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Towards advanced transport for the urban environment

Evaluation of passenger satisfaction levels for the existing bus service between the Business Car Park and Terminal 5 in Heathrow Airport

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Executive Summary

The CityMobil project includes three demonstrations of advanced transport systems. The first of these is a pilot installation of Personal Rapid Transport (PRT) at the new Terminal 5 of London's Heathrow Airport. BAA's purpose in building the Pilot System, which provides a shuttle loop between a business car park and the Terminal, is to prove the concept of PRT. If the demonstration provides a good and reliable quality of service, passenger satisfaction, and acceptable capital and operating costs, it is BAA's intention to expand the system into a comprehensive network serving the whole north side of the airport and, via the access tunnel, redevelopment of Terminals 1, 2 and 3 in the Central Terminal Area.

Central to the CityMobil project is a comprehensive evaluation of the demonstrators, and of Personal Rapid Transit as demonstrated in the Heathrow system, and extrapolation to a general assessment of the use of PRT in a variety of applications. In order to do this, it is necessary to judge the benefits and costs of PRT in comparison with alternative transport systems. At present, Heathrow Airport relies on bus services to transport passengers between the various car parks and the Terminal buildings, and also to link the different Terminals, car hire centres, hotels, staff workplaces, and various other centres of activity. In a fully-developed PRT network, many of these bus services would be replaced by PRT. Terminal 5 at Heathrow has been operating since spring 2008. Until the PRT service between the T5 Business Car park and Terminal 5 begins operation in late 2009 the car park is served by a transfer bus service. In evaluating the PRT service, it will be compared with this shuttle bus service.

To do this, passengers using the bus service were surveyed in March 2009. Passengers on the PRT system will be surveyed using an exactly comparable survey methodology in March 2010. The survey questionnaire is based on the key parameters identified in Deliverable 1.2.3.1, which in turn was based on the recommended Framework for Evaluation of the CityMobil Demonstrations proposed in Deliverable 5.1.1.

This Report describes the bus service survey and its findings. Passengers were asked to score a range of aspects of the service on a five-point scale, from 1="extremely poor" to 5="excellent". The passenger questionnaire was administered by BAA's own Quality of Service Monitoring team, and usable returns were obtained from 304 passengers. 85% of passengers were male, and 96% of travel was for business purposes. Generally speaking passengers found the quality of the bus service was acceptably high, with average scores ranging from 4.5 to 3.2 across 18 different aspects of the service. Only 9% of all responses rated service aspects as 1 or 2, which could be interpreted as unacceptable. Highest scoring was for ease of boarding the buses. Lowest scores were given for the T5 bus stop as a place to wait, and for the environmental effects of the buses. But low scores were also obtained for aspects of waiting generally, confirming the unpopularity of waiting as a component of travelling, and the image of the bus service was marked relatively lowly.

The Report describes levels of satisfaction for the many different aspects, but this is merely the "Before" survey, and the real interest will be found when it can be compared with the "After" PRT survey in a year's time.

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Evaluation of passenger satisfaction levels for the existing bus service between the Business Car Park and Terminal 5 in Heathrow Airport

1 Introduction

The objective of the CityMobil project is to achieve a more effective organisation of urban transport, resulting in a more rational use of motorised traffic with less congestion and pollution, safer driving, a higher quality of living and an enhanced integration with spatial development. Its focus is on automated vehicles, whether operating on general-purpose roads or in segregated systems. Amongst a wide range of sub-projects, it contains three large-scale demonstrations: a Personal Rapid Transit (PRT) system at Heathrow Airport in the UK, an automatically-guided bus system at Castellón in Spain, and a low-speed cybercar shuttle in the car park of an Exhibition Centre in Rome. These demonstrators are intended to supply proof of concept of innovative transport systems integrated into the urban environment.

The pilot installation of PRT serves a Business Car Park and links it to the new Terminal 5 of London's Heathrow Airport. Once PRT is shown to work successfully, the intention is to expand the pilot system into a wide network serving the whole Northside of the airport, and a redevelopment of Terminals 1, 2 and 3 via the access tunnel into the Central Terminal Area. The pilot system is essentially a shuttle system, and cannot fully demonstrate the advantages of PRT as a network where passengers can travel directly from any point to any other point on the network, without intermediate stops, and with little or no waiting. Nevertheless it will demonstrate the technical operation and reliability of the system, and its suitability for wider application. Thus it is not intended that the Pilot Scheme will of itself be economically justified, but it is intended to be the start of a fully-operational PRT system. After the Pilot phase, the system will continue to serve passengers travelling between the business car park and Terminal 5. The design of the Pilot system must, therefore, be as detailed and functional as the larger network. Experience of the construction and operation of this Pilot will provide a basis for judging the merits of future applications of PRT.

Evaluation is an important part of the whole Project, and is addressed separately in Sub Project SP5. For the Heathrow Demonstrator, the PRT system will be judged against the alternative conventional transport, in this case a transfer bus service. At present, Heathrow's car parks are served by buses, as are inter-Terminal connections, car hire, hotels, staff workplaces, and a range of other activity centres. As a comparator for evaluating the PRT system, it is necessary to assess the bus service. Terminal 5 has been in operation since spring 2008. The Business Car Park is approximately 1 kilometre from the Terminal building, and is presently served by midi-buses. Passengers using the system were surveyed in March 2009, and an exactly similar survey will be administered to PRT users in March 2010.

This Report describes the shuttle bus system, the passenger survey, and its findings. Naturally this can offer little of interest to the CityMobil project in itself, since it is only when the findings can be compared with those from the PRT survey that useful conclusions can be drawn. This will be done in later Deliverables.

2 The Heathrow Pilot PRT Scheme

The Heathrow Airport Pilot PRT Scheme has been commissioned and financed by the airport owner BAA, now part of the Ferrovial Group. This follows an extended period of analysis of alternatives to provide the key landside transport needs of the airport. BAA concluded that all existing forms of public transport were unsuited to meeting their key requirement, on the grounds of cost or inflexibility or both. BAA has concluded that the best transport solution to meet their future needs is a PRT network.

BAA are financing the system in two ways, by a major contract with Advanced Transport Systems Ltd (ATS) to install, integrate and commission the ULTra PRT system, and secondly by making a substantial investment in ATS which has paid for the development of a full production system. CityMobil will monitor the performance of the scheme and fund some aspects of PRT beyond the scheme itself, with the aim of achieving an evaluation of the operation of PRT which can then be applied to other potential installations.

The scheme will carry passengers arriving at the Business Car Park to the new Terminal 5 Building, which opened in March 2008. The PRT network has 3.8 kms of dedicated guideway, collecting passengers from two two-berth stations in the car park, transporting them along an elevated dual-guideway mainline section which skirts the perimeter of the airport, and terminating in a four-berth station on the third floor of the multi-storey short-term car park alongside the Terminal 5 Building, as shown in Figure 1.

The system will be served by 18 small four-seater battery-electric vehicles, controlled automatically. Normally, 16 vehicles will operate the service, with two vehicles in maintenance, but if this proves insufficient to handle peaks in demand there may be an additional three vehicles, owned by ATS for development work, to supplement the service. Additionally, vehicles in maintenance may also be brought into service if available. Except where there are sudden large peaks in arrivals, passengers will find a vehicle already waiting to collect them at the stations, and there will be little or no waiting. The scheme is intended as proof of concept.

Once it is demonstrated to operate satisfactorily, reliably and safely, BAA intend to expand the network to serve business, public and staff car parks along the entire northern edge of the airport, plus car hire offices and hotels, and link them through a tunnel to a redevelopment of Terminals 1, 2 and 3 in the Central Terminal Area.

It is important to understand that because the PRT system is a pilot to demonstrate proof of concept, some aspects of its location are unavoidably sub-optimal. Had the system been designed as an integral element of the airport the Terminal 5 stations would have been installed closer to the Terminal building itself, either within the building (the PRT vehicles are battery electric and produce no exhaust emissions and very little noise) or placed along the exterior wall of the building, rather than on the third floor of the multi-storey car park, where connection to the departure level, or from the arrivals level, is via lifts or stairs. Thus in this after-fit access to and from PRT is substantially worse than to or from the buses. This will inevitably affect the assessment.

3 The shuttle bus service

The ULTra PRT scheme will open towards the end of 2010. Currently users of the Business Car Park are served by midi-buses linking two bus stops in the car park with a stop on the top of the multi-storey short-term car park building outside Terminal 5, which is joined to the Departure level by level walkways. Passengers arriving in Terminal 5 walk at grade to a bus stop on the ground floor of the multi-storey car park. The route of the buses is shown in Figure 1, which also shows the PRT network.

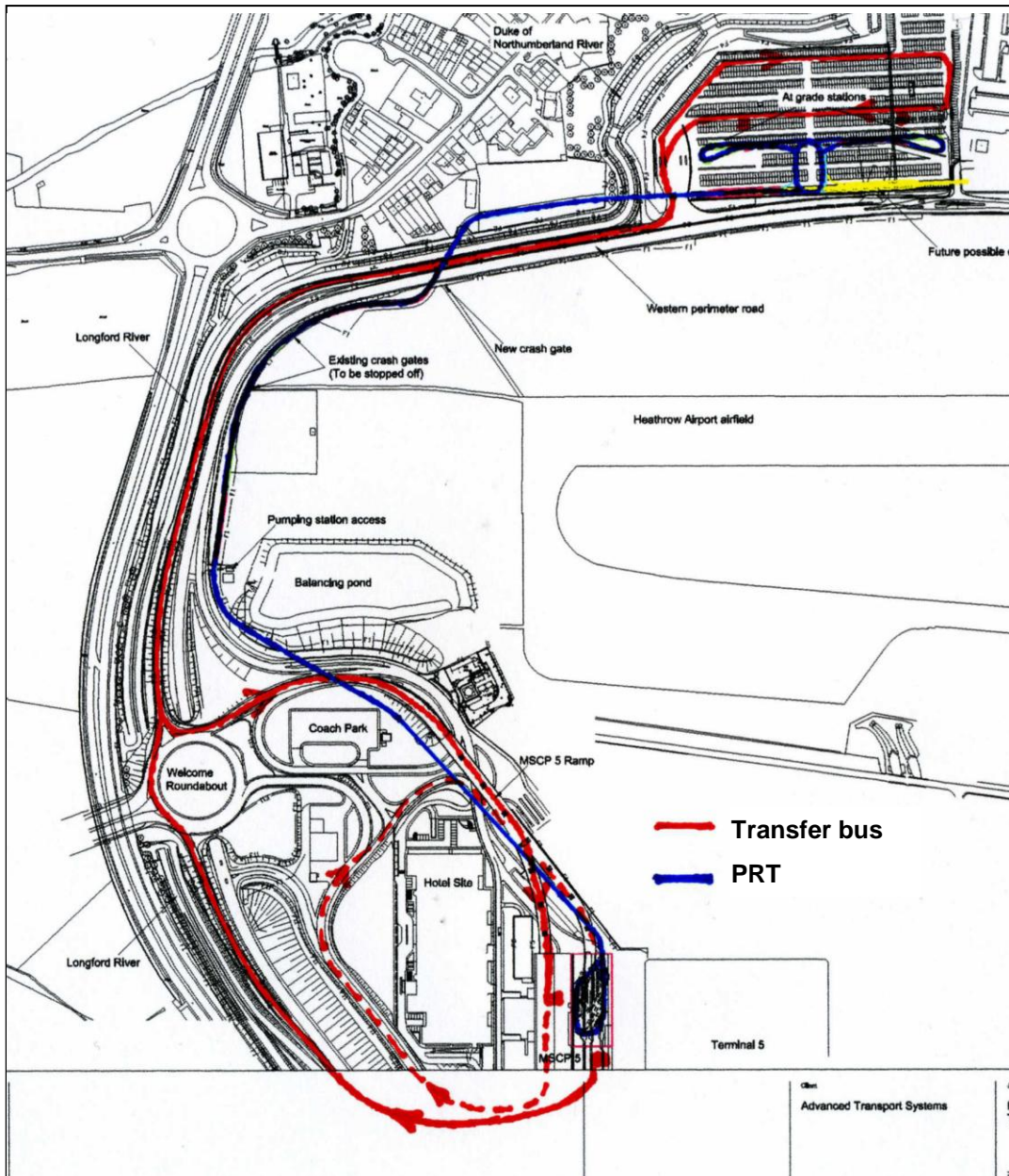


Figure 1. Routes of the Bus and PRT services between the Business Car Park and Terminal 5

The bus services are provided by two midi-buses which operate on a nominally eight to ten minute frequency (Figure 2). The round-trip time between the car park and Terminal, including a rather complicated loop which takes the buses from the Departure Level drop-off on the roof of the multi-storey car park to the ground-level pick-up stop for passengers from Arrivals Level, is little more than ten minutes, depending on traffic, so when both buses are in normal operation they can provide a service which is more typically seven or eight minutes, and with mean waiting times of three or four minutes. There are occasional hiatuses in the service, however, when one bus is unavailable for short periods, and on such occasions intervals can become as high as twenty minutes or more. The mean interval between buses as obtained from the barrier lift timings was 8.9 ± 1.2 minutes. This would correspond to a mean waiting time of 5.2 minutes for randomly (Poisson) arriving passengers.



Figure 2. Business Car Park shuttle bus

There are two bus stops in the Business Car Park. If the car park is full the mean walking distance to the nearest stop is 50 metres, though this cannot be compared to the mean walking distance to the PRT stations because in the present configuration the construction site for the PRT system occupies a third of the car park, so that when the PRT system is operational the car park will be substantially larger than at present.

From the car park bus stop the bus runs as shown in Figure 1 to a stop on the top floor of the multi-storey car park alongside the Terminal 5 building, from where passengers walk across a level bridge into the Departure Level and check-in desks. The mean run time from Bus Stop A (the one closest to the exit) in the Business Car Park to the T5 stop is 4.9 minutes. For passengers arriving at Terminal 5, the bus stop is at Arrivals Level underneath the multi-storey car park, where there is a long line of bus stops for various destinations. The mean run time from the stop to Bus Stop A in the Business Car Park is 6.0 minutes, longer than the outward journey because the bus has to travel round the south side of the multi-storey car park. Buses have a circuitous route from the T5 drop-off stop to the pick-up point, and take a mean time of 2.3 minutes between the stops. Buses do not stand for any appreciable time at Terminal 5, though they will wait if they see passengers arriving, but standing time, if any, is spent at the Business Car Park. The buses do offer the advantage over PRT of dropping passengers on request as they travel around the car park, so that the mean walking distance on return is less than on the outer journey, though these stops delay the journey for passengers left on the bus.

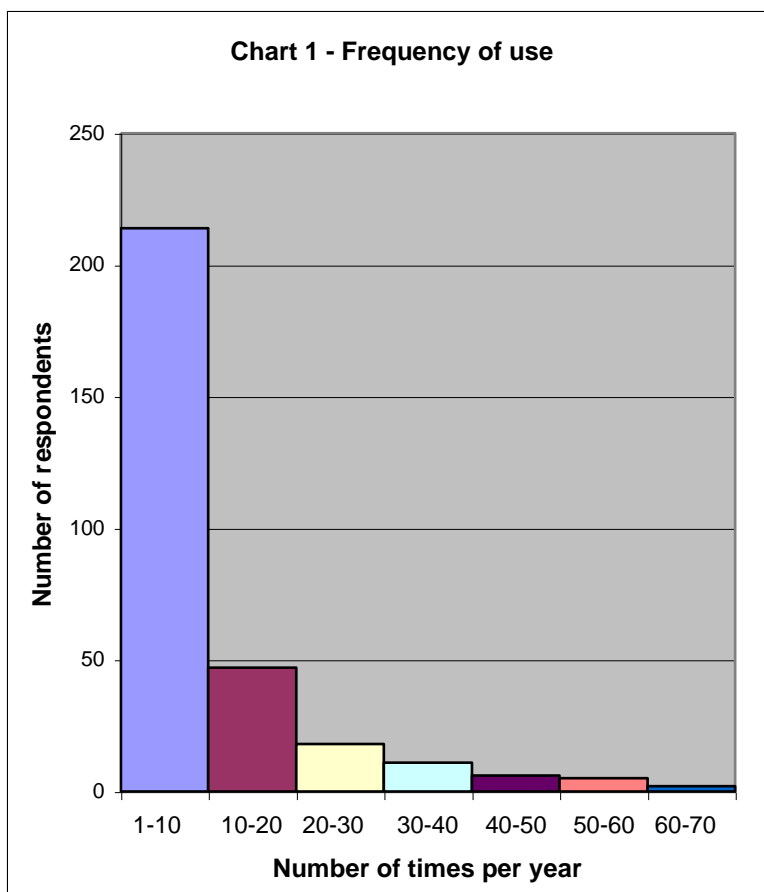
4 The survey

The survey was carried out on seven days between March 13th and 26th 2009 to obtain a representative sample of days and times. The Questionnaire is appended at Annex A. The surveyors were drawn from the regular survey team of BAA's own Quality of Service Monitoring team, which routinely manages similar surveys across a wide range of airport service activities.

Surveyors rode the buses travelling between Terminal 5 and the Business Car Park, asking passengers to complete the questionnaire during the journey, and offering explanation, advice and help as required. By administering the survey to passengers returning from the Terminal they were able to collect attitudes on both legs of the journey, and the questionnaire was short enough to permit completion on the bus without delaying passengers.

Most of the questions required the respondents to assess various aspects of the service on a five point scale, from 1 = Extremely poor to 5 = Excellent. In all, attitudes were sought on 18 aspects. The survey also asked whether the respondent would recommend the car park service to a friend or colleague, using a 10-point scale: this was essentially for BAA's own use rather than for the CityMobil study, but it provides an overall assessment of both bus service and car park.

5 The respondents



Usable returns were obtained from 304 respondents. Not surprisingly, given the nature of the car park, the overwhelming majority, 291, were travelling on business. Of the rest, 2 were travelling on package holidays, 6 on independently organised holidays, and 4 to visit friends or relatives (one respondent did not reply to this question). The sample of non-business travellers is too small to make meaningful distinctions between rankings for different travel purposes.

85% of the respondents were male and only 15% female, reflecting a very strong bias in business travel. Average rankings were similar for both males and females for

most of the aspects surveyed, and in what follows differences between the sexes will be mentioned only where they are appreciable.

Respondents were asked how many times they had used the Business Car Park in the last year, though in fact the car park had been open slightly less than a year. As Chart 1 shows, the great majority of users had used the car park no more than ten times since it opened: the surveyed trip was the only time of use for 82 respondents. A minority had used it many times, with one person having used it 68 times. It is likely, however, that many more passengers had experience of car park shuttle bus services elsewhere in the airport.

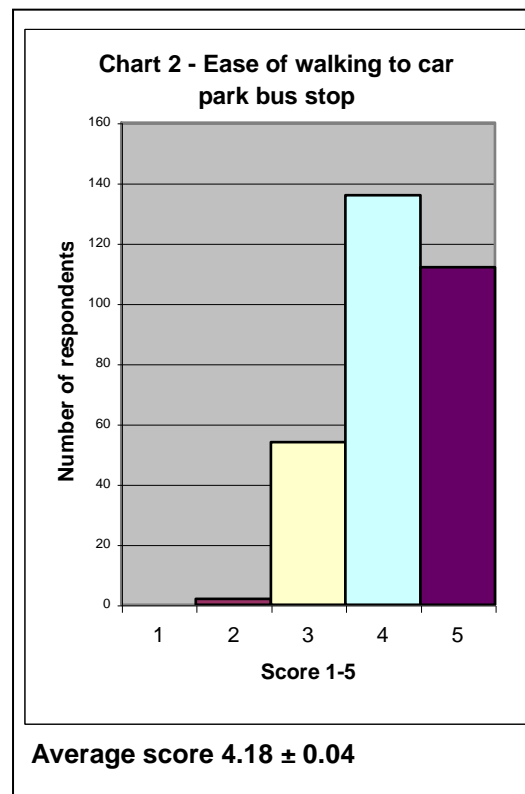
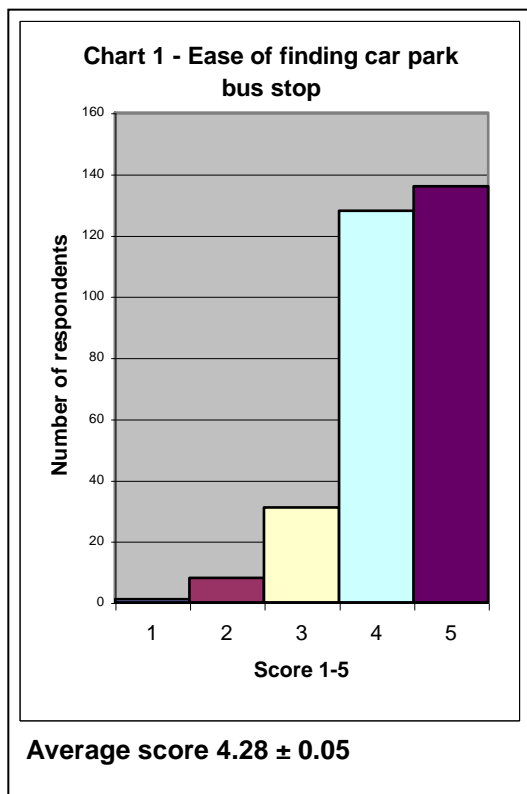
6 Survey results

6.1 The Business Car Park

In the Business Car Park the two shuttle bus stops are spaced along one of the main East-West through-lanes, and are standard rectangular bus shelters with glass sides. They are tall enough to stand well above the roofs of the parked cars. Consequently they are easily visible from any point in the car park.

“How would you rate the ease of finding the bus stop in the car park?”

This ease of finding the stop is reflected in the high markings given in answer to the question, as Chart 1 shows. The standard deviations shown are those on the means.



“How would you rate the ease of walking to the bus stop from your car?”

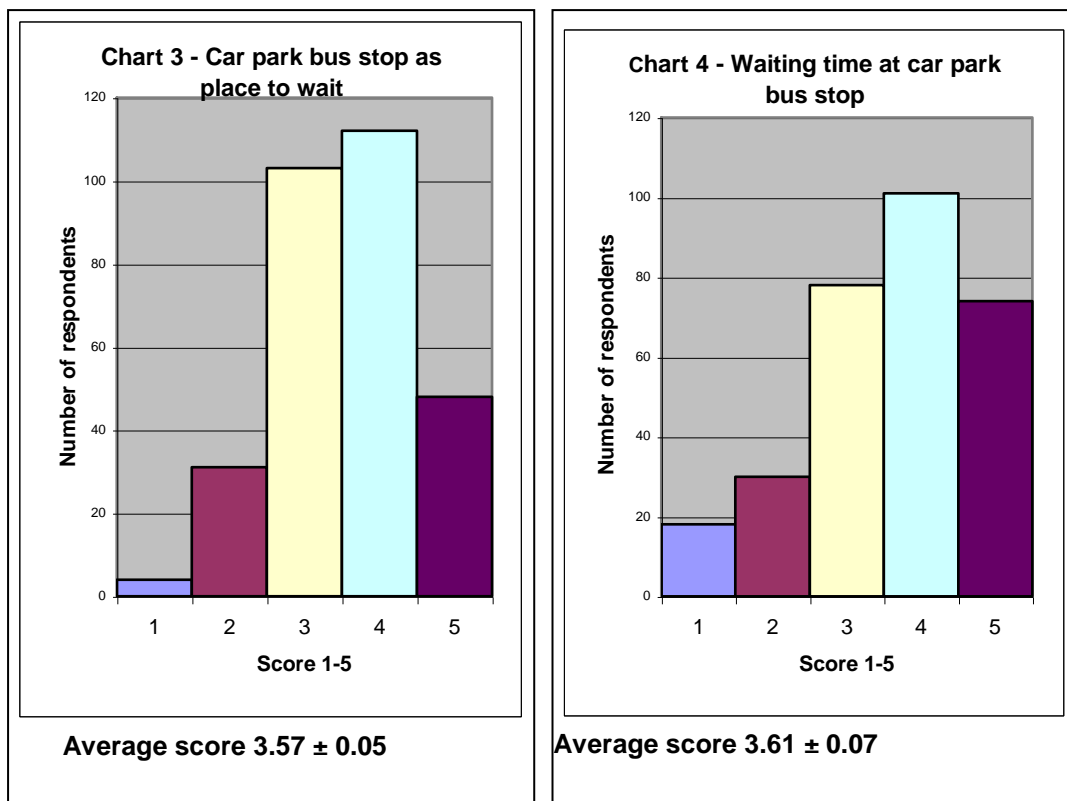
Similarly, as Chart 2 shows, travellers found no difficulty walking to the bus stop, since the mean walking distance is only about 50 metres.

“How would you rate the bus stop in this car park as a place to wait?”

The car park bus stops scored rather more poorly as places to wait (Chart 3), since the standard bus shelters are neither interesting nor proof against draughts. They are acceptable, but possibly no stops or stations are likely to score particularly highly on this aspect. In any case, the attitude of users to the stops as places to wait will inevitably be strongly related to their view of how long they had to wait for the bus to arrive, as in the next question.

“How would you rate the amount of time you had to wait at the bus stop?”

Although the average score is very similar to that given for the stop as a place to wait, the spread of the marking is appreciably wider, with proportionately more users rating the waiting time as good, and more as bad, reflecting personal experience of the variability of waiting time. As noted in Section 3, although the service can be better than the notional 8-10 minute frequency when two buses are operating, there are occasions when one bus is not operating for a short time and the intervals can become unacceptably long.



Waiting in the car park is in the open air, though the shelters protect from the rain, and Question 14 asked for a rating of the **weather at the time**. 54% of respondents marked the weather at 5 or 4, and only 9% at 1 or 2. Interestingly, poor weather did reduce the rankings, though only the bus stop as a place to wait shows a significant difference, as below:

	Good weather (4&5)	Poor weather (1&2)
Ease of walking to stop	4.25±0.05	3.81±0.17
Bus stop as place to wait	3.76±0.07	3.07±0.20
Waiting time at stop	3.75±0.09	3.96±0.23

It is also the case that poor weather depressed the rankings across all aspects, since the average score (omitting the weather itself) was 3.92 ± 0.09 in good weather and 3.53 ± 0.09 in poor weather. This is an aspect to be considered when comparing surveys with substantially different weather on average.

Women were more tolerant of the car park bus stops than **men**, though the differences are not significantly different. Women rated the stop as a place to wait at 3.71 ± 0.14 , and the waiting time at 3.80 ± 0.18 , compared with 3.54 ± 0.06 and 3.57 ± 0.07 respectively for men.

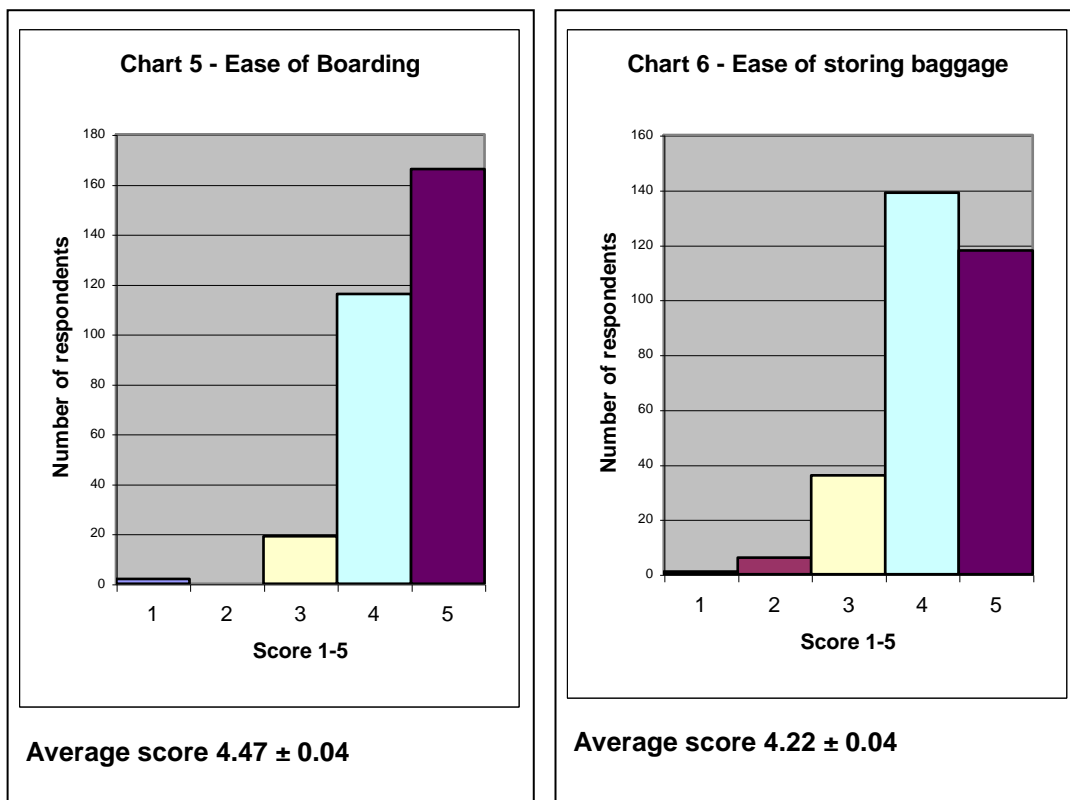
6.2 The buses

Five of the questions related to aspects of the buses themselves. First, getting on the vehicle:

“How would you rate the ease of boarding the vehicle?”

“How would you rate the ease of storing your baggage once on board?”

As Charts 5 and 6 show, few passengers found difficulty with either aspect. The score for ease of boarding was the highest for all the aspects. The buses are relatively low-floored, and although the floor rises to the rear both doors are at the lower level. There is a large three-tier baggage rack along the side of the bus behind the driver, and drivers will often help passengers with cumbersome or heavy luggage.



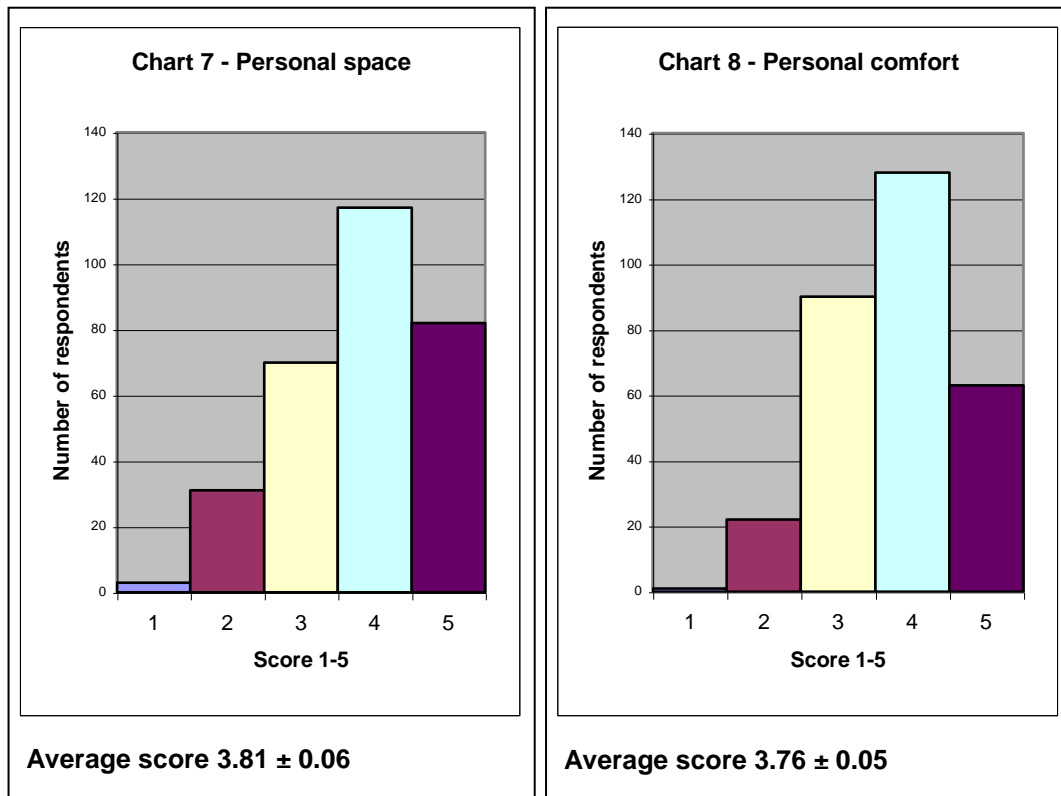
Women found no more difficulty than men, with scores of 4.52 and 4.18 for boarding and baggage respectively, compared with 4.46 and 4.23 for men. The sample of non-business travellers was very small, but they might be expected to carry more baggage, yet their scores

were much the same, at 4.42 and 4.17 for boarding and baggage respectively, as business travellers who rated the bus at 4.47 and 4.23.

“How would you rate the amount of personal space in the vehicle?”

“How would you rate your personal comfort whilst in the vehicle?”

These two aspects are closely related, and the scores are very similar (Charts 7 and 8), though there are more low scores for space than for comfort, which may represent the distribution of physical size of the passengers. Relatively few people find the bus extremely comfortable, even if they have sufficient personal space.



Women find the bus more spacious and comfortable, at 3.96 ± 0.15 and 3.93 ± 0.13 respectively, than do men, at 3.78 ± 0.06 and 3.72 ± 0.05 . Again, this presumably reflects their smaller size, though the differences are not very significant.

Lastly passengers were asked how safe they felt:

“How would you rate your personal safety whilst in the vehicle?”

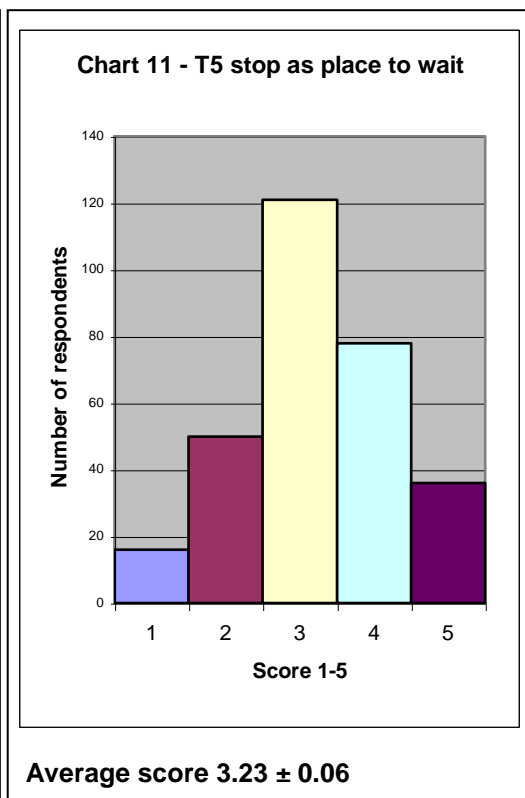
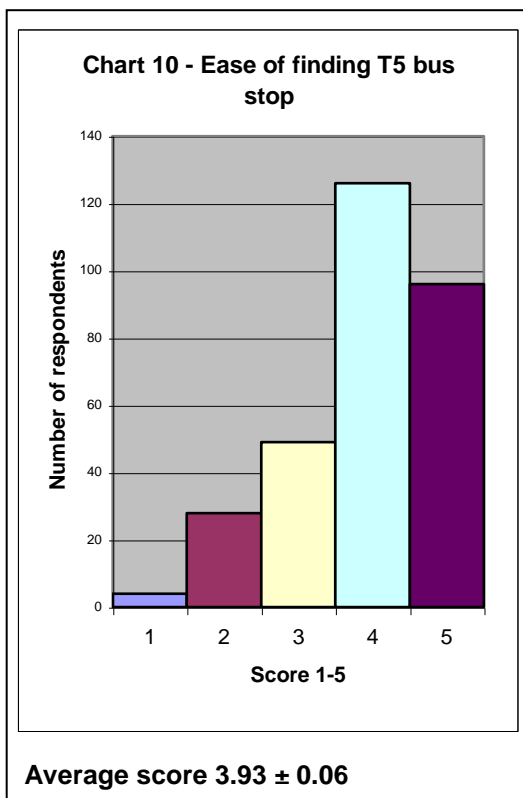
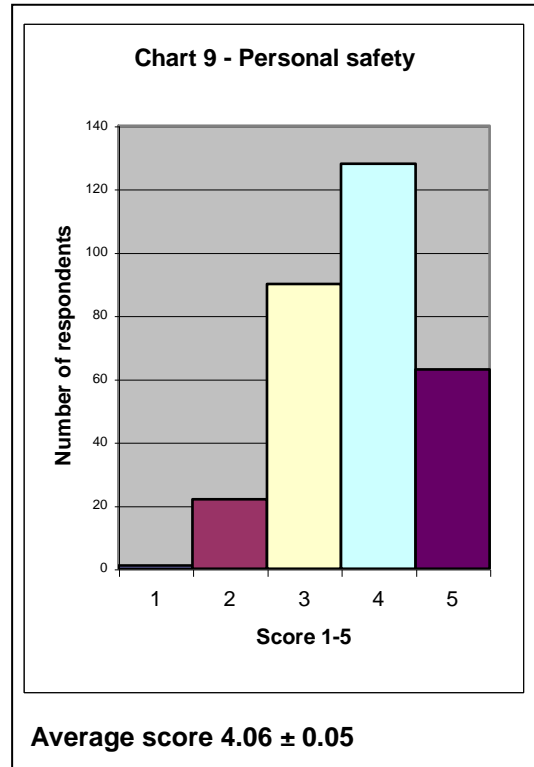
This question is more particularly addressed to the future PRT survey, where travel along an elevated guideway will be novel. Few people would regard a bus as inherently unsafe. In retrospect, it might have been better to ask about security at the bus stop as well as in the vehicle, since there is little question of personal assault whilst in the bus, and PRT will have the advantage of little or no waiting. However, the car park is a well-protected area with little reason to fear assault there, and these aspects are more pertinent to urban transport than to the airport system. Unsurprisingly, as Chart 9 shows, there is little concern about safety. Women do give a lower score than men, at 3.96 ± 0.15 compared with 4.08 ± 0.06 , but the difference is not significant.

6.3 The Terminal 5 bus stops

Three questions concerned access at the Terminal 5 end. Because the survey was administered as passengers returned to the car park the bus stop concerned is the one at ground level below the multi-storey car park. As noted in the Introduction, comparisons between bus and PRT on this aspect will not be very instructive, since the PRT station is not as convenient as it would be if PRT were to be designed permanently into the Terminal building.

“How would you rate the ease of finding the bus stop at Terminal 5?”

As Chart 9 shows this is not rated particularly highly, even though the bus stop is easily reached across one access road and a few metres within the multi-storey car park. The stop is one of a long line of bus stops, however, and the environment can be rather dark and forbidding.



“How would you rate the bus stop at Terminal 5 as a place to wait?”

This question received the lowest score of all the questions in the survey, probably because even though the stop is under cover, the tunnel-like environment is not inviting. There is

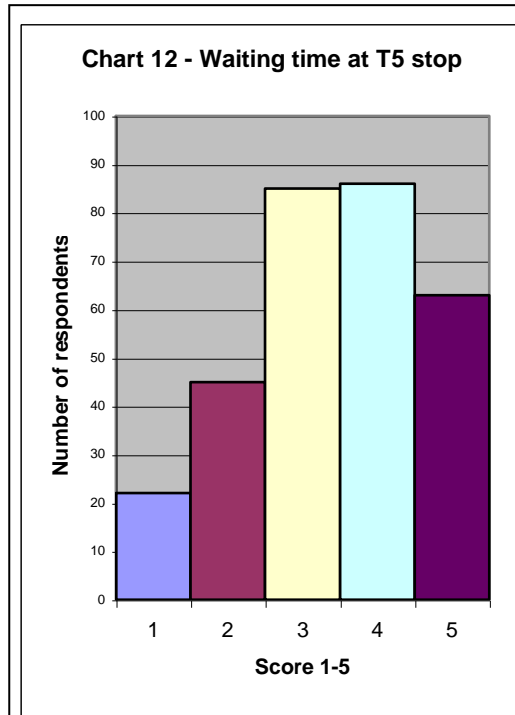
constant passing traffic, and it may be draughty. There are seats, but they are set back from the stops, and passengers may prefer to stand in the queue, if there is one.

Just as for the car park bus stop, passengers were asked about their waiting time:

“How would you rate the amount of time you had to wait at the bus stop?”

Although the mean bus headway will be the same at the Terminal as in the car park, the distribution may differ, and since the bus rarely stands for long at the Terminal, but spends any waiting time in the car park, it is likely that the intervals are more variable at T5 than at the car park. We have no data on this, since the bus timing data comes from the car park. But in any case, since the bus spends longer in the car park, and is therefore more often visible than at T5, passengers will be more likely to disregard the actual waiting time if they can see a bus is approaching.

This may explain the lower score for waiting time at T5 than at the car park, and also the greater variation in scoring. This may be reading too much into the results of the survey, but if true it suggests a high degree of consistency in the scoring.

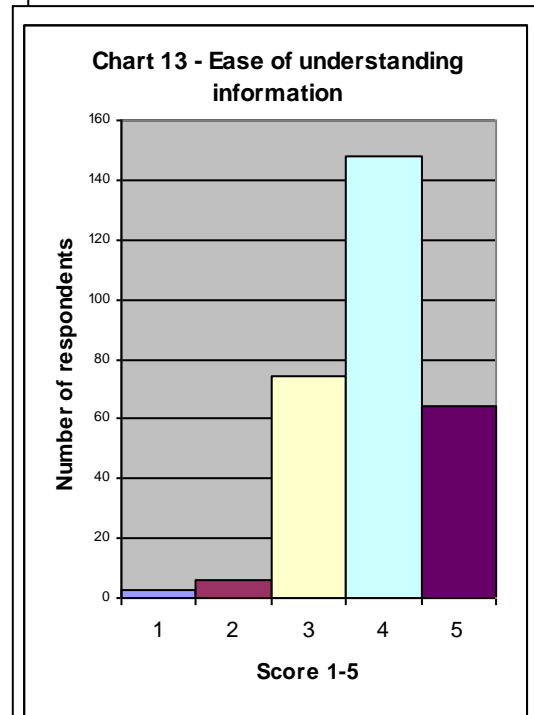


6.4 The Service

The remaining questions in the survey were concerned with the shuttle bus service overall.

“How would you rate the information about using the Transfer Bus as being easy to use?”

Of course, the information provided about the bus service is totally different from that which will be needed for the PRT service, and the comparison will not be evaluating PRT versus bus as a mode, but the way in which access to the service has been designed. In particular, in the airport way-marking is crucial, while since PRT will be a wholly novel mode instruction on how to use it needs to be designed very carefully. The success of that will be evaluated during the commissioning process. Use of buses is, of course, familiar to most people, even if they rarely use them, so the information required is largely where to find the



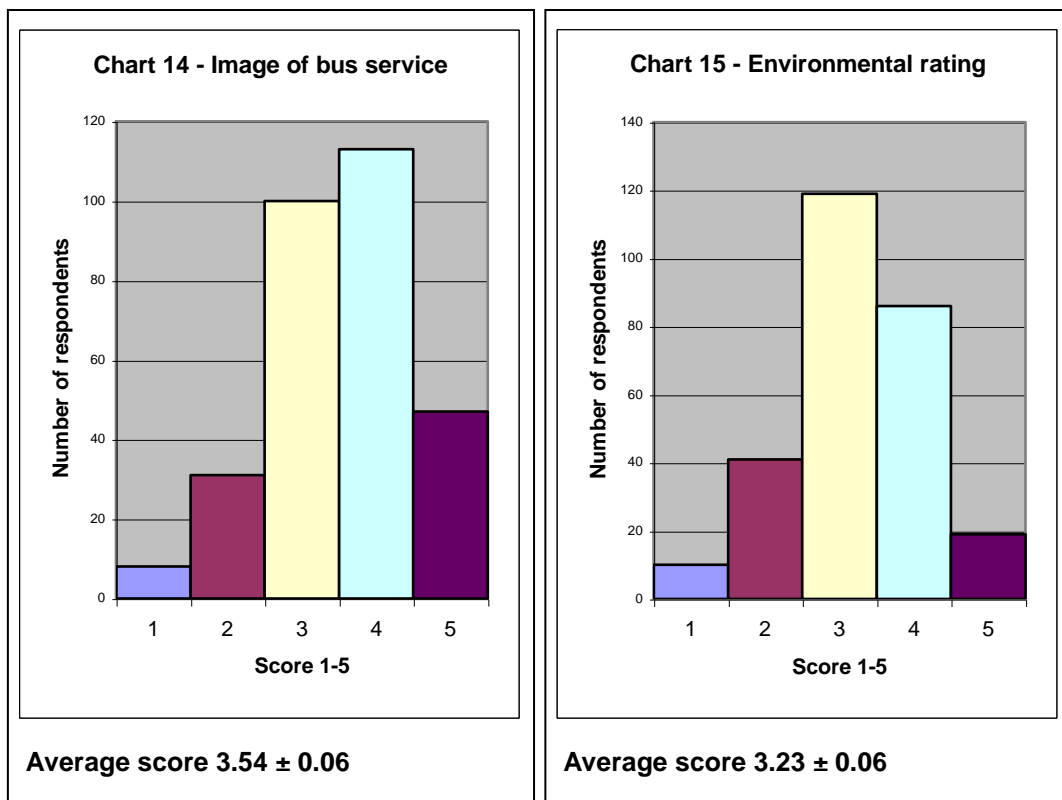
Average score 3.89 ± 0.05

stop and information about expected frequency. The service also stops operating between the hours of 23.30 and 05.00, when passengers use an intercom at the stops to call for transport.

As Chart 13 shows, most passengers find the information adequate, with very few marking it at 1 or 2, which presumably indicates that it acceptably clear. The task of providing adequate information is harder for PRT, and it will be interesting to see how the surveys compare.

“How would you rate the Transfer Bus in terms of having a modern image for the airport?”

The score for this is, perhaps, surprisingly high at 3.54 (Chart 14), given that buses might be regarded as rather old-fashioned against the high-tech automated rail systems incorporated into many airports, and certainly one would expect PRT to score much more highly here. In part, however, the scoring reflects what passengers expect from an airport car park, where they may well consider buses to be the obvious transport solution. In this sense, they may simply be judging the quality of the buses as buses, and the transfer buses are clean, smart and reasonably new.



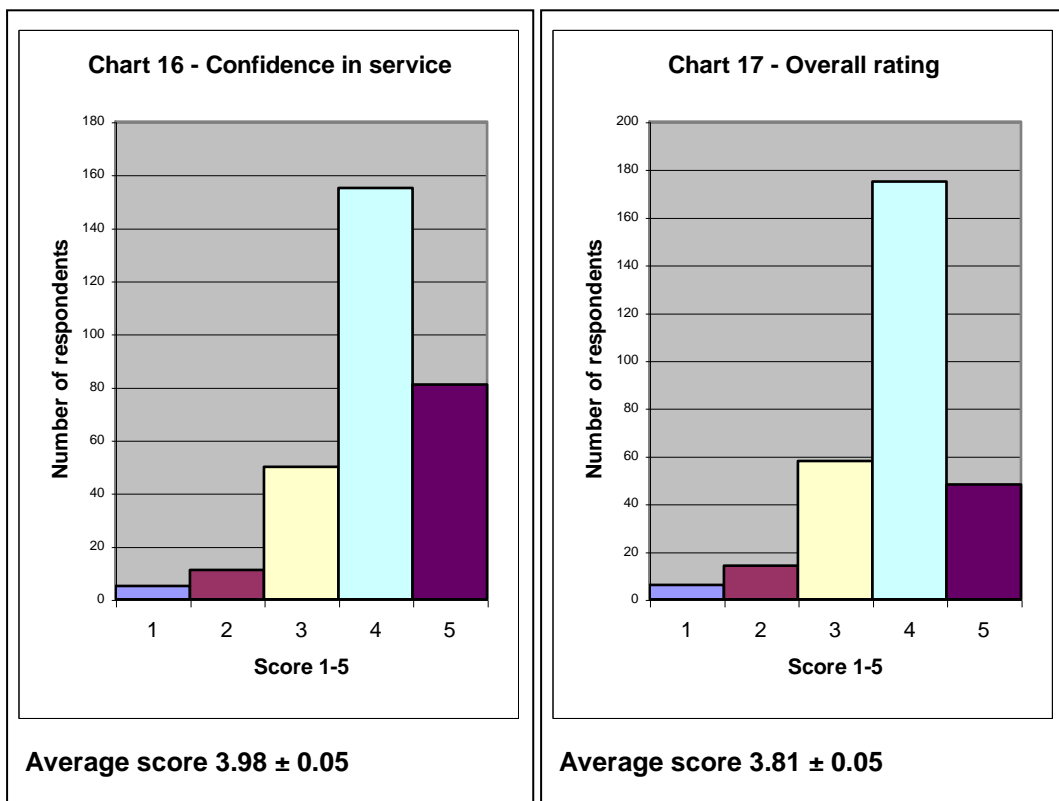
“How would you rate the Transfer Bus for being environmentally friendly?”

Perhaps not surprisingly, this question received the equal lowest score of the survey (Chart 15), together with the T5 stop as a place to wait. Large diesel vehicles are not generally regarded as environmentally friendly, though against this buses in general are regarded as greener than cars. It is interesting that 29 respondents marked this question as “don’t know”, and maybe it is this conflict which makes the question difficult to answer for some people. It

is, perhaps, regarded as a technical question, and although PRT is clearly less polluting than buses it will be interesting to see what passengers make of this question in the After survey.

“How would you rate your degree of confidence in the Transfer Bus as a means of travelling between the car park and the Terminal?”

As Chart 16 shows, this question is marked fairly highly, though perhaps not as highly as might be hoped, given that the system is in fact reliable and total transfer times reasonably short even when one of the buses is missing. There are, however, a number of passengers marking confidence at 1 or 2, and these may be people who had to wait longer than expected. In any case, frequently travelling businessmen tend to leave their arrival at airports relatively late, and may be more concerned at delays than the average passenger. This view is supported by the observation that the score given by people who had used the car park more than ten times in the past year gave a lower score, at 3.66 ± 0.13 , than users who had tried the car park only once or twice, who gave 4.07 ± 0.07 .



“How would you rate your overall experience of the Transfer Bus?”

This aspect might be expected to be strongly related to the previous question, and as Chart 17 shows the score is similar, though slightly lower. This could be interpreted as the overall verdict on the bus service, against which the PRT system will be judged, but the situation is likely to be rather more complicated than this. As an “overall” score, it seems probable that users will be judging not simply the transfer system, but their use of the car park as a whole, including the premium price charged for it compared with the standard long-term car parks. Even though it is likely that only a minority of users will be paying for the service personally, as against company expenses, the known cost will enter into the judgement to some extent.

Nevertheless, this will be true for both bus and PRT, and to the extent that PRT is judged to be superior it might be expected to achieve a higher score in the “After” survey.

“Would you recommend using this car park to a friend?”

This question was asked for BAA’s own purposes, and clearly relates to use of the car park as a whole, but it provides an additional measure of the extent to which PRT might improve the image of the car park. The average score, on a 10-point scale this time, is 7.84 ± 0.33 . It is not clear how this might be interpreted in terms of the proportion of users who would definitely recommend the car park in a yes/no answer, but it suggests strongly that the great majority of users are satisfied. Here again, frequent users (>10 times) are less enamoured than new users (1 or 2 times), scoring 7.26 ± 0.32 against 8.31 ± 0.84 , but the new users had a much wider distribution of scoring than the frequent users, suggesting that those familiar with the service had a more consistent view of its merits.

7 In Conclusion

This is merely the “Before” survey of a two-stage comparison, and it is not appropriate to draw conclusions here, beyond the observation that the survey methodology seems adequate to achieve consistent measures of users’ satisfaction levels, and that the sample size is sufficient to provide adequate discrimination.

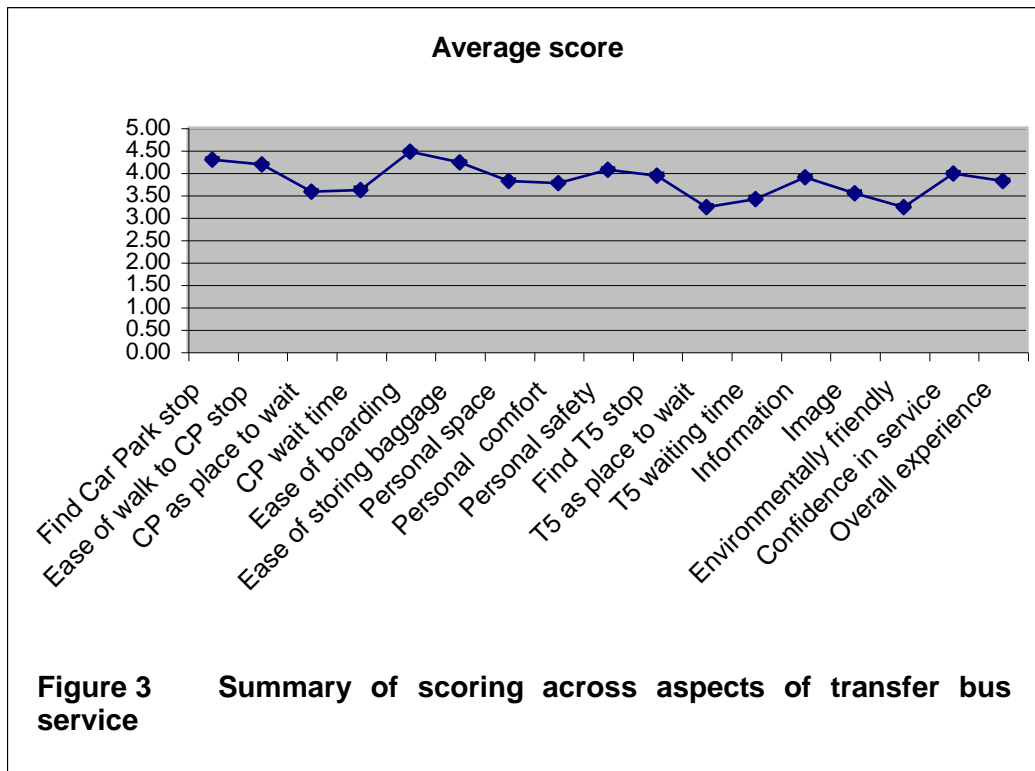


Figure 3 summarises the scores given in the survey. In absolute terms the average scores suggest that all aspects are acceptable, if a rating of 3 is interpreted as acceptable, and 4 and 5 as good and excellent. Only 9% of all respondents’ ratings were below 3 (502 in 5397). Only “T5 as a place to wait”, “T5 waiting time” and the “Environmentally friendly” aspect of the bus service scored less than 3.5, though the image of the bus service was also

low at 3.54. The car park, as a place to wait at 3.57, and waiting time in the car park at 3.61. reinforced the low scoring of waiting at T5 as being consistent with the unpopularity of waiting in perceived transport costs. Generally, though, there is no reason to expect the shuttle bus service should score lowly: it is an efficient and reasonably reliable service, and fulfils the requirements. It remains to be seen, in the “After” survey, to what extent PRT might improve on these results.

This study is also tasked with gauging the satisfaction levels of the operators, as well as of the users. In this case the operator in question is BAA, as the operator of the airport, rather than the sub-contracted operator of the transfer buses. This will be pertinent when PRT is evaluated, since the purpose of the pilot system is to demonstrate the concept of PRT, but it is not appropriate to obtain a formal measure of operator satisfaction in this “Before” survey. BAA has commissioned PRT because it regards PRT as potentially a better core transport service for Heathrow than using transfer buses. As representatives of BAA described at the recent ATRA Conference PRT@LHR (April 2009), this is for reasons of passenger convenience and comfort, efficiency and operating cost, image and environmental impact. The extent to which these expectations are fulfilled will be explored in the “After” survey, when experience has been gained in the running of PRT.

ANNEX A

The Passenger Questionnaire



T5 BUSINESS CAR PARK – PRT PRE-STAGE (March 2009)

Good morning / afternoon / evening. I am conducting a survey on behalf of the airport. We are interviewing users of the Car Park Transfer Bus and would like to ask for your opinions on the service...

[include this occasion, use leading zero]

1 How many times have you used this car park in the last 12 months? 1-2

Using a scale of 1 to 5 [SHOWCARD], where 1 is 'Extremely Poor' and 5 is 'Excellent', how would you rate the Transfer Bus in terms of...

[code as '9' if Don't Know]

2	Ease of boarding the vehicle?	<input type="text"/>	3
3	Ease of storing your baggage once on board?	<input type="text"/>	4
4	Amount of personal space in the vehicle?	<input type="text"/>	5
5	Personal comfort whilst in the vehicle?	<input type="text"/>	6
6	Personal safety whilst in the vehicle?	<input type="text"/>	7

Thinking about the transfer journey you have just made between Terminal 5 and this Car Park, how would you rate...

7	Ease of finding the Bus Stop at Terminal 5?	<input type="text"/>	8
8	The Bus Stop at Terminal 5 as a place to wait?	<input type="text"/>	9
9	The amount of time you had to wait at the Bus Stop?	<input type="text"/>	10

Now, thinking back to when you first arrived in this Car Park and transferred over to Terminal 5, how would you rate...

- | | | | |
|----|---|----------------------|----|
| 10 | Ease of finding the Bus Stop in this Car Park? | <input type="text"/> | 11 |
| 11 | Ease of walking to the Bus Stop from your car? | <input type="text"/> | 12 |
| 12 | The Bus Stop in this Car Park as a place to wait? | <input type="text"/> | 13 |
| 13 | The amount of time you had to wait at the Bus Stop? | <input type="text"/> | 14 |
| 14 | How would you rate the weather at that time? | <input type="text"/> | 15 |

Using the same rating scale as before, and thinking about the Transfer Bus in general, how would you rate...

- | | | | |
|----|---|----------------------|----|
| 15 | The information about using the Transfer Bus as being easy to understand? | <input type="text"/> | 16 |
| 16 | The Transfer Bus in terms of having a modern image for the airport? | <input type="text"/> | 17 |
| 17 | The Transfer Bus for being environmentally friendly? | <input type="text"/> | 18 |
| 18 | Your degree of confidence in the Transfer Bus as a means of travelling between the Car Park and the Terminal? | <input type="text"/> | 19 |
| 19 | Your overall experience of the Transfer Bus? | <input type="text"/> | 20 |

On a scale of 0 to 10, where 0 is 'Not at all likely' and 10 is 'Extremely likely', how likely would you be to recommend...[use leading zero]

- | | | | | |
|----|--|----------------------|----------------------|-------|
| 20 | ...using this Car Park to a friend or colleague? | <input type="text"/> | <input type="text"/> | 21-22 |
|----|--|----------------------|----------------------|-------|

- | | | | |
|----|---|----------------------|----|
| 21 | What was the main reason for your trip today? | <input type="text"/> | 23 |
|----|---|----------------------|----|

- Business 1
- Holiday – Package 2
- Holiday – Independent 3
- Staying at own property 4
- Visiting friends and relatives 5
- Other non-business 6

[Thank and close]

Respondent was Male / Female

 24

Male 1

Female 2

Interviewer number 25-28

D D M M Y Y

Date 29-34