

WEYMOUTH RELIEF ROAD

Alternatives to the Proposed Scheme

Report

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Prepared for:

Woodland Trust, Transport 2000, Friends of the Earth and The
Campaign to Protect Rural England

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Summary

1. A coalition of organisations including the Woodland Trust, Transport 2000, Friends of the Earth and the Campaign to Protect Rural England is objecting to the proposed Weymouth Relief Road, the main component of Dorset County Council's 'Weymouth, Portland and Chickerell Integrated Transport Strategy'. A key concern is that the council has not adequately considered alternative methods of reducing delays and congestion on the A354 rather than the building of the Relief Road. This report investigates a number of measures designed to reduce delays and congestion on the A354 that could be taken in the short to medium term.
2. The methodology followed three broad stages. First, the problems on the A354 were investigated. Second, a number of interventions which might have an impact on these problems were considered and those considered viable in the short to medium term were investigated further. Finally, the likely impact of those viable measures was estimated based on empirical evidence of modal shift obtained from literature on the subject.
3. The problem was split into a number of aspects. In terms of congestion and delays the A354 has well above average daily flows for the class of road and journey time surveys show that there are significant delays at peak hours. Accidents on the road have fluctuated in recent years but are not out of keeping with other roads of this type in Great Britain. Noise and air pollution and social exclusion caused by high road traffic levels are all hard to quantify but there is no suggestion of a serious problem. Overall, a comparison between empirical data and the stated reasons for the Relief Road scheme as set out by Dorset County Council, demonstrates some anomalies in the case for construction.
4. A review of measures that could be introduced on the A354 was conducted and those that were thought to have the potential for a significant impact on congestion and delays at peak times in the short to medium term were investigated further. These measures are:
 - Quality Bus Partnerships with operators on routes running along the A354
 - Rail improvements including upgrading of facilities at Dorchester, Upwey and Weymouth stations
 - Parking restraint in Weymouth
 - Redesign of the junction of the A354 and Littlemoor Road
 - Introduction/rejuvenation of workplace travel plans at all large employers in the Portland-Weymouth-Dorchester area
 - Implementation of school travel plans at schools with catchments including the A354
 - Implementation of visitor travel plans at major attractions in the area
 - Individualised travel planning
 - Improvement of walking and cycling facilities in the Weymouth area to encourage the use of these modes for short distance trips
5. The likely impacts of these measures were estimated using a range of "mode shift" factors sourced from the literature on the subject. With these, it was possible to

produce high and low estimates of the potential impact of these measures if implemented as an integrated package. This analysis suggests that the impact could be to reduce traffic flows at peak times by between 6% and 19%. It is acknowledged that some of this reduction may be negated by the effects of background traffic growth and the release of suppressed demand. But it is also the case that *synergies*, where the implementation of two or more measures may produce a modal shift greater than if these measures were introduced individually, could act to enhance the effectiveness of any package of measures.

6. The estimation process used was deliberately conservative and, were a package of measures as described in the report implemented, a significantly greater positive impact than forecast could very likely come about.
7. The set of interventions discussed in this report could all have an effect within a short time and none would require a planning inquiry. The likely cost to Government of such a package would be smaller than a major transport infrastructure project.
8. The investigations carried out in writing this report have shown that there is good cause to revisit the question of how best to deal with the problems of congestion and environmental impact on the existing A354.

1. INTRODUCTION

Weymouth Relief Road

- 1.1 The Weymouth Relief Road is the major component of Dorset County Council's 'Weymouth, Portland and Chickerell Integrated Transport Strategy'. It is designed to relieve congestion on the A354, currently the main road into and out of Weymouth and Portland. The preferred alignment of the Relief Road (the Orange route) would run from Manor Roundabout in Weymouth, through Mount Pleasant, Lodmoor North and Littlemoor village, rejoining the A354 at Came Road, north of Upwey.
- 1.2 A coalition of organisations including the Woodland Trust, Transport 2000, Friends of the Earth and the Campaign to Protect Rural England is objecting to the scheme on a number of grounds. First, the proposed road would cause extensive damage to the Dorset Downs, Heaths and Coast AONB and to ancient woodland in Two Mile Coppice, part of the Lorton SSSI. Second, the coalition believes that commitments to implement integrated transport measures as part of the Strategy have not been carried out. Third, the case for the road on economic grounds has been seriously questioned by a previous Steer Davies Gleave report. Finally, the coalition believes that possible measures to reduce delays and congestion other than the building of more road space have not been adequately investigated.

This project

- 1.3 The coalition has asked Steer Davies Gleave to address its fourth concern by preparing this report which outlines alternative measures that could be taken to reduce delays and congestion on the A354. They have asked us to consider a wide range of interventions such as improved rail and bus services and interchanges, implementation of travel plans for work and school, improvements to walking and cycling infrastructure, park & ride services and the possible improvement and redesign of road layouts and junctions along the A354, particularly the junction of the A354 with C105 Littlemoor Road.

2. SUMMARY OF METHOD

- 2.1 Traffic, and the need to travel, do not occur independently of our daily lives. The desire or need to travel by car is a response to, and is affected by, other factors such as changing lifestyles, the safety of the road environment, and the quality of alternative modes. Therefore managing how, and how much people travel is not out of our control. With this in mind, we have looked at the problems faced on the A354 in a holistic manner. Instead of simply accepting traffic growth as a given and providing for it by increasing road capacity, we start with the hypothesis that it may in fact be possible to manage the demand for travel by private car by taking a step back and looking at the reasons for this increasing demand, then positing some ways of managing it. Put another way, the principal problems identified on the A354 result from a mismatch between demand (the quantity of traffic attempting to travel) and supply (the capacity of the road to accommodate this traffic); it is legitimate to investigate whether the most appropriate responses relate not to attempting to increase the supply but to attempting to manage the demand. This would involve both ‘hard’ infrastructure interventions to improve traffic flow on the road itself and ‘soft’ measures aimed at changing travel behaviour.
- 2.2 Identifying and assessing a set of interventions as an alternative to the building of the Weymouth Relief Road involved three distinct processes: first, identifying the scale of the problem of traffic on the A354; second, establishing appropriate potential interventions; and, finally, estimating the likely impacts these interventions might have on present and future traffic on the A354. These three stages are described in more detail below.

Identifying the problem

- 2.3 Before we could start to identify measures to help reduce congestion on the A354 it was necessary to quantify the problem to ensure that the interventions would be on the right scale, make a meaningful impact, and that they would be targeted at the groups where there would be maximum scope for change.
- 2.4 The main sources of data were traffic counts on the A354, site visits carried out by members of the project team from Steer Davies Gleave to gain first hand knowledge of the problems on the road, journey time surveys along the stretch of the road that is proposed to be bypassed and origin-destination (O-D) surveys carried out on the A354. This allowed us to gain an idea of when delays occur both during the day and across the year, where on the road they occur and an idea of the severity of these delays. The O-D data allowed us to make some estimates as to where some of the inter-urban trips were beginning and ending, helping us to make some assumptions as to the scope for certain interventions to have an effect on traffic levels.

Establishing appropriate potential interventions

- 2.5 In thinking of the potential interventions, a wide variety of measures were considered, ranging from ‘soft’ factors such as travel plans to influence people’s travel behaviour to ‘hard’ engineering measures such as redesign of junctions on the road to improve the flow of traffic through the junction. These were all considered, some taken on board and some discarded. These are described in Chapter 4.

Estimating likely impacts

- 2.6 The orthodox method for estimating impacts of many of the transport interventions discussed in this report is the use of a network model, an approach which is not possible within the time and budgetary resources available. However, it is possible to make some credible estimates of the impact of the interventions using measures of modal shift taken from various reports on the subject¹, which contain summaries of empirical evidence. These measures can then be applied to estimates of the number of trips susceptible to change as a result of a given intervention.
- 2.7 We have used figures from the literature on the subject to work up high and low estimates for the potential percentage modal shift from car resulting from each intervention. These shift factors were then applied to the estimated number of trips in scope (for example, for a bus corridor, it would be the number of trips beginning and ending within 400m of the bus route) to give an estimate of the number of trips that could be transferred. More detail on the methods used for each measure are explained at paragraph 5.2 onwards.

Limitations

- 2.8 It is difficult to compare directly the Relief Road scheme with the interventions discussed here. The methods used here are not consistent with those used to analyse the effect of the Relief Road for which network modelling will have been used. It is also difficult to make comparisons when the identification of the problems on the A354 as set out in the Dorset Local Transport Plan (LTP) and the Appraisal Summary Tables (ASTs) concentrates heavily on the economic problems faced in Weymouth with less detail given to environmental, safety and social problems caused by the road. If more detail could be obtained in these areas, it may be easier to compare the two packages.
- 2.9 The types of impact are also different. For example, whilst the Relief Road proposal involves changes in land use and extensive building work affecting large areas of rural land, the measures considered in this report would have much less impact on the local environment. The formal way of comparing the two would be to use the New Approach to Appraisal (NATA), the method which must be used in presenting proposals to Government. However, there is not the time or resources to undertake a NATA-style appraisal of the package of measures considered in this report. This may prove a sensible future course of action.
- 2.10 Therefore we cannot come to the conclusion that a package of alternatives would be more desirable, overall, than the road or vice versa as we are not comparing like with

¹ The reports used:

WS Atkins for the Department of the Environment, Transport and the Regions (DETR) (1999) 'Assessing the Effect of Transport White Paper Policies on National Traffic'

Halcrow for the Department for Transport (DfT) (2001) 'Soft Factors Likely to Affect Travel Demand'

Sloman, L (2003) 'Less Traffic Where People Live: How local transport schemes can help cut traffic'

like. Despite this, as stated, it is still possible to give an idea of the possible impacts of the interventions detailed.

- 2.11 There are limitations on the quality and detail of the data available to the study. For example, whilst we obtained detailed origin-destination data taken at a census point just south of the A35 at the Dorchester end of the A354 which gave us an idea of inter-urban flows along the road, no data were available to gain an equally detailed picture of local trips in the Weymouth area.
- 2.12 The data available for vehicle flows, whilst extensive, only tell us the number of vehicles passing a given point for a given time period. Whilst this may give some pointers to the possible times of most congestion, it cannot tell us where congestion is occurring. Whilst flows may increase during morning peak hours for example, the traffic may still flow smoothly. Whilst some journey time surveys have been carried out which give an idea of congestion on the road, more data would be required to give a definitive idea of the location and scale of delays on the road.
- 2.13 Nevertheless, the information gathered has allowed us to build a picture of the problems on the A354 and of the possible solutions to these difficulties. The following chapters outline first the problem, second the possible interventions that may have an impact, and finally the likely impacts of these measures.

3. DISCUSSION OF THE PROBLEM

- 3.1 For 2001 the A354 in the built up area of Weymouth had an annual average daily vehicle flow (summed over both directions) of around 25,400 vehicles compared to a UK average for this class of road of 15,300 vehicles. Whilst this is high, it does not, on its own, show that there is a congestion problem. The areas where there may be problems associated with traffic on the road are examined below, along with a brief outline of the problems as set out in Dorset's 2000 Local Transport Plan.
- 3.2 Also, to put these figures in perspective, figures produced by the then Department of Transport (DoT) show that over 1,000 communities on the built up 'A' road network in Great Britain live with the same magnitude of flow or greater².

History of the Relief Road scheme and inclusion in Dorset's Local Transport Plan

- 3.3 The scheme for the building of the Relief Road was proposed in one form or another in both the Provisional and Full Dorset Local Transport Plan (LTP). The primary justification for the scheme in the LTP is one of economic regeneration. This argument is based on the fact that there were a number of Ministry of Defence closures in the area in the 1990s and that Weymouth and Portland was highlighted as an Area of Special Need (AoSN) in the Draft Regional Planning Guidance for the South West. In the LTP it is argued that the road would improve accessibility to Weymouth, which would in turn "*stimulate new economic activity and so contribute to the economic regeneration of both Weymouth and Portland*"³. However, the impact of these closures has never been proved. All 4,500 civilians affected were given the opportunity to transfer elsewhere and unemployment figures for the area show a peak in January 1996 with a sustained fall ever since. The final version of Regional Planning Guidance for the South West, RPG10, also called for the designation of Weymouth as an AoSN to be reviewed. The issues surrounding the economic benefits of the Relief Road are dealt with in more detail in a previous report⁴.
- 3.4 Other than the economic case for the scheme, the main problem identified is increasing traffic volumes leading to "*adverse environmental impacts and an increasing number of accidents*"⁵. The HGVs running along the road through the villages of Upwey and Broadwey are seen as a noise and pollution problem as well as causing congestion. The validity of these assertions is assessed in the sections which follow.
- 3.5 From the description of the problems, and justification in the LTP and Appraisal Summary Tables associated with the scheme, the main argument for the Weymouth

² Department of Transport (1997) Road Traffic Statistics Great Britain, Chart 1.3, p15

³ Dorset County Council (2000) Local Transport Plan for Dorset, p239

⁴ The limitations of the Economic Impact reports on the Relief Road have been questioned in detail in a previous report by Steer Davies Gleave for this coalition of environmental groups. It can be found on the web at <http://www.cpre.org.uk/resources/pub/PDFs/roads-and-transport/weymouth-road-rpt-jan-2003.pdf>

⁵ Dorset County Council (2000) Local Transport Plan for Dorset, p235

Relief Road is the supposed economic benefits the road would bring. This justification has subsequently been questioned. Much less weight is given to the environmental and safety problems associated with the proposal.

Traffic

- 3.6 Time series data on traffic does not support a claim that the volume is simply increasing. Rather, data for the two sites discussed in more detail below shows that total traffic has actually fluctuated slightly between 1998 and 2002. There may be several explanations for this and it is not appropriate to hypothesise without further analysis.

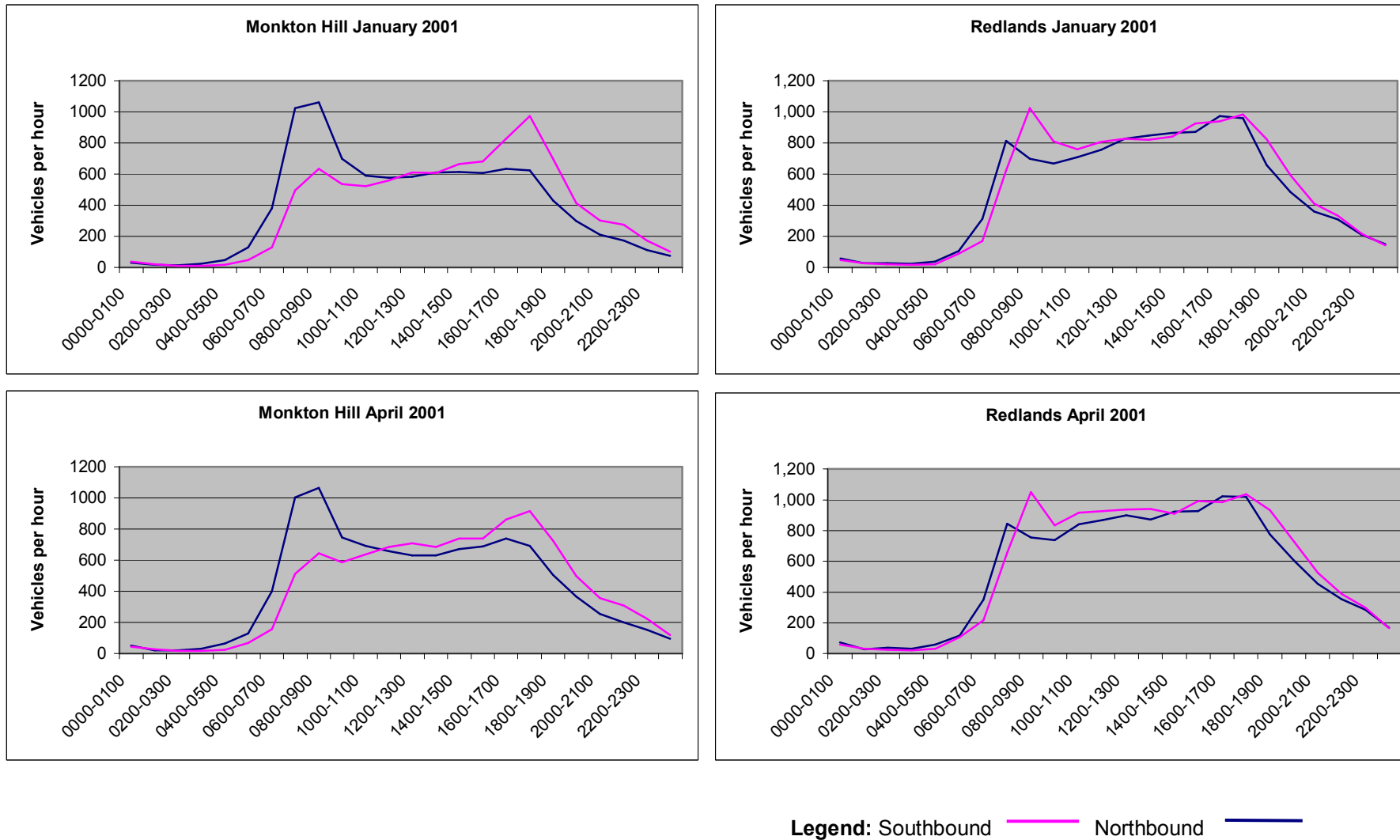
Congestion

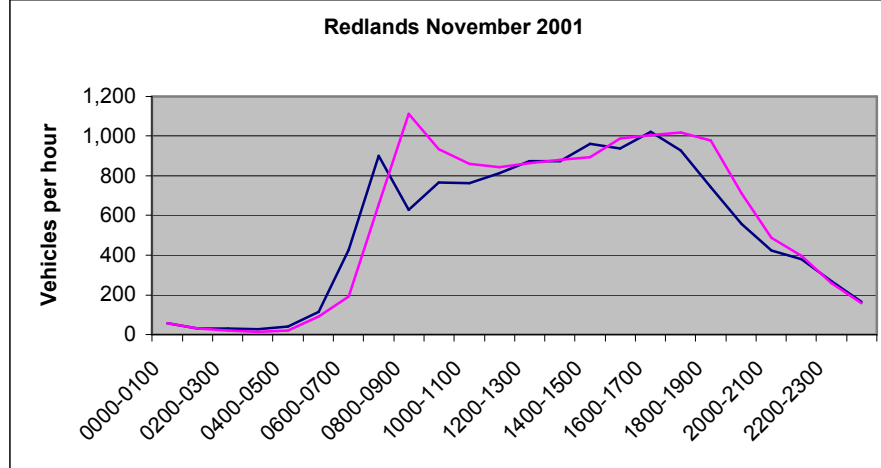
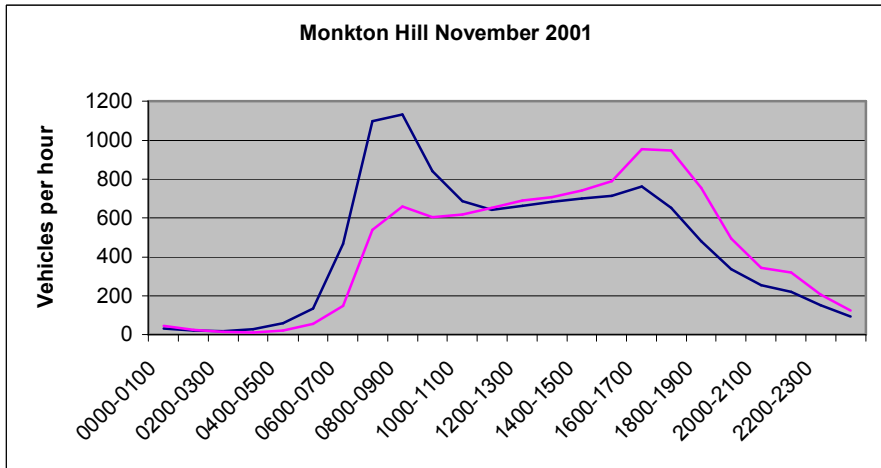
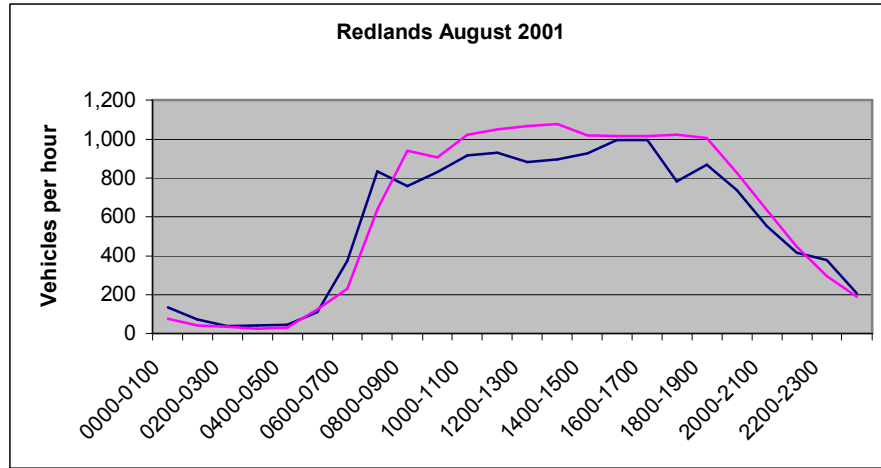
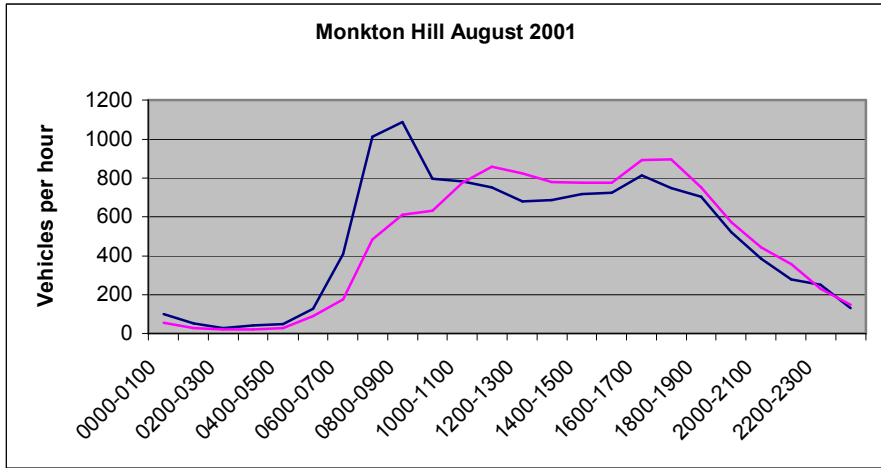
- 3.7 Analysis of where and when congestion occurs was undertaken using data obtained from automatic traffic counts at two sites along the A354: at Redlands just north of Manor Roundabout, and Monkton Hill at the Dorchester end of the road, and journey time surveys carried out by members of the CPRE Dorset branch.

Automatic Traffic Count (ATC) Data

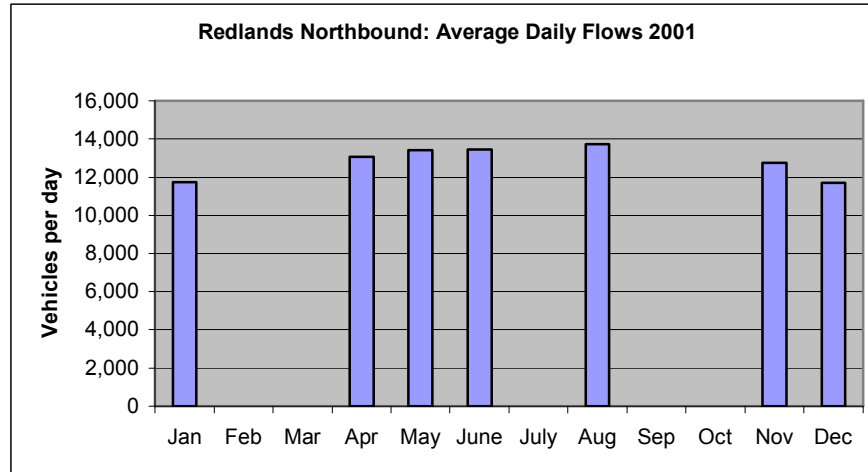
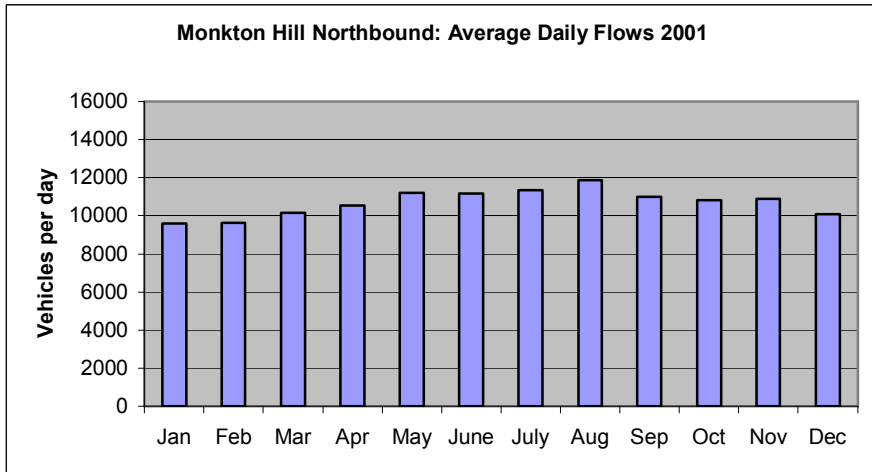
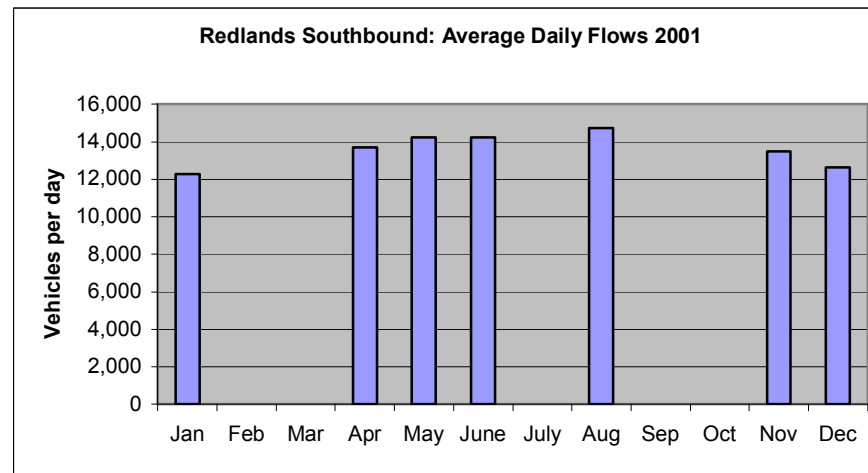
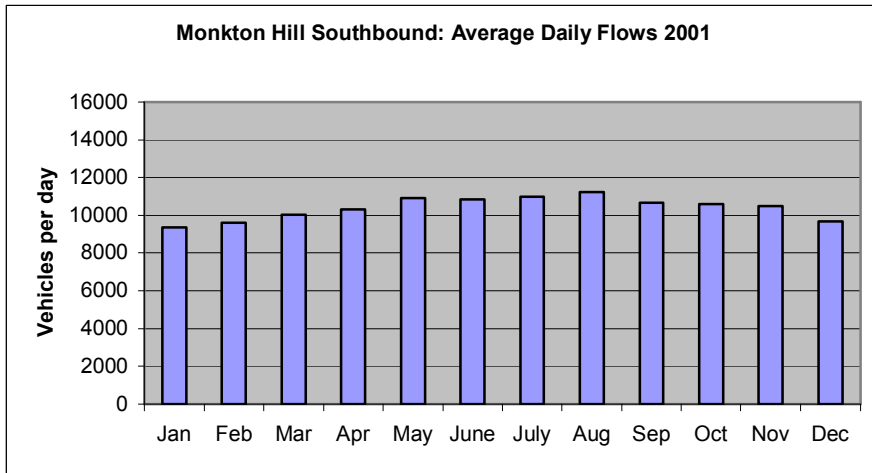
- 3.8 For the purposes of identifying the problem, reference is made to the data from Redlands (as it is part of the stretch that would be bypassed) and Monkton Hill, a location at the northern end of the A354 close to the junction with the A35 on the outskirts of Dorchester. The counts allow us to identify where flows are greatest throughout the day and the year. The charts in Figure 3.1 show the variations described below across the day and year at the two different locations. (Data are not available for all months of the year at Redlands.)
- 3.9 At Redlands there is a typical morning peak southbound into Weymouth between 0800 and 0900 for much of the year. The PM southbound peak is more spread showing a steady rise in traffic from 1500 until 1900. Northbound, there is a lower AM peak flow but traffic then builds steadily throughout the day peaking in the hour 1600-1700.
- 3.10 The exception to this pattern is in August, the peak of the tourist season, where southbound traffic is roughly constant at near peak levels from 1000 to 1900, peaking between 1300 and 1400. Northbound traffic shows less of a divergence from the normal patterns, although some increase in inter-peak traffic is still discernible. The peaks do not rise significantly compared to the rest of the year but inter-peak flows are markedly higher. Average daily flows for all months of the year, at both locations, show a steady rise up to August and a fall afterwards.
- 3.11 Average daily flows are lower at Monkton Hill compared to those at Redlands. There are also more pronounced peaks in flows at Monkton Hill. The peaks are of a similar level but the inter-peak period has lower levels of traffic than at Redlands. This suggests that local trips joining the A354 further south and travelling into Weymouth or Portland make up a significant proportion of traffic on the road in the area proposed to be bypassed.

FIGURE 3.1 TRAFFIC FLOWS BY TIME OF DAY AND YEAR AT TWO POINTS ON THE A354





Legend: Southbound — Northbound —



- 3.12 Data from Monkton Hill for 15th May 2001 show that 79% of the traffic on the road was private cars, 13% light goods vehicles (LGVs) and 5% other goods vehicles (OGVs, which include heavy goods vehicles). The remainder consisted of buses, coaches, motorcycles and other road users. Compared with national statistics on vehicle classification for principal roads in non-built up areas, the A354 has a marginally lower proportion of private cars and OGVs and a correspondingly higher proportion of LGVs and buses and coaches. Within the class of OGVs are identified so-called “heavy HGVs”, which have three or more axles. The same survey showed that these accounted for 1.6% of traffic, compared with 2.6% on average for this class of road. The adverse environmental impacts of heavy goods vehicles, then, whilst certainly unwelcome, are not likely to be greater than those experienced on other roads of this type.

Journey Time Surveys

- 3.13 Whilst the flow data described above gives an idea of the volumes of traffic travelling along the road at certain times of the day, this does not give an accurate idea of whether this leads to congestion on the route, and where this congestion occurs. Therefore, journey time surveys were carried out on Thursday 10th July 2003 between Manor Roundabout and Came Road (i.e. the stretch of road proposed to be bypassed).
- 3.14 The surveys were broadly consistent with the journey time statistics published in Dorset County Council’s 2002 Annual Progress Report (APR). They showed that the free flow time between these points was 5 mins 35 secs. The biggest delays, over 7 minutes greater than free flow, were experienced northbound in both AM and PM peaks and southbound in the PM peak. The main location of northbound delays was the section from Manor Roundabout to the 30 mph speed limit sign. Southbound the most congested section was from the 30 mph speed limit sign to Littlemoor Road. This suggests that delays are confined to specific sections, rather than the entire stretch of road proposed to be bypassed.
- 3.15 One surprising finding of the journey time surveys carried out was that there was very little delay at the signalled junction with Littlemoor Road, a point that, anecdotally at least (in discussions with local bus operators and the first hand observations of members of the project team) has a reputation for queues and congestion. However, the delays north of the lights travelling southbound and vice versa suggest that there may be delays further up the road due to a concertina effect on traffic caused by the signals.

Environmental impacts

- 3.16 Dorset County Council’s 2002 APR contains information on levels of nitrogen dioxide at Littlemoor Road. This shows that levels have remained below the 2005 National Air Quality Objective target of 40µg/m³ since January 1997. Although no data for carbon monoxide was available, data for King Street in central Weymouth shows levels within Government guidelines despite heavier, and slower-moving traffic than is seen on the A354. Weymouth and Portland Borough Council area does not include any Air Quality Management Areas.

3.17 The effects of noise on the road are harder to quantify. The higher than average flows on the road suggests that noise may be a nuisance for some living directly on the A354. However there is a lack of data on the subject and the irritation caused by traffic noise is a complex function of many variables, only one of which is traffic volume: speed, composition and regularity all play their parts. Thus, fewer vehicles travelling more quickly could actually be a source of greater annoyance than current conditions.

Accidents

3.18 A comparison of 1998-2001 accident data for the A354 between Manor Roundabout and Came Road with national averages for this class of road indicates that the road has fewer personal injury accidents per vehicle kilometre travelled than the national average although there are marginally higher than average casualties per slight accident (Table 3.1).

TABLE 3.1 PERSONAL INJURY ACCIDENTS ON THE A354 COMPARED TO NATIONAL AVERAGES (1998-2001)

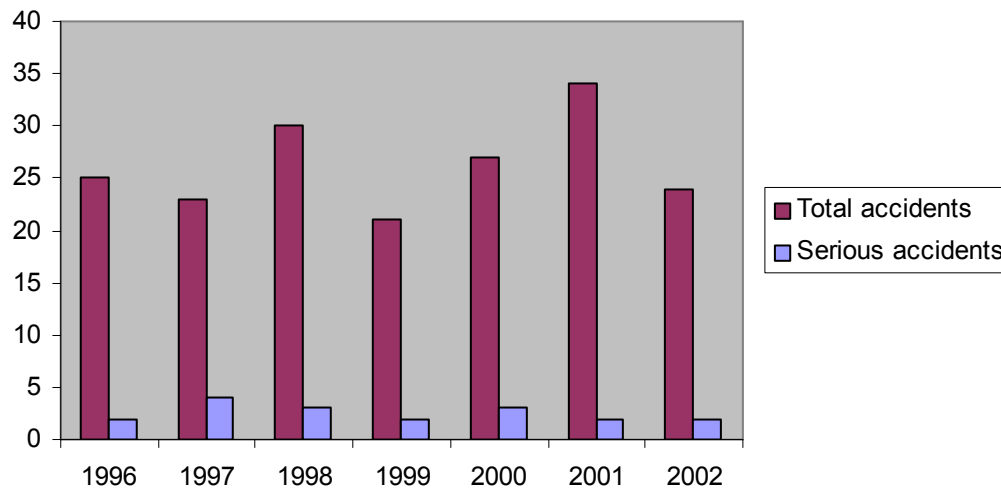
	Accidents per 100 million vehicle km				Casualties per accident			
	Fatal	Serious	Slight	All	Fatal	Serious	Slight	All
Built up sections	0.0	7.6	70.7	78.3	0.000	0.106	1.301	1.407
GB Average	0.8	12.0	82.8	95.6	0.009	0.139	1.167	1.316
Non Built up sections	0.0	1.9	41.0	42.8	0.000	0.043	1.739	1.783
GB Average	0.9	4.9	20.3	26.1	0.039	0.254	1.296	1.589
All sections (69.7% built up)	0.0	6.1	62.6	68.6	0.000	0.096	1.375	1.471
GB Average	0.9	9.8	63.9	74.6	0.018	0.174	1.206	1.398

Notes: Boxed figures are those which are greater than the national average

3.19 We note that whilst, on the whole, accident levels are below the national average, the one exception is slight injury accidents on the non-built up sections of the road. However, there are fewer serious and no fatal accidents on this stretch. This could be down to slower moving traffic leading to less serious accidents when they do happen. More detailed analysis of type and location of accidents than is possible now would enable a fuller understanding of this.

3.20 It is also important to note that, whilst one of the arguments put forward for the building of the Relief Road is that accidents are increasing on the stretch to be bypassed, the number of accidents on the A354 since 1996 has not increased; instead, total and serious personal injury accidents have fluctuated around a central value as shown in Figure 3.2.

FIGURE 3.2 PERSONAL INJURY ACCIDENTS ON THE A354, 1996-2002



Accessibility

- 3.21 Accessibility can be viewed in two ways: access for businesses to business opportunities in the area, and access for residents to employment, shops and services. These two parts can be dealt with reasonably separately.
- 3.22 In the business and economic growth sphere, Steer Davies Gleave undertook a critical analysis of the Economic Impact Study carried out for Dorset County Council by SQW Limited and BBP Regeneration. This analysis threw considerable doubt on the validity of the report's claims of regeneration impacts attributable to the Relief Road.
- 3.23 Accessibility of amenities for the local population is difficult to quantify. However, in this context there seem to be three areas of potential difficulty: severance of communities due to the high levels of traffic on the road; prohibitive travel delays; and limitations of public transport.
- 3.24 In the case of community severance, the number of signalled junctions along the road, and the 30 mph speed limits along much of the built up section suggest that crossing the road is not prohibitively difficult for most people. There are puffin crossings along the road at Redlands, Broadway and Upwey. It is acknowledged that the proposed traffic calming scheme on the road as part of the Relief Road proposals would make the situation better for pedestrians, but with possibly detrimental knock-on effects elsewhere as described below.
- 3.25 Whilst travel delays at peak times more than double journey times between Came Road and Manor Roundabout, (an increase in journey time of around 7 minutes to around 13 minutes), this would have to be seen as inconvenient rather than prohibitive.
- 3.26 Between the main bus operators (First and Sureline) public transport along the corridor currently runs at approximately a 10-minute frequency between Dorchester and Weymouth during the day. This is a comparatively high frequency although not all buses are low floor accessible models. However, proposals for traffic calming on the road as part of the Relief Road proposals could have a detrimental effect on services,

increasing journey times and reducing frequency as buses are slowed down by calming measures. Hence, the Relief Road proposals may increase social exclusion for those without access to a car living in communities along the road. In contrast to this, a Quality Bus Partnership along the A354 as discussed in Chapter 4 would improve infrastructure, introduce more accessible buses and increase the accessibility of facilities located in other parts of the corridor (such as the amenities of Weymouth Town Centre) to those without a car.

Impact on villages

- 3.27 The A354 between Weymouth and Came Road passes through Broadway and Upwey villages on its way to Dorchester. The effects of traffic are often noticed most in villages along main roads, especially noise, air quality and severance problems. It is also true that some of the narrowest sections of the road, and so the parts most susceptible to congestion, run through the villages. This is backed up by journey time data that suggests delays tailing back from Littlemoor Road in the southbound direction during peak hours into Upwey. Thus the effects of noise and air pollution may be felt more strongly here than the average for the road. However, air quality levels at Littlemoor Road are still well within government guidelines.

Summary

- 3.28 In summary, the flows on the A354 at Redlands are highest in a southbound direction during the AM peak and northbound during the PM peak. At Monkton Hill, peak times are similar but the flows are highest in a northbound direction during the AM peak and southbound during the PM peak. Daily flows at Monkton Hill are lower than at Redlands. Over the year, daily traffic flows increase to a peak in August (the main tourist season) but there is little variation in the level of peak hour flows, though the time of the peak shifts to later in the day during August. Journey time surveys show that there is significant congestion in the peak hours which is experienced at certain points on the road, namely north of Manor Roundabout (when travelling north) and north of Littlemoor Road (when going south). Traffic volumes have not increased on the road over the last five years, but have instead been fluctuating.
- 3.29 In terms of other effects of traffic, the frequency of personal injury accidents is below average on built up sections of the road (69.7% of the total length). On non-built up sections, accidents are more frequent than average but less severe compared to the GB mean. The evidence does not suggest that the absolute number of personal injury accidents on the road is increasing. Noise and air pollution are hard to monitor but what data there are show that air quality is comfortably within government guidelines.

4. POSSIBLE INTERVENTIONS

4.1 The interventions considered can be split into two types: ‘hard’ highway improvements designed to improve the flow of traffic on the road and other ‘soft’ interventions aimed at encouraging modal shift away from the car. We have conducted a review of a variety of possible interventions that could have an impact on traffic problems on the A354. From this review we have considered the following measures further:

- Quality Bus Partnership between Dorset County Council and First Group and/or Sureline on the Portland-Weymouth-Dorchester routes
- Rail improvements including upgrading of facilities at Dorchester, Upwey and Weymouth stations
- Parking restraint in Weymouth
- Junction redesign at the junction of the A354 and Littlemoor Road
- Introduction/rejuvenation of Workplace Travel Plans at all large employers in the Portland-Weymouth-Dorchester area
- Implementation of School Travel Plans at schools with catchments including the A354
- Individualised travel planning
- Improvement of walking and cycling facilities in the Weymouth area to encourage the use of these so-called ‘slow modes’ for short distance trips

We also considered the following measures but decided that they were not appropriate with the range and timescale of impacts we have in mind:

- Park and Ride
- Increased rail service frequency on the Weymouth-Dorchester line

Interventions taken forward

4.2 The measures we considered in detail are outlined below.

A354 Quality Bus Partnership (QBP)

4.3 QBPs provide benefits to bus users and operators by improving service frequency and quality on a given public transport corridor, making bus travel a more attractive alternative to using other modes. They have been widely implemented in urban areas in recent years and have proved successful in increasing patronage (including diversion from car use).

4.4 The 2002 Dorset APR states that there is an informal QBP in operation on Weymouth-Portland services but there is no mention of any partnership agreements for services operating north of Weymouth. The Weymouth to Portland arrangement is encouraging for bus services elsewhere as it shows that both parties have experience of setting up a QBP and that there appears to be some willingness to enter into such agreements.

- 4.5 The bus routes on the A354 could be enhanced with improvements to stops, vehicles and the route itself at points of significant congestion. In discussions with bus operators, the main pinch points appear to be the approaches to Manor Roundabout and the Littlemoor Road junction. This is borne out by journey time data that suggests delays at the southbound approach to Littlemoor Road and northbound delays on Weymouth Way at Manor Roundabout and along the A354 towards Nottingham Lane. With this in mind, bus lanes could help reduce journey times and improve the reliability of the service. Lanes at the approach to Manor Roundabout from Weymouth Way and, as far as is practicable, on the approaches from both directions to the Littlemoor Road junction, would help the flow of buses at these points
- 4.6 The installation of a SCOOT system at the Littlemoor Road lights giving bus priority would also help to reduce journey times and improve reliability. The combined effects of the bus lanes and SCOOT system could cut up to 10 minutes off a Weymouth to Dorchester round trip and allow First's service frequency to be increased from every 20 minutes to every 15 minutes using the same number of vehicles⁶. This, combined with current Sureline services, could increase frequency significantly to more than six buses per hour each way during the day.
- 4.7 New and improved shelters at stops would also improve the experience of travelling by bus. They would provide a better waiting environment for passengers and provide more information about bus services. For example, a survey carried out on 8 August 2003 revealed that 20 out of 41 bus stops between Weymouth and Dorchester were not provided with a shelter and 20 did not display a timetable. Real time information (RTI) at shelters would greatly improve the service to passengers but may prove expensive in the short term. Nevertheless, it is important that any new shelters be of a design that would allow the installation of RTI units in the future.
- 4.8 Complementing the new infrastructure, new low-floor, low-emission buses are a feature of many QBPs, delivering a more comfortable journey and improving accessibility for less mobile passengers. These would also be fitted with transponders compatible with the SCOOT system. Such vehicles could be expected to deliver a marginal environmental improvement, probably sufficient to offset the effects of increased bus kilometres. Net environmental effects of changes to the bus service should, of course, be examined alongside the environmental benefits of reduced car kilometres resulting from transfer to bus.

Rail improvements including upgrading of facilities at Dorchester, Upwey and Weymouth stations

- 4.9 There seems to be little scope for increases in the frequency of rail services in the short to medium term as funding is unlikely to be forthcoming with the current difficulties faced by Network Rail and the Strategic Rail Authority. However, current rail use is well below capacity so there is scope for significant increases in patronage without increased service levels.

⁶ First Southern National (2000) *Dorchester-Weymouth-Portland Corridor 'Wish List'*

- 4.10 Train use surveys show that patronage on the current services is running on average at 15% of full capacity. This indicates that there is significant spare capacity for centre to centre journeys (Dorchester-Weymouth and vice versa) and journeys from Upwey station north and south. There are however a number of constraints on the usage of train services by people making these centre-to-centre journeys such as access to the station (due to poor car parking facilities), poor information and high fares. The issue of fares is perhaps one that could not be addressed in the short to medium term given the current problems facing the rail industry, however, addressing the other constraints may increase the attractiveness of the train as an alternative to using a car for certain journeys, where the final destination is within walking distance of a station. Improvements may also widen the catchment area of these stations, further increasing the scope for shift from car to alternative modes.
- 4.11 One inexpensive way of attempting to boost demand for train services without altering the offer would take the form of a marketing and branding campaign designed to raise awareness of the availability of the train and its convenience. It is often the case that many people who could transfer to train are either unaware of the service or do not have an accurate knowledge of it. If publicity were combined with improved information and modest station improvements, as described below, some transfer from car would be very likely.
- 4.12 The unusual case of Dorchester West and South stations presents a problem for those travelling south, as southbound trains from both stations terminate at Weymouth but the stations are situated about 400m apart and run by different rail companies. Integrating the timetables for the two stations, and displaying this combined train time information for both stations in each station would help people to know which station to use to catch the next train.
- 4.13 Observations made on the morning of 15th July 2003 at each station showed that the car park at Weymouth station is currently well used with 35 of the 49 spaces being occupied. However, only 15 of the 41 spaces at Dorchester South and only one of the 32 spaces at Upwey were being used. There is no car parking available at Dorchester West. For those stations where car parking is available the installation of CCTV would provide an improvement. Current uptake indicates that if improvements were made to the parking facilities, there is sufficient spare parking capacity at three of the four stations to cater for an increase in usage.
- 4.14 Parking enhancements would appear to be the best way to attract the regular commuter to use services as a ‘park and ride’ option. It may be that this concept could be applied to all stations in Dorset on the routes into Weymouth to induce some modal shift for longer distance travel as well. Expansion of car parks at stations and improved facilities may also attract longer distance travellers to travel by train rather than by car.

Parking restraint

- 4.15 Weymouth town centre has a 5-year parking strategy introduced in 2000 which is intended to reduce the number of long stay car parking spaces in the town centre, and transfer to short stay spaces. This is the correct strategy to follow to try to discourage the practice of driving to work and parking all day in a long stay car park. However,

whilst this may be effective in reducing the number of people driving into Weymouth for lack of somewhere to park, it may be that these trips are simply transferred to other locations. Traffic may be relieved to some extent on the A354 but these trips may transfer to other roads, merely moving the problem rather than solving it.

- 4.16 In order to use this sort of demand management measure but maintain the attractiveness of Weymouth, a package of improved public transport and other alternatives such as walking and cycling could help to keep people coming into Weymouth but also reduce the modal share of cars for these trips. Therefore, parking restraint would probably best be seen as a complementary measure, accompanying “carrot” interventions designed to make alternatives to the car more attractive.

Littlemoor Road junction

- 4.17 Although we do not have access to empirical evidence to estimate the size of the problem, there is extensive anecdotal evidence that the junction of Dorchester Road (A354) and Littlemoor Road (C105) is a source of congestion. An initial examination of junction diagrams and photographs taken of the junction during a site visit suggests that the lane widths on the road are about 3 metres which, whilst on the narrow side, is above the minimum width for an urban road lane (2.75m). Examining the layout of the road at this point, the narrowness of the lanes leading up to the junction in both directions along the A354 also suggests that there is potential for congestion at peak times if a vehicle is poorly positioned in the right hand turn lane or if there are large vehicles queuing along the road.

- 4.18 With this in mind, there may be scope for some layout redesign or rephasing of the signals to improve the flow of traffic through the junction. This would require further analysis but, for the moment, we are not convinced that the junction is arranged optimally. It is important to note that this is a partially constrained site so building of new lanes or the like is limited. However, there may be some scope for altering the geometry or layout of the existing junction space.

Workplace travel plans

- 4.19 The introduction of workplace travel plans may help to reduce traffic flows at peak times through various measures such as flexible working hours, car sharing, encouraging use of alternative modes of transport, improvement of facilities for walking/cycling, etc. Initially large employers should be targeted, as these tend to offer the best return on investment because significant positive results can be obtained most easily. However, successful schemes would provide the impetus to roll out workplace travel plans to smaller firms in Dorchester and Weymouth.
- 4.20 The evidence is that only very limited work has been done on workplace travel plans in the area around the A354 to date. There are several large employers in the Dorchester and Weymouth area that could become flagship travel plan employers such as Dorset County Council and Dorset County Hospital in Dorchester and New Look in Weymouth.

School travel plans & visitor travel plans

- 4.21 A school travel plan sets out a number of practical ways to reduce the number of car trips made to a school, to encourage more walking and cycling and to improve safety on the school journey.
- 4.22 These plans help to raise awareness among pupils and parents of the harmful effects of increasing car use on children's health, safety and independence and aim to win 'hearts and minds'. The travel plan can also include proposals for physical improvements and facilities to make the journey feel safer and more pleasant for those on foot or bicycle such as 'Safer Routes to School', 'School Zones', 'walking bus' schemes and cycle parking facilities.
- 4.23 There are eight schools in the immediate vicinity of the A354. A number have a modal share for car-based access significantly higher than the national average and so there appears to be room for reduction in the modal share of driving for the journey to school.
- 4.24 It is increasingly understood that the traffic impacts of car-borne visits to tourist and other leisure attractions can, too, be managed through a similar process of awareness-raising, service provision and some infrastructure works. The importance of Weymouth as a tourist destination would make this a potentially significant contributor in the task of reducing trips by private car along the A354.

Individualised travel planning

- 4.25 Research by the RAC Foundation published in 1995 estimated that 5%-30% of car trips were "marginal": they either hardly had to be made at all or could easily be made by an alternative mode. Individualised travel planning is a collective term for the provision of advice and information to individuals on reasonable alternatives to using their car for journeys they commonly make, with the expectation that they might alter their behaviour on some of these marginal trips. The advice is often derived from a detailed picture of travel habits collected through a travel diary or equivalent.
- 4.26 In theory the entire population of Weymouth and Portland could be in scope for personalised travel planning and there is no reason that large populations cannot be targeted. The Department for Transport is currently seeking candidate towns for the implementation of a wide range of "soft" measures including individualised travel planning so the concept of global coverage is wholly realistic, and could offer significant economies of scale.
- 4.27 In the short term, a small pilot project might be set up for one area of the Weymouth/Portland urban area. A successful pilot could then be extended to other areas as has been seen in several Australian cities such as Adelaide and Perth.

Improvements to walking and cycling infrastructure

- 4.28 Higher hourly flows at Redlands compared to Monkton Hill suggest that a proportion of the trips made on the A354 in the stretch proposed to be bypassed are quite short and could be in scope for transfer to foot or cycle. Improvements to cycling and walking infrastructure such as improved street lighting and surfacing, cycle lanes and

cycle parking facilities at major destinations could encourage people to walk or cycle. These 'hard' infrastructure measures would also play a part in the success of school and workplace travel plans as these may need additional infrastructure to provide a sufficient incentive for people to shift their school or work journey to alternative modes (see discussion of synergy at paragraph 5.31 onwards). However, journeys for other purposes may also be encouraged onto foot or cycle and the number of leisure trips made by these modes may increase levels further.

Timescale of interventions

- 4.29 The interventions set out above are all achievable in the short to medium term. It is important to note that none of these measures would have its full impact straight away and some would take longer to have an effect than others. For example, bus use on a Quality Bus Corridor typically takes up to two years to peak⁷. But all of these interventions would have an effect within three years of their inception and many well before this time. This would mean that all of these interventions would be up and running and having effects on the level of traffic on the A354 well before the estimated completion date for the Weymouth Relief Road of 2010.

Interventions discarded

- 4.30 Whilst we have looked at the full spectrum of interventions, we felt that two would not be practical or effective in the short to medium term. These are increases to the rail frequency on the Weymouth to Dorchester routes and the introduction of a Park and Ride site along the A354.
- 4.31 The reason for disregarding the rail proposal is simply that, in the foreseeable future, there would not be a sufficiently strong economic case for increased frequency from the perspective of either the train operating companies or the Strategic Rail Authority. There are also some significant constraints on the operation of the line from Bournemouth (though not the line from Yeovil). We do not rule out that rail frequency (and possibly rolling stock) improvements could prove viable in the slightly longer term.
- 4.32 Park and Ride, whilst useful in some circumstances, would not fit well with the situation along the A354. An edge of town operation in Weymouth would not solve any of the problems on the A354 and a site at the junction with the A35 could have a detrimental effect by increasing local car journeys in the surrounding area.

Summary

- 4.33 The measures outlined in this chapter give a good spread of 'soft' measures and harder engineering measures (i.e. Littlemoor Road junction improvement) that should maximise the scope for reducing car trips on the road and also help to improve flow for the trips that remain without a large outlay on infrastructure.

⁷ Sloman (2003) 'Less Traffic Where People Live: How local transport schemes can help cut traffic', p15

- 4.34 All the measures set out are achievable in the short to medium term. Achievable here implies both affordability and acceptability, in the sense that none of the measures could be expected to excite strong opposition. It is important to set the measures out in terms of the timescale in which they are achievable to emphasise when the possible resulting reductions in traffic could be expected. The rejection of increased frequencies on the rail network was partly down to the timescale involved - this improvement would not take place in the foreseeable future but may be possible in the long term.
- 4.35 The possible impacts of these measures are set out in Chapter 5. The impact of each measure is outlined by the effect it might have on the types of problems described in Chapter 3.

5. POTENTIAL IMPACTS

- 5.1 The measures outlined in Chapter 4 should have impacts not only on modal share, and therefore traffic on the road, but also on related problems as described in Chapter 3. That is, environmental factors such as air quality, accidents on the A354, accessibility and social exclusion. We note that the problems occur mainly in the AM and PM peaks so we have concentrated on the impacts during these hours.
- 5.2 For each intervention, where it has been possible to estimate impact on car travel in the corridor, two figures have been derived – one high, one low.

Quantifying possible modal shift

- 5.3 It is possible to gain an understanding of the potential ranges of impacts the interventions may have on traffic by deriving estimates of the number of trips “in scope” for the effect of each intervention, and applying to the number a modal shift factor taken from the literature on the subject. The number of trips in scope for each intervention was derived variously from O-D data, employment data and school mode share data.

The O-D Data

- 5.4 The data available were collected at a census point on the A354 just south of the A35 on 15th and 16th May 2001. Southbound data were collected on 15th May and northbound data collected on 16th May. Data on the location of zones used to code trips were available only for the Weymouth area. The nature of the data means that we were able to gain a good idea of inter-urban trips between Weymouth and Portland and Dorchester but were not able to understand local trips in the Weymouth area. However, the employment and school mode share data gave an idea of the local context where needed.
- 5.5 The O-D data for the AM and PM peak hours (0700-0900 and 1600-1800) were used to estimate the number of journeys between Dorchester and zones in Weymouth and vice versa. As the O-D data measure the number of people travelling rather than the number of vehicles, an average car occupancy rate of 1.2 people per car was used to factor the number of person trips down to the number of vehicles this could be expected to represent. This is lower than the local result derived from a one-day survey carried out on 26th June 2003 which found average occupancy rates in the peak hours of 0700-0900 and 1600-1800 at Redlands to be 1.46. We have been conservative in estimating several other relationships and so are content that the use of this average rate will not lead to exaggerated results. Peak hour flows are shown in Table 5.1.

TABLE 5.1 PEAK HOUR FLOWS AT MONKTON HILL DURING O-D DATA COLLECTION

Peak hour	15 th May southbound (total number of vehicles)	16 th May northbound (total number of vehicles)
0700-0800	569	1,109
0800-0900	665	1,100
1600-1700	867	753
1700-1800	955	682

- 5.6 The O-D data shows that 41.8% of those interviewed in the AM and PM peaks travelling southbound came originally from Dorchester. If this is applied to the sum of the four peak hour flows at Monkton Hill on the day of the surveys, this translates to 1,277 trips originating in Dorchester and heading to Weymouth.
- 5.7 Northbound, the proportion travelling to Dorchester is even greater. 53.1% of trips during the AM and PM peaks were heading from zones south of Monkton Hill to Dorchester. This translates to 1,934 journeys in the four hours making up the AM and PM peaks.

Potential impacts

Quality Bus Partnership

- 5.8 The literature suggests that there is a positive relationship between the quality and quantity of measures included in a Quality Bus Partnership and patronage on the route. Halcrow’s report estimated that “if done well” a QBP could reduce car travel on affected corridors by up to 10%. This is the only reference to a shift factor that could be applied to car travel in the corridor. Considering that this is for a well-implemented QBP we take this to be a high estimate for modal shift. For the purposes of giving a low estimate, an effectiveness of half that of a well implemented scheme would mean a shift of 5%.
- 5.9 The improvements to the bus corridor between Dorchester, Weymouth and Portland would have an impact only on those whose origin and destination are close enough to the corridor to make them able to use the bus. With this in mind a 400m buffer was drawn around A354 bus route and the zones used in the O-D survey within this buffer were identified. The O-D data was then used to identify how many vehicle trips originated in these zones and ended in Dorchester or vice versa. This gave an estimate of the number of trips taking place in the peak hours of 0700-0900 and 1600-1800 within the 400m walking buffer for the bus corridor to provide an estimate of the number of trips in scope for shift to bus.
- 5.10 This analysis identified 2,221 trips within the 400m buffer giving a ‘high’ estimate of a reduction of 221 trips across the four peak hours. At a low shift rate of 5% the shift would be 110 trips across these hours.

- 5.11 This estimate only takes into account inter-urban trips from zones in Weymouth to Dorchester. More local trips would also be in scope for shift, especially from zones on the edge of Weymouth into the town centre for both leisure and work. This estimate is therefore decidedly conservative.

Rail improvements

- 5.12 Using our methodology, it is not possible to make an estimate of the likely impact of marketing, and improved station services and parking facilities. Whilst these measures are unlikely to have as great an impact as travel plans or bus service improvements, there may be scope for some shift to train for trips travelling from centre to centre (i.e. Dorchester to Weymouth or vice versa) by making the experience of travelling to the station, waiting for and catching a train easier and more pleasant.

Littlemoor Road junction

- 5.13 The possible improvement of the junction of the A354 with Littlemoor Road presents the greatest challenge in terms of predicting impact. Whilst, anecdotally, a congestion hotspot, other evidence has suggested otherwise. It is not in the scope of this report to investigate a complete redesign of the junction but initial examination suggests that there may be some scope for rephasing of traffic signals to improve flow of traffic.

- 5.14 It is possible to say that appropriate reconfiguration of the junction could reduce delay occurring at that point and that this would lead to an easing of congestion in general on the problem stretch of the A354. Whilst an overall reduction in congestion is likely, it is important to allow for the possibility that the remaining congestion could relocate to other points on the road, with either positive or detrimental results. A fuller investigation of this option (perhaps using micro-simulation modelling) would help to demonstrate this. It is also important to note that measures which reduce delay on the road could release suppressed demand, as drivers perceiving improved conditions start to use the route. The role of new demand is discussed below.

Workplace travel plans

- 5.15 Estimates for the likely impact of workplace travel plans are broadly similar across the sources consulted. The ranges are summarised in Table 5.2. Figures ranged from a 20% reduction in car use (Sloman, 2003) to a low estimate of 7% (Halcrow, 1999). These figures have been used as our high and low factors to estimate likely modal shift.

TABLE 5.2 WORKPLACE TRAVEL PLANS: LIKELY MODAL SHIFT

Document	Potential modal shift
Halcrow (2001)	7-12% reduction in car use
WS Atkins (1999)	Cases of up to 25% in the USA. More likely 10-15% reduction
Sloman (2003)	6%-20% reduction in various studies

- 5.16 Data was made available for a number of large employers in both Dorchester and Weymouth such as Dorset County Council, West Dorset District Council, Dorset County Hospital, DEK and New Look. Each gave data on the total number of people employed and an estimate of the number of employees driving along the A354 as part of their journey to work. The total number of employees thought to be driving on the A354 across all these employers is 1,471. This was multiplied by two, to produce a notional total allowing for the round trip.
- 5.17 Successful implementation of travel plans by these large employers would pave the way for rolling out the scheme to more businesses in the area, further increasing its impact. Thus, again, the high and low estimates represent the tip of the iceberg in terms of potential impact.

School travel plans & visitor travel plans

- 5.18 The documents reviewed had broadly similar figures for the potential for modal shift by implementing school travel plans. Whilst examples were given of schools that have successfully reduced car use for the journey to school by up to 50%, a figure of between 10% and 20% is seen as more realistic. The various estimates are shown below:

TABLE 5.3 SCHOOL TRAVEL PLANS: ESTIMATES OF MODAL SHIFT

Document	Potential modal shift
Halcrow (2001)	15% reduction in car use
WS Atkins (1999)	Cases of 25%, realistically 10-15% reduction in car use
Sloman (2003)	Cut car modal share by 20%

- 5.19 Four schools are situated on or very near to the A354 – Radipole Primary, St Johns Primary, St Nicholas & St Laurence Primary and Wey Valley Secondary school. The modal share data we have available for these schools allow us to estimate how many trips are generated by children being dropped off at these schools by multiplying the number of children travelling to school by car by four (i.e. a return home-school journey AM and PM). For example, St Nicholas & St Laurence and Wey Valley both front onto the A354 and therefore all trips to and from the school have to travel along the road. Examining the travel to school data, a total of 413 children travel to school by car. It can be shown that the trips made by these children could represent up to 48% of the two way traffic flow at Redlands between 0800 and 0900. Obviously this is a significant proportion of the total flows so a reduction in this set of trips could make a considerable contribution to tackling congestion on the road.
- 5.20 Taking all four schools, the low estimate - a reduction of car use by 10% - suggests a reduction in car trips to and from the schools of between 109 and 218⁸. The high estimate puts reduction of car use at these schools at between 218 and 437 trips. The high estimate for reduction of car use at these schools is 330 trips. If this is halved (to

⁸ The high figure assumes all journeys involve a home to school round trip both AM and PM. The low figure assumes all 'school run' journeys are part of a journey to work. In reality the school run is a mix of the two.

represent the trips in the morning peak only) and compared to average AM peak flows at Redlands, this would constitute a reduction in traffic of 19.1%. The most pessimistic estimate (10% mode shift and all parents then driving to work) puts the figure at a 4.8% decrease in trips. However, at peak times even this low estimate could still make a contribution to reducing congestion on the A354.

- 5.21 In the case of visitor travel plans, we have not attempted to quantify potential impacts. This field of activity is less well developed so there is only limited empirical data available on the effects of such plans. Their impact will also be highly dependent upon the catchment and mode shares of access trips. But it is worth pointing out that, whilst most of the other interventions described here would be expected to have their greatest impacts during peak hours, a set of well targeted visitor travel plans could lessen the pressure of August traffic when, as discussed above, volumes are near maximum across the day.

Individualised travel planning

- 5.22 The estimated impact of individualised travel planning is similar to the figures for school and workplace plans, at around 10% of current car trips as shown in Table 5.4.

TABLE 5.4 INDIVIDUALISED TRAVEL PLANNING: ESTIMATED MODAL SHIFT

Document	Estimate
Halcrow (2001)	10% 'where prosecuted vigorously'
Sloman (2003)	7-14% in urban areas

- 5.23 To avoid double-counting impacts, we would consider the trips in scope at peak times to be those not already affected by workplace and school travel plans, in other words, trips with purposes other than the journey to work or school escort.
- 5.24 Individualised travel planning typically has most impact on local trips. However, the O-D data made available to us only gives an idea of inter-urban trips. Therefore there is insufficient data for us to make an estimate of the likely impact of this type of intervention other than a possible 10% reduction in local trips in the Weymouth area using the A354. More detailed O-D data for local Weymouth trips would allow such an estimate to be made.

Sum of the interventions

- 5.25 Taking those interventions for which we can make a numerical estimate of the impact on the volume of trips made on the road, we can derive figures for the total effect these interventions might have on traffic. The interventions and estimates are summarised in Table 5.5.

TABLE 5.5 SUMMARY OF INTERVENTIONS AND THEIR POSSIBLE IMPACTS

Intervention	Number of trips in scope	Shift factor	Estimated shift (number of trips)	
			Low	High
Quality Bus Partnership	2,221 ⁹	5%-10%	110	221
Workplace travel plans	2,942 ¹⁰	7%-20%	206	588
School travel plans	1,140-2,280 ¹¹	10%-20%	171	342
TOTAL			487	1,151

5.26 It is also possible to make an estimate of the impact this would have on average peak flows during the AM and PM peak hours. This was done by taking an average hourly flow for each of the peak hours (0700-0900 and 1600-1800) from the Automatic Traffic Counter Site at Redlands. This gave a range of average flows for peak hours ranging from 747 to 986 vehicles per hour in either direction.

5.27 In order to obtain an average reduction of vehicles per hour to compare with average total flows, the total estimated shift figures (shown in Table 5.5) were divided by the number of peak hours (i.e. divided by four). They were further divided by two because they are sums for both directions.

5.28 From these figures, estimated percentage reductions could be calculated for four scenarios: a high flow/high impact, high flow/low impact, low flow/high impact and low flow/low impact. These are shown in Table 5.6. The table shows the lowest estimate (low impact on high flows) to be a reduction of 6.2% in volume of traffic per peak hour. The high estimate (high impact on low flows) indicates a reduction of 19.3% per peak hour.

TABLE 5.6 ESTIMATED REDUCTION IN FLOWS FOR PEAK HOURS

	Low impact	High impact
Low flow (747 per hour)	-8.1%	-19.3%
High flows (986 per hour)	-6.2%	-14.6%

⁹ Trips in scope = total trips with start and end within walking distance of the bus, in either direction over the four peak hours

¹⁰ Trips in scope = total employees with travel to work trip involving the A354 for employers surveyed multiplied by 2 to give total return travel to work trips per day in either direction during the four peak hours

¹¹ Trips in scope = total number of pupils travelling to school by car multiplied by either 2 (journey continues to work) or 4 (return home school home journey during both peaks). High and Low estimates take mid point of 1170 journeys (i.e. half single trips and half return)

- 5.29 The range is somewhat artificial since the factors behind fluctuations in traffic volume during the day and year would also influence the degree to which the interventions considered in this report could be expected to achieve modal shift. But the calculations remain appropriate because our estimates of “in-scope trips” are drawn from totals for the four peak hours.

Impact on the problems identified

- 5.30 These interventions all have an impact in some respect on the problems identified in Chapter 3. Their combined impact on these problems is shown in the matrix in Table 5.7 overleaf. Included in the table are measures described in Chapter 4 for which we were not able to make a numerical estimate, or which would be complementary to the measures examined above.

Synergy between interventions

- 5.31 Whilst all of these measures would have an effect on car use, these estimates do not take into account the possibility that the implementation of all the measures simultaneously might have an effect greater than the sum of their parts. Sloman (2003) splits synergistic effects into four categories:

- Increasing the effectiveness of traffic restraint
- Influencing travel habits and attitudes
- Addressing the separate reasons for making linked trips by car
- One measure amplifying another

- 5.32 Addressing these in turn:

- Increasing motoring costs may not have a great effect on the number of trips made by car. However, providing good quality alternatives such as a QBP corridor into Weymouth may increase the effectiveness of the traffic restraint measures: “*there will be more gain for less pain*”¹²;
- In the longer term, the effect of initial travel plans and alternatives may ‘snowball’ as people see neighbours and friends trying alternatives successfully;
- Many trips are multi-purpose therefore addressing only one of the purposes of a trip will not have an effect on these multi-purpose trips. Sloman gives the example that a parent working with an organisation which has implemented a workplace travel plan may not walk their child to school then catch the bus to work because it would take too long. However, if the school had a school travel plan, the parent may no longer need to escort their child to school as safe alternatives are in place, allowing her/him to make the journey to work by bus and arrive on time;
- The introduction of a combination of measures may increase the use of alternative services to a greater extent than would have been expected if the service were improved in isolation. For example, if a number of employers with premises near the A354 introduced travel plans alongside the introduction

¹² Sloman (2003) ‘Less Traffic Where People Live: How local transport schemes can help cut traffic’, p80

of a QBP, one would expect a greater use of the bus services along the corridor than with the QBP alone.

- 5.33 The extent to which each of these synergy effects might be seen in the case of Weymouth is unclear. It is sufficient to say, however, that the sum of impacts set out in Table 5.5 represents a baseline and that synergy effects could significantly increase the ultimate impact.

The effects of traffic growth and release of suppressed demand

- 5.34 Whilst investigation of these measures demonstrates the scope for reducing the number of trips made by private car in favour of other modes, the effects of future traffic growth and induced traffic should not be ignored. Data from Redlands ATC site shows a growth in traffic of 50% between 1983 and 2000. Several phenomena drive traffic growth, only some of which would be affected by the interventions discussed in this report. So it is reasonable to expect at least some background growth in traffic on the A354.
- 5.35 There is evidence to suggest that the hypothetical benefits of a reduction in traffic flows are often not observed in reality due to the release of suppressed demand. That is, that there is a certain amount of suppressed demand for travel by private car and reductions in traffic flows can be offset to some extent by those who previously would not have travelled by car but are now willing to do so in response to reduced traffic and congestion.
- 5.36 It is not possible to predict with confidence how much of an effect future traffic growth, and new traffic resulting from the release of suppressed demand, might have if the interventions discussed were implemented. It is definitely the case, however, that any such increases would be much less than if the Weymouth Relief Road were built. This is because the road scheme would do nothing to control any of the factors driving growth in car use but, instead, by reducing the cost of car travel between Weymouth and Dorchester, it would actively support such growth.

TABLE 5.7 IMPACT OF INTERVENTIONS ON PROBLEMS IDENTIFIED

	Congestion	Environment	Accidents	Economy	Social inclusion
Bus QBP	Reduced congestion along route – diversion from car	Neutral/slight positive – reduced car noise/ emissions but possible increase in bus noise/ emissions (offset by new vehicles)	On its own, reduced traffic may reduce accidents but increase severity due to increased speeds. Mitigating measures on the road may be required.	Reduction in delay to essential business/delivery trips.	Positive impact on social inclusion/accessibility through improved public transport provision
Rail improvements	As Bus QBP	Positive impact – same no. of trains and land take but reduced road emissions	As Bus QBP	-	As Bus QBP
Parking restraint	Combined with other measures, may reduce car trips into Weymouth Town Centre	As Travel Plans	As Bus QBP	As Bus QBP. Must be combined with other measures, to maintain attractiveness of Weymouth as destination for work/leisure.	-
Littlemoor Road junction	Reduced congestion by improved flow through the junction	Neutral/slight negative – possible need for small amount of land take at junction if feasible	Reduction by taking into account safety concerns at junction in redesign	As Bus QBP	-
Travel plans (workplace, school, visitor & individual)	As Bus QBP	Positive impact due to reduced car use with no additional land take	As Bus QBP. Reduction in child related accidents through school safety schemes in School Travel Plans	As Bus QBP	-
Improvements to walking and cycling facilities	As Bus QBP	As Travel Plans	As Bus QBP. Walking and cycling facilities designed to improve safety for these modes.	As Bus QBP	Positive impact on social inclusion by improving links for short trips for those without access to a car

6. CONCLUSIONS

- 6.1 Our method has taken us through the stages of investigating the problems experienced on the stretch of the A354 which Dorset County Council wishes to bypass, identifying alternative measures to the building of the scheme that might have a significant impact on traffic problems on the road and estimating the impact that these measures might have.
- 6.2 These investigations suggest that the interventions examined could have a significant positive impact on traffic conditions on the road during the peak hours when delays are most severe. Without debating the precise impacts on delays, it is perfectly reasonable to suggest that a reduction in flow of up to 19% would amount to a very noticeable change in the experience of using this road. We therefore conclude that these interventions merit further consideration.
- 6.3 We have taken care to avoid exaggeration in estimating impacts. In several areas, we have identified ways in which the number of trips removed could be larger than that estimated, and there are several interventions for which no estimate has been derived but which could be expected to have a detectable and positive impact. More detailed analysis of these interventions could therefore be expected to lead to larger projected effects on the A354's traffic problems.
- 6.4 It has not been possible to make any direct comparisons with the proposed road scheme. This is largely due to the difference between the potential impacts of the road scheme and those of the package of measures considered here. But there is also a dearth of available information on the justification of the road scheme itself. Much of this information we have found concentrates on the economic difficulties faced by Weymouth and the benefits in this area which the scheme would bring, both of which have been questioned in an earlier report¹³. Further information on the detailed case for the road scheme would allow us to make more direct comparisons.
- 6.5 Another, perhaps more significant, point given the context of this investigation of alternatives, is that all of the measures considered would have a positive impact on traffic on the A354 well in advance of the earliest likely completion date of the Weymouth Relief Road. All could be implemented within a two to three year time frame and could be expected to have immediate impacts on traffic on the A354 (with the full effects felt within a few years). In comparison, the Weymouth Relief Road would not be expected to be completed until 2010 at the earliest. A further attractive feature of the measures considered in this report is that none would require a planning inquiry due to their minimal land take and environmental impact compared with the lengthy planning process required for the Relief Road. The cost to Government of a package of alternatives could also be expected to be much less.
- 6.6 In closing, we believe that these limited investigations have shown that there is good cause to revisit the question of how best to deal with the problems of congestion and

¹³ Steer Davies Gleave (2003) Weymouth Relief Road – Critique of Economic Impact Study available online at <http://www.cpre.org.uk/resources/pub/PDFs/roads-and-transport/weymouth-road-rpt-jan-2003.pdf>

environmental impact on the existing A354. A strategic piece of work which considered all possible interventions from the perspective of positive and negative impacts as well as cost, could be very helpful in determining the most appropriate response.

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