

Hertfordshire County Council

Abbey Line Passenger Survey

FINAL REPORT



June 2006

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Executive Summary

- E1 The Abbey Line between Watford Junction and St Albans Abbey is a single-track Community Rail Partnership (CRP) line. Although currently operated by Silverlink, the line is to be part of the new West Midlands franchise, due to commence on 11 November 2007. The Community Rail Partnership is seeking to increase the frequency of services on the route, to a half-hourly level, thus requiring a second trainset and passing loop to be installed. The CRP therefore commissioned The Railway Consultancy to undertake a series of passenger counts and surveys of passenger travel patterns, in order to provide a basis on which business planning might be undertaken.
- E2 Analysis of passenger usage on the line was based upon surveying all weekday and weekend services once during May 2006. This encompassed the counting and alighting of boarders at every Abbey Line station and a series of on-train counts. In addition, a questionnaire was distributed to passengers. A total of 1300 forms were distributed; by the closing date of 9th June 2006, a total of 496 survey forms were returned completed, representing a response rate of 38%.
- E3 Count data across the survey period revealed that passenger numbers on the line were somewhat disappointing. The total number of boarders (i.e. across both directions) for weekdays, Saturdays and Sundays were respectively around 1300, 1000 and 450 per day. Across all periods the busiest stations were the two termini stations (Watford Junction and St Albans Abbey), with Garston the busiest intermediate station.
- E4 Detailed analysis of weekday loadings revealed that in both directions the sections of line with the heaviest loadings were between Watford Junction and Watford North. The highest on-train loading recorded was 97 passengers, but average loadings for weekdays, Saturdays and Sundays were only 19, 16 and 11 respectively.
- E5 Analysis of weekday travel patterns revealed that nearly half of all journeys on the line were between Watford Junction and St Albans, with another 28% being wholly within the line. This highlights the importance that the line plays in serving the local community.
- E6 Trips for work purposes are dominant during the week (76%), whilst at weekends, a wider range of journey purposes is evident. As well as work trips, those for shopping, leisure and visiting friends and relatives are all significant.
- E7 64% of passengers use the line at least once a week. However, 26% of passengers use the line less than monthly, so consideration also needs to be given to the needs of less-frequent users.
- E8 Analysis of ticket purchase patterns has shown that 50% of sales occur on the train, with only 36% of passengers purchasing tickets from the ticket office and 8% from ticket machines. This highlights the non-existence of on station ticket sales facilities, at stations apart from Watford Junction. Three ticket types predominate on weekdays, with season tickets, Cheap Day Returns and Standard Day Return tickets each being used by about one-fifth of passengers. Cheap Day Returns are the most common at weekends.
- E9 Despite the presence of on-train staff on all services, the frequency of ticket checking is disappointing, with 25% of passengers not having been subject to ticket inspections.
- E10 User needs analysis, of respondents' comments concerning the Abbey Line revealed that 32% of comments concerned the impressive punctuality/reliability/good service of the Abbey Line, 13% expressed a desire for a more frequent service, 12% requested the provision of later train services in the evening and nearly 8% asked for improvements to be made to the passenger information system or other facilities at stations.

Abbey Line Passenger Survey

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1 Introduction

- 1.1 The Abbey Line between Watford Junction and St Albans Abbey has been a Community Rail Partnership (CRP) project since June 2005. Under the CRP concept Silverlink (as the train operator), Network Rail, Hertfordshire County Council, the local borough councils and rail user groups work together to improve usage, awareness of and services on the line.
- 1.2 The line is currently operated by one 4-car class 321 unit, providing a shuttle service between the two terminal stations. There are five intermediate stations, the end-to-end journey time is only 16 min, and trains run every 45 minutes.
- 1.3 The CRP wishes to introduce a half-hourly service on the route, but this would require a second unit and the reinstatement of the previous passing loop at Bricket Wood. This concept is also mentioned in the latest rail franchise consultation document, issued by the Department for Transport on the 8th June 2006. The West Midlands Franchise Consultation Document (which is that which will be relevant for future services on this line) has indicated that plans have been drawn up for a low cost innovative control system for the envisaged passing place, and that third party funding is available for this investment. Bidders for the new franchise (due to commence on 11th November 2007) are therefore required to price an option for introduction of a half hourly service.
- 1.4 To be able to support a business case for these proposals, and since the available passenger count data is out of date or patchy, Hertfordshire County Council commissioned The Railway Consultancy to carry out passenger counts and surveys on the line. Apart from providing up-to-date usage figures, the surveys were also designed to help the CRP to understand better what parts of the community use the services at the moment and what types of journeys passengers on the line are currently making.
- 1.5 This report is structured as follows: Section 2 contains a description of the survey method used to collect and analyse the data. Section 3 sets out our results, followed by a summary of comments from passengers and some observations made by survey staff. Section 4 contains our conclusions and recommendations.

2 Survey Method

- 2.1 The survey work included two different tasks: On the one hand, boarding and alighting counts were carried out on every weekday, Saturday and Sunday departure from either Watford Junction or St Albans Abbey stations. On the other hand, a questionnaire was handed to a sample of the passengers in order to understand better their trip patterns.

On-Train Counts

Survey Method

- 2.2 The surveys took place during May 2006, with the Saturday and Sunday surveys being carried out on the weekend 13th-14th May and the weekday counts on Tuesday 16th May and Wednesday 17th May. Weekday surveys were deliberately scheduled midweek to avoid picking up slightly different travel patterns which might prevail at the beginning and at the end of the working week. Although the FA cup final took place on 13th May, this is not deemed to have had a significant impact on passenger numbers on the line during the afternoon.
- 2.3 The boarding and alighting counts were carried out by Railway Consultancy staff on board the trains, since this appeared to be the most effective way of collecting the required information using an economic number of staff. In addition to on/off counts during station stops the total number of passengers on the train was also counted at several stages during each trip, thus providing a useful check on the on/off counts.
- 2.4 During off-peak times one member of staff was able to conduct all the counts, whilst during peak times a second member of staff was added. On-train counting and questionnaire distribution was then limited to only two cars each per member of staff. However, both members of staff would count all boarding and alighting passengers for the entire train, which again provided a useful check when both records are compared.
- 2.5 Full on-train counts were generally conducted upon departure from the terminals at Watford Junction and St Albans Abbey, covering the boarding counts at the two busiest stations. The relatively low numbers of boarders and alighters at the intermediate stations were easy to count from the train. One can therefore be reasonably confident that the count figures are accurate. In case of slight discrepancies only the on/off counts were generally adjusted to achieve the surveyed on-train loads. Nevertheless, train-specific data should be treated with some caution since there is clearly some day-to-day variation (at least $\pm 10\%$) for the same trains.

Operational Issues

- 2.6 None of the total of 114 scheduled departures was cancelled on the planned survey dates, such that a full set of counts could be obtained without the necessity of re-running any surveys. The train service mostly ran well, but generally about two minutes late throughout. There were problems with the level crossing at Watford North on Saturday evening, leading to some services being delayed by as much as eight minutes.

Passenger Survey

Questionnaire Design

- 2.7 The main aim of the questionnaire was to collect trip pattern and journey purpose information. This was complemented by information on tickets used, car availability as well as gender and age of the respondents. In addition to these questions Silverlink were interested in information on ticket purchase and revenue protection, and relevant questions were added to the form. The questionnaire was based to a large extent on a survey form used by the SRA, but was abridged to fit onto a double-sided sheet of A4 paper and adapted specifically to suit the Abbey Line. This shorter and locally-adapted questionnaire would have contributed to a higher response rate by passengers.

- 2.8 There was room on the questionnaire for comments and suggestions regarding the Abbey Line service, a facility many respondents made use of. Passengers were also encouraged to use a dedicated e-mail address if they wished to express their views at greater lengths, but this was administered by the CRP such that we do not know the extent to which this was used. Passengers' names and contact details were only taken if respondents wished to enter a prize draw for Rail Travel Vouchers. This prize draw was set up to stimulate the response rate.
- 2.9 The survey forms were numbered sequentially, to enable allocation of responses to specific trains, to facilitate the analysis and to allow the follow-up of any queries to the surveying staff member.
- 2.10 Due to time constraints a formal pilot survey was not carried out to test the questionnaire. However, the questionnaire could be regarded as indirectly tested given that a questionnaire in a very similar format and with very similar wording has been used before by the SRA. Not conducting a pilot therefore seemed a suitable simplification to make.

Conducting the Survey

- 2.11 It was generally possible for staff to perform the on/off counts while the train was in a station and to distribute questionnaires between stops. The acceptance of questionnaires varied depending on the group of passengers and also depending on the time of day. Teenagers, for example, were generally less likely to accept a questionnaire due to lack of interest. However, they made up a significant proportion of passengers at the weekend. Equally, passengers were reluctant to accept a questionnaire on their return journey if they had been handed one on the outward leg. This applied both to leisure travellers at the weekend and to commuters during the week. In some cases commuters were intercepted during the weekend and were then reluctant to fill in another form for their work journey on a weekday. The phenomenon of passengers unwilling to fill in multiple questionnaires is not symptomatic solely to the Abbey Line, but was also observed on a similar study the Railway Consultancy conducted on the West London Line. This varying level of willingness to participate in the survey could potentially lead to a bias in the response data, which needs to be taken into account when interpreting the results.
- 2.12 Another potential bias arises since passengers travelling from intermediate stations and therefore shorter distances are relatively less likely to be handed a questionnaire than those travelling between the termini, and are also less likely to complete the forms on the train, thereby reducing the sample return rate. This bias is thought to be only small and has partially been offset by deliberately not handing questionnaires to a number of passengers immediately after departure from either Watford or St Albans.
- 2.13 Distributing questionnaires was slightly more difficult on the two busiest peak trains, the 0745 departure from St Albans Abbey and the 1806 departure from Watford Junction, where many passengers boarded the first carriage and then stood in the vestibules making it harder for staff to reach passengers to hand out forms. However, just over half of the passengers on those trains were still given a form, a figure in line with the average questionnaire coverage achieved on a weekday.
- 2.14 The following table contains a summary of the number of questionnaires handed out on each day and relates them to the number of boarders on those days. It also contains an indication of the response rate on 9/06/06 and market coverage of the survey.

Day	Total Boarders	Forms Distributed	Distribution Rate	Forms Returned	Response Rate	Market Coverage
Weekday	1300	700	53.8%	307	43.9%	23.6%
Saturday	1000	400	40.0%	122	30.5%	12.2%
Sunday	450	200	44.4%	53	26.5%	11.8%

2.15 On 9th June (the closing date for the receipt of questionnaires), a total of 496 survey forms had been returned completed. This equals a response rate of 38.2%.

Data Entry

2.16 During the data entry process it became clear that some passengers had difficulties with some questions on the questionnaire, and therefore a number of errors in passengers' responses needed to be corrected. For instance, some passengers on their return journeys entered the start station of their outward journey as their ultimate origin. However, this data was easily recognised and was amended manually.

Summary

2.17 Despite a small number of technical problems mentioned above, we believe that the results described in section 3 of this report accurately reflect current conditions on the Abbey Line. Our counts did cover every train on the route for the entire week, and the on-train counts provide a good cross-check on the boarding and alighting figures. Similarly, the questionnaire survey response was sufficiently large that it is unlikely not to provide a valid estimation of the types of trips made on the line. Whilst it is possible that individual items of data are incorrect by as much as 10%, our judgment is that it is extremely unlikely that aggregate data is incorrect by more than 1%.

3 Results

Passenger Counts

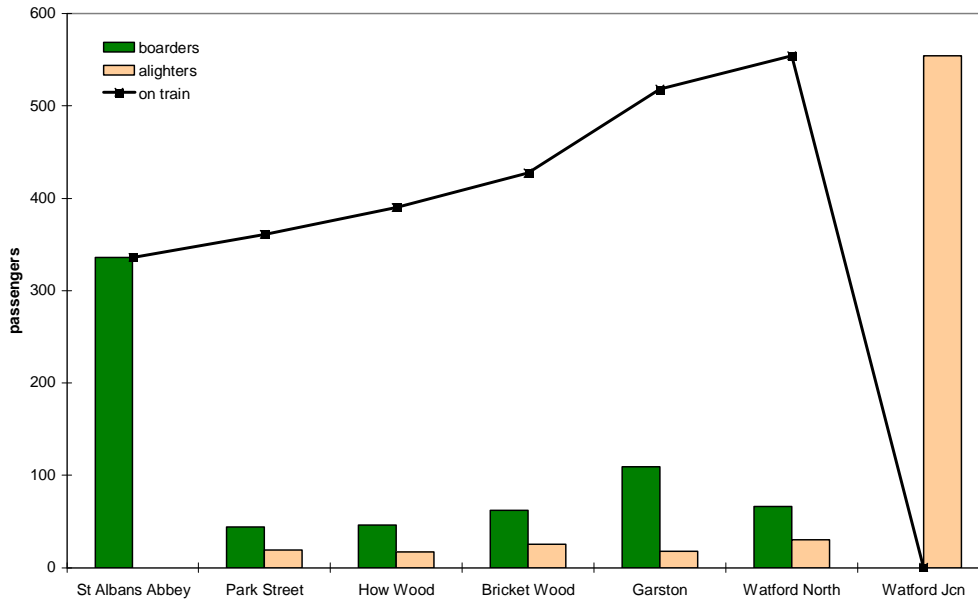
3.1 Count data for weekdays is shown in the tables and graphs below. As one can see the two terminal stations of the line are by far the busiest stations. The busiest of the intermediate stations is Garston, followed by Watford North and Bricket Wood. Both Park Street and How Wood are very quiet stations indeed. The slight imbalance between passenger numbers in the Up and Down direction is considered to be within the typical margin for day-to-day variation.

Weekdays	Up Direction		
	Boarders	Alighters	On train
St Albans Abbey	336	0	336
Park Street	44	19	361
How Wood	46	17	390
Bricket Wood	62	25	427
Garston	109	18	518
Watford North	66	30	554
Watford Jcn	0	554	0
TOTAL	663	663	

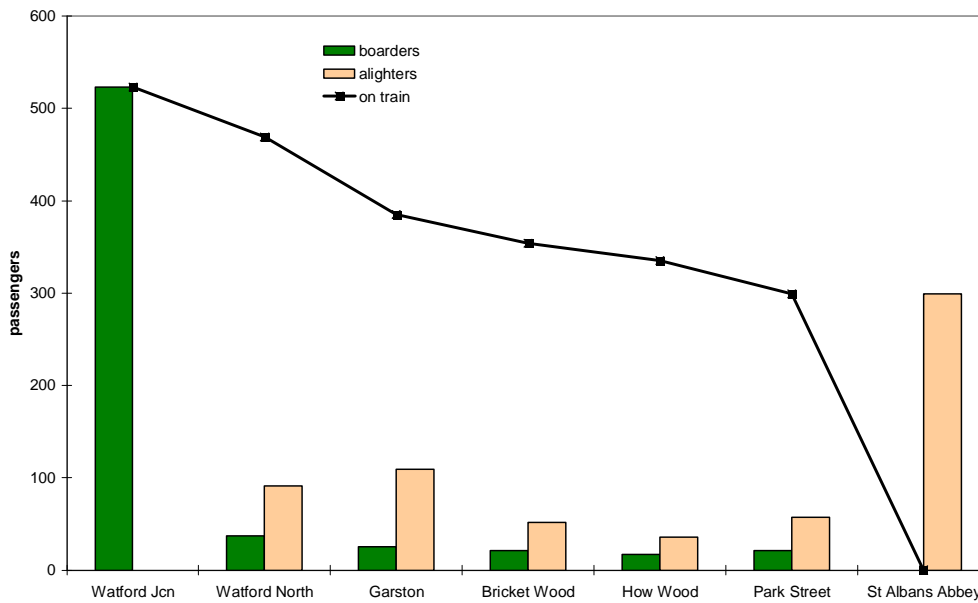
Weekdays	Down Direction		
	Boarders	Alighters	On train
Watford Jcn	523	0	523
Watford North	37	91	469
Garston	25	109	385
Bricket Wood	21	52	354
How Wood	17	36	335
Park Street	21	57	299
St Albans Abbey	0	299	0
TOTAL	644	644	

Weekdays	Both Directions TOTAL boarders
Watford Jcn	523
Watford North	103
Garston	134
Bricket Wood	83
How Wood	63
Park Street	65
St Albans Abbey	336
TOTAL	1307

Count Data: Weekday, Up Direction

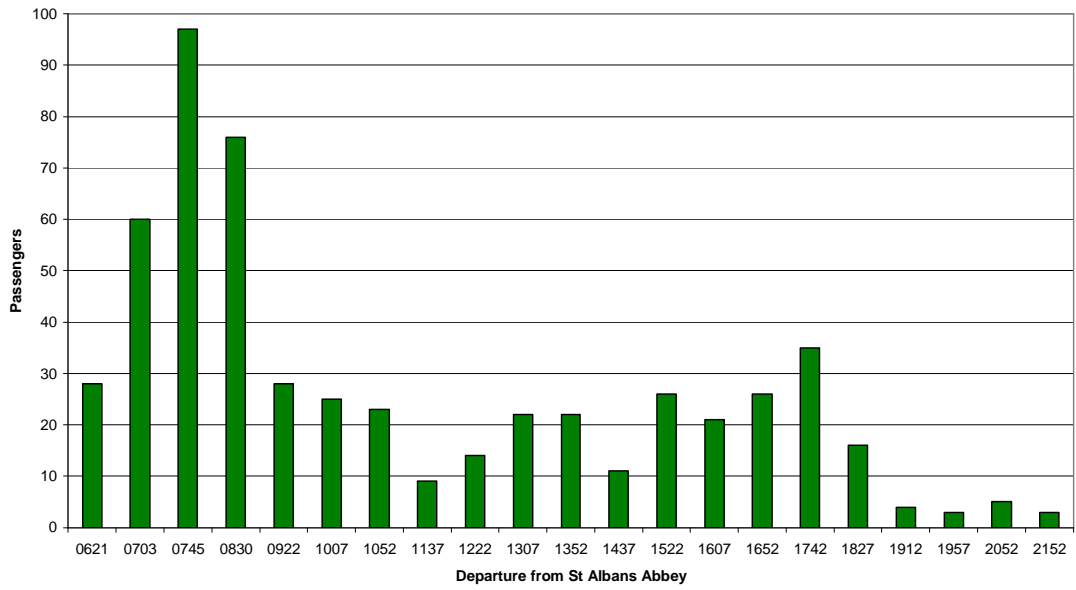


Count Data: Weekday, Down Direction

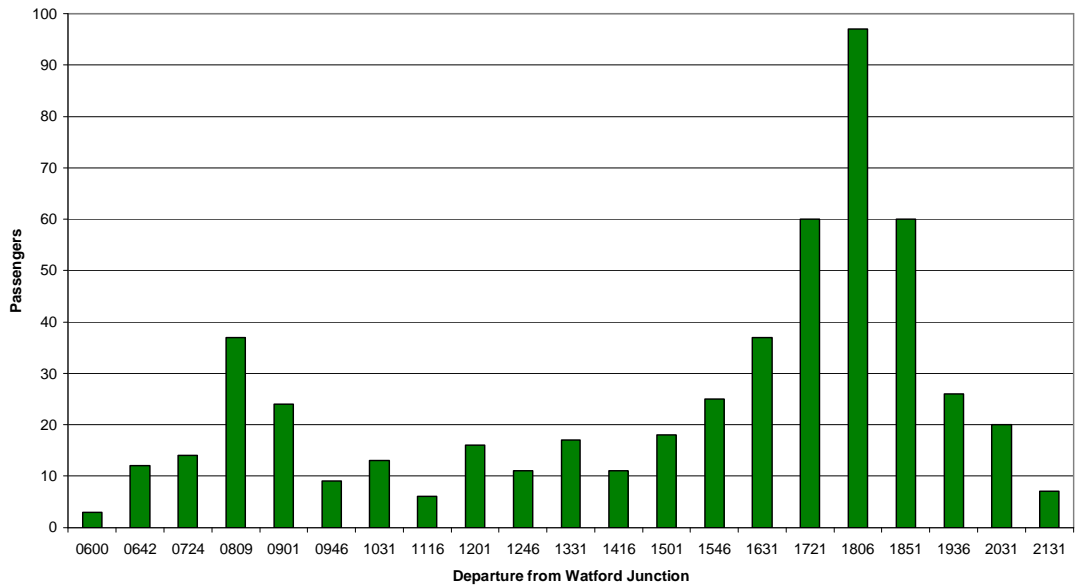


3.2 The section between Watford Junction and Watford North is the one with the highest on-train passenger loads. The following graphs contain the demand profile over the course of the day for this line section in both directions. They clearly show very dominant morning and evening peaks. It is also evident that there is a Watford and London peak as well as a St Albans peak. Due to the longer journey times involved, however, the former starts earlier and finishes later than the local commuting flows to St Albans.

Passenger Load Watford North - Watford Jcn (Weekdays)



Train Load Watford Jcn - Watford North (Weekdays)



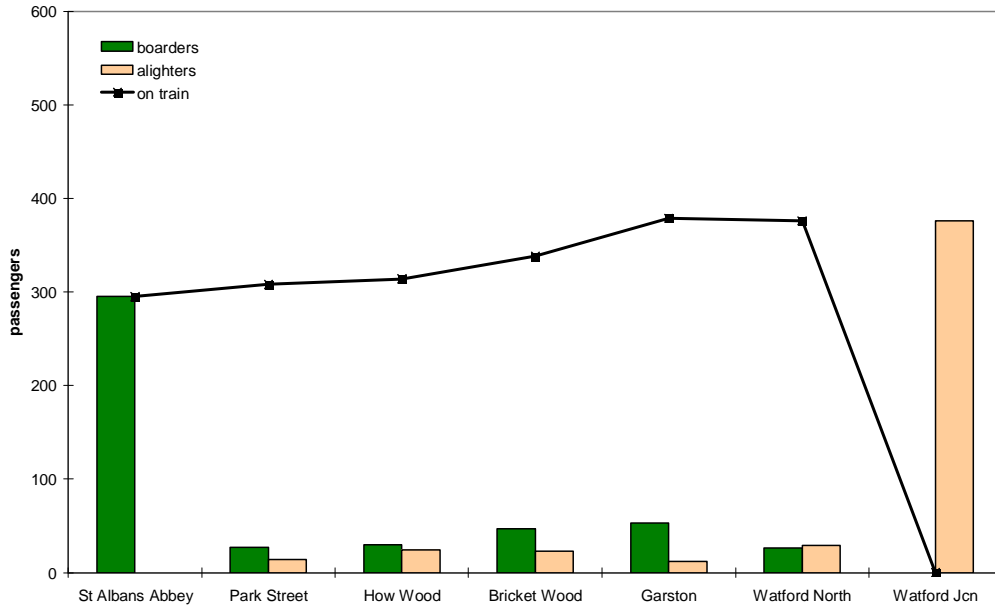
- 3.3 Count data for the weekend can be found in the tables and graphs below, split by Saturdays and Sundays. Watford Junction and St Albans remain by far the two busiest stations. Garston and Bricket Wood come second, whilst demand at Watford North is considerably lower at the weekend, suggesting that it has a large proportion of commuting traffic. Demand at How Wood and Park Street remains very low.

Saturdays	Up Direction		
	Boarders	Alighters	On train
St Albans Abbey	295	0	295
Park Street	27	14	308
How Wood	30	24	314
Bricket Wood	47	23	338
Garston	53	12	379
Watford North	26	29	376
Watford Jcn	0	376	0
TOTAL	478	478	

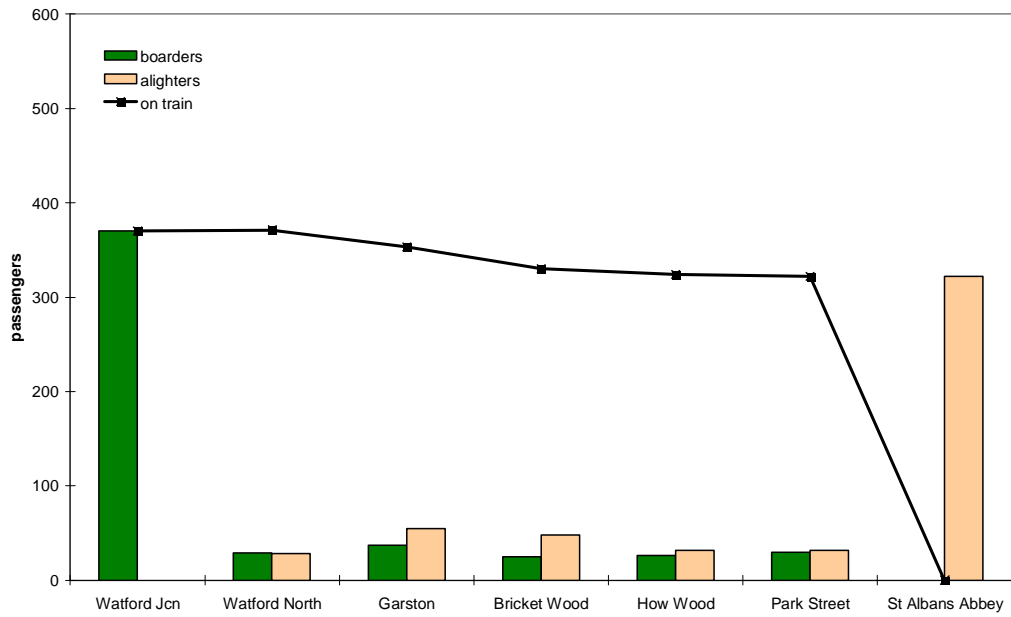
Saturdays	Down Direction		
	Boarders	Alighters	On train
Watford Jcn	370	0	370
Watford North	29	28	371
Garston	37	55	353
Bricket Wood	25	48	330
How Wood	26	32	324
Park Street	30	32	322
St Albans Abbey	0	322	0
TOTAL	517	517	

Saturdays	Both Directions TOTAL boarders
Watford Jcn	370
Watford North	55
Garston	90
Bricket Wood	72
How Wood	56
Park Street	57
St Albans Abbey	295
TOTAL	995

Count Data: Saturday, Up Direction



Count Data: Saturday, Down Direction

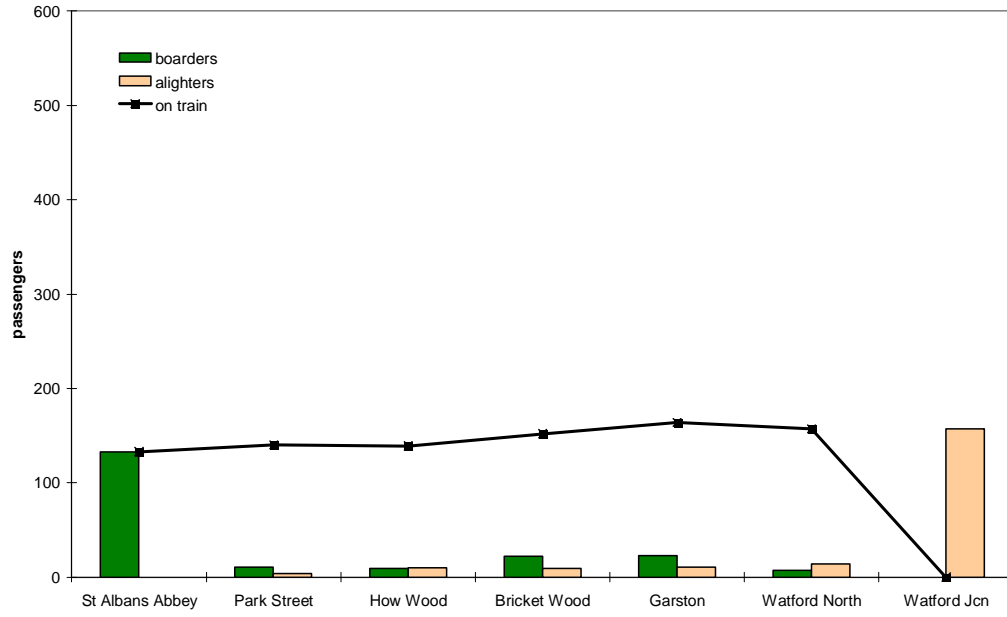


Sundays	Up Direction		
	Boarders	Alighters	On train
St Albans Abbey	133	0	133
Park Street	11	4	140
How Wood	9	10	139
Bricket Wood	22	9	152
Garston	23	11	164
Watford North	7	14	157
Watford Jcn	0	157	0
TOTAL	205	205	

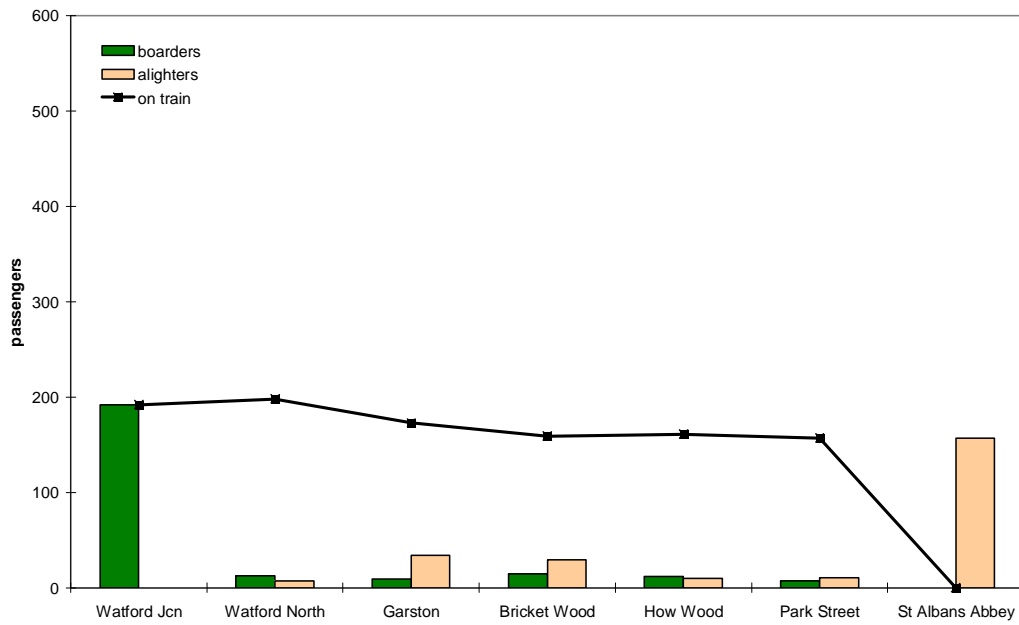
Sundays	Down Direction		
	Boarders	Alighters	On train
Watford Jcn	192	0	192
Watford North	13	7	198
Garston	9	34	173
Bricket Wood	15	29	159
How Wood	12	10	161
Park Street	7	11	157
St Albans Abbey	0	157	0
TOTAL	248	248	

Sundays	Both Directions TOTAL boarders
Watford Jcn	192
Watford North	20
Garston	32
Bricket Wood	37
How Wood	21
Park Street	18
St Albans Abbey	133
TOTAL	453

Count Data: Sunday, Up Direction

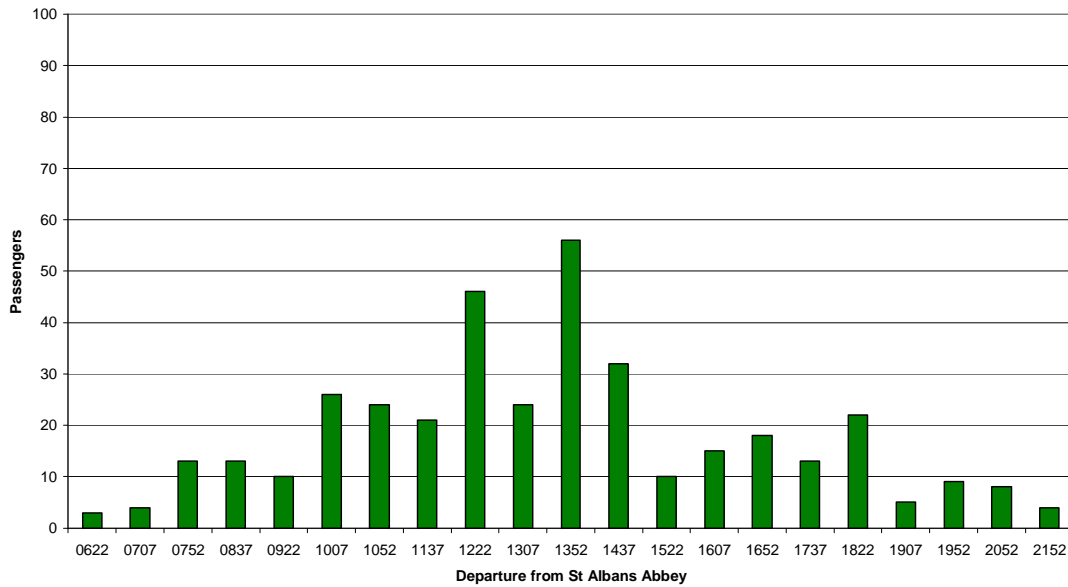


Count Data: Sunday, Down Direction

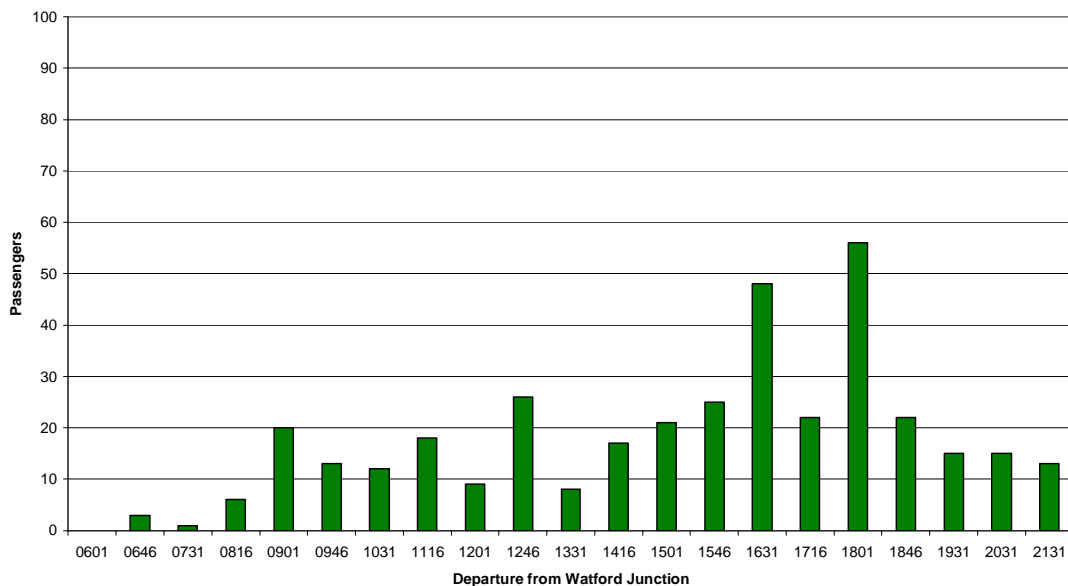


3.4 The demand profile at the weekend naturally differs from the weekday profile, since there are no extreme morning and evening peaks. Rather, demand picks up later in the morning and is generally more evenly spread throughout the day. Both on Saturdays and on Sundays an increase in demand towards Watford Junction can be observed around midday, whilst the peak in the opposite direction lies around late afternoon/early evening.

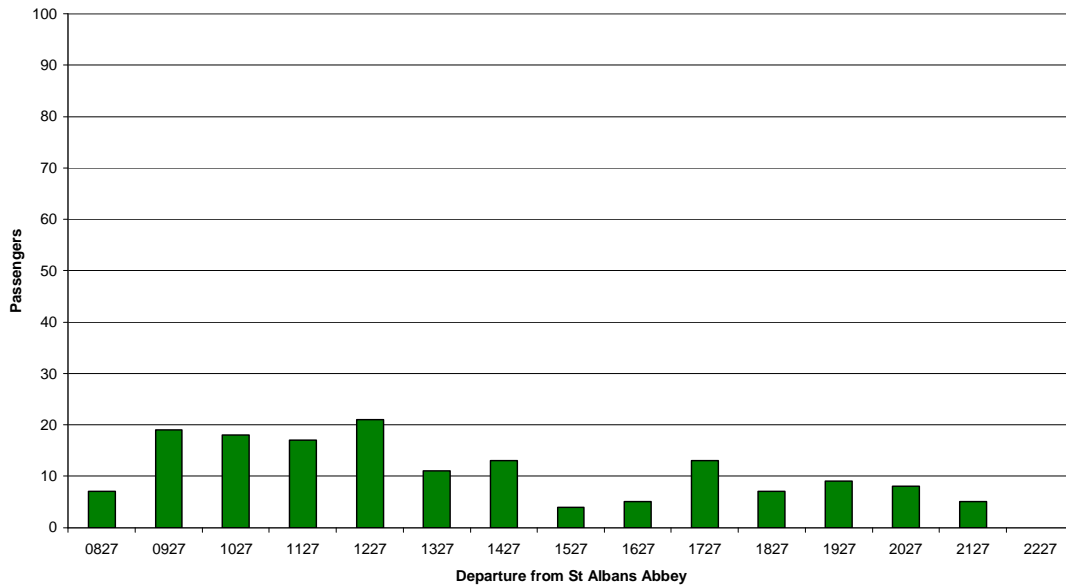
Train Load Watford North - Watford Jcn (Saturday)



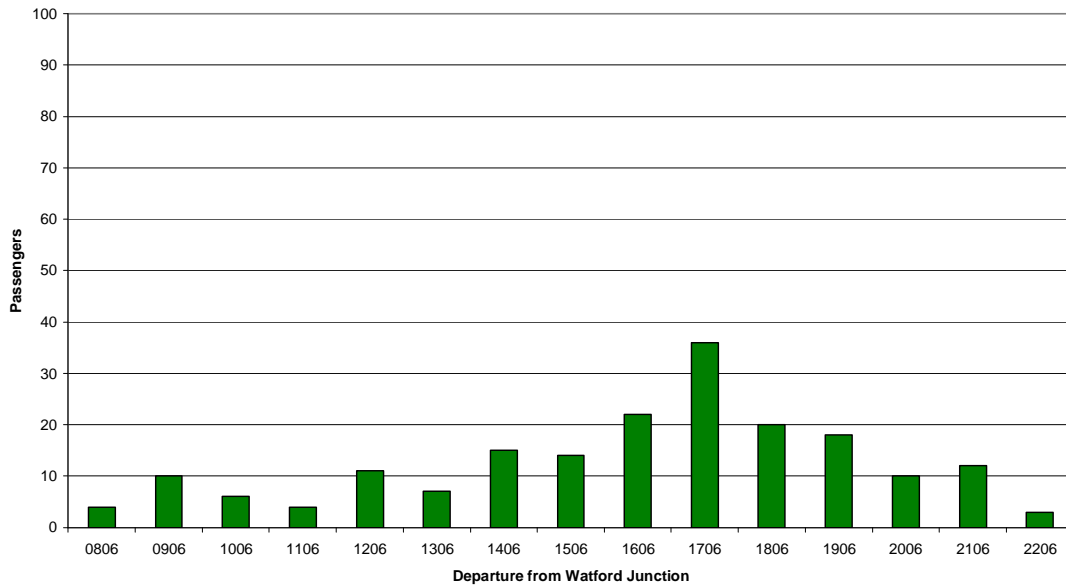
Train Load Watford Jcn - Watford North (Saturday)



Train Load Watford North - Watford Jcn (Sunday)



Train Load Watford Jcn - Watford North (Sunday)



3.5 As has been found in other studies, it can be seen that Saturday interpeak traffic is at a slightly higher level than that either on weekdays or Sundays. However, overall traffic levels are disappointing. Moreover, current demand levels seem to be significantly lower than those recorded in the 1991 British Rail Network SouthEast Origin & Destination survey, data which is reproduced in the table below. A figure for Watford Junction is excluded, since a separate count for the Abbey Line as opposed to the entire station is not available from 1991. It is not quite clear why demand has fallen so sharply over the last 15 years, but increased car ownership and service reductions in 1995 would no doubt have contributed to this.

Weekdays	Both Directions TOTAL boarders		% change
	1991 NSE	2006 RCL	
Watford North	153	103	-33
Garston	185	134	-28
Bricket Wood	151	83	-45
How Wood	37	63	70
Park Street	39	65	67
St Albans Abbey	455	336	-26
Total excl. Watford Junction	1020	784	-23

- 3.6 However, this report on existing demand cannot be used directly to infer the viability (or otherwise) of improving service frequencies. A multi-mode demand modelling exercise will be needed to see if the improved level of service (technically, the reduced generalised cost) would improve the attractiveness of the line sufficiently to generate the trips (and hence revenue) needed.

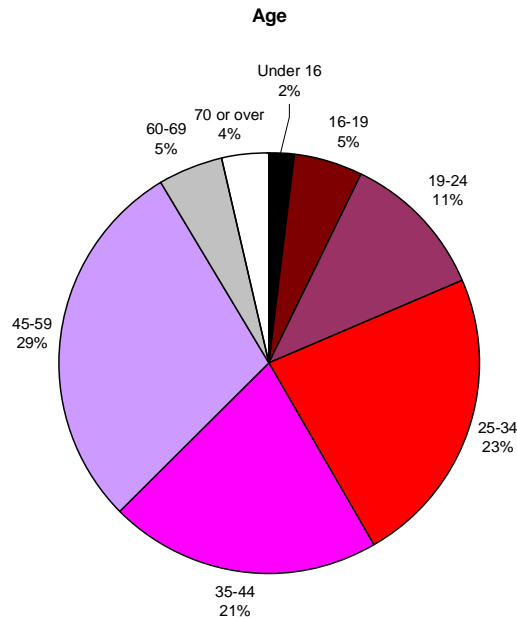
Passenger Survey Responses

- 3.7 When planning the survey there was a slight concern that a bias in the data might occur in terms of passenger boarding points covered, but as the following table shows this concern was largely unfounded. The table shows the proportion of respondents boarding at each of the Abbey Line stations in comparison with proportions of counted passengers across all days at these stations. One can see, however, that there is a slight over-representation in the survey results of passengers boarding at Watford North and Watford Junction, whilst passengers boarding at Bricket Wood are slightly under-represented. The higher proportion of respondents at Watford North and Watford Junction could be explained with the higher number of weekday users and the significantly higher response rate for weekday passengers.

Station	Respondents' Boarding Station	Proportion of Counted Boarders
Watford Jcn	41%	39%
Watford North	9%	6%
Garston	8%	9%
Bricket Wood	4%	7%
How Wood	6%	5%
Park Street	4%	5%
St Albans Abbey	27%	28%

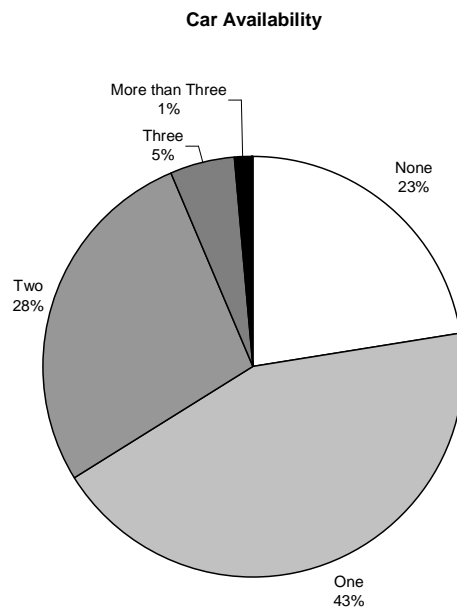
Demographic data

- 3.8 Abbey Line passengers are drawn from all age groups, but almost three quarters of users are between 25 and 59 years old. Observation suggests that teenagers are under-represented in the survey. The reluctance to participate was particularly prevalent in this age group, although a large number of teenagers were using the service at the weekends, and on Saturday in particular. The graph below shows the age distribution of passengers.



3.9 In terms of gender, 57% of passengers were male and 43% female.

3.10 About three quarters of Abbey Line passengers have at least one car available in their household. However, this also means that around a quarter of all passengers have no car available and therefore rely heavily on public transport. Car availability is shown in the graph below.

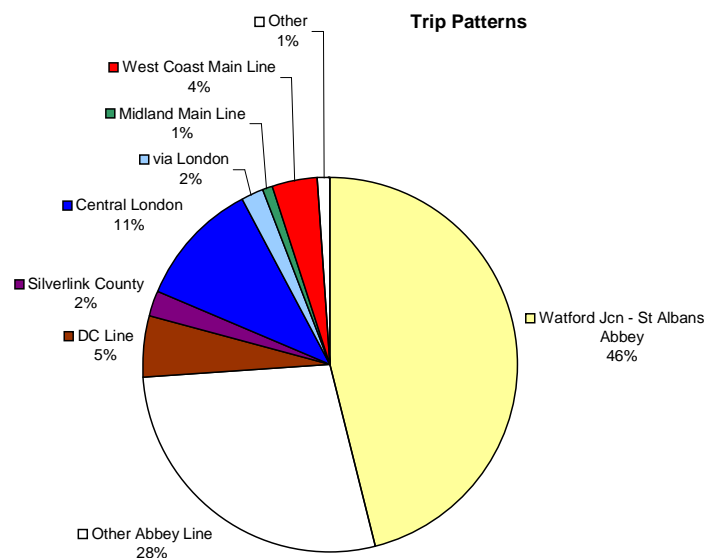


Trip Patterns

3.11 The trip patterns on the Abbey Line are dominated by local trips and here in particular trips between the two terminal stations of the line. Almost half of all trips are made solely between Watford Junction and St Albans Abbey stations. Another quarter is made to or from other stations on the Abbey Line. Of the remaining quarter, the largest proportion of trips is to or from Central London.

3.12 Trips to or from Watford DC Line destinations are typically for stations on the northern end of this line, such as Harrow & Wealdstone, Hatch End or Carpenders Park. Silverlink County destinations include Hemel Hempstead, Berkhamsted, Leighton Buzzard and Milton Keynes. As might be expected, recorded destinations for passengers changing from or to West Coast Main Line intercity services are dominated by larger centres such as Birmingham and Manchester. Only a very small proportion of passengers interchange between St Albans Abbey and St Albans City stations for services on the Midland Main Line.

3.13 The following graph shows the trip patterns of Abbey Line passengers, whilst a summary table of this information is given at Appendix B.

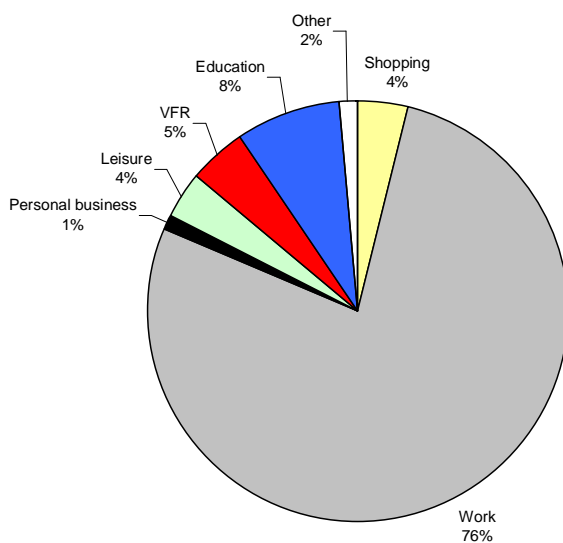


Journey Purposes

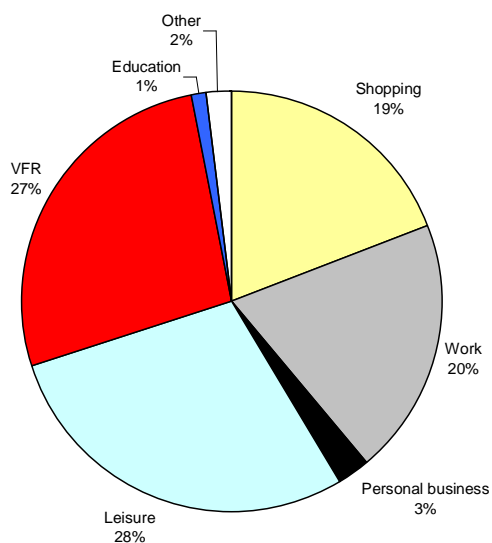
3.14 As might be expected, passengers' journey purposes vary significantly by day of the week. Weekday travel is dominated by trips to and from work (76%), with school/college trips the next most important category at only 8%. However, as we believe the education trips category to be under-represented, due to teenagers' unwillingness to participate in surveys, one can therefore assume that the actual importance of the Abbey Line service for school transport is bigger.

3.15 At weekends, however, trips are split between four main purposes, of which work is still one. Also important, however, are shopping trips, those for leisure purposes, and those to visit friends and relatives (VFR). The following graph shows the journey purposes of Abbey Line passengers on different days.

Journey Purpose: Weekdays



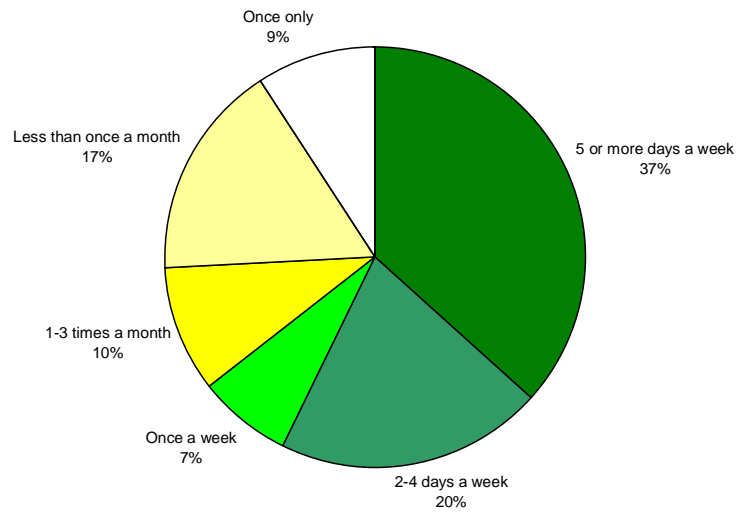
Journey Purpose: Weekends



Trip Frequency

3.16 The majority of Abbey Line passengers are regular users of the service with over a third of passengers travelling every day and three quarters of passengers using it at least once a week.

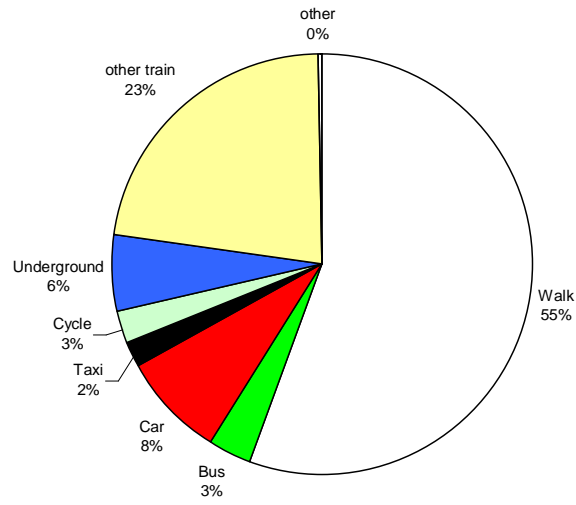
Journey Frequency



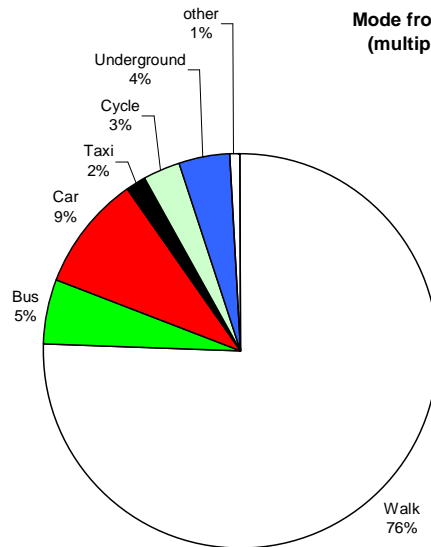
Access/Egress Modes

3.17 Walking is the predominant mode for passengers to get to and from stations, with two thirds using it as their access mode and over three quarters as their egress mode.

Mode to Abbey Line Station (multiple answers possible)

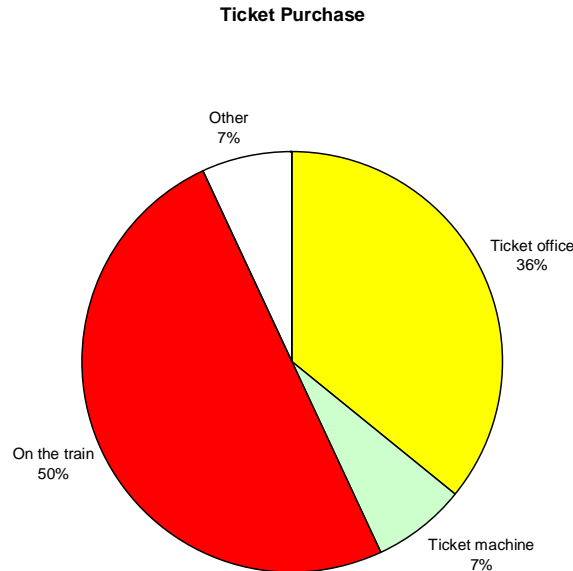


Mode from Destination Station (multiple answers possible)



Ticketing

3.18 The lack of ticket issuing facilities at all Abbey Line stations apart from Watford Junction explains why half of all tickets are bought on the train. Most passengers who buy their ticket at a ticket office will do so at Watford Junction. This also applies to passengers who buy their ticket at a ticket machine. A small number of passengers, mainly making inter-city journeys, bought their ticket from the ticket office at St Albans City station.



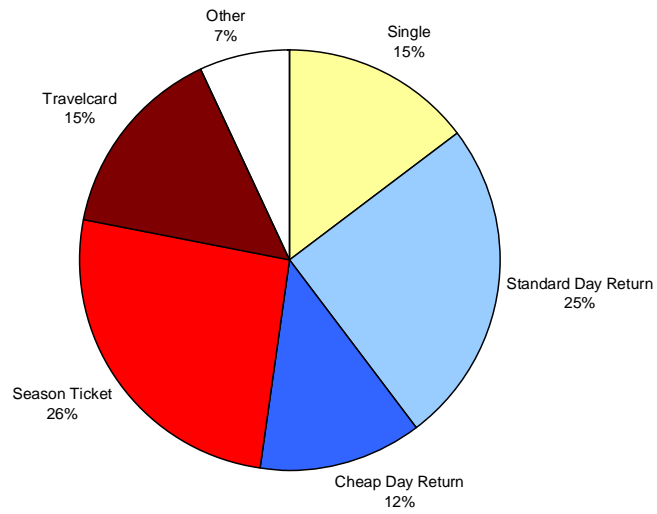
3.19 There seems to be a wide variation in the types of tickets used by Abbey Line passengers. However, it should be noted that many passenger seem to have had difficulties in identifying the type of ticket they were holding and indicating it correctly on the questionnaire. For instance, many weekend travellers claimed they had a "Day Return" ticket, when they must have clearly held a "Cheap Day Return" ticket. Equally, not all passengers differentiated between point-to-point (rail only) season tickets and Travelcard season tickets which include travel on TfL modes in London. While some corrections could be made during the data entry process the answers regarding ticket types should be treated cautiously.

3.20 However, as can be seen from the following diagrams, the results seem plausible. Weekday patronage is split between season tickets, Standard Day Returns and Cheap Day Returns, whilst weekend patronage is dominated by Cheap Day Returns.

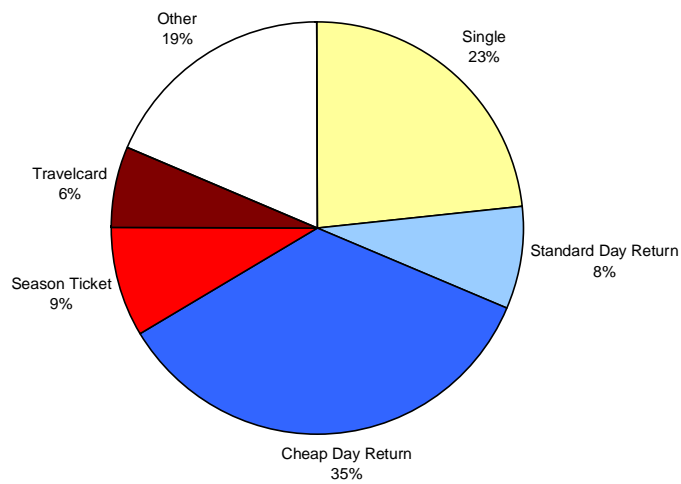
3.21 It seems curious that a surprisingly high number of passengers who use the service on a daily basis have indicated that they buy Day Returns, Cheap Day Returns or even single tickets when they make their journeys instead of buying a season ticket. It could be possible that these passengers are unaware of the availability of cheaper season tickets.

3.22 Silverlink expressed some concern over the effectiveness of revenue protection on the line. These concerns seem justified given that, although nearly three quarters of passengers indicate that their ticket had been checked, 26% of travellers had not had their tickets inspected.

Ticket Types: Weekdays



Ticket Type: Weekends



Other Comments

3.23 Over 40% of passengers used the space provided on the questionnaire for comments. The main comments made are summarised below in the following table.

<i>Subject of comment made</i>	<i>Frequency raised (%)</i>	<i>Rank</i>
Punctual/reliable/good service	31.9%	1
Wish to see more frequent service	13.1%	2
Wish to see later trains in the evening	11.8%	3
Other issues	10.5%	4
Upgrading of passenger information systems/station facilities required	7.7%	5
Friendly staff	7.4%	6
Better connections at Watford Junction	5.1%	7
Buying tickets can be problematic, causing delays for onward journeys	4.8%	8
Lack of ticket inspections	4.2%	9
Services should run through to London Euston	2.2%	10
Need better links to St Albans city centre and St Albans City station	1.3%	11

Sample size: Based upon 313 comments (many questionnaires had more than 1 comment) (9/06/06).

Comments included in the 'Other issues' category included aspects such as:

- Cost of the ticket for travel on the Abbey Line/national rail services (both positive and negative views).
- Unreliability of the rail replacement bus services.
- Early departure of trains.
- The frequency of the barriers at Watford North failing and causing delays to services.

General observations whilst undertaking the survey work on the line

3.24 During the course of the surveying on the line a number of observations were noted regarding the operation of the line, some of which were repeated in the comments provided by respondents to the questionnaire.

Revenue protection

3.25 Although staff undertook frequent revenue protection duties on board the surveyed trains, it was noticed that many passengers travelling between intermediate stations between Watford Junction and St Albans Abbey, did not have their tickets inspected/or were unable to purchase a ticket for their journey. This observation was reflected in the comments received about the lack of ticket inspections/difficulties concerning purchase of a ticket.

Cycle usage

3.26 Cycle usage on the Abbey Line across the survey period was fairly high, with numbers of passengers with cycles being: 20 (Saturday – 13/05/06), 9 (Sunday – 14/05/06), 14 (Tuesday PM – 16/05/06) and 10 (Wednesday AM – 17/05/06). The lack of any restrictions on bicycles on the line (even during peak periods) possibly helps to increase numbers, whilst the relatively poor location of St Albans Abbey station could also stimulate cycle use. No definitive explanation can be given for the high cycle usage figure on the Saturday and lower figure on the Sunday. However, weather on the Saturday was bright and sunny and on the Sunday cloudy/rainy, brightening up later in the day.

3.27 One problem noticed on services where bicycles were carried was the blocking of vestibule doorways and/or gangways by bicycles, thus making passage for both train staff and other passengers through the train somewhat difficult. Unlike the Class 319 units where the luggage van is used for storage of bicycles, on the observed Class 321 unit, this was locked out of service and used for train crew storage purposes.

Station security

3.28 During the observation period, several issues relating to station security were noted:

- On the 13/05/06, the station lighting at both Bricket Wood and Garston had failed. No on-board warning announcements were made prior to arrival at such stations (which we understood to be a requirement under the terms of an operator's franchise agreement). The lack of lighting caused a group of teenagers to miss their stop at Bricket Wood, due to the lack of lighting. Furthermore on the evening of 16/05/06, both stations' lighting did not appear to be functioning correctly, in the hours of darkness (at 21:00). This was reported to the control room at Watford Junction and on the final service both stations' lighting was operational.
- On a number of occasions at both Garston and Watford North, both during the evening and daytime it was noticed groups of youths congregating at these stations, with no intention to travel.

Watford North Level crossing

3.29 On the evening of the 13/05/06 it was noticed that the level crossing was not functioning correctly and resulted in all services on the line, from the 20:31 departure to St Albans Abbey experiencing typically delays of 8 minutes. The unspecified problem was not rectified until after the first round trip on the 14/05/06. The 08:06 departure to St Albans Abbey was, as a result, 8 minutes late upon arrival at St Albans.

Interchange at Watford Junction

3.30 An analysis of interchange times for journeys to/from London terminals was carried out. Average waiting times at Watford Junction, between Abbey Line services and mainline Silverlink services to London Euston, were: 13 minutes (weekdays), 14 minutes (Saturdays) and 8 minutes (Sundays). Average waiting times between mainline Silverlink services from London Euston and Abbey Line services were: 10 minutes (weekdays), 9 minutes (Saturdays) and 11 minutes (Sundays). However, this disguises some poor connections of up to half an hour, not just at the extremes of the traffic day, but also in alternate hours during the offpeak. The xx07 and xx37 departures from St Albans arrive at Watford at xx23 and xx53, leaving a sub-standard 2-minute connection time to the xx25 and xx55 departures for Euston. Clearly, regularising the St Albans branch to a half-hourly frequency could enable an improvement in connectional margins.

4 Conclusions and Recommendations

Conclusions

Demand Levels

- 4.1 Passenger usage of the Watford – St Albans line is currently running at around 1300 per day on weekdays. Equivalent figures at weekends are 1000 and 450 passengers per day for Saturdays and Sundays respectively. Whilst this leads to low average trainloads of 19, 16 and 11 respectively, this disguises significant peakiness, with the busiest trains carrying almost 100 passengers.
- 4.2 Comparison with data from British Rail's NSE 1991 Origin & Destination survey shows a fall in demand of over 20% in the last 15 years. The reasons for this are not clear, but service reductions in 1995 are likely to have contributed to this.
- 4.3 Count data revealed that the two terminal stations on the line are easily the most heavily used stations. Garston is the busiest intermediate station.
- 4.4 Demand on the line is tidal, with most trips to Watford in the morning, returning in the evening. However, there is also a smaller reverse flow of passengers to/from St Albans. As is often the case, the busiest train offpeak is the first on which Cheap Day Return tickets are valid.
- 4.5 Evening demand is particularly low, although the service only runs until around 2200. Subsequent analysis of comments received on the questionnaires, revealed a need amongst existing users for a later service, to permit an evening out in London/Watford. It was noted by several respondents that the early service finish either meant changing their mode of travel or using St Albans City station instead of the Abbey Station.
- 4.6 Saturday travel patterns reflected trips (including for shopping) towards Watford in the middle of the day, returning at tea-time. Sunday traffic was very low, but did demonstrate minor peak with returning traffic, again around 1700.

Passenger Journey Characteristics

- 4.7 Analysis showed that the users of the Abbey Line comprised a wide spread of ages, but over half (57%) of passengers were male.
- 4.8 The primary passenger flow on the line is between Watford Junction and St Albans Abbey (48%), with other Abbey Line journeys (28%) and trips to Central London 3rd at 11%. This clearly indicates the important role that the Abbey Line provides in serving local journeys.
- 4.9 Although most interchange times at Watford Junction for journeys to/from Euston are acceptable, some offpeak connections are over 20 minutes. Standardising services on the branch line could enable these to be improved.
- 4.10 Going to/or from work is the main purpose of users on the Abbey Line (57%), followed by leisure activities (12%) and visiting friends and relatives (12%).
- 4.11 Abbey Line passengers include both regular users (with 37% using the service every day) as well as a substantial minority (26%) of infrequent users (using the line once per month or less).
- 4.12 Walking is the primary mode for passenger access/egress, with 65% using it to access Abbey Line stations and 75% using it as their egress mode.

Ticketing

- 4.13 The lack of ticketing facilities at Abbey Line stations (apart from at Watford Junction) is shown by half of ticket sales being undertaken on board the train. This supports the need for a member of staff to be on board services in a retail capacity. However, revenue

protection on the line is far from effective. Of the passengers surveyed, only 74% of passengers reported as having had their tickets checked. Whilst the problem of short inter-station transit times could be a contributory factor to the low ticket examination figures, the relatively low trainloads should not make this a critical factor.

- 4.14 There is wide range of different ticket types used on the line. Season tickets, Cheap Day Returns and Standard Day Return tickets each comprise about one-fifth of tickets used.

Recommendations

Service Enhancement

- 4.15 Whilst current passenger demand data is relatively low, a multi-modal demand modelling exercise will be needed in order to assess the viability (or otherwise) of the investment required to sustain a half-hourly service.
- 4.16 Existing surveyed evening line patronage, both on weekdays and at weekends, was disappointing. It seems likely that it will be very difficult to justify service enhancements, as the marginal cost of providing the additional services will almost certainly outweigh any income received. However, demand at 2200-2300 is generally higher than that at 2100, so it could be worthwhile retiming evening services to provide a later train each way (even if this is at the expense of a mid-evening service).
- 4.17 With other demand studies normally showing higher levels of evening traffic on Fridays and Saturdays, it could also be worth investigating the provision of an additional service only on those days of the week.

Ticketing and revenue protection

- 4.18 Ticketing and revenue protection is clearly an issue on the line, partly due to the short intervals between the stations. However, a further contributor to this problem is the lack of ticket machines at any Abbey Line stations apart from Watford Junction. In an attempt to assist in revenue collection it is suggested that the following initiatives are considered:
- (a) provision of cascaded 'Quick Fare' ticket machines or installation of 'Fast Ticket' style tickets at stations;
 - (b) issuing of a carnet style booklet of tickets for journeys on the Abbey Line (a practice adopted on the Tamar Valley Line in Cornwall, by First Great Western);
 - (c) provision of automatic ticket machines on-board trains as seen on privately operated German rural lines such as the Connex Sachsen, Leipzig-Geithain route;
 - (d) utilisation of technology, through adoption of a 'Print and Go' web based ticketing system as used by Deutsche Bahn, whereby customers can purchase and print out tickets at home prior to their journeys (this would need to be adopted on a national basis or franchise specific basis to be viable).
- 4.19 On numerous surveyed trains it was noticed that even when revenue protection examinations were undertaken, tickets were not validated by train staff. This therefore enabled potential re-use of tickets at all stations along the line, with the exception of Watford Junction. It is recommended that staff are equipped with ticket validation equipment, as used by many operators. Additionally staff should be more vigilant as to discarded tickets on the train and ensure that tickets that could be potentially re-used are destroyed.

Passenger information provision and station facilities

- 4.20 The lack of real time train running information was noted as a major weakness concerning station facilities, amongst a number of responses to the questionnaire. In light of this, it is recommended that consideration be given, as to the provision of improved real – time passenger information systems, such as dot-matrix next train style indicators, as seen widely on the national rail network.

- 4.21 With regard to station facilities it is recommended that the client seeks assurances from the DfT during the West Midlands franchise consultation phase, that the preferred bidder is committed to a programme of upgrading of Abbey Line stations. This should be done in consultation with the Abbey Line Community Rail Partnership. Introduction of recordable CCTV (subject to available funding) should be considered, alongside maintenance of the existing security patrols, in an attempt to improve security at the stations and try and minimise the groups of youths congregating at unstaffed stations at the South end of the line (Bricket Wood, Garston and Watford North).

Train crew staffing

- 4.22 On many of the services observed, there were three members of staff: the driver, guard and conductor. It is felt that this constitutes overstaffing, given the current passenger levels. At all the stations on the line, there are mirrors for the driver to see passengers boarding/alighting the platform, and therefore conversion of the line to Driver Only Operation (DOO) is possible. At present the guard is only responsible for door operations, whilst the conductor undertakes retail duties. It is recommended that, in order to increase the efficiency of resources, consideration is given to the proposal that services are operated by a driver and conductor/RPI. With regard to the plunger at Watford North, that controls the level crossing, it is felt that this duty could be undertaken by the on-board conductor.

Bicycle usage

- 4.23 During the study, on a number of services which were monitored, bicycles were conveyed. The Class 321 unit has a dedicated luggage area, where bikes could be stored. However, unlike the similar Class 319 units operating on First Capital Connect services, this unit on the observed unit was locked out of service and used for staff purposes. As a result bikes were frequently observed to be blocking vestibule doors/passageways. It is therefore recommended, to avoid this, that the luggage area be made available to cyclists. Storage of staff belongings should be in the rear cab; alternatively, consideration should be given to the provision of secure storage cupboards at an appropriate point in the train, as seen on more modern units, such as the Class 377 Electrostar units, operating on South Eastern and Southern.

Improved journey connections at Watford Junction

- 4.24 Improved journey connections at Watford Junction, was ranked 6th in terms of the frequency of comments made by respondents to the questionnaire about the Abbey Line. Subsequent closer analysis of the connections into and out of Abbey Line services from London trains (the most frequent trip made on the Abbey Line, apart from purely local journeys) revealed average connections to adequate, but some to be excessive (e.g. over 20 minutes). However, it is recommended that connections are not modified until the mainline (Silverlink County) timetable has been settled down, probably in 2008.

- 4.25 However, it was noted in the analysis that several trains had connections into London services, off the Abbey Line, of 2 minutes. In order to facilitate such connections, it is recommended that consideration is given to reducing the turn round times at St Albans Abbey from typically 5 minutes to the minimum permissible, of 3 minutes. Additionally, on the basis of observations of running time between Park Street and St Albans Abbey, the booked time of 3 minutes between these stations could be reduced to 2 minutes. A saving of 3 minutes would then enable connections to be made into the London services with currently unattainable interchange times. Such reductions in turn round times and inter-station running might only be applied to turns where the 2 minute London connections exist.

Introduction of direct services into London Euston

- 4.26 Introduction of such services, even at the peak, raises a number of operational planning difficulties. Questions to be asked include:
- (a) To what extent extension of the service represents best use of capacity on the West Coast Main Line, given that the service would be restricted to run in a maximum of 4-car formations, due to the short platform lengths of several Abbey Line stations;

- (b) What would be an optimum stopping pattern to ensure that overcrowding does not occur from Watford Junction in the peak;
- (c) Would the service be viable in the off-peak given the observed Abbey Line loadings and
- (d) What impact the extension of the service into London Euston would have on punctuality and reliability (the need to provide longer layovers at destination stations, in order to claw back any delays occurred during the journey).

An initial assessment suggests that this option is unlikely to satisfy all of these issues, but the subject should be raised formally with the DfT during the consultation phase for the West Midlands franchise or once the new franchise is in operation.

Provision of a shuttle bus connection between St Albans Abbey, St Albans City centre and City station

4.27 The distance between the two stations is approximately 1.5 miles, making it an appropriate distance for such a service. Given the overall disappointing patronage levels of Abbey Line services, doubt has to be expressed as to the economic viability of such a service if operated as a stand-alone service. However, it is recommended that further investigation is undertaken as to the economic viability of such a link, if provided as part of an existing bus service. Issues requiring action would include establishing the funding for such a service, inclusion of the service into the PlusBus scheme, determination of the fare level to set and also choice of the operator and vehicle. Once again, this could be an issue for the client to address with the DfT when consulted over the new West Midlands franchise.

Acknowledgements

Thanks are due to Silverlink for providing travel facilities for staff and storage room space at Watford Junction for survey material, as well as Rail Travel Vouchers for the prize draw.



Appendix A. Abbey Line Passenger Survey 2006

The Abbey Line is a Community Rail Partnership (CRP) project and is supported by Silverlink Trains, the Department for Transport, Hertfordshire County Council, St Albans and Watford Borough Councils and ABFLY, the local rail users' group.

The CRP require information about how the present service meets your needs. Therefore, please help us by completing this questionnaire, which will assist the CRP to plan and improve services for the future. All questionnaires returned named will be entered into a prize draw for £50 of Rail Travel Vouchers provided by Silverlink Trains.

Q1. Regarding the purpose of your journey, where have you just come from?

- | | |
|---|---|
| <input type="checkbox"/> ₁ Home | <input type="checkbox"/> ₅ Leisure activity |
| <input type="checkbox"/> ₂ Shopping | <input type="checkbox"/> ₆ Visiting friends and/or relatives |
| <input type="checkbox"/> ₃ Work | <input type="checkbox"/> ₇ School/college/university |
| <input type="checkbox"/> ₄ Personal business (e.g. doctor, bank, etc.) | <input type="checkbox"/> ₈ Other [please write in below]: |

Q2. What is the address of this place?

Town/city: Postcode:

Q3. At what station did you board the Abbey Line train?

- | | | | |
|--|---|---|---|
| <input type="checkbox"/> ₁ Watford Junction | <input type="checkbox"/> ₃ Garston (Herts) | <input type="checkbox"/> ₅ How Wood | <input type="checkbox"/> ₇ St Albans Abbey |
| <input type="checkbox"/> ₂ Watford North | <input type="checkbox"/> ₄ Bricket Wood | <input type="checkbox"/> ₆ Park Street | |

Q4. How did you get from your starting point to this Abbey Line station?

Please tick all that apply.

- | | | |
|--|--|-----------------------------|
| <input type="checkbox"/> ₁ Walked | <input type="checkbox"/> ₅ Cycled | |
| <input type="checkbox"/> ₂ Bus | <input type="checkbox"/> ₆ Underground | [first station used:] |
| <input type="checkbox"/> ₃ Car | <input type="checkbox"/> ₇ other train | [first station used:] |
| <input type="checkbox"/> ₄ Taxi | <input type="checkbox"/> ₈ Other [please write in]: | |

Q5. What was the final railway station you used on your journey?

Station:

Q6. When you arrived at your final railway station, how did you get to your final destination?

Please tick all that apply.

- | | | |
|--|--|----------------------------|
| <input type="checkbox"/> ₁ Walked | <input type="checkbox"/> ₅ Cycled | |
| <input type="checkbox"/> ₂ Bus | <input type="checkbox"/> ₆ Underground | [last station used:] |
| <input type="checkbox"/> ₃ Car | <input type="checkbox"/> ₇ Other [please write in]: | |
| <input type="checkbox"/> ₄ Taxi | | |

Q7. What was the address of your final destination?

Town/city: Postcode:

Q8. Regarding the purpose of your journey, why were you travelling to this place?

- ₁ Going home ₅ Leisure activity
₂ Shopping ₆ Visiting friends and/or relatives
₃ Work ₇ Going to school/college/university
₄ Personal business (e.g. doctor, bank) ₈ Other [please write in below]:
.....

Q9. How often do you make this journey?

- ₁ 5 or more days a week ₄ 1 to 3 times a month
₂ 2 to 4 days a week ₅ Less than once a month
₃ Once a week ₆ Made this journey once only

Q10. Where did you buy your ticket for this journey?

- ₁ From ticket office at [please write in station]
₂ From ticket machine at [please write in station]
₃ On the train ₄ Other [please write in]:

Q11. What type of ticket did you use for this journey?

- ₁ Single ₄ Season Ticket (not Travelcard) [please circle: weekly; monthly; annual]
₂ Day Return ₅ Travelcard [please circle: one-day; weekly; monthly; annual]
₃ Cheap Day Return ₆ Other [please write in]:

Q12. Was your ticket checked on the Abbey Line train? ₁ Yes ₂ No

Q13. Are you? ₁ Male ₂ Female

Q14. What age were you on your last birthday?

- ₁ Under 16 ₃ 19 to 24 ₅ 35 to 44 ₇ 60 to 69
₂ 16 to 19 ₄ 25 to 34 ₆ 45 to 59 ₈ 70 or over

Q15. How many cars does your household normally have available for use?

- ₁ None ₂ One ₃ Two ₄ Three ₅ More than three

Q16. If the journey you have described did not start or finish at your home, could you please tell us where you normally live?

Town/city: Postcode:

You can use the space below for any other comments you might have regarding the Abbey Line service. Alternatively, if you have access to the internet, you can use the dedicated e-mail address **feedback@abbeyline.org.uk** if you wish to express your views at greater length.

.....
.....

If you wish to enter the prize draw for £50 of Rail Travel Vouchers, please provide your name and contact details below. We will not use your personal details for any other purpose.

Name: Telephone or e-mail:

**Thank you for taking the time to complete this questionnaire.
Please return it in the envelope provided. No stamp is required.**

	Watford Junc	St Albans	intermed stas	DC lines	outer-subn	C London	via London	Midland ML	W Coast ML	other	total
Watford Junc		10.6	2.6					0.9			14.3
St Albans	13.4	0.2	5.4	2.8	0.4	0.4	0.9		2.8	0.2	26.7
intermed stas	5.4	9.5	2.0	1.7	1.3	8.9	1.3		0.7	0.7	31.5
DC lines		3.5	1.3					0.2			5.0
outer-subn		1.3	1.5			0.2					3.0
C London		2.4	10.2								12.6
via London			0.9								0.9
Midland ML	0.2		0.2	0.2							0.7
W Coast ML		3.7	0.2					0.2			4.1
other		0.7	0.7								1.3
total	19.1	31.9	24.9	4.8	1.7	9.5	2.2	1.3	3.5	1.1	100.0
Appendix B. Summary Trip Matrix for Watford - St Albans Abbey Line											
(figures are % of total trips)											