

## The Effectiveness and Sustainability of Park and Ride

### Introduction

RPS conducted research on behalf of the Historic Towns Forum (HTF) relating to the effectiveness of Park and Ride (P&R). For this research a survey was sent out to a number of Local Authorities (LA's) to ascertain their experience of operating (P&R). Following analysis of the data a summary of the results has been outlined below. The results have been grouped by all Local Authorities and by small historic towns. Small historic towns have been defined as towns with a population of under 65,000 and historic as agreed with the HTF.

The surveys were sent out to a select sample of 31 LA's with 16 responding resulting in a response rate of 52%. Of the 16 responses seven were defined as small historic towns. 94% of all respondents and 88% of small historic towns considered that P&R had been a success. A summary of the results were presented at a HTF conference in Winchester in May 2009.

The results of the survey will be used to inform a revised web-based version of the HTF P&R guidance. They could also be used to share best practice amongst Local Authorities and Park and Ride operators. The results will provide some evidence as to whether P&R can be considered a success against the original aims, whether it is a sustainable transport policy and whether alternative measures should be considered.

Comments in this report are based on survey responses. The views are those of the author and not those of RPS or HTF. The survey is still open and further responses are welcomed.

### History of P&R

The idea of Park and Ride originated in the 1960's with experimental services operating in Leicester, Oxford and Nottingham around 1970. Reasons for implementing P&R within a city included; reducing car traffic, providing additional car parking, increasing economic development and as a traffic management measure. Oxford was the only one of these cities to retain a P&R scheme from that time through to the present day. The existing Oxford P&R scheme was implemented in 1974 and is the oldest continuously operating service in the UK.

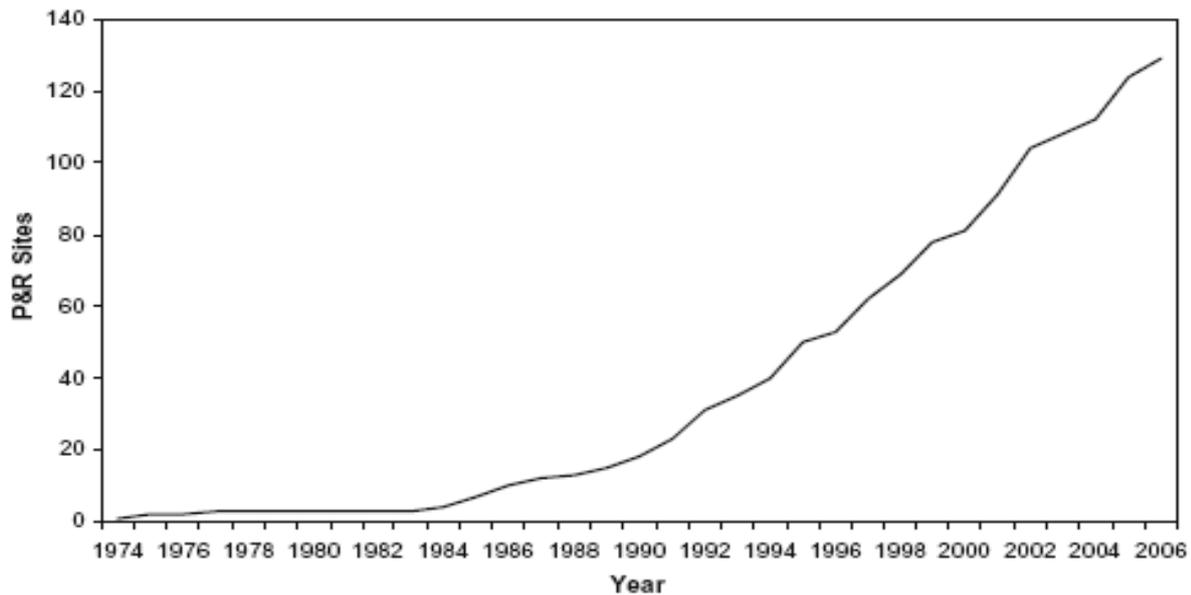
A few other cities started implementing P&R schemes in the 1980's including Bath and Chester, with Nottingham reintroducing a P&R service. In 1990 the Department of the Environment published a whitepaper entitled *This Common Inheritance*. This outlined P&R as a measure that could be used to provide short term benefits in towns. By this stage P&R schemes were also

operating in places such as Canterbury, Cambridge, Exeter, Norwich, Preston and York. During the 1990's P&R schemes were extensively implemented throughout the UK with around 35 schemes implemented by 1998 and at least 30 other schemes being considered (CPRE, 1998 cited in Parkhurst and Richardson, 2002).

During the 1990's P&R evolved from being based around small and medium sized historic cities to a range of urban areas. This period coincided with Local Authorities able to apply for funding from Central Government to implement P&R as part of a package of transport measures. This package of related transport measures needed to be focussed on increasing the attractiveness of alternative modes of travel. From 1997 the Government approach moved from support to encouragement for P&R schemes and by 2000 there were around 70 schemes implemented. P&R was seen as an effective way of reducing congestion and pollution. Indeed the DETR's 10 Year Plan (DETR, 2000) stated that P&R could offer an effective way of reducing traffic congestion in urban centres. The governmental encouragement for P&R reduced following the publication of Planning Policy Guidance 13: Transport (PPG13) in 2001, although P&R is still included within paragraphs 59 to 61. By 2005 there were 92 P&R sites situated across 40 cities across England (Clark, 2005). The number of P&R sites between 1974 and 2006 can be seen graphically in Figure 1 (Meek et al., 2009, Figure 1).

Over the period from the mid-nineties to the present day there has been an increase in opposition to P&R schemes. This is due to the impact they were having on local amenities, the damage to the environment in terms of traffic and building on green land and the opportunity cost of subsidising expensive schemes (Parkhurst, 2001a).

Many Historic Towns use P&R to maintain the accessibility for local businesses and tourism whilst protecting their historic streets and buildings from the negative impacts of vehicular traffic.

**Figure 1: Number of Park and Ride Sites 1974-2006**

### **Background and Summary of Existing P&R Studies**

As implementation of P&R has increased it has drawn an increased level of criticism and there are conflicting opinions of its impacts. Clark (Guardian, 2005) states that *“Park and Ride schemes have been popular since the 1980s and are viewed as particularly suitable for historic towns with narrow streets.”* The Knowledgebase on Sustainable Urban Land use and Transport (KONSULT) (2009) suggests a primary reason for implementing P&R is to reduce congestion in and around City Centres. A study by Atkins and the DETR (1998 cited on KONSULT, 2009) found that there were benefits in terms of traffic reductions and overall vehicle kilometres travelled with P&R schemes.

However, Parkhurst (1995) suggests that *“The detailed and long-term effects of Park and Ride are more complex than generally acknowledged.”* He suggests that P&R is generally successful in attracting cars, however it can cause diversion of journeys, generate new car trips and abstract trips from walking, cycling and public transport. Parkhurst (1999) suggests that P&R can contribute towards an increased reliance on the car, a reduction in travel via other modes and have a negative impact on social exclusion for those without the use of a car. Sherwin (1998) suggests that; P&R relies on car ownership which promotes car use, P&R may increase journey lengths, encourage more car trips from rural to urban areas and increase traffic growth and congestion in rural areas. Meek et al. (2009) suggest that over the past 15 years, there has been a growing body of evidence to suggest that P&R can have a limited or even counter-productive impact on its policy goals, particularly those to reduce car use. The sustainability of

P&R and the loss of green belt around our towns is questioned by the Countryside for the Protection of Rural England (CPRE). Within an article by Elliott (The Times, 2005) they state that:

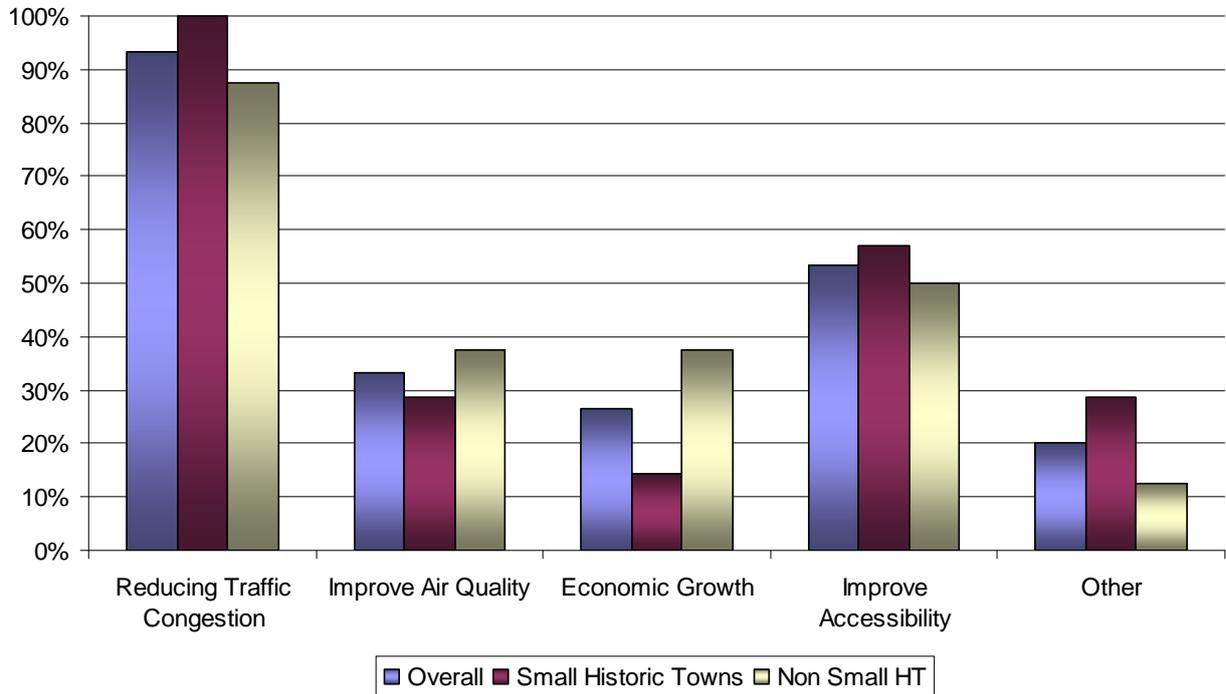
*“Increasingly large areas of countryside are being buried under tarmacadam in the name of sustainable transport. But... almost every trip relies on using the car at one end. We need to reduce traffic levels overall and improve public transport closer to where people live to provide genuine transport choices. If this continues, every major town in England will have a necklace of car parks around it and it won't be a pretty sight.”*

As the issues of climate change and peak oil become ever more important at both a local and global scale this research considers whether P&R is a successful traffic management policy and whether now is the time for alternatives to be considered.

### **Why Park and Ride**

94% of all respondents and 100% of small historic towns implemented P&R to reduce congestion. Just over half of the LA's have implemented P&R to improve accessibility and around a third to improve air quality. A quarter of all respondents and nearly 40% of those in small historic towns stated economic benefits as a reason to implement P&R.

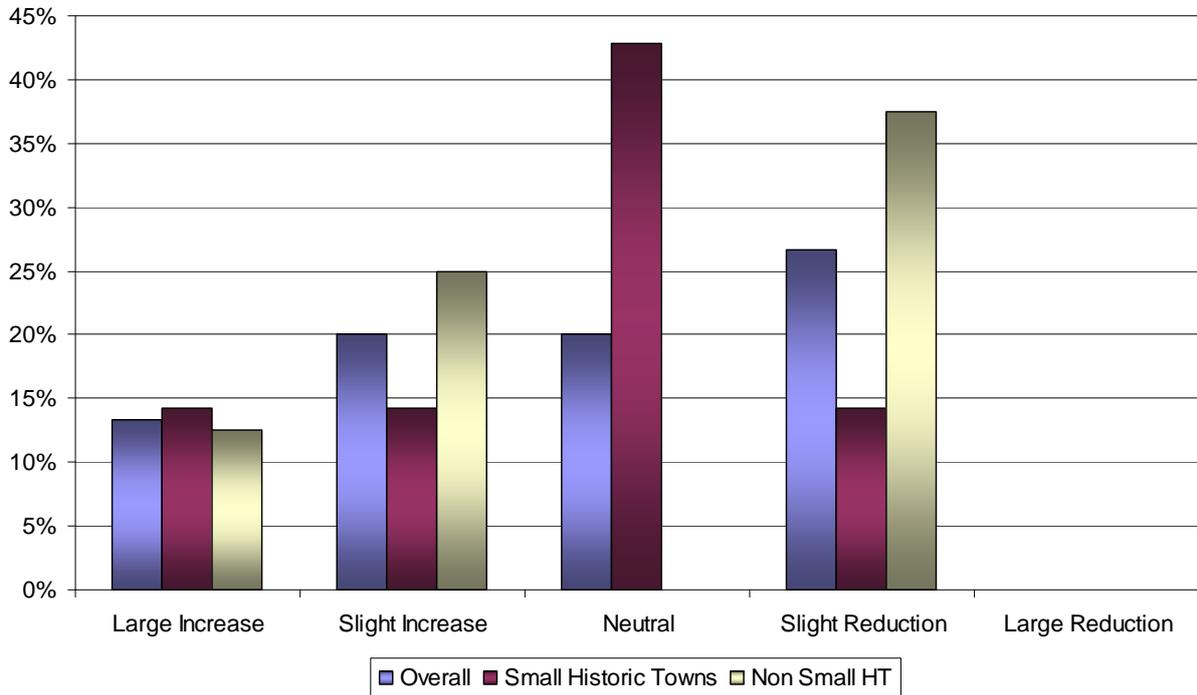
Figure 2: Why P&R



**Congestion + Traffic Flows**

During the peak periods around a third of all respondents and 28% of small historic towns stated that they had an increase in traffic flows into the town centre during peak periods. Around 26% of all respondents and 14% of historic towns reported an increase in daily traffic flows. Around a third of all respondents also stated that they have seen congestion around their P&R sites.

**Figure 3: Impact on Peak Traffic Flows**



Only two towns have permanently reduced parking provision in the town centre and these are both in small historic towns. In addition, another two LA’s have increased parking restrictions and raised parking tariffs in the city centre. One respondent stated that they planned to reduce the parking stock in the town centre and introduce further P&R sites. Other comments suggested that they had not reduced the level of parking but have increased the number of available spaces. The overall average number of parking spaces provided at P&R facilities is approximately 740 spaces.

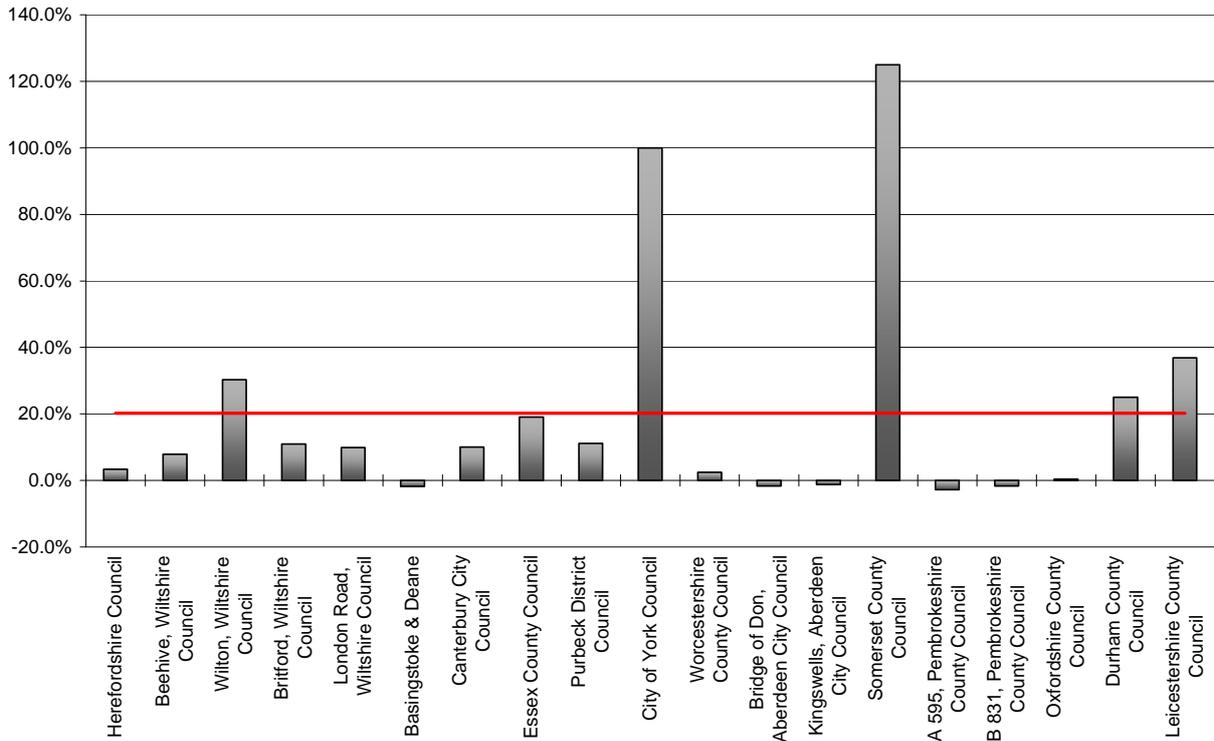
**Economy**

Nearly half of all the LA’s and around a quarter of those in small historic towns stated that local businesses cited benefits from P&R. Just over 10% of all respondents stated that businesses located in their town because of P&R, however none of these were in small historic towns. Over 80% of all respondents and small historic towns stated that local businesses are satisfied or very satisfied with the P&R service.

The increase in patronage from the year of opening through to the current year has been ascertained based on all P&R schemes across each of the Local Authorities that responded. There were a total of 19 park and ride sites that stated usage figures across the 16 respondents (some LA’s had more than one park and ride). All except four of the P&R sites have seen an

increase in patronage since the year of opening. The average annual increase across all sites was approximately 20% however both York and Somerset saw year on year increases in excess of 100%.

**Figure 4: Year on Year Increases in Patronage**



The positive user comments about P&R mainly relate to the cost, reliability, the waiting facilities and parking availability. However, the main negative comments also relate to the cost and reliability. A number of these positive and negative comments are received by the same Local Authority.

Approximately two-thirds of all LA's and over half of small historic towns are subsidising their P&R operations. Around a quarter of all LA's and 43% of the small historic towns are charging for parking on site in combination with charging for bus use. Just Purbeck District Council charge solely for parking and the majority of LA's charge solely for bus use. The average daily cost to a user for P&R is around £2 although this depends on a number of factors such as the number of people per vehicle, pre paid cards or season tickets.

**Air Quality**

31% of all respondents said improving air quality was one of the reasons for implementing P&R. However, although air quality had been monitored in half of the Local Authorities, none of the

respondents were in a position to provide comments or details relating to changes in emissions following the implementation of the P&R.

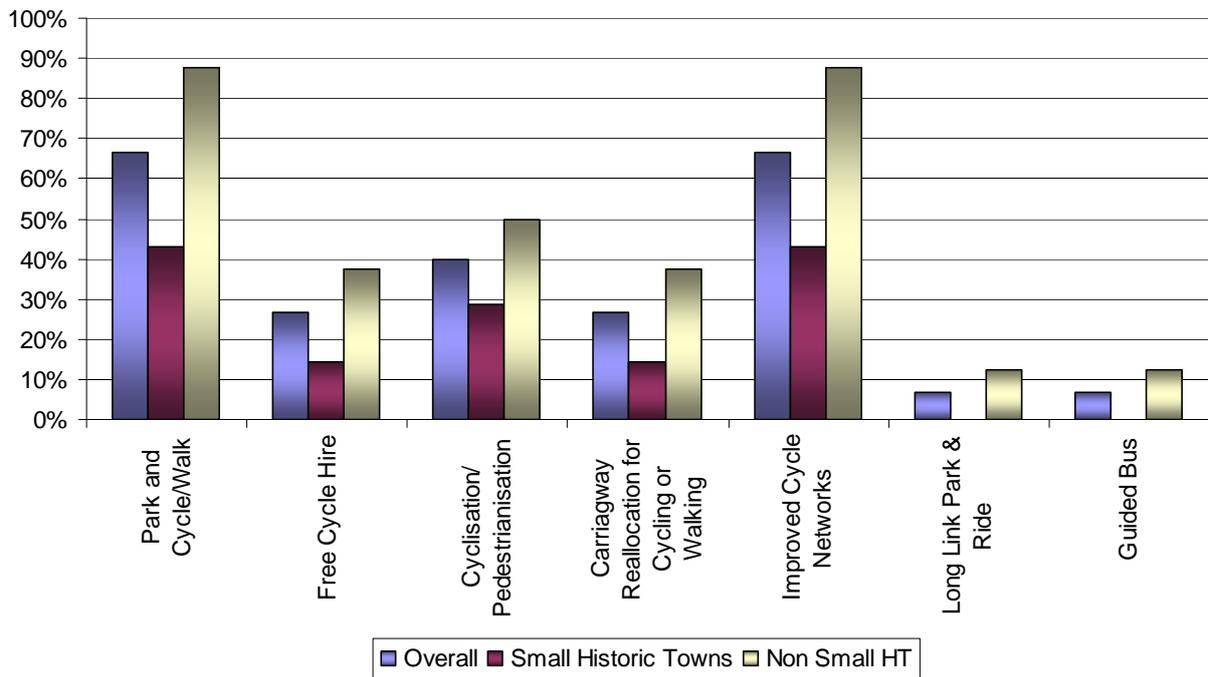
### **Impacts on 'Conventional' Public Transport**

The results show that there has been no reduction in patronage of 'conventional' public transport services following the implementation of P&R. 44% of all respondents suggested an increase in usage of buses and 19% an increase in the usage of trains. The bus figure may however include an increase in patronage including the dedicated park and ride bus services.

### **Alternative Schemes**

Overall approximately 75% of respondents had considered alternative measures to P&R. The most striking difference between all respondents and the small historic towns was the level of consideration of alternatives to P&R. Comparing small historic towns and those respondents that were 'not-small' historic towns showed that around 90% of 'not-small' historic towns have considered Park and Cycle / Walk whilst in small historic towns just 43% had considered this measure. Just under half of 'not-small' historic towns had considered pedestrianisation compared to less than a third of small historic towns. A greater percentage of 'not-small' historic towns compared with small historic towns also considered the following alternatives; Free Cycle Hire, Carriageway Relocation, Improved Cycle Networks, Long Link Park and Ride and Guided Bus services. Some Local Authorities indicated that they have included cycle facilities at their P&R allowing for a cycle and ride or park and cycle scheme. Other alternatives considered by Local Authorities but not listed above included improved signage (variable message signs), rapid transit and improved bus networks.

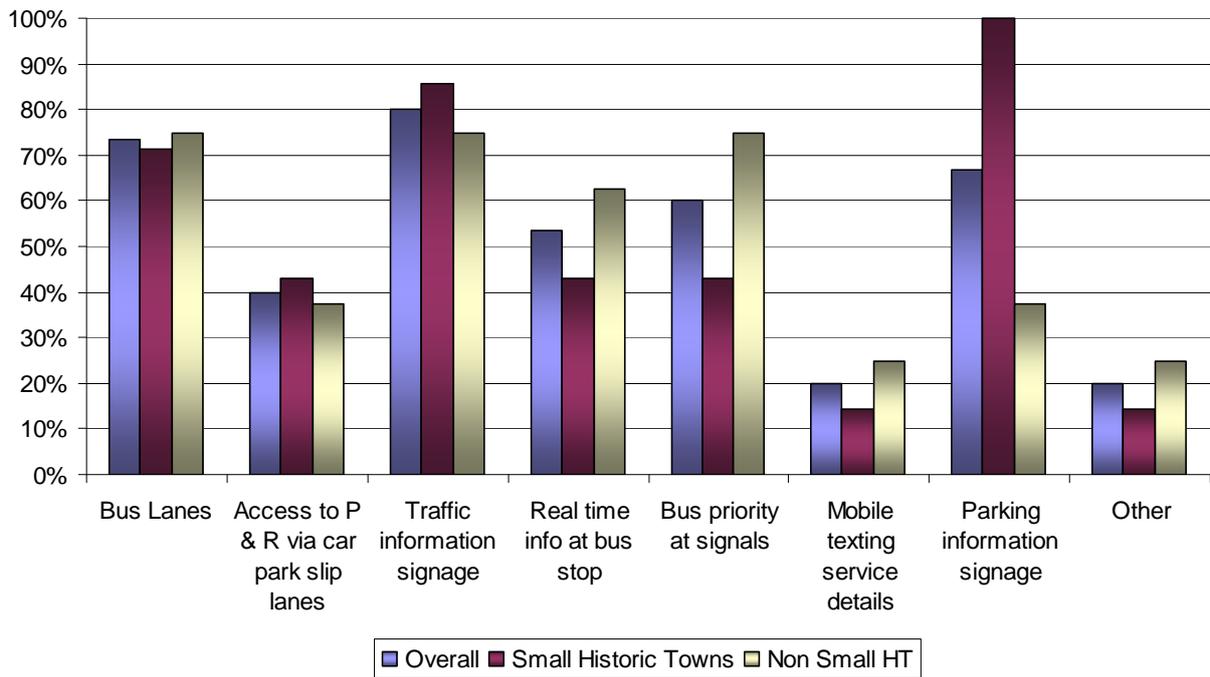
Figure 5: Alternative Measures Considered



**Infrastructure**

Respondents in the survey have used a variety of infrastructure measures to compliment their P&R sites. Around three-quarters have implemented traffic information signage and bus lanes, approximately two-thirds have implemented parking information signage and bus priority signals. Around 40% have also implemented slip road access to the P&R site and Real Time Passenger Information (RTPI) at bus stops. To a lesser extent 20% had implemented mobile texting services. Other measures which have been implemented included on board tracking, scheduled departure screen and a bus only section bypassing a busy junction.

**Figure 6: Infrastructure Implemented**



**Facilities**

The facilities provided at the P&R site can help to improve the experience of using the service. All respondents provide toilet facilities and 88% of all respondents provided bus shelters and bins. Two-thirds of all respondents had manned information booths and refreshment facilities were provided by half of all respondents. Other facilities provided included waiting rooms, CCTV and cycle lockers and cycle lanes. It is recommended that a P&R should provide bus shelters and toilets and to improve security at the site it would be beneficial to provide an information booth, waiting rooms and CCTV.

**Summary**

94% of all respondents consider that P&R has been a success. However, while nearly all respondents implemented P&R to improve congestion and reduce traffic flows around two-thirds had no change or increased traffic flows into the town centre during peak periods. A third also had congestion around their P&R site and 80% did not reduce parking within the town centre. Yet three quarters of respondents said they plan to expand their current sites and 81% said they plan to add additional P&R sites.

Similarly to the above 86% of small historic town respondents considered their P&R to be a success. However, all of the small historic towns implemented P&R to improve congestion and

around 70% had no change or an increase in traffic flows and nearly a third saw congestion around their P&R site. Despite this, 57% are looking to expand their current sites and 86% plan to add additional sites.

### **Discussion**

What do we mean by success? Success depends on the original objectives. The main reasons for implementing P&R related to congestion, accessibility and air quality. However, the main reasons for success appear to relate to economic benefits, increased usage, and attracting more visitors to the town. P&R appears to be failing to reduce traffic flows and congestion consistent with the original aims. Can it therefore be considered a success? At a local level success appears to be defined by economic success rather than environmental or sustainable success.

Park and Ride may still have a role to play as part of a successful integrated transport strategy, perhaps on a reduced scale as part of an overall access strategy incorporating a number of alternative long and short range access measures. A sustainable transport strategy needs to retain the accessibility that Park and Ride can provide and therefore needs to incorporate a number of alternative schemes such as Link and Ride, Public Transport Priority and Frequency Improvements, Park and Cycle, Cycling Improvements and Road Space Reallocation. Existing studies show that alternative schemes have the potential for congestion, environment, social exclusion, society, economic and health benefits. Potential alternative or complimentary measures which could form part of an integrated transport strategy have been briefly outlined below.

**Cycling Cities** – This would give greater priority to cyclists over vehicular traffic and more direct and safer cycling routes to encourage and increase the level of cycling for shorter journeys within cities. This could incorporate measures such as the reallocation of road space for cycling lanes, priority at junctions and signals for cycling flows over car flows.

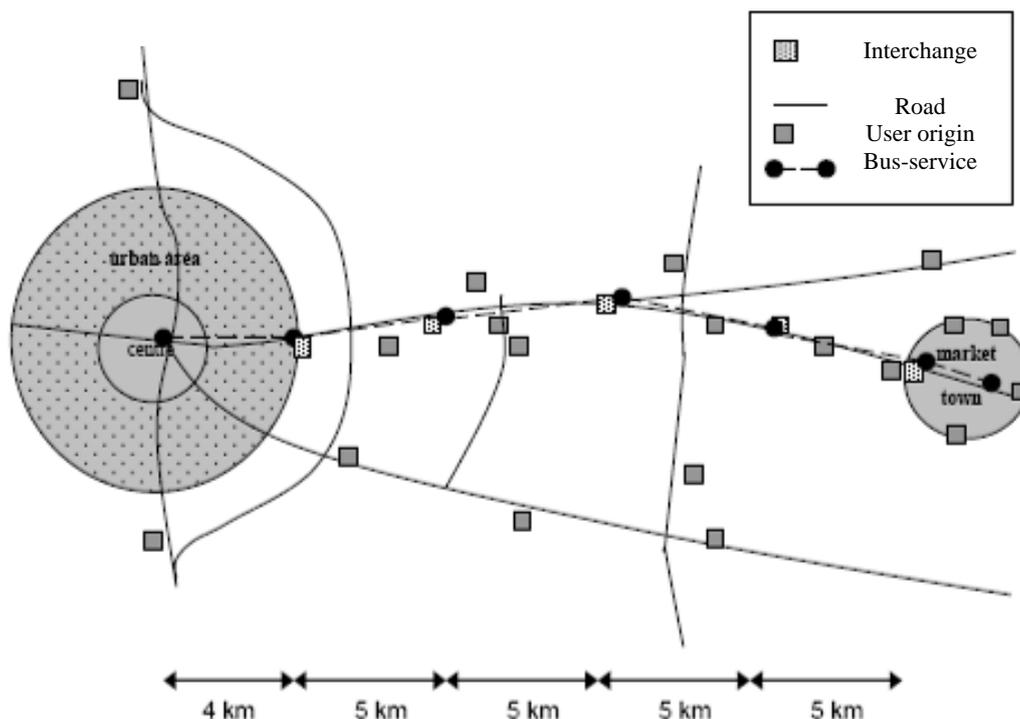
**Park and Cycle** – This measure is similar to a P&R scheme, however the bus journey is replaced with a cycle journey. This sort of scheme would compliment and build upon cycling improvements detailed above and allow visitors travelling from further away to travel via cycle for part of a journey. A park and cycle scheme would also require strong marketing and a 'presence' within a P&R site so that users are aware of its existence increasing the chances of a change in travel behaviour.

**Link and Ride** – This allows long range access utilising existing bus routes, with a series of

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smaller car parks located close to the users home locations. This allows the parking to be spread over a larger distance, utilising facilities that may not be fully in use during the day such as village halls, public houses and restaurants. As the car park is located closer to the home location of users, the car part of the journey would be shorter and the bus journey increased in length. This has the potential to reduce emissions and congestion whilst allowing long range access to a proportion of existing P&R users. In addition, ‘conventional’ bus services could be enhanced and protected providing a benefit to existing public transport users and those without access to a car. This solution can therefore provide social exclusion benefits. Due to the scale of a Link and Ride scheme, car parks would be required across a number of Local Authority boundaries and would therefore require political coordination. A simple example of a Link and Ride scheme is shown within **Figure 7** below.

**Figure 7: Link and Ride Interchange Strategy**  
 (Source: Parkhurst, 2000b: Figure 2)



Public Transport Enhancement – Public Transport can also be enhanced through the use of technology to improve the user experience and therefore make it a more attractive alternative to the car. This could incorporate such measures as mobile technology whereby the bus arrival time is linked to users mobile phones providing users with the knowledge of when to leave the

house and reducing waiting times at the stop. This could be incorporated into a bus priority system, whereby buses are tracked to allow them priority at signals and junctions so allowing consistent and reliable journey times. In addition, Real Time Passenger Information could be provided at bus stops along with more comfortable and user friendly buses incorporating services such as WiFi. Further enhancements could be provided through the provision of Guided Busways allowing a dedicated track for buses which enables more reliable journey times.

A reduction in scale of P&R requires greater emphasis on these alternative solutions. These would form an integral part of an integrated transport management strategy to reduce car use. P&R has been implemented for over three decades and so far there is limited evidence of its contribution for reducing car use even where implemented with other measures and reducing parking in central areas. Perhaps it is now time to see what changes in travel behaviour more 'radical' alternative approaches can achieve.

Over the longer term with the onset of global peak oil and the threat of climate change, the existing transport modes which burn oil using the internal combustion engine, are likely to require replacement by more sustainable technologies. It is likely that electric cars will have a significant role to play in the transport technology of the future. However, for electric cars to be truly sustainable would require significant investment in the energy infrastructure so that the majority is sourced from renewable sources such as wind, solar, tidal or wave power. Another renewable energy which may have a contribution, although somewhat more controversial, would be nuclear power.

In order for alternative measures to be successful over the long term, there would also need to be a change in attitudes and behaviour. Alternative solutions would need to be successful in targeting new users who are yet to make a choice in their travel behaviour due to a change in employment, home location or personal circumstances. A strategy to encourage people away from car use requires a more wide scale and integrated approach.

Successful more 'radical' transport strategies are demonstrated in a number of cities within Europe showing a reduction in car use and an increase in the use of alternative modes. An example of a successful 'radical' transport management strategy is in Groningen in the Netherlands. Groningen had an above average car ownership when it implemented its transport strategy for a mixed use city favouring pedestrians and cyclists. Measures that have been implemented include heavy cycle flows having priority over car traffic, cyclists having separate signals to car traffic and cyclists having green time twice every traffic signal cycle. The transport

strategy has resulted in 40% of all trips being made by cycle and similar travel times between cycling and car journeys. Originally these plans met with stiff opposition from local businesses concerned about the impact that reducing car use would have on their business and the economy. However, there are no reports suggesting that Groningen has suffered economically following the implementation of the strategy.

P&R is politically popular at a local level and generally has high user satisfaction. It is seen to improve accessibility and increase the attractiveness of city centres encouraging more frequent visits and visitors who would otherwise have travelled elsewhere. To implement alternative solutions and reduce the scale of P&R would therefore require strong political will and cooperation between neighbouring Local Authorities. With a lack of evidence suggesting that P&R reduces car trips, P&R could be considered contrary to national policies on climate change and encouraging the use of more sustainable modes of travel. It could therefore be considered a local versus global issue whereby Local Authorities consider the economic benefits it can provide without the responsibility of the additional traffic on the wider traffic network. However, encouraging car travel and increasing the number of vehicles on the wider network could increase carbon emissions in addition to having possible impacts on local air quality, health, road safety, society, severance and social exclusion.

So, has Park and Ride had its day? Currently as P&R is strongly supported at a local level its 'success' looks set to continue. However, over the longer term P&R may be provided at a reduced scale as part of an integrated sustainable transport management strategy. This would allow the accessibility levels to be retained whilst increasing the use of sustainable modes of travel, providing a number of environmental, health, economic and society benefits.

### What Next

This paper is designed to encourage debate and discussion with practitioners, operators of P&R and those who are considering the implementation of P&R. Views and comments are therefore welcomed and encouraged.

A more detailed feasibility study should be undertaken of more 'radical' alternatives to establish the most appropriate solutions for a particular city.

The HTF guidance will be updated and available electronically to allow the most up to date advice and sharing of knowledge and best practice.

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