Llewelyn-Davies
with
GIBB Ltd

Witney Integrated Transport and Land Use Study

Draft Final Report

Stage 3

APPENDICES

for

Oxfordshire County Council,
West Oxfordshire District Council
and Witney Town Council

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Contents

PART 3: APPENDICES

Appendix A: Consultation

1 *Introduction*

1.1 We report here the public consultation exercises carried out at the end of Stage 2 and during Stage 3 of the WITLUS. The following consultation exercises were undertaken:

- late arrivals from Stage 2 - completed forms and letters resulting from the Broadsheet and drop-in day consultations;
- meetings with local schools;
- a meeting with the Witney and District Chamber of Commerce and written comments from the Federation of Small Businesses;
- a meeting with representatives from the emergency services;
- a working meeting with relevant professionals from Oxfordshire County Council; and
- two meetings wieth the main bus operator (Thames Transit).

2 *Late arrivals to Stage 2*

2.1 The comments about the Broadsheet and drop-in day that we received after 27th November 1996 are set out here. They consisted of two completed forms and four letters. One of the letters, from the Federation of Small Businesses, is reported in section 3.

2.2 The following comments were made:

- **"drive to not through"**: there was general support for this idea, and two respondents noted the need to ensure that the walk from the car parks to the shops is not too long;
- **pedestrianisation**: all the responses supported pedestrianisation, some of them supported it strongly. There were a variety of views about allowing vehicles into the pedestrian areas, with one respondent stating that this was important, and another stating that this was unacceptable;
- **parking control**: there was a range of views about parking controls with two respondents being against them and one supporting their introduction;

- **town centre facilities**: there was support for improving town centre facilities, although two respondents mentioned the need to protect facilities from vandalism and crime;
- **the "green" combination**: this produced a mixed response with one respondent stating that car users are the number one priority in a rural area like Oxfordshire, while another stated that efforts should be made to reduce car use;
- **who pays**: one respondent noted that the burden of paying for measures should not fall solely on the car user and that if finance was unavailable, the measures should be scaled down to reduce the bill;
- **the Cogges Link**: one respondent expressed concern over the construction of the Cogges Link. Part of this concern seems to be based on the misconception that the link involves extra traffic on Cogges Hill Road. The respondent argued in favour of the Newland Link;
- **cycling**: one respondent gave us a helpful suggestion about a possible cycle link (this is incorporated in the schemes); and
- **speed management**: one respondent mentioned the application of low speed limits.

3 *Meetings with local schools*

3.1 We carried out interviews with a number of local schools:

- The Blake (primary);
- Tower Hill (primary);
- West Witney (primary);
- The Batt (primary); and
- Henry Box (secondary).

3.2 We asked them a standard list of questions concerning:

- their catchment area;
- how their pupils travel;
- problems outside the school and safe access to the school;
- if transport and environmental issues are included in their curriculum;
- if they were interested in Safe Routes to School projects; and
- if there was interest in transport issues within the PTA.

3.3 The following interesting points were raised:
The Blake: many children walk to school, although a few are bussed and taxied into school from the outer villages at Oxfordshire County Council's expense. They do not have major traffic problems outside the school,

although they occasionally have problems with parents parking on double yellow lines and blocking footways.

Tower Hill: the school has around 170 pupils. The catchment area extends westwards across Tower Hill, and to a smaller extent across Burford Road and Welch Way. This means that children's routes to school involve crossing busy roads which currently have no formal crossing facilities. Some children are delivered and collected by car at the Moor Avenue entrance, and this is seen as a risk to the safety of children and others. While the proportion coming by car is thought to be fairly small, the number of vehicle movements involved are sufficient to cause a problem. The school took part in the Travelwise "walk to school week" in 1996, and this generated some interest in the issue, but is not thought to have had a lasting effect on travel to school patterns. There is enthusiasm for further "safe routes to school" projects, especially if help is available.

West Witney: their catchment is the West Witney estates and they are struggling to meet demand for places generated by this area. A few people drive their children to school, and sometimes cause problems by parking inconsiderately. Many children who walk to school are accompanied, mainly because of worries about traffic. Slower traffic speeds on Edington Road could reduce this problem. While road safety issues are not included in their curriculum, the children do learn about the pollution impacts of car travel. The school is keen to promote Safe Routes to School projects and thinks they do make a long term difference to travel behaviour.

The Batt: the Batt has around 200 pupils of which two thirds walk and the rest arrive by car. Many who walk are accompanied. There is a lollipop lady on Corn Street who ensures safe access by that route, but other links are dangerous for pedestrians. The school is interested in safe routes to school projects, but have no space in their curriculum for additional issues. The school did not think that closure of Corn Street to traffic would be a problem, provided the access via Corn Street and Marlborough Lane was still available for service vehicles.

Henry Box: the school has an open catchment, drawing in pupils from all over Witney. Travel modes to school vary depending on the weather, but most pupils walk, over 100 cycle, 200 arrive by bus and the rest are driven (total 1,200). Station Lane causes a problem for children crossing to the school. They often have problems with buses and other vehicular traffic outside the school, and have a member of staff in attendance to oversee the children waiting for buses and cars. Transport and environmental issues are included informally in the curriculum, with PE fitness tests encouraging cycling and walking. The school would like a direct pedestrian access to the Leys but has so far been unable to secure this. They also mentioned that the Leys could provide the pick up point for buses and cars

rather than Church Green. They thought that more pupils would cycle and walk if conditions were safer. The School expressed interest in a 'Safe Routes to School' project.

4 *Consultations with retailers and small businesses*

4.1 The **Witney and District Chamber of Commerce** raised some interesting points as follows:

- **pedestrianisation**: they supported full pedestrianisation which would allow the market to expand, and thought that the area should exclude buses, taxis and delivery vehicles during the day. Restricting deliveries to before 9.00 a.m. would be acceptable. Possible problems are 8/10 Market Square, Greens warehouse which has no rear access. Market trader's vehicles would need access during the day.
- **Buttercross / Corn Street**: they acknowledged that traffic in this area is a problem and thought that pedestrianisation would solve it. They suggested that Corn Street should be one way out of town to allow parking outside the shops. They also suggested reversing the one way on Station Lane to relieve the difficult junction at the southern end of Station Lane.
- **road building**: they stated that the Cogges Link is more important than the West End Link and expressed dissatisfaction at the lack of action to build the Cogges Link.
- **football ground site**: they would like to see this site developed for retail.
- **cycling**: parking provision in the town centre should be improved.
- **buses**: local routes do not relate well to the new housing areas, particularly in West Witney. The Oxford bus gets stuck in heavy congestion.
- **parking**: they support the WODC policy of no parking charges.
- **shopping patterns in Witney**: the Chamber of Commerce made some general comments about shopping in Witney. The shopping catchment of the town is 80,000 people and this has not changed significantly over time. Witney is a low spend town, with people going home straight after work or specific shopping activities, making the town very quiet between 5.30 and 6.30 p.m.. A different set of people come into town in the evening, and upmarket restaurants generally fail because of this pattern. Town centre restaurants and pubs also compete with country pubs. Sunday opening was resisted in the town on "religious" grounds.

4.2 The **Federation of Small Businesses** wrote to us making the following points. Witney is seen as a pleasant market town. Its key assets are the variety of shops, and free parking. The latter was heavily stressed. The "drive to not through" idea was thoroughly endorsed with pleas to provide the Cogges Link road to facilitate this. The pedestrianisation of Market Square and High Street to Welch Way was also supported, with a major proviso for delivery vehicles to wholesalers and manufacturers. Delivery from behind Market Square and High Street was seen as a possibility. A one-way system was suggested, as an alternative to pedestrianisation. They complained about the width restrictions and humps on Corn Street stating that these are unsafe and that the road should be restored to its original state. They also expressed concern over access to shops for people with mobility impairments if the town centre is pedestrianised. They praised WODC's long term policy of encouraging quality new developments in the town centre.

5 *Emergency services*

5.1 The emergency services (ambulance, police and fire services) made a number of comments as set out below.

Pedestrianisation

5.2 Allowing **orange badge holders** into the pedestrianised area is potentially a major problem. The widespread abuse of the orange badge system means that there may be a large number of vehicles parked in the pedestrian area. This undermines the purpose of the area. It also causes enforcement problems for the police who require extra man power to enforce the access restrictions. Parking by orange badge holders can also cause problems for emergency vehicles passing through the pedestrianised area during an emergency, if vehicles are not carefully parked.

5.3 **Parking restrictions** should operate at all times so that they are simple for the police to enforce.

5.4 **Two way working** could cause problems for emergency vehicles given the narrow carriage way. This is avoided where the potential exists (e.g. rounded curbs to footways) for other vehicles to manoeuvre out of the way.

5.5 **High Street north of Witan Way** is a possible pinch point and needs to be carefully designed to ensure that there is space for vehicles to manoeuvre out of the path of emergency vehicles.

5.6 The ambulance and fire services stated that the **closure of Moor Avenue** would have a minimal affect on their response times and was not a serious problem. The police stated that physical measures are essential to enforce this road closure and stop the route becoming a rat run.

5.7 **Vehicular access for residents of High Street** was not seen as a problem, and it was suggested that a system of placing permits on the car windscreen would be effective.

5.8 The emergency services suggested that **buses should not be allowed to linger in High Street and Market Square** when their passengers have disembarked. The police representative brought attention to the fact that a bus is now defined as a vehicle with eight seats or more and that this can cause enforcement problems.

5.9 All the representatives urged for careful **wording** of the order to pedestrianise the town centre. The use of the word "emergency" can cause a problem. Wording should refer to the entire service, e.g. ambulance service use.

Speed management

5.10 The ambulance service oppose vertical deflections in the road, but can cope with horizontal deflections. Their representative stated that road traffic accidents amount to only 4.5% of their call outs, and that the inconvenience caused by physical deflections is not made up for by the reduction in accidents. The police, on the other hand, generally support traffic calming measures. The fire service representative stated that measures can damage equipment if poorly designed. The police will not support designated speed zones where the measures to slow motorists are not sufficient, as this gives them a problem with enforcement. All the representatives agreed that traffic calming measures need to be considered on a measure-by-measure basis.

6 *Meetings with Oxfordshire County Council professionals*

6.1 We held a series of meetings with professionals from the County Council to discuss a number of issues. The aspects covered were:

- the bus lane to Oxford on the A40;
- cycling proposals for Witney;
- soft measures and the mobility centre;
- measures for buses; and
- speed management proposals.

6.2 The following points were made:

- cycling:
  - the redesign of the five ways roundabout could include a ramp to ensure that motorists were aware of the cycle lane on the roundabout;
  - the Sustrans National Cycle network could include some routes near Witney;
  - the use of colour to demarcate cycle lanes improves safety;
- soft measures:
  - supermarkets hiring bike trailers is a good idea which allows for green advertising as well as providing a service;
  - supermarkets could offer cycle tokens;
  - many Safe Routes to Schools schemes depend on structural changes;
  - walking and cycling prescriptions given by doctors were mentioned;
  - using the back of tickets, leaflets, etc. as reminders is a good way of raising awareness;
- the mobility centre:
  - volunteer staffing of the mobility centre could cause credibility problems and should be avoided;
  - the centre will have start up costs in terms of purchasing computers, installing phone lines, etc. as well as the on-going funding requirement;
  - there could be a problem with providing an information service as well as promoting "green" travel. People expect to be provided with information instantly and a poor service can do more damage than good. Information is currently available through the OXIS initiative and the travel timetable.
- the Oxford bus: the possibility of closing Oxford Hill to traffic to allow a clear bus route was discussed; and
- speed management: the cost of implementing traffic calming measures was discussed.

7 *Meeting with Thames Transit (bus operator)*

7.1 Vertical deflections in the carriageway are strongly resisted, and bus services are likely to be withdrawn from roads when such measures are installed. The use of suitable speed cushions on routes operated by standard buses may, however, be acceptable.

7.2 Bus activated signals will be feasible in the short term as all Oxford bound buses will be fitted with transponders.

7.3 Park and Ride for travel to Oxford was considered to be desirable only for customers living outside Witney. A possible site west of the town would be considered favourably in terms of commercial potential.

7.4 The operator would respond to any apparent commercial opportunity. Consideration is already being given to journey to work by bus in Witney (at present poorly served).

7.5 The proposed A40 bus lane is considered to offer major potential for increasing the share of trips made by bus between Witney and Oxford.

7.6 The proposal to pedestrianise the town centre with bus exemptions, was welcomed, as were proposals to provide help to buses on High Street, Bridge Street and Oxford Hill.

Appendix B: Traffic Impacts of Road Network Changes

1 *Introduction*

This appendix contains information about further tests of the road network changes discussed in the main report. These tests relate to the refined Option 2 road network and to the inclusion of whole or part of the West End Link (WEL) with Options 2 and 3. (Options 2 and 3 are discussed in the Stage 2 report. Option 2 involves closures of High Street and other streets south of Witan Way; Option 3 involves additional closures between Witan Way and Staple Hall.)

The further model runs undertaken were:

- Option 2 in 1996
- Option 2 in 2001 with Cogges Link (CL) and North East Distributor (NED)
- Option 2 in 2001 with northern section of the WEL
- Option 2 in 2001 with complete WEL
- Option 3 in 2001 with northern section of the WEL
- Option 3 in 2001 with complete WEL

The closures for Options 2 and 3 were revised from those tested in Stage 2. We tested the 2001 scenarios with Curbridge Road closed and with New Yatt Road closed in addition to the closures tested in Stage 2. The interpretation of results that follows uses a combination of these new model runs, runs from Stage 2 and manual re-assignments.

There are three broad questions that have been addressed in this appendix:

1. What is the nature and extent of traffic impacts of Option 2, both now and following the opening of the CL and NED?
2. What is the nature and extent of traffic impacts of Option 2 in 2001 with all or part of the WEL?
3. By way of further development of the strategy, what is the impact of closing Bridge Street and building either all or part of the WEL?

2 *Model limitations*

The traffic modelling exercises have been used to identify the potential traffic diversion effects of various changes to the road network, and also to assess the comparative impacts of different networks and traffic levels at years 1996 and 2001. The traffic model is less suited to providing answers as to specific traffic flows at particular locations or junctions.

It should be borne in mind that the traffic model is unlikely to represent in full the behavioural responses in practice to the road network changes that have been tested. For example, the (Friday evening) peak hour traffic levels indicated in the tests may not materialise if a proportion of drivers choose to avoid congestion by travelling earlier or later ("peak spreading"). Equally, there are other possible responses that are not represented in the model, such as those set out in relation to parking management measures (see Appendix D).

Detailed examination of the model output has revealed a number of uncertainties relevant to the analysis of town centre and other road closures. Table B1 provides a comparison of flows assumed by the model in 1996 and flows actually counted in 1994. It can be seen that there are discrepancies between the counted traffic flows and the flows assumed by the model. We would expect the model flows to be slightly and consistently higher than the counted flows in 1994, reflecting traffic growth between 1994 and 1996. However, this is not always the case, with the model overloading some links and slightly under-loading others.

Where traffic loadings are significantly higher than the 1994 counted flows, this suggests smaller traffic impacts than indicated in the analyses below. Conversely, lower loadings would tend to mean greater traffic impacts. Where these uncertainties are of particular importance, they are discussed in the relevant analyses below.

3 *Option 2 in 1996*

This section reviews the impact of Option 2 road closures as shown in Figure B1. The impact of the Option 2 road closures in 1996, with associated measures to ensure that no undesirable rat runs are created, were analysed using the following model runs:

1. 1996 "do nothing" with the network as it is today;
2. Option 2 town centre closures in 1996 but with two rat runs open (Moor Avenue/Dark Lane and Gloucester Place/Puck Lane); and
3. Option 2 town centre closures in 1996 with the two above rat runs closed and with Curbridge Road closed.

Using the results of (3) above, traffic was manually re-assigned using the results of (2) above as a guide. Three re-assignment exercises were undertaken:

- traffic rat running through Windrush Valley Road was re-assigned to Tower Hill;
- traffic from Tower Hill/Burford Road/Deer Park Road was re-assigned to Curbridge Road; and
- traffic rat running through Burwell Meadows was re-assigned to Curbridge Road.

The traffic was re-assigned to bring flows on Curbridge Road to the levels in (2). These are also of the same order as the 1996 "do nothing" base. (It should be borne in mind that traffic calming on Curbridge Road would be likely to reduce traffic flows).

The difference in flows on key links between Option 2 (town centre closures plus the two rat runs closed) and the "do nothing" scenario in 1996, as predicted by the model, are described in the following paragraphs. Changes on key links are set out in Table B2.

Overall, with the Option 2 road closures, the model shows traffic diverting from High Street to Tower Hill, Burford Road/Mill Street and Witan Way. Other links are mostly unaffected.

Let us consider the changes in more detail.

3.1 *Sensitive routes*

- The town centre roads subject to closure (High Street and Corn Street east) are shown by the model to be traffic-free, though in practice small flows of bus and taxi traffic would remain.
- The two potential rat runs which were closed (Moorland Avenue/Dark Lane and Gloucester Place/Puck Lane), are also shown to be free of traffic, though these in practice would have light traffic flows generated by access-only vehicles.
- Welch Way and Holloway Road would experience significant traffic reductions, as a result of the removal of through traffic.
- The model shows southbound traffic increasing on Church Green (east). The model also shows a reduction in southbound traffic on Witan Way of a similar magnitude. The model seems to be reallocating traffic from Witan Way to Langdale Gate/Church Green (east)/Station Lane. This may be due to modelled delays at the Sainsbury's roundabout, although the information provided by the model at this junction is remarkably similar for both the "do nothing" and the Option 2 scenarios. The model does not suggest that traffic is using Church Green (east) in preference to Witan Way because the south bound flow is at capacity. Therefore, if traffic did start to rise on Church Green (east), traffic management measures could be implemented to switch the traffic back on to Witan Way.
- The model shows increases in traffic:
  - **v** northbound on Tower Hill;
  - **v** both ways on Burford Road between Tower Hill and Mill Street;
  - **v** both ways on Mill Street; and
  - **v** northbound on Witan Way.

These changes reflect the model's assumption that traffic using the High Street to access Bridge Street and north Witney would now travel via Witan Way or Tower Hill/Burford Road/Mill Street.

The model suggests that Tower Hill would become approximately as busy as Welch Way is today, while Burford Road (between Tower Hill and Mill Street) and Mill Street would carry traffic equivalent to one and a half times the present day flow on Welch Way.

Whilst there is little doubt that the Tower Hill/Mill Street route could (in the absence of traffic reduction measures) experience higher traffic flows in the short term compared with a "do nothing" situation, the magnitude of this increase indicated by the model may be over-stated for a number of reasons. The traffic generated by the Welch Way car park and other parking spaces in the area is over-stated in the model as the model assumes that a B1 development has been constructed in the Marriott's Close area. We estimate that westbound traffic on Welch Way in the Friday evening peak hour will be no more than half that estimated by the model (maximum around 500 vehicles). This means that the increases on Tower Hill/Burford Road/Mill Street described above are likely to be smaller than described above. On the other hand, Table B1 shows that the model slighly underestimates flows on Tower Hill.

The model assumes that drivers entering the town centre and using Welch Way car park will continue to use this car park when direct access to it via High Street is closed. In practice it is more likely that such drivers will choose to switch to the Witan Way car parks, access to which will remain as convenient as before.

Experience of town centre road closures elsewhere indicates that not all traffic diverts onto alternative routes; a proportion of it tends to "disappear". Although little is known about the reasons for such "traffic evaporation", it may simply be the reverse of the accepted principle whereby new roads induce more traffic.

3.2 *Other routes in Witney*

The model indicates traffic increases on Witan Way which will mean that parts of the road could be twice as busy as they are today. Impacts on Burford Road have been discussed above.

3.3 *Routes outside Witney*

The model indicates no significant traffic change on roads outside Witney following Option 2 town centre road closures. Increases are of the order of 2% - 3%, which would not be noticeable.

4 *Performance of Option 2 in 2001*

We investigated the performance of Option 2 in 2001 with CL and NED. The closures and network are shown in Figure B2. We used the following model runs to analyse the performance of Option 2 in 2001:

1 Option 2 in 2001 with both rat runs* closed and Curbridge Road, New Yatt Road and Woodstock Road closed;
2 Option 2 in 2001 with town centre closures only and the two rat runs* open; and
3 The 2001 base with the CL, NED and associated development.

** " the two rat runs" are Gloucester Place / Puck Lane and Moor Avenue / Dark Lane*

As outlined for Option 2 in 1996 above, working from (1) above, we re-assigned traffic from Tower Hill / Burford Road / Deer Park Road back on to Curbridge Road. We also re-assigned rat running traffic on Windrush Valley Road and Burwell Meadow back on to Curbridge Road. Traffic was re-assigned to bring Curbridge Road traffic to its run (2) level.

Based on this analysis, Table B3 shows how Option 2 town centre closures affect key links on the Witney network in 2001 compared with a 2001 base scenario (run 3 above).

Table B3 shows that Option 2 produces a similar pattern of changes in 2001 as it does in 1996. Traffic is diverted from Corn St, Welch Way and High St to Tower Hill, Burford Road, Mill St and Witan Way.

Ducklington Lane - Station Lane junction poses the problem of peak hour delays as a result of general traffic increases.

Routes outside the town are basically unaffected by the town centre closures.

5 *Impact of closing Curbridge Road, New Yatt Road and Woodstock Road in 2001 with Option 2*

We investigated the impact of closing Curbridge Road, New Yatt Road and Woodstock Road with Option 2 road closures in 2001. The closures tested are shown in Figure B3. We investigated the impact these closures would have on the following countryside links surrounding Witney:

- Crawley area: Dry Lane, Crawley Bridge, Crawley Road;
- Hailey area: Hailey Road, Foxburrow Lane, link between Foxburrow Lane and Hailey, Poffley End;
- New Yatt and North Leigh area: New Yatt Lane, link between New Yatt and North Leigh, North Leigh to Woodstock Road south, North Leigh to Woodstock Road west;
- Freeland area: Woodstock Road to A40; and

- Curbridge area: road between Curbridge and Ducklington, roads around Curbridge.

The analysis involved comparing the following two model runs:

- Option 2 in 2001 with town centre road closures only; and
- Option 2 in 2001 with town centre road closures PLUS two rat runs closed (Moor Avenue and Gloucester Place) and Curbridge Road, New Yatt Road and Woodstock Road closed.

The basic difference between the two runs is the closure of the Curbridge, New Yatt and Woodstock Roads. However, it must be noted that the town centre closures are not identical for each run (i.e. one has the two rat runs open, one has them closed), and this could have an impact on the results. Since we are considering the impact of the closures on the network outside Witney, these differences should not be too significant.

The routes of concern are routes through the villages surrounding Witney. Table B4 shows the villages considered and the results of the analysis. The indications of traffic impacts given in Table B4 emphasise the need for traffic calming or other traffic restrictions in the villages to avoid potential rat-run traffic seeking to avoid traffic restrictions in Witney. This applies also (though to a lesser extent) if traffic calming rather than closure is applied to New Yatt, Woodstock and Curbridge roads.

5 *Performance of the WEL with Option 2 in 2001*

5.1 *Southern section of the WEL and Option 2*

We analysed the impact of adding the southern half of the WEL from Welch Way to Mill Street with Option 2 in 2001. This was investigated using the following model runs:

1 Option 2 with both rat runs closed and Curbridge Road, New Yatt Road and Woodstock Road closed with manual reassignments as outlined above to reflect Curbridge Road remaining open to through traffic.
2 Option 2 with town centre road closures only and Moor Avenue open. Traffic rat running through Gloucester Place was manually reassigned to Mill Street and High Street.

Run (2) was used as an approximation of adding the southern section of the WEL to Option 2. This is reasonable because the model treats the WEL and Moor Avenue as similar types of link, and because of their physical

proximity. Table B5 shows the difference made by adding the southern section of the WEL.

The model results suggest that the southern section of the WEL would draw traffic onto some routes while relieving others. Tower Hill and Burford Road are less busy as traffic diverts to the WEL. Witan Way is also slightly less busy. This diversion means that connecting roads become busier with Welch Way and Holloway Road experiencing traffic increases. Traffic management measures to protect Holloway Road would be necessary with this option.

The results for Mill St are not conclusive as the model run without the WEL was carried out with New Yatt and Woodstock Road closed. The model suggests that closing these two roads would reduce traffic on Bridge St by a similar number of vehicles to the reduction on Mill St. The model results therefore seem to indicate that traffic on Mill St will not be significantly affected by the construction of the southern half of the WEL.

5.2 *The northern section of the WEL with Option 2 in 2001*

We investigated the impact of the northern section of the WEL on Option 2 in 2001. The main conclusion from this is that the northern section of the WEL draws traffic away from the CL and NED, rather than removing it from Bridge Street. There would be little point in pursuing this option, that is simply providing extra general traffic capacity at a third river crossing, without the simultaneous closure of Bridge Street.

5.3 *The complete WEL and Option 2 in 2001*

We investigated the impact of the complete WEL on Witney's road network with Option 2 closures in 2001. This test showed that traffic between Ducklington Lane and Hailey Road would be routed via Welch Way, rather than via Burford Road and Tower Hill. While this benefits residents on the latter roads, it also reduces the value of Welch Way as a "green route" primarily for pedestrians and cyclists, and hence could reduce mode switch potential.

The test also shows the WEL drawing traffic away from the CL and NED, and also from the A40. This change is accompanied by fairly large traffic increases on Hailey Road. Some reductions are indicated on Newland - Oxford Hill, but these are not substantial. The benefits to Bridge Street are relatively small. The addition of the third river crossing opens up the potential for induced traffic growth.

6 *Impact of the WEL with Bridge Street closed*

Option 2 in 2001 shows fairly marginal traffic relief on Bridge Street. Indeed in the peak flow direction, fairly substantial queues are indicated on Mill Street and Bridge Street. The expectation would be that further general traffic growth would quickly remove the short-term relief provided by CL and NED, unless traffic reduction measures take effect.

These results mean that further action is required to ensure that Bridge Street benefits from the construction of the new roads. Traffic management measures are discussed in section 6.4 of the main report.

The traffic model can only model a link as completely closed or completely open. We tested the Witney network with Bridge Street closed (referred to in the Stage 2 report as "Option 3") , and this represents the maximum traffic diversion that could occur. The traffic management measures put forward (section 6.4 of the main report) would not cause traffic diversion to the same degree, and equally would not provide as much traffic relief on Bridge Street.

7.1 *The northern section of the WEL with Option 3 in 2001*

We investigated the impact of the northern section of WEL (Mill Street to West End) with the Option 3 closures shown in Figure B4. The addition of the northern section of WEL leads to increased traffic on Hailey Road and West End (compared with Option 2 without WEL in 2001), which is partly explained by reductions in flows on the NED.

Traffic on Farmers Close and New Yatt Road is reduced, while there are no problems of traffic rat-running via Crawley or other villages. In terms of traffic congestion, delays would be experienced at Burford Road- Tower Hill junction, as well as at the Ducklington Lane - Station Lane junction. Elsewhere, the network would operate at least as effectively as with Option 2 in 2001.

7.2 *The complete WEL and Option 3 in 2001*

The closures and network tested are shown in Figure B4. The results of adding the WEL were to dilute both the negative and positive impacts of Option 3 closures. A full discussion of these impacts is in the Stage 2 report, Appendix C.

Table B1: Comparison of model flows and automatic traffic counts

	Average ATCS of two counts in May 1994	Two-way flow in model	Difference	
			Number of vehicles	Percent
Corn St, East of Tower Hill R'bout	923.5	947	23.5	2%
Ducklington Lane, south of Tower Hill R'bout	1053.5	909	-144.5	-16%
Curbridge Road, south of Tower Hill R'bout	758	1448	690	48%
Tower Hill, north of Tower Hill R'bout	823	716	-107	-15%
Welch Way east of Tower Hill R'bout	1158	1460	302	21%
Hailey Road, north of Witney	362	559	197	35%
Crawley Road	152	655	503	77%
Bridge St	2102	2262	160	7%
Witan Way, south of High St	701.5	1283	581.5	45%
Mill St	911	848	-63	-7%
Dry Lane, south of industrial estate	548	514	-34	-7%
Burford Road, east of Deer Park Rd	1168	1438	270	19%
Curbridge Road, south of Thorney Leys	848.5	1926	1077.5	56%
Deer Park Road, north of A4095	904	1011	107	11%
Thorney Leys, east of A 4095	864	906	42	5%
Cogges Hill Road, south of Oxford Hill	541.5	0	-541.5	
New Yatt Road, north of Earley Road	83.5	268	184.5	69%
Woodstock Road	910	1192	282	24%
A40W slip road to A415	202	553	351	63%
Thorney Leys, west of A415	1008.5	1200	191.5	16%
Station Lane, east of A415	1188	2028	840	41%
Deer Park Road, south of Burford Road	641.5	667	25.5	4%

* Dry Lane north of Burford Road was used as a proxy for "Dry Lane south of industrial estate".

Table B2: Model results for Option 2 compared with today

Sensitive routes	**Difference with Option 2**
Corn St (east)	-100%
Corn St (west)	-26%
High S (Butter cross to Witan Way)	-100%
Welch Way (east)	-100%
Welch Way (west)	between -18% and -47%
Church Green (east)	+46%
Church Green (west) at Buttercross	-100%
Holloway Road	between -62% and -74%
Mill St	+91%
High St (Witan Way to Mill Street)	+10%
Gloucester Place	-100%
Puck Lane	-100%
Moorland Avenue (south of Dark Lane)	-60%
Moorland Avenue (north of Dark Lane)	-100%
Dark Lane	-100%
Tower Hill	between +18% and +152%
Other routes	
Burford Road (between Tower Hill and Mill St)	between +50% and +100%
Witan Way	between +9% and +102%
Routes outside Witney	
Crawley area	+3%
Hailey area	0
New Yatt area	+3%
North Leigh area	+2%
Curbridge area	+2%
Ducklington area	-5%

Note: for Routes outside Witney the results from run (2) were used as this run did not include the closure of Curbridge Road.

Table B3: Modelled impacts of Option 2 in 2001 compared with "do nothing"

Sensitive routes	**Difference with Option 2**
Corn St (east)	-100%
Corn St (west)	-60%
Welch Way (east)	-100%
Welch Way (west)	between -10% and -35%
Church Green (east)	+140%
Church Green (west)	0%
Holloway Road	-60%
Mill St	+70%
Gloucester Place	-100%
Puck Lane	-100%
Moorland Avenue (south of Dark Lane)	-10%
Moorland Avenue (north of Dark Lane)	-100%
Dark Lane	-100%
Tower Hill	+125% at northern end, +50% at southern end
High St (Witan Way to Mill St)	-5%
Other routes	
Burford Road (between Tower Hill and Mill St)	between +50% and +70%
Witan Way	a variety of impacts
Routes outside Witney	
Crawley area	+2%
Hailey area	+1%
New Yatt area	+5%
North Leigh area	0
Curbridge area	0
Ducklington area	-1%

Note: for routes outside Witney the results from run (2) were used as this run did not include the closures of Curbridge Road, New Yatt Road and Woodstock Road.

Table B4: Wider impacts of closing Curbridge, New Yatt and Woodstock Roads

Crawley	Increase shown on the west end of Crawley Road as it enters Crawley village. Other links in the area are unaffected.
Hailey	Slight increase only.
Poffley End	Increase making this link approximately as busy as Dry Lane is today.
New Yatt	Increase on New Yatt Lane making this link a little busier than Dry Lane is today.
North Leigh	Increase making links in North Leigh approximately as busy as Hailey Road north of Witney is today.
Freeland	The model shows a significant increase from a very low base. However, traffic would still be less than a third of today's levels.
Curbridge	Decrease or no change on links through Curbridge.

Note: flows quoted on comparator links are actual flows counted in 1994

Table B5: Difference made by adding the southern section of the WEL to Option 2

Route	**Change**
Tower Hill	decrease in traffic of around 50%
Burford Road (between Tower Hill and Mill St)	decrease of around 20%
Mill St	increase of around 15%
Welch Way	increase of around 20%
Holloway Road	increase of around 75%
Witan Way	various changes, mainly a decrease of around 15%

Figure B1 Option 2 closures in 1996

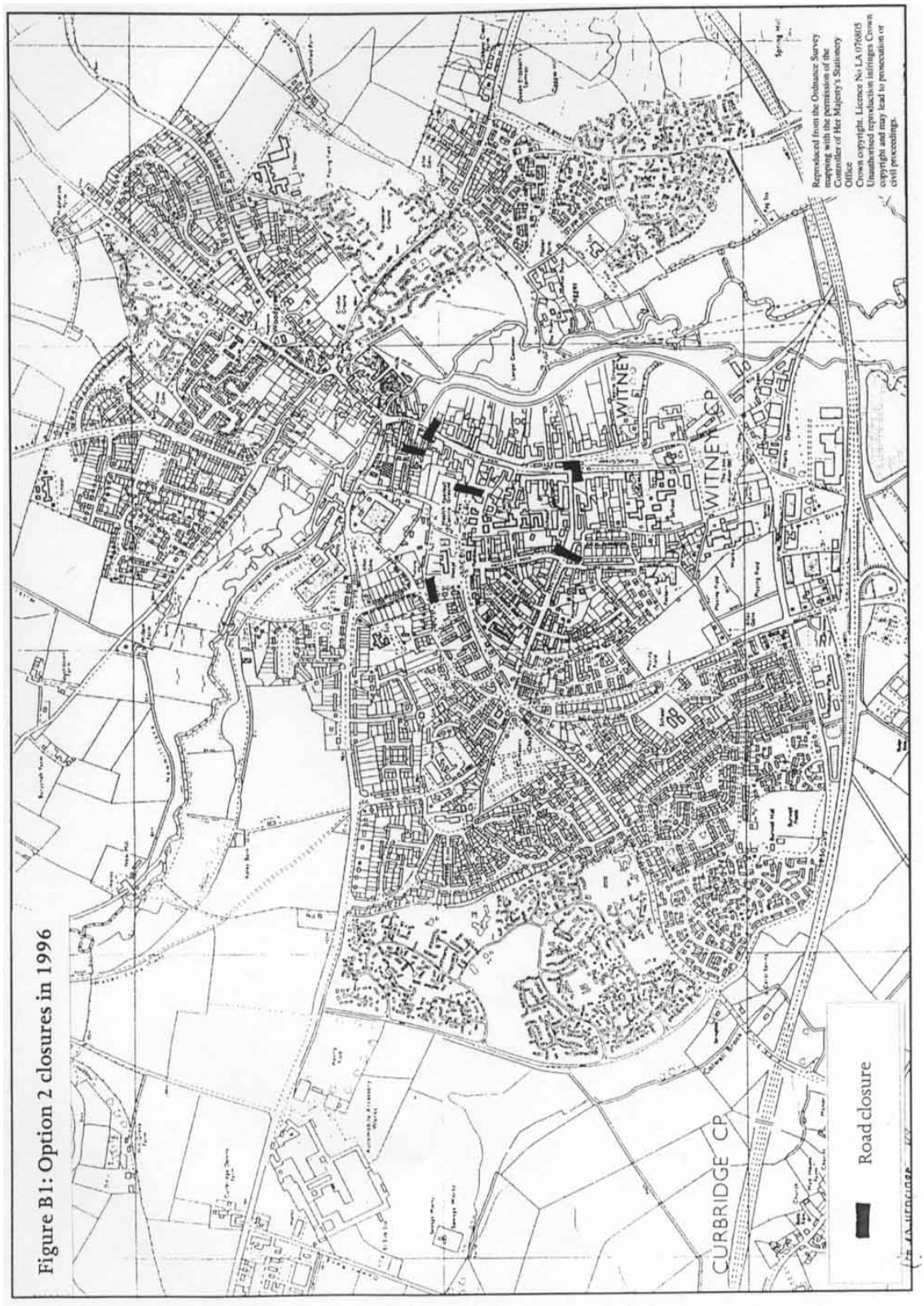


Figure B2: Option 2 Closures in 2011
(with Cogges Link and North East Distributor Road)

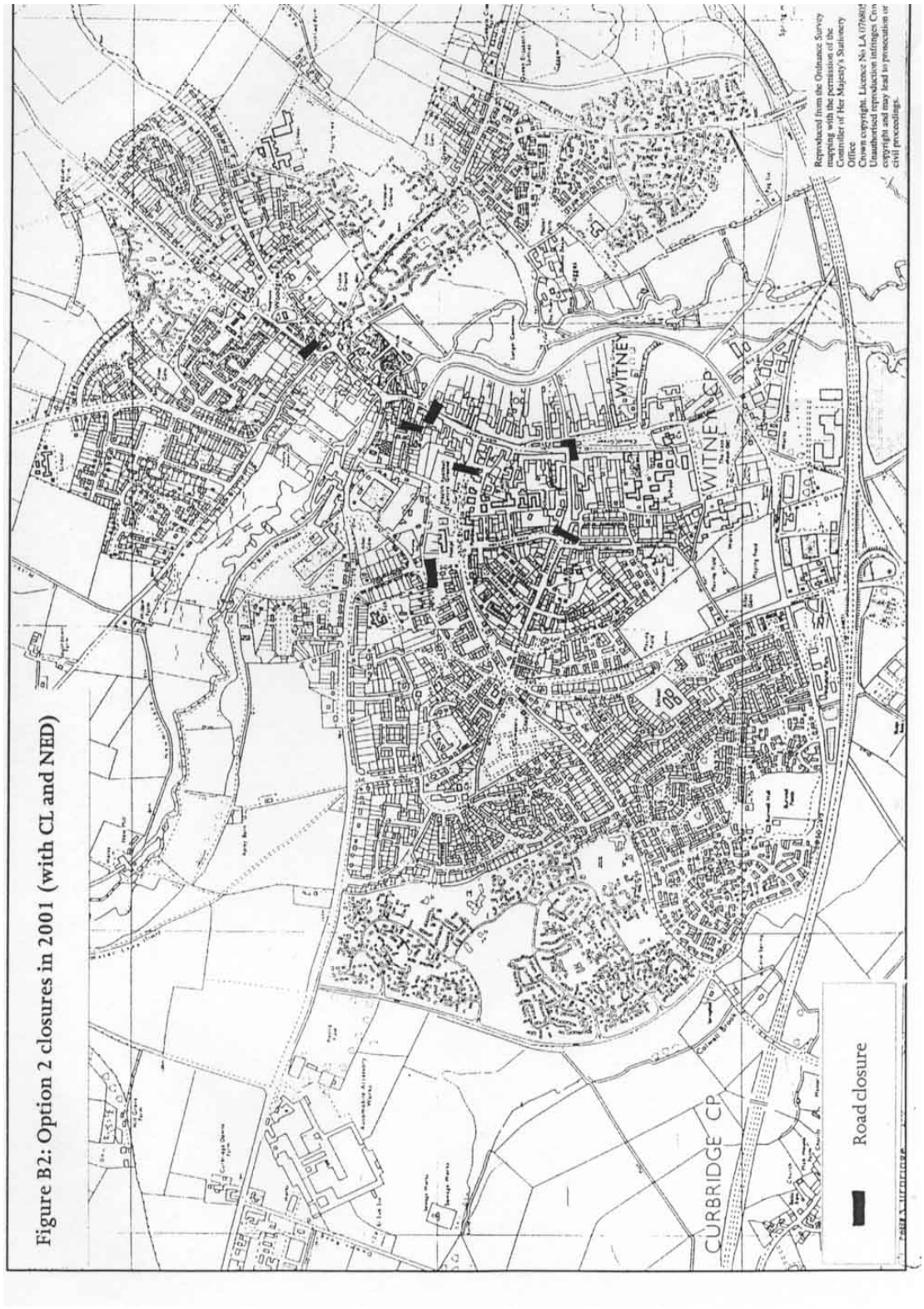


Figure B3: Network for testing the impact of closing Woodstock, New Yatt and Curbridge Roads, with Option 2 in 2001

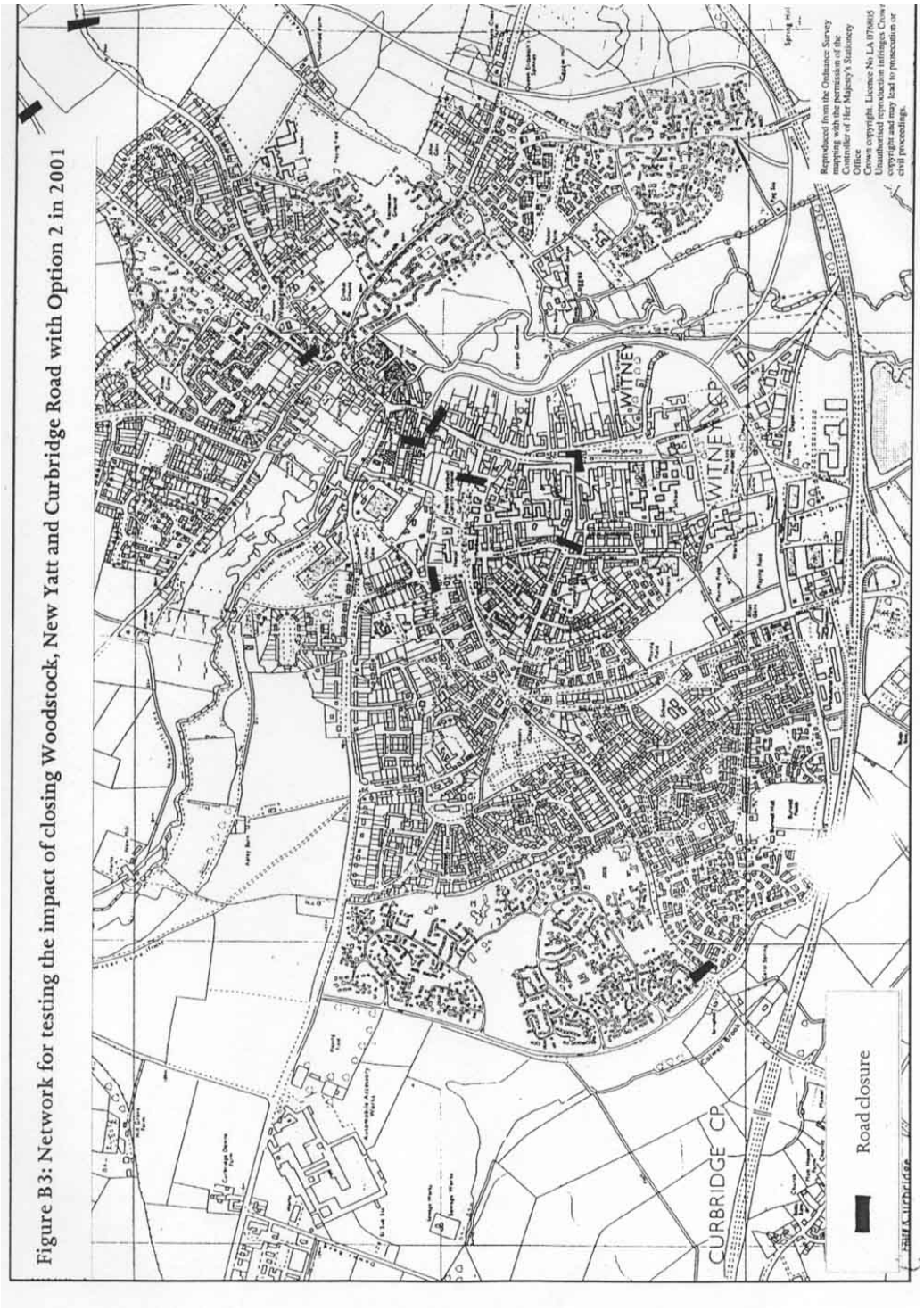
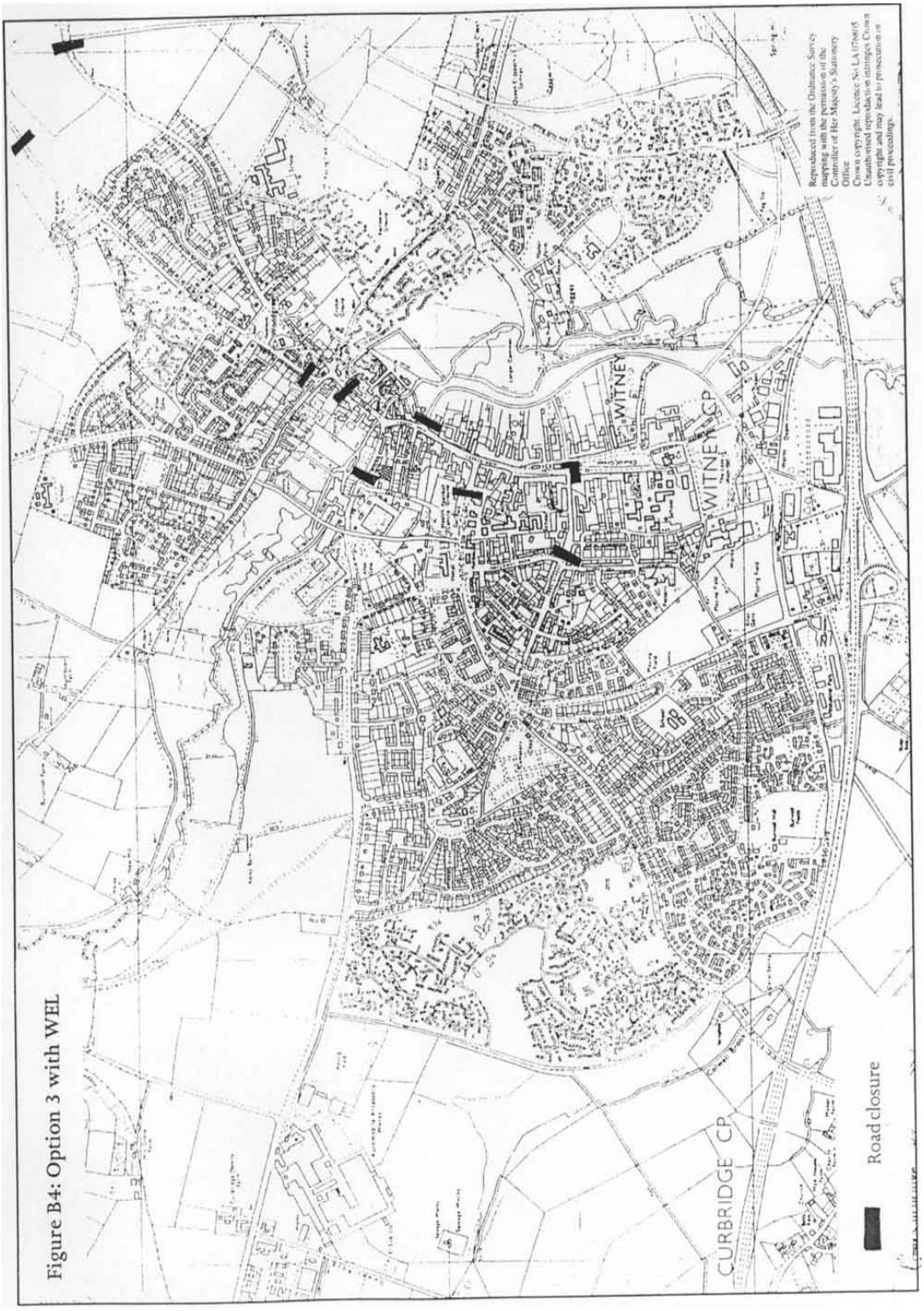


Figure B4: Option 3 with West End Link (WEL)



Appendix C: Town Centre Visitors Survey

This appendix provides additional analysis at the town centre visitors survey. It addresses the following issues:

- Do the results of the survey vary between survey stations?
- If so, how were they aggregated?
- To what extent is the town centre dependent on car borne traffic?

1 *Variation between survey stations*

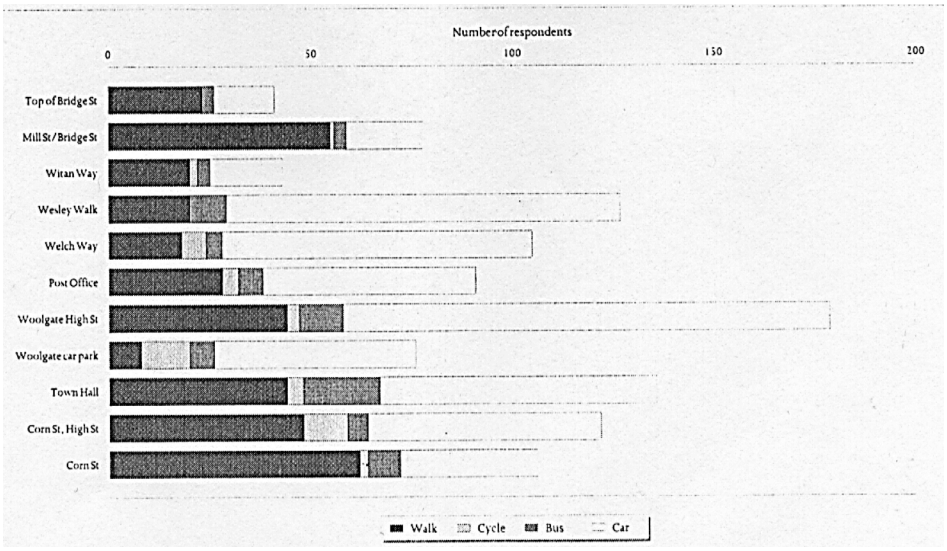
The results from each survey station vary in two ways:

- the numbers of people surveyed; and
- the modal split identified.

1.1 *Variation in the number of people surveyed*

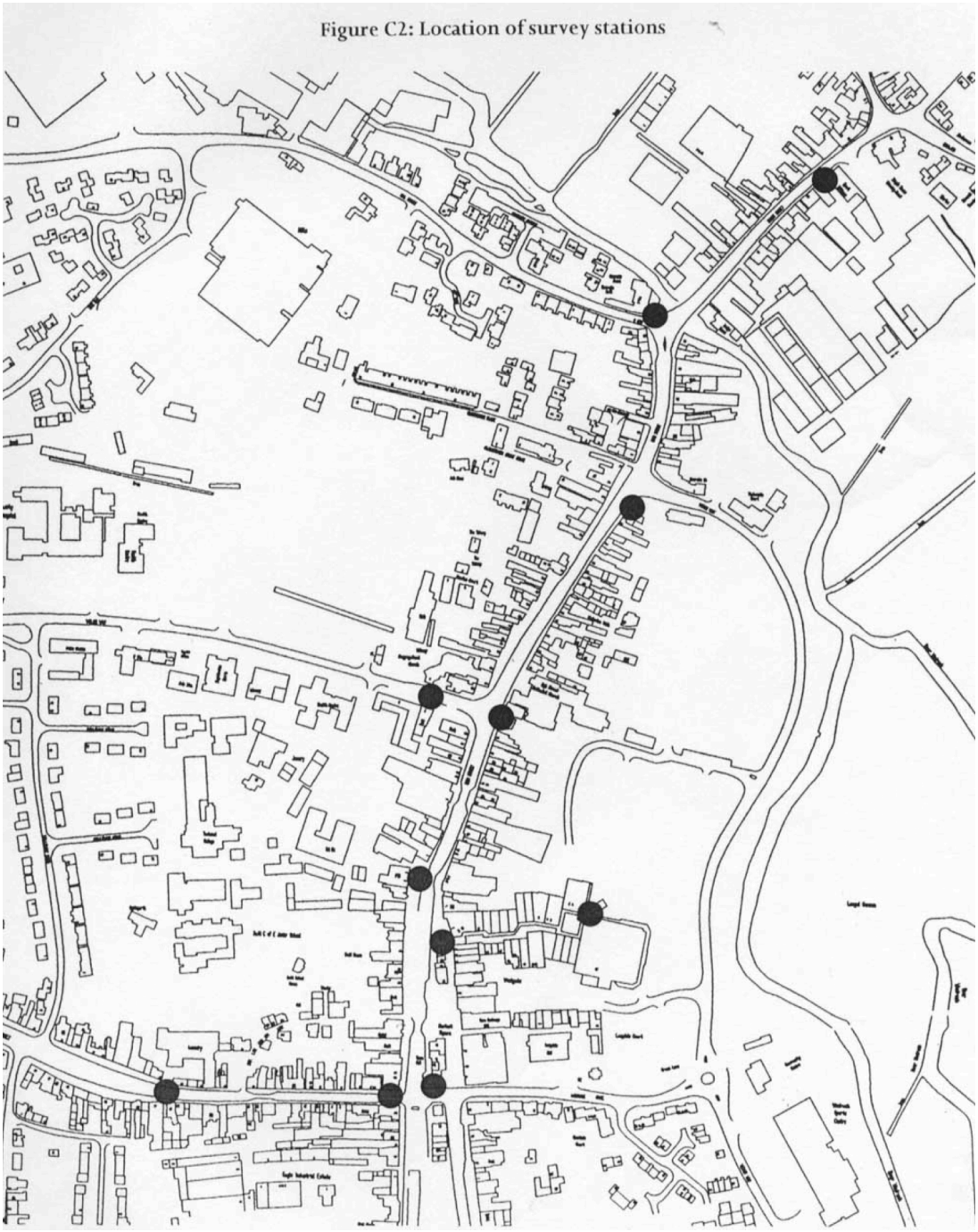
As Figure C1 shows, there was signification variation in the numbers of people surveyed at each survey location. For example, 180 people were interviewed at the survey station in front of the Woolgate centre on the High Street, whereas only 78 were surveyed at the Mill St / Bridge St junction. Figure C2 shows the location of surveyors.

Figure C1: Respondents surveyed at each survey station showing travel mode



The surveyor working at the top of Bridge Street was only there for one day as the response was low, and moved down to Witan Way on the second survey day where the response was similar. The responses for these two survey locations are the result of one days work each, whereas responses for other locations are the result of two days work.

Figure C2: Location of survey stations



There are three possible explanations for this variation:

- there were different numbers of pedestrians passing each survey station;
- people were more likely to stop at some survey stations than others; or
- surveyors worked at different rates.

Ideally, all the variation in the number of interviews carried out would be from the first source - i.e. number of people passing. If this were true, the survey would give us an accurate representation of all the town centre visitors. The worst case scenario is that all the variation comes from the latter two sources which would mean that the survey is less representative of town centre visitors.

We can make an informed judgement about whether our recorded variation reflects real variation in pedestrian numbers from our knowledge of the town centre. Cassani's study suggests that the busiest pedestrian areas of town are the Woolgate shopping centre, and the east side of the High Street as far as Welch Way. The west side of the High St as far as Welch Way is less busy, and the least busy area is the north end of the High Street. (Stage 2 report, para 4.3.4)

These comments tally reasonably with the figures shown in Figure C1. The High Street outside the Woolgate centre produced most questionnaires, with Buttercross and Wesley Walk locations producing the next highest number of responses. Locations on the west side of the High St (post office and Welch Way) come next, while the north end of the High St yielded the lowest number of responses.

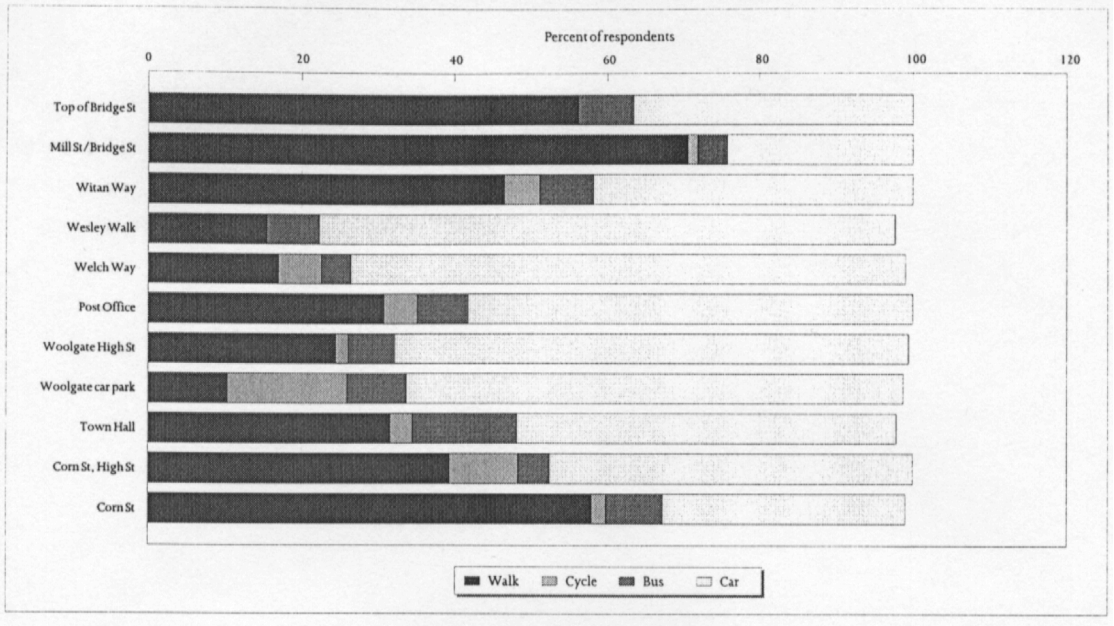
The exception to this generally good fit is the Woolgate car park. This surveyor completed fewer responses than we would expect. This suggests that the surveyor was a slow worker.

1.2 *Variation in results at different survey stations*

Figure C3 shows that there was considerable difference in the modal splits identified at different survey locations. Surveyors located at the south end of the High Street and Welch Way recorded the highest relative numbers of car users, while surveyors at the north end of the High St, Bridge St and Corn St recorded highest relative numbers of walkers. Given the location of the town centre car parks, these results seem reasonable. For example,

we would expect more people approaching the town centre on Welch Way to have driven to town than people approaching from Bridge Street or Mill Street.

Figure C3: Modal split recorded at each survey station



1.3 *Sensitivity of the results*

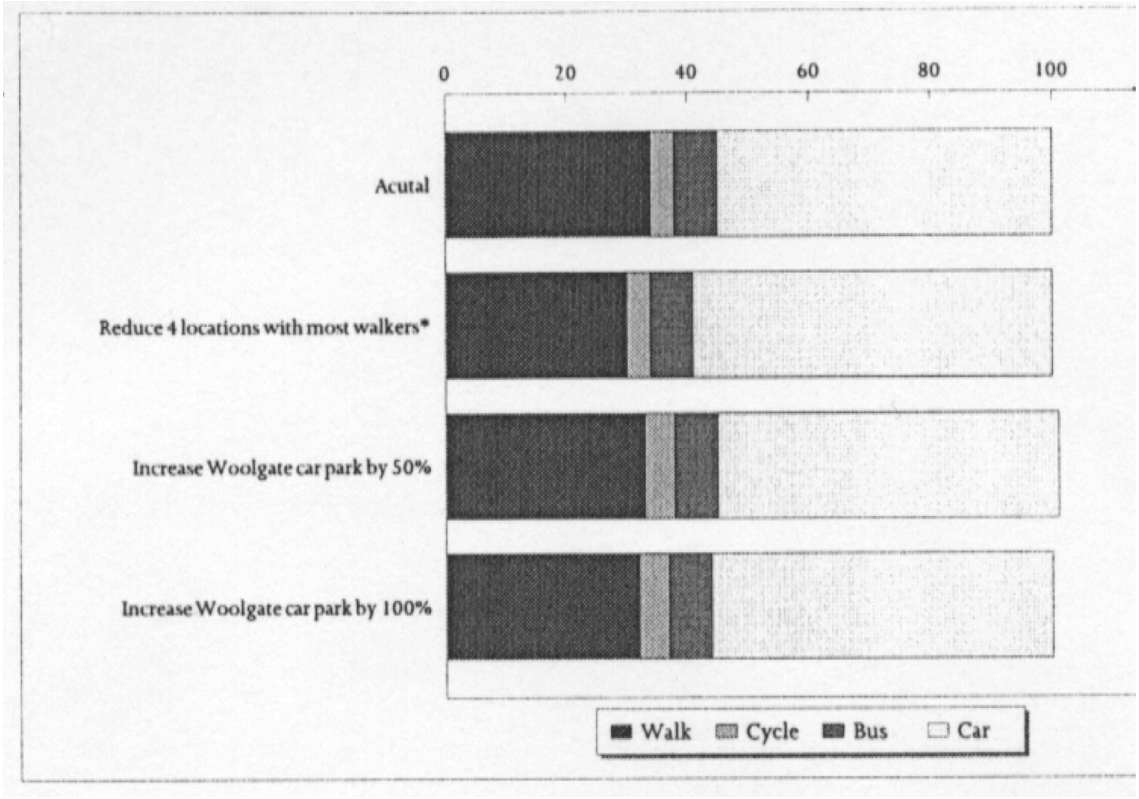
Sensitivity testing allows us to test the robustness of the survey data. This examines how much the overall results would vary if we change the contribution of different survey locations. Figure C4 shows three sensitivity tests. These are:

- halving the number of surveys included from the four survey locations with the most walkers;
- multiplying up the results from the Woolgate car park survey location by 50%; and
- multiplying up the results from the Woolgate car park survey location by 100%.

The first test hypothesises that the survey picked up a disproportionately large number of respondents at the survey locations where we recorded high proportions of walkers. The test hypothesises that the surveyors working at these locations were surveying a higher proportion of total passers-by than in the other locations. This is a reasonable hypothesis to test, as the surveyors in these less busy locations had the chance to approach proportionally more of the passers-by.

The second and third tests hypothesise that the surveyor at the Woolgate car park worked slowly and that the contribution from this survey station needs to be increased to give us a more accurate picture of the overall modal split.

Figure C4: Modal split sensitivity tests



**The four locations were: top of Bridge St; MillSt/Bridge St; Witan Way; and Corn St.*

Figure C4 suggests that the overall modal split does not vary significantly under the different assumptions tested. The actual proportion of car users reported was 55%. Under the first test this figure increases to 59%. Thus even if the survey did over-record at these locations, the impact on the total modal split is only small. The second and third tests have even less impact on the overall modal split. They only increase the proportion of car users by 1% to 56% of the total. Thus the results suggest that the slower surveyor at the Woolgate car park did not have a significant impact on the results of the survey.

Overall, then, the results suggest that the results of the survey do vary between survey stations. On the whole, this variation is consistent with how we would expect the town centre to function. Sensitivity tests show that even if surveyors had worked at different rates or surveyed higher proportions of passers-by, this has little overall impact on the modal split identified by the survey.

2 *Aggregation of results*

The survey data presented in the Stage 2 report were based on figures aggregated from both days of the survey and all survey locations. Every respondent is given equal weight in the analysis of the data. Given the findings of the presented above, this appears to be a reasonable assumption.

3 *Contribution to town centre economic and social activity*

3.1 *Economic activity*

The survey of town centre visitors gives us an indication of the relative current economic contribution made by people arriving by different modes. The survey collected information about frequency of visit as well as expected spend on a given day. The survey also provides indications of how this might change if visitors to the town centre switch mode.

Table C1 shows the proportion of the total recorded spend for our two survey days by mode of arrival, spend per visit and the equivalent monthly spend per head. The results show that car users make the larges contribution to the daily spend, but also that spend per person over time is greatest amongst people who walk. This is explained further below.

Table C1: Relative spend by mode

Mode	% of total spend	Number of respondents	Spend per visit	Spend per head per month
Walk	23	370	£14	£266
Cycle	3	45	£15	£229
Bus	7	77	£22	£181
Car	67	612	£25	£239

Table C1 suggests that, at the moment, car users contribute around two thirds of the town's total spend per day. Walkers contribute about a quarter, while bus and bike users contribute 10% between them. These figures reflect both the number of people arriving by each mode, and the spend per visit, with people using motorised transport tending to spend more per visit than those cycling or walking.

Consideration must also be given to the frequency with which people visit the town centre, and the total contribution they make over time, rather than per visit. The survey found that people arriving by car visit Witney town centre less

frequently that people using other modes. Consequently when the frequency of visits is taken into account, it is apparent that the total spend per person over time is broadly similar. Walkers spend an average of £266 per month in the town centre, while car users spend £239. These figures are only indicative as they involve a number of assumptions and are based on different size samples. In particular they assume that all visits by each person are by the same mode as on the survey day.

The next, and most important step, is to consider how this might change in the future and when the WITLUS measures are implemented. The growth of the town, and its increased role as the region's market town should mean that there will be considerable scope for expanding and developing the town centre's retail and other facilities. The problems created by the current level of motorised traffic in the town suggest that continued growth in car use will increasingly inhibit access to the town centre and be increasingly detrimental to its environment. The WITLUS therefore concentrates on encouraging people to travel by other modes so that the town can grow, the centre remains accessible to all (which will in turn ensure that it attracts new trade), and there is improvement in its environment (which in turn attracts more users and longer stays).

The survey data help us to answer the following questions:

- What will happen if people change mode?
- Which mode should be encouraged to ensure that Witney secures most economic benefit from growth in town centre visitors?

If spend per day is used as the basis for analysis, as set out in Table C1, it appears that a switch in mode from car to cycle or foot would lead to a reduction in spend in the town centre. However, if we consider individuals, patterns of behaviour suggest that a switch to these two modes from the car would, if anything, increase the amount spent in the town centre. If a person who drives to town switches to walking and adjusts their behaviour accordingly, they will spend an average of around £27 more in Witney town centre per month, according to our survey. This assumes that when a person switches to a non-car mode, they adopt the frequency and spend patterns of existing non-car users.

Finally, let us consider if these car users could change to another mode. The survey allows to consider this question from the information collected about the origin of the journey to the town centre. Of the 612 recorded car journeys to the town centre, 31% were from within the town, 31% were from within 5 km of Witney and 5% were from Oxford or Eynsham. Applying our findings from our survey of Witney residents to town centre visitors suggests that around one fifth or 115 of these trips are readily convertible to other modes. Thus our surveys suggest that in the short term around one fifth of car trips to the town centre could be switched to other modes, while in the medium term there is scope for up to two thirds of these trips to be made by other modes.

In summary, the town centre survey suggests that car users currently spend most per day in Witney, contributing around two thirds of the town's daily take. When frequency of visit is taken into account, however, people who travel on foot spend most in the town centre. The survey indicates that measures which encourage mode shift, and measures which encourage new town centre visitors to arrive by foot, cycle or bus will not reduce total spend in the town centre, and could increase it.

3.2 *Social activity*

The town centre visitors survey gives us a number of ways of considering the contribution to social activity in the town made by people arriving by different modes.

Table C2 gives a breakdown of the various main reasons reported by respondents for visiting the town centre. The table suggests that there is no significant difference in the reasons why people visit the town centre by mode of travel.

Table C2: Purpose of trip by mode

Main purpose	% of walkers	% or car users
Work	11	9
Shopping	66	63
Social/recreation	7	10
Personal business	11	13
Other	5	5

Equally, if we consider the proportions of people who reported making multi-purpose trips, the figures are remarkably similar with 44% and 45% of walkers and car users making multi-purpose trips respectively.

In terms of volumes of people in the town centre, the survey suggests that 55% come by car and a third come by foot. However, the survey also indicates that walkers and cyclists visit the town centre most often. Thus, if we think about an individual's contribution to town centre vitality, walkers and cyclists contribute more than car users.

This leads us crucially on to the question "What would happen to town centre vitality if there was a switch in travel mode?" Provided people adopt current behaviour patterns in terms of frequency of visit, a switch in mode from car to cycling or walking would increase town centre vitality, and a switch to bus would not affect it. Finally, the survey suggests that the town will benefit most from

growth in the number of town centre visitors if these visitors arrive by bike and foot.

In summary, the survey suggests that a shift in mode from car to cycle or walk will improve town centre vitality, while a shift to bus would keep it at today's levels. Most improvements to town centre vitality will be gained by encouraging new visitors to arrive by foot or cycle. In terms of contribution of each mode to town centre vitality, car users currently contribute most per day (as there are more of them) and walkers and cyclists contribute most per individual (as they visit most often). There is very little difference between car users and walkers in terms of purpose of trips or the proportions of multi-purpose trips.

Appendix D: Parking Management Strategy

1 *Purpose*

Parking management is an important component of the preferred Witney strategy in order to support the following objectives:

- improving the environment of the town centre and nearby areas;
- creating more space for pedestrian activity in the town centre;
- achieving the desired balance between access to the town centre by car and by other modes;
- ensuring that the "drive to, not through" policy operates efficiently (i.e. that demand at each car park does not exceed supply); and
- giving priority to residents, those without reasonable alternatives to the car, orange badge holders, and people whose presence is most valuable to the town centre.

Demand management through control and pricing of parking is likely to be a key element in securing the necessary mode switch away from the car necessary to help meet these objectives. The recommended parking management strategy is concerned primarily with managing the demand for trips to the town centre. (Car commuter trips to the main existing employment areas are also important targets for demand management, but other measures are more important in the short term, due to lack of control over private parking spaces.)

2 *Principles*

There is considerable scope for variation in the details of the parking strategy, and it is therefore necessary to set out the principles which should guide decisions on individual matters. These principles are related to the overall objectives of the study, and in particular the vitality and economic viability of the town centre.

Parking management should:

i) Reduce overall parking demand in the town centre in line with mode switch and environmental improvement objectives (the aim is to attract more visitors, and a higher proportion travelling by non-car modes).

ii) Remove or reduce parking in sensitive on-street locations in order to provide more space for those on foot, and to reduce visual intrusion in conservation areas.

iii) Manage demand so that peak demand is in balance with supply at each parking location. The aim should be peak demand at no more than 90% of supply, in order to ensure efficient turnover and to avoid searching traffic and queuing.

iv) Limit parking demand by the most marginal users. These users are defined as those with good alternative travel modes available, and those who contribute least to the economic and social vitality of the town.

v) Favour, if possible, non-Witney residents who have no reasonable alternative to the car.

vi) Encourage shoppers and other visitors to spend more time in the town centre (at present the great majority stay for less than 2 hours). The principle should be to encourage stays long enough to allow (for example) shopping, a stroll, and lunch. Stays of up to 4-5 hours are seen as consistent with this principle.

vii) Limit demand for parking associated with work and education purposes. While it is not practicable to limit demand by journey purpose, measures which discourage long stay or all-day parking (for example, stays more than 5-6 hours) will be consistent with this principle.

viii) Provide for certain users who may otherwise suffer disbenefits from parking management. These users include:-
   - Residents of the town centre and neighbouring residential areas;
   - Orange Badge holders (provision to maintain proximity to shops etc.);
   - others such as hotel guests and market traders can be considered.

ix) Be as clear and as simple as possible for drivers to use.

x) Include both legal and physical restrictions on parking on-street to meet safety objectives, and to avoid obstruction of pedestrians, cyclists and users of wheelchairs and other mobility aids.

Parking charges and controls should be reviewed following periodic monitoring of parking behaviour to ensure that the principles above are being maintained.

It should be stressed that the intention is to attract more visitors to the town centre by providing better access by non-car modes, and a higher quality environment within the town centre. The parking strategy will contribute to this by reducing parking in locations which undermine the achievement of this quality, and managing the remaining supply to ensure efficient operation and to favour certain user groups.

3 *The parking management strategy in outline*

The recommended strategy is offered as a means of achieving efficient and convenient parking at a reduced level of demand and consists of a reduced on-street parking supply, on-street parking controls, and parking charges in public off-street car parks. On-street controls include residents-only parking near the car-reduced town centre, to prevent parking by those displaced from the town centre. The parking management recommendation has the following main elements:

i) Charges to be applied in the town centre public car parks (Welch Way, Woolgate and Langdale Hall).
ii) The existing 2 hour time-limited areas within these car parks to be retained (but with charges added).
iii) Public on-street parking to be removed from High Street, Corn Street east of Holloway Road, and from Church Green.
iv) Residents-only parking "buffer zone" to be introduced near to town centre streets. Residents should initially be able to park free of charge.
v) Special bays and exemptions from charges for Orange Badge holders within the public car park "2 hour" sections, and on-street in Church Green and Corn Street.
vi) Signing to ensure efficient operation of "drive to, not through" policy.

4 *Impact of parking management*

The management measures should anticipate the secondary effects of both reduced on-street provision, and charges for on-street provision. Drivers are likely to respond in a variety of ways, and the main possibilities are as follows (responses consistent with WITLUS objectives are in bold):

Continue to visit by car:

- ***Park as before but pay charges***
- ***Divert from on-street to off-street car parks (and pay charges)***
- ***Stay on-street but keep within time limit, or use access privileges***
- *Divert to non-charge car parking, for example- Sainsbury's- Windrush Sports Centre- private off-street car parks (where available)- outside parking control area*
- *Park illegally (enforcement issue)*
- *Seek illegal residents' or orange badge privileges (enforcement issue)*

Park less:

- ***Park once only (combine trip purposes and walk between them)***
- ***Drop off and pick up***
- ***Visit less often (avoid unnecessary errands, combine trips, longer visits)***
- ***Avoid charge days and times (not generally possible for shoppers)***
- *Drive elsewhere*

Change mode:

- ***Change mode of travel to town centre (ride share, bus, cycle or walk)***
- ***Change mode and use other destinations, for example: - shop (etc.) in home locality- bus to Oxford***

As can be seen from the above, some possible responses are not regarded as consistent with the WITLUS objectives. Diversion to car parks which currently do not have charges can be overcome if the management of those car parks are brought into line with parking management in the rest of the town centre. Illegal activities are an enforcement issue, and it will be important to devote sufficient resources to the enforcement effort to minimise the problem. The remaining concern is those who will choose to avoid parking controls by driving elsewhere. This is unlikely, however, to present a major problem since almost all alternative destinations already have parking controls and charges of their own. Moreover, those who choose to drive elsewhere may be counterbalanced by those who currently use other centres, but who will be attracted to Witney by the town centre improvements.

It is intended that the driver responses in combination will provide the 16.5% reduction in peak demand required for efficient operation (see Table D2), and the parking charges will need to be set to meet this minimum target. It should be noted that this reduction in peak demand is equivalent to only 4.5% reduction in current town centre peak demand, taking account of the 1,135 private spaces available.

It should be noted that peak parking demand does not coincide with peak traffic times. Peak traffic is likely to be reduced as a result of parking charges, but more significantly by measures which encourage mode shift for the journey to work, such as “green commuter” plans, and bus priority on the Oxford routes.

5 *Elements of the parking strategy*

In the following paragraphs we set out in more detail the different elements of the town centre parking management strategy under the following headings:

- Parking charges structure;
- Charge Levels;
- Revenue and expenditure;
- Operational system;
- Private off-street car parks;
- Reducing and managing on-street parking;
- Residents' parking "buffer zone";
- Signing.

5.1 Parking charges structure

The appropriate parking charge structure cannot be accurately determined in advance. It must therefore be capable of revision and adjustment in the light of operational experience. While it is desirable to have a uniform structure between the different car parks, variation may be desirable depending on demand patterns. This means that the charge system established initially must have sufficient built in flexibility (e.g. pay machines must be capable of handling various charge regimes).

Figure D1 shows five possible charge structures, and these are discussed in turn.

Figure D1 Alternative Parking Charge Structures

"A" A structure which provides a free parking period (say up to 2 hours) has been suggested during the local consultation process. A sample based on this is shown in Table D1. This structure would, however, be inconsistent with the principles set out in (2) above, and would not offer full revenue potential.

"B" This represents a simple structure with only two charge levels: up to 5 hours stay and more than 5 hours. A flat charge up to 5 hours is consistent with the principle of encouraging longer stays by shoppers and other visitors, thus adding to vitality and economic success of the town centre. Stays of up to 5 hours allow a combination of purposes. The step up to a higher charge could occur at 4 or 6 hours without undermining this principle. The higher charge for longer stays is aimed at deterring all-day parking, mostly associated with commuting for work and education purposes. The simplicity of this structure could be helpful in Witney, where charges are being introduced for the first time.

"C" This structure introduces a further step up at 2 hours (but could be 3 hours). This may not be consistent with the objective of encouraging longer stays, but is consistent with the need to manage overall demand. The step could become necessary if longer stays were encouraged to the point

where demand for spaces exceeded the supply, and may therefore be regarded as a possible requirement following monitoring surveys.

“D” This structure is similar to “B”, but has an additional step for stays beyond 7 hours. This may be necessary if all-day parking is insufficiently deterred. An alternative would be to raise the charge for all stays beyond 5 hours.

“E” This structure has charges stepped for each hour up to (say) 5 hours, and is typical of structures applied in small towns (for example, E2 in Table D1 is the 1996 charge regime at Bicester town centre). Whilst this degree of stepping is economically efficient (relating charges to use of the parking resource), it is not entirely consistent with the important objective for Witney of encouraging longer stays by shoppers and other visitors. In addition, charges stepped in this way require users to make an accurate prediction of their length of stay at the time of parking, or risk paying more than they need to. This may reduce the likelihood of people spontaneously deciding to stay longer to enjoy the town, or to visit more shops. (This problem can be avoided by a “pay at exit barrier” system but, as discussed above, this is less satisfactory for other reasons.)

On balance, there are strong reasons in favour of “B” as the initial charge structure. After a trial period (a few months), this should be reviewed, at which time the new patterns of demand can be assessed to see whether further steps in the charge structure should be introduced. If stays of 2-5 hours become too numerous, then structure “C” should be considered. Similarly, if all-day parking is too dominant, then the structure should be modified to “D”.

In all scenarios, spaces nearest to the Waitrose and Somerfield supermarkets should be reserved for short stay (up to 2 hours) parking as at present, but with charges applicable. An alternative to ensure turnover would be for these spaces to be charged at a higher rate. We understand that the District Council legally can introduce charges at parts of Woolgate car park without further legal negotiation. The central part will require negotiation with the site operators, but this is not expected to pose difficulties, since a remaining “island” of free spaces would quickly become overloaded. It is desirable for the operation of Sainsbury's car park to be brought into line with the other town centre car park management and charging structures.

A proportion of spaces nearest to the pedestrianised areas should be reserved for free use by orange badge holders (who are less able to use parking machines) and wider bays provided.

If it is decided to provide "pay-and-display" parking bays in parts of Corn Street, the charge structure should be similar to that in the off-street car parks, though it may be desirable to impose a maximum length of stay to prevent use for commuter parking.

5.2 *Charge levels*

In the absence of any previous experience of parking charges in Witney, it is not possible to determine in advance the exact scale of charges best suited to achieving the overall objectives. Whatever charges are established initially, therefore, the operation of the car parks should be reviewed after, say, 6-8 weeks, and modifications considered in the light of changed demand patterns.

The initial charges should be set at a level which:

- encourages respect for the system (not too low);
- provides sufficient revenue to cover costs (not too low); and
- Does not cause undue hostility or deter an unreasonably high proportion of users (not too high)

Assuming an initial two-level structure, an appropriate charge is suggested at 40-50 pence for up to 5 hours, and 100-150 pence for over 5 hours. If a lower short-stay charge is contemplated, then structure "C" or "D" may be better in order to achieve a better revenue yield.

5.3 *Revenue and expenditure*

Revenue is likely to be a further important consideration in determining the appropriate charge levels.

Some revenue projections are shown for different charge levels and structures in Table D1. It must be stressed that both structure and level of charge should be reviewed within a short time of implementation, and consideration given to modifications either at all or at individual car parks.

Table D1 is included here to give an indication of possible parking revenues, and shows nine sample charge levels related to the five structure types shown in Figure D1. The revenue range for each sample (rounded to the nearest £1,000) reflects different levels of impact on demand at the car parks, namely zero impact to 20% reduction in demand.

Table D1 Revenue projections from sample parking charges										
Sample Charge rates		A1	B1	B2	C1	C2	C3	D1	E1	E2 (Bicester)
STAY (Hours)	% of parkers *	Pence	Pence	Pence	Pence	Pence	Pence	Pence	Pence	Pence
1	59	0	30	50	30	50	60	50	30	30
1-2	25	0	30	50	30	50	60	50	40	60
2-3	4	50	30	50	50	80	100	80	60	80
3-4	4	50	30	50	50	80	100	80	80	100
4-5	2	50	30	50	50	80	100	80	100	120
5-6	1	100	60	100	80	120	150	120	120	150
6-7	1	100	60	100	80	120	150	120	120	150
7-8	2	100	60	100	80	120	150	150	120	150
8+	2	100	60	100	80	120	150	150	120	150
	100									
Revenue range:		£	£	£	£	£	£	£	£	£
(-20% demand to zero impact)										
£000 per year (305 days):		146-183	466-582	776-970	489-611	837-1047	1016-1270	855-1069	622-778	751-939
Range mid-point (-10% demand)		165	524	873	550	942	1143	962	700	845
* Present demand estimated at weekday average of 6,000 parkers per day										

Table D1 Revenue projections from sample parking charges

It should be noted that since the majority of users at present stay for less than 2 hours (67% Friday and 61% Saturday), parking revenues are determined mainly by the charge applied for this time period.

It is suggested that initially the level is set as shown in Sample B2 in the table, with modification if necessary in the light of experience of changed demand patterns to C2 or D1. The annual revenue range for sample B2 is £776-970,000, with a mid range estimate of £873,000.

If the first two hours were made available free of charge (as in Sample A1), projected revenue would be around £165,000 per annum rather than £873,000. This would rule out parking revenue as a significant contributor to town centre enhancement costs, and would be unlikely to fund the Mobility Centre to the extent required.

To this must be added revenue from parking infringement penalties. The penalty should be set at around 10 times the daily charge. This would mean a penalty charge of £5 with a 50p parking charge. An enforced infringement rate of 3% would produce an annual income of around £247,000.

The estimate of total annual income (charge and penalty revenues) for sample B2 is therefore £1,120,000.

The costs to be met from this income include the following:

- Maintenance costs of all public car parks;
- Cost of equipping and maintaining the car park charge system
- Salaries and on-costs of enforcement and supervision personnel (both on-street and off-street parking enforcement within the controlled parking zone); and
- Parking administration costs of the local authority

These in total are unlikely to exceed £100,000 per year.

There will also be costs and revenues associated with on-street parking controls. it is assumed here that revenues (penalties and limited pay and display) will cover costs, and no surplus from on-street controls will be available.

A surplus on the parking account of approaching £1 million per year is therefore indicated by the estimates given above.

It is recommended that a part of this surplus is earmarked to fund the recommended Witney Mobility Centre, to the extent of, say, £100,000 to cover two full time staff, programme budget and office rent and overheads.

The remaining surpluses should be considered as a source of funding for town centre environmental enhancements.

It should be noted that that portion of parking revenue generated by on-street parking management (not included in the above figures), can only be spent on transport related matters (Section 55 of the Road Traffic Regulation Act, 1984).

5.4 *Operational system*

The system recommended is pay-and-display. The main advantages are:

- the system is familiar in Oxfordshire;
- staff patrol the car park at regular intervals, thereby helping security; and
- there are no delays at entry/exit barriers.

There are recognised disadvantages, however, notably the need for users to visit a pay machine and return to their car before leaving, and the inconvenience of finding the appropriate coinage for the machine.

Elements of a successful pay-and-display therefore include:

- courteous, well-trained staff;
- good equipment, reliable in operation, vandal-proof, and accepting a wide range of coins and notes;
- sufficient pay machines to minimise walking within the car park; and
- flexibility to provide two-part tickets if required for “loyalty” or “cash-back” schemes.

5.5 *Private off-street car parks*

Charges and controls in public parking areas will inevitably tempt some car drivers to try to avoid these by parking instead in private car parks. Private off-street car parking in the town centre can, of course, be regulated by the owners, and this may become necessary. Parking related to offices can be reserved for employees or visitors. Greater impact may be felt by the owners of private car parks which attract the general public. Both the Sainsbury’s and the Windrush Sports Centre car parks may attract drivers seeking to avoid parking charges and restrictions elsewhere, and the management of these car parks should ideally be bought into line with the other town centre car parks.

5.6 *Reducing and managing on-street parking*

Removing on-street parking in the town centre streets has a number of benefits including:

- reducing "search traffic";
- increasing the relative attractiveness of bus and cycle for visits to the town centre (both modes will have more convenient access);
- more space will be available for pedestrian-related activities; and
- special provision for orange badge holders becomes easier to provide and enforce.

Such removal does, however, make it necessary to manage demand in the off-street car parks, and also in streets nearby.

Table D2: Implications of reduced on-street parking in town centre

	Before	After	Change
Public parking			
CAPACITY (supply)	1,293	1,183	-8.5%
PEAK DEMAND	1,280	1,065*	-16.5

** Target peak demand, 90% of capacity*

5.7 *Residents' parking "buffer zone"*

To prevent diversion of parking to streets nearby, and to provide for residents' vehicles, on-street spaces should be designated for residents use only. This "buffer zone" should not include parking for the general public, since this would attract "searching" traffic. The western half of Corn Street, however, is a location where an exception to this principle could be made, and pay-and-display be provided.

The residents-only controls should apply only during the daytime. Other categories can be permitted, for example cars belonging to hotel visitors on Church Green, and orange badge holders. Special bays should be provided for orange badge holders close to the pedestrianised areas, especially Church Green and Corn Street to maintain short distance standards to the market and southern part of the pedestrianised area.

Visitor parking can be provided for daytime use in designated bays with a maximum stay of (say) 2 hours, provided that these are located in the residential areas well away from the pedestrianised core of the town centre.

5.8 *Signing*

It is important that visitors to the town by car can drive straight to a car park near their destination. Parking information signs at the main entrance points to the town and at the “fiveways” roundabout are recommended.

Appendix E: New and Upgraded Pedestrian and Cycle Paths

1 *Introduction*

1.1 Cyclists should not use footways and footpaths, and this should be discouraged by making safe and comfortable provision on the carriageway, or on segregated paths. It is recommended that all dual-use paths should make separate provision for pedestrians and cyclists. Users of “pedestrian vehicles” should be able to use the cycle portion of such paths.

2 *Dual-use path specification*

2.1 Dual-use paths, where cyclists and pedestrians are provided for side-by-side, should be built to the following minimum standard:

- Cycle path: 2.0 metres (2.5 metres better; 1.5 metres minimum in constrained locations) for two-way cycle traffic. Over short stretches where this cannot be provided, a “give way" to pedestrians sign and markings should be used.
- Footpath: 3.0 metres for new and upgraded paths in the town, and 2.0 metres elsewhere (1.6 minimum in constrained locations).

2.2 These widths are exclusive of items that could cause obstruction such as lighting columns, signposts, litter bins and seats. The minimum standards should be avoided as far as possible, and especially where pedestrian, cycle and vehicle traffic streams are immediately adjacent to one another.

2.3 Key points on the path network should be signed to indicate

- the town centre
- the nearest village
- other users’ objectives (e.g. industrial estate, leisure centre)

2.4 The paths should conform to the basic requirements of the “Five Cs” (see footway standards).

3 *Footway design standards*

3.1 Wherever the opportunity arises, as well as in the design of specific pedestrian schemes, the network of footways and footpaths should conform the requirements of the “Five Cs” (Tim Pharoah for London Planning Advisory Committee, with Metropolitan Transport Research Unit, 1996, “Putting London Back on its Feet”). These are briefly as follows:

- **Connected:** the network should be comprehensive, with no long detours or dead-ends. This is a matter of footway and street layout.
- **Convenient**: direct paths and routes without detours or deviations from desire lines, and without restrictions. Crossing of carriageways provided as of right. This is a matter of highway and footway design, and of traffic management design.
- **Comfortable**: smooth surfaces, more than adequate widths, absence of obstructions, no steep gradients or steps, good micro-climate, good lighting, separation from vehicle traffic (including cycles), a calm traffic environment providing feelings of security and safety.
- **Convivial**: diversity of streetscape, landscape, buildings and activities. Landscaping and furnishing, frequent passers-by, space for rest and relaxation, and enjoyment, interesting adjacent ground-floor activities, views in and out of properties and buildings.
- **Conspicuous**: legibility of routes, through design and through signing of streets, destinations, public transport stops, and non-residential building occupants.

3.2 Footways should provide a minimum unobstructed width throughout of 1.5 metres, and should be at a continuous level, gently graded where necessary to achieve a change of level. Such grading should not be steeper than 1 in 20. Paving should be smooth with good slip resistance. “Braille” paving of standard design should be avoided, and approval should be sought for paving with fine ribbing to assist blind and partially-sighted people. Further consultation with representatives of those with a physical disability should be sought on detailed design.

4 *Illustrations*

4.1 A number of illustrations are included showing general and specific designs for pedestrians, cyclists and buses. These show:

- carriageway designs for safer cycling (Figure E1);
- transition from cycle lanes to side strips (Figure E2);
- redesign of "fiveways" roundabout (Figure E3);
- carriageway designs for Curbridge Road (Figure E4); and
- bus priority bus stops with foot and cycle crossings for Oxford Hill (Figure E5).

Note on design of carriageways with side strips

4.2 This note accompanies the illustrations showing carriageway designs for safer cycling. The following points should be noted:

- the side strips should not be designated as cycle lanes unless they are in addition to a minimum 6 metre carriageway for other vehicles;
- the strips should be surfaced in a different colour from the main carriageway (red to be used only for designated cycle lanes) but at the same level, and smoothness. The two areas can be separated with a broken white line;
- cars can pass on the central carriageway strip (4.0 metres plus). Larger vehicles must use the side strip when passing other vehicles, and thus are limited to the speed of cyclists when they are present. Separate cycle lanes should be provided in uphill sections where possible;
- parking should be confined to separate bays off the carriageway where possible (bays should have a width of 2.0 metres, and 2.5 metres where used for loading).

Figure E1: Carriageway designs for safer cycling

(Prototypical profiles according to available width)

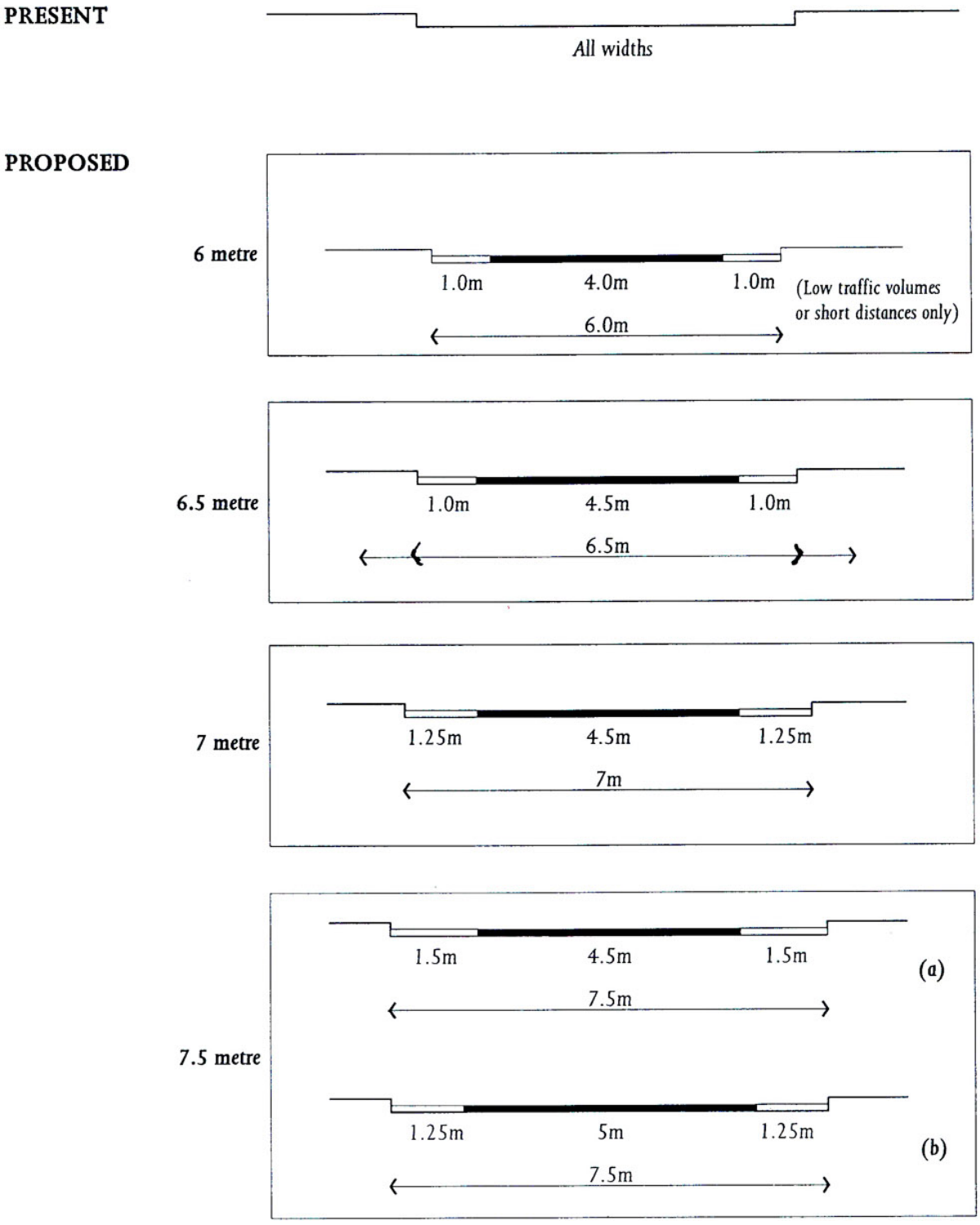


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Figure E2: Transition from side strips to cycle lanes at "Fiveways" roundabout

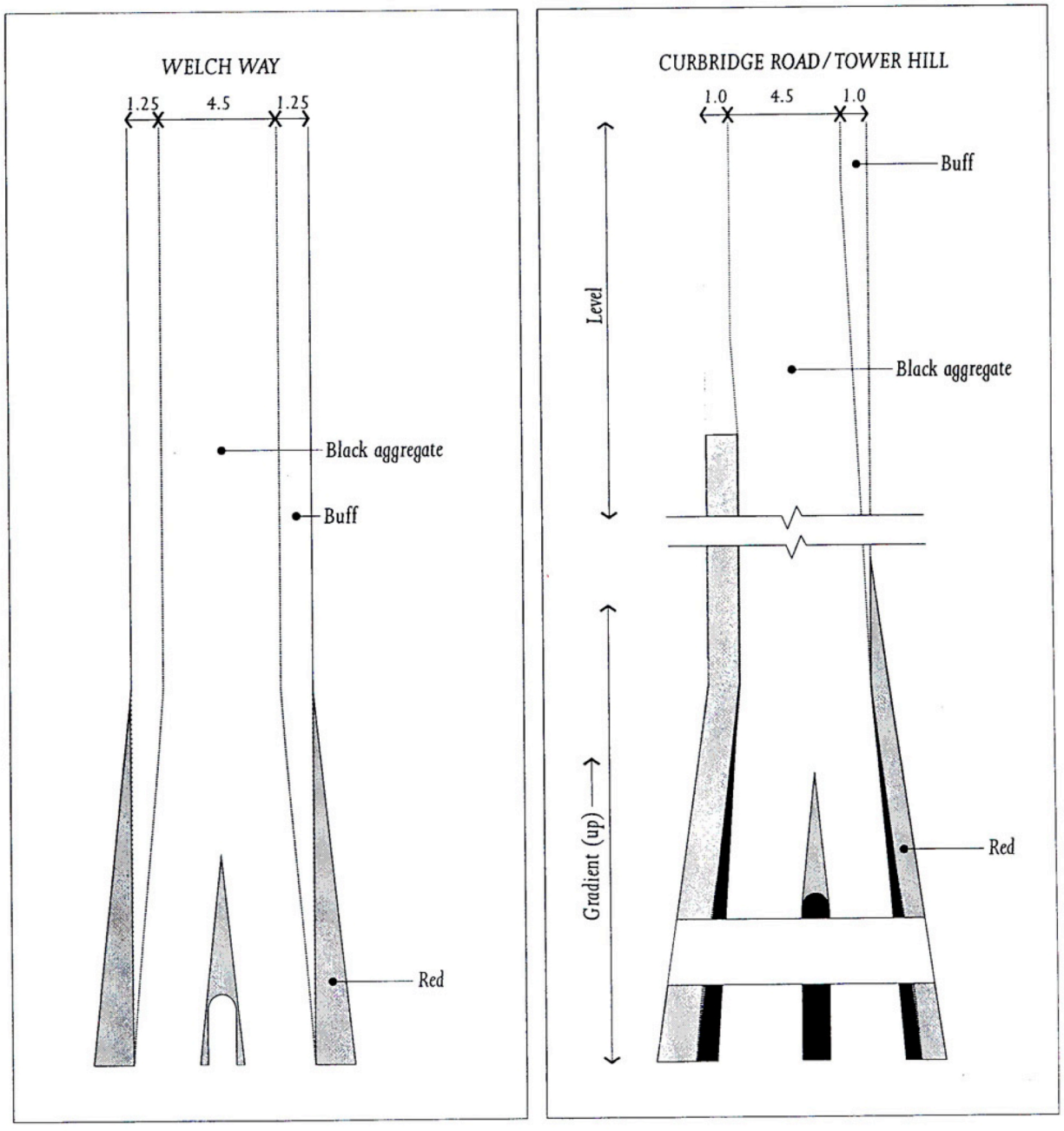

Figure E3: Redesign of "Fiveways" roundabout

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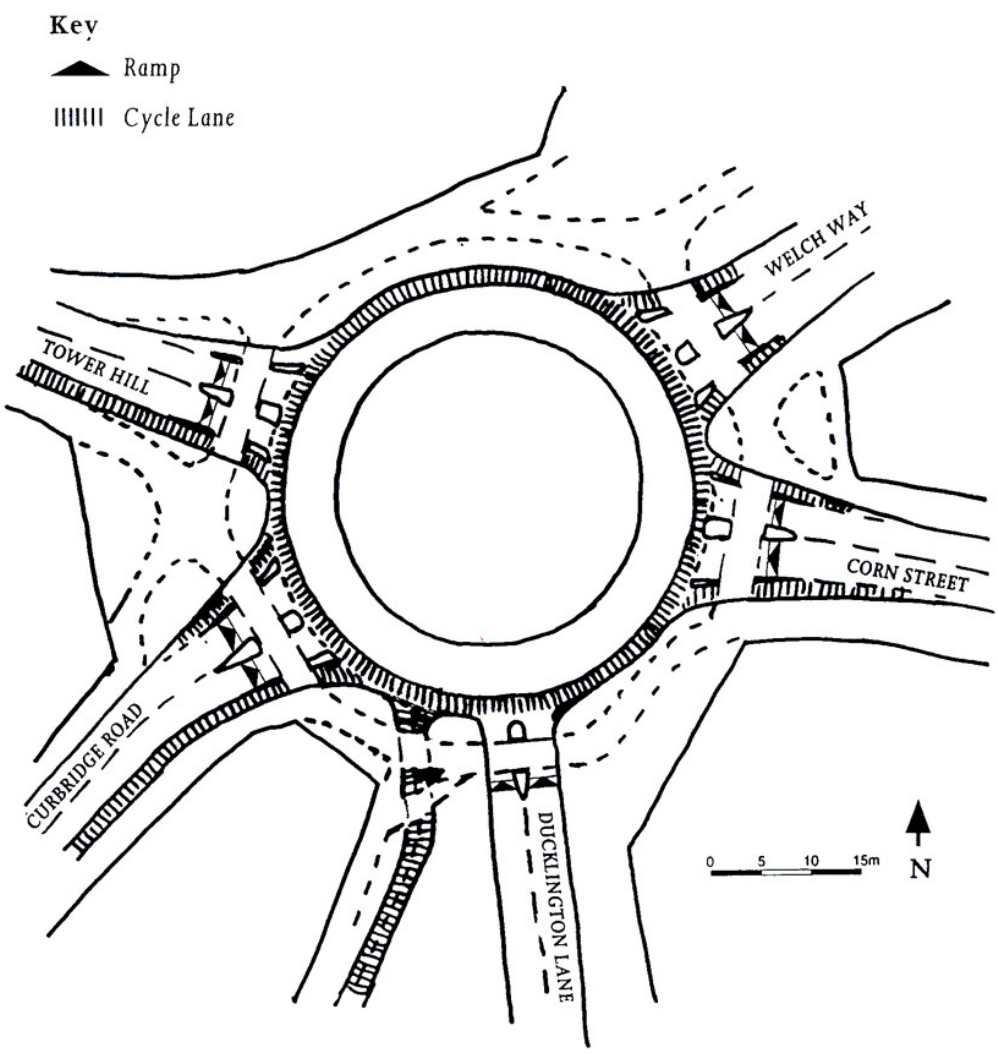

Note: This design of roundabout is considered safe for cyclists where vehicle flows are up to about 8,000 per day. In future this will depend on traffic reduction measures including the possible closure to private vehicles of Curbridge Road. Alternative junction designs will otherwise need to be considered.

Figure E4: Curbridge Road: Approach to "Fiveways" roundabout

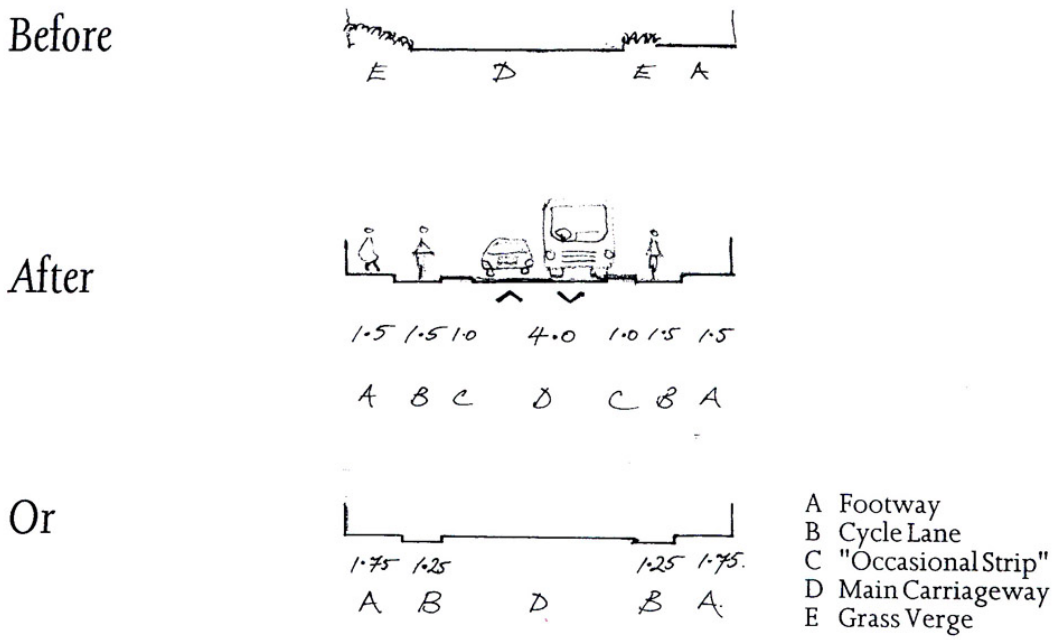

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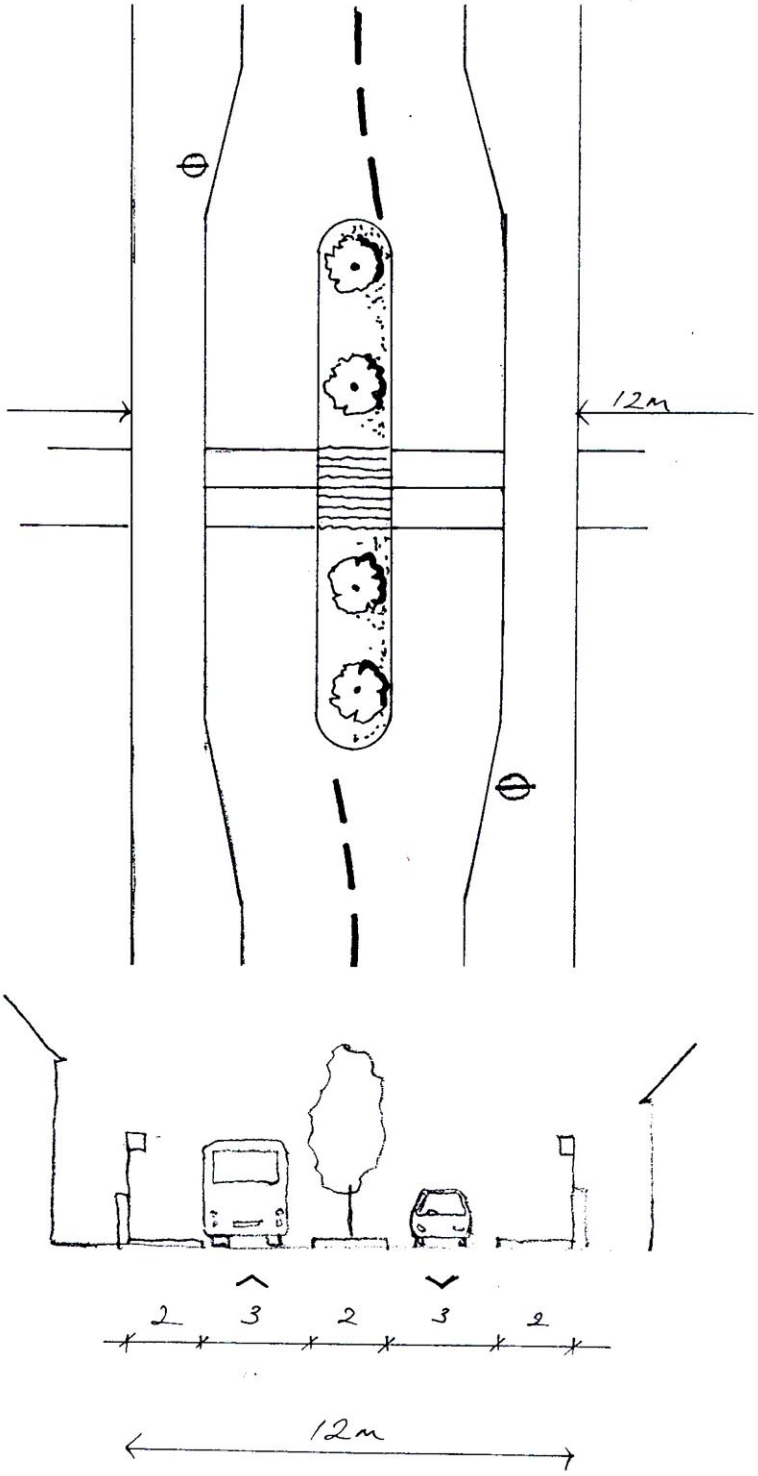
Figure E5: Bus priority bus stops (divided carriageway) with foot crossing (locations at Newland, Oxford Hill shown on Figure B2)



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