park based on road Speed Limits

10, 20 & 30 Minute Off Peak Drivetime Isochrones from Touchwood Car Park



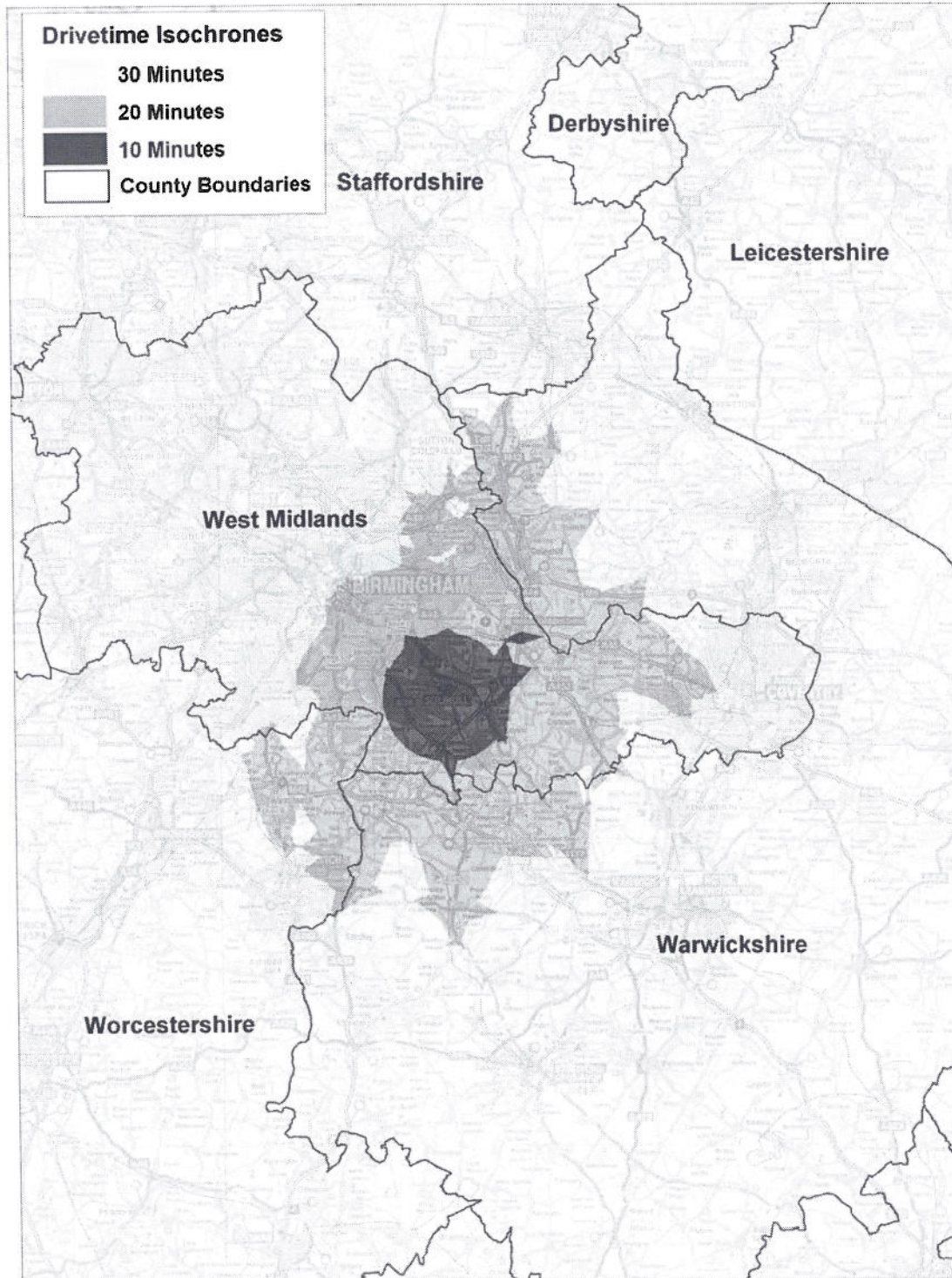
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Figure 7.11: Accessibility by Private Transport to Monkspath Car Park based on road Speed Limits

10, 20 & 30 Minute Off Peak Drivetime Isochrones from Monkspath Car Park



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Population Results

The following tables list the population within the various travel times of the sites tested for accessibility by the public transport and car.

Table 7.1: Population within Public Transport Isochrones

Population figures					
		0-10 Minutes	0-20 Minutes	0-30 Minutes	0-40 Minutes
Solihull Centre	Morning Peak (0730-0900)	11,426	100,932	257,233	441,209
	Evening Peak (1600-1800)	10,934	97,153	227,905	409,831
	Saturday (1100-1300)	9,259	98,824	247,541	438,427
New Railway Station	Morning Peak (0730-0900)	1,786	25,984	61,252	118,468
	Evening Peak (1600-1800)	831	12,074	67,147	143,259
	Saturday (1100-1300)	1,179	18,920	54,727	141,058
Solihull Station	Morning Peak (0730-0900)	9,783	100,472	266,792	485,623
	Evening Peak (1600-1800)	9,369	88,168	235,991	427,295
	Saturday (1100-1300)	7,248	87,531	247,928	438,967

Table 7.2: Population within Private Mode Isochrones

Population figures			
	0-10 Minutes	0-20 Minutes	0-30 Minutes
Monkspath	118,688	678,993	2,109,066
Lode Lane	144,450	800,555	2,303,539
Touchwood	122,528	751,043	2,245,516
Station	144,133	735,501	2,184,939

Accessibility Conclusions

Figure 7.1 show the accessibility that exists in accessing the main attractors in Solihull Town Centre. The existing accessibility is quite good, and linking these in with the new interchange site will provide a level of accessibility that is above the current situation for the current rail station interchange location and the town centre location. When the site is relocated, producing a site that combines interchange possibility between many services should lead to accessibility that is currently over and above what currently exists at either the station interchange or the city centre.

Figure 7.2, Figure 7.3 and Figure 7.4 show the accessibility at the existing Solihull interchange at Solihull station. As can be seen from Figure 7.5, Figure 7.6 and Figure 7.7 the new site currently has poor accessibility compared to the existing rail site. This demonstrates the importance of creating good interchange facilities at the new site that connects well with bus services in the area. If an interchange is created that moves all the current bus services that serve Solihull station to the new site, then the accessibility should be at least as good as the existing situation

The number of interchanges allowed in the model was set to 1. This is to represent the negative effect that having to change public transport services has. Creating a pleasant interchange environment at the new site will increase the attractiveness of interchanging, and therefore having the effect of increasing accessibility though greater use of the existing public transport.

The Drive time isochrones shown in Figure 7.8, Figure 7.9, Figure 7.10 and Figure 7.11 demonstrate that for private mode Solihull has a wide catchment area within 30 minutes travel time. This is particularly relevant for the area to the East and South of Solihull, where Solihull is the main centre. This would also be due to Solihull being near to the M42 and other major roads out of the West Midlands allowing faster speeds so shorter drive times. To the North and West the contours are not as wide ranging, as they will cover slower urban roads. These areas will have high population densities but Solihull Town Centre will be competing with other major centres in this area, such as Birmingham.

8. Solihull Town Centre - Crash Analysis

General

A crash analysis of Solihull Town Centre was conducted on the accident details from 1 January 2001 to 31 December 2005, 5 years, extracted from the SPECTRUM accident database. The data has been analysed for crashes within the town centre as a whole, and separately for the main crash "clusters".

Crash Trends

In the five year period there were 112 reported accidents resulting in 135 casualties.

Whole Corridor

Total Accidents

- Predominately slight; 97 from 112 (86.6%)
- Predominately during the hours of daylight; 85 from 112 (75.9%)
- Predominately with dry surface conditions; 80 from 112 (71.4%)

Total Casualties

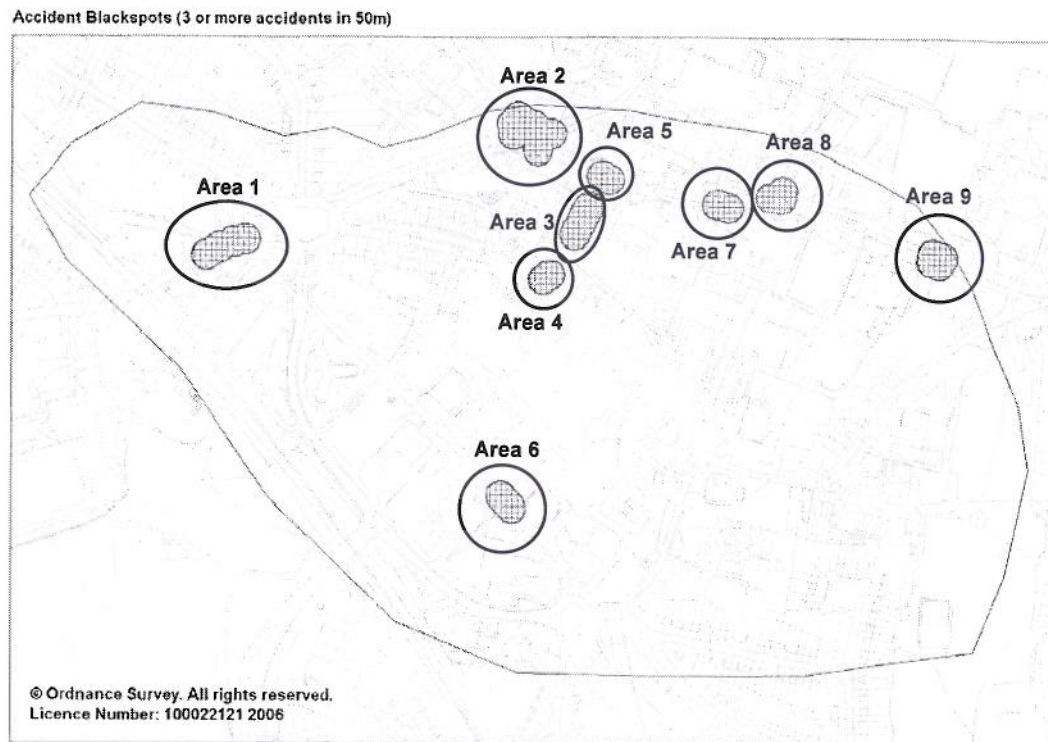
- Predominantly slight casualties, 119 from 135 (88.1%)
- No fatal casualties
- 35 from 135 casualties involved pedestrians (25.9%)

The accidents were plotted and the following 7 accident blackspots were established. These 9 sites combined equate to 69 from the 112 total reported accidents (61.6%).

ID	Accident Area	Number of Accidents
1	B4102 / Station Arm	8
2	B4102 / B426 / A41 Roundabout	24
3	Poplar Road	10
4	Station Road / Poplar Road	3
5	Poplar Road / B4102	3
6	Homer Road	5
7	B4102 / Mill Lane	4
8	B4102 / Union Road	5
9	B4102 / George Road	7
		=69

These are shown in Figure 8.1 below. The criteria used to establish a blackspot is 3 or more accidents within 50 metres in the five year period.

Figure 8.1: Accident Blackspots (3 or more in 50 metres)



Area 1 – B4102 / Station Arm

There were 8 accidents reported in the eastbound approach to the roundabout junction between the B4102 and the Station Arm. These 8 accidents involved 12 vehicles and caused 9 casualties.

The accident characteristics are as follows;

- Predominately slight; 7 from 8 (87.5%)
- Predominately light, 6 from 8 (75%)
- Predominately dry surface, 6 from 8 (75%)
- Predominately car accidents 9 from 12 (75%)

There was no pattern between day, month, year or time of day of the accidents. Most of the accidents occurred in 'optimal' driving conditions, i.e. in the hours of daylight on a dry road surface. This accident cluster occurs over two junctions and a pedestrian crossing; it is believed that the cause of accident blackspot is most likely due to driver error, and the large volumes of traffic using the B4102 rather than any site specific problems.

Area 2 - B4102 / B425 / A41 Roundabout

There were 24 accidents reported in the vicinity of the B4102 / B426 / A41 Roundabout. These 24 accidents involved 40 vehicles and caused 29 casualties. The roundabout is heavily trafficked and serves as a primary route for traffic entering Solihull from the Warwick Road (A41) or the M42.

The accident characteristics are as follows;

- Predominately slight, 20 from 24 (83.3%)
- Predominately dry surface, 16 from 24 (66.6%)
- Split equally between hours of daylight, 12 and darkness 12 (50% each)
- 10 from the 24 (41.6) accidents occurred on the weekend (Saturday or Sunday).

There was no pattern between day, month, year or time of day of the accidents. The roundabout should be investigated to establish if lighting is adequate in the hours of darkness.

Area 3 – Poplar Road

There were 10 accidents reported on Poplar Road. These 10 accidents involved 13 vehicles and caused 16 casualties.

The accident characteristics are as follows;

- Predominately slight; 7 from 10 (70%)
- Predominately light, 8 from 10 (80%)
- Predominately dry surface, 9 from 10 (90%)
- Predominately involving buses, 8 from 13 vehicle accidents (61.5%)

6 from the 16 recorded casualties involved pedestrians, and 7 from the 10 accidents (70%) occurred in either 2001 or 2002. Only 3 accidents occurred have occurred in either 2002, 2004 or 2005. This may be due to mitigation work undertaken post 2001. If no mitigation work has been undertaken then the last five year results indicate that bus and pedestrian are above that what would be expected and should be further investigated.

Area 4 – Station Road / Poplar Road

3 accidents occurred between 2001 and 2005. Again 2 of these accidents occurred in 2001. This may again represent that mitigation work has been undertaken along Poplar Road. 1 of the accidents again involved a bus and a pedestrian.

Area 5 – Poplar Road / B4102

3 accidents occurred at the Poplar Road / B4102 junction. All 3 accidents occurred in 2005. 1 accident involved a pedestrian.

Area 6 – Homer Road

There have been 5 accidents in the last five years at the Homer Road / Touchwood car park junction. Two of these accidents were of a serious severity, both involving cars colliding with cyclists in dark conditions. It is recommended that the junction should be reviewed for cyclist safety, to assess if there are any layout or visibility reasons for these accidents. It is believed that the junction has been recently modified by the council for traffic management reasons. This may have already mitigated against any potential problems. This should be investigated.

Area 7 – B4102 / Mill Lane

There were 4 reported accidents in the five year study period at the B4102 / Mill Lane junction. There does not appear to be any accident pattern between day, month, year or time of day of the accidents. It is not believed that there is a specific accident problem at the junction.

Area 8 – B4102 / Union Road

There were 5 reported accidents at the B4102 / Union Road junction in the five year study period, involving 6 vehicles and causing 5 injuries, of which 4 were slight and 1 serious. 3 from the 5 accidents involved collisions with pedestrians. There appeared to be no accident pattern between day, month, year or time of day of the accidents.

Area 9 – B4102 / George Road

There were 7 reported accidents at the B4102 / Union Road junction in the five year study period, involving 14 vehicles and causing 12 injuries, of which all were of slight severity. All 7 accidents were car-car collisions. Most accidents occurred in the hours of daylight, in fine weather on a dry road surface. All accidents were different in nature with no obvious pattern.

General Accidents

69 from the 112 total reported accidents (61.6%) occurred at the above 9 areas. Most of the remaining accidents occurred in isolation within the town centre study area. It is noted that whilst some accident 'blackspots' have been identified some of these may be due to driver error and/or random accident fluctuations rather than specific safety problems attributed to the junction or link.

The B4102 / B4025 roundabout has a much safer accident record than the B41025 / B425 roundabout although they have similar traffic levels. This is expected to be due to the greater deflection and greater inscribed circle diameter of the central island on the B4102 / B4025 roundabout.

Conclusions

The following safety issues should be investigated as part of a comprehensive town centre study.

- Pedestrians on Poplar way
- The B4102 / B425 / A41 Roundabout

Homer road and pedestrian connectivity along the B4102 and the side roads

9 Crime

9.1 Introduction

Crime, and the fear of crime, has a pernicious influence of people's perception of a place. In some parts of the conurbation, people are frightened to leave their homes at night, or wait at bus stops or even walk along quiet streets or through parks. Quite often the fear is unjustified but exposure to the risk is often sufficient to dissuade people from returning to that place.

There are a number of generic crime types which relate to centres of activity such as Solihull which can be used as both a measure of the level of crime activity, and as input into the design process with the intention of minimising their incidence. These crime types are:

- Crimes against persons outside the home (GBH, ABH, Theft, Sexual Offences etc).
- Crimes against vehicles (Theft, vandalism etc)
- Crimes within car parks.

9.2 Street Crime

Figure 9.1 shows hotspots of locations of street crime in the Solihull Town Centre between the years 2000 and 2005. The analysis shown in Figure 9.1 is merely an exercise to highlight the location of crimes and the relative levels of crime and within the study area. These crime figures are not compared against any regional or national figures.

Figure 9.1 indicates the locations where there are hotspots of Street crime. Street crime is categorised by all crime that occurs that is not domestic (in the home). The bus stops within Solihull Town Centre have also been plotted on the plan. The figure shows that most of the crime occurs along High Street, Poplar Road and Station Road. There are also hotspots at Mell Square and the Rail Station. There are a large number of crimes near the bus stops on Poplar Road and Station Road and significantly, close proximity of the many Pubs and nightclubs in the centre.

Figure 9.1: Street Crime Hotspots in Solihull Town Centre



9.3 Crimes against the person

Figure 9.2 shows the pattern of crimes specifically against the person for the last 5 years. Crimes of violence are particularly distressing, and constitute a major factor in the people's perceptions and the quality of the centre as a place of leisure and recreation. The pattern of crimes against individuals is similar to the overall crime pattern and focuses heavily on High Street and worryingly around the bus stops on Poplar Road. Outside of the core, there are very few reported crimes, which suggests that the problem is likely to be associated with congregations of younger people in or near pubs and nightclubs. The concentration of crime in such a small area is, perversely beneficial as it can be controlled by relatively small amounts of police and by the expansion of CCTV systems.

Figure 9.2: Violence against a person Crimes in Solihull 2000 – 2005



9.4 Crimes against vehicles and in car parks

Firstly the distribution of crime involving motor vehicles are shown in Figure 9.3 and Figure 9.4 are essentially very similar. The analysis suggests that the mix of crime against vehicles is greatest in the following locations:

- Tudor Grange Sports Centre
- Renaissance Hotel
- Lode Lane Car Park
- Morrison's Car Park
- Moat House Hotel
- Touchwood

Interestingly most of these locations are private sector concerns which attract large numbers of vehicles late in the evening. It is very likely that the proprietors of these establishments will be aware of the crime issues and will be addressing them in the natural course of their operations.

Figure 9.3: Car Park Crime Hotspot locations 2000 - 2005

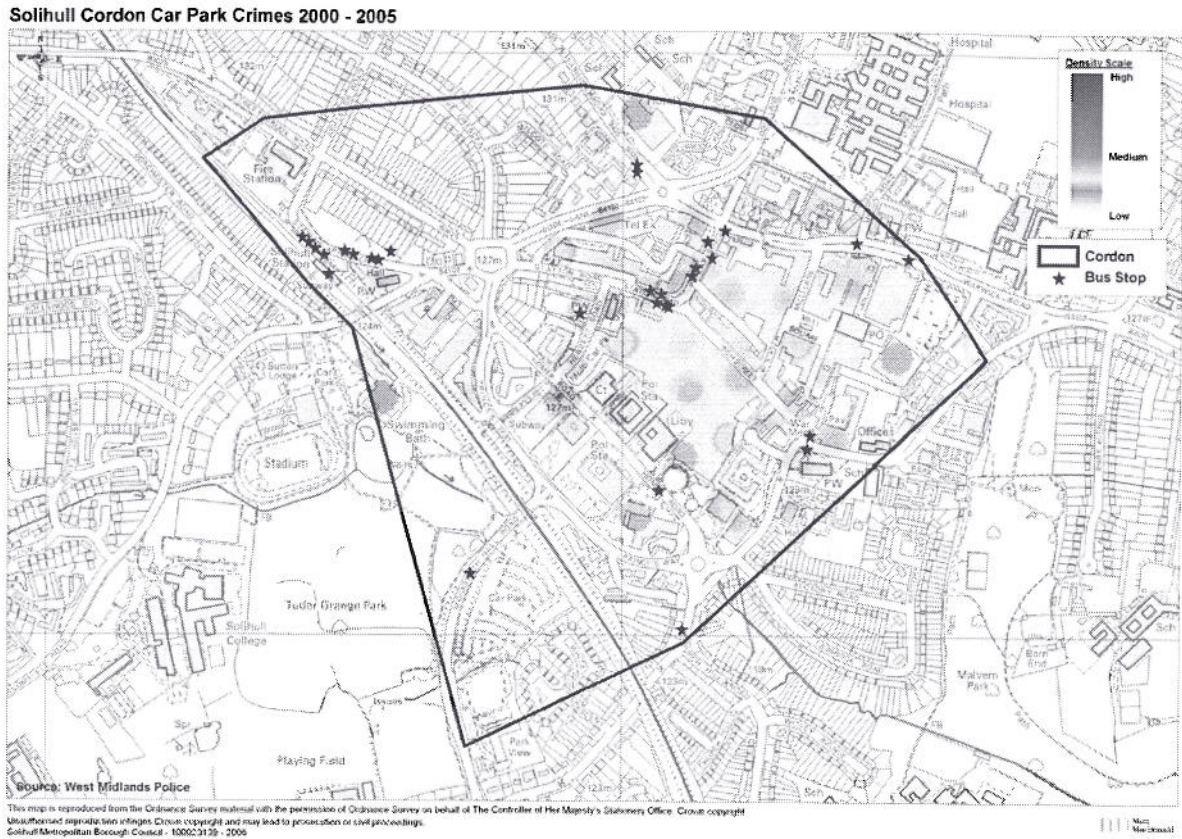
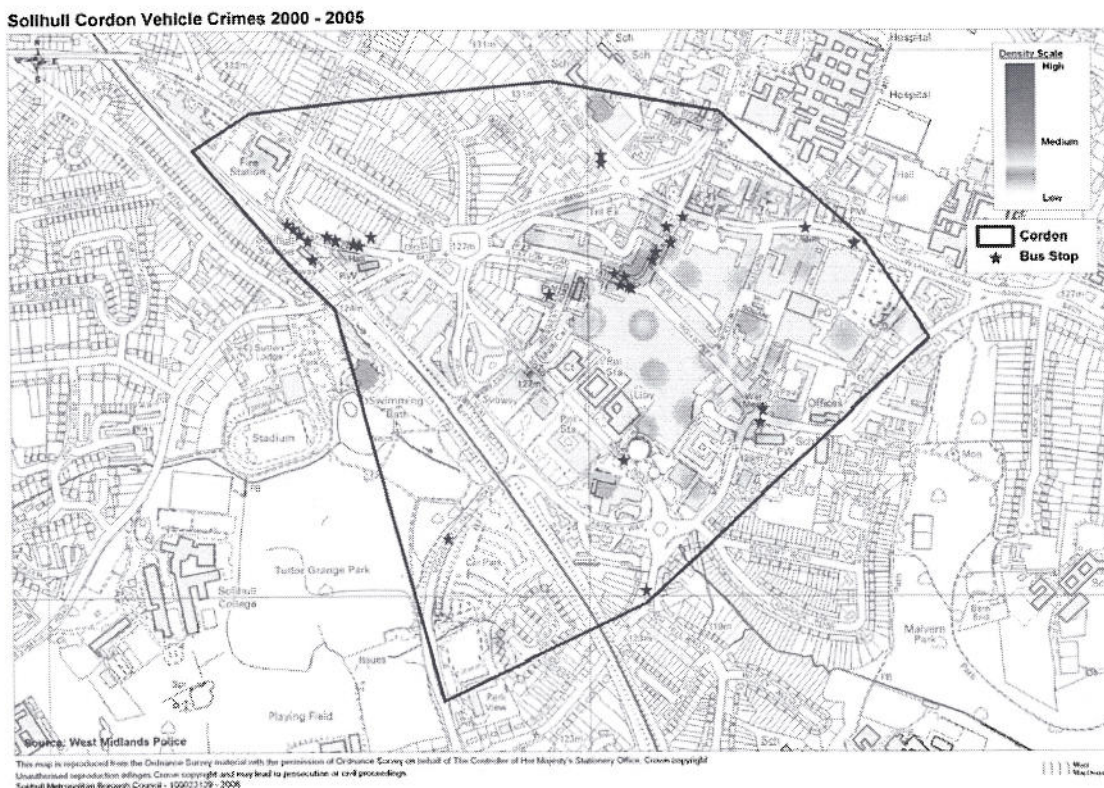


Figure 9.4: Vehicle Crime in Solihull 2000- 2005



9.5 Comparison of Crime and time period

Table 9.1 below shows the number and percentage of crimes against people in three eight hour time bands for three years, while **Error! Reference source not found.** shows the number of crimes against people by the time of day. Crimes against people groups all the crimes that are done to a person, these include for example grievous and actual bodily harm, theft, sexual assault. Domestic crime has been taken out of the analysis as only the crimes classed as on the street were needed.

Table 9.1: Number and Percentage of Crimes against people 2003-2005

	21:00 to 04:59	05:00 to 12:59	13:00 to 20:59
Number of Crimes against person in Town Centre streets	162	47	124
Percentage of crimes by time	48.7%	14.1%	37.2%

Figure 9.5: Graph of number of crimes against people in Solihull Town Centre

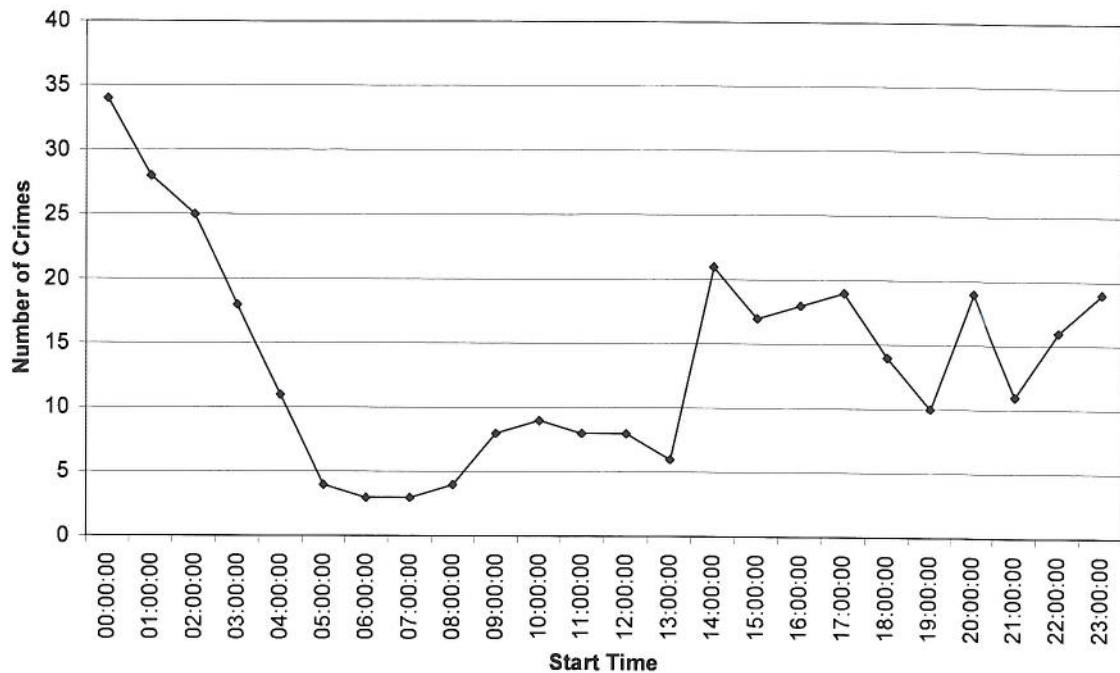


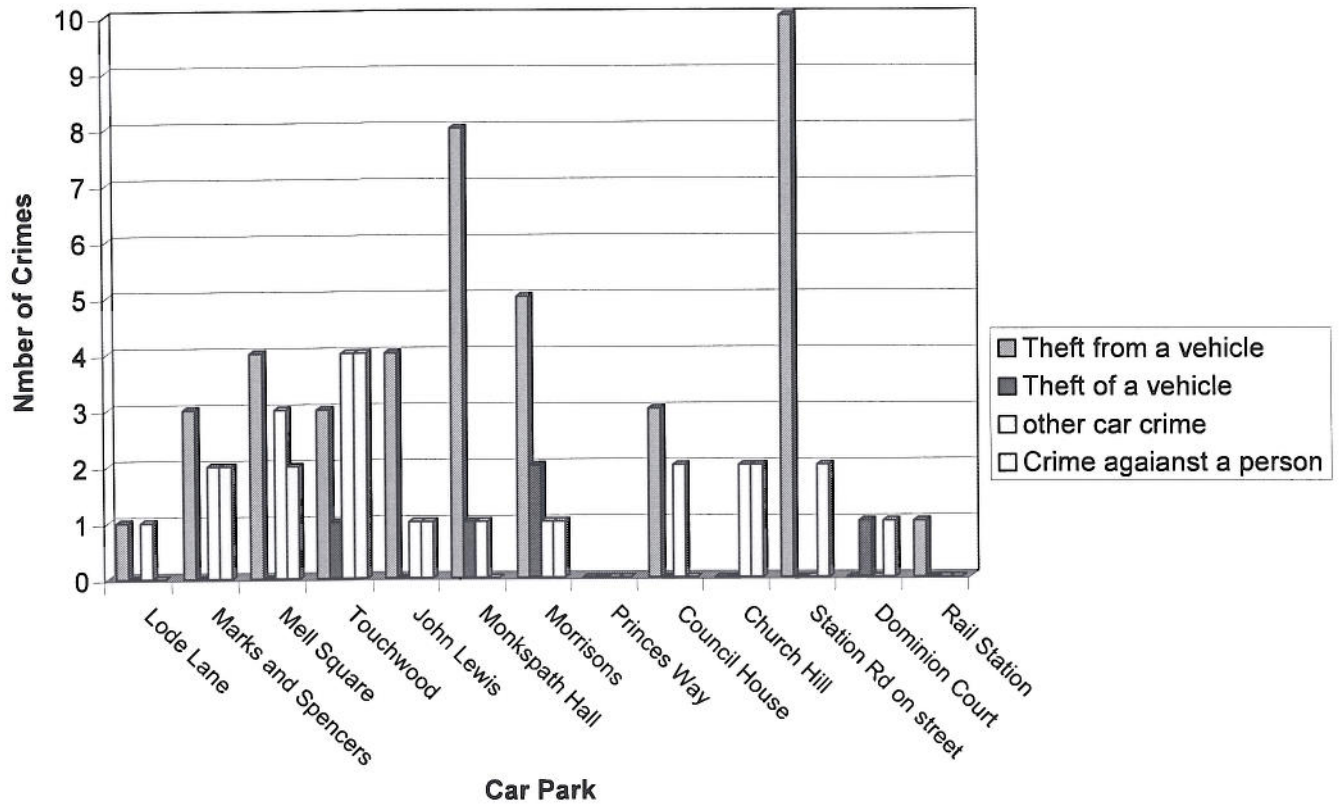
Figure 9.5 and Table 9.1 show that the number of crimes in Solihull is greater at night than at any other time. Almost half of all the crimes against people occur between the hours of 21:00 and 04:00. This shows that the majority of crime in the Solihull Town Centre is alcohol as there is a large amount of licensed pubs and nightclubs.

The other trend is that there are more crimes in the afternoon this could be due to a greater number of shoppers in the town centre at this time of day. These afternoon crimes may deter shoppers away from the town centre.

9.6 Car Park Crime

Figure 9.6 shows the number of crimes recorded at car parks in the town centre between 2003 and 2005. This graph indicates that the main crime that occurs at car parks is theft from a vehicle. Although the number of occurrences are not significantly large. The area that has the most significant number of theft from a vehicle crime is the on street parking area of Station Road. This could be caused by this being one of the main places drivers park at night.

Figure 9.6: Street Crime in Car Parks



10. The Transport Impact of New Developments

Introduction

The West Midlands regional model, PRISM has been used to predict the impact of committed and future developments on the Solihull road network in terms of total vehicle trips. Trip generation data has been obtained from the PRISM zone where the development is located.

The predicted trips have been extracted from PRISM for the Weekday morning and evening peak scenarios. The trips shown in Table 10.1 show the difference in trips between 2001 and 2011.

The data has been summarised into four areas:

- North of A45 – including NEC, Birmingham International Airport and Birmingham Business Park;
- Area between the A45 and A41 –Land Rover;
- A34 Corridor and surrounding area – Blythe Valley, Dicken’s Heath (residential);
- Town centres – Chelmsley Wood, Knowle, Solihull and Shirley

Table 10.1: Proposed new developments and predicted traffic increases

Area	PRISM Zone	Developments	AM Peak	PM Peak
North of A45	5064	Marston Green (Residential)	165	148
	5065	BIA, Clock Interchange	360	193
	5066	Birmingham Business Park, Birmingham International Park, Bickenhill Lane	928	503
Area between A45 and A41	5173	Land Rover, residential development at the former British Gas site, Wharf Lane	1647	1536
A34 Corridor and surrounding area	5095	Dicken's Heath (Residential)	295	202
	5101	Provident Park	102	-1
	5102	Stratford Road/Dog Kennel Lane, Shirley	-189	-317
	5094	Blythe Valley Business Park	617	573
	5103	Highlands Road, Monkspath	419	313
Town Centres	5051	Chelmsley Wood	26	27
	5081	Knowle	-9	-73
	5131	Solihull Town Centre	421	110
	5113	Shirley	280	184
<i>Total</i>			<i>4960</i>	<i>3398</i>

Area North of A45

In Solihull, north of the A45, the major generator of trips from the PRISM model between 2001 and 2011 is the Birmingham Business Park (Proposal E1/1, 2006 UDP), Birmingham International Park (Proposal E2/2, 2006 UDP), and Bickenhall Lane (Proposal E2/6, 2006 UDP).

Other significant increases in trips are for Birmingham International Airport (Proposal E4/1 and E4/2, 2006 UDP), and the Clock Interchange (Proposal E2/3, 2006 UDP). The PRISM model predicts that between 2001 and 2011 there will be an additional 360 and 193 trips during the AM and PM peak periods.

Finally, there are a number of residential developments north of Marston Green (Proposal H1/1.9B, 2006 UDP). The PRISM model predicts that between 2001 and 2011 there will be an additional 165 and 148 trips during the AM and PM peak periods.

It is likely that the additional development trips predicted by the PRISM model will impact mainly on M42, Junction 6, the A45 and the A452/A446 east of the Birmingham Business Park.

Area between A45 and A41

North of Solihull town centre, the 2006 UDP includes two major development sites. These sites are Land Rover (Policy E6, 2006 UDP) and the former British Gas site on Wharf Lane (Proposal H1/1.5, 2006 UDP). The PRISM model predicts that between 2001 and 2011 there will be an additional 1647 and 1536 trips during the AM and PM peak periods.

If the predicted future trips to actually occur, this is likely to put pressure on the surrounding highway network, including the A45, B425 Hob's Moat Road, A41, and M42 Junctions 5 and 6.

A34 Corridor and Surrounding area

There are significant developments along the A34 corridor and at M42 Junction 4. These include Provident Park (Proposal E2/7, 2006 UDP), Blythe Valley Park (Proposal E1/2 and E1/3, 2006 UDP), Stratford Road/Dog Kennel Lane, Shirley (Proposal E2/5, 2006 UDP) and Highlands Road, Monkspath (Proposal E2/1, 2006 UDP).

The largest generator of trips from the PRISM model is for the zone that includes Blythe Valley Park. The PRISM model predicts that between 2001 and 2011 there will be an additional 617 and 573 trips during the AM and PM peak periods. Provident Park is located in the North West quadrant of M42 Junction 4. The PRISM model predicts that the zone will generate an additional 102 trips in the AM peak, but no increase is predicted for the PM peak.

Further north on the A34 are the development sites located at Stratford Road/Dog Kennel Lane and Highlands Road, Monkspath. The PRISM model predicts that between 2001 and 2011 there will be an additional 419 and 313 trips during the AM and PM peak periods at the Highlands Road, Monkspath site. However, at the Stratford Road/Dog Kennel Lane site, the PRISM model predicts a reduction of -189 and -317 trips during the AM and PM peak periods. This reduction in trips is possibly related to the former occupation by Joseph Lucas.

Town Centres

The PRISM model has also been used to assess changes in trip generations for each of the four main centres in Solihull.

The PRISM model predicts that between 2001 and 2011 there will be an additional 26 and 27 trips during the AM and PM peak periods in Chelmsley Wood. However planning consent has been granted for significant food and non-food retail developments in Chelmsley Wood Centre.

The PRISM model does not predict any further development trips in Knowle, and this is backed up by data received from Solihull MBC,

Within Solihull Town Centre, the most significant development is Mell Square (Proposal S3/1, 2006 UDP). The PRISM model predicts an additional 421 and 110 trips during the AM and PM peak periods in Solihull.

A planning application for the redevelopment of Shirley town centre has recently been submitted (Proposal S4/1 and S4/2 for food and non-food retail). The PRISM model predicts an additional 280 and 184 trips during the AM and PM peak periods in Solihull. Highway improvements have been designed to accommodate this traffic, particularly at the A34/Haslucks Green Road junction.

Conclusions

The analysis of the predicted number of trips from committed and future developments in the Solihull area, show that in the AM peak it is predicted that just below 5000 new trips will occur due to committed and future developments in Solihull and just over 3000 new trips in the PM peak. These trips may not travel through the Town Centre but there could be implications on surrounding roads. This may have an impact on congestion of the roads that vehicles use to access the Town Centre. These roads are congested at the present, there is a concern that the existing highway network would not cope with any additional traffic.

The largest amount of proposed development is in the area between the A45 and A41. This area has the advantage of trips being able to access the M42 and M6 quickly and has good bus links to the Town Centre therefore hopefully alleviating the impact on the roads surrounding Solihull Town Centre.

11. Walking and Cycling

Introduction

Walking and cycling are important issues when considering accessibility and movement in the Town Centre. The 'National Cycling Strategy' produced by the Department for Transport, aims to promote cycling priority on the highway in the centre of towns, to and from the workplace and throughout new developments. By doing so, the Strategy aims to generate a major cultural change in the favour of cycling. The document 'Encouraging Walking: advice to local authorities' produced by the Department of the Environment, Transport and the Regions wants walking to be easier, more pleasant and safer than it is now.

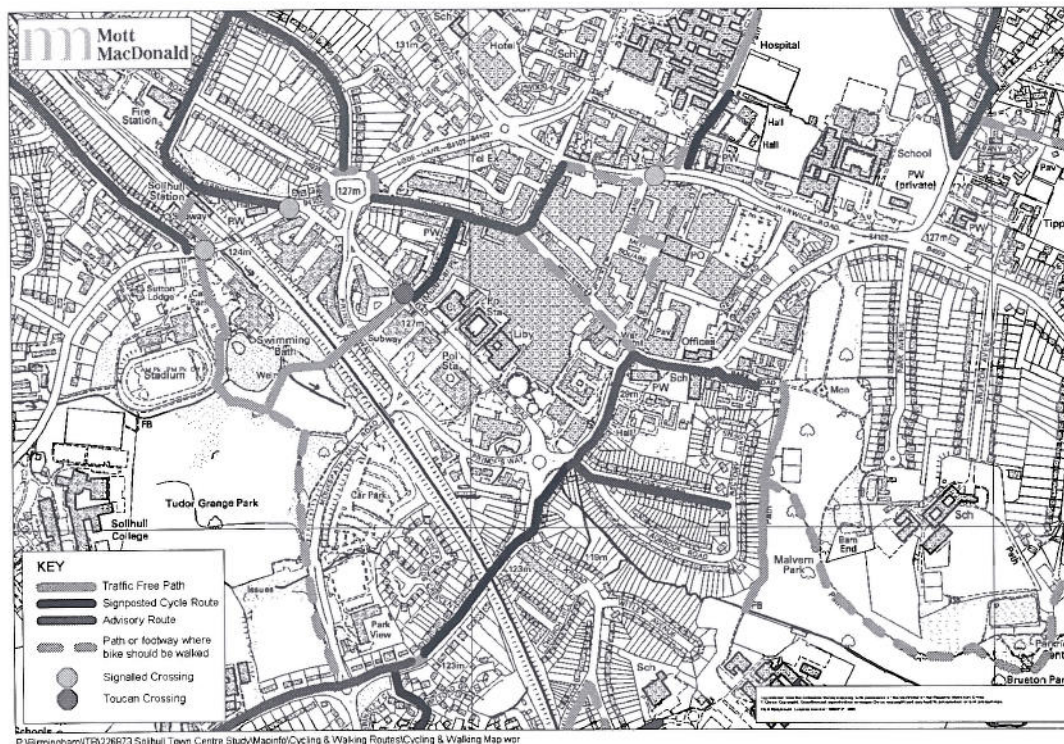
Cycling

Solihull MBC has produced a Cycling Strategy. The purpose of the Solihull Cycling Strategy is to:

- Coordinate all policies and programmes of action which assist in promoting cycling as an attractive, safe and sustainable form of transport for all standards of cyclist.
- Identify the objectives, targets and mechanisms to be adopted by the council in its attempt to further promote cycling.
- To contribute to meeting the overall Local Transport Objectives within the West Midlands.

Solihull has also produced a cycle map which identifies major cycle routes in the town centre. These are identified on Figure 11.1.

Figure 11.1: Cycle Routes and facilities in Solihull Town Centre



Walking

Solihull MBC has produced a Walking Strategy. The 'Walking Strategy for Solihull' also refers to 'Encouraging Walking; advice to Local Authorities' and other guidance documents, including Local Agenda 21 Access for all and The European Charter of pedestrians' rights.

The walking strategy promotes the following vision:

"To create an environment and culture, where walking is regarded by everyone as the primary means for making local journeys and a recreational activity which leads to a healthier, more enjoyable and sociable lifestyle."

To achieve this, Solihull Council will deliver the strategy in the following ways:

- Through engineering measures to create safe and pleasant walking facilities.
- Through the enforcement of legislation which will lead to a more attractive walking environment.
- Through educational measures to teach healthy lifestyles and care of the environment.
- Through a wide programme of encouragement for walking, as a health-promoting activity both for the individual and the environment.

Existing Situation

Cycling access into the town centre is generally limited to the main roads. There are traffic free paths in the surrounding park lands; however these have poor connections to other paths. Within the town centre, recent improvements include a cycle link between the Rail Station and the Town Centre (as highlighted in the Cycling Strategy) and the provision of cycle parking at the Touchwood car park.

Pedestrian facilities within the town centre are considered good as High Street and Mell Square have pedestrian priority. This helps to create a safe vehicle free environment for people to access facilities. However, on a number of pedestrian access routes into the town centre there are a number of points where the link is poor. Roundabouts, major arterial roads, large buildings and narrow lanes can be difficult for pedestrians to pass around or through. Poor pedestrian links in Solihull include crossing Warwick Road and the Warwick Road/Lode Lane and Blossomfield Road/Streebsbrook Road/Lode Lane roundabouts.

The Solihull MBC efforts are focused on encouraging walking, including child road safety training and safer routes to school. Kerbcraft is the road safety training scheme for children in school years 1 and 2 in several schools throughout the borough.

In conclusion, there are a number of issues that need to be addressed to improve facilities for cyclists and pedestrians. The most important issue is to create better cycling and pedestrian access into and around the town centre.

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