ASHFORD PARK & RIDE STUDY

FINAL REPORT

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1.0 INTRODUCTION

Background

1.1 The Ashford's Future Study recommended that Ashford could grow significantly over the period to 2031. The study recommended growth of c.31,000 dwellings and c.28,000 jobs over the period 2001-2031. Importantly, the study recommended that a "step-change" in transport provision will be needed if sustainable development patterns are to be achieved.

1.2 The Ashford Area Transport Study (AATS) developed a transport strategy to serve the growth area. AATS considered land-use and travel patterns at 2031 and also recommended how transport measures could be phased over time. The AATS strategy included both "carrots" and "sticks" – the "carrots" comprising high quality public transport (including SMARTLINK) and park and ride but complemented by "sticks" comprising parking restraint (by controlling future supply) and significantly higher parking charges in the expanded town centre. The AATS recommendations were included in the RPS report 'Towards a Transport Strategy'.

1.3 As noted above, the parking strategy is a key element of the overall strategy for the growth area. As far as parking is concerned, the Towards a Transport Strategy report recommended:

i) Parking for new commercial development in Ashford town centre provided at half the maximum set out in PPG13.
ii) Residential parking in the town centre provided in accordance with PPG3.
iii) Parking at greenfield employment locations restricted to at least 20% less than demand.
iv) A review of the existing provision of on-street spaces with a view to relocating a proportion of these to off-street car parks.
v) A significant increase in town centre parking charges to be introduced by 2031.

vi) Three bus-based park and ride sites to form part of the overall transport strategy, located at The Warren (M20J9), A28 Great Chart and A2070 near Park Farm and Cheeseman's Green. The latter two could 'anchor' SMARTLINK.

1.4 Subsequent to the completion of the initial AATS work in February 2004, further studies have been undertaken (largely GADF) to determine the future land use pattern in Ashford and to refine the transport strategy for the growth area. These have confirmed that park and ride, along with higher parking charges and parking restraint, will be needed to secure the sustainable growth of Ashford.

Aims and Objectives

1.5 The AATS and emerging GADF strategy is based on the transport and land-use conditions predicted at 2031 ie. with significant growth in travel and with high town centre parking charges as well as parking restraint. These combine to produce a potentially significant demand for park and ride. It is intended that park and ride should be brought forward as early as possible with potential funding via the Local Transport Plan (LTP) process. This study has considered demand for park and ride much earlier than the 2031 horizon considered in AATS and GADF. It also considers the phasing of park and ride.

1.6 This study has therefore included the following key elements which are set out in this report:

i) An analysis of existing transport conditions as far as they affect the potential for park and ride. These are summarised in Section 2.0.

ii) The results of an early and preliminary assessment of the potential demand for park and ride including a review of other park and ride sites in the UK. This is set out in Section 3.0 and has resulted in the selection of three sites for detailed study.

iii) Outline design of park and ride sites and supporting infrastructure needed to support successful park and ride operations. Details are included in Section 4.0.

iv) Assessments of operating and capital costs are set out in Section 5.0

v) Demand forecasting of park and ride in Ashford based on targeted stated preference surveys. Details are included in Section 6.0 along with commentary regarding issues related to parking restraint.

vi) Finally, business case analysis and reporting is set out in Section 7.0.

1.7 Ashford is, in some ways, unique. The future transport strategy is determined as much by significant changes in land use patterns as existing travel patterns and conditions. The future strategy, which includes high quality public transport and parking restraint, affects the potential demand for park and ride over time. Thus the final strategy will be phased. The different elements of the strategy are considered individually in Sections 4.0 to 7.0. Section 8.0 of this report brings all the different elements of the study together and recommends a phased park and ride system for Ashford.

2.0 EXISTING SITUATION

2.1 Road Network and Traffic Flows

2.1.1 Ashford has a compact town centre, largely contained by or fronting the ring road. The ring road itself has significant traffic capacity, in excess of current traffic demands. Five main radial routes emanate from the town centre as shown on **Figure 2.1**. The key characteristics of the radial routes are set out in **Table 2.1**. The radial roads connect external origins of traffic to Ashford town centre. In total they carry c.25,000 vehicles into the town (one-way, 12 hour).

2.1.2 Traffic flows are also monitored crossing a cordon around Ashford town centre. **Table 2.2** compares the 12 hour traffic flows at the town centre cordon with those on the edge of the urban area. This shows that traffic flows grow considerably, by c.80%, between the edge of the urban area and the town centre. Park and ride will largely, although not exclusively, capture travellers heading towards the town centre from areas external to the town.

2.1.3 Travel times in the peak hour between the edge of the urban area and the town centre (derived from journey time surveys and with an additional two minutes added to represent parking search time/travel time within the ring road) are set out below:

Radial Route	**Approximate travel time**
A28 Chart Road	10 minutes
A292/A20 Maidstone Road	6 minutes
A28 Canterbury Road	8 minutes
A292 Hythe Road	7 minutes
A2042/A2070 Romney Marsh Road	7 minutes

This clearly shows that travel times by car from the edge of the urban area to the town centre are low, indicating the existing low levels of delay and congestion in the town.

2.2 Travel Patterns and Modal Split

2.2.1 Information from the AATS Strategic Transport Model has been used to derive an overall picture of movement within, into and out of the town. Considering car travel, the overall pattern of movement is as shown below:

Origin	Destination		
	Town Centre	**Rest Urban**	**External**
Town Centre	-	6.4%	4.4%
Rest Urban Area	6.6%	29.9%	23.4%
External Areas	4.6%	24.7%	-

This shows:-

- a relatively small proportion of total travel by car (around 20%) is focused on the town centre, with 9% between external areas and the town centre;
- large volumes of traffic (c30% of the total) travel within the urban area excluding the town centre; and
- large numbers of trips are made between the urban area (outside the town centre) and external areas.

2.2.2 Thus, the existing market for park and ride - travel between external areas and the town centre - is relatively small. ie only 9% of total trips in and around the town as identified above.

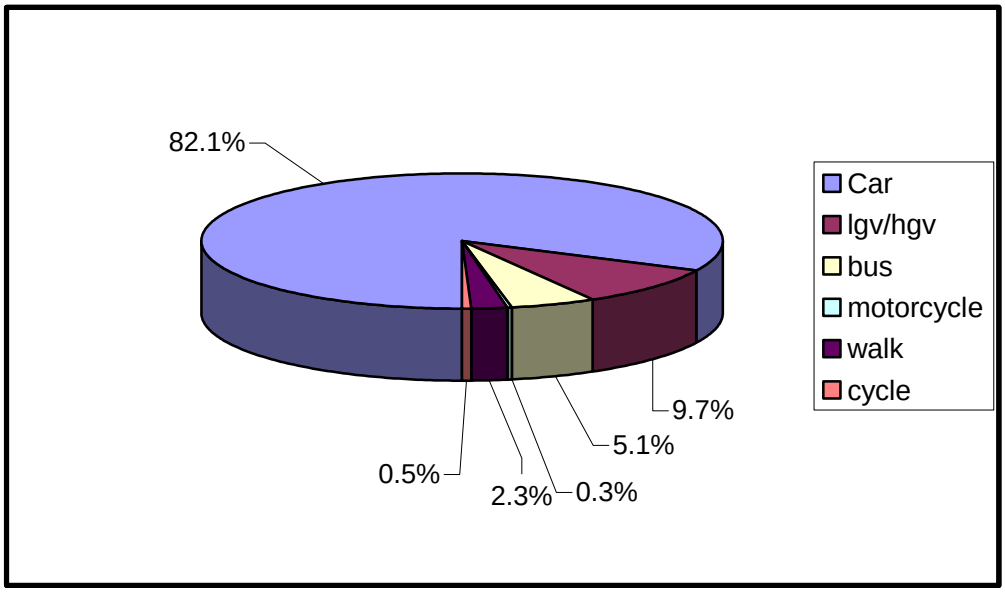
2.2.3 Roadside interview data has also been analysed to establish the existing levels of travel from the edge of the urban area to Ashford town centre. The information, summarised on **Figure 2.2**, shows the following:

- total car occupants on radial routes = 96,500
- car occupants travelling to work in the town = 2,700
- car occupants travelling to the town centre for other purposes = 11,300

2.2.4 Thus the existing potential park and ride demand of 14,000 people represents c.15% of the total number of people entering the urban area. 'Other'

purposes (shopping, leisure, personal business etc) represent the majority of the potential demand (80% compared to 20% for work).

2.2.5 In terms of modal split, travel in and around Ashford is currently dominated by the private car. Information from AATS shows that the daily car/public transport modal split is 95.5% by car and 4.5% by bus and rail. KCC also monitor travel by all modes across a cordon around Ashford town centre and this gives the following modal share:



Public Car Parks

2.3.1 Currently there are c4300 publicly available off-street car parking spaces in Ashford town centre. All but 64 are priced to encourage short-stay use although there are c660 spaces where long-stay parking is charged at £3.00 per day. Short-stay charges are typically £1.20 and £2.40 for two hours and four hours respectively. As well as the off-street spaces, there are c190 on-street pay and display spaces and c640 spaces where limited waiting is allowed. The location of the publicly available car parking spaces is shown on **Figure 2.3** which also identifies the capacity of each car park.

2.3.2 Surveys have been conducted at the main public car parks with **Tables 2.3** and **2.4** summarising the results of the surveys for weekdays and Saturdays

respectively. The tables show the car park capacity, the average and maximum occupancy, the average duration and turnover (parking acts per space).

2.3.3 The results from the weekday surveys (**Table 2.3**) show:

i) Although (over the day) there is some spare capacity in the short-stay car parks, the maximum occupancy indicates that the car parks are almost full (excluding the DOV) at around 11.00. There is little room for growth.

ii) The DOV car park is not busy on weekdays, with an average occupancy of only 20% and a maximum occupancy of 32%.

iii) The long-stay car park at Pall Mall is full by 10.45 and is an average of c.70% occupied over the day. The difference between the average and maximum occupancy at the IPS car park is low, reflecting its use by commuters to London (also evidenced by the average duration of 9½ hours).

iv) The average durations at the short-stay car parks are typically 1½ hours. Any increase in town centre activity (eg. County Square) which increases durations of stay will lead to increases in occupancy and, given that the maximum occupancy is near to capacity, pressure on spaces.

2.3.4 The results from the Saturday surveys (**Table 2.4**) show:

i) As for weekdays, the main short-stay car parks are full by mid-late morning. There is less space at the start and end of the day compared to weekdays.

ii) The DOV is, as expected, much busier on Saturdays with the maximum occupancy increasing from 32% to 80% (the average increasing from 20% on week-days to 58% on Saturdays). There is

space for an additional 300 vehicles although if 10% of the capacity is allowed for circulation then this reduces to 150 spaces. At times (eg. in the run up to Christmas), it is expected that the car park will be full.

iii) The long-stay car park at Pall Mall is used on Saturdays and the maximum occupancy is 79%, indicating its use by shoppers (the charging regime allows for this).

iv) The IPS and Borough Council/Stour Centre car parks are lightly used on Saturdays.

v) Short-stay durations are similar to those for weekdays. Any increases in duration will result in significant pressures on car parking.

Private Non-Residential Parking

2.3.5 There are c.1200 private non-residential (PNR) parking spaces in and around Ashford town centre. The locations of the main car parks and their capacity is given on **Figure 2.4**. The key characteristics (occupancy, duration, turnover) are set out in **Table 2.5**, derived from surveys conducted in September 2004.

2.3.6 The results from the parking surveys (**Table 2.5**) show:

i) All the PNR car parks surveyed are under-utilised with spare capacity available throughout the day.

ii) The NatWest car park appears to be used by NatWest visitors rather than staff (given the low average durations).

3.0 PARK & RIDE SITE SELECTION

3.1 Introduction

3.1.1 The selection of park and ride sites for detailed evaluation was undertaken earlier in the study taking account of a review (by TAS) of other park and ride sites in the UK, a preliminary review of potential demand, revenues and costs and the evolving GADF strategy. Each is described below.

3.2 Review of Park and Ride Sites

3.2.1 TAS undertook a review of best practice in bus based park and ride and this was reported separately; the TAS reports are included as **Appendix A**. The aim of the review was to identify the features which result in successful park and ride operations. TAS selected towns of similar size and stature to (the expanded) Ashford including Cheltenham, Coventry, Ipswich, Leicester, Maidstone, Prenton, Swansea and, subsequently, Guildford and Horsham. Further advice on best practice is given in the report 'Bus Based Park & Ride: A Good Practice Guide' by the English Historic Towns Forum.

3.2.2 The TAS review considered the location of the sites and the facilities available, pricing and a comparison with town centre parking charges, infrastructure and service specifications and the strengths and weaknesses of park and ride operations in each town.

3.2.3 The TAS review identified that the key factors that contribute to a successful park and ride scheme are:-

- Optimum location relative to source of traffic and location of congestion and a suitable fast route for the bus service.
- Quality facilities to minimise security risks to the user and mitigate unattractiveness of transfer from car to bus.
- A high frequency service which minimises the waiting time at the car park for the user.

- A price which offers good value for money in comparison with town centre alternatives (and a town centre pricing policy which facilitates this).

3.2.4 These factors have been taken into account in site selection and the design of potential park and ride systems for Ashford set out later in this report.

3.3 Preliminary Demand Assessment

3.3.1 The potential demand for park and ride will depend upon a number of factors:

i) the overall level of demand for travel, by market segment;

ii) the availability and cost of parking;

iii) the quality of the car journey; and

iv) the quality and attributes of the park and ride service.

3.3.2 All the above act together to determine the usage of park and ride. An interim evaluation of the above was undertaken to assess the potential level of demand for park and ride to aid in the selection of sites for detailed study.

Overall Level of Demand

3.3.3 **Figure 2.2** identifies the existing level of travel towards Ashford town centre on each of the main radial routes. The number of potential car trips by corridor and journey purpose was extracted from roadside interview data and is summarised in **Table 3.1**. These are the maximum demand ie. if everyone travelling from the edge of the urban area to the town centre used park and ride. Clearly this is unlikely but the table shows that only the radials from the M20 motorway carry significant flows towards the town centre.

3.3.4 In the longer term, growth in Ashford, particularly in and around the town centre, will increase the overall level of demand for travel. If combined with

policies of parking restraint (either by restricting supply or by increased charges or both) then this could increase the demand for park and ride considerably. This study investigates the potential for the short-term introduction of park and ride based on existing travel to the town centre. The longer term potential, taking account of parking restraint, is also considered.

Availability and Cost of Parking

3.3.5 The analysis of the current parking situation in Ashford, identifies that short-stay spaces in the heart of the town centre are full on weekdays and Saturdays. The County Square development will increase the demand for town centre short-stay parking. Thus given that the existing short-stay car parks are full, the County Square development could effectively create a demand for park and ride. The increased retail offer in the town may also increase average durations of stay and therefore increase the overall demand for parking or park and ride.

3.3.6 The total car traffic demand for work journeys (taken to represent long-stay parking) in the town centre and surrounding area is c.2,000 vehicles from outside the urban area. The results of the parking surveys indicates that the long-stay Park Mall car park is fully utilised but that the PNR car parks have spare capacity. Thus any increase in demand where parking isn't provided at the work end (for example if operational parking is only provided with new town centre office developments) is likely to increase the potential demand for park and ride.

3.3.7 As far as charges are concerned, typical short-stay durations of stay are 1½ hours, equivalent to a parking charge of £1.20. Information from the SP surveys indicates that most of those travelling to the town centre for 'other' (ie. short-stay) purposes pay to park:

Trip Purpose	% By Parking Type			
	Public Charged	Off-street Free	On-street Charged	On-Street Free
Shopping	97	3	0	0
Personal Business	65	12	18	5
Leisure	92	0	0	8
Overall	**87**	**5**	**7**	**1**

3.3.8 Thus nearly all, 94%, of those visiting the town centre for other purposes pay to park. Clearly those who pay for parking are more likely to use park and ride alternatives than those for whom parking is free.

3.3.9 The majority of workers travelling to the town centre by car have free parking. Analysis of the parking data (for those parking for 7½ hours or more) indicates that c.62% park in PNR areas. Of the respondents to the SP surveys travelling to the town centre to work, 79% stated they had free parking.

Quality of the Car Journey

3.3.10 As well as the availability and cost of parking, other attributes of the car journey affect the choice of mode. These include travel time, parking search time, walk time from the car to the final destination and petrol cost.

3.3.11 The analysis of journey time data identifies that travel times between the edge of the urban area and the town centre are low. In the short term, these are unlikely to increase significantly unless priority is given to park and ride buses (as well as scheduled services using the main radials).

3.3.12 For workers, parking search time is unlikely to be significant as the majority have parking at the workplace and those without free parking are likely to use the same car park on a daily basis. Search time for shoppers is likely to be larger given that the car parks are at capacity during the day. Walk time for workers and shoppers will be low: for workers because the majority park at their workplace; for shoppers because the largest car parks are well related to

retail areas. Petrol costs for the journey between the edge of the urban area and the town centre are insignificant.

3.3.13 Thus, at present, the car journey to the town centre is generally high quality with there being little current incentive for either workers or other town centre visitors to use any other mode.

Quality of the Park and Ride Alternative

3.3.14 The attributes of the park and ride journey which affect the choice of mode are travel time, wait time for the park and ride bus, walk time, bus fare and the modal penalty.

3.3.15 The travel time for the park and ride service is likely to be slightly longer than for the equivalent car journey because of the diversion time to the park and ride site. Bus priority measures could reduce the park and ride bus journey time.

3.3.16 The wait time will depend upon the frequency of the park and ride bus service. For relatively frequent services (say a bus every 15 minutes) then bus users (drivers at the park and ride site in this case) will tend to arrive at random and therefore the wait time will be half the headway ie. 7½ minutes for a 15 minute frequency service. Wait time is typically perceived to be double travel time (ie. people do not like to wait) although this could be reduced by the provision of real-time information (which gives certainty), high quality waiting facilities or by buses always waiting at the terminal.

3.3.17 The walk time at the park and ride site should be small providing the site can be well designed. At the town centre end, walk times for workers are likely to be longer than for the equivalent car journey as many workers park at the workplace and the park and ride bus will only be able to use limited town centre stops. Walk times for shoppers are likely to be similar to car journeys.

3.3.18 The park and ride fare can be varied and different payment mechanisms can be adopted, such as paying to park or paying to use the bus. A typical return fare might be £1.50 per person or a parking charge could be £2.00. Thus park and ride fares (or parking charges at the park and ride sites) are likely to be higher than the equivalent town centre parking charges for 'other' trips but could well be cheaper than the town centre parking charge for workers. Of course, the majority of workers do not pay to park.

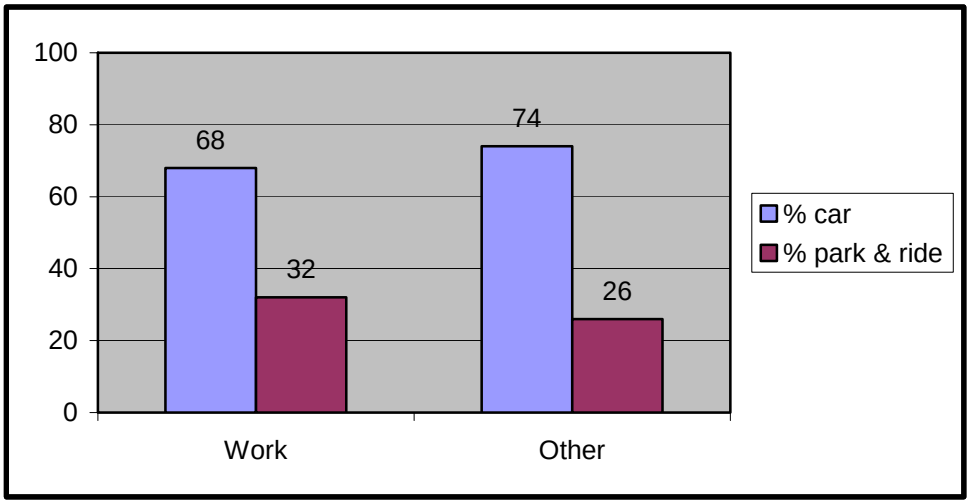
3.3.19 The mode penalty for park and ride represents all the other attributes of the park and ride journey which cannot easily be measured eg. reliability, comfort, convenience, safety etc. The AATS modelling work identified a mode penalty of 10 minutes for public transport and the SP results also indicate a 10 minute mode penalty for park and ride.

3.3.20 Thus, overall and with current conditions, the journey by park and ride is likely to be "more expensive" - in terms of time and money - than the equivalent car journey.

Potential Demand for Park and Ride

3.3.21 The above factors were all taken into account in preliminary mode choice modelling of the demand for park and ride along each radial route. This has been repeated with more detailed mode choice parameters and is set out in Section 6.0.

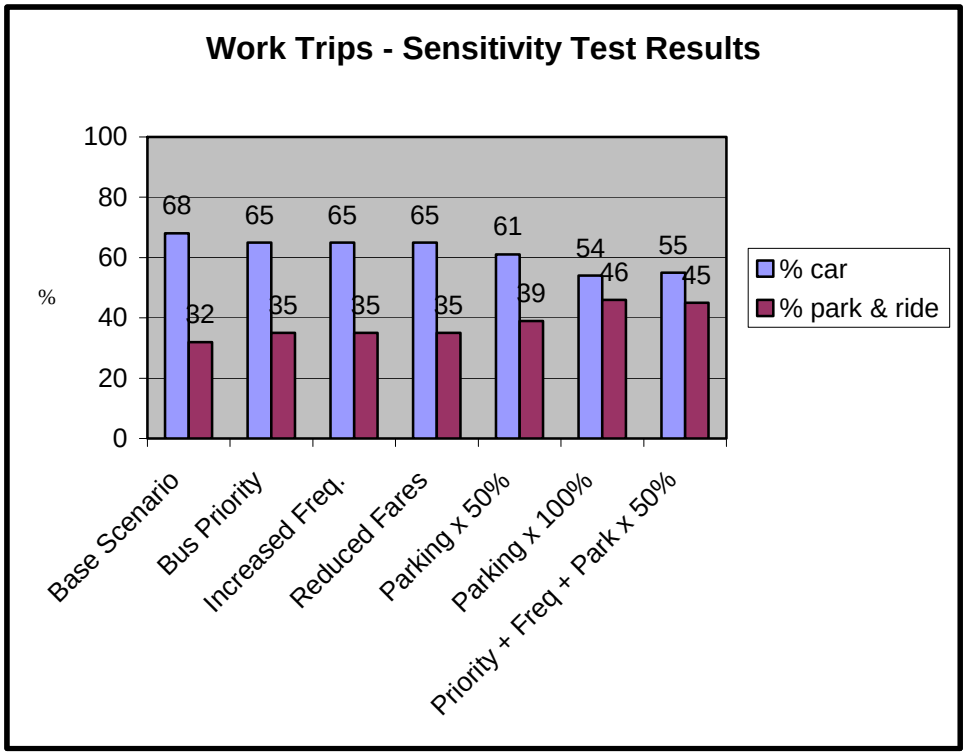
3.3.22 The preliminary analysis of generalised costs by car and park and ride resulted in the following modal splits:



3.3.23 The proportions predicted to use either car or park and ride were then applied to the overall levels of demand along each corridor into the town centre to calculate the potential usage of park and ride. This also took account of the work PNR trips (assumed that none of these would transfer). This resulted in the following preliminary demand estimates for park and ride:-

Site/Corridor	Work Trips	Other Trips	Total Trips
The Warren	50	490	540
A251 Faversham Road	15	75	90
A28 Canterbury Road	30	220	250
M20J10	60	460	520
A2070	25	235	260
A28 Chart Road	15	130	145
Total	**195**	**1610**	**1805**

3.3.24 Sensitivity tests were also undertaken with variations in generalised costs to assess the sensitivity of the demand to the introduction of measures which would promote park and ride usage. The results of the sensitivity tests for work trips are set out in the figure below:

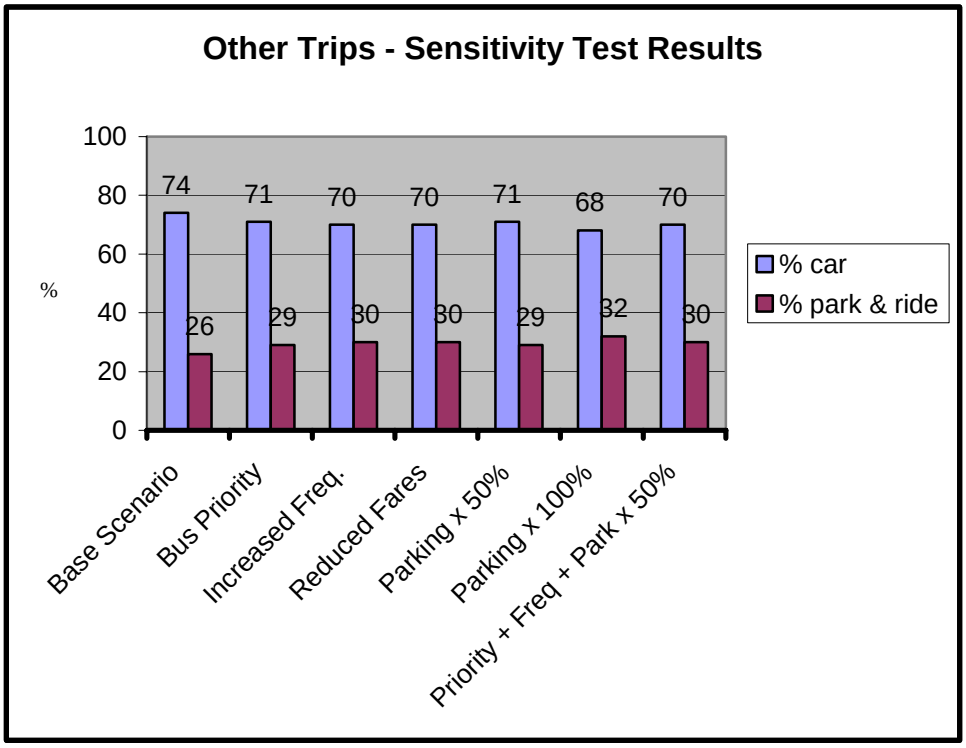


3.3.25 The results from the preliminary sensitivity tests showed:

- Implementing bus priority, increasing the park and ride bus frequency and reducing fares all have the same effect - increasing the park and ride share from 32% to 35%.
- Increasing the parking charge by 50% increases the park and ride share from 32% to 39% whilst doubling parking charges increases the share to 46%.
- A combination of bus priority, higher frequency bus services and a 50% increase in parking charges increases the park and ride share to 45%.

3.3.26 Thus the analysis identified that varying the parking charge, rather than the attributes of the park and ride bus service, is likely to have the most significant effect on the proportion of workers transferring to park and ride. Of course, although the proportion increases, this is applied to a low level of total demand (because most workers currently do not pay to park).

3.3.27 The results of the preliminary sensitivity tests for other trips are set out in the figure below:



3.3.28 The analysis shows that all the sensitivity tests produce similar results with little overall change in the park and ride modal share. This is largely because parking charges are low, particularly when combined with the higher car occupancy for other trips.

3.3.29 The sensitivity test results were then applied to the total demand data to derive the potential total use of park and ride for all scenarios. This identified the following potential increases in the demand for park and ride compared to the base scenario:-

Scenario	**Increase in P&R usage above base scenario**
Base	-
Bus Priority	11%
Increased Frequency	15%
Reduced Fares	15%
Parking x 50%	13%
Parking x 100%	25%
Priority + Freq + Park x 50%	18%

3.3.30 The number of park and ride spaces required to accommodate the potential demand was calculated assuming workers park all day and trips by 'other' purposes turnover at 3 parking acts per space. The table below shows the number of spaces required for the base scenario and for the scenario with the highest demand for park and ride ie. with a doubling of parking charges:

Site	Possible Park & Ride Usage	
	Base Scenario	Max. Demand Scenario
The Warren	220	270
A251 Faversham Road	40	50
A28 Canterbury Road	105	130
M20J10	215	280
A2070	105	135
A28 Chart Road	60	70

3.3.31 Thus the preliminary demand assessment identified that only the sites at The Warren (M20J9) and M20J10 are likely to result in the need for reasonable sized park and ride sites under existing conditions. Of course, policy initiatives to promote the use of sustainable modes and restrict car use would increase the demand for park and ride. This is considered further in Section 6.0.

3.4 Evolving GADF Strategy

3.4.1 GADF and AATS both envisage that park and ride sites will "anchor" the future SMARTLINK public transport system in Ashford. The land use strategy, and public transport system which serves it, has been subject to extensive testing as part of the GADF process. This has included further work with the AATS Strategic Transport Model.

3.4.2 The emerging land use strategy sees major expansion of Ashford town centre and the creation of two new urban (primarily residential) villages at Chilmington Green to the south west of Ashford and at Cheeseman's Green to the south east. Major development is also anticipated close to M20J9 at Eureka and the Barracks. The SMARTLINK system is therefore envisaged as a three leg system with each leg emanating from the town centre and serving:

- Chilmington Green via Cobbs Wood, Chart Estate and Singleton.
- Cheeseman's Green via New Town, South Willesborough, Orbital Park and Waterbrook.
- Eureka via The Barracks.

3.4.3 The SMARTLINK system includes park and ride sites serving each of the three legs and this is broadly compatible with the results of the preliminary demand assessment set out in Section 3.3 above. The SMARTLINK leg to Eureka would route via The Warren park and ride at M20J9. The Cheeseman's Green leg would include a park and ride as close as possible to M20J10. Only the A28 Chilmington Green site identified in GADF performed poorly in the preliminary demand assessment. However, this was based on existing demand and excluded the effects of the expanded town centre, higher parking charges and potential parking restraint.

3.4.4 Given that a park and ride site along the A28 near Chilmington Green would anchor one leg of the SMARTLINK system then this was also selected for further detailed study.

3.5 Park and Ride Site Selection

3.5.1 Taking account of the TAS review of best practice, the preliminary demand calculations and the emerging GADF strategy, the following park and ride sites were therefore selected for further evaluation:-

- M20J9 The Warren (the BLP allocated site)
- M20J10 Waterbrook (site location as output from GADF)
- A28 Chart Road/Chilmington Green.

4.0 PARK AND RIDE SITES AND BUS PRIORITIES

4.1 Introduction

4.1.1 As noted above, three sites have been selected for detailed evaluation – M20J9 The Warren, M20J10 Sevington and A28 Chart Road/Chilmington Green. The locations of the sites are as identified by GADF and are discussed further below. A layout for each site has been developed, taking account of the potential future need for expansion of the sites. Access has been considered. The need and potential for bus priority measures along the routes towards the town centre has then been set out.

4.2 Park and Ride Site Design

M20J9 The Warren

4.2.1 The potential park and ride site, identified by both AATS and GADF, is close to M20J9 south of The Warren as shown on **Figure 3.1**. The site is identified in the Ashford Borough Local Plan (BLP), policies TP10 and S43, and extracts from the BLP are included in **Appendix B**.

4.2.2 The site is located off Fougeres Way approximately 400m south west of M20J9. The site is triangular shaped, bordered by Fougeres Way, A20 Maidstone Road and The Warren Site of Nature Conservation Interest (SNCI). The site is bisected by the Ashford to Maidstone railway line, running south to north. The area of the site identified in the BLP is approximately 7.8 hectares of which c2.0ha is to the west of the railway line.

4.2.3 An indicative park and ride site layout is shown on **Figure 4.1**. This identifies the land requirements for a 500 space car park and the further land take required to expand the site to 1000 spaces. This shows that the land to the east of the railway line, accessed off Fougeres Way, is capable of accommodating at least 1000 car parking spaces.

4.2.4 The land to the west of the railway is difficult to access because of the levels associated with the railway line and it is likely to be more cost effective to provide a separate vehicular access off Maidstone Road. In addition, walk distances from vehicles to the bus terminal/stops from this western part of the site will be longer (c300m) and the direct walk route will involve crossing the railway. It is therefore considered that the park and ride site should be provided solely on the eastern larger part of the BLP site given the access constraints and that this eastern area could accommodate in excess of 1000 parking spaces. The western part of the site could be reserved for future expansion.

4.2.5 The indicative layout shown on **Figure 4.1** identifies a terminal building adjacent to a layby for the park and ride buses. It is envisaged that the terminal building will be equipped with toilets, vending machines, timetable and ticket information etc. CCTV would be provided across the site. The 500 parking spaces are clustered around the terminal building with parking for disabled motorists closest to the terminal. Typical walk distances from the car park to the terminal building are 60-70m with the maximum being 150m. The site is capable of expansion and this is shown on **Figure 4.1**. Typical walk distances to the terminal for a 1000 space site would be 100m with the maximum being 190m.

4.2.6 **Figure 4.1** also shows landscaping around the edge of the site. Given the location of the site adjacent to the SNCI, the BLP identifies that "A substantial tree belt is required along the northern boundary". There is scope to easily accommodate a significant depth of landscaping. Pedestrian access from the park and ride site to The Warren is also shown although this will need to be determined by ABC. A link to the Maidstone Road cycleway is also shown.

4.2.7 Vehicular access to the site is shown to be via a new traffic signal controlled junction off A20 Fougeres Way as shown on **Figure 4.1**. The design of the access should be co-ordinated with the design of traffic signal improvements to both M20J9 and A20/A292 Drover's roundabout. An access for park and ride buses separate to that for car traffic should be investigated. Traffic

capacity of the access will need to be tested with traffic flows from AHTS but it is considered that it should be possible to provide sufficient capacity. The internal layout has been "tracked" for a double decker bus and this is shown on **Figure 4.2**.

M20J10 Sevington

4.2.8 The park and ride site at Sevington is as identified by GADF and is shown on **Figure 3.1**. It is located off Waterbrook Avenue which connects with A2070 Southern Orbital Road at the Orbital Park/Waterbrook roundabout. The site is located approximately 1.5km to the south west of M20J10. Although this is a significant distance from the motorway junction, much town centre bound traffic uses A2070 and A2042 Romney Marsh Road in preference to the narrow and constrained A292 Hythe Road.

4.2.9 The park and ride site is located in an area allocated in the BLP for land take associated with road improvements and for development (site S14 Waterbrook). The site is also in the flood plain. Careful detailed design of the site will therefore be needed to ensure compatibility with both road improvements and the layout of development at Waterbrook.

4.2.10 An indicative layout for the park and ride site is shown on **Figure 4.3**. This identifies the land requirements for a 500 space site and the area needed to allow expansion to 1000 spaces. The site will anchor the south eastern leg of the proposed SMARTLINK system and therefore its design will need to be amended to accommodate the SMARTLINK alignment when this is determined, as well as highway improvements and development proposals.

4.2.11 The layout identifies a terminal building and facilities will be as those identified for The Warren park and ride site. Typical walking distances from the 500 space site would be 70m with the maximum being 170m. These would increase to 170m (typical) and 220m (maximum) with the 1000 space site.

4.2.12 Vehicular access to the site is likely to be from Waterbrook Avenue. **Figure 4.1** shows this via a simple priority controlled junction but the layout will need to be determined when plans for the improvement of the A2070/Waterbrook Avenue roundabout are known. Any design of the junction improvements should ensure access to the park and ride site is not prejudiced. The internal layout has been "tracked" for a double decker bus and this is shown on **Figure 4.4**. Opportunities for separate bus/car access and egress should be investigated.

A28 Chart Road/Chilmington Green

4.2.13 A park and ride site to anchor the south western leg of SMARTLINK has been identified by AATS and GADF and this is shown on **Figure 3.1**. A site could be provided to the east of A28 Chart Road, in the Chilmington Green area, close to the A28 junction with Goldwell Lane/Ashford Road ie at the south western end of the A28 Great Chart Bypass.

4.2.14 The park and ride site is approximately 4km from Ashford town centre and is currently in what appears to be agricultural use. The site is not currently allocated in the BLP although it will lie close to possible future development at Chilmington Green and its design will need to be integrated with that of any development proposals (note that if development is not allocated in this location then the park and ride site will not be needed to serve SMARTLINK).

4.2.15 An indicative layout for the park and ride site is shown on **Figure 4.5**. The land take for a 500 space site is shown with the expansion land to accommodate 1000 spaces also identified. Facilities would be as the sites at M20J9 and M20J10. Parking for disabled motorists would be close to the terminal building. Typical walk distances to the site are low, at 60m, with a maximum of 140m. These increase to 90m and 170m respectively for the 1000 space site.

4.2.16 Vehicular access could be via a new roundabout junction at the south western end of A28 Great Chart Bypass. As for the other sites, opportunities for

separate bus/car access should be investigated. A four arm roundabout would connect the A28 with the park and ride site and Goldwell Lane/Ashford Road. The design of the roundabout may need to be modified to take account of possible longer term dualling of A28 and a future connection to provide access to Chilmington Green. The design could be modified to form the connection between the proposed Roman Way and A28 and the park and ride site layout design could be modified, depending upon the final alignment of Roman Way. The internal layout of the park and ride site has been "tracked" for a double decker bus and this is shown on **Figure 4.6**.

4.3 Bus Routes and Bus Priorities

4.3.1 It is envisaged that the three park and ride sites will ultimately anchor three legs of the new public transport system for Ashford, SMARTLINK. At this time it is envisaged that park and ride services will be replaced by a high quality bus based service running on a SMARTLINK alignment. The details of the SMARTLINK routes have yet to be determined but they should seek to provide fast journey times, with priority over the car, to Ashford town centre. In the shorter term, the routes of park and ride bus services have been considered and then the need and scope for bus priority measures has been investigated. Section 8.0 of this report sets out a phasing plan for park and ride.

Bus Routes

4.3.2 The possible routes for park and ride bus services are shown on **Figure 4.7**. The routes associated with each of the park and ride sites are described below. The routes recommended for short term park and ride operations (ie pre SMARTLINK) are set out after the consideration of potential bus priority measures. It has been assumed that park and ride bus services would drop off in the town centre in the Bank Street area or at Elwick Road outside the New County Square development in the short term with town centre bus termini modified, as necessary, when SMARTLINK opens.

M20J9 The Warren

4.3.3 With the existing road layout, two options are available:-

i) The Warren – A292 Maidstone Road – New Street – Somerset Road – Station Road – Elwick Road – Bank Street. This would be the most direct route between the potential park and ride site and the town centre.

ii) The Warren – Barracks Link – Godinton Road – Forge Lane – Somerset Road – Station Road – Elwick Road – Bank Street. This route would be slightly longer than the route via Maidstone Road but would also serve The Barracks development.

M20J10 Sevington

4.3.4 Three potential bus routes are available between the park and ride site at Sevington/Waterbrook and Ashford town centre:-

i) Waterbrook – Southern Orbital – M20J10 – Hythe Road – Mace Lane – Station Road – Elwick Road – Bank Street. The route distance would be approximately 5.50km.

ii) Waterbrook – The Boulevard – Crowbridge Road – Newtown Road – A2042 Romney Marsh Road – Elwick Road – Bank Street. The route distance would be approximately 3.85km.

iii) Waterbrook – Southern Orbital – A2042 Romney Marsh Road – Elwick Road – Bank Street. The route distance would be approximately 5.25km.

A28 Chart Road/Chilmington Green

4.3.5 The park and ride bus services would travel along A28 Great Chart Bypass

and A28 Chart Road to the roundabout junction with The Barracks link/Godinton Road. From the roundabout there are three alternative routes to the town centre:-

i) Godinton Road – Forge Lane – Somerset Road – Station Road – Elwick Road – Bank Street.

ii) Chart Road – Maidstone Road – New Street – Somerset Road – Station Road – Elwick Road – Bank Street.

iii) Barracks link – Maidstone Road – New Street – Somerset Road – Station Road – Elwick Road – Bank Street.

Queues and Delays

4.3.6 In the longer term, park and ride buses are likely to run along a segregated SMARTLINK alignment. In the short term, the need for bus priority measures is determined by existing queues and delays. The base year AHTS SATURN model has been interrogated to determine queues and delays along the possible park and ride bus routes identified above. The results for the AM and PM peak hours are shown on **Figure 4.8**. Only locations where the delay is greater than 20 seconds are given.

4.3.7 **Figure 4.8** shows that there are very few locations where existing queues and delays are significant. The main areas of congestion are as follows:

i) Drover's roundabout. There are significant delays and queues on all three arms of the junction which would be used by park and ride bus services (A20 Fougeres Way, A292 Maidstone Road and The Barracks link) although it is understood, that a scheme is being prepared to improve capacity at the roundabout by signalising the junction.

ii) M20J10. There are significant delays at the motorway junction, particularly on the overbridges. Again, a scheme is planned to improve the junction which includes widening of the overbridges, dualling of Hythe Road and improvements at the Hythe Road/M20 westbound on slip junction.

iii) A28 Chart Road/Barracks link/Godinton Road roundabout. There is a significant delay inbound on the A28 towards the town centre in the AM peak hour (88 seconds with an average queue of 24 vehicles).

4.3.8 All other modelled delays and queues are moderate and would not significantly affect park and ride bus operations. On this basis, there is little need for bus priority measures to be introduced in the short term. In the longer term, as Ashford grows and congestion increases, then it is envisaged that the introduction of SMARTLINK will provide a priority route from all three park and ride sites to the town centre.

4.3.9 Nevertheless, the potential for bus priority measures along each of the possible bus routes has been investigated and this is considered below for each park and ride site.

Opportunities for Bus Priority

M20J9 The Warren

4.3.10 **Figure 4.9** summaries the opportunities for bus priority for the two alternative routes to the town centre.

4.3.11 A bus lane could be provided between the park and ride site access and the Drover's roundabout. Its design would need to be incorporated with the proposed traffic signal improvement scheme at the roundabout. Land to the north west of Fougeres Way could be used to provide a bus lane from the roundabout into the park and ride site although it is considered that this is

unlikely to be needed given that it should be possible to design the park and ride site access junction such that delays are minimised.

4.3.12 There are few queues and delays along the A292 Maidstone Road corridor into and out of the town centre and therefore there is little need for bus priorities in the short term. Maidstone Road is dual carriageway along most of its length and it would be possible to provide bus lanes by dedicating the inside lane for buses only. This is shown on **Figure 4.9**. The traffic flows along Maidstone Road could be accommodated in one lane although, given the lack of existing congestion problems, any benefits for buses could be offset by delays to general traffic.

4.3.13 There is scope for provision of bus lanes along The Barracks link as the carriageway has wide verges (see **Figure 4.9**) but, again, there are few existing queues or delays other than on the approach to the Drover's roundabout. It is assumed that the signalisation of the roundabout will resolve capacity issues.

4.3.14 There is an existing bus gate on Carlton Road (see **Figure 4.9**) which provides bus only access to Godinton Road. Whilst Godinton Road (in this respect) is therefore a suitable route for buses, it is narrow with cars parked on one side along its entire length (see **Figure 4.9**). There is little scope to widen Godinton Road without significant property acquisition as the footways are narrow. There appears to be no scope to relocate the parking as the road is fronted largely by terraced properties, most with no rear or alternative access.

4.3.15 The park and ride bus services would utilise the ring road and this results, given its current one-way operation, in significant journey lengths to reach Bank Street. Bus priorities around the ring road have not been investigated as it is assumed that the proposed modifications to the ring road to achieve two-way operation will also include bus priority measures. The opportunity to introduce an 'early win' bus only lane between New Street and Bank Street (ie

via Forge Lane and Elwick Road) should be investigated as part of the ATCDF ring road assessments.

4.3.16 Overall, it is considered that only the bus lane on the approach to the Drover's roundabout should be provided and that this should be incorporated in the traffic signal improvement of the roundabout, depending upon the final design of the improvements at the junction.

M20J10 Sevington

4.3.17 **Figure 4.10** considers the opportunities for bus priority measures along the three alternative routes between the Sevington/Waterbrook park and ride site and the town centre.

4.3.18 The SOR between Waterbrook and M20J10 is of two-lane dual carriageway standard. There is little need for bus priority other than at M20J10. It is assumed that the "interim" improvement scheme will reduce delays. Any widening of the SOR to provide bus lanes would involve very significant costs and is unlikely to be justified in cost-benefit terms.

4.3.19 Hythe Road offers a potential bus route and the eastern end will be improved with the "interim" scheme at M20J10. The remainder is constrained by properties fronting the relatively narrow footpaths and carriageway and there is therefore little scope to improve the road to provide bus priority without significant costs and land take. The road bridge across the Ashford-Canterbury railway line also acts as a constraint. It would be possible to dedicate one lane in each direction of Mace Lane to buses (see **Figure 4.10**) but there are low existing queues and delays and any removal of highway capacity could result in congestion but with little benefit for park and ride.

4.3.20 An alternative route to the town centre from Waterbrook is via Orbital Park, Crowbridge Road and Newtown Road, joining A2042 Romney Marsh Road at the IPS. This route is recommended by GADF as a SMARTLINK corridor and it will need to be subject to detailed route planning. In the short term, bus priorities would be difficult and expensive to introduce. There are significant

vertical and horizontal alignment constraints including the bridge near Gladstone Road and under the Ashford-Hastings railway to the west of New Town Works.

4.3.21 The third potential route is via A2070 SOR and A2042 Romney Marsh Road. The whole route is dual carriageway standard and is relatively lightly trafficked. The AHTS base year SATURN model identifies that there are no significant queues or delays. It would be possible to dedicate one lane for buses in each direction although this is likely to have little benefit.

4.3.22 Overall, it is recommended that bus priorities are not needed along this route to the town centre.

A28 Chart Road/Chilmington Green

4.3.23 The issues associated with the provision of bus priority measures along the corridor to the town centre are summarised on **Figure 4.11**.

4.3.24 The A28 Chart Road is currently a single carriageway between the proposed park and ride site access and the roundabout junction with The Barracks link/Godinton Road. AATS identified the possible need to dual the road for traffic capacity reasons and that, if dualling was completed early, then one lane of the road could be used for bus priority in the short term and before the SMARTLINK route is fully operational. There are constraints along the route but it should be possible to dual the A28. However, dualling should not be progressed solely to provide short-term bus priority in the absence of SMARTLINK.

4.3.25 As a result, no bus priority measures are recommended along this route.

4.4 Recommended Bus Routes

4.4.1 The full park and ride strategy, including phasing, is set out in Section 8.0. If park and ride is to be introduced in the short-term then it is recommended that

bus services run along the following routes:-

- M20J9 The Warren: via Maidstone Road to Ashford town centre, switching to The Barracks link, Chart Road and Maidstone Road when significant development on The Barracks site is occupied. The park and ride bus would stop at The Barracks.
- M20J10 Sevington: via A2070 SOR and A2042 Romney Marsh Road in the short term. Route via Newtown Road if constraints at the western end are resolved.
- A28 Chart Road/Chilmington Green: via A28 Chart Road and Maidstone Road.

4.4.2 The recommended bus routes are shown on **Figure 4.12**.

4.4.3 Given the future provision of SMARTLINK, the only bus priority measure recommended is a bus lane on the approach to the Drover's roundabout from The Warren Site. Ideally, buses will utilise an early modification to Ashford ring road, resulting in two-way operation and faster bus journey times to the town centre.

5.0 CAPITAL AND OPERATING COSTS

5.1 Capital Costs

5.1.1 Capital costs of the three park and ride sites have been calculated by TAS/RPS. The costs are set out in **Table 5.1** and include the following elements:

- Land purchase: an allowance of £750,000 for a 500 space site and £1,000,000 for a 1000 space site has been included.
- Access: costs have been calculated based on the designs set out on **Figures 4.1**, **4.3** and **4.5**.
- Waiting Area: it has been assumed that this would include toilets, bike sheds etc.
- Signage, surfacing and markings (typical rates from TAS).
- Landscaping and fencing (typical rates from TAS).
- CCTV (four cameras per site).

5.1.2 The costs exclude fees, significant statutory undertakers costs, significant geotechnics, fees, compensation and VAT. Although an allowance for land purchase has been included, this could vary significantly.

5.1.3 Bus capital costs have not been explicitly allowed for in the business case model. They have, however, been included in the operating cost model by way of depreciation, which is standard practice. An alternative would be for the buses to be purchased and TAS have obtained quotes from Mistral Bus and Coach Rentals for the supply of brand new 29 seat Alexander Dennis Dart low floor buses. These are priced at £82,500. Two buses would be required for a four bus per hour operation whilst three buses would be needed to provide a ten minute frequency.

5.1.4 The only bus priority recommended is the provision of a bus lane between The Warren park and ride site access and the Drover's roundabout. The costs of this scheme will be in the order of £100,000, excluding the items set

out in 5.1.2. If the scheme is to be introduced then this would be best constructed as part of the improvement works to the Drover's roundabout. On this basis, the cost has been excluded from the capital cost estimate.

5.1.5 Therefore, the estimated capital costs of the three park and ride sites used in the business case analysis (Section 7.0) are:-

Site	500 spaces	1000 spaces
M20J9 The Warren	£2,023,000	£3,003,000
M20J10 Sevington	£1,668,000	£2,653,000
A28 Chart Road	£1,818,000	£2,803,000

5.2 Operating Costs

5.2.1 TAS have calculated the operating costs of the park and ride bus services and these are set out in **Table 5.2**. Costs have been calculated for two different frequency levels: 4 buses per low and 6 buses per hour. The following assumptions have been adopted, based on regional averages:-

- Drivers wages and ancillary costs: £12.50 per hour with a shift length of 7.5 hours plus 1 hour inactive time allowed per person.
- Site security superior: £14.50 per hour with shift length as above.
- Fuel, maintenance, tyres: £0.45 per mile.
- Depreciation: £8,250 based on the purchase price of a 29 seat midibus costing £82,500 and depreciated over 10 years.

5.2.2 Site maintenance and cleaning costs have been excluded because, in practice, they usually form an extension of existing activities ie the shelter cleaning team add the park and ride facilities to their schedule and the roadsweeper diverts off the road outside the park and ride and cleans the car park.

5.2.3 An operator profit margin of 15% has been added to the operating costs.

5.2.4 Therefore the annual estimated operating costs of the three park and ride sites used in the business case analysis (Section 7.0) are:

Site	4 buses per hour	6 buses per hour
M20J9 The Warren	£218,700	£315,900
M20J10 Sevington	£231,000	£334,300
A28 Chart Road	£221,500	£320,100

6.0 DEMAND AND REVENUE FORECASTS

6.1 Introduction

6.1.1 Park and ride demand is influenced by a range of factors and these are summarised in Section 3.0. The calculation of the demand for each park and ride set has been undertaken using the approach set out in **Figure 6.1**.

6.1.2 This section sets out the details of the mode choice model used including the results of stated preference surveys, summarises the input data to the models, sets out the demand predictions and considers a range of sensitivity tests. Finally, revenue forecasts are given.

6.1.3 The future demand for park and ride, and other public transport services including SMARTLINK, can be influenced by restricting parking supply. AATS has concluded that this is likely to be necessary to achieve the significant levels of growth envisaged in Ashford (particularly in the town centre) and to improve the viability of public transport services. This section of the report considers short-term demand, without restraint (ie a conventional demand analysis). The effects of parking restraint are considered in Section 7.0 to establish their effects on the business case. The overall phased strategy for park and ride is set out in Section 8.0.

6.2 Mode Choice Modelling

6.2.1 The modal split between car and park and ride for any travel movement (O-D pair) is calculated using a logit model. This calculates the probability of using either car or park and ride based on the generalised costs of each mode. The equation used is as follows:-

$$P\ car = \frac{1}{1 + \exp \theta\ (GC\ p\&r - GC\ car)}$$

where:

P car = probability of choosing car

θ = scaling parameter
GC p&r = generalised cost of park & ride journey
GC car = generalised cost of car journey

6.2.2 Thus the probability of choosing park and ride, Pp&r, is equivalent to 1 – Pcar.

6.2.3 The generalised costs of park and ride and car are as follows:

GC p&r = a1 (travel time) + a2 (walk time) + a3 (search time) + a4 (fare) + mode penalty

GC car = a1 (travel time) + a2 (walk time) + a3 (search time) + a4 (parking charge)

where a1-a4 and the mode penalty are coefficients of the model derived from stated preference (SP) surveys.

Stated Preference Surveys

6.2.4 PDC have undertaken specific SP surveys in Ashford and their report describing the surveys and the resulting calibration of the mode choice model is set out in **Appendix C**. A summary is given below.

6.2.5 The overall approach was to undertake a stated preference personal face-to-face interview survey of people who either work or shop (or visit for other non work purposes) in Ashford town centre. Taking one recent trip made into the town along the potential park and ride corridors, the interview explored respondents trip decision making with and without the park and ride system for various levels of cost, journey time etc.

6.2.6 The work was undertaken in two phases. The first pilot phase was completed in September 2004 and was used to further develop the questionnaire. This had a sample of 20 interviews. The second phase was conducted in late September/early October 2004 and covered a further sample of 101 interviews.

The questionnaire was supported by descriptions, pictures and maps of the potential park and ride system which described the different options. The support material was of sufficient high quality so as to convey to the respondent a clear perception of the options and what it would mean to them for their travel.

6.2.7 Potential respondents were selected at a variety of positions throughout the town. The potential respondent was asked a series of questions to ensure that they fitted the criteria for interview. These included:-

- information about the respondents travel context to identify the reference trip;
- information about the respondent's reference trip;
- information about the respondent's alternatives to their reference trip;
- information about the attributes of the new mode, which they could use for their reference trip; and
- background information about the respondent

6.2.8 The interviewer selected one of the most recent trips made within the study area and along a corridor of interest as the reference trip. The details of the reference trip were recorded e.g. trip origin, purpose, frequency of trip, journey time, type of parking if used and parking cost. These were used to calculate the total journey time and total cost. Having worked out the journey time and the cost of the reference trip and doing it via the alternative mode, the respondent was asked to compare the cost and journey time values, reflect on the practicality of using each of the alternative modes (including the one actually used), to bear in mind the attributes (time, cost etc) of each alternative mode and decide how likely was that they would use the alternative mode.

6.2.9 This simple choice was recorded and used to define the stated preference game which the respondent was to play. Each of the six stated preference games had been designed with low and higher values and the respondent who liked the alternative mode was offered an SP game which reflected their choice and

which offered the most appropriate levels of cost, time etc which would ensure that they would switch between the alternative modes of transport being offered.

6.2.10 The stated preference game invited the respondent to consider alternative ways of making the reference trip via the current mode or via the alternative mode option (with different values of time cost etc). The results were recorded. A ranked stated preference game was then conducted where respondents were asked to rank eight alternative ways of making their reference trip. This was generally highly successful and respondents found it interesting to conduct. The design proved not to be a taxing task for respondents. Finally, a set of market segmentation questions were asked to round-off the interview.

6.2.11 The size of the survey sample was geared to the number of market segments for which coefficients are to be measured with a guide of 50 to 75 interviews per target market segment. A target market segment is that group of travellers for which separate coefficient measurements are required.

6.2.12 A total of 121 SP interviews were obtained and have been subsequently analysed to develop the attributes of the mode choice model. The characteristics of the interviewees is set out in detail in **Appendix C**. The trip purpose breakdown of the interviewees was as follows:-

Trip Purpose	No. of Interviews
Work	52
Employer's Business	1
Shopping	32
Personal Business	17
Leisure	12
Escort	1
Visiting friends/relatives	3
Interchange (parking then taking train or bus)	3
Total	**121**

Calibration of Mode Choice Models

6.2.13 The SP data was analysed by PDC. The results of pooling all the phase one stated preference results together, set out in **Table 6.1**, showed a good

general fit to the coefficients. All the relative coefficients were positive (and the absolute coefficients negative) confirming the expectation that as the attribute increases then this is perceived to be 'nastier' to respondents (e.g. increasing the cost of the mode is seen to be making it less attractive). The students 't' statistic is given for each coefficient and these show that all the coefficients are significant.

6.2.14 Turning to the coefficients themselves, they show that the average value of time was found to be 6.0 pence per minute, which is within the range expected. Values of time between 1.5 and 9 pence per minute have been calibrated by PDC for these sorts of choice situations.

6.2.15 The value of walk time is 0.8 minutes per minute of in-vehicle time. For walking times of up to about 10 to 15 minutes, this generally lies within the range 0.8 to 2 minutes with a more recent tendency for lower values especially in circumstances where a certain amount of walking is expected. This is at the lower end of the range which shows that people do expect to walk these distances in this area.

6.2.16 For waiting times up to about 15 minutes, the value of waiting time generally lies within the range 0.8 to 2 minutes with a more recent tendency for lower values especially for turn-up-and-go public transport services where a certain amount of waiting is expected. The value of 1.1 from the SP is within this range as expected.

6.2.17 For park and ride, PDC have measured mode perception values of between 5 minutes and 20 minutes with more recently a tendency towards the lower end of this range, especially if it is accompanied by good quality infrastructure, service reliability etc. The mode perception coefficient (mode constant) calibrated from the SP was 9.9 minutes which is within the range expected. Overall the coefficients offer a good explanation of the data.

6.2.18 The data was then analysed by trip purpose so as to compare the sample across different types of trip. The results of this analysis are shown in **Table 6.2** with the overall coefficient values given for comparison.

6.2.19 Overall the results were good with the estimated model coefficients conforming to expectations and, except for those purposes with small samples (ie personal business, leisure and visiting), with generally highly significant 't' statistics. The values of time and the other coefficients were all fairly similar which shows consistency within the survey sample and lends support to their accuracy.

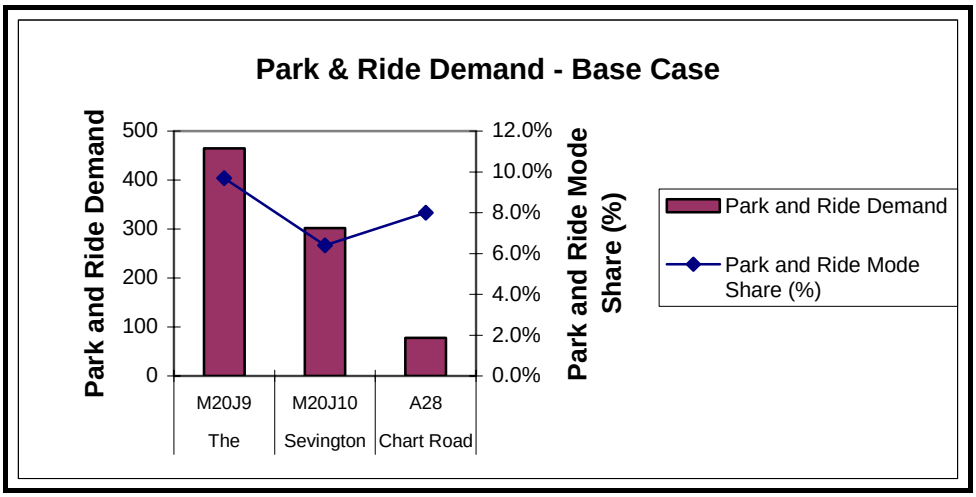
6.2.20 The mode choice model derived from the SP surveys has then been used to estimate the demand for each park and ride site. The input data is summarised in **Appendix D**.

6.3 Mode Choice Model Results

6.3.1 PDC have applied the calibrated mode choice model to the demand for travel to the town centre. The demand data takes account of the availability of free PNR parking for work trips; it has been assumed that only 35% of workers pay to park (based on the parking and SP survey results) and therefore only 35% of the total work trip demand to the town centre has been included in the model. The model results are included in detail in **Appendix E**.

Base Case

6.3.2 The base case demand assessment adopts existing parking charges and a park and ride bus frequency of four buses per hour. The results of the demand modelling are set out in **Table 6.3** and are summarised below.



6.3.3 The base case demand is the situation that is predicted to occur if park and ride was introduced today ie without any growth, higher parking charges or parking restraint. This identifies that park and ride would achieve an overall mode share of 8.1% compared to car (of those trips within the park and ride catchment).

6.3.4 The modal share for work trips is 38.9% and is high because all car trips in the analysis are assumed to pay a long stay parking charge. This does, however, form a high share of a small number of trips because, in practice, about two-thirds of workers parking in the centre have free parking available. In the calculation of park and ride usage, it has been assumed that they will not use park and ride. The modal share for other (non work) trips is 5.3% but is applied to a significantly higher level of demand. This results in 60% of the total park and ride demand generated by non work trips.

6.3.5 In terms of the number of car parking spaces needed at the park and ride sites, the c850 trips predicted to transfer to park and ride would generate the need for only c500 car parking spaces taking account of car occupancy and assuming short stay parkers (other non work purposes) turnover at 2 acts per space per day.

6.3.6 **Table 6.3** (and the figure in paragraph 6.3.2 above) shows that The Warren site would attract the highest demand. The transfer from car would exceed

the transfer from the Sevington/Waterbrook and Chart Road/Chilmington Green sites combined.

6.3.7 The demand figures are not unexpected given the low base level of demand for travel to the town centre (see Section 2.0), the low levels of parking charge in Ashford town centre and the large proportion of workers who have free PNR parking available. The demand levels for non work trips are significantly lower than those derived at the preliminary demand assessment stage. Sensitivity tests have been undertaken to establish how the demand for park and ride could be increased. At this stage, 'short-term' effects have been considered ie the effects of significantly higher parking charges and parking restraint have been excluded. These are considered later in this report.

Demand Sensitivity Tests

6.3.8 The sensitivity tests have considered the following:-

i) Time saving. The park and ride journey is assumed to reduce by 4 minutes relative to the car journey.

ii) Frequency Increase. Park and ride buses are assumed to run at a higher frequency of 6 buses per hour.

iii) Lower Fares. The park and ride fares are reduced to two thirds of the base value (taken as £1.00 per person).

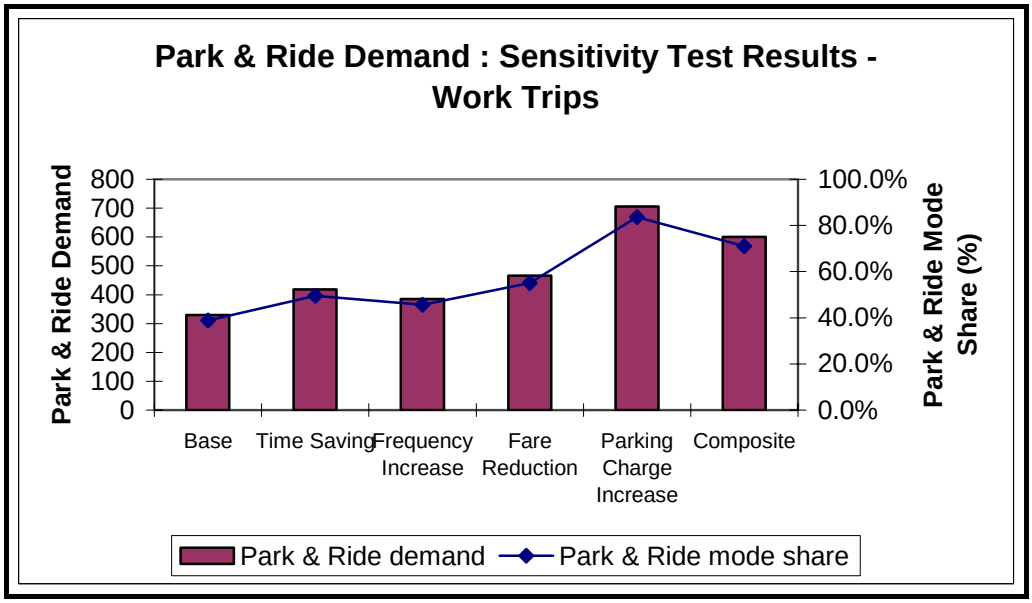
iv) Higher parking charges. Town centre parking charges are assumed to increase by 50%. PNR parking stays at 65% for workers.

v) Package of measures. Time savings + frequency increase + lower fares (ie i) + ii) + iii) above).

6.3.9 The results of the sensitivity tests are summarised in **Table 6.4** and are

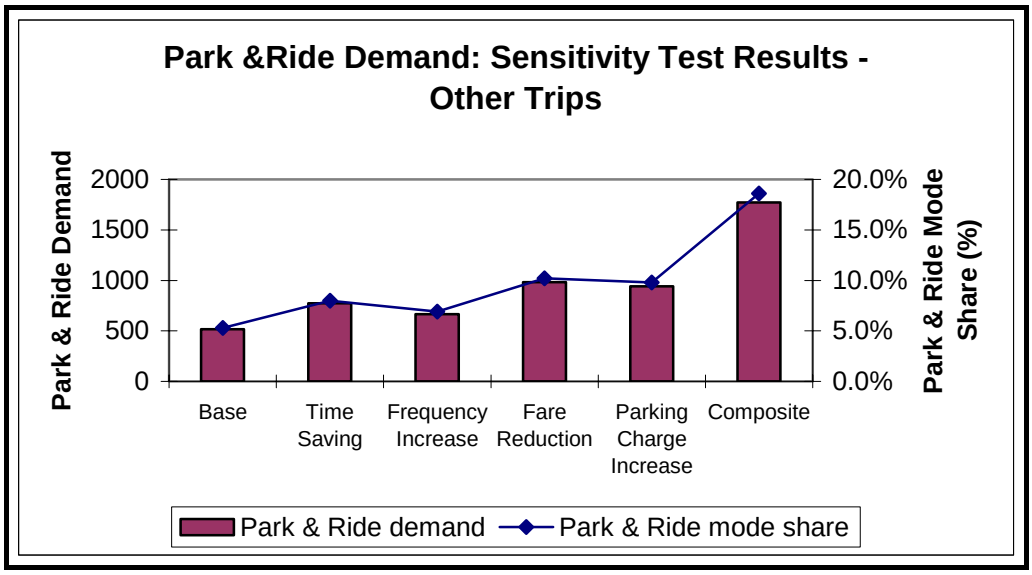
shown graphically below (the full details are included in **Appendix E**). The practical issues associated with introducing measures to promote park and ride are considered in Section 7.0.

6.3.10 The effect on work trips is shown below:



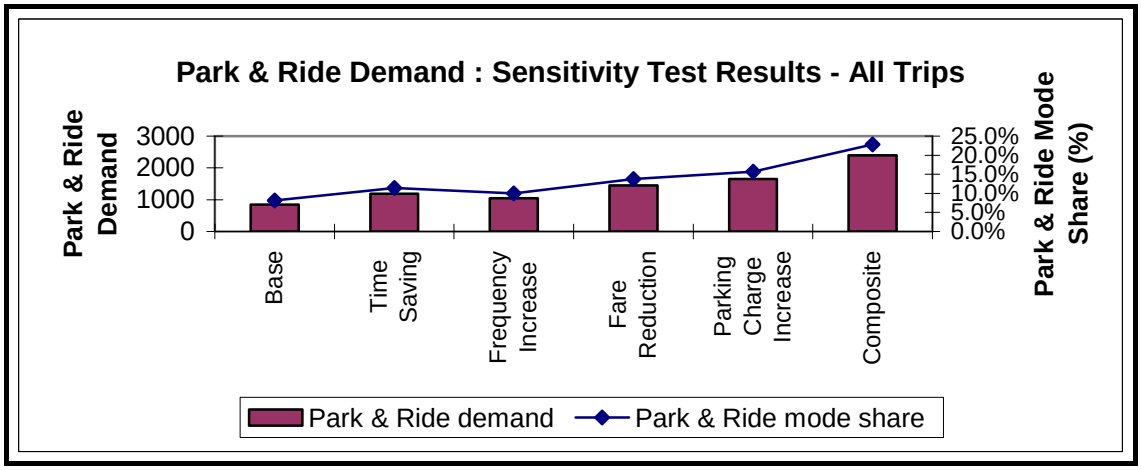
6.3.11 Increasing parking charges has by far the largest effect on the usage of park and ride by workers. The park and ride mode share increases to 84% - nearly all workers, who would otherwise pay to park in the town centre, are predicted to use park and ride. Reducing fares by a third would increase demand by c42% compared to the base case. Increasing the frequency has a modest effect on demand, resulting in a 17% increase compared to the base case. A travel time saving of four minutes increases demand by 27%. The composite effect of time savings, frequency increases and fare reductions is less than that of increasing parking charges; resulting in a 82% increase in demand compared to a 115% increase with higher parking charges.

6.3.12 The effect on other (non work) trips is shown below.



6.3.13 Increasing short-stay parking charges by 50% has less of an effect on non work trips to the town centre, largely because short stay charges are relatively low and car occupancy is high. Demand is increased by 82%. On its own, the fare reduction has the greatest effect on park and ride demand (90% increase above the base case), largely because it reduces the average cost per car occupant. Unlike work trips, a combination of reduced travel times, fare reductions and frequency increase has the greatest effect on park and ride. The park and ride mode share increases to nearly 19% and demand increases from just over 500 trips per day to nearly 1800 trips.

6.3.14 For completeness, the combined (ie work + non work) sensitivity test results are shown below.



Effect on Park and Ride Car Park Requirements

6.3.15 The demand levels predicted from the above sensitivity tests have been converted into parking space requirements for each of the scenarios (adopting the occupancy and turnover assumptions as previously) and this is set out below:-

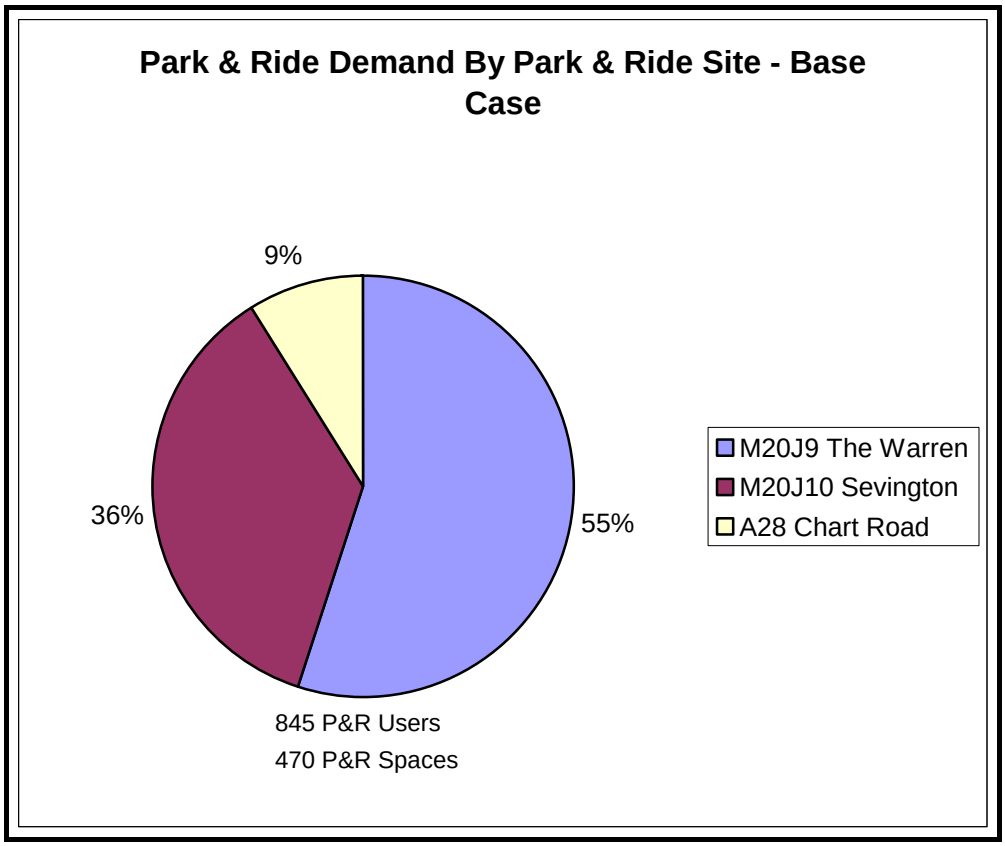
Scenario	No of P & R Car Park Spaces Required	Increase above base (%)
Base	470	-
Time saving	640	36%
Frequency Increase	570	21%
Fare Reduction	750	60%
Increased Parking Charges	960	104%
Composite	1140	143%

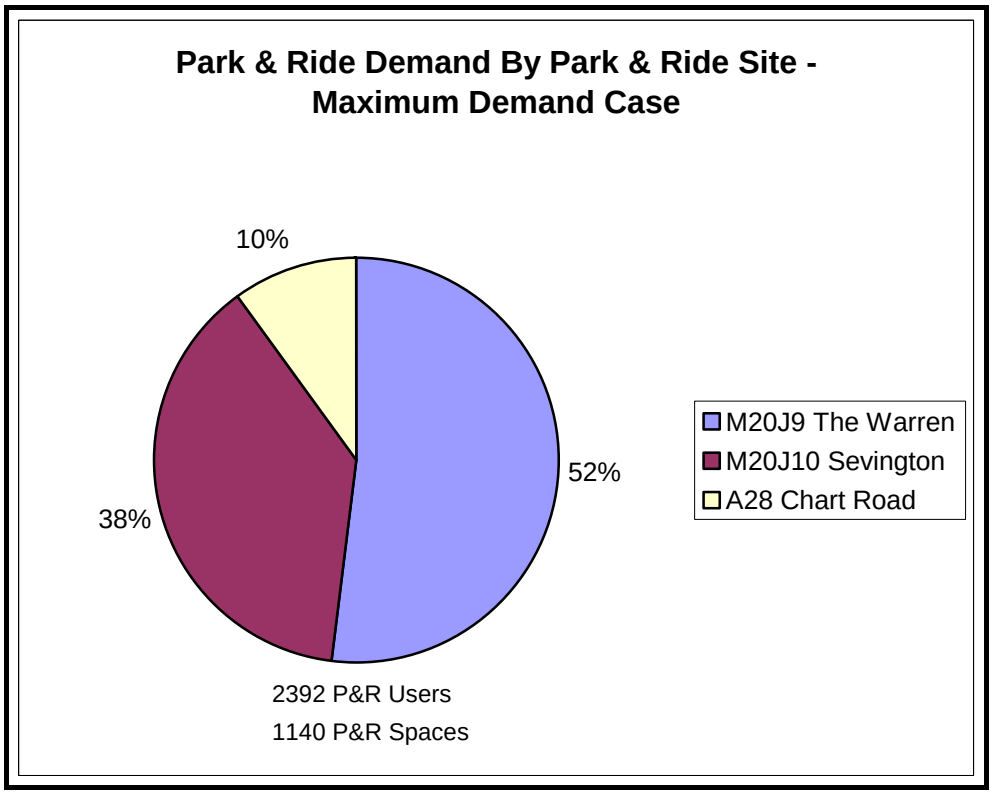
6.3.16 The above table clearly shows that the park and ride parking requirements vary significantly depending upon the parameters adopted in the demand models. The above does, however, show that there is unlikely to be demand for 1500 spaces across three sites in the short term.

6.3.17 One factor which could affect this is the potential demand associated with the County Square retail development. It is understood that 500 spaces will be needed off site to serve County Square. These are considered in the business case analysis (Section 7.0) and the overall phased park and ride strategy (Section 8.0).

Demand at the Park and Ride Sites

6.3.18 The above demand and car park size assessments give the combined usage of all three potential park and ride sites in Ashford. The calculations of demand have, however, provided the usage of each of the three sites and the calculations are set out in **Appendix E.** The split of demand between the three potential park and ride sites is summarised below for the base case and maximum demand scenario (note that the parking space requirements are broadly in the same proportion):-


Park & Ride Demand By Park & Ride Site - Base Case
9%
36%
55%
M20J9 The Warren
M20J10 Sevington
A28 Chart Road
845 P&R Users
470 P&R Spaces


Park & Ride Demand By Park & Ride Site - Maximum Demand Case
10%
38%
52%
M20J9 The Warren
M20J10 Sevington
A28 Chart Road
2392 P&R Users
1140 P&R Spaces

6.3.19 The above diagrams clearly show that The Warren park and ride site would attract the highest share of demand. In the base case this would generate the requirement for 270 spaces, rising to 600 with the maximum demand scenario. The site at Waterbrook/Sevington would generate the need for 160 and 440 spaces with the base case and maximum demand scenarios respectively. The site at A28 Chart Road performs poorly in all scenarios with the requirement for only 40 spaces in the base case, rising to 100 with maximum demand. This confirms the preliminary evaluations that the A28 site is unlikely to perform well, in the short term.

6.3.20 Phasing and our recommendations regarding each site are set out in Section 8.0, following the business case analysis.

6.4 Revenue Forecasts

6.4.1 The demand assessments adopt a fare of £1.00 per person (other than the reduced fare scenario). The resulting revenues for each of the different scenarios have been calculated. It has been assumed that the demand on Saturdays will be equivalent to the weekday demand, with the reduction in workers compensated by an increase in shoppers. Park and ride services are assumed not to operate on Sundays.

6.4.2 The annual revenues for each scenario are set out below:-

Scenario	Annual Revenue	Increase above base (%)
Base	£265,000	-
Time saving	£370,000	40%
Frequency Increase	£330,000	25%
Fare Reduction	£300,000	13%
Increased Parking Charges	£515,000	94%
Composite	£745,000	181%

6.4.3 The base case revenues are modest, only £265,000. The maximum demand scenario increases revenues significantly, to almost £0.75 million. The effect

of varying revenues, including comparisons with operating costs, are set out in the next section where the business case analysis is presented.

7.0 BUSINESS CASE ANALYSIS

7.1 Introduction

7.1.1 The costs (capital and operating) and revenues associated with each park and ride site have been calculated. A range of revenues have been predicted, based upon the sensitivity of the demand forecast to the attributes of both car and park and ride affecting choice of mode. The bus routes between the park and ride sites have also been considered, as has the need for bus priority measures.

7.1.2 The demand forecasts for the early introduction of park and ride services (ie based on existing travel patterns and conditions and with existing parking levels and costs) identify relatively low levels of demand. The growth of Ashford, and in particular significant expansion of the town centre, will provide an opportunity to significantly improve demand. As well as the growth in overall travel demand resulting from expansion of the town, a transport strategy involving significant restraint is likely to be be needed to ensure growth is sustainable. Thus the longer term prospects for park and ride are likely to be enhanced.

7.1.3 This section of the report draws together the previous technical assessment work (largely sections 5.0 and 6.0) and includes:

- a summary of the methodology adopted for the business case analysis;
- the business case analysis of the base case demand scenario;
- the effects on the business case of demand sensitivity tests and the implications of this;
- a consideration of the levels of demand needed to achieve satisfactory economic and financial performance and how this might be achieved; and
- consideration of the long term and the opportunities to increase park and ride demand, and therefore viability, through parking restraint.

7.1.4 The section concludes with recommendations regarding the introduction of park and ride in Ashford in the short term. This feeds into the overall phased strategy for park and ride to 2031 which is presented in Section 8.0.

7.2 Business Case Methodology

7.2.1 A Local Transport Plan (LTP) bid for park and ride, if this is to be progressed, is likely to require full NATA appraisal (including environmental assessment) and Transport Economic Efficiency assessments.

7.2.2 At this stage, preliminary financial and economic assessments have been undertaken to identify the key issues associated with the business case for park and ride. These have looked at costs and benefits over 30 years using the capital and operating costs from Section 5.0 and the revenue predictions from Section 6.0. It has been assumed that the schemes would have a definite life and therefore the 30 year evaluation is considered appropriate. No account of residual value has been undertaken.

7.2.3 Based on TAS advice, revenues have been assumed to reach their predicted levels at year 3 of operation with 50% and 75% of demand in years 1 and 2 respectively. Future demand has been calculated using TEMPRO growth ie the effects of parking restraint and town centre expansion have not been considered at this stage.

7.2.4 A conventional economic analysis would take account of non user benefits, arising from travel-time, vehicle operating cost and accident savings for vehicles remaining on the highway network. The transfers to park and ride are modest and result in small reductions in traffic flows along the radial routes into the town centre. Existing travel times from the edge of the urban area to the town centre are low and the analysis of delays and queues (Section 4.0) confirms that there is little congestion across the road network. Any non-user benefits are therefore expected to be minimal and have been ignored in the business case analysis.

7.2.5 The analysis considers operating ratios (a comparison of annual costs and revenues), Net Present Values (NPVs) and Benefit Cost Ratios (BCRs). The calculated NPVs exclude capital costs and thus identify the net discounted costs of operating the park and ride services over the 30 year evaluation period. The BCRs are the present value of benefits divided by the present value of costs. Subsidy has been excluded. DfT guidance identifies:-

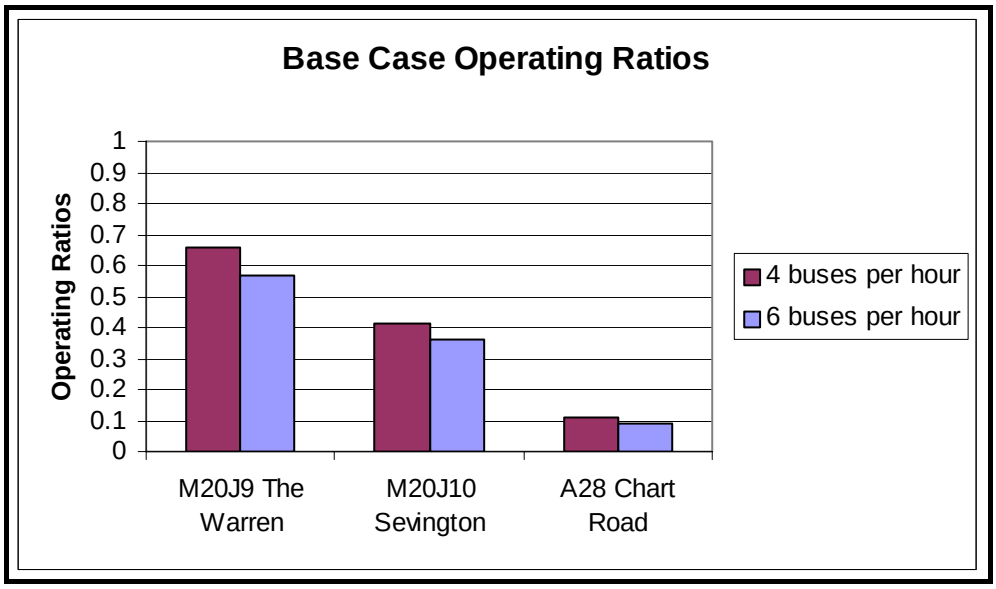
- BCR less than 1.0 : poor value for money – no prospects of funding
- BCR between 1.0-1.5 : low value for money – very few projects funded
- BCR between 1.5-2.0 : medium value for money – some projects funded
- BCR greater than 2.0 : high value for money – most projects funded.

7.3 Analysis of the Base Case

7.3.1 The base case has been subject to economic assessment and the details are included in **Appendix F**. Each of the three potential park and ride sites has been tested and scenarios with four buses per hour and six buses per hour have been evaluated. The key inputs to the assessments are summarised in **Table 7.1**. Cost have been calculated for park and ride sites with 500 and 1000 spaces; at this stage only the input data for 500 space sites are presented, given the low demand levels.

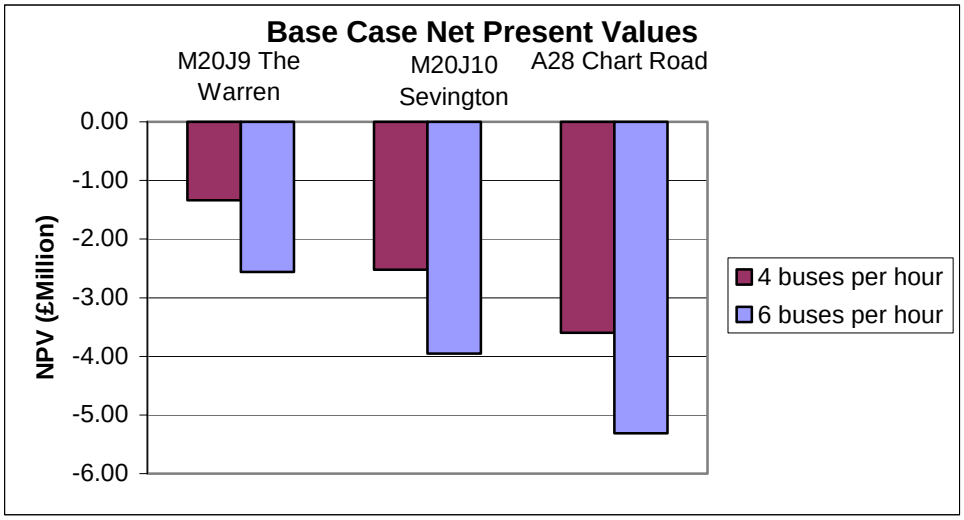
7.3.2 The results of the economic evaluations (details in **Appendix F**) are set out in **Table 7.2** and are summarised in the graphs below. Again, given the low levels of base demand, only the 500 site operation is considered. The assessments have been conducted with and without site supervision. The operating ratios given in **Table 7.2** include both cases. The removal of supervision from the operating costs results in an annual saving of c£50,000 per site and improves both the financial and economic performance. It is, however, considered that supervision should ideally be provided and the discussion of results therefore only includes those for the 'with supervision' scenarios. The NPVs and BCRs are only given for this scenario.

7.3.3 The figure below shows the operating ratio (revenues ÷ operating costs) for each park and ride site:-



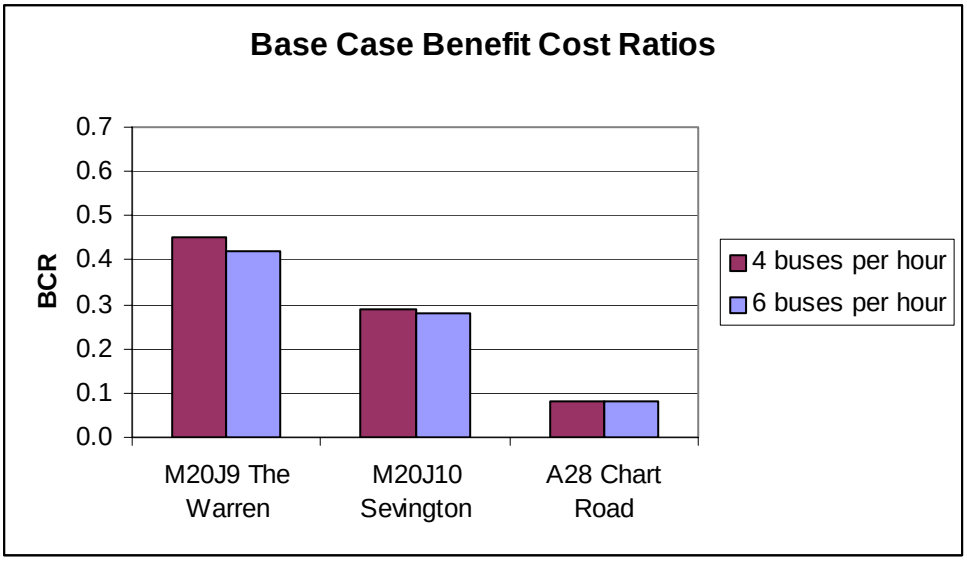
7.3.4 All the operating ratios are less than 1.00, showing that annual revenues would not cover operating costs. Only the site at The Warren results in revenues near annual operating costs. Note that the operating ratio increases to 0.91 for a four bus per hour frequency operation when site supervision is excluded. The site at A28 Chart Road, as expected, performs poorly with operating ratios around 0.1, showing revenues only cover 10% of annual operating costs. In all cases, operating ratios are lower with the higher frequency bus services : this is not surprising as demand (and therefore revenues) increase by c25% but operating costs increase by c45%.

7.3.5 The net present values (NPVs) for each park and ride site are shown below:-



7.3.6 All the NPVs are negative, showing that operating costs exceed benefits (revenues) over the 30 year evaluation period. Thus there is no net revenue stream to off-set against the capital costs of the sites.

7.3.7 Given the negative NPVs, all of the BCRs are significantly less than 1.0:-



7.3.8 Thus all three potential park and ride sites perform poorly in the base case. The introduction of park and ride operations would also result in a reduction in town centre parking revenues which have not been taken into account in the above analysis.

7.4 Sensitivity Tests

7.4.1 The demand analysis presented in Section 6.0 considered a range of factors which could increase the demand for park and ride. These included.

- Time savings for the park and ride bus
- Frequency increases
- Fare reductions
- Increase in parking charges

The practical issues associated with the above are considered before their effects on the business case analysis are set out.

Time Savings

7.4.2 A four minute saving in the park and ride journey relative to the car time was modelled and this is predicted to increase demand by 41%. The travel times, by car and park and ride, between the edge of the urban area and the town centre are low. There is little scope for bus priority and therefore a four minutes time saving is likely to be difficult to achieve. A more modest saving, of say two minutes, is considered to be more likely achieved in the short term.

Frequency Increases

7.4.3 The base case analysis has considered higher frequency park and ride services. Whilst demand and references increase by c25%, annual operating costs increase by c45%. In all cases, the higher frequency scenarios result in poorer financial and economic performance at all three potential park and ride sites. It is therefore considered that, at least in the short term, park and ride services should operate at four buses per hour.

Fare Reductions

7.4.4 Reducing park and ride bus fares has a significant effect on demand; increasing demand by 71% with a third reduction in fare. Of course, although demand increases by a significant amount, the increase in revenue is modest, at only 15%, given the reduced fare.

Parking Charge Increases

7.4.5 Increases in parking charges of 50% are predicted to result in a significant increase in demand. The modelling exercise identifies a 95% increase in total park and ride usage. Increases in parking charges are, however, likely to be unpopular with the public and, potentially, with elected members. They can also affect the vitality and viability of the town centre in the short-term. There are therefore significant hurdles to overcome if higher charges are to be introduced in the short term.

Effects on Financial and Economic Performance

7.4.6 The financial and economic evaluations have been repeated with the revenues from the sensitivity tests. Given the relatively poor economic performance of the base case analysis, only the four buses per hour frequency has been tested and only for 500 space park and ride sites which have lower capital costs. All the calculations have been undertaken for the 'with supervision' operating cost scenario. The results are presented in **Table 7.3**.

7.4.7 The sensitivity test results show that the A28 Chart Road site continues to perform very poorly in all scenarios. It is considered that park and ride operations at this site will be unsuccessful in the short to medium term in the absence of significant parking restraint.

7.4.8 The performance of the site at Waterbrook/Sevington is poor. Operating ratios are significantly less than 1.00 in all scenarios. NPVs are negative,

demonstrating that operating costs exceed annual revenues. The benefit cost ratios are significantly less than 1.0. This represents poor value for money using DfT criteria. In addition, there may be practical difficulties in implementing a park and ride site in this location in the short-term given the existing allocations in the BLP and the floodplain.

7.4.9 The site at M20J9 The Warren performs adequately and, with high parking charges, then it has a positive operating ratio, positive NPV and BCR approaching 1.0. There is therefore potential for short term park and ride operations at this site providing measures are introduced to improve demand. This is considered below.

7.5 Short Term Park and Ride Strategy

7.5.1 The sensitivity test results indicate that park and ride services from The Warren could result in satisfactory performance. Further demand assessments have been undertaken assuming:-

- A park and ride frequency of four buses per hour.
- A 50% increase in long stay (worker) parking charges but only a 10% increase in short stay (non worker) charges.
- A 20% reduction in off-peak park and ride fares, designed to attract shoppers to the service.
- A two minute saving in park and ride journey times, achieved through the introduction of bus priority at Drover's roundabout and by early introduction of two-way bus operations at Ashford's ring road.

7.5.2 The results of the analysis are summarised below for The Warren park and ride site:-

Annual Operating Costs	=	£220,000
Annual Revenues	=	£256,000
Operating Ratio	=	1.16

Net Present Value	=	+£0.88 million
Benefit Cost Ratio	=	0.82.43

7.5.3 The analysis shows that annual revenues exceed operating costs (at year 3 of operation) giving a positive operating ratio. The revenue stream results in a positive NPV and a BCR of 0.82. Note that the Sevington and Chart Road sites continue to perform poorly using the same assumptions.

7.5.4 There is potential to increase demand at this site:

i) The County Square development will generate the need for additional off site parking.

ii) Some town centre bound vehicles from M20/A20 east could divert to this park and ride site.

7.5.5 If it is assumed that, say, 200 of the County Square spaces are provided at the park and ride (with a turnover of two acts per space) and that half of the M20/A20 east trips could use The Warren site (ie half the trips are input to the demand assessment) then the financial and economic results are as follows:

Annual Operating Costs	=	£220,000
Annual Revenues	=	£441,000
Operating Ratio	=	2.00
Net Present Value	=	+£4.42 million
Benefit Cost Ratio	=	1.41

7.5.6 Under these conditions the site performs very well with revenues significantly in excess of costs and a healthy operating ratio. Year 1 revenues (which are assumed to be only half of those output from the model) are predicted to cover operating costs. The NPV would be healthily positive and the BCR at 1.41 indicates that the scheme is close to representing medium value for money.

7.5.7 Of course, the analysis assumes a strategy is in place to encourage park and ride and that some of the parking at County Square is provided at The Warren. The demand levels predicted are therefore significantly in excess of the base case. The two sets of results presented above do, however, indicate that a positive case can be made for the introduction of a park and ride site in the short term at The Warren. The site is allocated in the BLP and therefore it should be possible to progress the site subject to funding of capital costs.

7.5.8 The demand forecasts have been analysed to establish the number of parking spaces required at The Warren site. The forecasts indicate a park and ride site of between 600-800 spaces, depending upon the demand assumptions (ie the difference between the two cases identified above). Thus a 500-600 space site could be built with expansion to 1000 spaces as demand increases.

7.5.9 Any park and ride operation will affect the overall Ashford town centre parking account. The effect of park and ride operations at the Warren has been assessed, taking account of the loss in revenue as a result of transfers to park and ride and the increase in revenue resulting from higher parking charges for those who continue to drive. The net result is a c£200,000 deficit in the parking account, largely resulting from the transfer of long stay parkers to park and ride services. Of course, it may be possible to reduce the number of long stay spaces, resulting in a capital asset and saving in operating costs. Alternatively, the spaces may be taken up with parkers as Ashford town centre grows, albeit that the aim should be to restrain overall parking levels. This needs to be investigated further following consideration of this report.

7.6 Longer Term Prospects for Park and Ride

7.6.1 In the longer term, Ashford town centre is predicted to grow significantly. The latest GADF work envisages 3,150 new dwellings, 12000 new jobs and c150,000 sqm of new retail/leisure floorspace in the expanded town centre. All these uses will generate significant demands for travel.

7.6.2 A new public transport system, SMARTLINK, is proposed to serve the growth area. This will be complemented by significant parking restraint, both in terms of higher charges and reductions in the number of spaces provided. In addition, the town centre ring road is being redesigned to accommodate flows similar to those of today. The AATS Strategic Transport Model has been used to assess these impacts and this has identified that significant parking restraint will be needed to achieve future flows at today's levels. High quality public transport and high parking charges, on their own, will not be sufficient.

7.6.3 Levels of parking under restrained and un-restrained scenarios have been calculated for the expanded town centre for 2011, 2021 and 2031. With restraint, other modes will need to provide for travel to the town centre. Analysis identifies that park and ride would play a significant role and the following number of park and ride spaces are envisaged:-

Parking Type	2011	2021	2031
Long Stay (Commuters)	1600	1600	2100
Short Stay (Others)	200	400	700
Total	**1800**	**2000**	**2800**

7.6.4 The analysis can be modified once proposals for the town centre are developed but the above, when combined with the short-term demand forecasting results, points to:

- A large park and ride site at M20J9 The Warren, initially with 500 spaces but with land reserved for expansion to 1000 spaces. This can be achieved on the BLP site.
- A large park and ride site at M20J10 Sevington/Waterbrook with 500 spaces initially. Land should be reserved for expansion, taking into account the BLP allocations in the area.
- A smaller car park at A28 Chart Road/Chilmington Green. This is only likely to be viable in the medium/longer term. It is considered that a site capable of accommodating up to 500 spaces will be needed.

7.6.8 These have been fed into the overall park and ride strategy for Ashford which concludes this report.

8.0 RECOMMENDED PARK AND RIDE STRATEGY

8.1 This report has considered the costs, demand and revenues associated with three potential park and ride sites at M20J9 The Warren, M20J10 Sevington/Waterbrook and A28 Chart Road/Chilmington Green. The sites have been subject to extensive assessment including financial and economic analysis.

8.2 This section of the report brings all of the elements together and sets out:-

- Recommendations for the introduction of park and ride in the short-term.
- The end state 2031 park and ride strategy for Ashford.
- Phasing of the strategy and its relationship to SMARTLINK.

Short Term Park and Ride

8.3 The assessments presented in this report indicate that the park and ride site at The Warren, close to M20J9, will perform satisfactorily in the short term in financial and economic terms. The demand for the site, if supporting measures are put in place, will result in revenues which exceed operating costs. The planning and design of the site should therefore be progressed in detail.

8.4 Although revenues will cover operating costs, there may be a need for short-term subsidy depending upon the build up of revenues in the early years of operation. The transfer of cars from town centre car parks to the park and ride will also result in a reduction in town centre parking revenues. The parking account therefore needs to be investigated to assess the implications of this.

8.5 It is recommended that a 500 space car park is built initially but with land identified for expansion to at least 1000 spaces. This can be accommodated on the BLP allocation. The design of the access and bus priority measures

on the approach to the Drover's roundabout needs to be coordinated with the design of improvements to the roundabout itself.

8.6 As the town centre expands, including the County Square development, then the demand for park and ride will increase, particularly as parking is restrained. A park and ride site at M20J10 Waterbrook/Sevington should therefore be developed in the short to medium term, initially with 500 spaces but with land for expansion identified.

8.7 Park and ride sites with 500 spaces will cost in the order of £2 million (although land costs need to be investigated and the cost estimate excludes various items). The capital costs of the sites will need to be funded separately from the bus service. This could be using LTP monies, Section 106 contributions or from the Ashford's Future infrastructure fund.

8.8 If the site at The Warren is operated, in the short term, in isolation then a signing strategy should be put in place to direct traffic from other corridors to use the site, particularly M20/A20 east and A28 Canterbury Road.

2031 Park and Ride

8.9 The future demand for park and ride is influenced by the levels of expansion and parking restraint in Ashford town centre. The future parking strategy is yet to be finalised but if significant restraint is implemented then it is likely that three park and ride sites could be provided as follows:-

i) M20J9 The Warren: at least 1000 space site.

ii) M20J10 Waterbrook/Sevington: 1000 space site.

iii) A28 Chart Road/Chilmington Green: a smaller 500 space park and ride site.

8.10 Revenues will depend upon parking restraint but the long term viability of the sites should be satisfactory as SMARTLINK will provide the services and operating costs will be covered by SMARTLINK revenues. The park and ride sites will therefore assist the viability of SMARTLINK by creating an additional revenue stream. Capital costs should be funded via the LTP, Ashford's Future infrastructure fund or S106.

8.11 Further work needs to be undertaken on the M20J10 site to establish how the scheme fits with the BLP allocations in the area. Land for this site, and the A28 site, should be reserved in the emerging Ashford Local Development Framework (LDF).

Phased Park and Ride Services

8.12 The potential phased introduction of a park and ride and SMARTLINK system for Ashford is shown on **Figure 8.1**. This will depend upon the final phasing plan for development which emerges from the LDF process but, at this stage, the following is envisaged:

- **Phase 1: 2007-2012 : Conventional Bus Operation**
  - Park and ride site introduced at The Warren (M20J9) in 2007/2008.
  - Conventional bus provides dedicated park and ride services to Ashford town centre; initially via A292 Maidstone Road then diverting via The Barracks once development there commences.
  - Route via two-way ring road when this delivered.
  - Introduce site at Waterbrook in line with town centre expansion.
  - Increases in long stay and short stay parking charges implemented (long stay + 50%; short stay +10%).

- **Phase 2: 2012 : First Phase of SMARTLINK**
  - The Warren and Waterbrook sites extended to 1000 spaces following monitoring and evaluation of early years of operation.
  - Park and ride bus services provided by first phase of SMARTLINK between the two park and ride sites.

- Continued increase in long and short stay parking charges plus increased parking restraint to be implemented.

- **Phase 3: 2014 : SMARTLINK extensions**
  - Park and ride sites continue to operate with SMARTLINK.
  - Extensions of SMARTLINK towards urban villages at Chilmington Green and Cheeseman's Green.

- **Phase 4: 2017 : SMARTLINK Complete**
  - Park and ride site (500 spaces) built at A28 Chart Road and connected to SMARTLINK alignment to Ashford town centre via Chilmington Green.
  - Review size of site at Sevington/Waterbrook based on monitoring and evaluation of early years of operation.
  - Parking charges increased towards AATS recommended strategy levels and significant town centre parking restraint.

8.13 Thus a phased park and ride strategy for Ashford has been defined. Its implementation will assist in securing the sustainable growth of Ashford.

ASHFORD PARK AND RIDE STUDY – MODE CHOICE MODEL INPUT DATA

Site 1 : M20J9 The Warren

Market Segment Ref	No of People in M-Seg	No of Cars in M-Seg	Car Generalised Cost Information			P&R Generalised Cost Information					
			Travel Time	Work Time	Parking Charge (per car)	Car Diversion Time	Bus Time	Walk Time	Frequency (buses per hour)	Mode Penalty	Fare (per person)
M20 Work	315	290	8	1	£2.50	0	10	4	4	From SP	£1.00
M20 Shop	2920	2030	8	2	£1.00	0	10	2	4	From SP	£1.00
A28 Work	110	100	8	1	£2.50	4	10	4	4	From SP	£1.00
A28 Shop	1450	840	8	2	£1.00	4	10	2	4	From SP	£1.00
East Work	140	110	8	1	£2.50	3	10	4	4	From SP	£1.00
East Shop	1560	890	8	2	£1.00	3	10	2	4	From SP	£1.00

Site 2 : M20J10 Sevington

Market Segment Ref	No of People in M-Seg	No of Cars in M-Seg	Car Generalised Cost Information			P&R Generalised Cost Information					
			Travel Time	Work Time	Parking Charge (per car)	Car Diversion Time	Bus Time	Walk Time	Frequency (buses per hour)	Mode Penalty	Fare (per person)
M20 Work	290	230	8	1	£2.50	2	10	4	4	From SP	£1.00
M20 Shop	3110	1780	8	2	£1.00	2	10	2	4	From SP	£1.00
A2070 Work	70	60	8	1	£2.50	3	10	4	4	From SP	£1.00
A2070 Shop	1260	660	8	2	£1.00	3	10	2	4	From SP	£1.00

Site 3 : A28 Chart Road

Market Segment Ref	No of People in M-Seg	No of Cars in M-Seg	Car Generalised Cost Information			P&R Generalised Cost Information					
			Travel Time	Work Time	Parking Charge (per car)	Car Diversion Time	Bus Time	Walk Time	Frequency (buses per hour)	Mode Penalty	Fare (per person)
A28 Work	60	50	10	1	£2.50	0	12	4	4	From SP	£1.00
A28 Shop	910	550	10	2	£1.00	0	12	2	4	From SP	£1.00

Table 2.1 : Characteristics of Main Radial Routes

Road Number	Carriageway Standard	Daily (12 hr) Flow at edge of Town (inbound to Ashford)	Key Land Uses served within Ashford	Key External Destinations served
A28(N) Canterbury Road	Single	5600	Predominantly large residential areas at Kennington and residential areas around Magazine Road	Canterbury District, Thanet, Faversham
A292 Hythe Road	Single	3900	Henwood Industrial Estate; Norton Knatchbull & North Schools; Willesborough residential area; William Harvey Hospital close by at M20J10	Folkestone and Dover via M20 East
A2042/A2070 Romney Marsh Road	A2042 Dual A2070 Single	5200	Railway Station; DOV; Park Farm	Hamstreet, Romney Marsh, Hastings, Rye
A28 (SW) Chart Road	Single	4600	Chart Road Industrial Estate; Cobbs Wood Industrial Estate; residential areas at Godinton Park, Singleton and Great Chart	Tenterden and rural SW of Ashford District
A20/A292 Maidstone Road	Part single/part dual	6100	Barrow Hill residential area; Highworth School	Charing, Maidstone and beyond via M20 West

Table 2.2 : Town Centre and Urban Edge Traffic Flows

Route/Road Name	Town Centre Cordon	Urban Edge
A28 Chart Road	22,200	9,200
A292 Maidstone Road	12,100	12,200
A28 Canterbury Road	15,900	11,200
A292 Hythe Road	13,800	7,800
A2042 Romney Marsh Road	26,300	10,400
Total	**90,300**	**50,800**

Table 7.1 : Base Case Economic Analysis Input Data

Park and Ride Site	Frequency Scenario	Capital Cost	Annual Operating Cost		Annual Revenues[1]
			With supervision	Without supervision	
M20J9 The Warren	4 buses ph	£2,023,000	£220,000	£160,000	£145,000
	6 buses ph	£2,023,000	£315,000	£250,000	£180,000
M20J10 Sevington	4 buses ph	£1,668,000	£230,000	£170,000	£95,000
	6 buses ph	£1,668,000	£335,000	£270,000	£120,000
A28 Chart Road	4 buses ph	£1,818,000	£220,000	£160,000	£25,000
	6 buses ph	£1,818,000	£320,000	£260,000	£30,000

[1]At year 3 of operation

Table 7.2 : Base Case Economic Analysis Results

Park and Ride Site	Frequency Scenario	Operating Ratio[1]		NPV	BCR
		With supervision	Without supervision		
M20J9 The Warren	4 buses ph	0.66	0.91	- £1.34m	0.45
	6 buses ph	0.57	0.72	- £2.56m	-0.42
M20J10 Sevington	4 buses ph	0.41	0.56	- £2.52m	-0.29
	6 buses ph	0.36	0.44	- £3.95m	-0.28
A28 Chart Road	4 buses ph	0.11	0.16	- £3.60m	-0.08
	6 buses ph	0.09	0.12	- £5.31m	-0.08

[1]At year 3 of operation

Table 2.3 : Public Car Parks: Key Characteristics - Weekdays

Ref No.	Site Name	Pricing Structure	Maximum Capacity	Occupancy					Average Duration (hours + mins)	Turnover (acts/space)
				Average (vehs)	Average %	Maximum (vehs)	Maximum %	Time of Maximum		
1	Edinburgh Road	SS	320	113	35%	249	78%	1100	1h 11m	3.6
5	Vicarage Lane	SS	200	104	52%	185	93%	1030	1h 18m	5.5
6	County Square	SS	400	210	53%	397	99%	1115	1h 50m	3.6
8	Park Mall	LS	300	208	69%	307	102%	1045	4h 24m	1.8
13	Ashford IPS	LS	400	217	54%	250	63%	1345	9h 32m	0.4
14	DOV	SS	1520	306	20%	483	32%	1300	1h 20m	1.3
15	Borough Council/Stour Centre	N/A	400	280	70%	384	96%	1345	2h 32m	3.2

Nb SS = Short Stay LS = Long Stay

Table 2.4 : Public Car Parks: Key Characteristics - Saturdays

Ref No.	Site Name	Pricing Structure	Maximum Capacity	Occupancy					Average Duration (hours + mins)	Turnover (acts/space)
				Average (vehs)	Average %	Maximum (vehs)	Maximum %	Time of Maximum		
1	Edinburgh Road	SS	320	196	61%	307	96%	1130	1h 17m	4.9
5	Vicarage Lane	SS	200	149	74%	203	102%	1145	1h 13m	5.9
6	County Square	SS	400	304	76%	424	106%	1130	1h 37m	4.6
8	Park Mall	LS	300	150	50%	238	79%	1130	2h 10m	2.2
13	Ashford IPS	LS	400	54	14%	59	15%	1330	7h 47m	0.1
14	DOV	SS	1520	884	58%	1214	80%	1330	1h 44m	2.8
15	Borough Council/Stour Centre	N/A	400	74	18%	119	30%	1115	1h 24m	1.2

Nb SS = Short Stay LS = Long Stay

Table 2.5 : PNR Car Parks: Key Characteristics - Weekdays

Ref No.	Site Name	Maximum Capacity	Occupancy					Average Duration (hours + mins)	Turnover (acts/space)
			Average (vehs)	Average %	Maximum (vehs)	Maximum %	Time of Maximum		
1	Charter House	190	99	52%	135	71%	1015	5h 43m	1.0
2	International House	220	86	39%	123	56%	1000	4h 7m	1.1
4	Kent House	150	75	50%	106	71%	1345	5h 44m	1.0
7	Mace Lane	120	61	51%	100	83%	1345	6h 20m	0.9
12	Park Street (Nat West)	c.60	25	42%	46	77%	1200	53m	5.8

Table 5.1 : Estimated Park and Ride Capital Costs

	M20J9 The Warren		M20J10 Sevington		A28 Chart Road	
Cost Item	**500 spaces**	**1000 spaces**	**500 spaces**	**1000 spaces**	**500 spaces**	**1000 spaces**
Land purchase	£750,000	£1,000,000	£750,000	£1,000,000	£750,000	£1,000,000
Access	£400,000	£400,000	£50,000	£50,000	£200,000	£200,000
Waiting Area	£95,000	£95,000	£95,000	£95,000	£95,000	£95,000
Signage	£6,000	£6,000	£6,000	£6,000	£6,000	£6,000
Surfacing and Markings	£643,000	£1,283,000	£643,000	£1,283,000	£643,000	£1,283,000
Landscaping/Fencing	£104,000	£194,000	£99,000	£194,000	£99,000	£194,000
CCTV	£25,000	£25,000	£25,000	£25,000	£25,000	£25,000
Total	**£2,023,000**	**£3,003,000**	**£1,668,000**	**£2,653,000**	**£1,818,000**	**£2,803,000**

Table 5.2 : Estimated Park and Ride Operating Costs

Item	M20J9 The Warren		M20J10 Sevington		A28 Chart Road	
	4 buses ph	**6 buses ph**	**4 buses ph**	**6 buses ph**	**4 buses ph**	**6 buses ph**
Vehicles Employed	2	3	2	3	2	3
Drivers Required	3	5	3	5	3	5
Annual driver costs	£99,450	£165,750	£99,450	£165,750	£99,450	£165,750
Annual mileage related cost	£19,948	£29,922	£30,596	£45,894	£22,374	£33,561
Vehicle cost (depreciation)	£16,500	£24,750	£16,500	£24,750	£16,500	£24,750
Supervision cost	£54,288	£54,288	£54,288	£54,288	£54,288	£54,288
Total Annual Operating Cost	£190,186	£274,710	£200,834	£290,682	£192,612	£278,349
15% Profit Margin	£28,528	£41,207	£30,125	£43,602	£28,892	£41,752
Operating Cost	**£218,714**	**£315,917**	**£230,959**	**£334,284**	**£221,504**	**£320,101**

Table 6.3 : Base Case Demand Assessment Results

Park and Ride Site	Work Trips			Other Trips			Total Trips		
	% car	% P&R	P&R Trips	% Car	% P&R	P&R Trips	Park & Ride % Car	% P&R	P&R Trips
M20J9 The Warren	53.6%	46.4%	197	93.9%	6.1%	268	90.3%	9.7%	465
M20J10 Sevington	69.7%	30.3%	109	95.6%	4.4%	193	93.5%	6.4%	302
A28 Chart Road	61.7%	38.3%	23	94.0%	6.0%	55	92.0%	8.0%	78
Total	**61.1%**	**38.9%**	**329**	**94.7%**	**5.3%**	**516**	**91.9%**	**8.1%**	**845**

Table 6.4 : Park and Ride Demand – Sensitivity Test Results

Park and Ride Site	Work Trips			Other Trips			Total Trips		
	% Car	% P&R	P&R Trips	% Car	% P&R	P&R Trips	% Car	% P&R	P&R Trips
Base	61.1%	38.9%	329	94.7%	5.3%	516	91.9%	8.1%	845
Time saving	50.5%	49.5%	418	92.0%	8.0%	774	88.6%	11.4%	1192
Frequency increase	54.4%	45.6%	385	93.1%	6.9%	665	90.0%	10.0%	1050
P&R Fare Reduction	44.9%	55.1%	466	89.8%	10.2%	981	86.2%	13.8%	1447
Parking Charge Increase	16.4%	83.6%	706	90.2%	9.8%	941	84.3%	15.7%	1647
Composite (time + freq + fares)	29.0%	71.0%	600	81.4%	18.6%	1792	77.2%	22.8%	2392

Table 7.3 : Sensitivity Test Economic Analysis Results

	Operating Ratio[1]				NPV				BCR			
Park and Ride Site	**Base Case**	**Time Saving**	**Fare Reduction**	**Parking Increase**	**Base Case**	**Time Saving**	**Fare Reduction**	**Parking Increase**	**Base Case**	**Time Saving**	**Fare Reduction**	**Parking Increase**
M20J9 The Warren	0.66	0.91	0.73	1.25	-£1.34m	-£0.19m	-£0.96m	+£1.24m	0.45	0.64	0.51	0.88
M20J10 Sevington	0.41	0.54	0.46	0.76	-£2.52m	-£1.85m	-£2.24m	-£0.90m	0.29	0.41	0.34	0.57
A64 Chart Road	0.11	0.16	0.14	0.19	-£3.60m	-£3.40m	-£3.50m	-£3.12m	0.08	0.11	0.10	0.16

[1]At year 3 of operation

Table 3.1 : Potential Park and Ride Trips (Car Trips 12 Hour One Way)

Site/Corridor		Work Trips	Other Trips	Total Trips
The Warren	A20	110	1180	1290
	M20W	400	710	1110
	Total	510	1890	2400
A251 Faversham Rd		160	290	450
A28 Canterbury Rd		280	840	1120
M20J10	A20	130	520	650
	M20E	520	1260	1780
	Total	650	1780	2430
A2070	A2070	170	660	830
	Ashford Rd	80	250	330
	Total	250	910	1160
A28 Chart Road		140	490	630
Total Ashford		**1990**	**6200**	**8190**

Table 6.1 : Overall SP Coefficient Results

Attribute	Overall Coefficients
Mode constant for park and ride (min) Coeff 't'	 9.9 9
Value of time p/min Coeff 't'	 6.0 19
Walk time (min) Coeff 't'	 0.8 11
Wait time (min) Coeff 't'	 1.1 5

Table 6.2 Comparison of Model Coefficients by Purpose

Attribute	Purpose					
	All	**Work**	**Shopping**	**Personal**	**Leisure**	**Visit f&r**
Mode constant for p&r (min)						
Coeff	9.9	11.7	8.0	8.7	11.9	8.5
't'	-9	-7	-4	-4	-3	-2
Value of time p/min						
Coeff	6.0	5.4	5.2	7.2	5.3	9.9
't'	-19	-13	-9	-7	-6	-3
Walk time (min)						
Coeff	0.8	0.9	0.4	0.8	0.8	0.6
't'	-11	-7	-3	-5	-3	-2
Wait time (min)						
Coeff	1.1	0.5	2.0	1.9	-0.3	2.0
't'	-5	-2	-4	-3	1	-1
Sample size	121	53	31	18	11	4
Rho bar squared %	34%	37%	30%	36%	38%	49%

APPENDIX A
TAS REVIEW OF PARK AND RIDE SITES

APPENDIX B

ASHFORD BLP: EXTRACTS RE PARK AND RIDE

APPENDIX C
PDC STATED PREFERENCE REPORT

APPENDIX D
MODE CHOICE MODEL INPUT DATA

APPENDIX E
MODE CHOICE MODEL RESULTS

APPENDIX F
BUSINESS CASE ANALYSIS