Declaration

This study was completed for the MSc in Transport Planning at the University of the West of England, Bristol. The work is my own. Where the work of others is used or drawn on it is attributed.

Signed:_____ Date_____

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Abstract

This dissertation seeks to gain an understanding of how accessible and valued the Severn Beach Railway Line is to the communities it serves. A triangulation of different research methodologies aims to provide a greater level of understanding of the line in relation to actual, potential and attitudes towards use. Recommendations based upon this greater level of understanding will then be provided.

Traffic congestion within the Greater Bristol area has increased dramatically over the last ten years well above the levels experienced nationally. It is estimated that in Bristol 21% of all travelling time is spent stationary. A result of this is the estimated to cost to the local economy of £350 million per year (JLTP 2006). Rail provides an alternative mode of transit that is not subject to the travel time uncertainty experienced on Bristol's congested roads.

The results of this dissertation demonstrated that the SBL is a very accessible highly valued component of Bristol's public transport system.

Contents

Chapter		Page
1	**Introduction**	**1**
Title		1
Context		1
Research Questions		2
Study Objectives		3
Reader Navigation		3
2	**Introduction of rail service & the community it serves**	**5**
The Severn Beach Line		5
The Engineering of the Line		6
The National and Local Rail Policy Context		7
The development of the Severn Beach line as a Community Rail Line		9
The Cost of providing the Severn Beach Line		10
Community and interest groups		12
Citywide Background		13
Introduction to the communities served by the SBL		16
3	**The Consideration of Public Transport Use**	**18**
What is meant by Accessibility?		18
Consequences of the Social Exclusion Unit's report		21
Considerations for public transport use		23
	Travel Time Uncertainty	24
	Interchange	25
	The role of walking and cycling	26
4	**Research Methodology**	**28**
Research Methodology		28
Secondary Data Sources Measuring Existing Use		30
Wessex Trains Data		30
	Limitations of data	30
Local Authority Annual Rail Census data		31
	Limitations of data	31
Local Authority Annual Rail Survey		32
	Limitations of data	32
Existing & Potential use measured through GIS and accessibility modelling		33
The Role of Modelling		33
Existing Literature		33

Contents Continued

Chapter		Page
4	**Research Methodology continued**	
	What is Accession?	34
	A different approach adopted	36
	Methodology of providing greater understanding of existing passenger use	37
	Methodology 1 of providing data on potential use	38
	Methodology 2 of providing data on potential use	39
	Limitations of Modelling techniques and outputs within Study	40
	Secondary data providing attitudes towards use	41
	Primary data collected measuring attitudes towards use	41
	Questionnaire Design	42
	Questionnaire Distribution	42
	Limitations of Questionnaire	44
	Primary Data collected through observed findings	44
	Limitations of observed findings	45
5	**Results and Discussion**	**46**
	Historical analysis of total daily passenger use	46
	Analysis of total annual passenger use based on ticket sales	49
	Analysis of individual station performance using annual ticket sales	50
	Analysis of service daily demand using census boarding and alighting data	52
	Passenger access patterns of existing passenger use	55
	Individual stations 'value of attractiveness'	61
	Potential market share of each station	63
	Household Access	63
	Level of potential access to households without access to a car or van	65
	Level of potential access to employment providing by SBL	67
	Travel Time Comparisons	69
	Whiteladies Road travel time access comparison	72
	General comments on the SBL	75
	Individual Issues	79
	Reliability and Frequency concerns	80
	Convenience and Cost	81
	Ticketing	81
	Station facilities and Information Provision	82
	Safety and Security	82
	Service Coverage	83
	How valued is the SBL to the community it serves? The case for Shirehampton	84

Contents Continued

Chapter		Page
6	**Conclusions and Recommendations**	**92**
Recommendations		95
7	**References**	**96**

List of Appendices

A Locations served by the Severn beach Line
B Brief history of the construction of the line
C Example of Annual Rail Survey
D Detailed methodology of section 3.3.8
E Questionnaire used
F Details of questionnaire study site
G Audit sheet used
H Severn Beach station's walking access map
I St Andrews Road station's walking access map
J Avonmouth station's walking access map
K Shirehampton station's walking access map
L Sea Mills station's walking access map
M Clifton Down station's walking access map
N Redland station's walking access map
O Montpelier station's walking access map
P Stapleton Road station's walking access map
Q Lawrence Hill station's walking access map
R List of each stations accessible trip attractors
S List of bus services used for travel access comparison
T Whiteladies Road morning peak travel time access outputs
U Whiteladies Road evening peak travel time access outputs
V Severnside Industrial Estate morning peak travel time access outputs
W Severnside Industrial Estate evening peak travel time access outputs
X Temple Quay morning peak travel time access outputs
Y Temple Quay evening peak travel time access outputs
Z Results of full station audit
AA Images from the stations

Page

Figures

1	Map of Severn Beach Line	5
2	Illustration of amended rail structure	7
3	Map illustrating IMD scores within Bristol	14
4	Map illustrating households without access to a car or van	14
5	Map illustrating workplace population	16
6	Triangulation of Research methodologies	29
7	Data requirements for Accession	35
8	Illustration of questionnaire distribution	43
9	2004 Outbound Train Capacity Service diagram	53
10	2004 Inbound Train Capacity Service diagram	54

Tables

1	Selected national census and household survey data	18
2	Total journey made to & from station along SBL	49
3	Trip Attractor Scores	62
4	Potential Household Access	65
5	Potential Household Access for households without access to a car or van	66
6	Potential levels of trip attraction through existing employment levels	68
7	Output table illustrating percentage of all study wards households access to Whiteladies Road during the morning peak	73
8	Whiteladies Road household accessibility comparison table	74
9	Rail users comments	77
10	Distribution of questionnaires returned	85
11	Spatial distribution of public transport users	86
12	Comparison of reasons for using SBL	86
13	Questionnaire statement 1 results	88
14	Questionnaire statement 2 results	88
15	Questionnaire statement 3 results	89
16	Questionnaire statement 4 results	89
17	Questionnaire statement 5 results	89
18	Questionnaire statement 6 results	90

Graphs

1	Rail Census data 1981 to 2004	47
2	Ticket sale data from individual stations	51
3	Distances of the walking trips as a percentage of total trips	53
4	Percentage of all jobs within walking distance of each station	69
5	Why did you use the train today?	76
6	Why do you not use the Seven Beach Line?	87

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Is the Severn Beach Rail Service an accessible and valued component of the public transport system in Bristol?

Chapter one - Introduction

Summary

This section provides an introduction to the dissertation's title, provides a brief contextual introduction to the existing transport problems experienced within Bristol before clarifying the research questions and objectives of the study. A study guide is also provided assisting navigation within the document.

Title: *'Is the Severn Beach Rail Service an accessible and valued component of the public transport system in Bristol?'*

This dissertation seeks to gain an understanding of how accessible and valued the Severn Beach Railway Line is to the communities it serves. Annual surveys are conducted to provide a historical record of the changing nature of rail use within the Greater Bristol area. This study seeks to examine one component of the local railway network and provide greater understanding of the line in relation to actual, potential and attitudes towards its use. Recommendations based upon this greater level of understanding will then be provided.

Contextual introduction to existing transport problems within the study area.

Traffic congestion within the Greater Bristol area has increased dramatically over the last ten years well above the levels experienced nationally. The increase in traffic congestion has resulted in Bristol being on of the most congested Cities in Britain. It is estimated that in Bristol 21% of all travelling time is spent stationary. A result of this is the estimated to cost to the local economy of £350 million per year (JLTP 2006).

A further consequence of the traffic congestion experienced is the uncertainty of travel time for both car and bus users operating within the city. Rail provides an alternative mode of transit that is not subject to the travel time uncertainty experienced on Bristol's congested roads.

Based on the annual rail census data passenger use on the Severn Beach Line has increased by 57% between 1994 and 2004. Generating greater passenger use through expanded service provision is not as simple as would first appear. An increase in the frequency of services creates problems with track capacity and congestion within the rail network. In addition to this there is competition between national, regional and local services for the limited number of train paths available (JLTP 2006). Within Bristol an average of 2% of all economically active individuals use rail when accessing their employment. A consequence of this low number and competition for the limited number of rail paths, the local rail service is often regarded a the poor relation and is often subject to delays and cancellations when staff shortages or rolling stock problems occur else where within the network.

Despite the problems outlined in the previous paragraph the local rail service is highly valued by local interest groups and is fearlessly defended when its future is brought into doubt. What is less understood is the level of support experienced throughout the wider community.

Research Questions

This study intends to use a triangulation of research methodologies to gain an understanding of three main research questions examining actual, potential and attitudes towards use. The findings from each of the research areas all assist in providing a sound basis in fulfilling this study's aim of understanding the role the Severn Beach Line has in providing for the community it serves.

- *What is the existing level of use and passenger access pattern of the Severn Beach Line stations?*

- *Using the accessibility tool Accession, what is the potential role of the Severn Beach Line in providing an alternative to buses for households assessing major employment and leisure sites within Bristol?*

- *How valued and supported is Severn Beach Line to the local community it serves?*

Study Objectives

A range of study objectives were formed from the research questions listed above:

1. To gain a historical understanding of the existing passenger use at stations along the Severn Beach Railway line.
2. To gain an understanding of the existing train capacity issues.
3. To test the value of the accessibility-modelling tool Accession in providing useful outputs on the level of accessibility provided by the Severn Beach Railway Line.
4. Using primary and secondary sources to gain an understanding of existing users and non-users perspectives of the line and non-users perceived perspective of
5. To provide a first time users perspective of the station facilities at each of the stations by conducting a station audit.
6. To provide recommendations on the future of the Severn Beach Line

Reader Navigation

Chapter two Introduces the Severn Beach Line and the issues associated of providing the service before providing a background to the community it serves.

Chapter three provides an introduction to some of the considerations made by individuals when considering the use of public transport. It also introduces the key component of Accessibility to this study.

Chapter four provides an understanding of the research methodology adopted within this study. Within this section the role of modelling and the novel use of accessibility modelling are discussed.

Chapter five discusses the results provided through the triangulation of research methodologies outlined within chapter 3 relating to the three distinct research questions of assessing Existing, Potential & Attitudes of use towards the line.

Chapter six discusses the conclusions of the study and provides a range of recommendations on the future role of the Severn Beach Line.

Please note that throughout this study unless otherwise stated Bristol Temple Meads does not form part of any analysis.

Chapter two – Introduction of rail service & the community it serves

Summary

This chapter provides an introduction to the Severn Beach Line (SBL) and the associated issues of providing the service. The socio-economic background of the communities served by the SBL is also discussed. Initially this is on a citywide basis before greater clarification of the communities served by the SBL is made. Within this chapter and chapter 4 only census wards located in the vicinity of the SBL are referenced. These will be referred to as 'Study Wards'.

2.1 The Severn Beach Line

"*The Severn Beach is a mighty fine line; Clean and friendly and sometimes on time*"

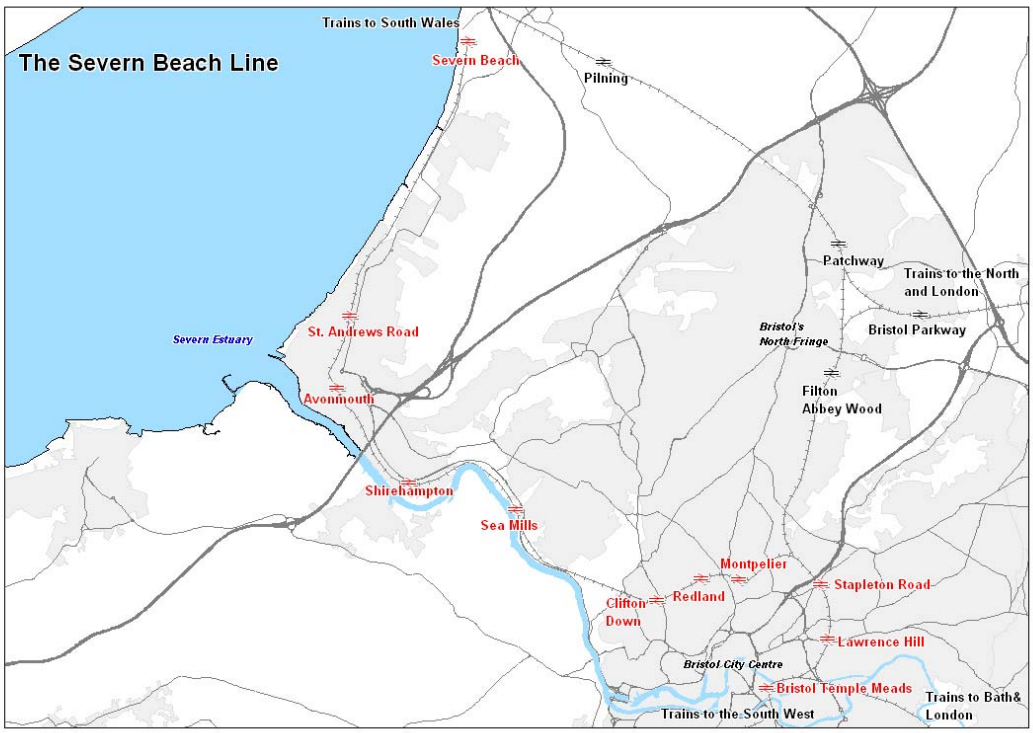
(BBC 2004)

The above quote was taken from the regional television programme 'Inside Out'. The SBL featured as a story in an episode from September 2004. The quote is one of the local campaigners demonstration chants.

The SBL has undergone a number of changes during its time, adapting to the evolving nature of demands placed upon it by differing owners, urban expansion and changing dynamics of the local communities it serves. The current line and stations may have seen better days from their height in the early 20th century but they are still functional and capable of providing a service for the 21st Century.

Figure 1 provides a map of the existing rail network in northern Bristol. The stations in shaded red are those that form the SBL.

Figure 1



The SBL is Bristol's only true branch line. The line offers good views travelling along the Avon Gorge and has been previously listed by Thomas Cook as one of the most scenic railway journeys in Europe (BBC 2004).

The 13.½-mile rail route operates between Bristol Temple Meads and Severn Beach Station and takes approximately 45 minutes. A bus service replaces the rail service between Avonmouth and Severn Beach between the commuting peaks Monday to Friday. A consequence of the line becoming a single tracked route in the 1970's and the need to provide an hourly service dictates the decision to terminate services at Avonmouth throughout the majority of the day. The journey between Temple Meads and Avonmouth is 25 minutes. Consequentially there is a need for one train unit to operate along the single-track line allowing a five-minute turnaround at each end station. There is no Sunday service.

Details on the locations served by the SBL are provided within Appendix A.

2.1.1 The engineering of the line

Please refer to Appendix B for a brief history on the construction of the line.

The present day line was completed in 1922. The existing route was not what was envisaged at its conception but what has evolved from the different demands placed upon it to provide transport to meet the needs of an expanding economy and population within the City of Bristol. The history of the SBL is one in which finance and missed opportunity have played a vital role in dictating its role within Bristol's public transport hierarchy.

Bristol's importance as a major dock in the nineteenth century was declining due to the difficulties experienced by larger ships navigating the bends of the River Avon into the city docks. A new deep-sea dock was proposed at Avonmouth, at the mouth of the river. In anticipation of this new dock the Bristol Port Railway and Pier (BPR) Company were formed (Oakley 1983).

The BPR line first operated in 1865, but it wasn't until 1885 when a full passenger service operated between Avonmouth and Temple Meads. The line as it is seen today was completed in 1922. Severn Beach station was opened and quickly became a popular day trip destination. David Frith in his web site cites anecdotal evidence of a bank holiday in 1922 when "*packed trains continue to arrived at Severn Beach all morning and half of the afternoon*". The original BPR branch to Hotwells station was also closed in 1922 when it and its track were removed to make way for the building of a new road link from Avonmouth to Bristol, the A4 Portway.

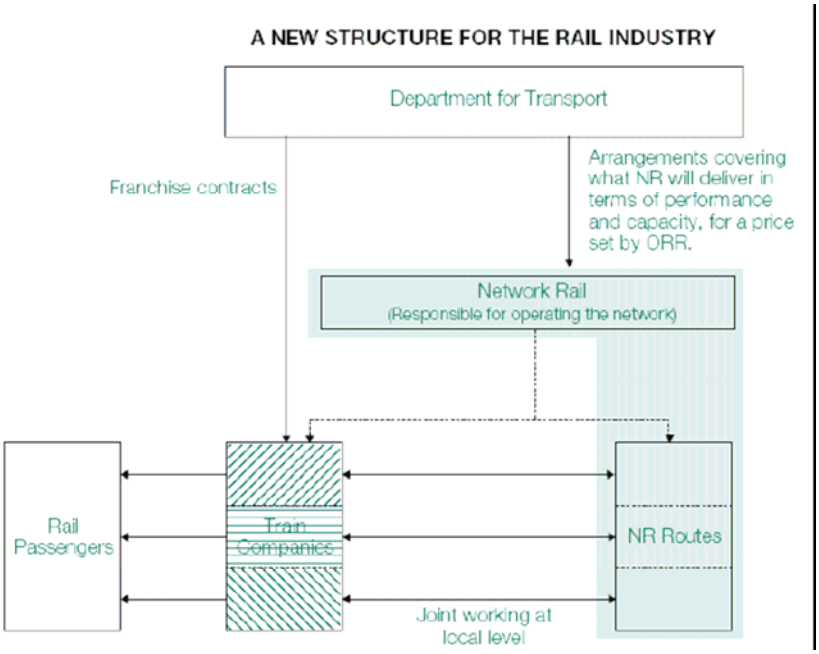
The primary purpose of the line during the first part of the 20th Century was the transportation of large numbers of workers to the docks at Avonmouth. Due to the lack of alternatives the SBL attracted a large volume of passenger traffic. Following the completed A4 Portway road link and the rise in car travel during the mid 20th Century, passenger demand along SBL declined quickly.

The rapid decline in passenger use was so pronounced that the SBL faced closure as part of Dr Beeching's rail closure plans during the 1960's. The proposed closure was strongly contested by local residents and their MP and the line survived but with a reduced passenger service. During the 1970's the lines double tracks became single, providing passing loops at Avonmouth and Clifton Down. The single track and the cost of re-doubling it determine the level of service provided today.

2.1.2 The National and Local Rail Policy Context

The Railways Bill 2004 implemented the proposals set out in the 2004 White Paper *'The Future of Rail''.* The key priorities of the White Paper were to "*improve performance and get a grip on costs*, while maintaining a high standard of safety' (DFT 2004a p1).

Figure 2



(DFT 2004a p1)

The White Paper included a new streamlined structure and organisation for the Rail industry, as illustrated in figure 2, built on the principle of public and private partnerships while confirming rail's status as a public service. The new management structure ensured each sector of the organisation concentrated on its particular strengths, with the Government (DfT) setting the

strategic direction, with Network Rail and the private sector (Train companies) taking charge of delivery.

At the time of writing this dissertation Wessex Trains held the rail franchise for operating trains throughout the South West of England including the SBL. In December 2005 the Department for Transport announced its decision to award First Group the newly combined Great Western, Thames and Wessex rail franchises from April 2006. This newly combined rail franchise would cover rail routes operating in South West England, Reading and parts of London.

First Group already operate the majority of buses in the city of Bristol raising the issue of a potential monopoly on public transport provision within the City region. This issue was taken before the Competition Commission and in March 2006 First Group were cleared to operate the franchise (BBC 2006).

The rail network in Bristol is characterised within the Bristol's first Local Transport Plan (LTP) as one that's "*provides a healthy inter-regional service, but locally suffers through a poor quality service*" (BCC 2001 Appendix 3.9 p143).

The LTP despite providing an unflattering impression of the local rail network did acknowledge the potential of the service and stated the aim of increasing rail patronage by 5% for each year of the LTP period. During the public consultation process of second round Joint Local Transport Plan (JLTP), 49% of people considered rail a priority issue. The JLTP acknowledged this strong level of public support stating that the network has:

"A crucial role in securing a shift from private car on key transport corridors, the potential for high-volume travel with minimal environmental impacts: reducing congestion, journey times, air pollution, noise and providing for people without a car, and the critical advantage of speed and reliability compared to road travel" (JLTP 2006 p103).

It also aims to increase rail patronage by 3% for each year of the plan.

2.1.3 The development of the Severn Beach line as a Community Rail Line

In November 2004 the Strategic Rail Authority (SRA), subsequently absorbed into the DfT, published its '*Community Rail Development Strategy'.* The primary focus was to the importance of local and rural railways. The strategy attempted to build upon the four priority outcomes shared by central and local Government – reducing congestion, increasing road safety, providing greater accessibility to services and improving air quality.

The overriding aims of the strategy were to encourage greater use of the service and reduce the operating costs per passenger kilometre. The objectives of the policy document were based on:

"Providing a strategic framework for local and rural routes, services and stations, within which they can develop and be put on a sustainable basis for the medium to long term through:

- *Increasing ridership, freight use and net revenue;*
- *Managing costs down; and*
- *Greater involvement of the local community."*

(SRA 2004 p3)

The success of this strategy depends upon the support of the local community and the rail industry. Community rail partnerships were created to facilitate the community led involvement.

In response to the SRA's February 2004 consultation document 56 proposed community rail lines were identified, including the SBL. The inclusion of the SBL was unique as it was the only principally urban line included. This

provides an insight into the struggling nature of the line and the limited role rail plays within Bristol's public transport system.

A consequence of the SBL becoming a Community Rail line is the reduction in accountability central Government could face should the line close. By shifting emphasis of the management of the line towards the community the responsibility for the line survival lays within the community it serves. The essence of this is summed up by the Friends of Bristol Suburban Railways "*Use it or lose it*" campaign.
(http://www.johnrogers.pwp.blueyonder.co.uk/fosbr.htm)

2.1.4 The Cost of providing the Severn Beach Line

In 1969, following the survival of the SBL from the 'Beeching cuts' the Minster for Transport agreed to the payment of a social grant to British Rail towards the cost of maintaining the SBL passenger service until 1974. The 1974 Transport Act continued providing support for the SBL and introduced financial support for the whole British Rail passenger network. In 1979 it was estimated that the cost of providing a passenger service on the SBL was £100,000 p.a. At this time British Rail felt the financial commitment of operating the passenger service could not be justified without some financial commitment from the then Avon County Council (Avon 1981).

The local authority examined the likely consequences of closing the line and concluded that the disbenefit of closing the line could be as high as £250,000 p.a. This estimated figure comprised of the additional costs of transferring rail passengers to new and existing bus services. On reflection of these costs, the local authority agreed to support British Rail with their operating costs (Avon 1981).

In 2002 the annual operating cost of the SBL had increased to £777,471 p.a. The revenue generated by the line was £256,450 and the derived cost of operating the service was provided in the form of a subsidy of £521,021 of

which, £120,000 was provided by Bristol City Council. This equated to a subsidy per passenger using the SBL of £1.74 (Faber Maunsell 2003).

In the financial year 2002-03 central Government support for the rail industry was £2.6 billion, with over 1 billion journeys made this subsidy figure can be roughly equated to £2.60 per journey (SRA 2004). Considered in this context the level of subsidy for the SBL provides good value for money.

Cost plays a major factor in determining the level of service the SBL provides and reducing costs is one of the primary aims of the 2004 White Paper.

A recommendation of the JLTP and part of the franchise proposal supplied by First Group was the introduction of an additional service in both the morning and evening peaks. Such action was the primary recommendation of Faber Maunsell's 2003 '*Bristol – Avonmouth - Filton Rail Routes Study''*.

Within their study, Faber Maunsell commented on the consequences of providing the additional peak services and forecasted the total operating costs of the additional services, should the additional train only be used on the SBL at £1,265,862 p.a. an increase of 63% on the 2003 operating costs. The additional services would result in an estimated annual increase in demand of 102,281 passengers resulting in a revenue increase of £62,000. The derived cost of operating these additional morning peak services increases to £946, 479 p.a. or a subsidy per passenger using the SBL of £2.25 (Faber Maunsell 2003).

The increase in additional passenger demand and the subsequent modal shift from road to rail reinforces both local and national policies regarding increasing ridership and reducing traffic congestion and associated pollutants.

At the time of writing this dissertation issues surrounding the 2006 level of financial support provided by the local authority were in question, with Bristol City Council's £136,000 subsidy transferring to the new franchise holder. Such action reduces the potential for providing the additional peak services.

2.1.5 Community and interest groups

The local community and local interest groups have always played a vital role in the SBL's history. From the petition to open Redland station to ensuring the lines survival during the 1960's.

Part of the 2004 Community Rail Strategy called for the creation of Community Rail Partnerships to facilitate community involvement involved in decisions on the management of the line.

The Severnside Community Rail Partnership (SCRP) was created in 2004. It is a non-profit company that aims to encourage the use of local train services on routes in and around Bristol. They bring together key stakeholders and interest groups such as: the local authorities, train operators, community and voluntary organisations, tourism agencies and business groups (SCRP 2005a).

An example of one of the community involvement schemes organised by the SCRP is the *'Station Friends'* initiative. Station Friends encourages groups of volunteers to take an active interest in their local railway station by improving the quality of the station environment, with the aim of discouraging potential vandals and anti-social behaviour at the station. It is hoped that this will encourage a sense of local community pride and help promote the rail service (SCRP 2005b).

The Friends of Suburban Bristol Railways (FOSBR) are a proactive interest group, which strongly believes in the role and promotion of rail. They are members of the SCRP and campaign on numerous rail related issues; one of the current campaigns is to: "Defend services on the Severn Beach Railway. In response to Bristol City Councils decision to cut local subsidy funding they organised a petition with over 3000 people supporting the proposed additional morning and evening peak services. (http://www.fosbr.org.uk/index.php).

2.2.1 Citywide Background

The Index of Multiple Deprivation (IMD) is a combined value of seven domain indices each considering a different aspect of deprivation. The seven domains relate to: Income deprivation, Employment deprivation, Health deprivation and disability, Education, Skills and training deprivation, Barriers to housing and services, Living environment deprivation and crime. Each domain is weighted differently combining to form an overall measure of deprivation. The IMD scores were created by the Social Disadvantage Research Centre at Oxford University on behalf of the Office of the Deputy Prime Minister (ODPM 2004).

IMD scores are recorded at Super Output Area level (SOA), each covering approximately 1500 people. Figure 3 illustrates the 2004 levels of deprivation experienced within Bristol, highlighting those areas that scored within the top and bottom 10 and 20% deciles for England.

One of the defining features of the SBL is the link it provides between areas of deprivation with prosperity. Due to the arterial nature of the main bus routes, principally serving communities located along the main road thoroughfares, linking North with South – East with West via the city centre. The SBL's elongated 'S' shape path provides the only direct public transport link between communities located in the eastern part of central Bristol with those located in the north west of the city. Therefore providing an alternative direct public transport service not provided for by main bus routes.

Figure 3

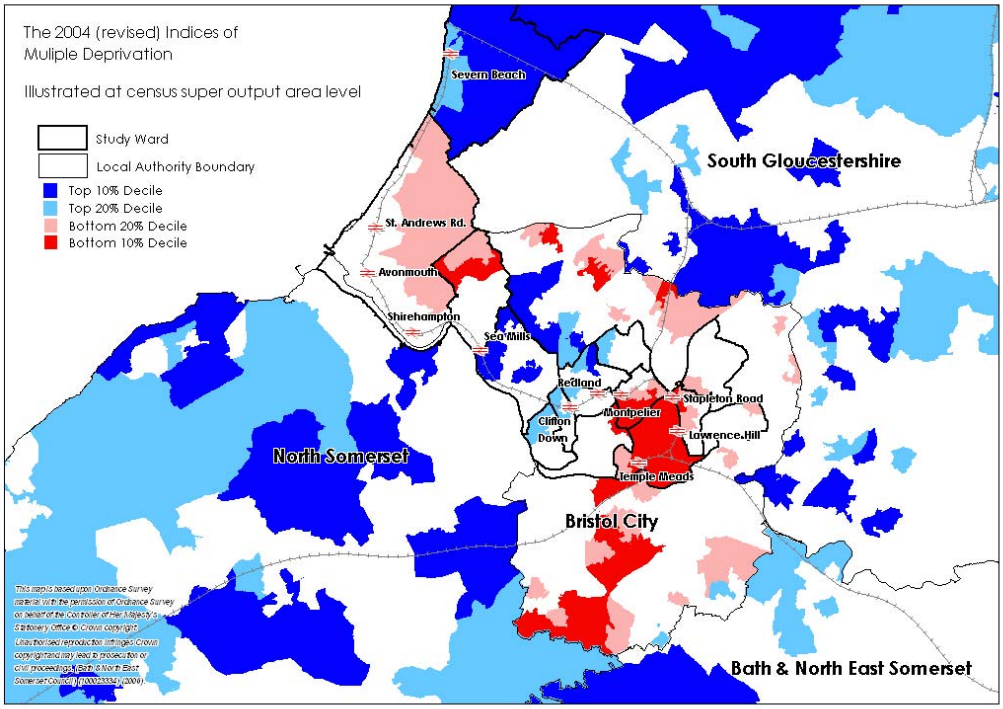
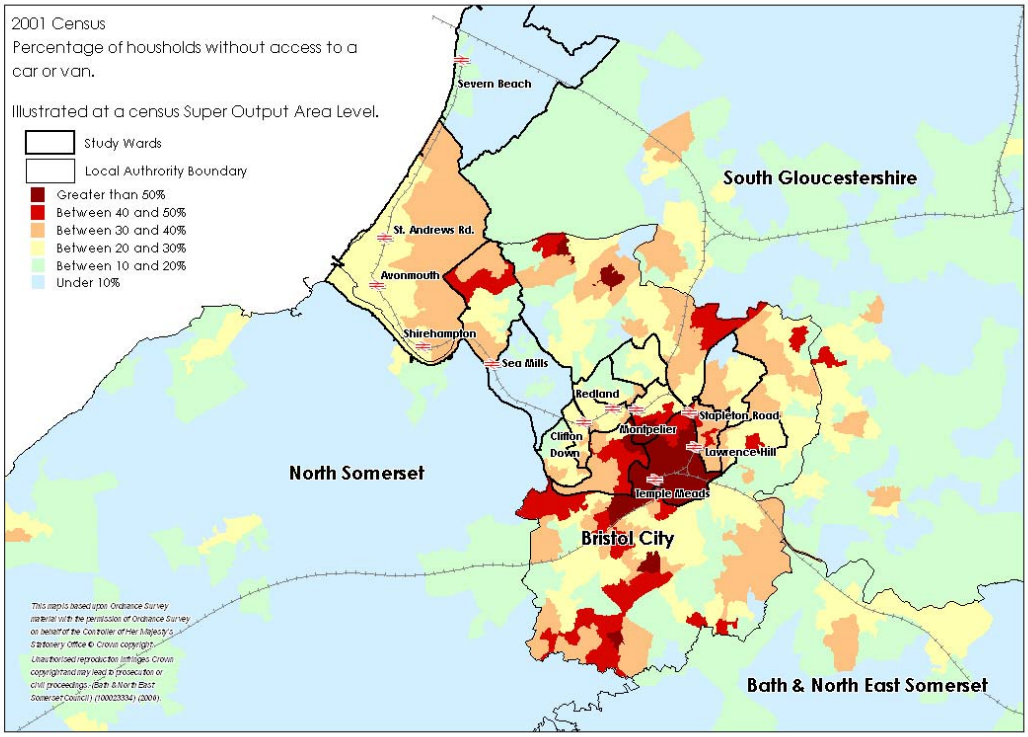


Figure 4



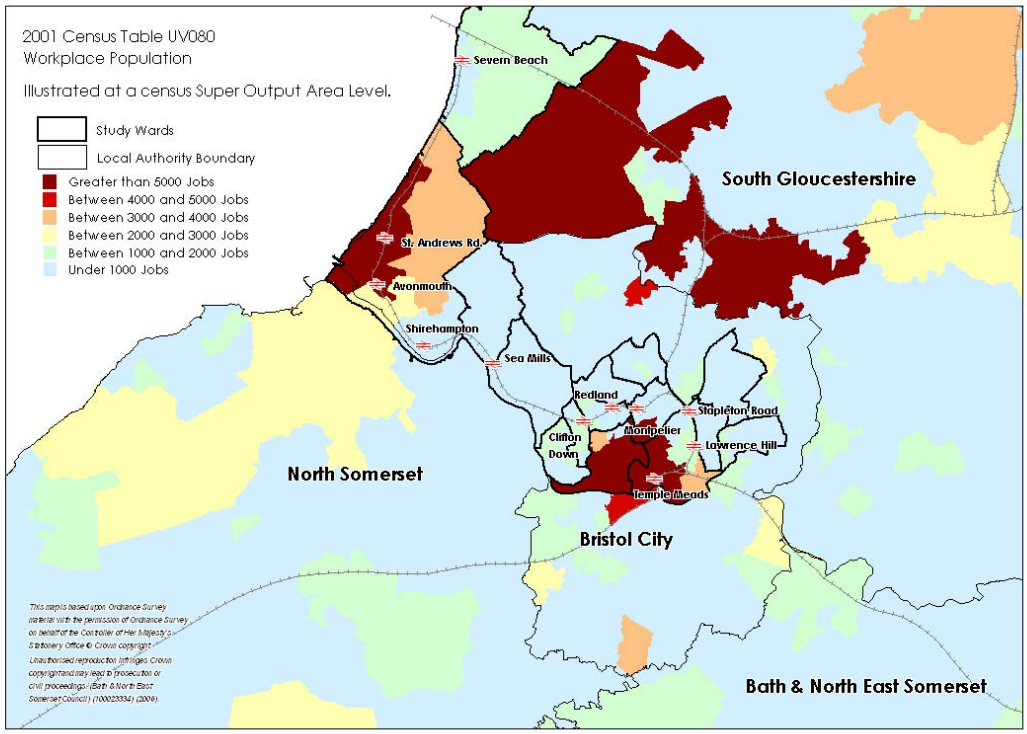
For any transport system to work there must be demand for the service it provides. Demand is generated when the service provided is deemed as more complementary to an individuals needs than other alternatives available. Conversely demand is also generated through necessity and the lack of alternatives available to the individual. Within this dissertation the latter demand generator is considered in relation to the 2001 census data recording the number of households without access to a car or van. Figure 4 illustrates this data for Bristol.

Comparing figure 3 with figure it is often the most deprived areas that often have the lowest access to car rates. Between 40% and 50% of households in areas of central state to not having access to a car or van with some areas exceeding this figure. With the exception of the central Stations and Sea Mills the areas surrounding all other stations record a level of between 20 and 30%.

The link between deprivation and not having access to a car is not mirrored within the Western half of central Bristol. Households within this area may have chosen not to own a car due to their immediate location to work, leisure facilities and public transport provision.

As previously stated for a public transport service to be provided and work effectively there must be demand for the service it provides. If the need of accessing employment is considered, amending bus services to reflect changing development patterns is far cheaper and relatively simple compared with providing a heavy rail link. Figure 5 illustrates the main employment areas of Bristol.

Figure 5



It is with interest that after 84 years of being completed the SBL continues to serve two of main employment zones within Bristol. Unfortunately expansion of Bristol's local rail provision has not kept up pace with the ever changing and expanding residential developments within the City region. The social economic background of communities served by SBL 84 years ago is different to the one served today. The consequential level of demand for the service and the locations served perhaps no longer ideally suited to the travel needs of the present day communities.

2.2.2 Introduction to the communities served by the SBL

The 13.½-mile SBL takes approximately 45 minutes linking a total of 11 stations between Severn Beach and Bristol Temple Meads. Details on the locations served by each station are explored within appendix A. Table 1 provides a brief summary of selected national census and household survey data related to wards within the locality of each station. Within this dissertation the term "study wards" relates only to the wards served by the SBL. Only study ward data is contained within table 1.

Analysis of this table confirms the SBL's role in providing a direct link between deprived and prospering communities ranked at opposite ends of the citywide spectrum.

The SBL provides access to the top three locations for providing employment as well access from two wards that are included within the bottom five for providing the least. A similar situation is shown with regards to the number of unemployment claimants residing in the local vicinity, with three wards served by the line ranked in the bottom five for the City.

On average 25% of each wards population commutes out of Bristol on a daily basis, it is interesting to note that regardless of the number of jobs or levels of unemployment the level of outbound community only fluctuates by 5% on the citywide average.

Resident satisfaction with the local bus services within the study wards is on average 5% lower than the citywide average of 49%. It is interesting to note that two of the wards recording the greatest levels of car ownership (Stoke Bishop and Redland) also report some of the lowest levels of bus service satisfaction. This may be a result of their perceived views of the service instead of their actual experience. In contrast to this two inner City wards, Ashley and Lawrence Hill, which record 37% and 55% of households without access to a car also report the same level of bus satisfaction, suggesting those that use the bus service are satisfied with it. Unfortunately no data was available with regards to the local rail service. It is the aim of this dissertation to enlighten upon this point.

The information contained within Table 1 is based on data provided by Bristol City Council in their 2004 ward profiles.

Table 1

Ward Name	Station Served	Ethnic Profile		Total number of jobs *	% Of residents with no qualifications or Technical qualifications	Unemploy-ment Claimants *	% Residents working outside Bristol	% Households without access to a car or van	Average House Price	Household Tenure			% of residents with good access to services	% of residents satisfied with the bus services	Reference
		All White	All BME	Bristol ward ranking		Bristol ward ranking				% Household owner occupied	% Council rented	% Other rented			
Bristol Average		92%	8%	-	22%	-	25%	29%	£168,057	61%	18%	18%	79%	49%	BCC 2004a
Severn Beach & Pillning	Severn Beach	98.8%	1.2%	N/A	27.6	N/A	N/A	10.3%	N/A	84.8%	5%	10.2%	N/A	N/A	SGC 2001
Avonmouth	St. Andrews Rd Avonmouth & Shirehampton	97%	3%	33	18%	23	24%	30%	£124,436	62%	29%	7%	80%	49%	BCC 2004b
Kingsweston	Sea Mills	95.6%	4.4%	2	27%	23	27%	32%	£161,882	49%	40%	9%	78%	43%	BCC 2004k
Stoke Bishop	Sea Mills	92.5%	7.5%	4	3%	35	28%	10%	£292,980	81%	6%	10%	76%	40%	BCC 2004p
Clifton	Clifton Down	92.3%	7.7%	30	3%	30	26%	25%	£271,766	47%	5%	41%	81%	55%	BCC 2004e
Clifton East	Clifton Down	90.4%	9.6%	28	8%	33	27%	27%	£244,609	42%	1%	49%	85%	56%	BCC 2004f
Cotham	Redland	92.4%	7.6%	21	1%	26	26%	27%	£245,712	47%	3%	47%	82%	51%	BCC 2004g
Redland	Redland	93%	7%	14	6%	31	27%	21%	£255,525	61%	2%	34%	83%	40%	BCC 2004m
Ashley	Montpelier	74.4%	25.6%	31	8%	2	23%	37%	£168,518	48%	11%	37%	83%	37%	BCC 2004a
Bishopston	Montpelier	91.8%	8.2%	18	10%	17	30%	21%	£202,946	73%	2%	22%	87%	51%	BCC 2004c
Easton	Stapleton Rd	75.1%	24.9%	16	19%	3	24%	34%	£116,516	66%	9%	21%	79%	45%	BCC 2004i
Eastville	Stapleton Rd	82.4%	17.6%	12	16%	8	29%	29%	£154,071	69%	8%	19%	78%	47%	BCC 2004j
Lawrence Hill	Lawrence Hill	68.3%	31.7%	34	37%	1	21%	55%	£128,658	25%	47%	24%	79%	55%	BCC 2004l
St Georges West	Lawrence Hill	91.2%	8.8%	8	27%	14	29%	29%	£123,079	66%	14%	16%	75%	56%	BCC 2004n
Cabot	Temple Meads	88.7%	13.3%	35	6%	10	22%	39%	£179,280	31%	14%	49%	80%	51%	BCC 2004d
Data Source		A	A	C	B	C	C	A	D	A	A	A	B	B	

* There are 35 wards within Bristol, 1 = ward rank with lowest number and 35 = highest.

A = 2001 Census data, B = 2003 BCC Quality of life Questionnaire, C = Strategic & Citywide Policy 2004, D Neighbourhood & Housing Services 2004

Chapter Three – The Consideration of Public Transport Use

Summary

This chapter seeks to provide an understanding of the term Accessibility and the policy consequences of the Social Exclusion Unit's 2003 '*Making the Connections'* report, before an providing an introduction to a range of individual considerations made in relation to any use of a public transport system.

3.1.1 What is meant by Accessibility?

"Accessible transport systems are essential to ensure equal opportunities for all people in society"

(Wu & Hine 2003 p307)

The term accessibility with regards to transport is very often confused and means something different to different people. Hine & Grieco (2003) cite Hillman et al (1973) stating the traditional definition of accessibility as one as the '*get-at-ability'* of a particular destination.

Jones writing in 1981 states the basic concept of accessibility as the "*ease of reaching*" a particular service or location, he then makes a clear distinction between the terms '*mobility*' and *accessibility*' as the terms are often confused.

Jones describes mobility as "the ability of an individual, or type of person, to move about" (1981 p1). The ability of being able to move about is effected by two components. The first element considers where the individual lives, where they want to travel to, what time of day they wish to travel and the performance/availability of the public transport system. The second element

depends on the characteristics of the individual, such as if they can afford the public transport fare, if they can walk and use the public transport system, if they own a car or if they have full knowledge of their travel options available

To summarise component one involves the spatial compatibility of the public transport system with desired locations and component two involves the individual and their ability to make use of the transport system.

Jones states that "*Accessibility is concerned with the opportunity that an individual or type of person at a given location possess to take part in a particular activity or set of activities*" (1981 p1). It therefore does not concern an individual's behaviour but with the opportunities provided by the transport and land-use system for individuals to engage in different activities.

The clear distinctions Jones provides separating 'mobility' with 'accessibility' becomes less clear in the 2003 Social Exclusion Unit's '*Making the Connections*" report.

The report seeks to examine the links between social exclusion, transport and the location of services. Within the report the issues of Accessibility are introduced as:

"Can people get to key services at reasonable cost, in reasonable time and with reasonable ease? Accessibility depends on several things: does transport exist between people and the service? Do people know about the transport, trust its reliability and feel safe using it? Are people physically and financially able to access transport? Are the services and activities within a reasonable distance? Solving accessibility problems may be about transport but also about the locating and delivering key activities in ways that help people reach them" (SEU 2003 p1).

The 2003 Social Exclusion Unit's report describes how travel and the changing nature of society can affect an individual opportunity to fully participate in an inclusive society. It describes that the need to travel has

become greater as society has been reorganised around the car when accessing services, such as healthcare, education, employment and retail.

For the majority of people the reliance upon the car has not affected their lifestyles, but for people without access to a car, this lack of access has the potential to detract from an individual's ability to fully participate in their preferred lifestyle. For some individuals personal choice dominates the decision making process in not owning or having access to a car. For others the choice of not owning a car is not of their making, there are many reasons for this including the financial costs associated with operating a car, the age of an individual or if the individual has any disability effecting their ability to drive.

Out of town developments during the 1990's further enhanced the reliance upon the car, with the cost of public transport fares increasing greater then the cost of motoring (SEU 2003).

The report recognises a number of barriers that might increase an individuals chances of being or becoming socially excluded. These include:

- The availability and physical mobility of accessing transport
- Issues regarding safety and security while travelling
- The cost of travelling
- Lack of information or experience of using different types of transport
- The location of services

(SEU 2003 p21)

3.1.2 Consequences of the Social Exclusion Unit's report

The report's recommendations have had a major influence on local and central Government policy towards transport, land use planning and the delivery of key services. One of the key points made within the report was that "*no single public body has had overall responsibility for accessibility*" (SEU 2003 p39) and this was cited as a factor in the rise of inaccessible

services. The report provided a new policy framework for Accessibility Planning, providing a clear structure for issuing responsibility and accountability in identifying accessibility problems and providing solutions to any issues identified.

This new policy framework will be incorporated into the next round of Local Transport Plans (covering local Government transport policy between 2006 and 2011) as an Accessibility Strategy. The framework assists local authorities to work in partnership with other service providers, in seeking and addressing issues of social exclusion by directly tackling the problems facing people and their ability to access key services.

The Department for Transport (DfT) provided guidance on the Accessibility Planning process in line with that provided within the SEU 2003 report. The DfT identified a 5 stage process including: local and strategic accessibility assessments, option appraisals, actions plan development and monitoring and evaluation.

Local and strategic accessibility assessments were to be undertaken via mapping audits. The DfT developed a bespoke accessibility modelling software '*Accession*' to measure existing levels of accessibility experienced by local communities when accessing key services. The aim of the mapping audits was to provide an evidence base for the identification of communities experiencing poor levels of accessibility (DfT 2005).

One of the objectives of this study is the use of Accession in provided an assessment of how accessible the SBL is to the communities of North Bristol.
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3.2.1 Considerations for public transport use

As previously stated with section 1.2.1 for any transport system to work there must be demand for the service it provides. Demand is generated when the service provided is deemed as more complementary to an individuals needs than other alternatives available.

"*The market potential for railway services depends on the quality of the total chain from residence to place of activity*" (Rietveld 2000 p 71).

The evidence provided within this section seeks to provide examples of the complex range of factors considered by individuals with regard to their particular travel choices made for each journey. In addition to those stated habit and familiarity play a vital role in the decision making process. The roles of travel time uncertainly, transport interchanges and walking and cycling will be considered in greater detail.

The choice made by an individual relating to the mode of transport used for a particular journey can depend on a number of factors; the origin or destination of the journey, the actual or perceived experiences of certain transport modes and the level of knowledge of service options available to the individual. Although it is not known whether travel choices are made by individuals seeking to minimise their generalised travel cost, within this dissertation to aid analysis of the data outputs a reduction in travel cost forms the basis for comparison. The costs of travel include; the monetary cost, travel time, comfort, convenience and reliability.

In relation to the generalised costs of using the SBL, the financial and travel time costs of using the service are far less than the using alternative bus routes. A single ticket between Lawrence Hill and Avonmouth costs £1.90 and takes just over 20 minutes. Bus fares between these two locations are greater and the travel time is longer needing a change of bus service within the City Centre. The reliability of the bus travel time also varies and is

dependant on the level of congestion experienced at any given time within the City centre. Levels of comfort between the two modes are highly comparable. The SBL is very convenient for those communities it serves but the alternative service provided by the bus is more convenient for the majority of households within Bristol. The frequency of bus services is also far greater compared to the SBL's hourly service.

3.2.2 Travel Time Uncertainty

Bates et al (2001) provide evidence from many qualitative and attitudinal studies regarding travel choice behaviour and comment that "*punctuality, reliability and dependability of a transport system*" (p191) are very important features that effect users perceptions and the level of use of a particular transport system.

Rietveld et al (2001) discuss the issue of travel uncertainty for both public and private transport stating that road congestion, recurrent and non-recurrent, can create issues of unreliability with regards to journey times. Recurrent traffic congestion such as that experienced within the morning and evening peaks does not lead to uncertainty for private transport, as an additional 15 or 30 minutes to their journey becomes excepted to the driver as normal travel times in that particular travel horizon. Unpredicted incidents resulting in traffic gridlock results in increased travel times and unreliability within the transport system and affect both pubic and private transport users.

To reduce the issue of uncertainty for public transport users, transport operators incorporate predicted traffic congestion into the public transport timetable. In principle such action seems to adequately address the issues of uncertainly. Due to the infrequency of timetable changes, usually twice a year to encourage familiarity with service times and routes, unpredicted incidents such as emergency road works can have serious consequences on the uncertainly and reliability of road based public transport services. Rietveld et al (2001) highlight the problems experienced by passengers needing to use several public transport services to complete their journey. Using the

example of a 5-minute delay in one stage of a journey resulting in a missed transport connection and the consequences of the delay increasing drastically if the connecting service operates at a low frequency.

3.2.3 Interchange

An interchange is any passenger facility that allows ease of transfer from one transport mode to another. Within this dissertation an interchange relates primarily to the railway stations located along the SBL.

Sustrans is a sustainable transport charity advocating model shift away from the car while encouraging greater physical activity such as walking or cycling. They have established a 'Safe Routes to Stations' project that aims to:

"*Enable more passengers to walk and cycle to railway stations. This is achieved through the provision of safe, direct routes, making changes to the highway to reduce traffic speeds and volumes, re-allocating road space and revising station approaches in favour of pedestrians and cyclists*". (Sustrans 2003 p1)

Sustrans comment that traditionally railway companies have ignored how their passengers accessed their stations. They have therefore provided a fact sheet providing examples of best practice for both the Railway Company and the local authority.

Rietveld's (2000) examines the role of the bicycle in accessing railway stations in The Netherlands. He comments that one of the reasons for people not using railway stations is the location of the station in relation to their home and activity ends of the journey. To eliminate this possibility from this dissertation only communities that currently report existing use have been considered.

Rietveld also cites slow entry speeds, the risk of missing onward journey connections, poor waiting areas and inconvenient journey times as push factors towards car use.

Bicycle use is far greater in The Netherlands compared to the UK. Due to the advantages in distances covered compared to walking such a mode would further increase the potential for additional users on SBL. Rietveld recommends that more could be done by the train companies with regards to bicycle security and the possibility of renting bicycles at the activity end of the journey.

For passenger convenience it is essential that minimal time be spent at interchanges as any delay can impact upon the overall journey.

Hine & Scott (2000) undertook and series of focus groups and interviews intended to gain and understanding of public transport users views of transport interchanges. Their work is not directly relevant to this study as it is primarily focussed on the interchange from one mode to another, but their findings are of interest in relation the comments made by passengers and their time spent at interchanges. These finings can be likening to comments made by passengers waiting at SBL stations.

Many of the comments made regarding waiting at interchanges were associated with the design of the interchange and the perceived risk to personal safety. Further comments made related to the lack of information regarding departure times, an example of this is one respondent stating that interchanges would be better if they were designed like airport departure lounges where arrival and departure information was readily available (Hine & Scott 2000).

3.2.4 The role of walking and cycling

In 2004 the Government announced its Obesity Strategy in which it recommended that adults should undertake moderate intensity physical

activity, such as walking or cycling, for at least 30minutes a day. Within the strategy it included data from the National Travel Survey that reported total miles travelled by foot or cycle had reduced by 26% between 1975/6 and 1999/2001 (LTT 2004).

In 2003 the DfT published a report on '*Attitudes to walking & cycling'* in which several of the key findings highlight the scale of the challenge set for the 'Safe Routes to Stations' project, the Obesity Strategy and the problem facing policy makers in encouraging modal shift.

Their findings concluded that 17% of people thought walking conditions had improved compared with 27% for cycling over the last 2 years. In contrast 18% and 11% though that walking and cycling conditions had worsened over the same period. Rather alarmingly 38% or respondents did not think walking was an important form of transport and that 58% or respondents stated they currently use a car to make journeys within walking or cycling distances (DfT 2003).

Goodman & Tolley (2003) cited on www.walk21.com describe a number of factors that various researchers have found to affect an individual's decision not to walk. These include; the condition of the footway; being too narrow or uneven, the presence of litter, dog dirt, parked vehicles and cyclists blocking the footways. The volume or speed of traffic was also cited as problems providing a link between increased road traffic and reduced pedestrian use was provided. Further consequences of the volume of traffic include the reduction in the number of safe pedestrian crossings. Distance and time were also stated as deterrents to walking, with walking often regarded as taking too much time when considered against driving. The weather is also included as having a significant impact upon the choice made by an individual with regards to walking.

Chapter Four - Research Methodology

This chapter seeks to provide an understanding of the research methodology adopted within this study. Detailed discussion is provided with regards to the data sources and primary research undertaken to gain understanding towards the research questions in relation to actual, potential and attitudes towards use of the SBL. Limitations of the research methods and data sources are also provided. Within this chapter the role of modelling and the novel use of accessibility modelling are discussed.

4.1.1 Research Methodology

The overarching aim of this dissertation is to understand the role the Severn Beach Line has in providing for the community it serves. Three distinct questions were designed to gain understanding of this issue, relating to Actual, Potential and Attitudes towards Use.

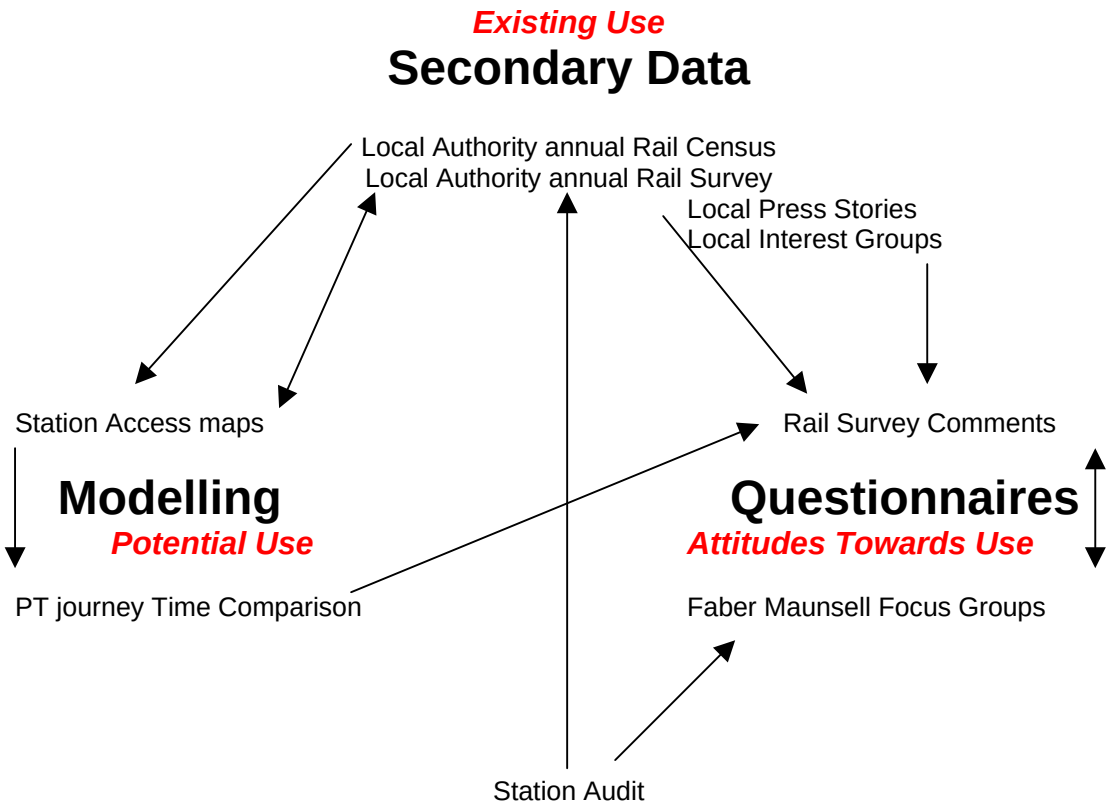
A triangulated approach to research methodology has been adopted. In additional to the three questions and their related research methodologies a fourth observational theme has been undertaken to assist with familiarity for the author to the environment of each of the stations and community they serve. Denscombe (1998) and Robson (2004) both agree that employing a triangulated research method enhances and validates the findings of a research study reducing any potential for researcher or respondent bias.

The adoption of the multiple research methodologies is not designed to prove that the author '*got it right*' but to provide a sound base to which substantiate the conclusions of this study. This approach differs from the use of single research methods when unknown aspects of the results can be attributed to the singular research method employed. The use of triangulating research methodologies does carry risks when research findings potentially conflict with each other (Denscombe 1998, Robson 2004).

The adopted triangulation of research methodologies used within this study is illustrated in figure 6.

Figure 6

Triangulation of Research Methodologies



All provide for an understanding to the role of the Severn Beach Line has in providing for the community it serves

The links between each of the four research areas feed into each other with the aim of validating each research questions findings. Existing passenger origin and destination data contained within the local authority rail surveys records actual passenger use. This measure of existing patterns of passenger behaviour provides a sound basis and directly links into the measurement of potential use within the modelling section of this dissertation. Potential use is further validated through individual attitudes towards the SBL

recorded via comments made by rail users and non-users via the local authorities annual rail survey, Faber Maunsell's focus groups and this study's questionnaire. To further validate user comments and non-users perceived views on rail use, observational findings gained during a station audit are used. Other small links occur assisting in gaining a greater understanding in each of the distinct questions.

4.2.1 Secondary Data Sources Measuring Existing Use

Data relating to existing use has been kindly supplied via two outlets. Wessex trains supplied data relating to journeys made to and from stations along the SBL and Bristol City Councils Transport Monitoring Team supplied data recording use of the SBL through their annual rail census and survey.

4.2.2 Wessex Trains Data

Data supplied by Wessex Trains related to the annual total journeys made to and from stations along the SBL between the years 2000 and 2005. Unfortunately no data was supplied for Temple Meads. This information was based on ticket sales. Caution must be taken when analysing this data, as any journey between stations along the line would result in a double counting of passenger numbers. This does however provide a fascinating insight into journey patterns made throughout 2000 to 2005.

4.2.2.1 Limitations of data

There are no facilities for passengers to purchase tickets at stations along the SBL. Tickets are therefore only available on the train. The high demand placed on the service during peak travel time, coupled with the close stopping pattern along the service impact upon the guard's ability to check or provide tickets to all rail users.

A possible reason for Wessex Trains not to supplying data for the SBL at Temple Meads is the guard's inability to provide tickets to all passengers.

Ticket barriers are in place on the platform at Temple Meads providing a barrier to any passenger not in possession of a ticket. Due to the high level of passenger demand during peak travelling times large queues often form behind the barriers with passengers required to purchase a ticket before existing the station. Past experienced of this occurrence has witnessed station staff opening the ticket barriers thereby allowing passengers to exit the station regardless of a ticket being purchased. Concerns relating to the accuracy of this data therefore exist. It is however the most accurate data available for the purposes of this study.

4.2.3 Local Authority Annual Rail Census data

The annual local authority rail census is conducted during the second week of November each year. The process used by the local authority to collect this data requires the employment of enumerators to stand at each station and record the number of passengers boarding and alighting from each service throughout the day. Although passenger use is recorded at Temple Meads for the SBL, no other passenger count is undertaken due to the volume of passengers experienced there.

The data collected within the rail census is used by local authorities to measure changes in rail use. At the time of writing the 2005 data was not yet available.

In addition to the local authority passenger census Wessex Trains conduct a surveys twice a year. Unfortunately they would not supply this data for use within this dissertation.

4.2.3.1 Limitations of data

There are several concerns regarding the accuracy of the data supplied by the local authority. The local authority census only records a snap shot of the use, consequentially this fails to record seasonal fluctuations in demand and is subject any events occurring on the day of survey.

4.2.3 Local Authority Annual Rail Survey

The annual rail survey is conducted at a similar time to the rail census. Appendix C provides an example of the survey form used. Questionnaires are distributed to rail passengers, they are requested to complete the questionnaire and then post it back to the relevant local authority. On the reverse of the questionnaire a freepost postal address is supplied to encourage passengers to return their survey form. All data recorded within the questionnaire is input into a database where the results can be analysed.

Within this dissertation only data from the 2002, 2003 and 2004 rail surveys has been analysed. Before analysis of the data could be undertaken within this study it was necessary to extract only questionnaire from passengers that either boarded alighted at stations along the SBL.

4.2.3.1 Limitations data

One of main limitations of the survey method is the poor response rate of returned questionnaires compared with actual rail users recorded within the census. From the three years analysed a total of 6964 rail passengers were counted using the SBL of this figure only 569 returned questionnaires. This equates to a response rate of 8%. In addition to this it became clear that some respondents completed the questionnaire for their return journey, thus resulting in a few anomies regarding the purpose of their journey. An example of this is the amount of passengers alighting at Severn Beach to go to work in a primarily residential area.

4.3.1 Existing & Potential use measured through GIS and accessibility modelling

Within this section the role of transport modelling is discussed before its use within this study is applied to the research areas of existing and potential use.

4.3.2 The Role of Modelling

Bonsall (1997 p103) states that models are:

> *"Simplified representations of reality which can be used to explore the consequences of particular polices or strategies".*

Transport models seek to provide outputs of polices far quicker and cheaper than implementing a policy and monitoring its effects. Models are deliberately kept simple to keep them manageable highlighting the important features / outcomes of the system relevant to the particular policy area (Bonsell writing in O'Flaherty 1997).

Within this dissertation the accessibility model Accession will be used to measure levels of access to certain destinations using the SBL

4.3.3 Existing Literature

Wu & Hine 2003 used GIS and ACCMAP to assess the spatial impact of hypothetical changes to Belfast's Citybus network. Similar to this dissertation the IMD was used to identify areas of deprivation.

ACCMAP was the forerunner to Accession offering many of the same analytical tools within the software package. A primary difference between the software packages is the ability of ACCMAP to produce Public Transport Accessibility Levels (PTALs) scores. A PTAL score is a spatial assessment of an areas ability to access the public transport system within a certain time

frame i.e. commuter peaks. It is therefore a measure of access to the transport system regardless of where the particular transport service operates between. Accession differs from ACCMAP having been designed based on the recommendations of the SEU 2002 report, it is therefore primarily concerned with linking certain groups of people with certain key services.

4.3.4 What is Accession?

Accession is fully functional Geographic Information System (GIS) designed specifically for transport analysis. The software provides the opportunity for accessibility assessments to be made for different areas and for different population groups using a range of transport modes. Accession uses the full public transport timetable to measure either time, distance or cost in accessing selected destinations during a specified time period. Accession can be used to produce a range of outputs including contour maps and reports. These assist in the identification of any potential barriers in accessing certain destinations. The evidence-based outputs can then facilitate the development and recommendation of alternative solutions (MVA 2004).

At the time of writing Accession remains a relatively new piece of software, first distributed in 2004, and is still subject to updates related to further software developments.

Figure 7 illustrates the data requirements necessary to build the Accession model used within this dissertation. Accession version 1.4 and a base model using public transport data correct at November 2004 were used throughout this study.

4.3.5 A different approach adopted

Within this dissertation Accession has been used in a novel way by measuring levels of accessibility using only one element of the public transport system.

It is hoped that by studying the SBL in isolation, its role and potential role within the context of the greater transport system could be further understood. The modelling outputs may then add value to particular arguments either ensuring the line is kept open or conversely adding credence to the notion of closing it.

Within Wu & Hilne study, the hypothetical route changes tested were expressed in the changing level of PTAL score, within this dissertation Accession provides the facility to report levels of accessibility related to actual groups of people. Within this study this relates to all households and households without access to a car within the study wards.

Within this dissertation Accession will be used in a number of different ways. The first use assists in gaining an understanding of existing passenger behaviour, while the second and thirds uses provide data outputs that can assist in gaining an understanding of the potential of the line:

1. To calculate access times for passengers boarding and alighting at each station based on information contained within the local authorities annual rail survey.
2. To calculate the potential market for each station including the number of jobs within certain time thresholds of each station.
3. To compare access times between the SBL and bus network to three locations during the travelling peaks.

Research undertaken during analysis of the rail survey has found that walking is the favoured mode of transport when accessing SBL stations. Due to time

constraints in using the modelling software this will therefore be the only mode of travel tested within elements 2 and 3.

De Jong & Van Eck 1996 comment on the use of proximity counts such as that proposed in section 2. They use the example of access to employment and raise concerns should not be cited as a measure of accessibility. They stress the importance that any measure made only relates to the potential for employment as it fails to consider the existing job market and any competition for employment experienced.

They also state that greater weight should be made to those jobs that are closer to others, for example if 100 jobs are stated to be within 1 km of a train station, this fails to make reference that 90 of those jobs are within 200m and the further 10 being in within the last 800m.

Within this dissertation the proximity counts used within section 2 are not stated for the purposes of providing an accessibility figure but are stated in reference to the number of people employed within the area and therefore represent the number of potential users of the line.

4.3.6 Methodology of providing greater understanding of existing passenger use

'To calculate access times for passengers boarding and alighting at each station based on information contained within the local authorities annual rail survey'

The term 'recorded passengers' relates to all SBL rail users (excluding Temple Meads) that fully completed the journey origin and destination section of the local authority annual rail survey between 2002 and 2004.

Most questionnaires had been completed correctly providing either a postcode or address of their journey origin and destination. Using the GIS MapInfo and www.multimap.com each boarding or alighting passenger's origin or destination was accuracy recorded. For many questionnaires the

respondent would state only the name of the road. When this occurred an estimation of the location was taken.

A total of 583 boarding passengers completed the questionnaire during this period; of this figure 51 had incorrectly completed their origin details resulting in a working sample of 91%. A total of 387 passengers alighting from the SBL, 75 had incorrectly completed their destination details resulting in a working sample of 80%. Each passengers relating origin or destination was plotted and coded. In addition to this the mode of transport used when travelling to or from the station was also recorded.

Once all origin and destination details for each station were plotted, the data was imported into Accession. Regardless if the plotted data related to a passengers origin or destination within Accession they represented the origin point during the calculation process. Due to the coding given to each of the origin points a passengers' origin or destination could be determined after the model had been run. Station locations were also imported and these represented the destinations within the calculation.

Once all the data was imported a series of network calculations using the road network were undertaken for each recorded mode of transport used travelling to or from the station. A simple report was then run providing travel time details from each origin point to each destination point. The report could then be analysed within Excel providing an appropriate travel time recorded for each passenger.

4.3.7 Methodology 1 of providing data on potential use.

'To calculate the potential market for each station'

To calculate the potential passenger market for each station a different approach was used within Accession. Unlike the previous calculation using actual recorded passenger origins or destinations as the basis of the model this time a 200m grid of origin was used. An additional mapping layer was

also imported based upon the national census' Super Output Area (SOA) boundaries.

Once these elements were successfully imported all relevant census data was disaggregated to the related origin point contained within the corresponding SOA. Individual station locations were then imported and these were used once again used as the destinations within the model.

A series of walking network calculations using the road network were conducted for each station. Numerous threshold reports were run recording the number of households, households without access to a car or van and the number of jobs within a certain walking distance from each station.

4.3.8 Methodology 2 of providing data on potential use.

'To compare access times between the SBL and bus network to three locations during the commuting peaks.'

The methodology used to compare access times differed once again from those used in sections 3.3.6 and 3.3.7. The building of the model involved several stages, appendix D provides details on how this undertaken.

Using the origin and destination details plotted while calculating journey times in section 3.3.6. This data was used to compare travel times to three destinations, Temple Quay in central Bristol, Whiteladies Road in Bristol's West End and Severnside Industrial Estate located in Avonmouth, using three different transport scenarios. The first recorded travel times using buses only, the second used the SBL only and the third used a hypothetical change in rail frequencies.

4.3.9 Limitations of Modelling techniques and outputs within Study

There were many limitations of the methodology used within this section that ultimately impaired this study's ability to fulfil its aim of completing section 3 of the modelling process.

Such problems include the inability to restrict walking distance once the road network has been accessed. This has resulted in Accession recording levels of access for households that may walk throughout the whole study period, gaining access to the destination without the need for public transport.

Such walking trips lasting up to an hour are highly unlikely from an individual's perspective with an alternative transport mode sought.

Restriction can be set to restrict the maximum walking distance in gaining access to the network, but this had little or no effect in this particular study due to the urbanised environment analysed.

Further concerns regard the rather optimistic walking access times; analysis has found that physical boundaries such as rivers or railway lines are sometimes ignored. Topography is also ignored, amending individual walking links in respect to their contours could rectify this but such action would involve many additional hours. Which may not be fully justified in the end results.

4.4.1 Secondary data providing attitudes towards use

The two main sources of secondary data collection with regards to attitudes towards use of the SBL are comments made by passengers during the local authority annual rail survey and the opinions voiced during the focus groups organised by the transport consultants Faber Maunsell.

In 2003 Faber Maunsell were commission to undertake a study examining the potential of the SBL. The report was entitled '*The Bristol – Avonmouth - Filton Rail Routes Study'.* Part of the preliminary stage of their study comprised of conducting six focus group sessions of users and non-users. Each consisted of between six to eight people. The findings of the focus groups form an important insight into peoples travel habits, attitudes and awareness of the line.

It is hoped that primary data collected as part of the questionnaire will confirm certain view and attitudes towards the SBL.

4.4.2 Primary data collected measuring attitudes towards use

It is extremely important to gain an understanding of the existing attitudes towards the SBL relevant to the time of writing this dissertation. The secondary sources provide an invaluable record of users and non-users attitudes, but analysis of existing attitudes provides an insight into any change over the years.

To maximise available time and recourses a questionnaire focusing on one station environment was adopted. Questionnaires were distributed by hand door to door collecting completed questionnaires a few days later.

4.4.3 Questionnaire Design

The questionnaire was designed on the basis of self-completion please refer to appendix E. The questions were designed to maximise the amount of information provided by the respondent in as little inconvenience as possible. Open-ended questions were avoided due to limited analysis time available. A small pilot survey of 15 individuals was completed before finalising the questionnaire design.

Following advice by Robson (2004), the questionnaire and short covering note were designed using a large typeface in clear jargon free English. No personal information was requested, as the location of the household would be recorded when distributed. Information regarding the frequency and reasons for using or not using public transport were explored before the respondent was asked to score five statements directly related to the SBL.

A small diagram illustrating the stations along the SBL was included to introduce the line to people that might be unfamiliar with the service. The options provided for using and not using the line were input in at random to encourage the respondent to take an additional moment before answering, likewise for the positioning of the scoring statement.

Details on the questionnaire study site are provided within appendix F.

4.4.4 Questionnaire Distribution

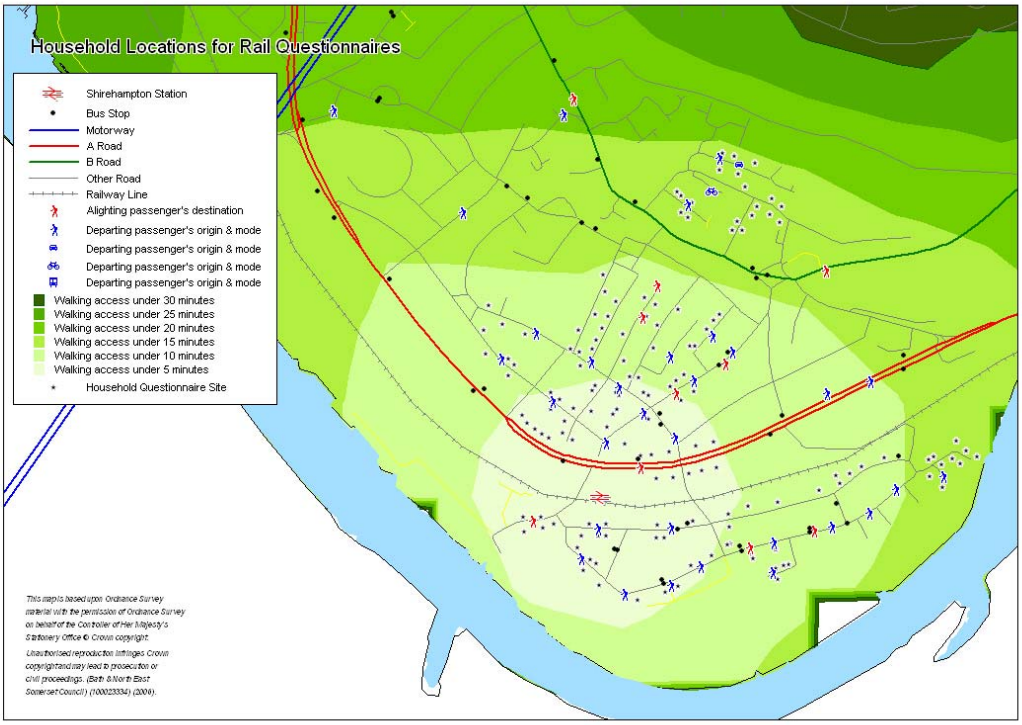
150 questionnaires were delivered to households within Shirehampton. The physical barrier created by The Portway in addition to walking distances created using Accession during stage 2 of the modelling process formed the basis of distribution for the household questionnaires.

The stars illustrated on figure 8 refer to the location of each household that received a questionnaire. The locations were decided at random after a visit

in preparation of the survey. Households were limited to 5 per road section. A section of road is created between road links.

The distribution of questionnaires was designed to reflect the housing distribution and the origin and destinations of rail users that completed the local authorities rail survey between the years 2002 and 2004. The questionnaire distribution split was 90 north of The Portway and 60 to the south. For households in the northern section, 30 were delivered to households within a 5 minutes walk, 40 were delivered within a 10 minutes walk and 20 within 15 minutes walk. For households in the south, 30 were delivered to households within a 5 minutes walk, 20 were delivered within a 10 minutes walk and 10 within 15 minutes walk.

Figure 8



The questionnaires were distributed on Thursday night with a covering letter explaining that collection would be on the following Saturday. By pre-informing households of the follow-up visit it provided the opportunity to complete the questionnaire in advance and leave it outside for collection. If a household did not leave the questionnaire outside, their front door would be

knocked. Should the householder have failed to complete the questionnaire in advance the simple design of the questionnaire provided the opportunity for a doorstep interview to be undertaken taking only a few moments of the householder's time.

4.4.5 Limitations of Questionnaire

The results of the questionnaire would have been more valuable if a greater sample size had been used, or if the questionnaire was conducted using the same methodology but at a number of different locations.

A very small percentage of the questionnaires returned did not complete the scoring section correctly, ticking the points they agreed with instead of scoring each statement individually. For the most part the questionnaire was completed successfully.

4.5.1 Primary Data collected through observed findings

The primary aim of the observed data collection was to gain an understanding from a first time rail users perspective of accessing and using the station facilities along the SBL. An existing local authority rail facilities audit sheet was used to reduce any potential bias or lack of consideration towards certain issues that may not have been immediately clear from the author's perspective. A copy of the audit sheet is provided within appendix G. All Rail Audits were conducted within a few days of each other in October 2005.

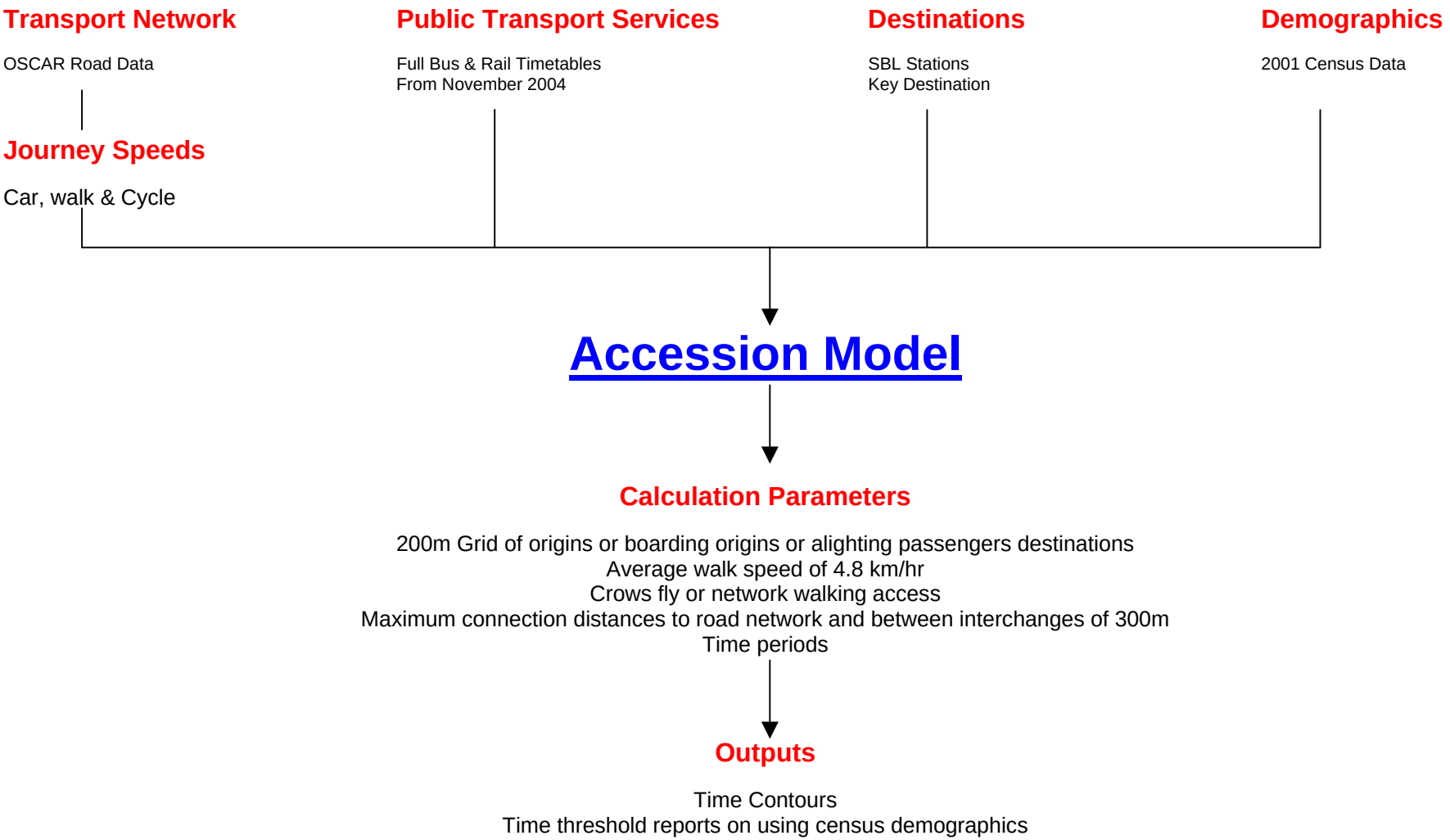
To ensure consistency within the audit process a high number of digital photos taken during the audit complementing notes taken at the time.

The results of the rail audit provided a familiarisation with the stations environments and the communities they serve. The observations made will be used to validate comments made by rail users during the rail survey, comments made at Faber Maunsell's focus groups and the questionnaire undertaken within this study.

4.5.2 Limitations of observed findings

The reliance on only one participating observer is not ideal due to inherent bias towards his or her own experience or expectations of the station facilities. The use of an existing rail audit form aimed to alleviate this problem by increasing awareness to other individuals needs.

Figure 7


Transport Network
OSCAR Road Data
Public Transport Services
Full Bus & Rail Timetables
From November 2004
Destinations
SBL Stations
Key Destination
Demographics
2001 Census Data
Journey Speeds
Car, walk & Cycle
Accession Model
Calculation Parameters
200m Grid of origins or boarding origins or alighting passengers destinations
Average walk speed of 4.8 km/hr
Crows fly or network walking access
Maximum connection distances to road network and between interchanges of 300m
Time periods
Outputs
Time Contours
Time threshold reports on using census demographics

Chapter Five – Results and Discussion

Summary

The overarching aim of this dissertation is to understand the role the Severn Beach Line has in providing for the community it serves. This chapter discusses the results provided through the triangulation of research methodologies outlined within chapter 3 relating to the three distinct research questions of assessing Existing, Potential & Attitudes of use towards the line.

5.1. *What is the existing level of use and passenger access pattern of the Severn Beach Line stations?*

By fulfilling objectives 1 and 2 of this dissertation it provides the relevant basis of understanding needed to answer the question of existing use.

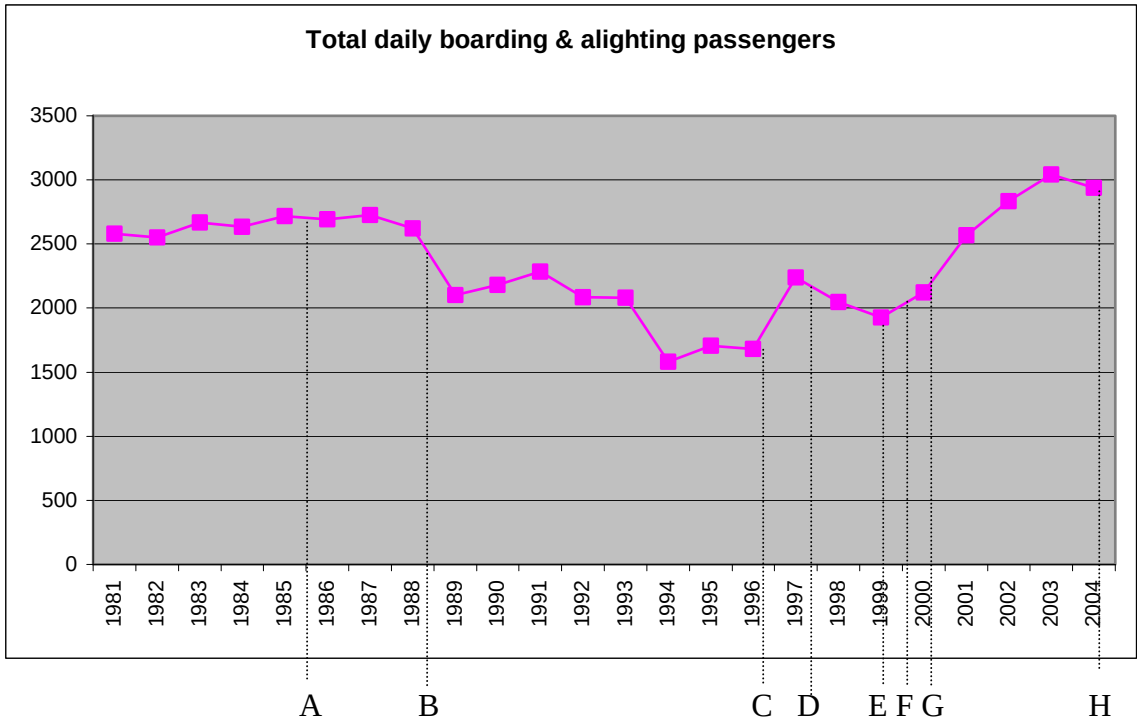
5.1.1 Historical analysis of total daily passenger use

Historical data supplied by the annual rail census show that total daily passenger use for the Severn Beach line has increased 14% since records began in 1981 (including SBL passenger use at Temple Meads). Table 2 illustrates this data. Passenger use between 1981 and 1988 is consistent year on year, from 1988 daily passenger counts declined until 2001 when they returned to the level experienced during the 1980's. Since 2001 passenger levels have grown year after year with 2004 providing a slight decline in use.

The reasons for the decline in daily passenger use between the years 1988 to 2001 is unclear. It may have been a result of a number of contributing factors including; changes in survey methodology, amendments to rail timetable or service frequencies, ineffective advertising campaigns, increased competition from buses following deregulation during the mid 1980's, fears for safety

following a number of rail crashes, engineering works or the effects of rail privatisation and the subsequent increase in rail investment. By plotting these factors onto graph 1 the picture becomes a little clearer as to why daily passenger use has fluctuated during this period.

Graph 1



Factor A represents the 1985 Transport Act and subsequent bus deregulation. This change in legislation does not appear to have had an immediate effect on daily passenger numbers. This however was not the case by 1989, although purely speculative, it could be assumed that direct competition between bus and rail did not existed until this time. Passenger numbers may have also declined due to fears over rail safety following the 1988 Clapham Rail Disaster (B) in which 35 people died.

Between 1988 and 1996 the rail industry suffered chronic under investment, this coupled with changing timetables or service frequencies may have contributed to these years of declining passenger numbers. In 1996 (C) the Railways industry became privatised resulting in an influx of investment into

the service. Passenger use along the SBL grew from this point returning to a daily passenger level not experienced for several years.

A further factor in the number of passengers recorded at this time is the potential change in methodology used to record daily passenger flows. In 1996 Avon County Council cessed to existed, replaced by the four unitary authorities of today. Responsibility for data collected for the majority of the SBL switched to Bristol City Council. A different method may then have been employed from this point resulting in the increase in passenger totals in 1997.

Daily passenger rates steadily declined between 1998 and1999. Fears over rail safety may once again have been a factor, following the 1997 Southall (D) and 1999 Paddington (E) Rail Disasters killing a total of 38 people.

In 2000 the Government produced its 10 Year Transport Plan (G) in which it pledged £60 billion for rail investment over the next 10 years, with hope of encouraging a further 50% more passengers. This high profile endorsement of the rail industry and raise in profile may have facilitated the steady rise in daily passenger flows. An inadvertent consequence of the Governments rail investment and engineering resulted in the decline in passenger numbers for the year 2004 (H). Wessex Trains confirmed the consequences of the engineering works through correspondence during the research process.

"*The year 2004 suffered from the effects of engineering works on the line, plus the closure of the line for diversionary trains when the works at Filton took place. We have found that engineering works particularly have a bad affect on this line and a long-lasting effect*."

(Wessex Trains 2004)

5.1.2 Analysis of total annual passenger use based on ticket sales

A further source of data relating to existing passengers use is that of annual ticket sales. Analysis of the annual ticket sales validates the steady growth trend between 2000 and 2003 and decline in 2004. Table 2 provides data related to ticket sales supplied by Wessex Trains for the annual total number of journeys made to and from stations along the SBL. In the absence of Temple Meads where there is no data is available, Clifton Down is consistently the most popular station along the SBL.

Table 2

Location	2000 Journeys	2001 Journeys	2002 Journeys	2003 Journeys	2004 Journeys	2005 Journeys
Severn Beach	38,082	38,229	35,780	36,518	29,612	29,690
St Andrews Rd	4,969	4,132	3,450	3,017	4,207	4,966
Avonmouth	36,761	36,594	40,018	40,110	36,118	28,717
Shirehampton	32,423	38,500	44,645	37,584	31,659	29,651
Sea Mills	23,047	27,464	32,675	34,649	34,104	34,129
Clifton Down	92,405	102,499	122,770	187,460	140,929	142,329
Redland	34,088	32,004	39,960	50,310	47,286	50,258
Montpelier	46,936	55,074	61,581	62,322	57,343	65,347
Stapleton Rd	63,795	67,669	77,041	77,708	70,519	74,257
Lawrence Hill	46,662	47,493	52,553	53,989	53,282	46,551
Total	**419,168**	**449,658**	**510,473**	**583,667**	**505,059**	**505,894**

Total Annual Passenger Growth from 2000 base year

Annual Census recording daily totals	+19%	+21%	+31%	+28%	N/A
Ticket sales recording annual totals	+7%	+22%	+40%	+20%	+21%

It is of interest that the general trend of passenger growth matches that recorded within the annual census, however ticket sales highlight large differences in rate of passenger growth. When comparing the two collection methods 2002 is the only comparable year for passenger growth.

The annual census creates a smooth line of growth with recorded passenger growth ranging between a 11% difference over the 4 years. The smooth

growth in passenger numbers recorded in the census is in contrast to the annual ticket sales where large fluctuations in passenger growth are reported ranging between a 33% difference over the 5 years.

There could be several reasons for this reported difference in passenger use: Annual passenger use is subject to long term factors effecting the service such as engineering works, which might not have such an effect the annual daily census. There may also have been inconsistencies in the collection method used by Wessex Trains for ticket allocation (Please refer to section 4.2.2.1).

Although differences occur in the rate of total passenger growth both collection methods confirm the trend of passenger growth from 2000 with a decline occurring in 2004 due to engineering works. The long-term effects of these works is at the moment an unknown quantity, although the annual ticket sales for 2005 saw a very slight increase on the 2004 level. Unfortunately this small increase cannot be validated against the annual census data, as this data was not available at the time of writing.

5.1.3 Analysis of individual station performance using annual ticket sales

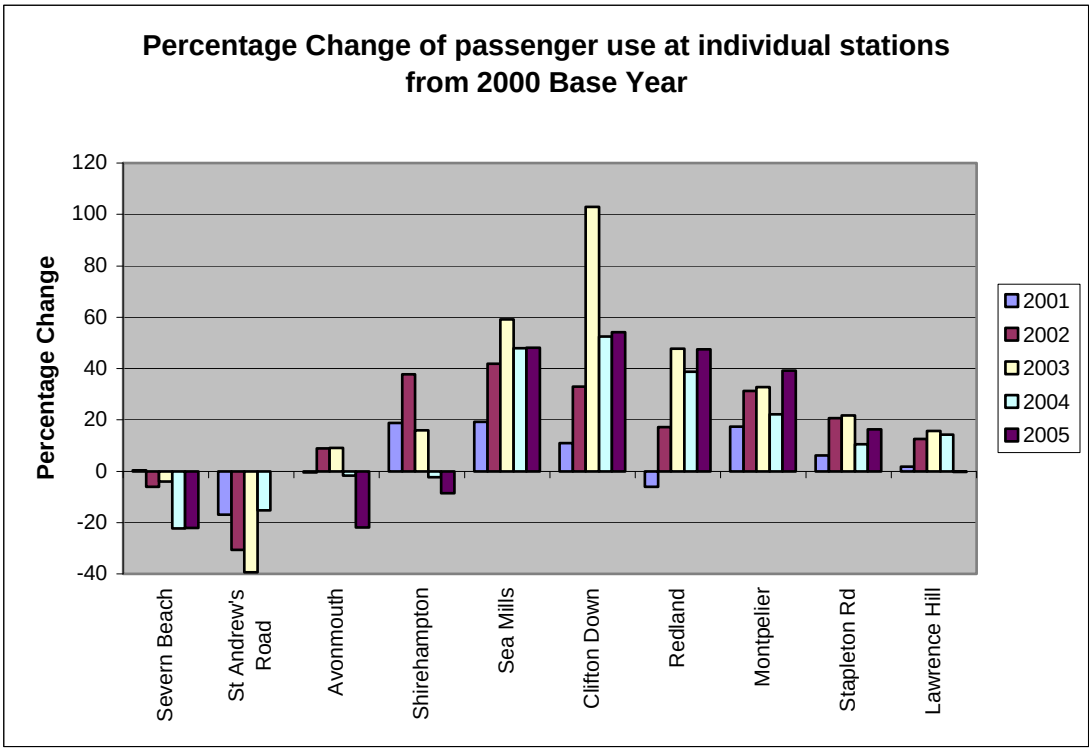
Analysis of the total passenger use discussed with section 4.1.1 and 4.1.2 provided a valued overview of the SBL, but what is not understood is if this overall growth is consistent among all stations. Graph 3 is based on data contained within table 2 and illustrates the changing level of passenger demand from the 2000 base year.

It is clear from this graph that passenger use varies according the individual station in question. Passenger use has declined significantly in Severn Beach and St Andrews Road stations, although the 2005 figure recorded for St Andrews Road returns it to its 2000 base year level. Although not clear why this has occurred it can be assumed that the replacement bus service operating between these stations and Avonmouth must be a contributing

factor. The replacement bus service may also be the related factor in the decline in passengers using Avonmouth in 2005, although it is not clear why the trend experienced at Severn Beach and St Andrews Road is not mirrored. The engineering works may also have had an effect.

In contrast to the stations at the north western end of the line, passenger use between Sea Mills and Lawrence Hill has remained fairly constant. The only anomaly occurring at Clifton Down in 2003, which recorded an increase of over 100% from the 2000 base year. This huge increase in passenger use would have has a significant effect on the overall passenger figures for the line and may provide part if the reason for the reported 40% increase in passenger use in 2003. It would also have a major effect on the subsequent years performance in which passenger use reported a 20% decline in growth on the previous year.

Graph 2



5.1.4 Analysis of service daily demand using census boarding and alighting data

Table 2 and graph 2 provide a valued insight to the most popular stations along the line based on ticket sales; unfortunately there is separation between inward and outward passenger flows. The annual census can provide this data as boarding and alighting passengers are counted separately.

From this data it is possible to recreate the passenger flows along the SBL throughout the day. The level of train capacity based on the total number of seats available can then calculated providing a valuable insight into the daily passengers flows and demands placed on the existing service. This form of analysis could potentially be used to justify additional services due to level of demand placed upon the different services operating along the line.

The main rolling stock type used along the SBL over the last threes years are the Class 143's units. These are the favoured rolling stock due to short stopping pattern of the SBL and the relatively high acceleration rates provided by these units. The Class 143 provides seating for 103 passengers. For the purposes of this section it is assumed that the rail services operate between Temple Meads and Severn Beach throughout the whole day.

Figures 9 and 10 provide details of the 2004 inbound and outbound passenger flows illustrated as a percentage of train capacity. The number stated relates to the number of passengers on the train upon leaving the station. The pattern illustrated within these figures is consistent with those from 2002 and 2003.

Figure 9 illustrating inbound Services from Severn Beach to Temple Meads highlight the pressures placed upon the service during the morning and evening peak. For the vast majority of the time the service operates at less than 20% capacity. The 07.21 and 08.16 are the most popular services providing access into central Bristol at 07.56 and 09.04 respectively. Between

Montpelier and Temple Meads the 07.21 operates in excess of the number of seats available to passengers. The demand placed on this over subscribed service raises potential fears over passenger safety and potential lack of revenue (via the guards inability to serve all passengers during the short stopping pattern) adds weight to the argument of providing an additional peak hour service (section 1.1.4) arriving at Temple Meads before 9.00. Demand in the afternoon is less acute and occurs mainly between Clifton Down and Montpelier stations.

Figure 9

Inbound Services

Service Start Time	Severn Beach	St Andrew Road	Avonmouth	Shirehampton	Sea Mills	Clifton Down	Redland	Montpelier	Stapleton Road	Lawrence Hill	Temple Meads
06:33	4	3	7	7	8	12	22	29	31	28	28
07:21	8	9	14	24	46	54	82	104	109	117	117
08:16	6	6	20	29	42	43	58	76	77	78	78
09:50	7	7	7	8	14	8	8	16	23	31	31
10:40	1	1	3	5	7	8	8	9	11	14	14
11:40	2	2	8	8	9	15	13	18	14	14	14
12:40	3	3	4	7	10	13	15	14	10	8	8
13:40	0	0	0	3	5	4	5	5	5	5	5
14:40	2	2	11	10	8	10	11	37	13	9	17
15:40	1	1	3	3	3	16	25	29	18	12	12
16:45	2	3	16	21	22	53	58	57	31	26	26
18:30	1	3	6	6	6	12	15	10	7	4	4
19:38	1	1	2	4	4	4	4	7	2	2	2
20:54	1	0	1	8	6	7	6	6	2	2	2
22:10	1	3	3	4	4	4	7	6	4	2	2

Key

- <20% Capacity
- Between 20 & 40% Capacity
- Between 40 & 60% Capacity
- Between 60 & 80% Capacity
- Between 80 & 100% Capacity
- >100% Capacity

Figure 10 illustrates outbound services operating between Temple Meads and Severn Beach. Demand on the service differs from the inbound service. The majority of demand in the morning peak occurs on the 08.05 service between Temple Meads and Clifton Down, peaking between Stapleton Road and

Redland. Further research has found that that this demand stems form the provision of secondary education at Montpelier and Redland stations. Demand during the evening peak occurs on a number of trains unlike the two service dominance of the inbound morning peak services.

Figure 10

Outbound Services

Service Start Time	Temple Meads	Lawrence Hill	Stapleton Road	Montpelier	Redland	Clifton Down	Sea Mills	Shirehampton	Avonmouth	St Andrews Road	Severn Beach
05:53	1	2	5	5	5	4	3	4	3	2	2
06:40	3	4	10	11	10	9	9	10	4	2	2
08:05	30	48	117	92	57	17	21	15	3	1	1
09:05	17	21	39	36	28	0	2	5	9	8	1
10:31	14	17	20	14	12	6	6	7	2	2	2
11:31	5	11	13	14	10	9	11	6	3	3	3
12:31	6	5	9	8	7	3	4	4	2	2	2
13:31	13	11	10	9	10	4	3	1	2	2	2
14:31	11	11	11	11	10	8	8	4	1	1	1
15:31	35	37	36	16	15	12	8	3	1	1	1
16:32	39	38	37	29	26	21	15	8	8	8	8
17:54	93	92	82	53	31	23	18	8	5	5	5
19:02	29	28	26	17	10	7	8	3	2	2	2
20:06	7	6	6	6	3	1	1	1	1	1	1
21:35	8	7	6	5	4	5	8	5	4	5	5

Key

- <20% Capacity
- Between 20 & 40% Capacity
- Between 40 & 60% Capacity
- Between 60 & 80% Capacity
- Between 80 & 100% Capacity
- >100% Capacity

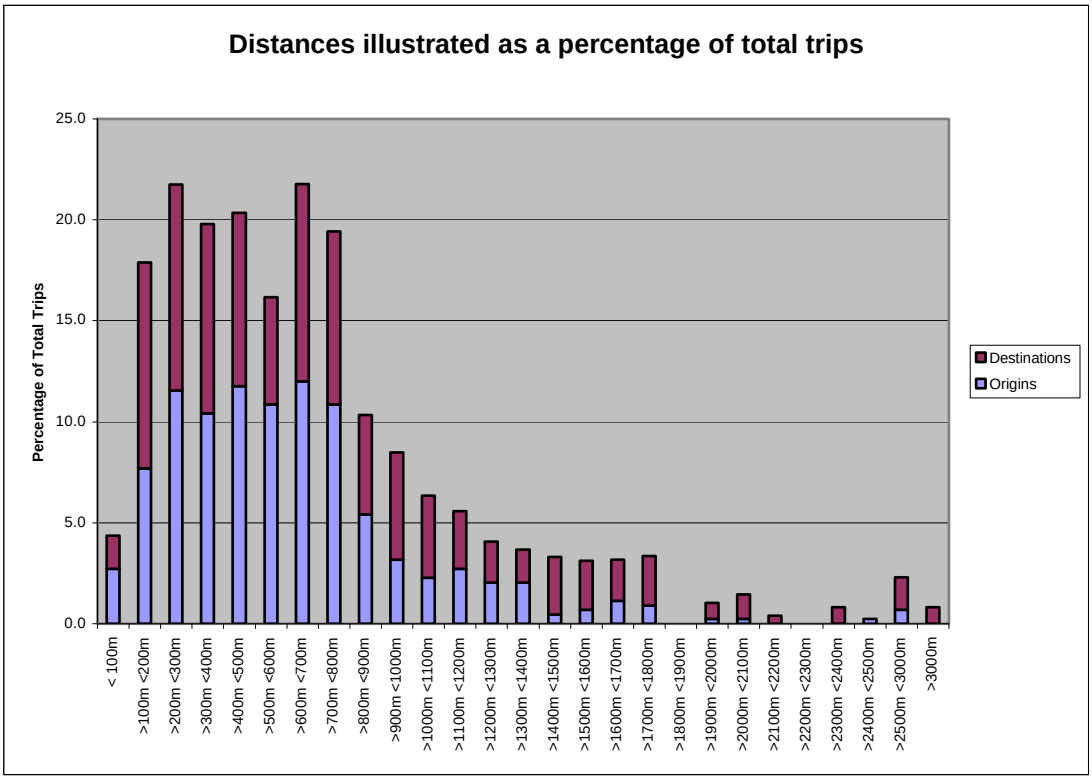
It is interesting to note that the SBL operates at less than 20% capacity at all other times except peak travelling times, when increased demand is placed on the service while it serves the inner-city. With regards to the 8.05 outbound service demand never exceeds 20% for station past Clifton Down. This lack of demand must be a cause for concern to the train operating company.

5.1.5 Passenger access patterns of existing passenger use

In providing evidence of the existing use of the SBL section 4.1 this section moves away from the quantitative data contained with the annual census or ticket sales and analyses the origin and destination data of existing passengers collected via the annual rail survey between the years 2002 and 2004. It is acknowledged that the data analysed within section 4.1.5 fails to provide a complete account of the existing passenger access pattern but it represents the most accurate data available.

Walking accounts for 89% of all passenger trips made to stations along the SBL and 87% of all passengers trips from stations along the SBL. Graph 3 illustrates the walking trip distances as a percentage of total walking trips made to and from all stations along the SBL.

Graph 3



All distances have been calculated using an average walking speed of 4.8km/h, equating to 80m per minute or 800m per 10 minutes. The data contained within Graph 3 clearly illustrates that the majority of walking trips occur within the first 10 minutes walk to or from a station. The number of walking trips made between 800m and 1600m (10 to 20 minutes) declines steadily in relation to the distance from the station. Walking trips over 20 minutes are more sporadic suggesting this distance is unacceptable to most passengers. It is also interesting to note that greater distances are walked from stations to destinations rather than from origins to stations, 78% of trip origins and 64% of trip destinations are within 10 minutes walk of the station, and 97% of trip origins and 90% of trip destinations are within 20 minutes.

Individual station patterns are also of great interest as they provide further insight into access behaviour, confirming if access patterns are consistent among all stations or if the data within graph 3 is skewed by the more dominant station locations.

The following sections analyse each station individually and refer to supporting appendices providing a graphical output for each stations recording passenger origin or destination locations. Potential trip attractors such as major employers or schools are also provided, although not discussed within this section they will be referred to subsequent sections of this study.

Due the relatively small data sample and the dominance of walking, only walking time contours have been produced.

Due to a data handling error and accidental deletion, all values stated as average relate to the mean. It is acknowledged that this is far from ideal due to the small data sample as it may be subject any extreme values within the data set. The median value would have been the preferred average value stated.

5.1.5.1 Severn Beach

Please refer to appendix H for the walking access map. Demand for access to or from this station originates manly in the suburb of Severn Beach, with exceptions from the neighbouring village of Pilning and Severnside Industrial works. Walking is the dominant mode of travel. The average walking time for boarding passengers is under 5 minutes and 9 minutes for alighting passengers. The increased alighting figure recorded is a result of the three-outlier destinations situated outside Severn Beach.

5.1.5.2 St Andrews Road

Please refer to appendix I for the walking access map. Due to the very small sample size there are few meaningful comments to be made.

5.1.5.3 Avonmouth

Please refer to appendix J for the walking access map. The origin location of boarding passengers is dominant in the residential areas surrounding the station, with the vast majority of passengers walking no longer than 10 minutes. The pattern for alighting passengers varies tremendously with many passengers walking in excess of this figure accessing the neighbouring industrial or commercial estates. This pattern is reflected in the average walking distance recorded, 8 minutes for boarding passengers and 12 for alighting.

5.1.5.4 Shirehampton

Please refer to appendix K for the walking access map. Origin and destination locations for passengers accessing Shirehampton station are among the lowest for the whole line. An average of 7 minutes is recorded. Due to the short distance between Avonmouth and Shirehampton it appears

the M5 Motorway Bridge acts as a natural boundary for both of these stations, passengers from the north use Avonmouth and south use Shirehampton.

5.1.5.5 Sea Mills

Please refer to appendix L for the walking access map. Similar to other stations the vast majority of journeys originate within a 10-minute walk of the station. Sea Mills does however record a number of passengers walking in access of 20 minutes, equal in length to some car journeys made. Regardless of this an average walking time of 9 minutes is calculated.

5.1.5.6 Clifton Down

Please refer to appendix M for the walking access map. Clifton Down is the busiest station along the SBL; and the only station recording a greater number of inbound passengers. Station access is dominated by its location, providing numerous employment, retail or leisure opportunities. Due to the topography of the area Clifton Down station is located half way up a large hill, increasing in height until 'The Downs' are met from the City centre. This may explain the pattern between boarding and alighting passengers. The origins of boarding passengers circle the station and are concentrated within a 10-minute walk. The destination of alighting passengers is more fixed to the main road (Whiteladies) before fanning out towards the University of Bristol and the northern section of the City centre. This pattern may be a result of the topography i.e. less effect is exerted walking down hill, or this may be result of the increased traffic congestion experienced in this area, with walking the preferred choice due to the potential additional time costs incurred through road based transit. Surprisingly the average walking times for passengers alighting at the station is still only 9 minutes compared to 7 minutes for passengers boarding the service.

5.1.5.7 Redland

Please refer to appendix N for the walking access map. Redland station has a very interesting passenger access pattern, as with all stations walking dominates recording an average walking time of 7 minutes for boarding passengers and 10 minutes for alighting passengers. However, Redland records the greatest number of access journeys made by car. Not all car journeys are illustrated on appendix N due to the distance many of them travel. A potential reason for the number of car users accessing station the rise in costs of inner city car parking compared with the cost of the rail fair and free street parking offered on the streets surrounding Redland station. Graph 2 records consistent levels of passenger use from 2000 and figure 9 illustrates the level of demand in the morning peak. Increased car parking charges coupled with increased employment opportunities at Temple Quay (located next to Temple Meads) may be fuelling this level of demand.

5.1.5.8 Montpelier

Please refer to appendix O for the walking access map. Montpelier station like most other stations is dominated by passenger's origins and destinations being located in the immediate vicinity of the station. Montpelier and St Andrews residential districts provide the majority of the passengers. In addition to these Colston's Girls School and Fairfield Schools generate demand. The average walking distance is 7 minutes for boarding passengers and 8 minutes for alighting passengers.

5.1.5.9 Stapleton Road

Please refer to appendix P for the walking access map. The M32 provides the boundary for the majority of passengers, with the residential areas of Lower Easton and Whitehall providing the majority of origins or destinations for passengers at Stapleton Road. Recording an average of 7 minutes for both boarding and alighting passengers.

5.1.5.10 Lawrence Hill

Please refer to appendix Q for the walking access map. Lawrence Hill's passenger distribution is dominated by access provided via Church Road to the east of the station. Lawrence Hill is served by very good bus links operating along this Road linking the City Centre and the East Bristol, however the SBL provides a public transport link not otherwise provided. A potential consequence of this are the extended walking distances recorded at Lawrence Hill. The average length of journey recorded by boarding passengers is 10 minutes; the largest of all stations and the average journey for alighting passengers is 9.

The individual access patterns confirm the data contained within graph 3, recording the majority of station access occurs via walking to or from distances within 10 minutes of a station. This section has provided a comprehensive account of existing passenger use along the SBL, confirming that passenger use has recovered and now exceeds the level of use previously recorded before deregulation of the local bus service. It has also shown that this increase in demand is not consistent throughout all stations but in stations within the inner city region, with the majority or travel occurring during the commuting peaks. Research into actual passenger journeys has found that walking is the dominant mode of transport with journeys on average not lasting greater than 10 minutes.

5.2 Using the accessibility tool Accession, what is the potential role of the Severn Beach Line in providing an alternative to buses for households assessing major employment and leisure sites within Bristol?

By fulfilling objective 3 of this dissertation it provides the relevant basis of understanding needed to answer the question of potential use

Before analysis of the potential role of the SBL can be fully explored it is essential to examine the existing trip attractors located within the vicinity of each of the station.

5.2.1 ndividual stations 'value of attractiveness'

If it is assumed that the majority of access trips continue to be dominated by walking. Section 4.1.5 commented that most walking trips lasted no longer than 20 minutes to or from the station, with the vast majority lasting under 10 minutes. Appendix R lists all trip attractors within a 20-minute walk of each station based on the walking access contours time maps provided in appendices H to Q. Trip attractors are based on the facilities and key services used to calculate the Government's core accessibility indicators, part of the LTP2 process.

In order to apply a value to a station to reflect its level of attractiveness to a potential rail user a 'value of attraction' has been calculated for each station. A simple scoring system has been developed to create the 'value of attraction'. Each trip attractor located within a 5-minute walk of a station scores 15 points, within 10 minutes its 10 points, 15 minutes its 5 points and 20 minutes its 1 point. An overall value is then assigned to each station based on its scores.

Table 3 provides the 'value of attraction' for each station. Clifton Down is most attractive station location providing a vast number of trip attractors within walking distance of the station. This further validates the comments made

within section 4.1.5.6 and confirms Clifton Down as the most popular station along the SBL.

If the individual fields of attractors are further analysed; Clifton Down and Redland provide access to the greatest number of health facilities. Redland and Montpelier provide access to the greatest number of education facilities. Clifton Down and Avonmouth provide the greatest access to major employers along the line. Clifton Down, Redland and Montpelier each provide a similar access to leisure facilities, Redland scoring particularly high due to its location between the two other stations with walking facilitating access to both main sets of leisure facilities located along Whiteladies and Gloucester Roads. Clifton Down also provides the greatest number of retail and other attractions. It should be noted that although Temple Meads does not form part of this analysis the attractions provided by this station are substantial especially in respect to employment, leisure and retail.

Table 3

Station Name	**Health**	**Education**	**Major Employment**	**Leisure**	**Retail**	**Other**	**Overall Score**
Severn Beach	0	0	0	0	0	15	**15**
St Andrews Road	0	0	17	0	0	0	**17**
Avonmouth	10	0	22	25	10	0	**67**
Shirehampton	30	1	0	20	10	10	**61**
Sea Mills	21	0	0	1	0	15	**36**
Clifton Down	155	17	41	35	40	26	**314**
Redland	97	40	15	36	12	0	**190**
Montpelier	51	25	7	35	11	0	**129**
Stapleton Road	40	1	17	1	15	0	**74**
Lawrence Hill	31	10	10	11	10	15	**87**

5.2.2 Potential market share of each station

Having identified the attractiveness of each of the SBL stations a further element needing to be considered is the potential market for new rail users. This can be calculated either through the number of potential boarding passengers calculated by the number households or households without access to a car or van, that can access each station within acceptable walking distances, or the number of potential alighting passengers that could be generated due to the attractiveness of the station location. All data used within this section is based on 2001 national census data.

Research undertaken within section 4.1.4 has found that most rail use occurs during the morning and evening peaks; it would be safe to assume that these trips are generated through the need to travel to work. Built upon research undertaken so far within this study the number of jobs has been calculated in relation to location of each station and the level of employment within set walking distances of each station.

5.2.3 Household Access

Using the walking time contours and the average walking distances calculated within section 4.1.5, the total number of households has been calculated in relation to each station's walking access times. Table 3 provides this information. An average of the daily passenger use has also been included to provide an insight into the exiting level of use

It must be noted that the number of households stated is not comparable with existing daily use of individuals because there is no knowledge of the number of individuals residing in each household. However the levels of access from this table can be compared with table 4 providing data on the level of access provided to households without access to a car. A further consideration is the potential for households will be double counted if they are located within 2 walking time frames, i.e. 20 minutes from Clifton Down but 5 minutes from

Redland. The fields highlighted yellow provide the potential market share if existing walking distances are continued.

If it is assumed that one individual resides in each household and the existing walking pattern continues, the increase in rail use is substantial with potential increases in excess of 90%. The two exceptions are Severn Beach and Avonmouth where a high proportion of households already use the SBL. It is unrealistic to assume that such a level of demand would exist at each station. Data contained with table 1 shows that commuting outside the Bristol City boundary is at least 25% in all communities served by the line and existing rail use accounts for only 4% of journeys to work.

If this 4% figure is applied to the potential market for each station based on existing services it results in a potential increase of 1111 passengers using the line daily basis equating to approximate 250,000 annual passenger trips. Faber Maunsell 2003 study estimated that additional peak services would generate an increase of 102,281 passenger trips. Suggesting that the figures quoted here are rather optimistic, in some cases far greater than existing use, but what is undeniable is the potential the line has to serve community. To create such a level of demand changes in timetabling and an additional peak service should be considered coupled with a clever marketing campaign informing households of what the line could do for them.

Table 4

	Average Rail Boarders from Census 2002, 2003, 2004	Average Walking time for Passenger Boarding Service	HHs 5 min walk	HHs 10 min walk	HHs 15 min walk	HHs 20 min walk	Potential Market Increase	Number of potential passengers created by a 4% increase in market share
Severn Beach	50	5	103	234	361	493	51%	**4**
St Andrews Road	7	0	40	134	268	434	96%	**7**
Avonmouth	107	8	74	229	522	1095	65%	**12**
Shirehampton	62	7	238	1224	2370	3065	96%	**58**
Sea Mills	93	9	191	572	1626	2872	88%	**31**
Clifton Down	189	7	1340	4406	9347	13833	97%	**230**
Redland	134	7	1123	4947	10589	16897	98%	**243**
Montpelier	198	7	1260	4627	9362	14620	96%	**235**
Stapleton Road	196	7	1020	2750	5458	9393	95%	**151**
Lawrence Hill	90	10	666	2833	6345	10133	97%	**140**

5.2.4 Level of potential access to households without access to a car or van

Many of the same warnings and calculation methods stated within the previous section apply to the data contained within this. There is however one major difference due to circumstances these households do not have the same level of choice regarding their transport options and may be more reliant on the service offered by the SBL; conversely they may not have the need to use the SBL.

Table 5 provides information for this potential market sector. The column relating to average daily passenger flows and potential market share have been excluded this table.

Table 5

	Average Walking time for Passenger Boarding Service	HHs no car within 5 min walk	HHs with no car within 10 min walk	HHs with no car within 15 min walk	HHs with no car within 20 min walk	4% increase in market share
Severn Beach	5	14	31	47	64	**1**
St Andrews Road	0	10	34	69	114	**2**
Avonmouth	8	19	59	134	300	**3**
Shirehampton	7	55	331	697	928	**15**
Sea Mills	9	27	106	293	516	**5**
Clifton Down	7	376	1197	2453	3670	**63**
Redland	7	280	1268	2938	4856	**62**
Montpelier	7	414	1614	3125	4509	**81**
Stapleton Road	7	396	1089	2484	3643	**59**
Lawrence Hill	10	319	1262	2705	4171	**63**

As table 5 illustrates the level of potential access to the SBL increases dramatically between Clifton Down and Lawrence Hill, this is as a result of the increase in non-car ownership in approximation to the city centre. A further product of living closer to the city centre is the increase in public transport options available to individuals, and the potential decrease in need to use the SBL. Although the existing dispersed passenger pattern for Lawrence Hill (appendix Q) does suggest that there is a strong need to use the line throughout quite a dispersed community. If the 4% increase in potential passenger use is totalled it is estimated that the SBL has the potential to provide for an additional 354 daily passenger trips, equating to just under a third of the potential total daily trips calculated for all households.

Sections 4.2.3 and 4.2.4 have both calculated the potential base market for boarding passengers but what has not been analysed is the potential for trip attraction creating the desire to use the line. Section 4.2.5 will now discuss this potential for increased use in relation to access to employment.

5.2.5 Level of potential access to employment providing by SBL

Table 6 provides details of the outputs created within Accession, the fields shaded yellow refer to the existing walking patterns of alighting passengers and therefore it is assumed these relate to acceptable distance for rail passengers to walk. The same 4% potential passenger increase has also been included.

The potential for additional use on the SBL in providing access to employment equates to a potential of 1413 daily trips or approximately 300,000 annual trips. Similar to the household access figures these figures are very optimistic and highly unlikely to be realised considering the comments made within chapter 2 with regards to the considerations of public transport use, but they do highlight the potential of the service in providing for the employment market.

To further highlight the potential of the line, graph 4 illustrates the percentage of all jobs within the City of Bristol (inc Pilning & Severn Beach ward) in relation to the calculated walking distances from each station.

Table 6

	Average Rail Alighters from Census 2002, 2003, 2004	Average Walking time for Passenger Alighting Service	Number of Jobs 5 min walk	Number of Jobs 10 min walk	Number of Jobs 15 min walk	Number of Jobs 20 min walk	Number of Jobs 25 min walk	Number of Jobs 30 min walk	Number of potential Trip Attractors under 20 minutes***	Potential Market Increase	4% increase in market share
Severn Beach	41	9	85	205	336	476	659	834	2	85.862069	**11.6**
St Andrews Road	14	14	310	1062	2118	3372	5226	6470	5	99.598854	**139.6**
Avonmouth	103	12	433	1273	2652	4208	5061	6058	13	97.306485	**174.32**
Shirehampton	70	7	91	492	1063	1706	2601	3708	11	87.993139	**23.32**
Sea Mills	71	9	76	212	643	1149	1714	2700	3	75.347222	**11.52**
Clifton Down	246	9	2077	6927	15943	32194	44682	62954	50	97.267881	**360.16**
Redland	125	10	425	2506	13534	33582	48302	69589	34	95.735244	**117.24**
Montpelier	193	8	863	6589	13941	25464	51518	73732	26	97.410091	**298.08**
Stapleton Road	165	7	593	1995	4827	9087	21087	35289	19	93.62442	**103.52**
Lawrence Hill	86	9	900	3444	8600	16408	28631	49795	17	98.020258	**173.76**
Temple Meads			1976	11751	30874	50045	69294	91664			
Total			**7829**	**36456**	**94531**	**177691**	**278775**	**402793**			**1413.12**

Notes

Similar to tables 4 & 5 jobs are double counted if they can be accessed by more than one station

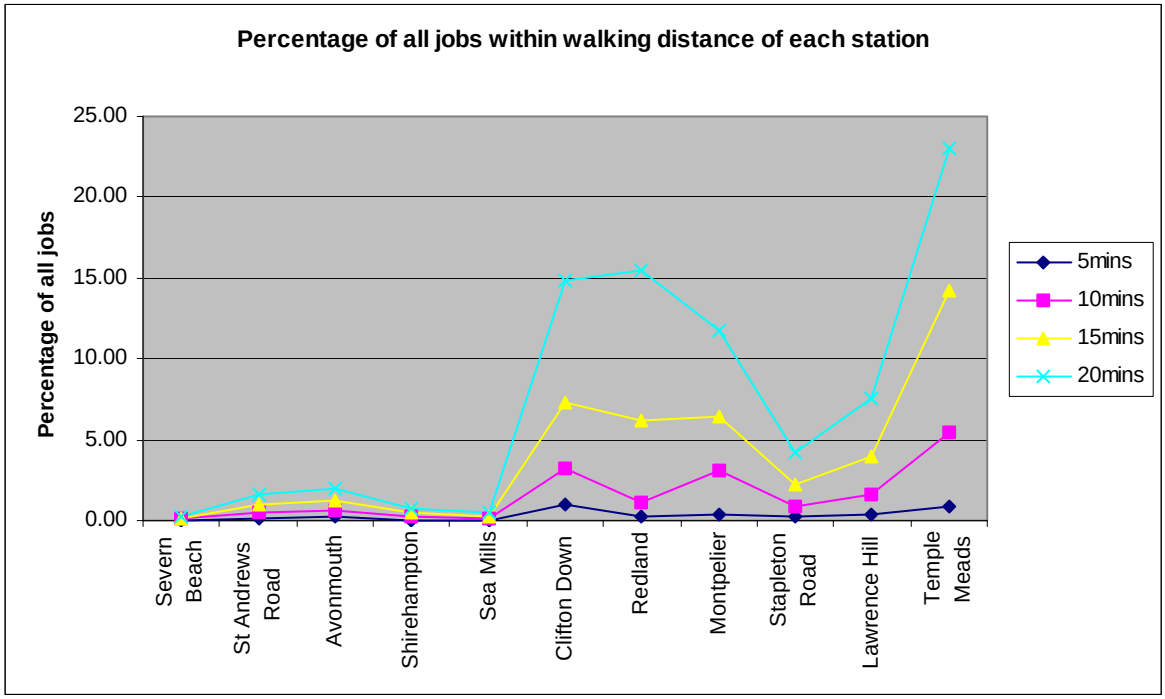
The total number of jobs available within the City of Bristol and Severn Beach & Pilning ward in South Gloucestershire is 217,299

*** Based on totals provided in table 3

From under 10 minutes walking from Clifton Down or Montpelier stations 3% of all jobs can be accessed, from Temple Meads this figure is 5%. Although not considered (with the exception of St Andrew Road or Avonmouth) access from under 15 minutes provides access to 6% of all jobs from Montpelier and Redland Stations, 7% from Clifton Down and a substantial 14% from Temple Meads.

Access from within 20 minutes is even more significant with Redland and Clifton Down Stations reports access to over 15% of all jobs and Temple Meads just under a quarter.

Graph 4



The information contained within this section truly highlights the potential the SBL has with regards to new custom from households and employment within reasonable walking distances of each station. However the potential is meaningless if there are more favourable travel options available to an individual. Section 4.2.6 will now examine the different public transport options available to the neighbouring communities of the SBL and examine the costs of each mode with regards to the total travel incurred.

5.2.6 Travel Time Comparisons

Travel time comparisons are tested between three different locations using three different public transport scenarios testing bus and rail access only. It was essential to test these public transport modes in isolation to provide a

true understanding of the potential the SBL has in providing access from the communities it serves.

The locations chosen for these comparisons were determined by the trip attractor findings contained within section 4.2.1 and are based on the desire to access employment and leisure opportunities located within the vicinities of three stations. To ensure there is no bias towards the SBL the locations are a sited short walk away from the station, therefore providing ease of access from both bus and rail.

The locations used were Whiteladies Road close to Clifton Down station because of the large employment and leisure opportunities, Severnside Industrial Estate close to Avonmouth because of the employment opportunities and Temple Quay located close to Temple Meads station because of the levels of employment located there and the opportunities provided by Temple Meads for public transport travel outside the Bristol area.

Peak travel times were tested based on the evidence provided from figures 9 and 10 relating to main demand for travel for existing passengers. The three public transport scenarios include bus access only, rail access only and rail access only incorporating the proposed additional peak hour services based on a hypothetical timetable change.

The level of access is only tested and compared within the ‘study wards’ listed in table 1 as these directly relate to the communities served by the SBL. Lists of the bus services used within the ‘bus only’ calculations are provided in appendix S. The travel time contours and access output tables detailing the percentage of household within access of the three destinations are provided within appendices T to Y.

A basic observation of the contours produced illustrates the benefits the local bus service has in providing comparable travel times to a greater percentage of the households.

Unsurprisingly the additional peak rail service does increase levels of accessibility but not quite to the levels expected, this however may have been a result of the hypothetic timetable change based on the additional service being started half an hour being the existing service.

A change to the study periods may also have benefited the SBL, it was however the intention to provide a unbiased test environment where both transport types would be examined fairly. Perhaps to fully understand the benefits of the SBL a test environment favouring the service should be created. To a certain extent this would reflect actual behaviour with individuals knowing their optimum journey time via their actual experience. Thereby leaving their origin with just enough time to walk to the public transport stop before catching their intended service.

An alternative approach would be to model the advantages of the each transport scenario at each station environment individually. The study period could then be set to set to reflect the local conditions better. Such an approach would take substantially longer to model but in theory this would produce greater accuracy in the results.

The approach adopted within this study was to examine the strategic outlook looking at all services from a distance, on reflection this was not the best approach to adopt.

The data outputs from this section were not fully understood and it is felt that additional time be spent testing and interpreting the outputs generated away before any meaningful comments are made. The speed of the rail service (its main advantage over bus travel) failed to be properly recognised during the modelling process. There may be many reasons for this that need further investigation but ultimately it is felt that it was a result of the decisions taken regarding the calculation parameters set at the beginning of the modelling exercise. Unfortunately due to limited time made available to operate the Accession software, it was not possible to further test and validate the results generated.

The work included within appendices U to Y should not be discounted as it forms the basis of further research into accessibility modelling. The unsatisfactory conclusion to this section of work may be that Accession is not be the most appropriate modelling software tool to use when comparing elements of the public transport system in isolation

An attempt has been made to interpret one set of results comparing travel time access during the morning peak to Whiteladies Road. The outputs and results for the other are included for the reader's information but these will not be referenced within this section. These are located in appendices U to Y.

5.2.6.1 Whiteladies Road travel time access comparison

Please refer to appendix T for the morning peak results. Table 7 provides the calculation outputs from the accessibility calculations. Within the 60 minutes travel horizon 'Bus only' access is available for almost all households with the exception of Pilning and Severn Beach. Rail access is not quite so universal with households within Pilning & Severn Beach, Eastville and St Georges West suffering from poor access. This is a result is a combination of factors relating to walking distances, waiting times and service operating times. This situation changes once the additional rail service is included with full access provided to these wards; unfortunately the additional rail service fails to address the accessibility problems experienced by households at Severn Beach.

Table 7 Travel Access Times

Ward Name	Bus 10 mins	Bus 20 mns	Bus 30 Mins	Bus 40 mins	Bus 50 mins	Bus 60 mins	Rail 10 mins	Rail 20 mns	Rail 30 mins	Rail 40 mins	Rail 50 mins	Rail 60 mins	Rail 2 10 mins	Rail 2 20 mins	Rail 2 30 mins	Rail 2 40 mins	Rail 2 50 mins	Rail 2 60 mins
Pilning and Severn Beach	0	0	0	0	7	40	0	0	0	7	27	27	0	0	0	7	27	27
Avonmouth	0	0	42	76	81	87	0	21	67	78	88	88	0	21	67	79	88	88
Kingsweston	0	11	57	90	93	93	1	8	30	51	75	75	1	8	30	51	75	75
Stoke Bishop	3	61	90	97	98	98	1	24	90	98	98	98	1	24	90	98	98	98
Clifton	9	95	95	95	95	95	5	37	93	95	95	95	5	37	93	95	95	95
Clifton East	97	100	100	100	100	100	51	100	100	100	100	100	51	100	100	100	100	100
Cotham	58	100	100	100	100	100	38	100	100	100	100	100	38	100	100	100	100	100
Redland	12	85	100	100	100	100	0	66	97	100	100	100	0	66	100	100	100	100
Ashley	0	27	90	100	100	100	0	50	85	91	100	100	0	50	100	100	100	100
Bishopston	0	9	100	100	100	100	0	0	11	59	100	100	0	0	46	97	100	100
Easton	0	2	89	100	100	100	0	11	49	49	49	91	0	11	86	100	100	100
Eastville	0	0	20	85	100	100	0	0	3	3	3	15	0	0	13	47	88	99
Lawrence Hill	0	36	94	100	100	100	0	5	44	66	85	96	0	5	80	97	100	100
St George West	0	0	30	96	100	100	0	0	0	0	0	4	0	0	4	41	85	100
Cabot	28	100	100	100	100	100	9	57	91	100	100	100	9	57	91	100	100	100

Table 8 compares the SBL's access performance against that provided by the bus service. The data is based on the Households percentages expressed within table 7 and compares the level of household access (expressed as a percentage of all) through the different access times.

Figures expressed in negative terms indicate the percentage of households that would gain in access time by using the SBL; conversely positive figures express the percentage of households that would gain from using the bus service, fields left blank highlight those fields where access is equal between the rail and bus.

As table 8 shows that bus only access provides far shorter travel time to Whiteladies Road compared with the SBL to the majority of households. The exceptions to this general observation are the wards of Avonmouth and Pilning and Severn Beach where travel time access provided by the SBL is far greater. The advantages of the additional rail service are shown for the wards of Easton, Eastville, Lawrence Hill and St Georges West where once high household accessibility percentages levels were dominated by bus use are

reduced significantly providing for an increase in travel options through the extra time savings made by rail.

Table 8

	Existing Rail Service						Additional Rail Service					
Ward name	10 mins access time	20 mins access time	30 mins access time	40 mins access time	50 mins access time	60 mins access time	10 mins access time	20 mins access time	30 mins access time	40 mins access time	50 mins access time	60 mins access time
Pilning and Severn Beach				-7	-20	13				-7	-20	13
Avonmouth		-21	-25	-3	-7	-1		-21	-25	-3	-7	-1
Kingsweston	-1	3	27	39	18	19	-1	3	27	39	18	19
Stoke Bishop	2	37		-1			2	37		-1		
Clifton	4	58	2				4	58	2			
Clifton East	47						47					
Cotham	21						21					
Redland	12	19	3				12	19				
Ashley		-22	5	9				-22	-10			
Bishopston		9	89	41				9	54	3		
Easton		-9	41	51	51	9		-9	3			
Eastville			17	82	97	85			8	37	12	1
Lawrence Hill		31	50	34	15	4		31	15	3		
St George West			30	96	100	96			27	55	15	
Cabot	18	43	9				18	43	9			

The information contained within this section 4.2 has highlighted the potential the SBL has with regards to providing access to households and employment. An attempt was made to examine the different advantages provided by the different public transport options available in the communities the SBL serves, but the methodology employed failed to provide any meaningful results.

Except highlighting the challenge facing the SBL in attracting new users while the bus service continues to provide a more than suitable alternative and that an additional rail service would assist in increasing levels of accessibility to certain households.

Ultimately personal circumstance dictates the level of choice available to the individual; section 4.3 examines the attitudes of users and non-users towards the SBL.

5.3.1.1 How valued and supported is Severn Beach Line to the local community it serves?

By fulfilling objectives 3 and 4 of this dissertation it provides the relevant basis of understanding needed to answer the question of assessing attitudes towards use by providing an understanding of how valued the service is to the communities it serves.

The main sources of data used to gain an understanding of the attitudes towards the SBL are the secondary data provided via comments made through the annual rail survey and research undertaken by Faber Maunsell during their 2003 study. These secondary data sources are further enhanced through the primary data collected for this study, via the station audit and questionnaire findings at one of the station locations.

This section begins by examining general comments made during the rail survey, before concentrating on what is felt to be the main themes governing individual's actual or perceived attitudes of the SBL. The final section will examine the results of the questionnaire based at Shirehampton station.

5.3.1 General comments on the SBL

In the 2004 annual survey the question 'Why did you use the train today?' was asked. 184 individuals responded to this question and the results provide a fascinating insight into the motivations behind their choice of public transport used.

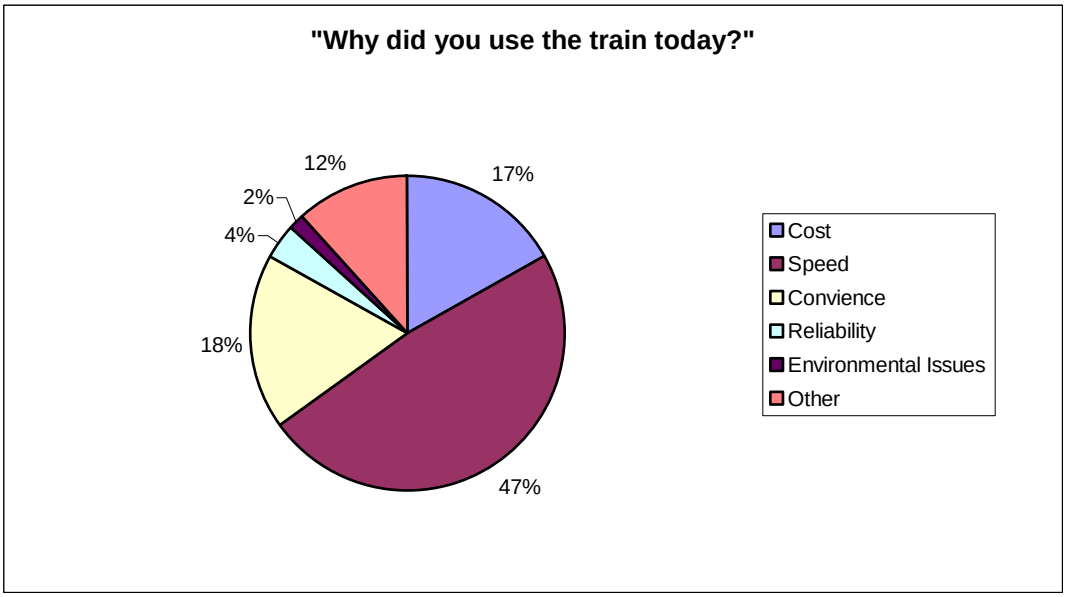
The main themes to their responses were as follows:

- Cost (relating to fares or car parking)
- Speed
- Convenience (location of station or lack of alternatives)
- Reliability

- Environmental Issues

Some respondents provided more than one response to this question several additional comments included that the train provided them the environment to be able to work on the train during their journey to work. Graph 5 compares the responses given

Graph 5



The speed of the service dominates individuals responses with 47% stated this as the reason for use, cost and convenience are stated as the second most important factor with 35% of respondents stating these reasons for their decision to use the service. These factors confirm what was perceived as the main factors in passengers using the SBL.

Table 9 summarises further comments made by individuals via the 2002, 2003 and 2004 surveys. The comments made are not always positive and are only provided by those respondents that felt self-motivated in providing them.

Table 9

Rail Passengers' Comment Categories	Severn Beach	Avonmouth	Shirehampton	Sea Mills	Clifton Down	Redland	Montpelier	Stapleton Road	Lawrence Hill	Total
Train performance and service										
Reliability, Frequency & Service Coverage	9	10	8	7	11	6	4	21	4	**80**
Overcrowding		1		1		9	4	2	3	**20**
Staff conduct and related issues		1		4		7	1	1	1	**15**
Information during journey					1					**1**
Cleanliness of trains	4			1				1	3	**9**
Stations										
Amenities		3	2		2		4	8	2	**21**
Information regarding journey	2	3	2	3	7	4	4	4	1	**30**
Car parking										**0**
Toilets										**0**
Cleanliness of station		3		1	1	2	1	2		**10**
Facilities for cycles							2	1	2	**5**
Timetabling	6	2	6	5	10	12	3	10	10	**64**
Fares & ticketing										
Prices/values		1	1	1					1	**4**
Ticket Purchasing	1			3	3	15	4	4	1	**31**
Access, safety & security										
Disabled and special needs facilities		2					1	2		**5**
Personal safety and security			1	1	1		2	7		**12**
Comments on the importance of service	3	2	7	4	3	6	2	5	7	**39**

Management issues regarding train performance, frequency, service coverage and timetabling dominate. These are issues that First Group as new franchises should address as a matter of urgency. In contrast to the negative comments provided a large proportion were positive highlighting the importance of the line. The individual issues raised in table 9 will be examined at length within section 4.3.2.

Issues of train cancellations or late running of services are of real concern to passengers, the following selection of comments illustrates the frustration and despair felt certain rail users.

"*This is an excellent service which I use everyday. The problem is when the train doesn't turn up and I'm left stranded. I totally rely on this service and can't do without it. When it runs, it runs well, when it doesn't it's a nightmare*"

Anon 2002 from Severn Beach

"The many cancelled and delayed trains on this line is very frustrating, especially when children are going to and from school. As a parent this is a real concern. I worry for my child's safety if a train is cancelled"

Anon 2002 from Stapleton Road

"Normally this is a very reliable service although it seems to be the first to be withdrawn when there is a shortage of drivers or rolling stock, on these occasions a not so reliable bus service is provided"

Anon 2003 from Severn Beach

"*The train is sometimes early, you then have to wait for between 45-90 minutes for the next one. Or it's late. Generally a dreadful service. Might be better to remove the track on the Severn Beach to Bristol section and turn it into a footpath/cycle track"*

Anon 2003 Clifton Down

"The words rail and service should not be used in the same sentence when referring to travel from Stapleton Road"

Anon 2003 Stapleton Road

These comments are a real cause for concern; issues of unreliability do not inspire confidence in a service and reduce the potential retention rate of existing passengers and fail to inspire potential ones. It is important to consider that these comments only represent a few passengers, what is not known is the extent to which they are shared by all passengers.

Praise or seemingly justification for the service is also received via the station survey. It appears that many customers believe the SBL is under threat from closure and therefore use this annual opportunity to raise their point of view.

"*I think this service is very good. It is quicker than travelling by bus or car and is cheaper as well*"

Anon 2002 Avonmouth

"*This service is really relied upon by many people*"

Anon 2004 Clifton Down

"*The Severn Beach train is a lifeline keep it going"*

Anon 2004 Montpelier

"*My train journey takes approximately 8 minutes from start to finish. I would have to get 2 buses to d the same journey at more cost"*

Anon 2003 Stapleton Road

"*Please don't axe this service. It should be extended e.g. opening up more of the old stations making a more complete Bristol City rail network"*

Anon 2003 Lawrence Hill

Section 4.3.1 has examined general comments made by existing rail users with regards the SBL, apart from a few the comments are generally very positive about the role of the line and the importance it has to the individuals that use it. Section 4.3.2 will now examine at greater length the individual issues raised in table 9. These will be addressed from a rail and non-rail users perspective.

5.3.2 Individual Issues

The headings and comments made within section 4.3.2 are based on the issues highlighted through analysis of the annual rail survey and the comments made in focus groups arranged as part of Faber Maunsell's 2003 '*Bristol –Avonmouth - Filton Rail Routes study'* and when appropriate observations and comments made during the rail audit. For details on the full findings of the station audit please refer to appendix Z. A selection of images

has also been provided within appendix AA to provide an increase in reader awareness to the quality of stations at the time of the audit.

5.3.2.1 Reliability and Frequency concerns

In addition to the general concerns raised through the unreliability of the SBL when services are cancelled, the replacement bus service is also heavily criticised as providing an inadequate replacement service unable to compete with the speed offered by the train. The risks associated with the unreliability of the service results in rail users being unable to plan their journey with confidence, comments were also made about the lack of financial compensation to users that had purchased weekly rail passes.

Non-users of the service expected the service to be unreliable and stated their alternative travel preferences were based on past experiences of public transport in general without specific reference to the SBL. The avoidance of waiting for delayed services at isolated unmanned stations was cited as motivation for not using the service.

With regards to the frequency of the service rail users felt that the current service provision as far to infrequent especially during the morning and evening travel peaks. It was felt that the limited frequency was inflexible in meeting the demands of existing working practices and this was the main obstacle to increasing rail patronage. A suggested funding initiative to finance the additional peak services was the possibility of reducing non-peak train frequencies. Research undertaken within this study has concluded that this is not a viable issue as the main issue governing services is not just finance but competition for train timing slots at Temple Meads station.

Non-users assumed that the service would only operate once an hourly or once every other hour and this was perceived as being inadequate to their needs. Many however did state that if the service ran more frequently they would consider using it but felt issues regarding reliability as more fundamental.

5.3.2.2 Convenience and Cost

From the rail users perspective the speed and convenience provided by the SBL were the main motivations for its use citing the benefits of the avoidance of congested roads and the journey time savings compared to bus or car use. The service was also viewed as more cost effective than other transport modes and said that increased fares to fund service improvements would be acceptable. From a non-users perspective the perceived impression of the service is one of high-ticket prices providing an antiquated slow service, in a poor state of repair.

These vastly different opinions are cause for concern and action should be taken to address the issue from a non-users perspective. A marketing scheme highlighting the advantages of rail over bus or car use should be used as a means of publicising the line with the aim of encouraging additional use.

5.3.2.3 Ticketing

Although the cost of the tickets is more then acceptable to the existing users the ability to purchase one is more frustrating. Users describe a poor ticketing scheme in operation. There is no way of purchasing a ticket in advance of the journey as stations are un-staffed and there are no ticket machines. Train conductors are responsible for collecting fares.

Many rail users are concerned that many of their fellow rail users use the train for free. They are concerned that this loss of revenue might result in the service being closed. Concerns were raised within this study over the accuracy of the ticket sales data provided by Wessex Trains. A rail user commenting in the annual rail survey stated:

"The train is extremely busy which is good, especially if your journey is from Severn Beach to Lawrence Hill because 9 times out of 10 the journey will be

FREE. The conductors are either very slow or more likely can not be bothered, preferring to sit in the end compartment"

Anon 2003 Redland

Train overcrowding formed the basis of several comments particularly from passengers boarding at Redland station.

5.3.2.4 Station facilities and Information Provision

The quality and standard of station facilities were causes for concern from both users and non-users of the line. Stating that the lack of seating and lighting provision and the presence of litter and graffiti detracted from the desire to use the line. The information provided at the stations was also criticised, as the timetables were often small to be read and information points are often prone to vandalism.

Research undertaken during the station audit concluded that existing station facilities were basic to the point of non-existent at all stations. It must be stated that there was evidence of recent improvements to all stations with new lighting and safe covered seating provided throughout. The information provided at key locations at the stations informed the traveller of the local environment providing a map to aid navigation from the station. Timetable information was also provided, but this could have been provided in a simpler manner using a larger font size to assist ease of use. The information points were in all cases in a poor state of repair and were positioned in locations not always best suited to for their use.

5.3.2.5 Safety and Security

Both users and non-users were concerned about personal safety especially at night and waiting on and at platforms that are not visible from any other locations. While undertaking the audit at it was felt that at Shirehampton and Montpelier stations it was very much like 'stepping into the unknown' as platforms could not be viewed until they had been accessed. Comments

made through the rail survey validate those made at the focus groups and station audit.

"I'm becoming frightened to use the train. Teenagers hang out on the platform (gangs of them) and use foul language and are very intimidating"

Anon 2003 Sea Mills

"Being that the station is isolated. I'm too afraid to use the service after dark"

Anon 2002 Montpelier

"After dark Stapleton Road platform is a very unfriendly place for a woman travelling alone. Very frightening and makes me nervous. Will you do something?"

Anon 2002 Stapleton Road

Passenger safety is a real concern. Passengers should feel safe at any time of the day when using, accessing or waiting for a service. The isolated locations of the stations and that they are un-staffed hinder any real developments for improving station safety. Vandalism and graffiti are also causes for concern as any action taken to improve the station environment is often counter productive providing an opportunity for fresh abuse. The FOSBR '*Station Friends'* scheme attempts to tackle this issue by encouraging a sense of community pride and ownership of the stations addressing any anti-social behaviour that currently exists within the area. Murals at Lawrence Hill and Montpelier add to this sense of community distinction and ownership.

5.3.2.6 Service Coverage

This issue was not brought up in the annual survey. Non-users of the line perceived that there would be poor integration between bus and rail services making it inconvenient for those not living close to make use of it. Research undertaken within this study concurs with this opinion.

Further comments made included the failure of the service to provide adequate access to the main retail centres of Broadmead and Cribbs Causeway and the lack of late night services on Friday and Saturday nights.

Section 4.3.2 has addressed the main issues of users and non-users of the line. Many have highlighted the gap between actual and perceived views of the service. The comments made have for the most part not portrayed a sense of value or community pride in the SBL. In order to ascertain if such a sense exists detailed research has been undertaken at one of the station locations.

5.3.3 How valued is the SBL to the community it serves? The case for Shirehampton

Analysis of the questionnaire outlined in section 3.4.2 is split into four areas of analysis. Section one examines the distribution of questionnaires returned and the answers provided to questions 1 and 2 in the hope of understanding a relationship between household location and public transport travel choice. Section two considers all responses to questions 4 and 5, on why individuals use or do not use the SBL. Section three examines question 6 and section four will examine any additional comments made by individuals and see how these vary between those made by people during the local authority annual rail survey.

5.3.3.1 Questionnaire Returns

A Total of 75 questionnaires were returned. This number includes an additional 3 questionnaires completed by additional members of one household and a canvassing Labour Politician. A further 4 questionnaires were completed via a doorstep interview, equating to a total of 82 and a return rate of 54.6%. Of those questionnaires returned 8 were incorrectly completed, this resulted in a working sample of 76 or 50.6% of the original 150 delivered. The return rate far exceeded the estimated 30% return rate. Due to the limited number of questionnaires distributed the results generated

are not statically significant, a non-statistical commentary of the results is therefore provided.

5.3.3.2 Analysis Section 1

5.3.3.2.1 Distribution of Questionnaires returned

Table 10 provides details on the distribution of returned questionnaires. The number of usable questionnaires returns was similar both sides of The Portway divide with 39 returned from the north and 37 returned in the south. This relates to a return rate of 62% in the south and 43% in the north.

Table 10

Walking distance from Station	Number of returned questionnaires		Percentage of questionnaire returned	
	North	**South**	**North**	**South**
5 minutes	13	21	43%	70%
10 minutes	20	10	50%	50%
15 minutes	6	6	30%	60%

It is interesting to note that the percentage of questionnaire returns from the South's, 5 and 15 minute walking extremes is significantly greater than the corresponding walking distance within the north.

Assuming that only those households with experience or interest of the SBL completed the questionnaire, it is unsurprising that the northern 15-minute walking extreme provided a smallest rate of return. This is due to their easy access of the main bus serves operating along Shirehampton High Street in contrast to the distance of train station.

5.3.3.2.2 Public transport Use

From the working sample of questionnaires 83% of individuals use of public transport within Bristol and 67% use the SBL, resulting in 16% of public transport users using buses only. Table 11 records the spatial distribution of this pattern.

Column A – Relates to the percentage of public transport users

Column B – Relates to the percentage of SBL users

Column C – Relates to the percentage of public transport users that do not use the SBL.

Table 11

Walking distance from Station	A		B		C	
	North	South	North	South	North	South
5 minutes	85%	90%	62%	76%	23%	14%
10 minutes	90%	70%	80%	60%	10%	10%
15 minutes	67%	67%	17%	67%	50%	0%
Total	85%	81%	64%	70%	21%	11%

The physical barrier of The Portway does not appear to effect rail use with a comparable proportion's of users from the north and south of Shirehampton. This trend is not mirrored in relation to bus use with 'bus only' use accounting for 21% in the north and 11% in the south.

5.3.3.3 Analysis Section 2

Section 2 analyses why individuals living in Shirehampton use or don't use the SBL. The reasons stated for doing so vary from those responses given by SBL rail users as a whole (graph 5). Table 12 compares these results.

Table 12

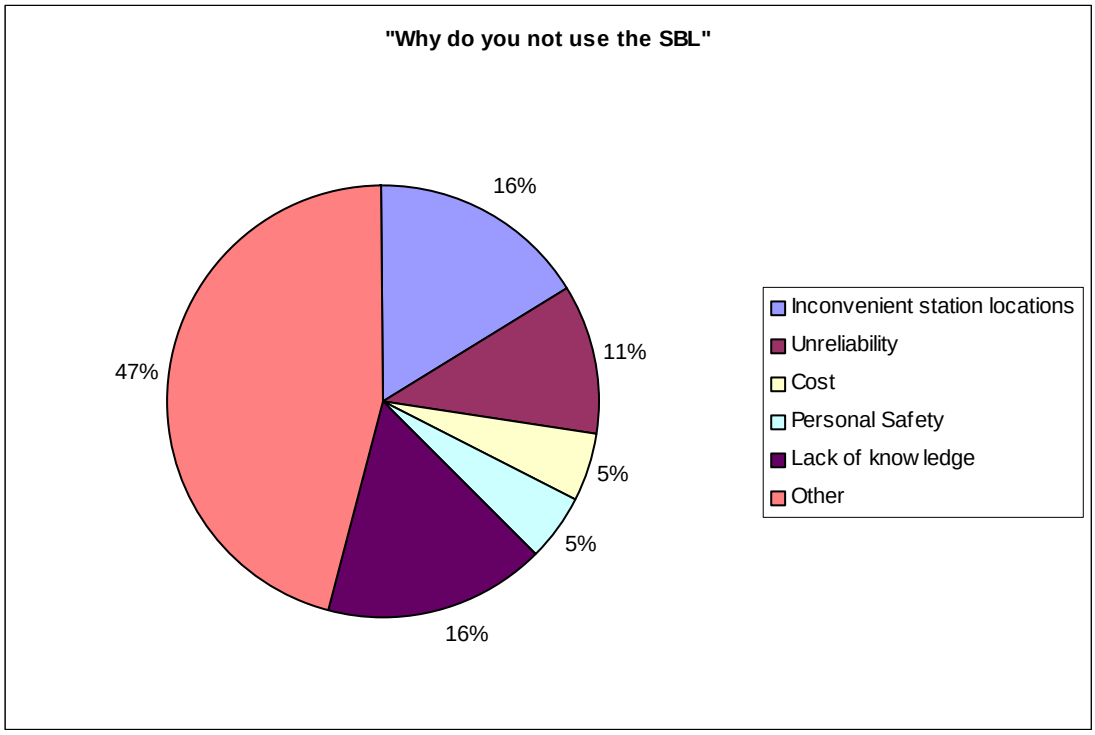
Reason	Shirehampton	All SBL users
Cost	11%	17%
Speed	26%	47%
Convenience	40%	18%
Environmental	8%	2%
Other	15%	16%

For the people of Shirehampton convenience is stated as the most important reasons for use compared to speed or journey times for the SBL as a whole. This may be a result of the location of Shirehampton and the provision of an alternative high frequency bus route. Other reasons for use provided by

individuals include; the intention of accessing connecting services at Temple Meads and one individual with small children uses it as treat.

The reasons for not using the service are provided in graph 6. The option 'other' was the most popular reason supplied, analysis of the comments made mainly associated that the individual owned a car and therefore had no need to use public transport. Inconvenient station locations, unreliability and a lack of knowledge of the services are provided as the reasons for not using the service.

Graph 6



5.3.3.4 Analysis Section 3

Having looked at the distribution of public transport and SBL use and the reason stated for using and not using the line, section 3 attempts to gauge local opinion of the line in an attempt to understand how valued it is as a service within Shirehampton. The five statements provided in question 6 of the questionnaire were positioned at random to encourage the respondent to think about their response, respondents were then asked to score each

statement based on the scale 1 to 5, 1 representing strongly agree and 5 strongly not agree.

The first statement '*If the Severn Beach Line were to close it would not have an impact upon my transport needs'* was designed to see how dependant people were on using the SBL. A comment made during the annual rail survey from Shirehampton described the line as their 'life-line' it was intriguing to see if many other people felt the same way. Table 13 records the results of this statement.

Table 13

Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
22	8	21	5	20
40%		27%	32%	

32% of respondents said that should the SBL close it would impact upon their transporting need. This figure is far higher than originally thought and shows how important the service is within Shirehampton. The majority of responses did however say that it would not impact upon their life.

Table 14 records the results to the statement '*The line plays an important role in providing public transport access to parts of Bristol'.* This statement was designed to assess how important the service provided by the SBL was to the local community.

Table 14

Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
42	10	17	3	4
68%		22%	10%	

68% of respondents agreed that the SBL plays an important role in providing a service, with 55% strongly agreeing. This substantial percentage truly reflects the level of support the line receives within Shirehampton.

Table 15 records the results to the statement '*The line should be replaced by a more flexible high frequency bus service*', based on the level of support shown so far towards the SBL it is assumed that the majority of respondents would disagree with this statement.

Table 15

Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
6	6	22	12	30
16%		29%	55%	

As assumed the results provided within section 15 overwhelmingly disagree with this statement not only showing support for the route of the SBL but for the rail service itself.

Table 16 records the results to the statement '*If more trains were operated during the day and weekends I would think about using the service more'*. This is an interesting statement; the statements so far have not been related to personal behaviour, this question attempts to gauge if more were to be offered by the franchise holder would local people react to this offer.

Table 16

Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
24	12	25	3	12
47%		33%	20%	

Although more people agreed that they would think about using the service if more trains operated, a third of all respondents said neither agree nor disagree, questioning the value of the additional services.

Table 17 records the results to the statement '*A lot more could be done by the local authority and train company to promote the service'*. It is assume that the vast majority of respondents would agree to this statement as it is usually always felt that something more can be done with regards to transport.

Table 17

Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
38	15	17	5	1
70%		22%	8%	

As assumed this statement receives almost total support.

The results gained from this section really get a feel for how well valued the SBL is to the community of Shirehampton and how much it would impact against a communities travel needs should it close. The level of support for additional services is a slight concern as research undertaken by Faber Maunsell during their focus groups suggested that a more frequent service would encourage greater use. A further overwhelming finding confirms that more could be done to promote the service.

5.3.3.5 Analysis section 4

Many of the comments made reflect those made in general for the whole of the SBL. More services are needed throughout the day and night including a Sunday service. Other comments regarded the problems of ticket allocation with many people travelling for free. Issues of safety were also raised, with one individual commenting with regards to her son using the SBL to get to school

"My son uses it daily in summer months but in winter times I drive and pick him up daily, due to personal safety issues at the station"

Anon 2006 Shirehampton

Many of the comments made specifically in relation to Shirehampton involved the park and ride service that operates along The Portway. People feel that this service is far more convenient as it operates on a far greater frequency and provides direct access to Broadmead. Many of the respondents were elderly or disabled and therefore unable to use the service, they did say that

when they were able to the service they did so regularly, one such individual states

“Although I am unable to use this service I would like to keep it open for the younger people”

Anon 2006 Shirehampton

A suggestion from one individual to encourage greater public transport use was a loyalty point’s scheme providing free public transport use after a set number of journeys.

Within section 4.3 different attitudes towards the SBL have been explored. General comments, good and bad, have been provided before specific issues were addressed from a users and non-users perspective. In the final section the value of the SBL was investigated in the Shirehampton community and this found that there was a very strong level of support for the line regardless of how frequently the line was used by the individual. This level of support for the service truly highlights how well regarded the SBL is to the community it serves.

Chapter Six – Conclusions and Recommendations

Summary

The section draws the study to an end before completing object 6 and providing a set of recommendation on the future of the Severn Beach Line.

It is believed that this dissertation has demonstrated that the SBL is a very accessible highly valued component of Bristol's public transport system.

This has been achieved by completing the five key objectives stated at the outset of this study relating to the three distinct question areas of existing, potential and attitudes towards use.

Research into existing use has confirmed that passenger use in recent years has recovered and now exceeds the level of use previously recorded before deregulation of the local bus service. It has also shown that this increase in demand is not consistent throughout all stations but dominated by stations within the inner city region. Research has also shown that the greatest demand for the SBL occurs during the commuting peaks with limited demand at all other times.

Concerns have also been raised regarding the accuracy of data relating to actual passenger numbers. Such concerns were further validated though comments made by rail users through the annual rail survey and Shirehampton questionnaire when the issue of passengers not purchasing a ticket were raised, thereby not providing an accurate record of passengers using the service.

Research undertaken using the GIS tools Mapinfo and Accession into existing passenger behaviour concluded that walking is the dominant mode of

transport for passengers travelling to or from stations. With average journeys not lasting greater than 10 minutes.

The potential market increase for rail was examined using the Accessibility modelling tool Accession. This was examined from two perspectives from number of households and jobs located within a set walking distance from each station. Due to the rather small base sample the figures generated for potential increases in annual trips do appear rather large, an extra 250,000 p.a. generated from households and 300,000 p.a. from the jobs available within the vicinity of each station. This does not result in an increase of 550,000 p.a. as it is assumed that the vast majority of people using the train from their home will be accessing work i.e. just one journey generated. The 250,000 p.a. is therefore a more reliable total to consider as the potential market opportunity. A third of the new passengers include individuals from households that do not have access to a car or van thereby increasing personal levels of accessibility and ensuring that they play an active part in a fully inclusive society.

A further consideration of the figures quoted as potential new rail customers is the effect their decision to switch transport modes would have not only on the SBL but other transport modes. New customers may be encouraged from alternative public transport services, and some may be encouraged from their cars. Evidence of the effects of increasing City Centre parking has been highlighted at Redland Station where parking is free and the rail fare is highly competitive.

To ensure the new customers are catered for along the SBL the proposed additional peak services would have to be delivered. Research within this study has highlighted that existing peak services operate at and over their capacity during the commuting peaks.

Objective 3 of this study was related to testing the value of the outputs generated by Accession in determining levels of accessibility provided by the SBL. For the most part the outputs were adequate in meeting the needs they

were set. This was not the case with the work undertaken within section 4.2.6, when the data outputs were not fully comprehended, probably as a result of the way the model was used more then a failing of the Accession software. The contour outputs supplied in appendices T to Y do highlight the challenge facing the SBL in attracting new users while the bus service continues to provide a more than suitable alternative to the majority of households. The benefits of the additional peak rail service were also highlighted although the extent in which they would benefit the local community is understated. Suggesting that Accession is not the most suitable tool to test the potential benefits of the additional service.

The final research question examined general attitudes towards the SBL before specifically examining the views of one of the communities served in order to gain a level of understanding regarding how well valued the SBL is to the local community.

Attitudes towards the SBL vary considerably, with some providing real praise for the service. The vast majority of comments made regard service cancellations and the lack of confidence they have in the SBL. The issue of service cancellation is of immense importance if potential rail users are to be converted. The perceived view of the SBL is one of unreliability and this is fair comment, but to appease existing users and attempt to address the perceived views of non-users action must be taken. The SBL is currently viewed by its management as a service to plunder when staff or rolling stock shortages occur, such actions result in the cancellation of services. It is hoped that First Group the new franchisees will not follow Wessex Train's example and ensure that SBL provides the service it claims to provide.

Regardless of the frustrations felt by many of its passengers the SBL is a valued service receiving a very strong level of support regardless of how frequently or infrequently individual uses the line.

Recommendations

1. To ensure the Severn Beach Line remains open. The research undertaken within this study confirms how important the SBL is to the community it serves with regards the access it provides and the level of community support it receives.

2. Provide additional peak services. This will reduce the overcrowding currently experienced during the morning peak and the increased frequency will encourage potential new users due to the additional transport opportunity provided.

3. Provide greater opportunity for passengers to purchase tickets. This will benefit not only the user of the service but also will also assist the supplier in meeting additional operating costs of providing the additional peak services. Two conductors should be present on trains during the morning peaks to collect fares. In addition to this the opportunity to purchase tickets in advance should be provided. It is not practical to staff stations or install ticket machines due to the risks of vandalism, but books of tickets i.e. 10 journey cards, could be purchased from newsagents.

4. Increase profile of line. A marketing strategy stating the times trains operate and highlighting the advantages of rail over road-based transport should be pursued. Advertised not just at station locations but also in the local press so the message is provided to as many people as possible. This may now be possible as the same transport operator now manages both bus and rail.

5. Increase the Severn Beach Lines priority at Temple Meads. It is essential for the SBL to meet its full potential to ensure that priority is given to the SBL when train-timetabling slots are allocated at Temple Meads. The SBL should not continue to play the poor relation to other services operating out of the station. Local needs should be put before profit.

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Severn Beach

The station at Severn Beach is only one situated outside the City of Bristol and was originally built to serve day-trippers visiting the resort. Over the years Severn Beach as a resort has disappeared and Severn beach as a residential area has grown. Severn Beach has a limited number of trip attractors, with highlights including easy access onto the Severn Way riverside walk and impressive views of the Severn Bridges.

St Andrews Road

The station at St Andrew Road is a request-only stop and is consequentially the least used station along the SBL. It situated in the heavily industrialised areas of Avonmouth and Severnside.

Avonmouth

The main images of Avonmouth are generally ones of Avon Motorway Bridge, smoke, articulated lorries and the industrial plants. The station at Avonmouth is situated in the heart of what is described as Avonmouth Village, the residential centre for the area. The station provides easy access to the large employment sites situated within the heavily Industrialised dock area. The area surrounding Avonmouth bares the scars of heavy industry with a high number of contaminated sites (BCC 2004b)

Shirehampton

Similar to St Andrews and Avonmouth the station is situated within the Ward of Avonmouth; unlike the other station within Avonmouth, Shirehampton station is situated in a residential suburb close to the River Avon. Due to its location, other than the local community, the station is touted as one for day trips suited to young families and walkers providing scenic walks to Kings

Weston House and the child friendly Lamplighters pub which provides views across to River Avon to boasting creek of Pill (BCC 2005).

Sea Mills

Sea Mills station is situated on the banks of the River Avon and has no immediate residential or commercial market to serve. Such is the low density of housing surrounding Sea Mills station; the main attractors are the walking and picnicking opportunities provided along the river itself. The main attraction of this station is the journey getting there from Temple meads, with spectacular views of the Avon Gorge.

Clifton Down

Clifton Down Station is almost the exact opposite to that of Sea Mills. It is situated along Whiteladies Road one of the premier shopping and entertainment areas of the City. It is also ideally located to access Bristol Zoo, the large green open space area locally referred to as 'the downs', the BBC Headquarters and University of Bristol.

Redland

Redland Station is ideally situated to serve the local communities of Redland and Cotham and provides easy access to the school. Redland has one of the highest number of multiple occupancy housing within the city and is a favourite for students providing a large number of temporary accommodation. The station is located within the ward of Cotham, which provides an interesting mix of residential, retail and leisure facilities (BCC 2004g, BCC2004m).

Montpelier

Montpelier station is suited to serve the communities of Montplier and St Andrews. It also provides for easy access to the large variety of shops,

restaurants and businesses located along the Gloucester Road and the educational facilities provided at Colston's Girls' School and Bristol college's Brunel Centre.

Stapleton Road

The station of Stapleton Road is situated in the condensed inner city ward of Easton. Its ethnically diverse population provides the vibrant multi-race feel within the main retail areas of St Marks Street and Eastville Market. Ikea and the other large retail outlets are located within a short walk at the Eastgate Retail centre. There is also the opportunity to access the Frome Valley walkway.

Lawrence Hill

Lawrence Hill station is situated in Bristol's most deprived ward. It has the highest level of unemployment within Bristol despite providing the second highest number of jobs. The ward also suffers high levels of crime and poor levels of good health. Due to the location of station it is not best positioned in relation to the number of employment opportunities available within the ward boundaries (BCC 2004l).

Temple Meads

Temple Meads is the South West regions busiest railway station and is situated in central Bristol. It provides travel links from the SBL onto the national rail network, to Bristol Airport via a high frequency bus link and Bristol's harbour ferries. Temple Quay is situated next to Temple Meads and is home to substantial number of jobs within the city centre. Broadmead, Bristol's premier retail area, is a ten-minute walk from Temple Meads or a short bus ride via the simple interchange with the 8 or 9 high frequency bus service.

A Brief History of the construction of the SBL

The main source for this brief history is based upon information provided from http://www.david.frih.net/severn/.

Bristol's importance as a major dock in the nineteenth century was declining due to the difficulties experienced by larger ships navigating the bends of the River Avon into the city docks. A new deep-sea dock was proposed at Avonmouth, at the mouth of the river. In anticipation of this new docks the Bristol Port Railway and Pier Company (BPR) were formed (Oakley 1983).

Work began on the line in 1863, with the first section of line between Avonmouth and Clifton completed by 1865. The original line served the existing stations of Avonmouth (although not in its current location), Shirehampton, Sea Mills and Clifton. Clifton station was not the existing Clifton Down Station but one situated on the current day A4 Portway road link near Hotwells.

Temple Meads opened in 1840 and provided a link to Bath. It was the intention of the BRP to extend the railway into the centre of Bristol linking it with the Bristol Temple Meads and the rest of the rail network. Unfortunately limited financial resources dictated that the BPR were unable to achieve this, subsequently isolating the line from the rest of the network.

Oakley writing in 1983 provides a different account of the origins of the line, stating that it was never the original intention of the line to link with the rest of the rail network, it was however soon apparent that local traffic was insufficient for the viability of the line and the proposed port is would serve.

During the 1860's the opportunity to extend the line to Temple Meads had been missed due to the lack of land availability in the city centre. This missed opportunity has continued to cause transport problems into the 21st century with no direct rail access into the main retail and commercial centres of

Bristol. It also had a major impact on the subsequent path of the line and the major engineering projects ahead for its owners.

In 1863 when the BPR was in its infancy Stapleton Road and Lawrence Hill stations were opened to serve the line between Bristol and South Wales. In 1874 the Great Western Railway and Midland Railway companies opened the Clifton Extension Railway. This jointly owned line served the existing stations of Stapleton Road and Lawrence Hill and the newly constructed stations of Montpelier and Clifton Down. One of the aims of the this new line extension was the connect to the existing BPR line, but problems with the construction of the mile long rail tunnel under Clifton Down delayed this.

In 1877 the tunnel was opened for freight use, but there were further delays for passenger services with additional problems associated with the length of Sea Mills platform and signalling inadequacies (Oakley 1983).

In 1885 the tunnel was opened for passenger use and the two lines were connected. Clifton station on the BPR was renamed Hotwells.

Due to the popularity of the line and the travel opportunities it provided residents of Redland petitioned for a station and one was subsequently opened in 1897. St Andrews Road was opened in 1917 to serve a munitions factory as part of the war effort.

The line as it is seen today was completed in 1922 with the opening of Severn Beach station, which quickly became a popular day trip destination. Hotwells station was also closed in 1922 when it and its track were removed to make way for the building of a new road link from Avonmouth to Bristol, the A4 Portway.

North Somerset Council *2001 Rail Survey*

In order to assist North Somerset Council in improving Public Transport it would be appreciated if you would complete and return the following postage paid questionnaire concerning your journey today.

1 Departure station?

2 Arrival station?

3 Where did you start this journey? *(Not railway station)*. (Street name, town/village and postcode.)

4 Where did you finish your journey? *(Not railway station)*. (Street name, town/village and postcode.)

Please tick boxes as appropriate (✓)

5 How did you get to the station?

- **a.** Walk ☐
- **b.** Cycle ☐
- **c.** Bus ☐
- **d.** Car ☐
- **e.** Motorcycle ☐
- **f.** Taxi ☐

6 How will you finish your journey?

- **a.** Walk ☐
- **b.** Cycle ☐
- **c.** Bus ☐
- **d.** Car ☐
- **e.** Motorcycle ☐
- **f.** Taxi ☐

7 What is the purpose of today's journey?

- **a.** Work ☐
- **b.** Shopping ☐
- **c.** Education ☐
- **d.** Personal business ☐
- **e.** Social ☐
- **f.** Other *(please specify)*

8 How often do your make this journey?

- **a.** 5 or more times per week ☐
- **b.** 2 – 4 times per week ☐
- **c.** Once a week ☐
- **d.** Once a month ☐
- **e.** Infrequently ☐

9 Please indicate whether you are satisfied or dissatisfied with each of the following elements of this station

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied
a. Passenger waiting areas and shelters	☐	☐	☐	☐	☐
b. Cleanliness	☐	☐	☐	☐	☐
c. Car parking	☐	☐	☐	☐	☐
d. Cycle parking	☐	☐	☐	☐	☐
e. The overall condition of the station	☐	☐	☐	☐	☐

10 Please indicate whether you are satisfied or dissatisfied with each of the following elements of public transport information provided at this station.

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied
a. Station train timetables	☐	☐	☐	☐	☐
b. Platform updates on train times	☐	☐	☐	☐	☐
c. Local bus service information	☐	☐	☐	☐	☐

11 Could you have used a car, instead of the train, for today's journey?

a. Yes ☐ **b.** No ☐

Any other comments

North Somerset Council

services that benefit the community

Appendix C

Appendix D

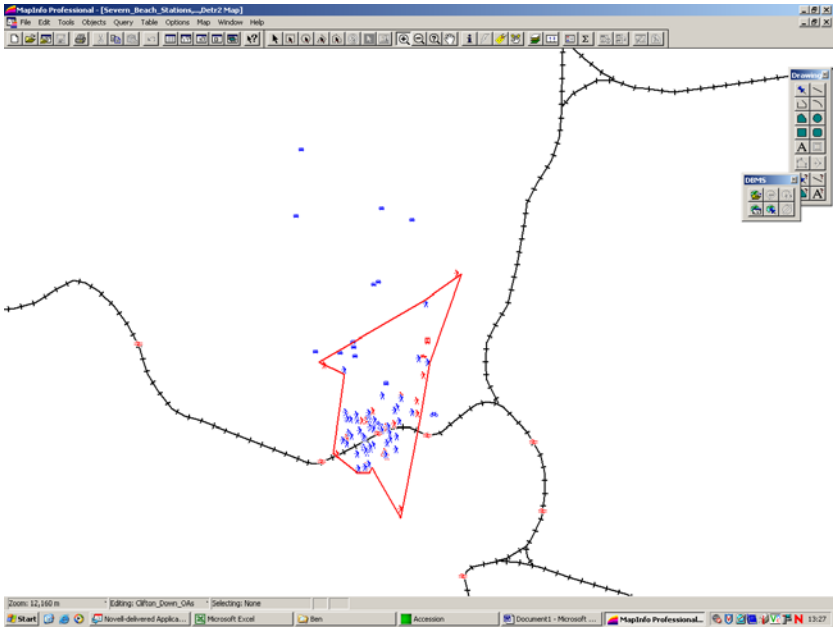
Detailed methodology of section 3 of modelling process

3 To compare access times between the SBL and bus network to three locations during the commuting peaks.

To assist in describing each process a series of screen shots are provided.

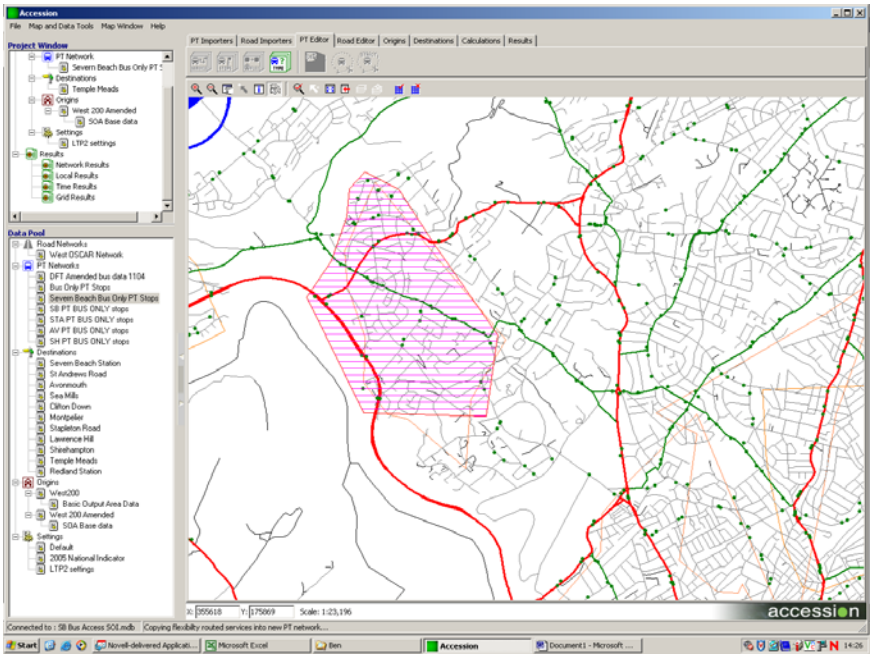
Using the origin and destination details plotted while calculating journey times within MapInfo an additional mapping layer was created and a separate polygon drawn around all passengers that walked when accessing each station. Illustrated within figure A for Redland Station.

Figure A



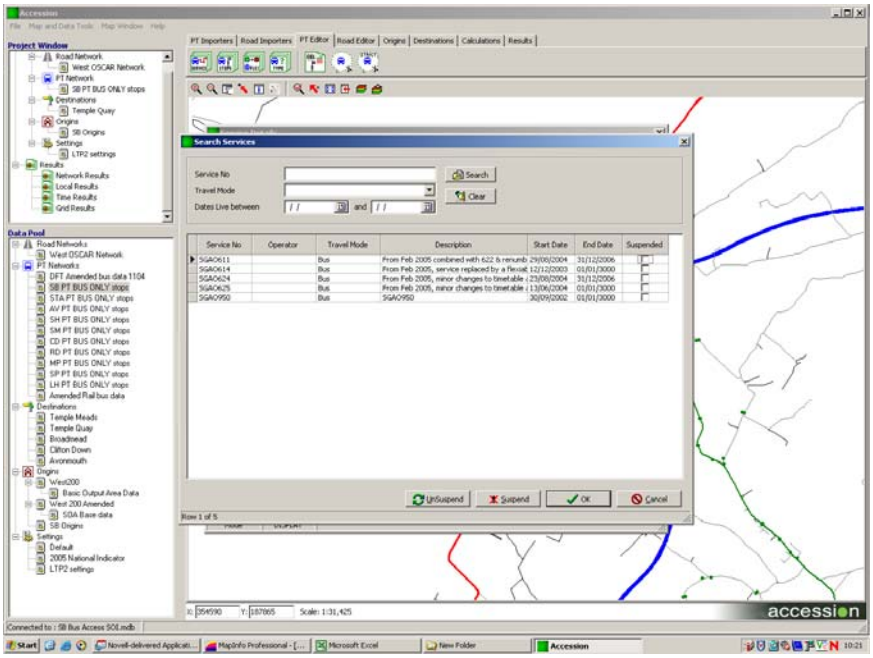
Each separate polygon or Sphere of Influence (SOI) was then imported into Accession. Once in Accession it was necessary to clip (select) the bus stops within each station SOI (shaded orange), due to the roughness of the sphere drawn, all public transport stops that were just outside the boundary have also been included. Figure B illustrates this; the example used is from Sea Mills station.

Figure B



Once each of the bus stops had been clipped for each SOI, Accession provides the facility of viewing each public transport service operating from each stop. Figure C is that of Severn Beach. The reason for assessing each the stops contained within each station SOI is to fully understand the public transport options available to the existing passengers using the SBL.

Figure C



The next stage of the process is to create a series of new public transport networks.

The first public transport network created was ‘bus only’ and involved suspending all services not available within each station’s SOI. In addition to this school services and those operating on limited days of week were also removed. For a full list of services included please refer to Appendix S

The second public transport network created was ‘rail only’ and only included the Severn Beach services and the 950, the replacement bus service between Severn Beach & St Andrews Road. The 950 was also removed from the ‘bus only’ network. The third public transport created was also ‘rail only’, but this was amended to incorporate an additional service during the morning and evening peaks based on a hypothetical timetable change.

Three journey destinations were selected based upon existing journey demand evidence provided within the rail questionnaire. The three locations were:

- Temple Quay (Temple Meads)
- Whiteladies Road (Clifton Down)
- Severnside Industrial Estate (Avonmouth)

All three locations are large employment sites; in addition, Whiteladies Road provides numerous social and retail opportunities.

Two travel times will be measured assessing access to these points.

- Morning peak – 08.00 to 9.15
- Evening peak – 17.00 to 18.15

With no accurate work time starting data available, it is assumed within this study the standard workday begins at 9.15 and finishes between 17.15 and 17.30.

Work undertaken during the JLTP measured the morning peak between the period 7.30 to 9.00 assuming a 9.00 start time. Within the existing SBL timetable two services operate within the JLTP time period, the 7.21 from Severn Beach arriving at Temple Meads at 7.56 and the 8.16 from Severn Beach arriving at 9.04. Due the awkwardness of these times and a basic requirement to incorporate all the SBL stops at least once the morning peak study period of 8.00 to 9.15 was adopted. It is recognised that this is not the ideal, but for the purposes of this study it is necessary to examine the SBL in isolation.

Calculations for the morning peak are based on travelling from the 200m grid of origin to the destination. The evening peak calculations will be based on travelling from the destination to the points of origin; this is to simulate the return journey for the commuter. .

Due to time constraints and availability of the transport model it was necessary to base this calculation set using "crowsfly" access calculations. This significantly reduced the calculation times without compromising the quality of the modelling out puts.

Appendix E

Faculty of the Built Environment

March 2006

Dear Sir or Madam,

MSc Transport Planning

Householder questionnaire on the Severn Beach Rail Line

I am sorry for the interruption but I was wondering if I could trouble you for a moment of your time.

As part of my final year's dissertation it is important that I collect and record local peoples opinions towards the local rail service.

Due to the location of your house you have been selected to participate in a household survey related to the local rail service. I can assure you that no personal details will be recorded other than the name of the road in which you live.

Please take a few minutes to complete the questionnaire on the back of this page.

I will then pop round on Saturday morning between 9.00 and 10.00** to collect your completed questionnaire and discuss any issues you may have related to this survey. If this is inconvenient please could you fold this questionnaire and leave it in a prominent place on your doorstep.

Your assistance with this is greatly appreciated.

Kind regards,

Ben Watts

– – – –

Please could you spare a few moments to complete this short questionnaire regarding the Severn Beach Rail Line.

Faculty of the Built Environment

Bristol's Severn Beach Rail Line

Severn Beach

St. Andrews Rd

Avonmouth

Shirehampton

Sea Mills

Clifton Down

Redland

Montpelier

Stapleton Road

Lawrence Hill

Temple Meads

1) Do you use public transport in Bristol?

☐ Yes ☐ No

2) Do you ever use the Severn Beach Rail Line?

☐ Yes ☐ No

If you answered **Yes**, please continue, if you answered **No** please move to question 5 and continue.

3) How often do you use the service?

☐ 5 or more times per week
☐ Once a month
☐ 2-4 times per week
☐ Infrequently
☐ Once a week

4) Why do you use this service?

☐ Convenience of station locations
☐ No other means of travel
☐ Faster travel time
☐ Cost
☐ Environmental Issues
☐ Other please state below

Please move to question 6.

5) Why do you not use this service?

☐ Inconvenient station locations
☐ Issues regarding personal safety
☐ Unreliability of service
☐ Unsure of service times
☐ Cost
☐ Other please state below

6) Using the following scale **1 being I Strongly Agree** and **5 being I Strongly Disagree**, how would you rate the following statements?

☐ If the Severn Beach line were to close it would not have an impact upon my transport needs.
☐ The line plays an important role in providing public transport access to parts of Bristol
☐ The line should be replaced by a more flexible high frequency bus service
☐ If more trains were operated during the day and weekends I would think about using the service more
☐ A lot more could be done by the local authority and train company to promote the service

Any Other Comments?

Thank you very much for your time in completing this questionnaire

Appendix E

Welcome to Shirehampton

Shirehampton was selected as the study site within this dissertation following analysis of the local authority annual rail survey and the results of the station audit.

Issues that create particular interest with regards to rail use in Shirehampton include; the socioeconomic make up of the area; the existing transport links, comments contained within the local authorities rail survey about the rail service and the physical barrier created by footbridge over the Portway providing access to the station.

Socioeconomic background

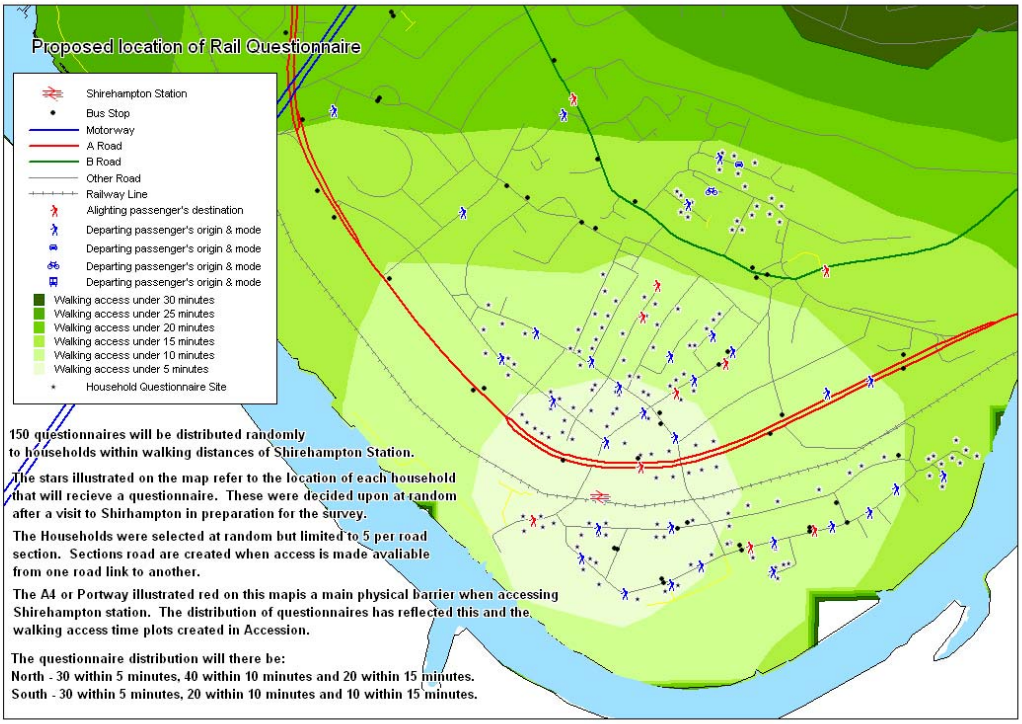
The suburb of Shirehampton is located within the ward of Avonmouth. Transport and industry have heavily influenced Shirehampton's development during the past century.

Shirehampton is located on the banks of the River Avon, during the 1830's it developed as a beauty spot often frequented by visitors to the village. As Bristol's wealth grew Shirehampton became a fashionable aristocratic area home to ship owners and wealthy merchants. Following the arrival of the railway line and construction of the new docks in Avonmouth the population rapidly expanded due to the new employment opportunities available.

Further expansion occurred after the First World War following the decision of the local authority to build hundreds of new council houses as part of the slum clearance schemes taking part within central Bristol. Expansion continued for several decades providing both private and social housing. Shirehampton's development was also heavily influenced by the construction of the A4 Portway, which has effectively split Shirehampton in two and removed some housing built during its times as a fashionable aristocratic retreat. (http://www.shire.org.uk/).

Due to the historical expansion of Shirehampton, the suburb enjoys a full mix of privately owned and rented housing types. Within the ward of Avonmouth 62% of the housing stock is owner occupied, 29% is rented by Bristol City council. This is well above the citywide average of 18% per ward and the remaining 7% of housing stock is rented privately (BCC 2004a).

Figure F1



Transport links

Shirehampton enjoys good road links via the A4 Portway (illustrated red in figure F1) between central Bristol and the M5. Shirehampton's main public transport provisions are the bus services operating along the High Street (illustrated green in figure F1) in the northern section of the town. This is served mainly by the 43 and 54 services. The 43 operates on a 20-minute frequency during the day between Cribbs Causeway via central Bristol (Broadmead) to Cadbury Heath. The 57 operates on a 12 minute frequency during the day and 30 minutes at night between Cribbs Causeway via central Bristol (Broadmead) to Stockwood. Public Transport in the south of the town

is provided by the 518 operating on a 30 minute frequency between Shirehampton and Emersons Green and the SBL operating on a 60 minute frequency.

Travel Times

Bus access from Shirehampton provides travel times to Broadmead, the principal retail area, in about 25 and 30 minutes, but the level of congestion experienced within central Bristol can influence this travel time. Neither high frequency bus services provide access to Temple Meads; but this could be accessed via a 10-minute walk from Broadmead.

The SBL provides access to Temple Meads within 20 minutes, with Broadmead accessed within a further 10 minutes walk. Travel times to central locations are therefore highly comparable, with each mode providing a beneficial service to the principal location served.

Comments made within Local Authority Survey

Analysis of the local authority rail survey from the years between 2002 and 2004 recorded a total of 27 comments about Shirehampton Station and the SBL. The largest number of comments regarded timetabling and cancellations, but 7 people (the joint highest from SBL station) praised the service and commented on how important it was. Two examples of these comments include

"This service is great. I would be lost without it"

Anon 2002

"The train service is far more reliable and greater value than any bus service, far more comfortable, friendlier and efficient. Brilliant value for money I'd recommend the Severn Beach Railway to anybody!"

Anon 2002

The general trend was praise for the service but with a request for a greater frequency of services. It will be interesting to see if householders throughout Shirehampton or just regular users of the line share this praise for the service.

Physical Barrier

The A4 Portway acts as a physical barrier and splits Shirehampton in two. Households north of this barrier can access the station via a footbridge over the dual carriageway. A level crossing is available at the Hung Road cross roads but this is not ideally suited when accessing the station adding considerable time to journey.

Figure F2 provides a view from the northern section of Station Road across The Portway to the southern section of Station Road and Shirehampton Station. Please note the shallow steps used for providing access to the footbridge. These are not suitable for wheelchair and pushchair use and would consequently add to journey times should the station be accessed via Hung Road.

Figure F2

Photo supplied by author.

Figure F3

Photo supplied by author.

Figure F3 provides a view when walking over the footbridge towards the southern side

Analysis between household questionnaire either side of this barrier will make for an interesting comparison to see if it should effect anybody decision about using the SBL.

Appendix G

STATION FACILITIES AUDIT

Station:_____

Auditor: _____ Date: _____

GENERAL STATION FACILITIES

Booking office	Buffet/catering	Toilets/baby changing

SIGNAGE

Station approach signs/ surrounding area	Entrance/exit	Destinations (to & from nearby destinations)
Direction of travel	**Platform numbers**	**Condition of signs**

LIGHTING

Station exterior/approach	Access lighting: ground level/ramps/passengers/lifts/ stairs	Platform
Shelter/waiting room	**Timetable**	**Condition of lighting**

ACCESS TO PLATFORMS (remember to consider the Disability Discrimination Act when assessing the access)

Tunnel/bridge	Ramp/Disabled Access/Lifts	Stairs/Handrails/White-edged Stairs/Treads
Any ways to improve access?		

STATION FACILITIES AUDIT

PLATFORMS

Number	Quality of platform surface	Platform edge white lines /Yellow line & instruction

PASSENGER INFORMATION

VDU Monitors/electronic information displays	Public address system	Press button information points & instructions on how to use them
Printed information: timetables/ticket purchasing information	Number and location of display boards	Interchange information
Local/tourist information/maps/ countryside walks	Condition of information	

SHELTER & SEATING

Covered waiting area with all-round visibility & weather protection	Number of shelters/seating	Location of shelters/seating
Heating	Glazing	Condition of shelters/seating

SECURITY

CCTV	Telephone	Emergency response button

STATION FACILITIES AUDIT

Security patrol	Staff presence (tickets purchasing & provision for movement of luggage)	AA sponsored secure car parks

CAR PARK

Number of spaces	Free/Charging	
Lighting	**Expansion opportunities**	**Condition of car park**

INTERCHANGE FACILITIES/OPPORTUNITIES

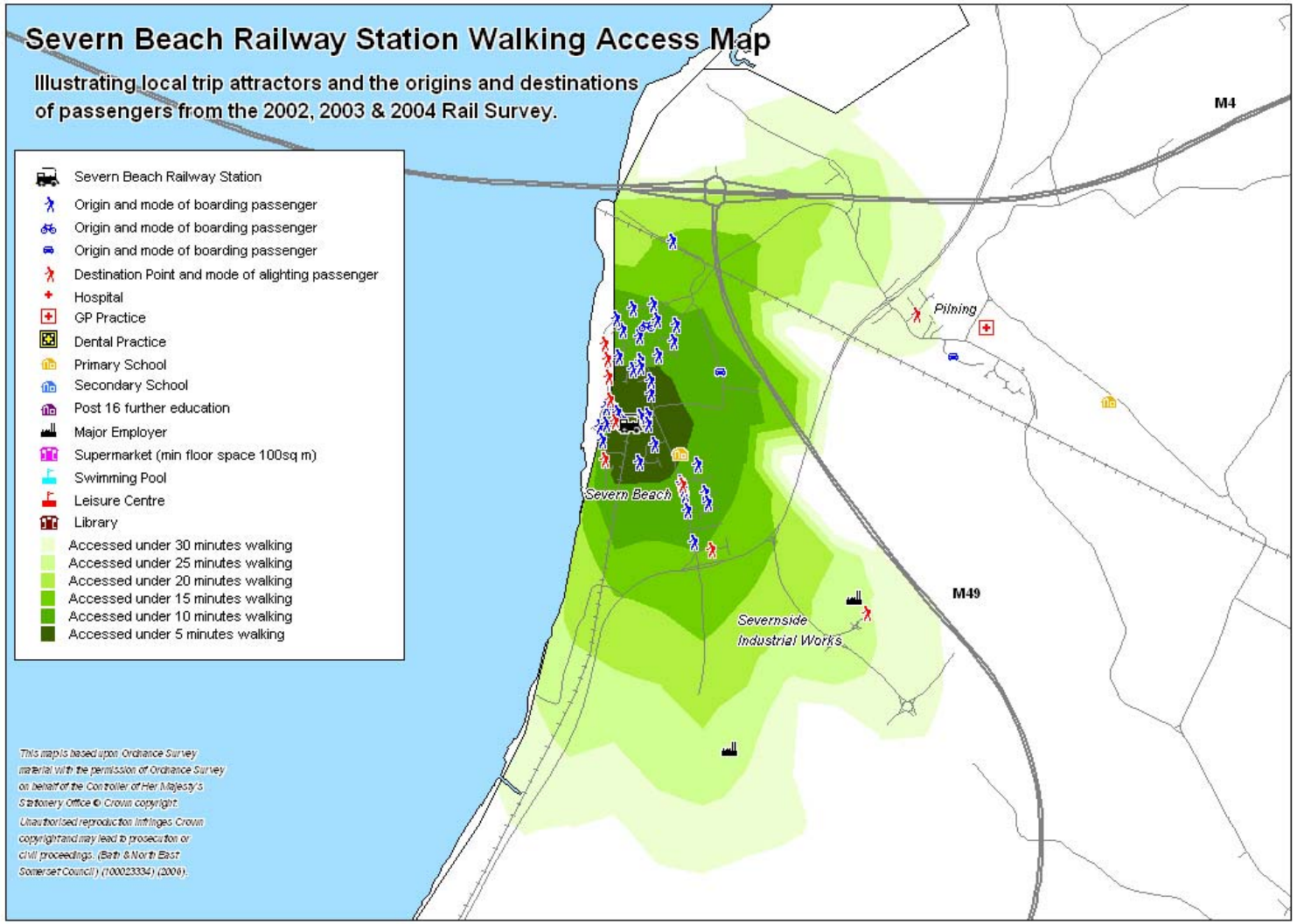
Bus	Taxi	Pedestrian
Bicycle	**Kiss & ride/drop off**	**Park & ride/Dial a ride**
Coach	**Ferry**	**Airport**

Summary

FUTURE IMPROVEMENTS

Short term

Long term


Severn Beach Railway Station Walking Access Map
Illustrating local trip attractors and the origins and destinations of passengers from the 2002, 2003 & 2004 Rail Survey.
Severn Beach Railway Station
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Destination Point and mode of alighting passenger
Hospital
GP Practice
Dental Practice
Primary School
Secondary School
Post 16 further education
Major Employer
Supermarket (min floor space 100sq m)
Swimming Pool
Leisure Centre
Library
Accessed under 30 minutes walking
Accessed under 25 minutes walking
Accessed under 20 minutes walking
Accessed under 15 minutes walking
Accessed under 10 minutes walking
Accessed under 5 minutes walking
M4
M49
Severn Beach
Pilning
Severnside Industrial Works
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Appendix H

St Andrews Road Railway Station Walking Access Map
Illustrating local trip attractors and the origins and destinations of passengers from the 2002, 2003 & 2004 Rail Survey.
Severn Beach Line Railway Station
Hospital
GP Practice
Dental Practice
Primary School
Secondary School
Post 16 further education
Major Employer
Supermarket (min floor space 100sq m)
Swimming Pool
Leisure Centre
Library
Destination and mode of alighting passenger
Accessed under 30 minutes walking
Accessed under 25 minutes walking
Accessed under 20 minutes walking
Accessed under 15 minutes walking
Accessed under 10 minutes walking
Accessed under 5 minutes walking
Rockingham Works
Docks
M5
Severnside Trading Estate
Avonmouth
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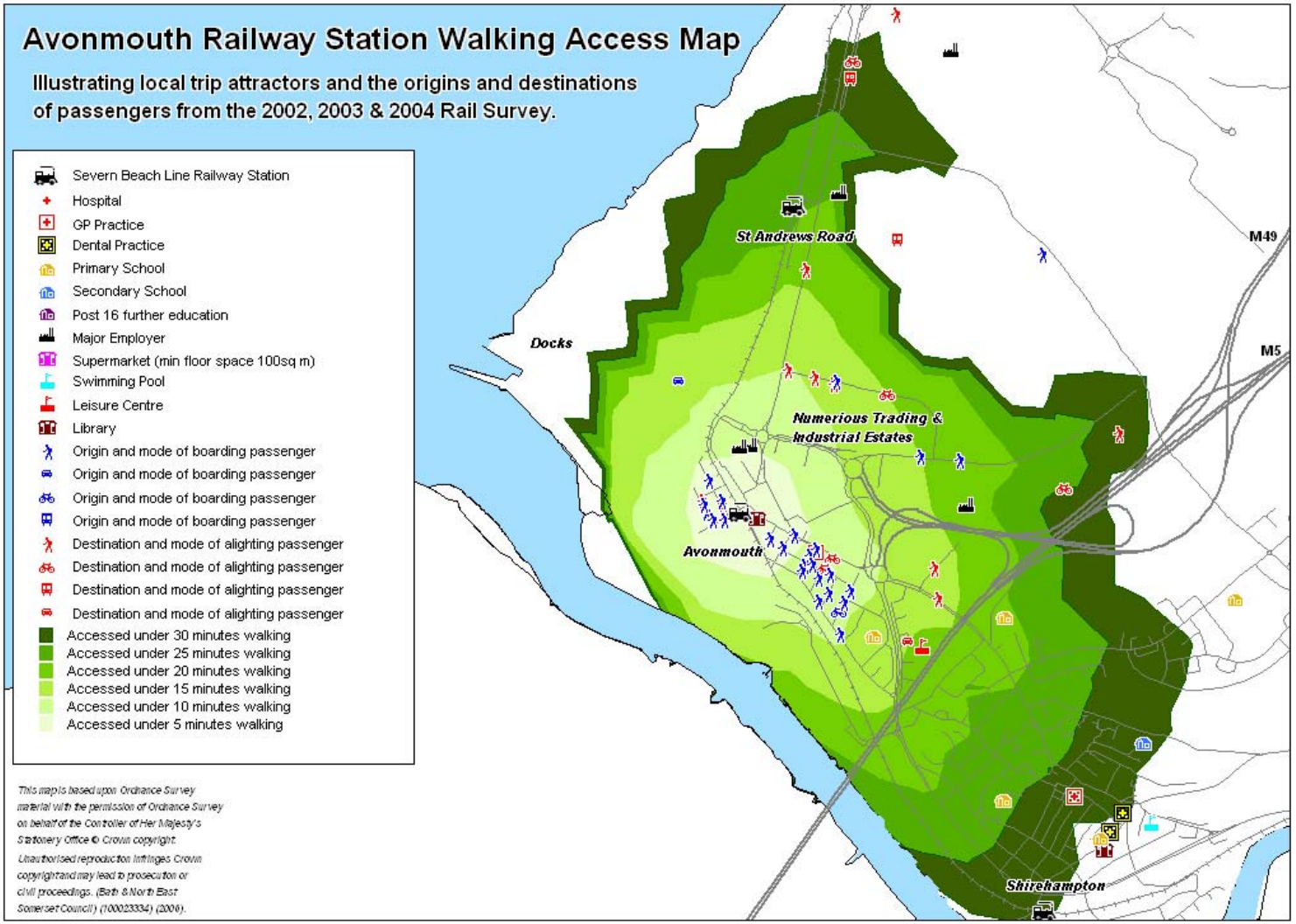
Appendix I

Avonmouth Railway Station Walking Access Map

Illustrating local trip attractors and the origins and destinations of passengers from the 2002, 2003 & 2004 Rail Survey.



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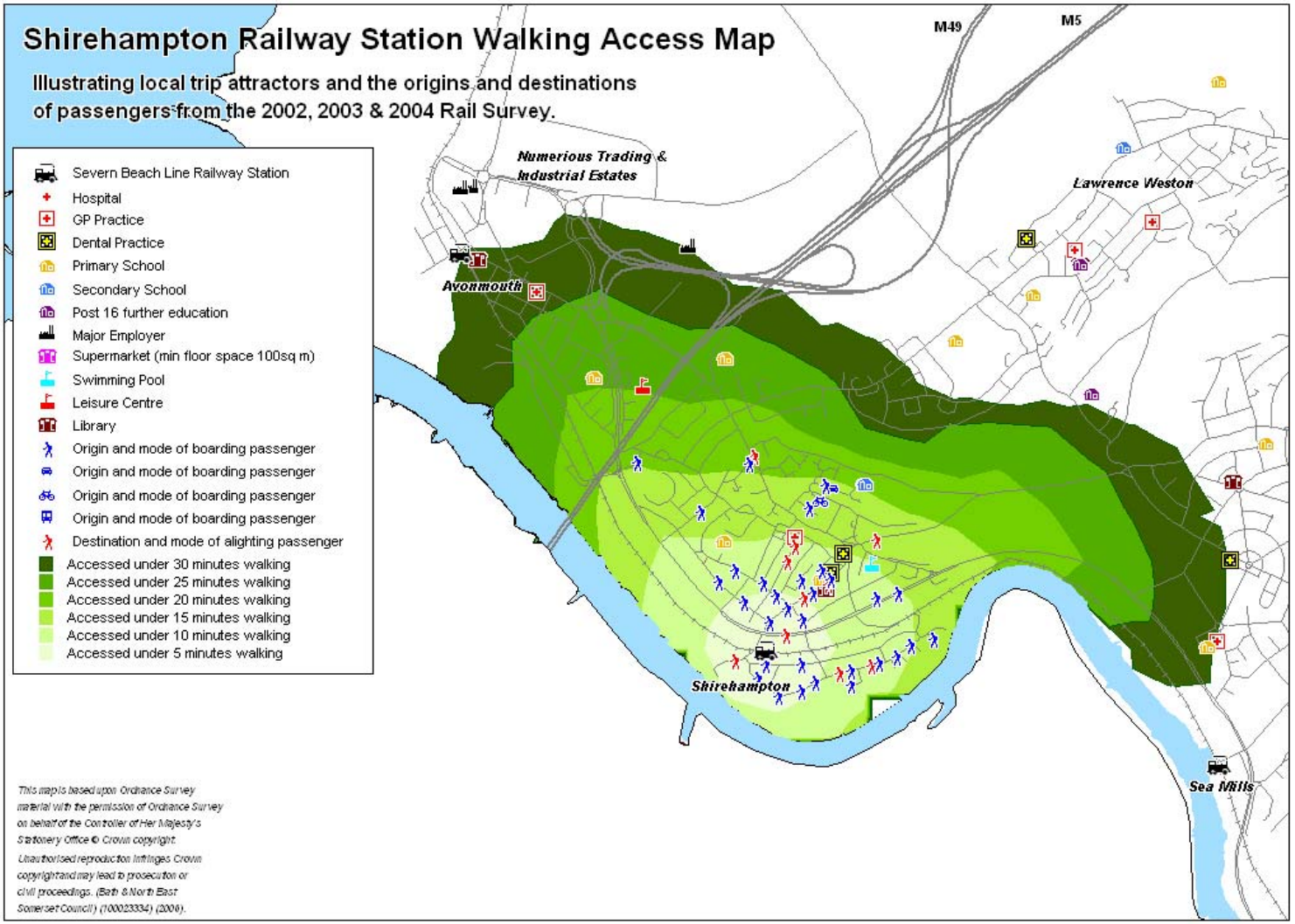
Appendix J


Shirehampton Railway Station Walking Access Map
Illustrating local trip attractors and the origins and destinations of passengers from the 2002, 2003 & 2004 Rail Survey.
Severn Beach Line Railway Station
Hospital
GP Practice
Dental Practice
Primary School
Secondary School
Post 16 further education
Major Employer
Supermarket (min floor space 100sq m)
Swimming Pool
Leisure Centre
Library
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Destination and mode of alighting passenger
Accessed under 30 minutes walking
Accessed under 25 minutes walking
Accessed under 20 minutes walking
Accessed under 15 minutes walking
Accessed under 10 minutes walking
Accessed under 5 minutes walking
M49
M5
Numerious Trading & Industrial Estates
Lawrence Weston
Avonmouth
Shirehampton
Sea Mills
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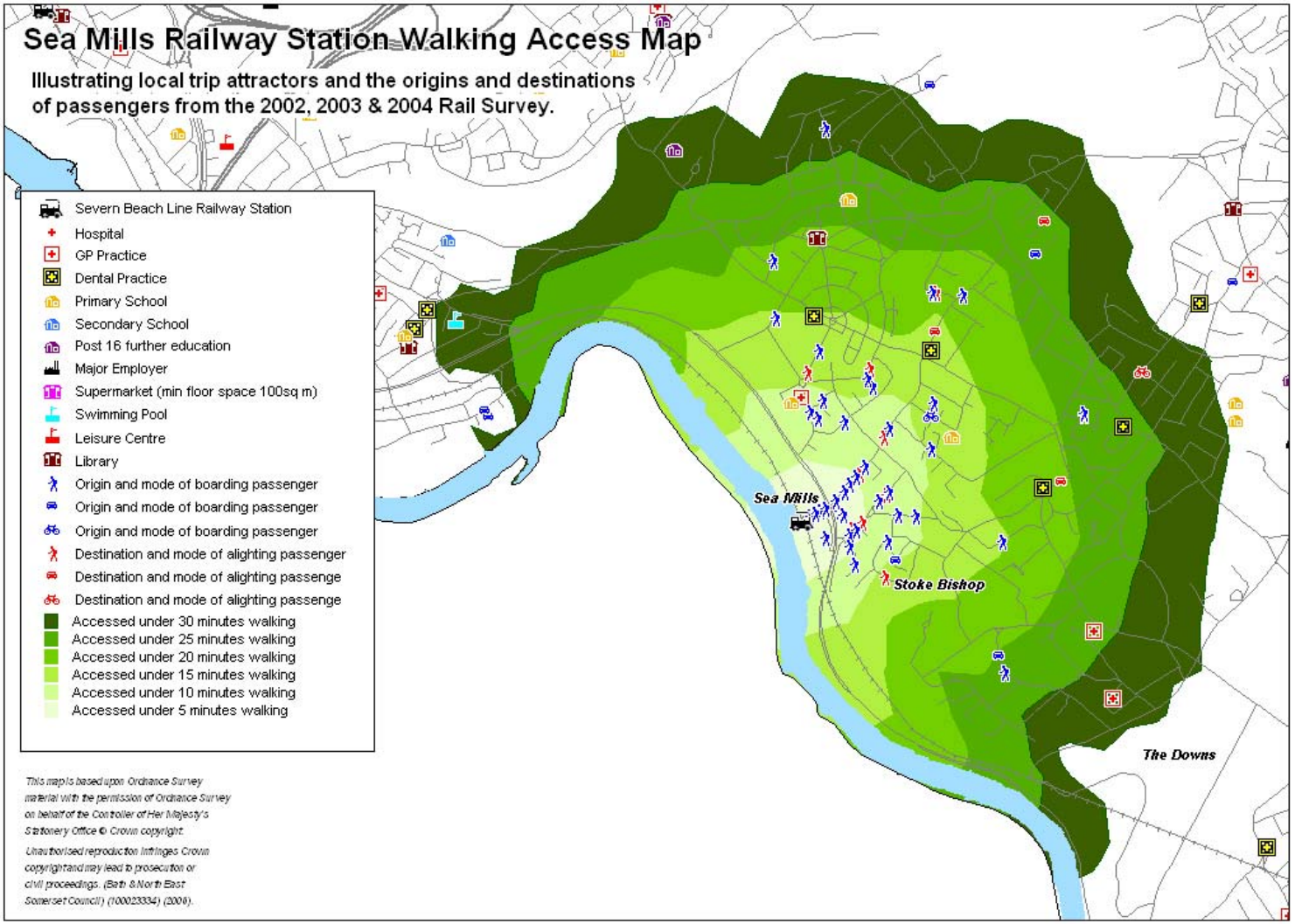
Appendix K


Sea Mills Railway Station Walking Access Map
Illustrating local trip attractors and the origins and destinations of passengers from the 2002, 2003 & 2004 Rail Survey.
Severn Beach Line Railway Station
Hospital
GP Practice
Dental Practice
Primary School
Secondary School
Post 16 further education
Major Employer
Supermarket (min floor space 100sq m)
Swimming Pool
Leisure Centre
Library
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenge
Destination and mode of alighting passenge
Accessed under 30 minutes walking
Accessed under 25 minutes walking
Accessed under 20 minutes walking
Accessed under 15 minutes walking
Accessed under 10 minutes walking
Accessed under 5 minutes walking
Sea Mills
Stoke Bishop
The Downs
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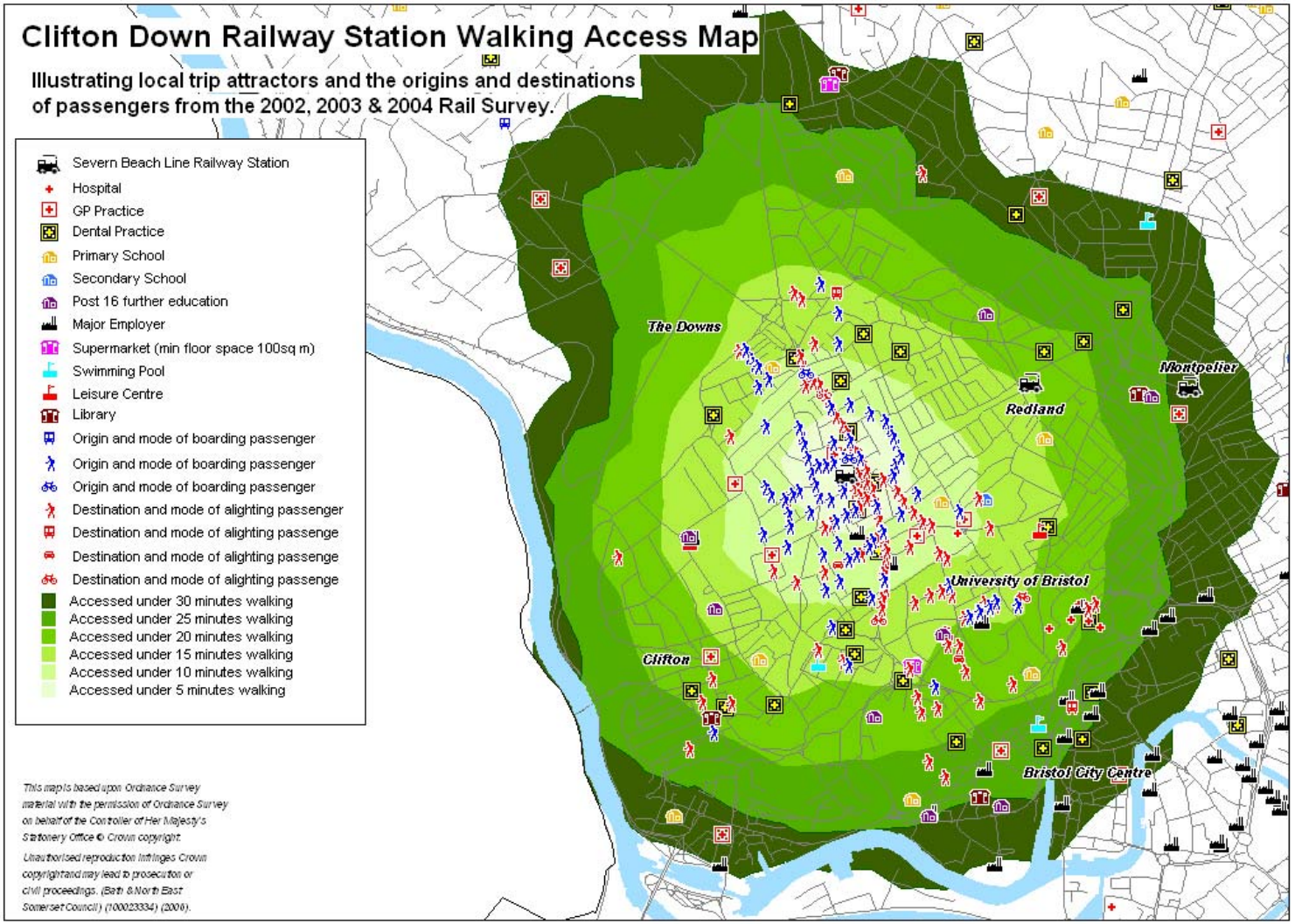
Appendix L


Clifton Down Railway Station Walking Access Map
Illustrating local trip attractors and the origins and destinations of passengers from the 2002, 2003 & 2004 Rail Survey.
Severn Beach Line Railway Station
Hospital
GP Practice
Dental Practice
Primary School
Secondary School
Post 16 further education
Major Employer
Supermarket (min floor space 100sq m)
Swimming Pool
Leisure Centre
Library
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenge
Destination and mode of alighting passenge
Destination and mode of alighting passenge
Accessed under 30 minutes walking
Accessed under 25 minutes walking
Accessed under 20 minutes walking
Accessed under 15 minutes walking
Accessed under 10 minutes walking
Accessed under 5 minutes walking
The Downs
Montpelier
Redland
University of Bristol
Clifton
Bristol City Centre
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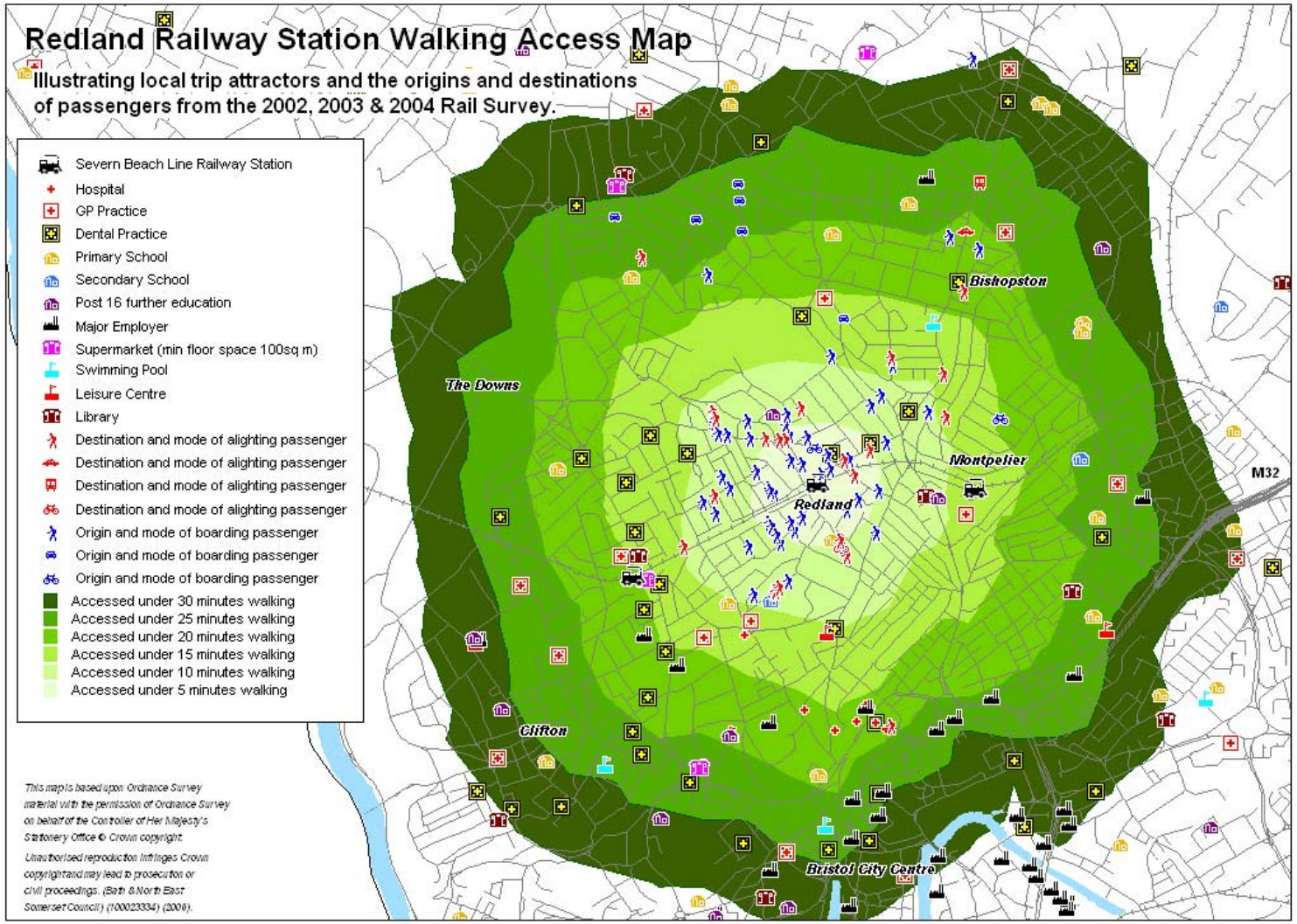
Appendix M


Redland Railway Station Walking Access Map
Illustrating local trip attractors and the origins and destinations of passengers from the 2002, 2003 & 2004 Rail Survey.
Severn Beach Line Railway Station
Hospital
GP Practice
Dental Practice
Primary School
Secondary School
Post 16 further education
Major Employer
Supermarket (min floor space 100sq m)
Swimming Pool
Leisure Centre
Library
Destination and mode of alighting passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Accessed under 30 minutes walking
Accessed under 25 minutes walking
Accessed under 20 minutes walking
Accessed under 15 minutes walking
Accessed under 10 minutes walking
Accessed under 5 minutes walking
The Downs
Bishopston
Montpelier
Redland
M32
Clifton
Bristol City Centre
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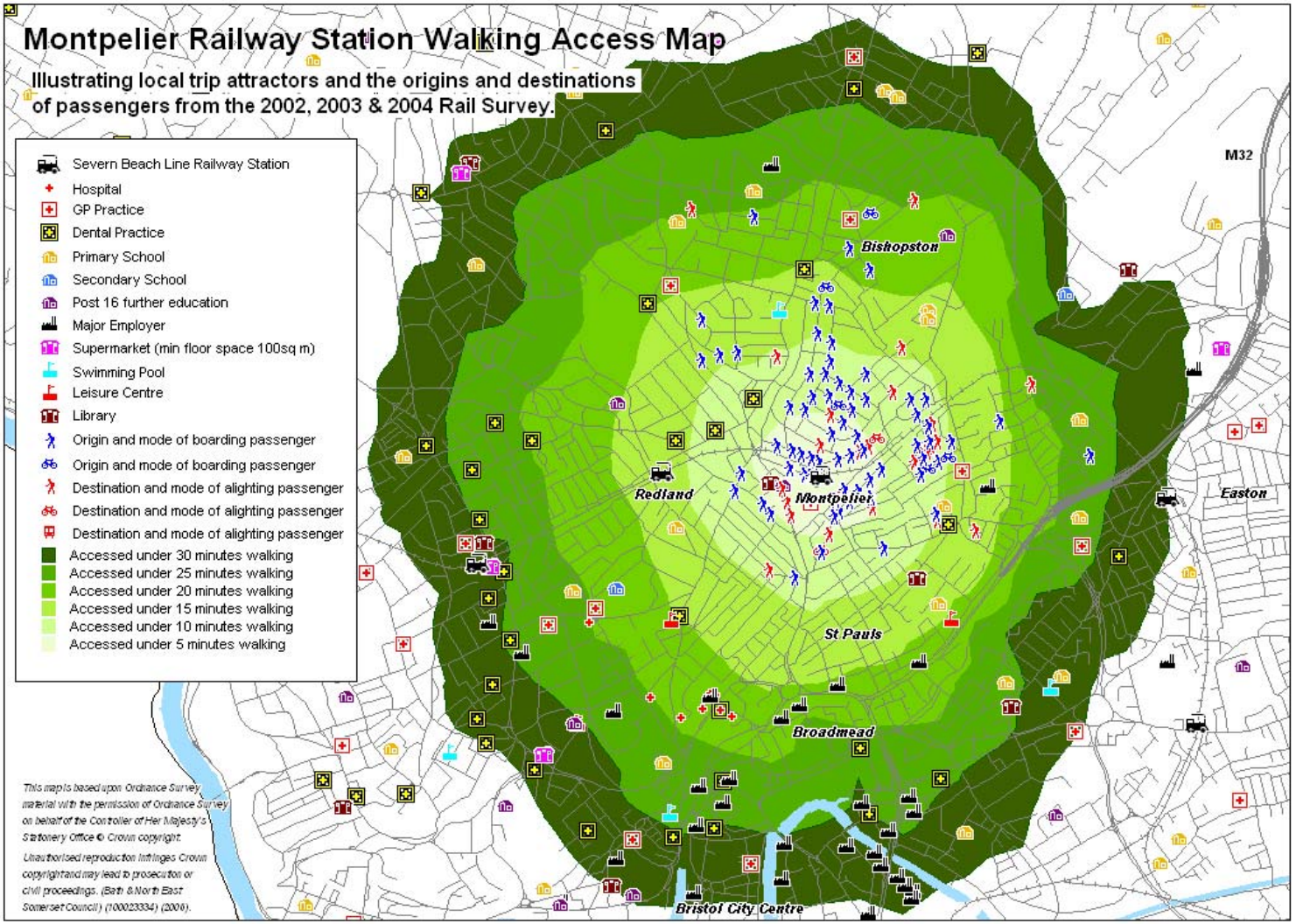
Appendix N


Montpelier Railway Station Walking Access Map
Illustrating local trip attractors and the origins and destinations of passengers from the 2002, 2003 & 2004 Rail Survey.
Severn Beach Line Railway Station
Hospital
GP Practice
Dental Practice
Primary School
Secondary School
Post 16 further education
Major Employer
Supermarket (min floor space 100sq m)
Swimming Pool
Leisure Centre
Library
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenger
Accessed under 30 minutes walking
Accessed under 25 minutes walking
Accessed under 20 minutes walking
Accessed under 15 minutes walking
Accessed under 10 minutes walking
Accessed under 5 minutes walking
M32
Bishopston
Redland
Montpelier
Easton
St Pauls
Broadmead
Bristol City Centre
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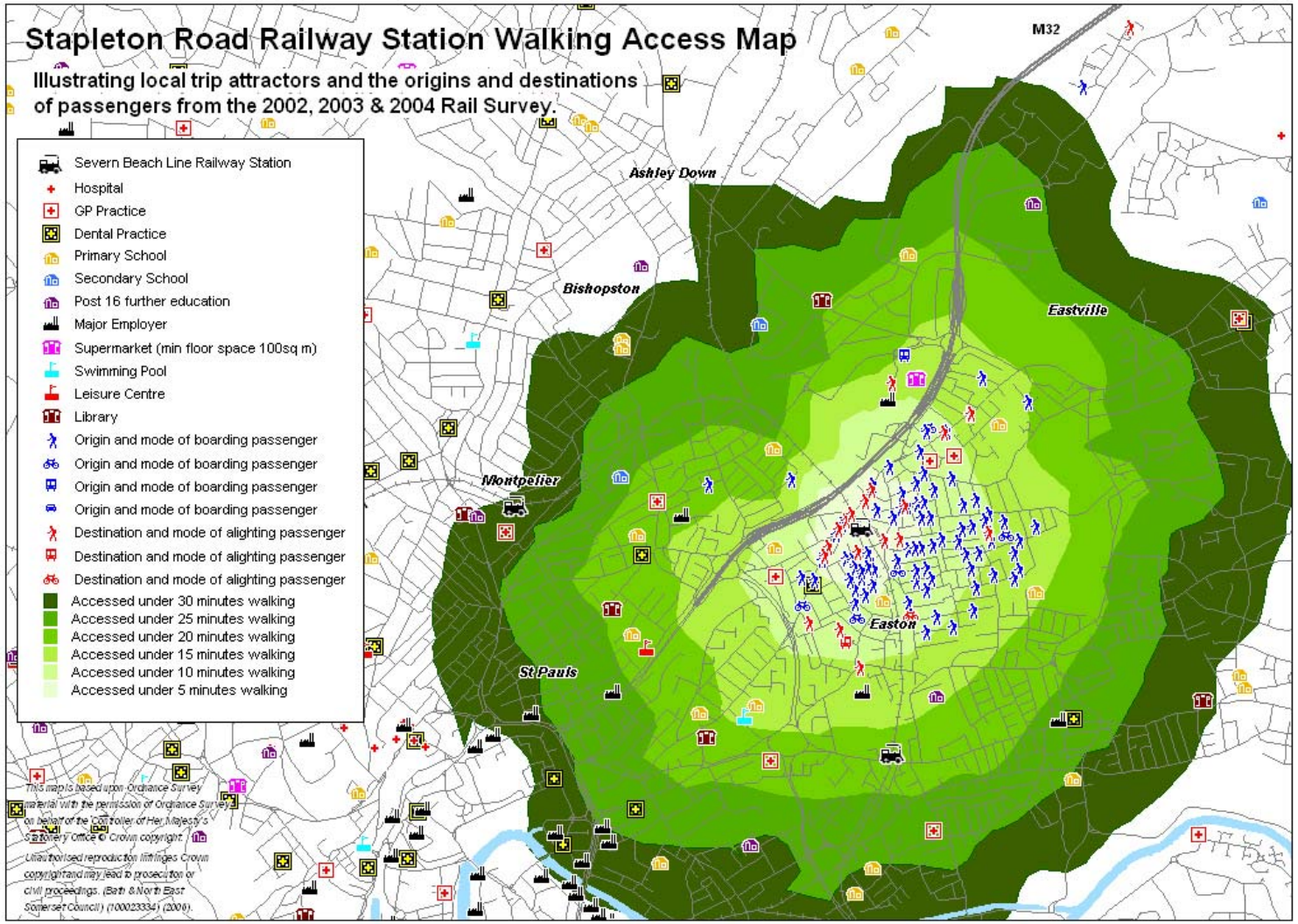
Appendix O


Stapleton Road Railway Station Walking Access Map
Illustrating local trip attractors and the origins and destinations of passengers from the 2002, 2003 & 2004 Rail Survey.
Severn Beach Line Railway Station
Hospital
GP Practice
Dental Practice
Primary School
Secondary School
Post 16 further education
Major Employer
Supermarket (min floor space 100sq m)
Swimming Pool
Leisure Centre
Library
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenger
Accessed under 30 minutes walking
Accessed under 25 minutes walking
Accessed under 20 minutes walking
Accessed under 15 minutes walking
Accessed under 10 minutes walking
Accessed under 5 minutes walking
M32
Ashley Down
Bishopston
Eastville
Montpelier
Easton
St Pauls
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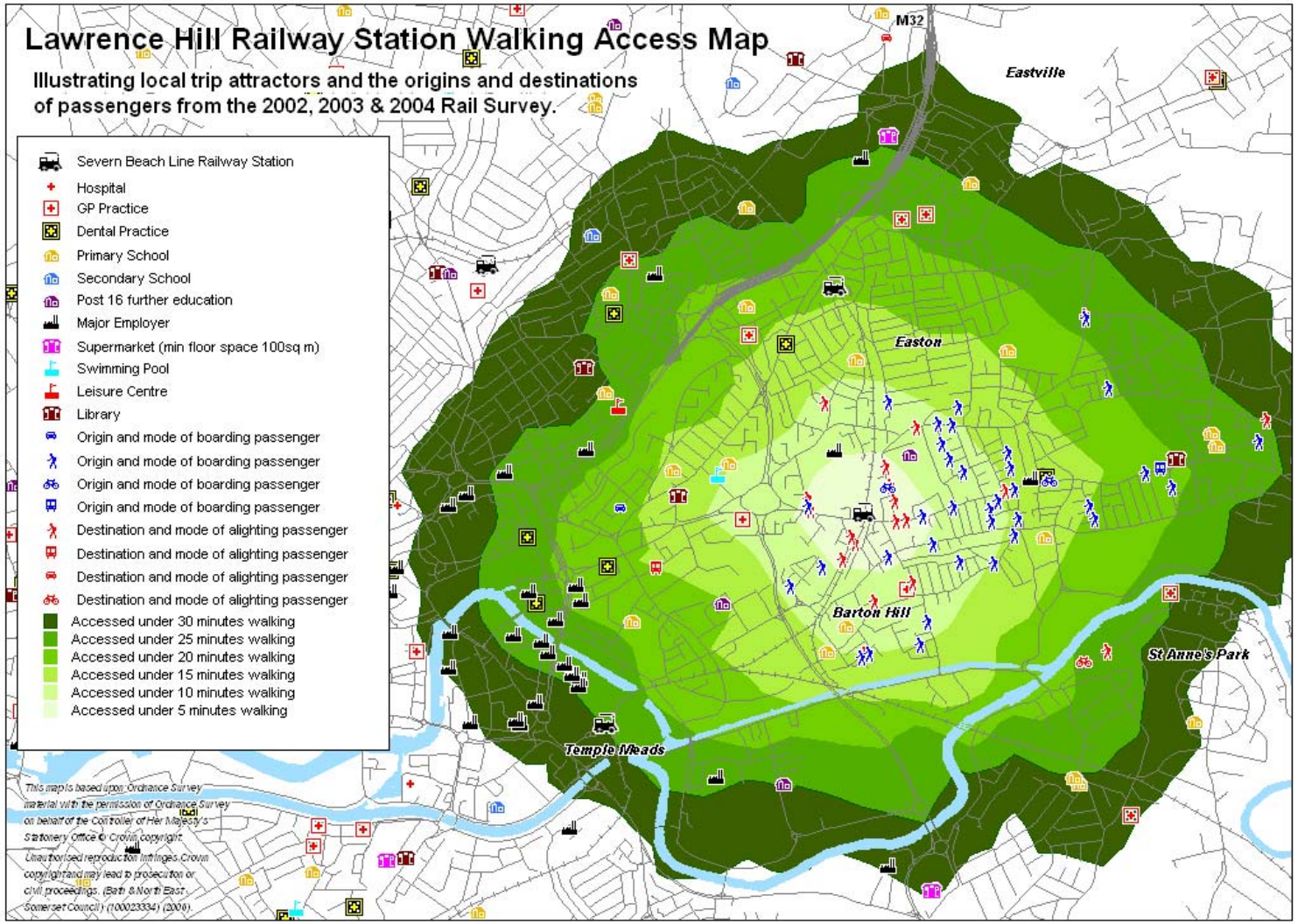
Appendix P


Lawrence Hill Railway Station Walking Access Map
Illustrating local trip attractors and the origins and destinations of passengers from the 2002, 2003 & 2004 Rail Survey.
Severn Beach Line Railway Station
Hospital
GP Practice
Dental Practice
Primary School
Secondary School
Post 16 further education
Major Employer
Supermarket (min floor space 100sq m)
Swimming Pool
Leisure Centre
Library
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Origin and mode of boarding passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenger
Destination and mode of alighting passenger
Accessed under 30 minutes walking
Accessed under 25 minutes walking
Accessed under 20 minutes walking
Accessed under 15 minutes walking
Accessed under 10 minutes walking
Accessed under 5 minutes walking
M32
Eastville
Easton
Barton Hill
St Anne's Park
Temple Meads
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Appendix Q

Appendix R

Trip Attractors

List of Trip Attractors with a maximum a walking time of 20 minutes from each Severn Beach Station

In order to apply a value of station to reflect its attractiveness to a potential rail user a 'value of attraction' has been calculated for each station. A simple scoring system has been developed to create the 'value of attraction'. Each trip attractor located within a 5-minute walk of a station scores 15 points, within 10 minutes its 10 points, 15 minutes its 5 points and 20 minutes its 1 point. An overall value is then assigned to each station based on its scores. The education only count only relates to secondary education facilities.

Severn Beach

Health	**Walking Time**	**Education**	**Walking Time**
Major Employment	**Walking Time**	**Leisure**	**Walking Time**
Retail	**Walking Time**	**Other**	**Walking Time**
		National Cycle Route	5

Facility or Key Service	**Health**	**Education**	**Major Employment**	**Leisure**	**Retail**	**Other**
Score	**0**	**0**	**0**	**0**	**0**	**15**
Total Score		**15**				

Appendix R

Trip Attractors

St. Andrews Road

Health	Walking Time	Education	Walking Time
Major Employment	**Walking Time**	**Leisure**	**Walking Time**
Rhodia Ltd (250-500 employed) Bristol Port Company (500-1000 employed) Cowlin Construction Ltd (250-500 employed)	5 20 20		
Retail	**Walking Time**	**Other**	**Walking Time**

Facility or Key Service	Health	Education	Major Employment	Leisure	Retail	Other
Score	**0**	**0**	**17**	**0**	**0**	**0**
Total Score		**17**				

Appendix R

Trip Attractors

Avonmouth

Health	Walking Time	Education	Walking Time
Avonmouth Medical Centre	10		
Major Employment	**Walking Time**	**Leisure**	**Walking Time**
Bristol Port Company (500-1000 employed) Cowlin Construction Ltd (250-500 employed) British Bakeries (250-500 employed	10 10 20	Avonmouth Library Robin Cousins Sports Centre	5 10
Retail	**Walking Time**	**Other**	**Walking Time**
Avonmouth Shops	10		

Facility or Key Service	Health	Education	Major Employment	Leisure	Retail	Other
Score	**10**	**0**	**22**	**25**	**10**	**0**
Total Score		**67**				

Appendix R

Trip Attractors

Shirehampton

Health	Walking Time	Education	Walking Time
Shirehampton Health Centre Dentist x2	10 10	Portway Community School (Secondary & post 16)	20
Major Employment	**Walking Time**	**Leisure**	**Walking Time**
		Shirehampton Library Shirehampton Swimming Baths	10 10
Retail	**Walking Time**	**Other**	**Walking Time**
Shirehampton High Street Shops	10		

Facility or Key Service	Health	Education	Major Employment	Leisure	Retail	Other
Score	**30**	**1**	**0**	**20**	**10**	**0**
Total Score		**61**				

Sea Mills

Health	Walking Time	Education	Walking Time
GP Dentist x2 Dentist	10 15 20		
Major Employment	**Walking Time**	**Leisure**	**Walking Time**
		Sea Mills Library	20
Retail	**Walking Time**	**Other**	**Walking Time**
		Riverside Walk	5

Facility or Key Service	Health	Education	Major Employment	Leisure	Retail	Other
Score	**21**	**0**	**0**	**1**	**0**	**15**
Total Score		**36**				

Appendix R

Trip Attractors

Clifton Down

Health	Walking Time	Education	Walking Time
Health centre	5	Cotham School (Secondary & post 16)	15
GP's x4	10		
Dentists x2	5	Clifton College (Private Education)	15
Dentists x3	10		
Dentists x7	15	Bristol Grammar School (Private education)	20
Dentists x4	20		
United Bristol Healthcare Trust Hospital Sites (Various)	20	Clifton High School (Secondary & post 16)	15
		Redland High School (Secondary & post 16)	20
Major Employment	**Walking Time**	**Leisure**	**Walking Time**
Hargreaves Lansdown Assets Management (250-500 employed)	10	Whiteladies Road – Various bars & Restaurants	5
BBC Bristol (500-1000 employed)	10	Redland Library	10
		Uni of Bristol Swimming Pool	15
Whiteladies Road Shops/Clifton Down Shopping Centre	10	Leisure Centre	15
Clifton College (250-500 employed	15		
Bristol University (>2000 employed)	15		
United Bristol Healthcare Trust (>2000 employed)	20		
Retail	**Walking Time**	**Other**	**Walking Time**
Clifton Down Shopping Centre	5	Bristol Zoo	10
		QEH Theatre	20
Whiteladies Road	5	Good bus interchange facilities with services operating in to the north of the City	5
Clifton Triangle	15		
Clifton Village	15		

Facility or Key Service	Health	Education	Major Employment	Leisure	Retail	Other
Score	**155**	**17**	**41**	**35**	**40**	**26**
Total Score		**314**				

Appendix R

Trip Attractors

Redland

Health	Walking Time	Education	Walking Time
GPs and health centres x5	15	Cotham School (Secondary & post 16)	5
Dentists x2	5		
Dentist	10	Redland High School (Secondary & post 16)	5
Dentist x7	15		
Dentsistx6	20	Colston's Girls School (Secondary & post 16)	10
United Bristol Healthcare Trust Hospital Sites (Various)	20		
Major Employment	**Walking Time**	**Leisure**	**Walking Time**
Gloucester Road Retail Area	10	Gloucester Road – Various bars & Restaurants	10
Hargreaves Lansdown	20		
Assets Management (250-500 employed)	20	Whiteladies Road – Various bars & Restaurants	20
BBC Bristol (500-1000 employed)	20	Cheltenham Road Library	10
Whiteladies Road Shops/Clifton Down Shopping Centre	20	Kingsdown Leisure Centre	15
Bristol University (>2000 employed)	20		
United Bristol Healthcare Trust (>2000 employed)			
Retail	**Walking Time**	**Other**	**Walking Time**
Gloucester Road Shops	10		
Clifton Down Shopping Centre	20		
Whiteladies Road Shops	20		

Facility or Key Service	Health	Education	Major Employment	Leisure	Retail	Other
Score	**97**	**40**	**15**	**36**	**12**	**0**
Total Score		**190**				

Appendix R

Trip Attractors

Montpelier

Health	Walking Time	Education	Walking Time
Montpelier Health Centre	5	Colston's Girls School	5
Dentists x2	10	(Secondary & post 16)	
Dentists x5	15	Fairfield High School	10
United Bristol Healthcare Trust Hospital Sites (Various	20	(Secondary & post 16)	
Major Employment	**Walking Time**	**Leisure**	**Walking Time**
Brooks Service Group Ltd (250-500 employed)	20	Gloucester Road – Various bars &	5
Avon & Somerset Probation Services (250-500 employed)	20	Restaurants Cheltenham Road Library	5
		Kingsdown Leisure Centre	15
GE Capital Equipment Finance LTD (500-1000 employed)	20		
House of Frasier (250-500 employed)	20		
Debenhams (250-500 employed)	20		
Broadmead Retail Centre (1000-1500 employed)	20		
United Bristol Healthcare Trust (>2000 employed)	20		
Retail	**Walking Time**	**Other**	**Walking Time**
Gloucester / Cheltenham Road Shops	10		
Broadmead Retail Centre	20		

Facility or Key Service	Health	Education	Major Employment	Leisure	Retail	Other
Score	**51**	**25**	**7**	**35**	**11**	**0**
Total Score		**129**				

Appendix R

Trip Attractors

Stapleton Road

Health	Walking Time	Education	Walking Time
GPs x3 Dentist	10 10	Bristol City Academy (Post 16 education)	20
Major Employment	**Walking Time**	**Leisure**	**Walking Time**
Ikea (500-1000 employed) Eastgate Retail Park (1000-1500 employed) First Group (500-1000 employed) Brooks Service Group Ltd (250-500 employed)	10 15 20 20	Easton Leisure Centre & Swimming Pool	20
Retail	**Walking Time**	**Other**	**Walking Time**
Eastgate Retail Park Stapleton Road & St Marks Road Shops	15 10		

Facility or Key Service	Health	Education	Major Employment	Leisure	Retail	Other
Score	**40**	**1**	**17**	**1**	**15**	**0**
Total Score		**74**				

Appendix R

Trip Attractors

Lawrence Hill

Health	**Walking Time**	**Education**	**Walking Time**
GPs x2 Dentists x 2 Dentist	10 15 20	Bristol City Academy (Post 16 education)	10
Major Employment	**Walking Time**	**Leisure**	**Walking Time**
First Group (500-1000 employed)	10	Easton Leisure Centre & Swimming Pool Trinity Road Library	10 20
Retail	**Walking Time**	**Other**	**Walking Time**
Shops along Lawrence Hill	10	Good bus interchange facilities with services operating in to the east of the City	5

Facility or Key Service	**Health**	**Education**	**Major Employment**	**Leisure**	**Retail**	**Other**
Score	**31**	**10**	**10**	**11**	**10**	**15**
Total Score		**87**				

Severn Beach

Service Number	Description
611, 614	Severn Beach to Thornbury
624, 625	Severn Beach to Old Market

St Andrews Road

Service Number	Description
41	Avonmouth to Cherry Gardens

Avonmouth

Service Number	Description
41, 42a	Avonmouth to Cherry Gardens
43A	Cribbs Causeway to Cadbury Heath
517	Avonmouth to MOD Abbeywood
523	Avonmouth to Westbury-on-Trym

Shirehampton

Service Number	Description
41, 42 A	Avonmouth to Cherry Gardens
43A	Cribbs Causeway to Cadbury Heath
57	Blaise Castle to central Bristol
523	Avonmouth to Westbury-on-Trym
518	Shirehampton to Emerson's Green

Sea Mills

Service Number	Description
41, 42 A	Avonmouth to Cherry Gardens
43A	Cribbs Causeway to Cadbury Heath
57	Blaise Castle to central Bristol
517	Avonmouth to MOD Abbeywood
523	Avonmouth to Westbury-on-Trym
585	Broadmead to Sea Mills

Clifton Down

Service Number	Description
1	Broomhill to Henbury
8	Temple Meads loop service
9	Temple Meads loop service
20,21	Rookery Farm to Westbury-on-Trym
41, 42A	Avonmouth to Cherry Gardens
43	Cribbs Causeway to Cadbury Heath
54	Cribbs Causeway to Stockwood
55	Southmead to Broadmead
99	Centre to UWE
500	Baltic Wharf loop
586	Broadmead to Redland
587	Kingswood to Hotwells
624/625	Severn Beach to Old Market

Redland

Service Number	Description
8	Temple Meads loop service
9	Temple Meads loop service
20,21	Rookery Farm to Westbury-on-Trym
70	Centre to UWE
71	Centre to Bradley Stoke
75, 75A	Cribbs Causeway to Hartcliffe
76	Southmead to Hartcliffe
77	Henbury to Hartcliffe
99	Centre to UWE
309, 310	Main bus station to Thornbury
586	Broadmead to Redland
587	Kingswood to Hotwells
601	Centre to Almondsbury

Montpelier

Service Number	Description
20,21	Rookery Farm to Westbury-on-Trym
25	Lockleaze to Ashton Vale
70	Centre to UWE
71	Centre to Bradley Stoke
75, 75A	Cribbs Causeway to Hartcliffe
76	Southmead to Hartcliffe
77	Henbury to Hartcliffe
99	Centre to UWE
309, 310	Main bus station to Thornbury
601	Centre to Almondsbury

Stapleton Road

Service Number	Description
4	Centre to Longwell Green
5A, 5B	Centre to Downend
24, 25	Lockleaze to Ashton Vale
48, 49	Centre to Emersons Green
585	Broadmead to Sea Mills
586	Broadmead to Redland
587	Kingswood to Hotwells
342	Bus Station to Chipping Sodbury

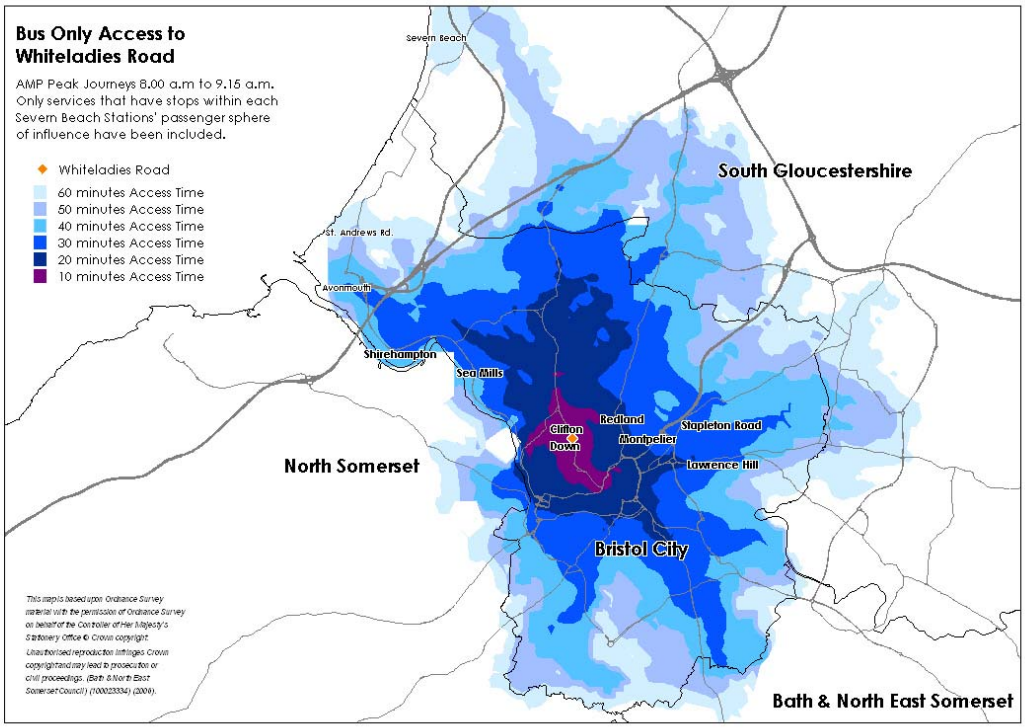
Lawrence Hill

Service Number	Description
6	Centre to Kingswood
7	Centre to Staple Hill
41, 42A	Avonmouth to Cherry Gardens
43	Cribbs Causeway to Cadbury Heath
585	Broadmead to Sea Mills
586	Broadmead to Redland
587	Kingswood to Hotwells

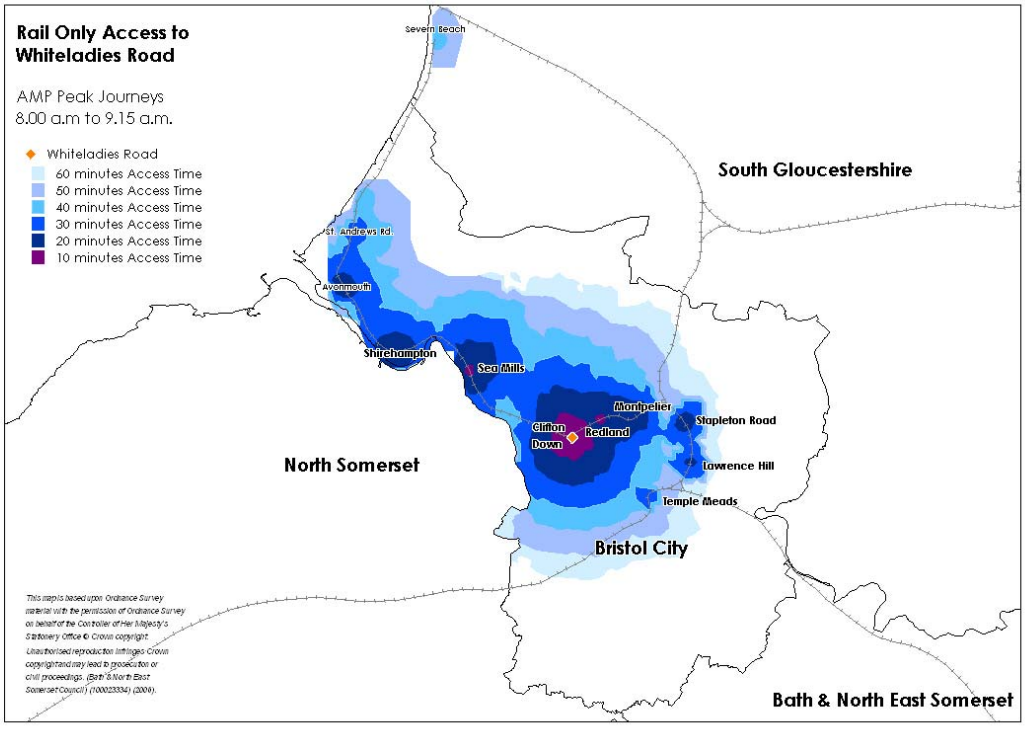
Appendix T

Access to Whiteladies Road during the morning peak

Bus Only

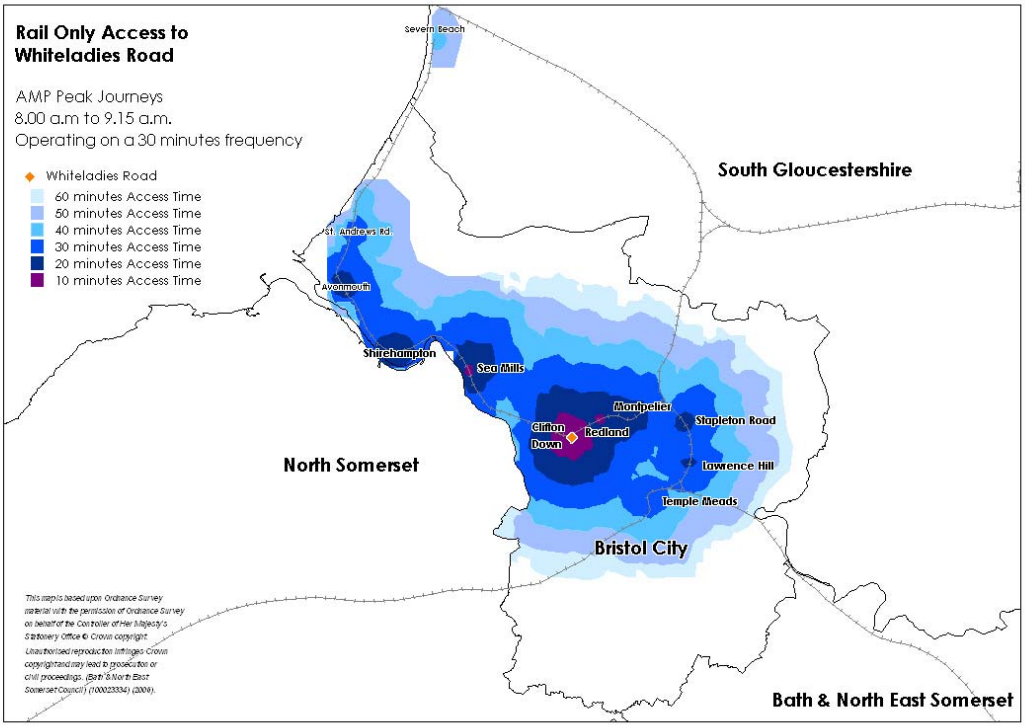


Rail Only



Appendix T

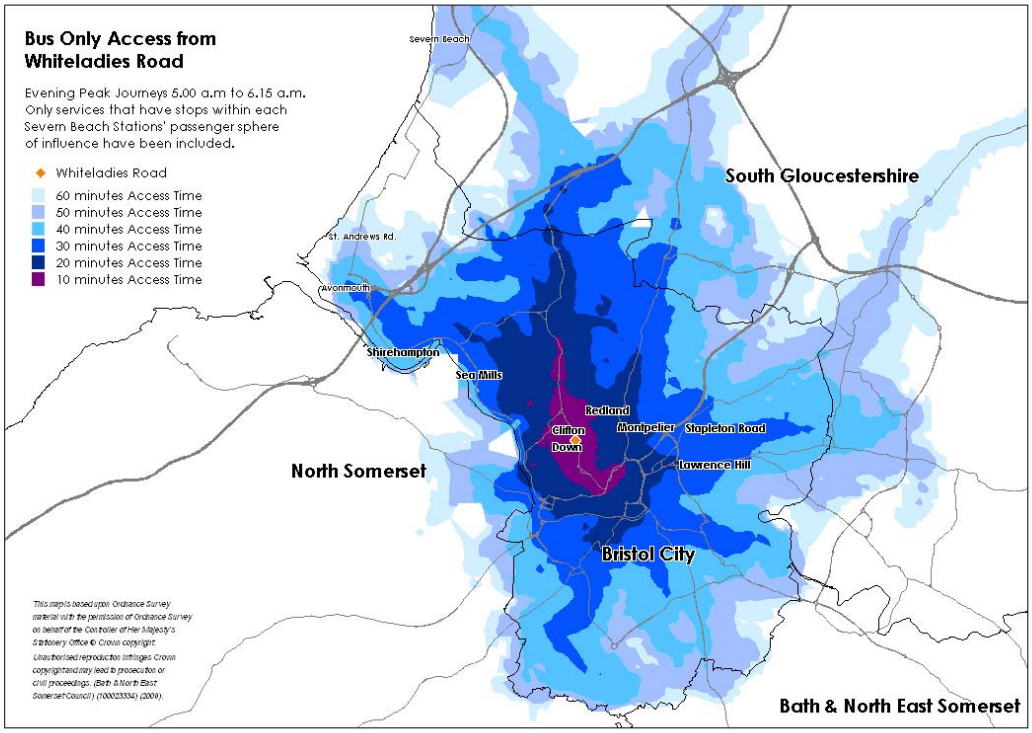
Double Rail Frequency Only



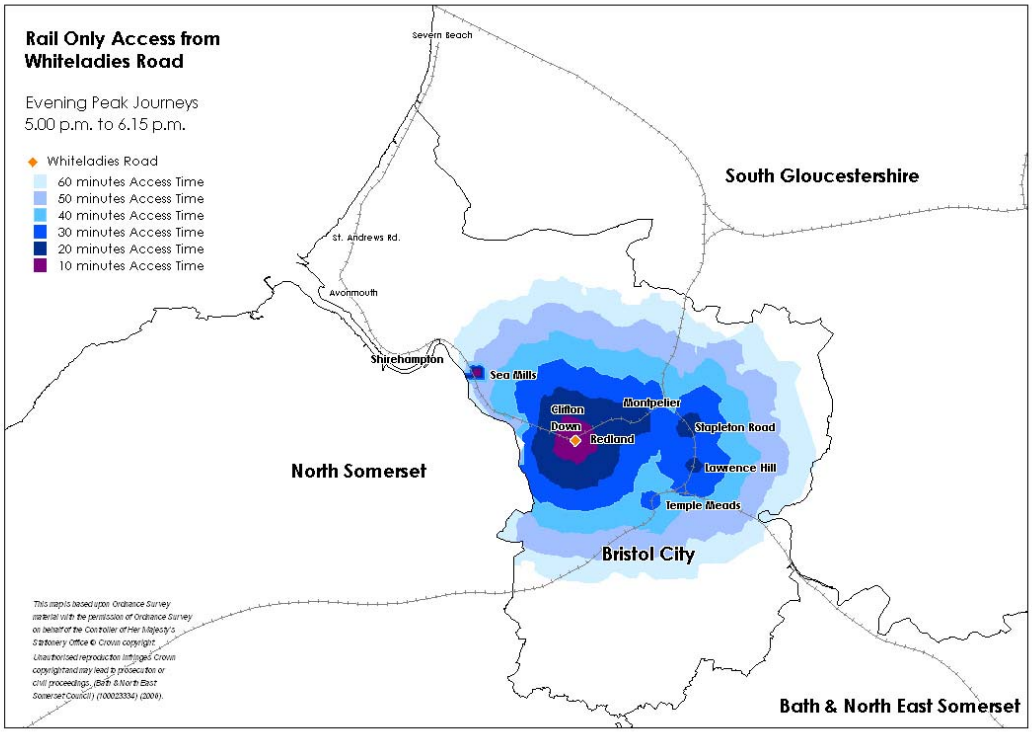
Appendix U

Access to Whiteladies Road during the evening peak

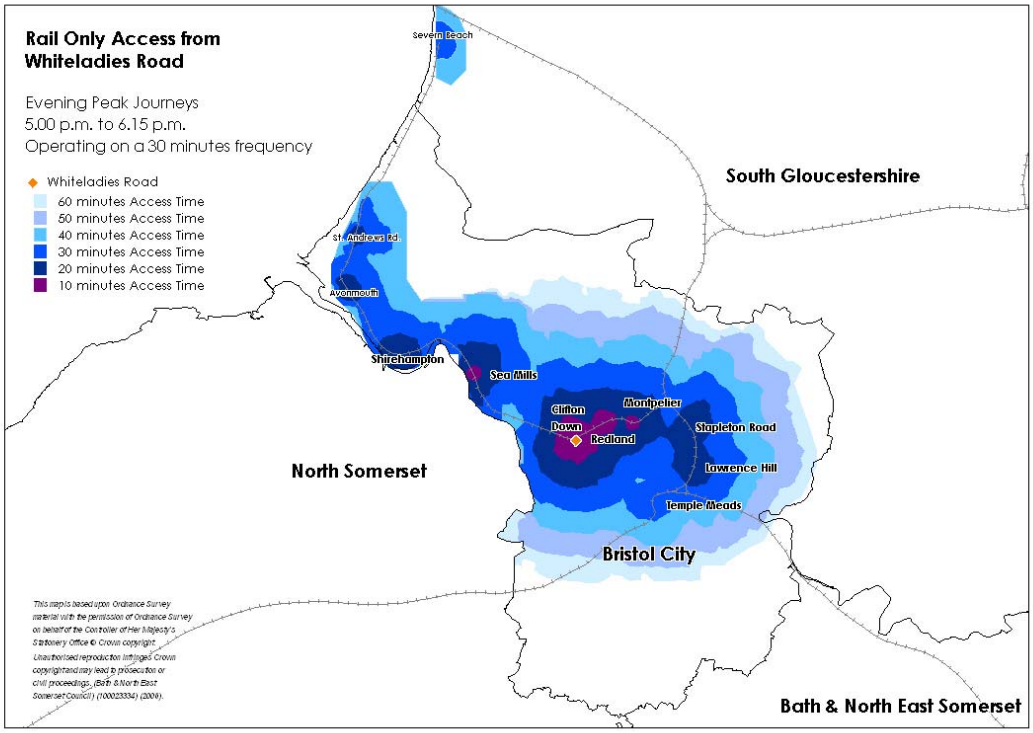
Bus Only



Rail Only



Double Rail Frequency Only



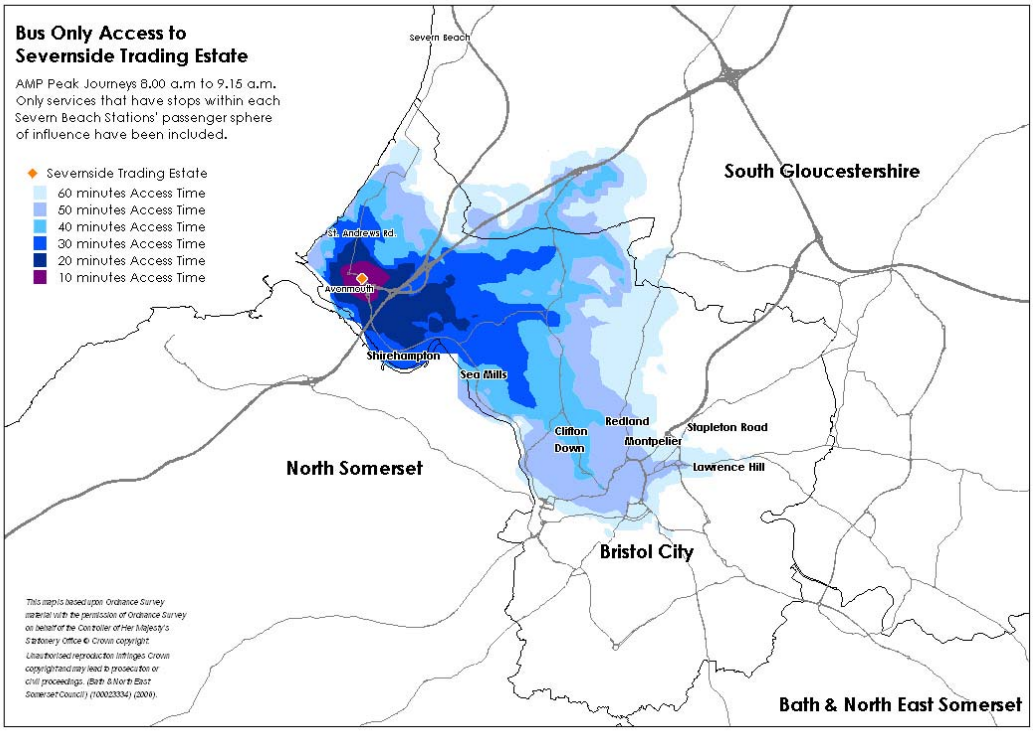
Output table showing levels of accessibility to households expressed as a percentage of total households in each ward.

Ward Name	Bus 10 mins	Bus 20 mns	Bus 30 Mins	Bus 40 mins	Bus 50 mins	Bus 60 mins	Rail 10 mins	Rail 20 mns	Rail 30 mins	Rail 40 mins	Rail 50 mins	Rail 60 mins	Rail 2 10 mins	Rail 2 20 mins	Rail 2 30 mins	Rail 2 40 mins	Rail 2 50 mins	Rail 2 60 mins
Pilning and Severn Beach	0	0	0	6	40	64	0	0	0	0	0	0	0	0	14	30	30	30
Avonmouth	0	0	39	75	81	87	0	0	0	0	0	0	0	24	70	83	83	83
Kingsweston	0	10	63	92	93	93	1	1	1	1	3	29	1	9	30	52	52	52
Stoke Bishop	4	75	93	98	98	98	3	7	36	59	93	98	3	27	92	98	98	98
Clifton	11	93	95	95	95	95	5	37	93	95	95	95	5	37	93	95	95	95
Clifton East	97	100	100	100	100	100	51	100	100	100	100	100	51	100	100	100	100	100
Cotham	54	100	100	100	100	100	34	100	100	100	100	100	57	100	100	100	100	100
Redland	18	93	100	100	100	100	0	51	98	100	100	100	9	81	100	100	100	100
Ashley	0	52	100	100	100	100	0	39	99	100	100	100	13	80	100	100	100	100
Bishopston	0	42	100	100	100	100	0	0	32	93	100	100	0	4	68	100	100	100
Easton	0	1	95	100	100	100	0	17	90	100	100	100	0	64	100	100	100	100
Eastville	0	1	95	100	100	100	0	17	90	100	100	100	0	64	100	100	100	100
Lawrence Hill	0	30	92	100	100	100	0	12	67	95	100	100	0	42	90	100	100	100
St George West	0	0	45	100	100	100	0	0	7	48	89	100	0	0	27	69	100	100
Cabot	32	98	100	100	100	100	9	55	91	100	100	100	9	63	91	100	100	100

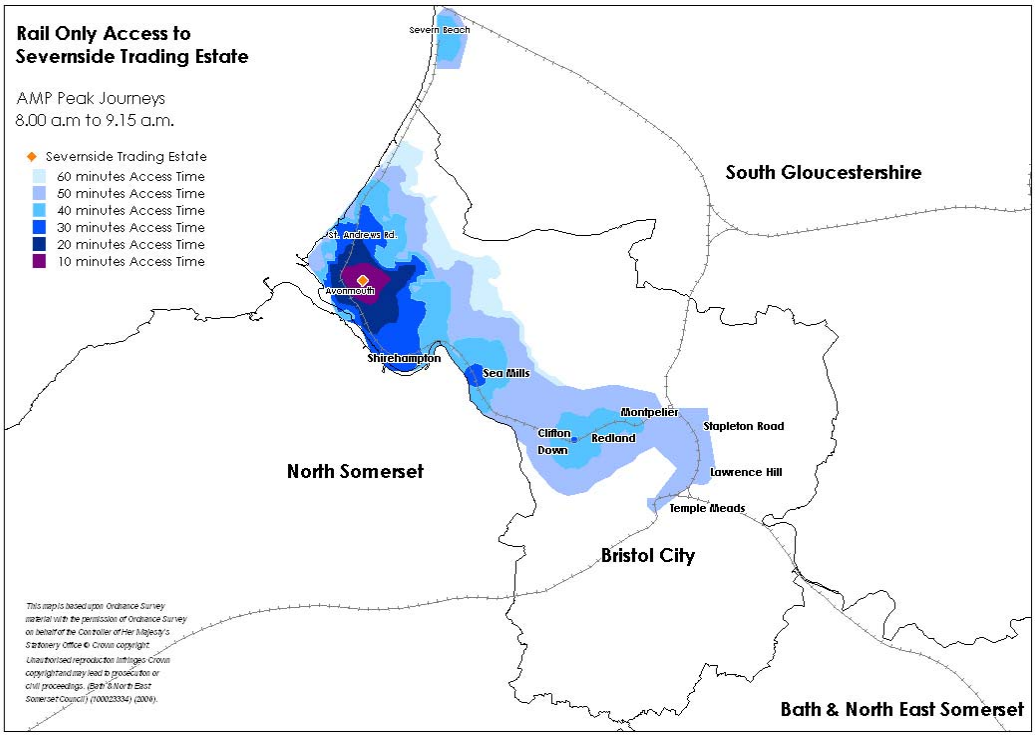
Appendix V

Access to Severnside Trading Estate during the morning peak

Bus Only

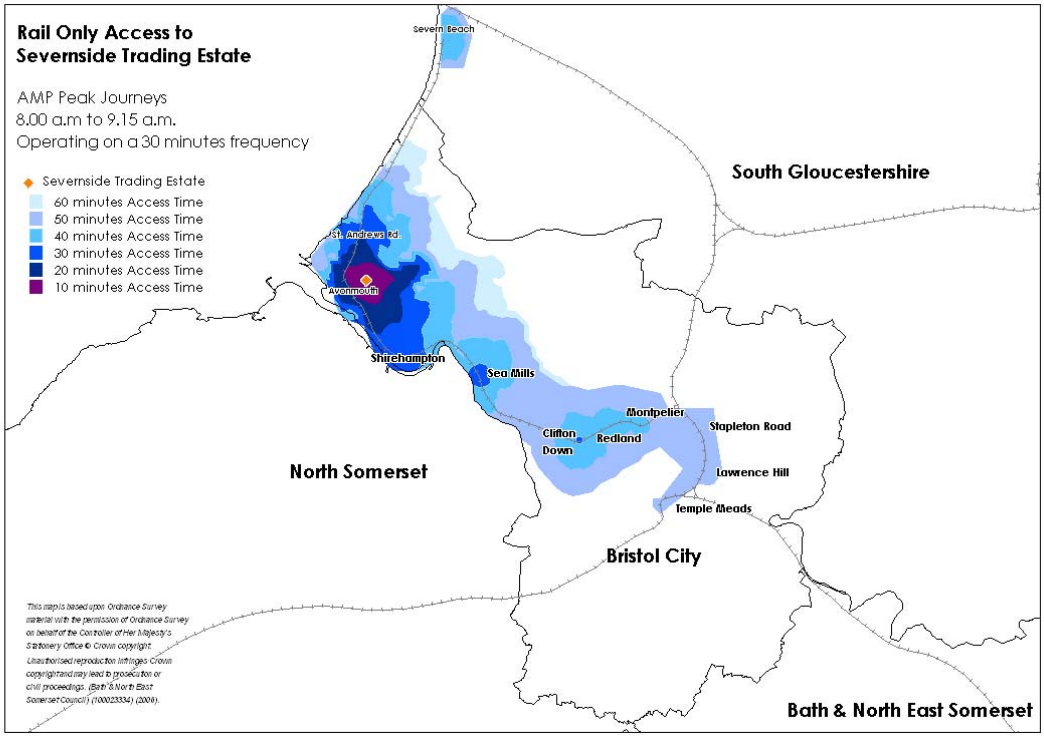


Rail Only



Appendix V

Double Rail Frequency Only

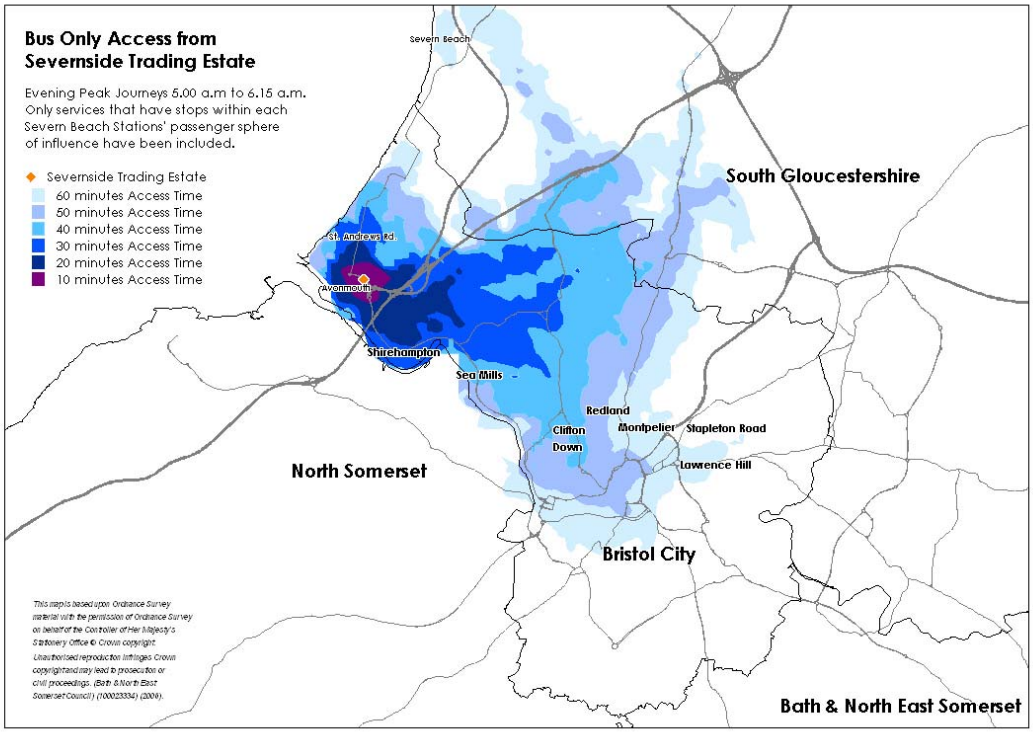


Output table showing levels of accessibility to households expressed as a percentage of total households in each ward.

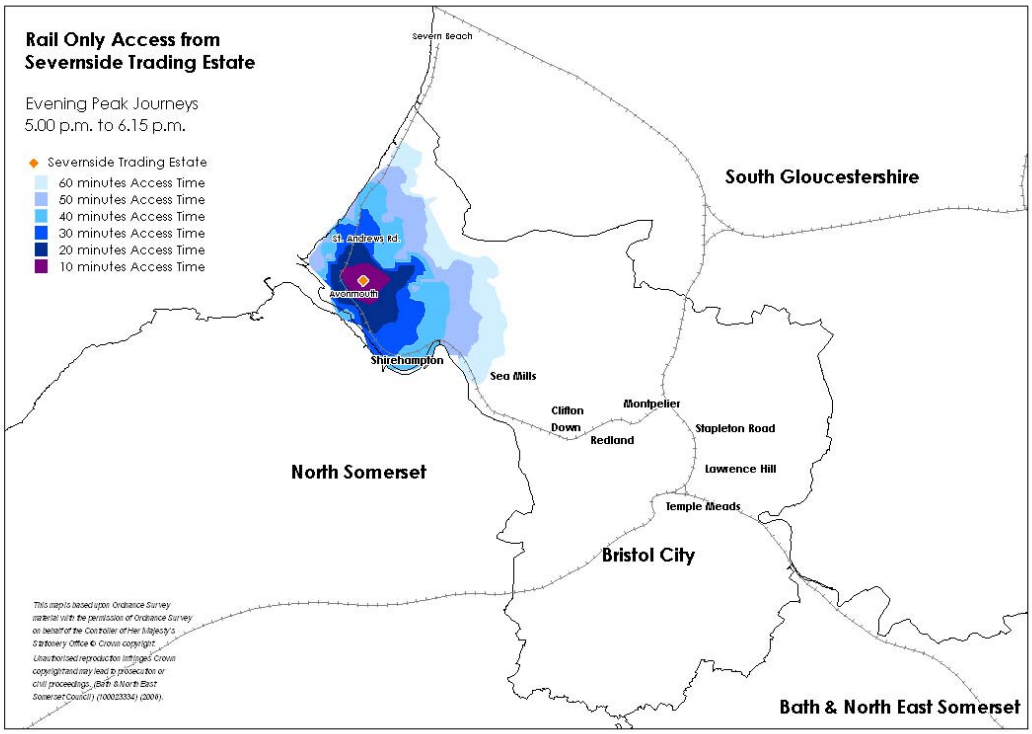
Ward Name	Bus 10 mins	Bus 20 mns	Bus 30 Mins	Bus 40 mins	Bus 50 mins	Bus 60 mins	Rail 10 mins	Rail 20 mns	Rail 30 mins	Rail 40 mins	Rail 50 mins	Rail 60 mins	Rail 2 10 mins	Rail 2 20 mins	Rail 2 30 mins	Rail 2 40 mins	Rail 2 50 mins	Rail 2 60 mins
Pilning and Severn Beach	0	0	0	0	0	0	0	0	0	20	27	27	0	0	0	20	27	27
Avonmouth	4	50	82	88	91	94	4	20	61	87	91	93	4	4	61	87	91	93
Kingsweston	0	18	86	93	93	93	0	0	2	22	67	88	0	0	2	22	67	88
Stoke Bishop	0	1	51	86	97	97	0	0	5	32	75	75	0	0	5	32	75	75
Clifton	0	0	0	33	100	100	0	0	0	83	100	100	0	0	0	83	100	100
Clifton East	0	0	0	53	100	100	0	0	5	69	100	100	0	0	5	69	100	100
Cotham	0	0	0	33	100	100	0	0	0	83	100	100	0	0	0	83	100	100
Redland	0	0	0	22	80	100	0	0	0	18	88	88	0	0	0	18	88	88
Ashley	0	0	0	0	23	72	0	0	0	19	83	83	0	0	0	19	83	83
Bishopston	0	0	0	1	0	72	0	0	0	0	11	11	0	0	0	0	11	11
Easton	0	0	0	0	0	29	0	0	0	0	49	49	0	0	0	0	49	49
Eastville	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	3	3
Lawrence Hill	0	0	0	0	17	58	0	0	0	0	38	38	0	0	0	0	41	41
St George West	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0
Cabot	0	0	0	6	93	97	0	0	0	11	65	65	0	0	0	11	65	65

Access to Severnside Trading Estate during the evening peak

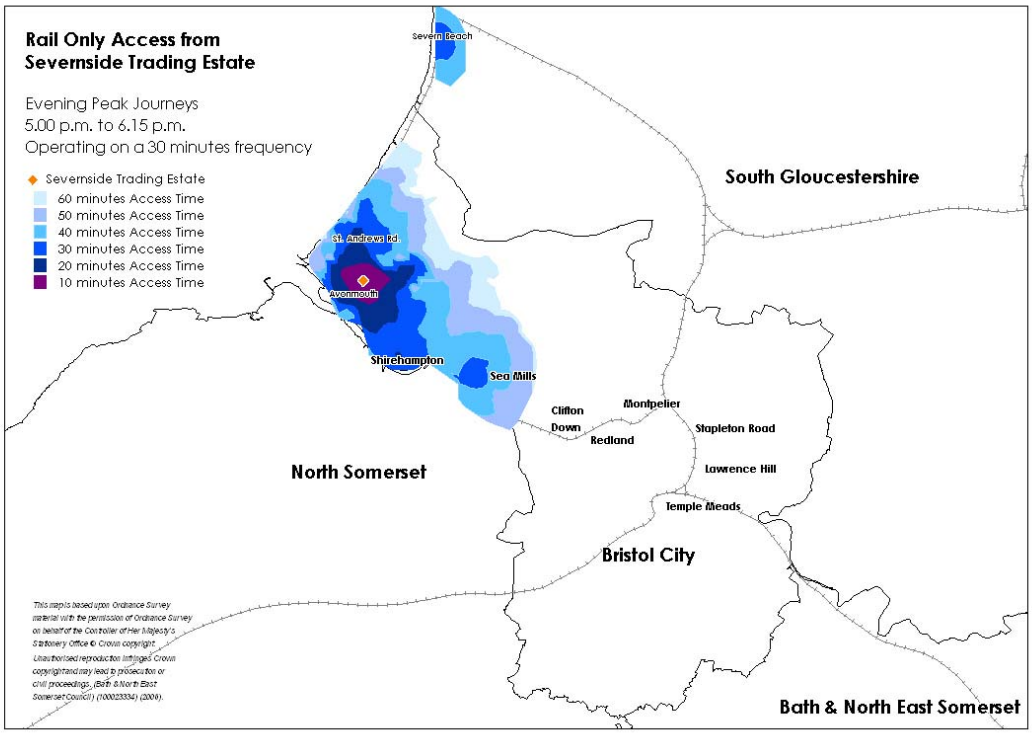
Bus Only



Rail Only



Double Rail Frequency Only



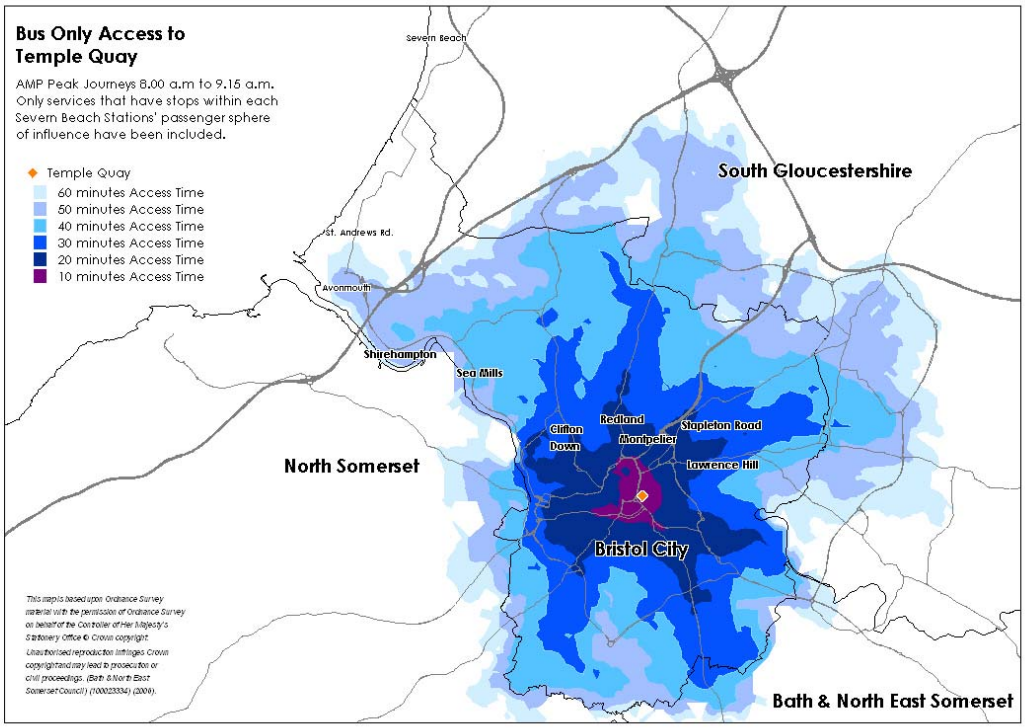
Output table showing levels of accessibility to households expressed as a percentage of total households in each ward.

Ward Name	Bus 10 mins	Bus 20 mns	Bus 30 Mins	Bus 40 mins	Bus 50 mins	Bus 60 mins	Rail 10 mins	Rail 20 mns	Rail 30 mins	Rail 40 mins	Rail 50 mins	Rail 60 mins	Rail 2 10 mins	Rail 2 20 mins	Rail 2 30 mins	Rail 2 40 mins	Rail 2 50 mins	Rail 2 60 mins
Pilning and Severn Beach	0	0	0	0	1	29	0	0	0	0	0	0	0	0	14	30	30	30
Avonmouth	4	50	81	88	91	93	4	20	49	86	91	93	4	21	66	88	91	93
Kingsweston	0	15	83	93	93	93	0	0	0	8	49	88	0	0	2	28	67	88
Stoke Bishop	0	0	34	86	97	97	0	0	0	0	0	17	0	0	8	38	78	78
Clifton	0	0	0	3	72	95	0	0	0	0	0	0	0	0	0	0	0	0
Clifton East	0	0	0	53	100	100	0	0	0	0	0	0	0	0	0	0	0	0
Cotham	0	0	0	33	82	100	0	0	0	0	0	0	0	0	0	0	0	0
Redland	0	0	0	22	64	100	0	0	0	0	0	0	0	0	0	0	0	0
Ashley	0	0	0	0	5	75	0	0	0	0	0	0	0	0	0	0	0	0
Bishopston	0	0	0	1	50	98	0	0	0	0	0	0	0	0	0	0	0	0
Easton	0	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0
Eastville	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Lawrence Hill	0	0	0	0	8	59	0	0	0	0	0	0	0	0	0	0	0	0
St George West	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0
Cabot	0	0	0	6	73	100	0	0	0	0	0	0	0	0	0	0	0	0

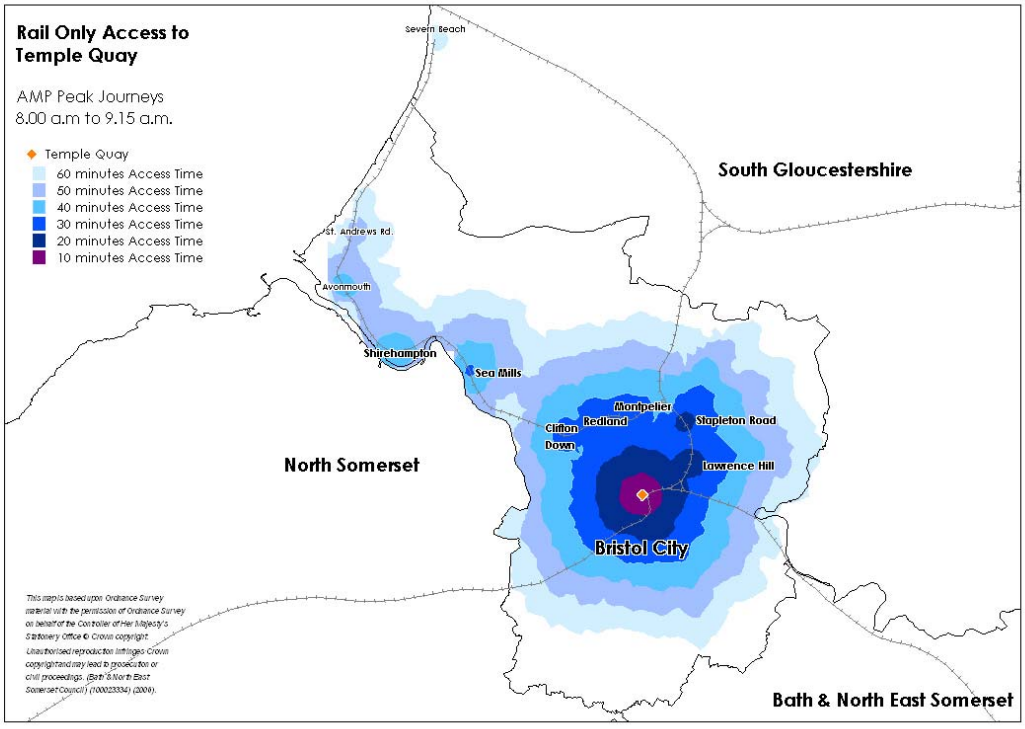
Appendix X

Access to Temple Quay during the morning peak

Bus Only

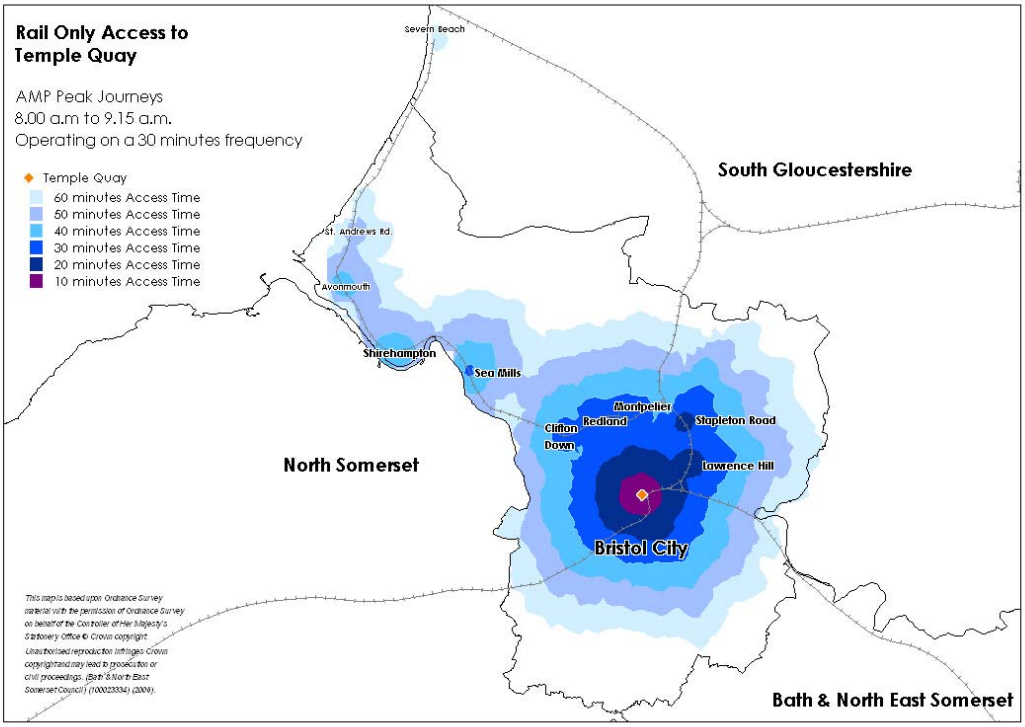


Rail Only



Appendix X

Double Rail Frequency Only



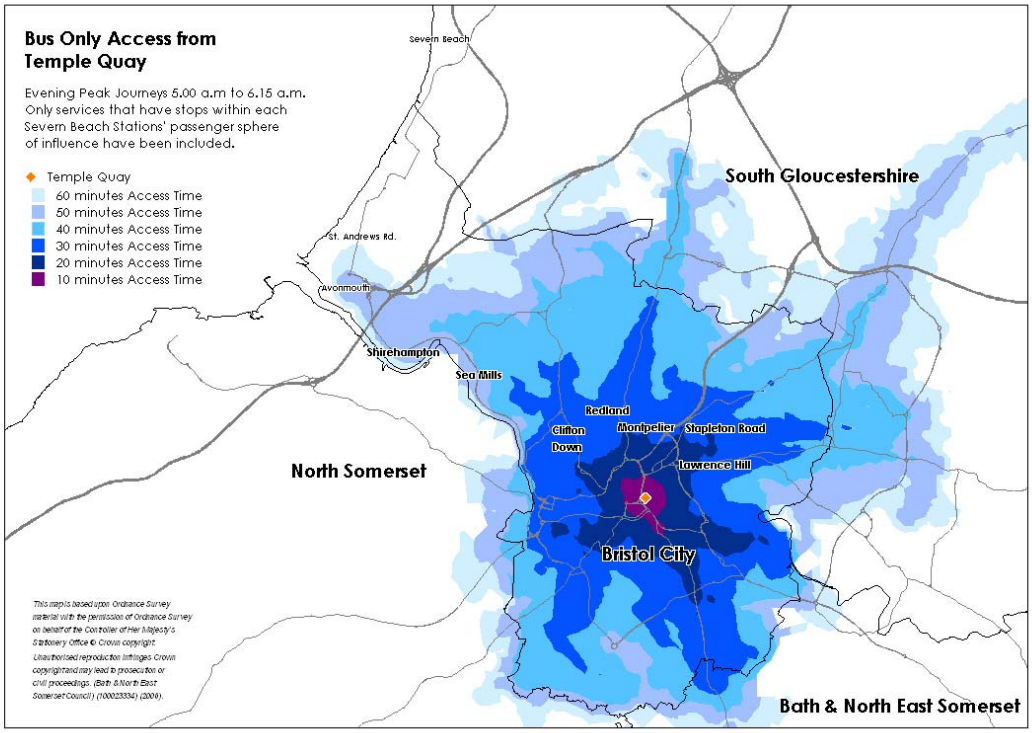
Output table showing levels of accessibility to households expressed as a percentage of total households in each ward.

	Bus 10 mins	Bus 20 mns	Bus 30 Mins	Bus 40 mins	Bus 50 mins	Bus 60 mins	Rail 10 mins	Rail 20 mns	Rail 30 mins	Rail 40 mins	Rail 50 mins	Rail 60 mins	Rail 2 10 mins	Rail 2 20 mins	Rail 2 30 mins	Rail 2 40 mins	Rail 2 50 mins	Rail 2 60 mins
Pilning and Severn Beach	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	7
Avonmouth	0	0	0	11	66	78	0	0	0	21	67	79	0	0	0	21	67	79
Kingsweston	0	0	0	37	78	92	0	0	1	8	30	51	0	0	1	8	30	51
Stoke Bishop	0	1	13	88	98	98	0	0	1	23	84	98	0	0	1	23	84	98
Clifton	0	48	95	95	95	95	0	0	6	66	95	95	0	0	6	66	95	95
Clifton East	0	54	100	100	100	100	0	0	44	100	100	100	0	0	44	100	100	100
Cotham	0	27	100	100	100	100	0	0	90	100	100	100	0	0	90	100	100	100
Redland	0	20	86	100	100	100	0	0	44	88	100	100	0	0	44	88	100	100
Ashley	2	55	100	100	100	100	0	11	83	100	100	100	0	11	83	100	100	100
Bishopston	0	11	100	100	100	100	0	0	0	49	97	100	0	0	0	49	97	100
Easton	0	41	100	100	100	100	0	21	96	100	100	100	0	21	96	100	100	100
Eastville	0	0	61	100	100	100	0	0	13	50	88	100	0	0	13	50	88	100
Lawrence Hill	21	91	100	100	100	100	16	60	100	100	100	100	16	60	100	100	100	100
St George West	0	3	69	100	100	100	0	0	22	60	98	100	0	0	22	60	98	100
Cabot	13	87	100	100	100	100	1	27	94	99	100	100	1	27	94	99	100	100

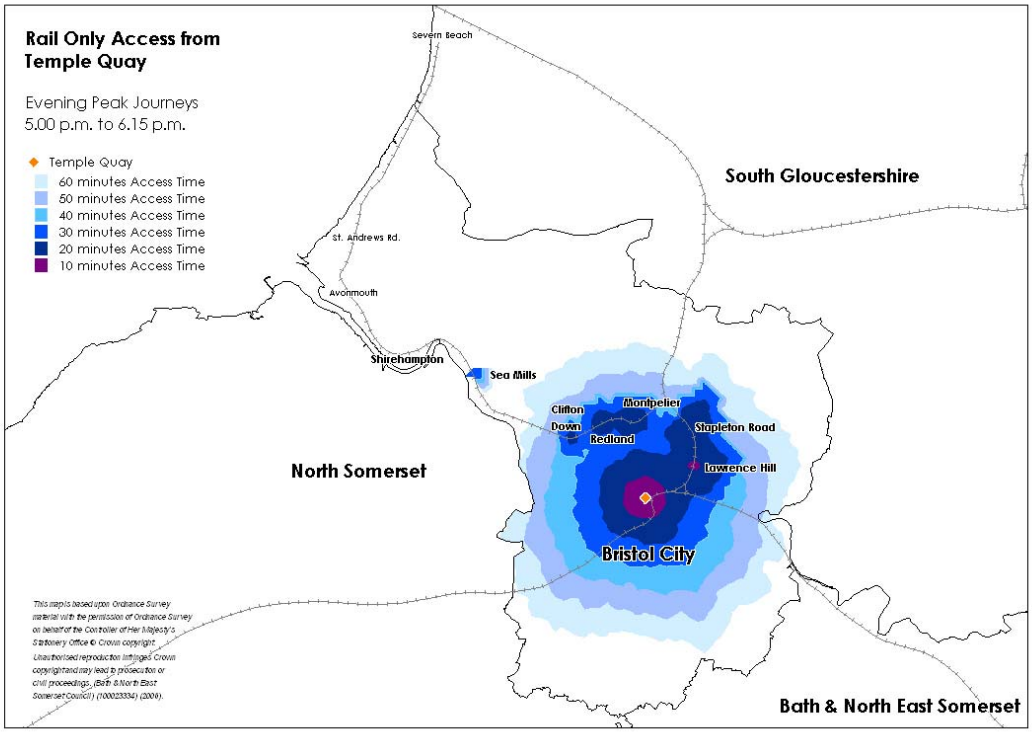
Appendix Y

Access to Temple Quay during the evening peak

Bus Only

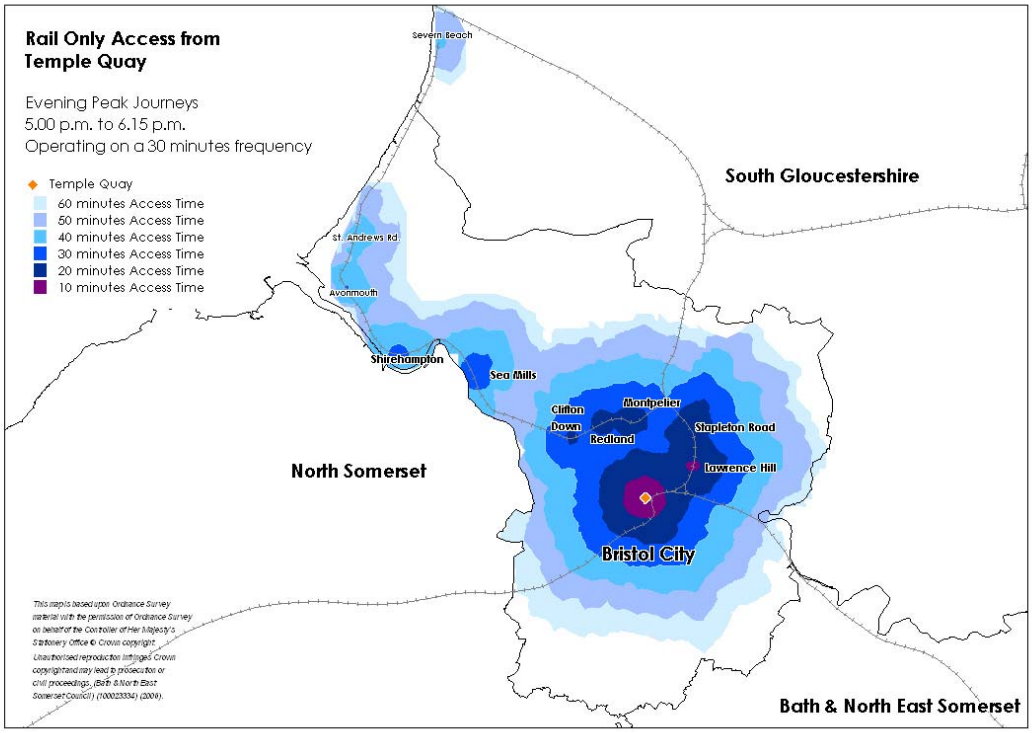


Rail Only



Appendix Y

Double Rail Frequency Only



Output table showing levels of accessibility to households expressed as a percentage of total households in each ward.

	Bus 10 mins	Bus 20 mns	Bus 30 Mins	Bus 40 mins	Bus 50 mins	Bus 60 mins	Rail 10 mins	Rail 20 mns	Rail 30 mins	Rail 40 mins	Rail 50 mins	Rail 60 mins	Rail 2 10 mins	Rail 2 20 mins	Rail 2 30 mins	Rail 2 40 mins	Rail 2 50 mins	Rail 2 60 mins
Pilning and Severn Beach	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	23	30
Avonmouth	0	0	0	3	64	78	0	0	0	0	0	0	0	0	5	52	76	83
Kingsweston	0	0	0	33	61	92	0	0	1	1	1	1	0	0	3	21	43	52
Stoke Bishop	0	0	21	85	96	98	0	0	3	3	5	23	0	0	10	51	98	98
Clifton	0	2	90	95	95	95	0	0	6	49	93	95	0	0	16	79	95	95
Clifton East	0	11	100	100	100	100	0	7	44	80	100	100	0	7	83	100	100	100
Cotham	0	0	100	100	100	100	0	34	90	92	100	100	0	34	100	100	100	100
Redland	0	0	77	100	100	100	0	16	51	51	88	100	0	16	77	100	100	100
Ashley	0	23	97	100	100	100	0	42	91	97	100	100	0	42	100	100	100	100
Bishopston	0	0	78	100	100	100	0	0	0	0	51	97	0	0	25	84	100	100
Easton	0	23	100	100	100	100	1	82	96	96	100	100	1	82	100	100	100	100
Eastville	0	0	48	97	100	100	0	5	17	17	28	64	0	5	31	77	100	100
Lawrence Hill	19	81	100	100	100	100	18	87	100	100	100	100	18	87	100	100	100	100
St George West	0	0	90	100	100	100	0	5	24	28	62	100	0	5	41	85	100	100
Cabot	0	29	100	100	100	100	0	51	100	100	100	100	0	51	100	100	100	100

Station Audit Work Sheet for Severn Beach Line Stations		Lawrence Hill	Stapleton Road	Station Audit Work Sheet for Severn Beach Line Stations	
General Station Facilities	Ticket Office	No	No	General Station Facilities	Ticket Office
	Buffet/catering	No	No		Buffet/catering
	Toilets/baby changing	No	No		Toilets/baby changing
Signage	Station approach signs / surrounding area	Very clear with numerous signs for cyclists and pedestrians	Very well sign posted from both sides of the station	Signage	Station approach signs / surrounding area
	Entrance / Exit	Very clear and easily understood. Although lack of large station sign may lack impact of site	Clear upon approach		Entrance / Exit
	Destinations (to & From nearby destinations)	Standard Wessex trains local map provided on platform 1 but not on platform 2	Good clear signs to Stapleton Road Shops		Destinations (to & From nearby destinations)
	Direction of travel	Extremely clear before accessing station from A42(	No		Direction of travel
	Platform Numbers	Clear	Clear upon approach		Platform Numbers
	Condition of signs	Good	Good - some have been subjected to graffiti		Condition of signs
Lighting	Station exterior / approach	Standard street lighting. No street lights on station side of road	Ample street lighting. Street lights along Belmont Street are restricting due to overgrown tree foliag	Lighting	Station exterior / approach
	Access lighting: Ground level / ramps / passengers / lifts / stairs	No additional lighting down access stairs, only platform and road lights prevail	Platform bridge is well light along each section		Access lighting: Ground level / ramps / passengers / lifts / stairs
	Platform	Ample supply of lighting all full length of platforms + adjacent supermarket car park	Ample supply of street lighting along full length of platform		Platform
	Shelter / Waiting Room	No lighting inside shelter but platforms lights positioned either side of waiting shelters	No lighting inside shelter but platforms lights positioned either side of waiting shelters		Shelter / Waiting Room
	Timetable	Well light	Well light		Timetable
	Condition of lighting	Modern lighting provision	Modern lighting provision		Condition of lighting
Access to Platforms	Tunnel / Bridge	Platform 1 has 2 access points, 1 from the A420 where a stairs are needed to access platform. In addition to this there is a level road access provided through adjacent super market car park. Platform 2 has only one access point from the A420 and down a separate set of stairs	Once at the station each platform is accessed by a footbridge. Platform 1 can be accessed from 2 separate locations, a quick route from Stapleton Road via a step of steps with hand rail, an alternative route avoiding the steps can be made by using Bemont Street which can provide level access entry. Platform 2 can also be accessed from 2 separate locations, from Stapleton Road via Henrietta St and then a set of steps, or from St Marks Road where a ramp can be used.	Access to Platforms	Tunnel / Bridge
	Ramp / Disabled Access / Lifts	Platform 1 has good disabled access, there is so such facility on platform 2	Platform 2 has a good ramp providing access to St Marks St.		Ramp / Disabled Access / Lifts
	Stairs / Handrails / White-edged Stairs / Treads	Concrete stairs with hand rails provide access. These are not white-edged of have treads	Concrete stairs with hand rails provide access to footbridge.		Stairs / Handrails / White-edged Stairs / Treads
	Any ways to improve access?	The introduction of a sign highlighting stating that level access is available from adjacent car park. A ramp could be installed onto platform 2 to provide access, but this may no be practical with present station lay out.	Create ramp that provides access from Henrietta St to platform 2		Any ways to improve access?
Platforms	Number	2	2	Platforms	Number
	Quality of platform surface	Nice even surface	Nice even surface		Quality of platform surface
	Platform edge white lines / yellow line & instructions	Platform edge marked by white line. Slabs are used to mark safe distance from platform edge. There are no instructions advising users of this issue	Platform edge marked by white line. Slabs are used to mark safe distance from platform edge. non slip tactile slabs have been used in the middle part of the platform. There are no instructions advising users of this issue		Platform edge white lines / yellow line & instructions
Passenger Information	VDU Monitors / electronic information displays	No	No	Passenger Information	VDU Monitors / electronic information displays
	Public address system	No	No		Public address system
	Press button information points & instructions on how to use them	One on platform one. The box seems to have been recently vandalised. The 'i' has been spray painted over with white paint and the instructions of use have been removed. There is evidence of where they were position before.	Yes - each platform has an information point situated adjacent to the entrance/exit. There are instructions on their use situated on platform 1		Press button information points & instructions on how to use them
	Printed information: timetables / ticket purchasing informatior	Timetable information provided. No information about ticket purchasing	Timetable information provided. No information about ticket purchasing		Printed information: timetables / ticket purchasing informatior
	Number and location of display boards	2 display boards positioned on each platform by the entrance/exits	3 display boards positioned on each platform		Number and location of display boards
	Interchange Information	Not at station	None		Interchange Information
	Local / tourist information / maps / countryside walks	Standard Wessex Trains locality information provided on platform 1	Standard Wessex Trains locality information provided on platform 1		Local / tourist information / maps / countryside walks
	Condition of Information	The information boards look to have been recently replaced and the information contained within them was up to date	Up to date timetable and locality information		Condition of Information
Shelter & Seating	Covered waiting area with all round visibility & weather protection	Yes	Yes	Shelter & Seating	Covered waiting area with all round visibility & weather protection
	Number of shelters / seating	2 shelters	2 shelters + extra seats provided on each platform		Number of shelters / seating
	Location of shelter / seating	End of each platform close to entry points of station	End of each platform close to entry points of station		Location of shelter / seating
	Heating	No	No		Heating
	Glazing	Fully glazed	Fully glazed		Glazing
	Condition of seating / shelters	Good - may have been recently installed	Good - subjected to some graffiti though		Condition of seating / shelters
Security	CCTV	No	No	Security	CCTV
	Telephone	No	No		Telephone
	Emergency response button	No	No		Emergency response button
	Security patrol	No	No		Security patrol
	Staff presence (tickets purchasing & provision for movement of luggage	No	No		Staff presence (tickets purchasing & provision for movement of luggage
Car Park	Number of spaces	No station car park present	No station car park is present - only on street parking provision	Car Park	Number of spaces
	Free / Charging	There is a free car park approx 50 yards from station. The supermarket car park is also available	n/a		Free / Charging
	Lighting	n/a	n/a		Lighting
	Expansion Opportunities	n/a	Yes - along Henrietta Street		Expansion Opportunities
	Condition of Car Park	n/a	n/a		Condition of Car Park
Interchange Facilities / Opportunities	Bus	Very good. There are bus stops situated just outside station entrance/exits	None at station, but buses can be easily be accessed at Stapleton Road	Interchange Facilities / Opportunities	Bus
	Taxi	Not from station	None		Taxi
	Pedestrian	Good access paths surrounding station. There is also a level crossing directly opposite station entrance access steps	Good footpath connections		Pedestrian
	Bicycle	There is no parking provision. But railings could be used	2 Sheffield stands are provided on each platforms		Bicycle
	Kiss & Ride / Drop Off	None	None		Kiss & Ride / Drop Off
	Park & Ride / Dial a Ride	None	None		Park & Ride / Dial a Ride
	Coach	None	None		Coach
	Ferry	None	None		Ferry
	Airport	None	None		Airport
Summary		An accessible and well positioned station that could be fully embraced into the local community. It is situated close to high density housing, and therefore potential users. Due to its strategic position on the main road linking the City Centre with the Kingswood the railway line is in direct competition with bus services entering the city centre, but this competition may also work in its favour through the creation of an bus/train transport interchange to serve east & west Bristol.	A well used and signposted station located in a busy multi-cultural commercial district of Bristol. What the station gains in good directions accessing the station it fails with information at the station. No direction of travel or bus interchange information is provided, with first time users lost as to which platform was for which service. The station is also used as a short cut from accessing Stapleton Road and St Marks Road by members of the public.	Summary	
Future Improvements	Short Term	Better signage informing passengers of level access point through Lidl car park from main station entrance.	Better station information	Future Improvements	Short Term
	Long Term	Provide ramp for disabled users to access platform 2. Possible interchange and connection to shou case bus route. Increase the number of trains stopping there.	Security issues and updated information would provide increased confidence when using the station. The areas along and adjacent to Henrietta Street could be converted into a car park, security issues would have to addressed to install passenger confidence before its use.		Long Term
Date of survey		15-Oct-05	15-Oct-05	**Date of survey**	

Montpelier	Redland	Station Audit Work Sheet for Severn Beach Line Stations		Clifton down
No - has been converted into a heritage fire place work shop	No - the building is still present and in relatively good state of repair. It is however locked and	General Station Facilities	Ticket Office	No - the building is still present but is currently being used as an Australian them bar
No	appears to be used for storage		Buffet/catering	No
No	No		Toilets/baby changing	No
	No			
Sign posted from Cheltenham Road but a poorly placed sign reduces its impact on informing people of the station location. Graffiti also detracts from the signs usefulness	The station has good pedestrian signs from all directions	Signage	Station approach signs / surrounding area	There are plenty of pedestrian signs but there are all quite small
Very clear on approach but in a poor state of repair	The station entrance isn't very clear - it is hidden behind a private garage block		Entrance / Exit	Very clear and highly visual from both station entrance/exits
Yes - directions to local shops are indicated	Yes - directions local shops are indicated		Destinations (to & From nearby destinations)	Yes in several locations illustrating directions to the Zoo
Yes - but not clear on entering statior	No		Direction of travel	Yes and positioned in several highly visible locations
n/a - there is only one	n/a - there is only one		Platform Numbers	Clear
There appear to be quite new but have already been vandalised with spray cans	Good		Condition of signs	Very good
Good street lighting when accessing station from Station Road - quite poor from Cromwell Road access path	Very poor entrance and exit lighting. Station could easily be missed at night	Lighting	Station exterior / approach	The station is positioned between 2 roads, St John's Road which has standard street lighting and Whiteladies Road which is a busy commercial strip and home to a large number of street lights. It i therefore very well light
2 spotlights were positioned on the old ticket office supplying ample light onto the ground level access from Station Road	Very poor - station is accessed via a private garage block that does not have any lights		Access lighting: Ground level / ramps / passengers / lifts / stairs	The station is highly accessible and has a large supply of street lighting around all station access points
Ample lighting is provided, although the station platform is not as well light as others. Due to the close proximity of housing along Station Road, there is only 1 independent standing light along the platform. Others are fixed to the old ticket office	Ample lighting is provided once the station has been accessed		Platform	Very well light
Quite poor - no light inside shelter. This may be quite daunting at night	The seating area is well light		Shelter / Waiting Room	Both shelters and seating areas are well light
Lighting provided from adjacent housing	The timetable is well light, benefiting from the platform lights		Timetable	Well light
Lighting adjacent to housing looks new, but lights attached to ticket office seem quite old	The shelter lighting appears quite old, along the platform it seems in good condition		Condition of lighting	Good
The main station entrance can be accessed through a even ground level entrance - well positioned when entering Station from Station Road and St Andrews Road. A set of stairs, and footpath must be used when entering/exit station via Cromwell Road	The stations accessed through an even ground level entrance	Access to Platforms	Tunnel / Bridge	Platform 1 is accessed via a footbridge and ramp. Platform 2 has a number of access points, via a set of steps from the footbridge or ground level access from the car park
The station entrance is at ground level	The station entrance is at ground level		Ramp / Disabled Access / Lifts	Both platform are highly accessible - the ramp providing access to platform 1 is set to a long gradua incline aiding ease of use
When accessing station from Cromwell Road the footbridge over the station then provides access to a set of stairs to access the platform. These have highly visible handrails but the white-edged stairs have faded	n/a		Stairs / Handrails / White-edged Stairs / Treads	The ramp providing access to platform 1 has a highly visible red hand rail. Work was being undertaken on the steps providing access to platform 2 at the time of survey.
The station is already highly accessible. Although stairs are needed to access the station from Cromwell Road, this can be compensated by accessing the station from its main entrance on Station Road	Better lighting would facilitate the existing highly accessible entrance/exit from South Road		Any ways to improve access?	A highly accessible station, which carefully considers the needs of all passengers.
1	1	Platforms	Number	2
Good quality surface	Good quality surface		Quality of platform surface	Good quality surface
Platform edge marked by white line. Slabs are used to mark safe distance from platform edge. New non-slip tactile slabs have been used. There are no instructions advising users of this issue	Platform edge marked by white line. Slabs are used to mark safe distance from platform edge. Older Non-slip tactile slabs have been used. There are no instructions advising users of this issue		Platform edge white lines / yellow line & instructions	Platform edge marked by white line. Slabs are used to mark safe distance from platform edge. The use of non-slip tactile slabs have been used in on the platform next to the waiting areas. There are no instructions advising users of this issue
No	No	Passenger Information	VDU Monitors / electronic information displays	No
No	No		Public address system	No
An information point is available by the station entrance/exit. It is in a very poor state of repair - covered in graffiti with no instructions present. First impressions a customer would not recognise what the blue box was, let alone press the 'chewing gum' encased button	An information point is very good condition is situated adjacent to the station entrance/exit. No instructions or 'i' are visible on the box highlighting its purpose		Press button information points & instructions on how to use them	2 information points are positioned on each platform. No instructions of use were provided.
Timetable and very clear instructions on purchasing a ticket provided	Timetable information is clearly visible throughout entry to the station platform		Printed information: timetables / ticket purchasing information	Timetable information provided. No information about ticket purchasing
1 situated adjacent to main entrance/exit	4 display boards are used in various stages of entry into station		Number and location of display boards	5 display boards are very well laced around the station entrances and platforms
None	None, but a bus stop is situated opposite from the entrance/exit		Interchange Information	None at station, but a large number of bus stops are highly visible when exiting station from Whiteladies side of station
2 Wessex Trains locality information maps were provided	2 Wessex Trains locality information maps were provided		Local / tourist information / maps / countryside walks	Standard Wessex Trains locality information provided
Up to date timetable and locality information	Up to date timetable and locality information		Condition of Information	The zoo is very well sign posted. There is also an Wessex Trains map on platform 2
Yes	Yes - situated under the canopy of the old ticket/waiting room. One that is no longer in use	Shelter & Seating	Covered waiting area with all round visibility & weather protection	Yes
1 shelter and 1 bench are provided	1 bench is provided		Number of shelters / seating	There is 1 shelter provided on each platform. Platform 1 has an extra large waiting room and 1 addition bench. Platform 2 has a standard waiting room and 3 additional benches
The shelter is situated next to the main entrance/exit, the additional seating is situated close to the	The bench is situated at the end of the platform by the entrance/exit. An additional point of interes			Both shelters are situated next the main platform access point. For platform 2 this is the opposite
stairs providing access from Cromwell Road	that the train stops a lot further down the platform from the seating area		Location of shelter / seating	end of ground level access point. Benches are positioned along each platform
No	No		Heating	No
Full glazed	No		Glazing	Yes
Very good	Retro		Condition of seating / shelters	Good
No	No	Security	CCTV	No - CCTV cameras due cover part of the station car park that is adjacent to the Australian Bar
No	No - but one is opposite the station entrance/exi		Telephone	No - but there are many along Whiteladies Road
No	No		Emergency response button	No
No	No		Security patrol	No
No	No		Staff presence (tickets purchasing & provision for movement of luggage	No
No station car park is present - only on street parking provision. The area is close proximity to station have been restricted through the use of double yellow line	No station car park is present - only on street parking provision	Car Park	Number of spaces	There is a large car park surrounding part of the station. This is a shared car park between Bristol University, The Roo Bar and rail users. 22 spaces are provided for rail users and are situated at the St John's Road end of the car park
n/a	n/a		Free / Charging	Yes to rail users
n/a	n/a		Lighting	There is ample lighting at the Whiteladies end of the car park, the frequency of lights reduces at the St John's Road end
none	none		Expansion Opportunities	None
n/a	n/a		Condition of Car Park	Good
None at station, but buses can be easily be accessed from Cheltenham/Gloucester Road	Bus stop is situated opposite station entrance/exit. Further services can be accessed from Gloucester Road	Interchange Facilities / Opportunities	Bus	There is no interchange information provided at the station - but there are large numbers of buses situated on Whiteladies Road
None at station, but taxies can be easily be accessed from Cheltenham/Gloucester Road	None at station, but taxies can be easily be accessed from Gloucester Road		Taxi	These can be easily accessed from Whiteladies Road
Good footpath connections	None		Pedestrian	Very good clearly defined pedestrian walk ways surround the station
No bike stands, but plenty of railings are available	2 Sheffield stands are provided on the platform		Bicycle	8 Sheffield stands are available within the car park
Station Road is a dead end - surrounding industrial sites provide opportunity for turning and therefore potential for Kiss & Ride / Drop Off site	None		Kiss & Ride / Drop Off	There is the potential for such a point. The station car park is sufficiently large and has 2 entrances/exits
None	None		Park & Ride / Dial a Ride	None
None	None		Coach	None
None	None		Ferry	None
None	None		Airport	An additional stop to the Bristol Flyer service could be incorporating Clifton Down Station
Montpelier Station oozes character from its station art, however unlike other stations this is not respected, with additional graffiti covering much of the station and station facilities. The type of art used to express the character of the station may have encouraged further contributors. Graffiti is not restricted to the station with much of the station hinterland subjected to spray can contributors. Like the alternative Montpelier station sign, Cheltenham Road has many fine examples of urban street art that add to the character of the area, as such as small contributors detract from it. The Arches are an important land mark along the busy Cheltenham/Gloucester Road thoroughfare and are only there due to the railway, but the station is less prominent from this strategic land mark. Regardless of this the station is busy.	A station that time forgot. A nice quiet station hidden from the rest of the world. Pedestrian signag is good providing access to the station but seems to stop once the station has been reached with n recognition of reaching the intended target. Planning restrictions may prohibit the use of a large sign being used to draw attention to the station. The relatively modern garage block presumably build on land once own by the railway company serious detracts from any expansion of the opportunity. The use of the word 'Private' painted on the station access route further detracts from openness of the station site. It does fit its sleepy suburb vibe of the present station. Better suited to the age of steam than modern commuter.	Summary		A very busy station in a highly desirable and busy commercial and residential area. The station is well looked after and befits the station's location. Due to the location of the station it faces stiff completion from buses and taxies. Better signage stating travel times and costs would increase its competitive edge over its competitors
Better signage from Cheltenham/Gloucester Road area	Try and raise profile of station through the use of more prominent station signs and removal of the word 'Private' from main station access route	Future Improvements	Short Term	Clearer and easily understood signage displaying travel times and costs. Also better interchange information from the station should be incorporated into the numerous display boards situated around the station
This station could provide the gateway into this charismatic bohemian commercial district, but better marketing would greatly benefit addition passengers alighting from station	Further seating should be provided, but this should remain in keeping with existing station.		Long Term	Larger station sign on Whiteladies Road would propel knowledge of the service to other potential customers. The return of the real time information board (once present in Sainsbury's), if possible placed outside
15-Oct-05	15-Oct-05	**Date of survey**		16-Oct-05

Sea Mills	Station Audit Work Sheet for Severn Beach Line Stations		Shirehampton	Avonmouth	Station Audit Work Sheet for Severn Beach Line Stations
No - the building has been converted into a private office block	General Station Facilities	Ticket Office	No - it has since been converted into a shed for the adjacent property. Possibly once the station keepers house	No - it has since been converted into a hair dressers	General Station Facilities
No		Buffet/catering	No	No	
No		Toilets/baby changing	No	None at station, but public toilets are a 2 minute walk	
Very limited. There are pedestrian signs showing access route from the Portway, no other signs visible	Signage	Station approach signs / surrounding area	Very good pedestrian signage from Shirehampton village. Quite small signs are used to direct road traffic from Portway - you would need t look for them to see them	Signage to the station is very poor in the surrounding area	Signage
The main station sign and entrance are visible from Harbour Wall but the view is obstructed by a bridge and several trees from the larger Sea Mills Lane.		Entrance / Exit	Clear on entering station - nothing when existing station	There are no signs showing the station entrance/exit. It is however very clear due to the station location within the centre of the village	
None		Destinations (to & From nearby destinations)	Signs highlighting Shirehampton village are placed on footbridge over Portway	A sign showing the transfer to bus for stops to Severn Beach is clear on exiting the station	
Yes		Direction of travel	No	Yes at main station information point	
n/a - there is only one		Platform Numbers	n/a - there is only one	Clear	
Adequate - the main station sign appears to have been struck by something and is currently standing at an angle		Condition of signs	There are numerous signs all are in good condition	Good	
Very poor. Limited street lighting is present along Harbour Wall.	Lighting	Station exterior / approach	When entering and existing the station, there are plenty of lights along the Portway, the car park is well light and also benefits from neighbouring industrial site, the short footpath access route also has 2 lights positioned along it. Their effectiveness is hampered by the overhanging trees from the adjacent garden	There is general street lighting on the opposite side of the road surrounding the station exterior/approach.	Lighting
Poor one light is situated on the corner of the old ticket/waiting room by the station entrance		Access lighting: Ground level / ramps / passengers / lifts / stairs	There are 2 lights when accessing station platform from the access footpath	A light is positioned above the ramp on entering platform 2	
A good provision of lighting is present along the full length of the platform		Platform	Very well light along the full length of platform	Platform 1 has 2 lights posited within the middle of the platform. Platform 2 has several lights posited within the platform canopy	
Platform lights are situated adjacent to both shelters		Shelter / Waiting Room	The shelter is well light	The lighting on platform 1 is well positioned either side of the shelter. The seats along platform 2 is also well light through the lighting within the platform canopy	
The main entrance light doubles by lighting the timetable (or where the timetable should be)		Timetable	Well light via the car park lighting	There is no lighting above timetable information boards. These may benefit from the light positioned at station entrance	
Good		Condition of lighting	Good	Good	
The platform is accessed on ground level up a small incline	Access to Platforms	Tunnel / Bridge	When travelling from the station entrance the platform is accessed along a short level footpath. A footbridge must be used when accessing the station from Shirehampton	Both platforms are accessed via a ground level entrance - a level crossing is used to cross from one platform to the other	Access to Platforms
The pedestrian access gate is not wide enough for wheelchair users, they would have to access the station via the car crossing gate		Ramp / Disabled Access / Lifts	The footpath and station entrance provide good disabled access	A very short ramp is used to access platform 2	
n/a - ground level access		Stairs / Handrails / White-edged Stairs / Treads	n/a - ground level access	n/a - ground level access	
Move the car crossing gate across and then expand the width of the pedestrian access gate		Any ways to improve access?	Footpath safety must be improved. This could be achieved by placing mirrors in the bends of the path to provide the user with a view of what is waiting for them around the corner	A small handrail might aid access up the small ramp on platform 2	
1	Platforms	Number	1	2	Platforms
Good quality surface		Quality of platform surface	Good quality surface	Good quality surface	
Platform edge marked by white line. Slabs are used to mark safe distance from platform edge. Older Non-slip tactile slabs have been used. There are no instructions advising users of this issue		Platform edge white lines / yellow line & instructions	Platform edge marked by white line. There are no instructions advising users of this issue	Platform 1 edge marked by white line. Slabs are used on platform 2 to mark safe distance from platform edge. Older Non-slip tactile slabs have been used. There are no instructions advising users of this issue	
No	Passenger Information	VDU Monitors / electronic information displays	No	No	Passenger Information
No		Public address system	No	No	
			1 positioned in the car park next to the other timetable information. The box is in good condition with the 'i' clearly visible. The instructions have been removed, but a board shows where they would once have been. At the time of survey a passenger pressed the button, a recorded message then stated the time of the next train. There was no details of whether it was operating on time though		
1 but no instructions on how to use this facility		Press button information points & instructions on how to use them		1 positioned next to entrance of platform 2, instructions are also present. The box is however in an extremely poor state of repair	
None		Printed information: timetables / ticket purchasing information	Timetable information provided. No information about ticket purchasing	Timetable information provided. No information about ticket purchasing	
Display board is adjacent to station entrance		Number and location of display boards	The display board is situated in the station car park	There is one display board situated in the station car park, highly visible when entering the station on platform 2	
None		Interchange Information	None	Only information regards bus replacement service	
None		Local / tourist information / maps / countryside walks	Standard Wessex Trains locality information provided	Standard Wessex Trains locality information provided	
Non existent		Condition of Information	Good	Good	
No	Shelter & Seating	Covered waiting area with all round visibility & weather protection	No	Yes	Shelter & Seating
There are 2 shelters. An old brick shelter provides protection from the weather but has restricted visibility. The second shelter is more modern Avon Public Transport shelter that has full visibility but no glazing		Number of shelters / seating	There is 1 brick built shelter providing whether protection, it does however not provide all round visibility	Platform 1 has a fully glazed shelter, platform 2 is fully a bench is provided at the end of the platform	
Both are positioned close to the station entrance/exit		Location of shelter / seating	Middle of the platform	Platform 1's is situated in the middle of the platform. Platform 2's bench is positioned close to the entrance to the platform	
No		Heating	No	No	
No		Glazing	No	No	
Poor		Condition of seating / shelters	Very Good	Adequate	
No	Security	CCTV	No	No	Security
No		Telephone	No	No	
There is a telephone for checking the times of the trains at the car crossing - this could be used for emergencies		Emergency response button	No	No	
No		Security patrol	No	No	
No		Staff presence (tickets purchasing & provision for movement of luggage	No	No	
No station car park is present - only on street parking provision	Car Park	Number of spaces	The station car park is well placed at the station entrance. It has 10 spaces including 1 for disabled users. However, the disabled space is the same width as the other spaces and is positioned in the far corner from the entrance and has a curb adjacent to one side of it.	4 spaces are available for rail users, there is also additional road side parking	Car Park
n/a		Free / Charging	Yes	Yes	
n/a		Lighting	The car park has 2 lights covering the area. It would also benefit from the street lighting from the neighbouring industrial area	There is street lighting along the opposite side of the road	
none		Expansion Opportunities	None	None	
n/a		Condition of Car Park	The car park is bowed and therefore would be flooded in the middle after a heavy rain fall. At the time of survey there was a large amount of mud situated around the drain, suggesting that also might be blocked	Poor car park surface and no spaces are marked	
There is no interchange information provided at the station - but there is a bus stop few minutes walk from the station	Interchange Facilities / Opportunities	Bus	There are 2 bus stops situated a short walk from the station. They are served by a park and ride service and are well served throughout the day. Services operating into Bristol can only be accessed by crossing the road footbridge	Only information regards bus replacement service	Interchange Facilities / Opportunities
None		Taxi	None	None	
Adequate pavements provided. River Avon footpath can be easily accessed from Station		Pedestrian	Footpaths are clearly marked	Easy access	
		Bicycle	2 Sheffield stands are provided for cyclists in the station car park	2 Sheffield stands are provided at the entrance to platform 2	
None		Kiss & Ride / Drop Off	None	None	
None		Park & Ride / Dial a Ride	None	None	
None		Coach	None	None	
None		Ferry	None	None	
None		Airport	None	None	
A rural station within a busy city. Sea Mills station is positioned due to the topography of the surrounding area along the path of the river Avon and is therefore not surrounding by residential or commercial interests. Its remoteness does however hold is key for potential growth. Walking/bird watching could be promoted from Sea Mills Station. For walking a single journey ticket to Sea Mills followed by the walk back into Bristol could aid fitness levels as well as people quality of life through there experience of walking through the Avon Gorge.	Summary		A station separated from its village by the over dominating advance of road traffic. Shirehampton station is a pleasant well kept station linked to its main residential area by a footbridge, it is highly accessible to the residential areas south of the Portway. Due to its location it would be quite possible to forget the station even existed.	A very well placed and used station in the heart of Avonmouth village which should play the key public transport role when accessing Bristol City Centre. It is however, let down but is poor state of appearance. Signage to and from the station is very poor, however the station's location probably serves as a reminder to all locals of its presence.	Summary
Improve waiting shelters and access lighting.	Future Improvements	Short Term	Security issues along the platform access footpath should be addressed at a matter of urgency. The car park drainage should also be unblocked to facilitate the uneven nature of the car park	Improve stations appearance and increase signage and public transport interchange information	Future Improvements
Market walking as a healthy family activity from Sea Mills Station		Long Term	The long term future should sustain the station in in its current condition.	Improve car park	
14-Oct-05	Date of survey		14-Oct-05	14-Oct-05	Date of survey

	St Andrews Road	Severn Beach
Ticket Office	No	No
Buffet/catering	A snack bar is positioned outside station	No
Toilets/baby changing	No	No
Station approach signs / surrounding area	Signs along St Andrews Road show station location	Limited signs in surrounding area showing station location
Entrance / Exit	Very clear	Clearly visible
Destinations (to & From nearby destinations)	None	Very clear good cycle routes signposted
Direction of travel	None	There is only one way to go
Platform Numbers	n/a - there is only one	n/a - there is only one
Condition of signs	Those that are present are of good quality	Good
Station exterior / approach	There is general street lighting on the opposite side of the road surrounding the station exterior/approach.	The is an ample supply of lighting
Access lighting: Ground level / ramps / passengers / lifts / stairs	There is ample lighting provision over the footbridge accessing the platform - however only 3 on the lamps on the bridge are in working order	The entrance is well light
Platform	The platform is very well light	The platform is well light
Shelter / Waiting Room	The lighting is well positioned next to the shelter.	The lighting is well positioned either side of the shelter.
Timetable	There is no lighting directly above the timetable - street lighting is valuable on the opposite side of the road	There is lighting directly above the timetable information
Condition of lighting	Good	Good
Tunnel / Bridge	The platform is accessed by a large footbridge from the station entrance	The platform is accessed via a ground level entrance
Ramp / Disabled Access / Lifts	The footbridge is the only access point	There is a small ramp providing access from the road onto the station's platform
Stairs / Handrails / White-edged Stairs / Treads	It is in very good condition and looks recently refurbished. The steps have clear white-edges with good treads, a bright yellow hand rail is also provided	Due to the minimal gradient of the access ramp there is no need for additional aides to assist access onto the platform
Any ways to improve access?	Due to the location of the station, the length of existing platforms and the surrounding heavy industry there is no real practical way of improving access. Due to the height of the rail crossing a ramp may not be suitable - thus resulting in poor station access for the disabled	Increase the number of drop down curbs on entering the station. Only driveways provide ease of access to the station. This however may be counter productive and the bus stops just out side the station and the high curbs may be a safety feature of this.
Number	1	1
Quality of platform surface	Good quality surface	Good quality surface
Platform edge white lines / yellow line & instructions	Platform edge marked by white line. There are no instructions advising users of this issue	Platform edge marked by white line. Slabs are used to mark safe distance from platform edge. New non-slip tactile slabs have been used. There are no instructions advising users of this issue
VDU Monitors / electronic information displays	No	No
Public address system	No	No
Press button information points & instructions on how to use them	1 positioned at the station entrance next to the information boards. The box is in a good state of repair with the instructions clearly visible	1 positioned half way along the platform. The box is in good condition with the "I" clearly visible and instructions positioned next to it
Printed information: timetables / ticket purchasing information	Timetable information provided. No information about ticket purchasing	Timetable information provided. No information about ticket purchasing
Number and location of display boards	There is 1 display board situated at the station entrance	There is 1 display board situated at the station entrance
Interchange Information	Only information regards bus replacement service	Only information regards bus replacement service
Local / tourist information / maps / countryside walks	Standard Wessex Trains locality information provided	Standard Wessex Trains locality information provided
Condition of Information	Good	Good
Covered waiting area with all round visibility & weather protection	No - almost - shelter doesn't provide all round visibility	Yes
Number of shelters / seating	There is 1 shelter posited in the middle of the platform	There is 1 shelter posited in the middle of the platform
Location of shelter / seating	There is 1 shelter posited in the middle of the platform	There is 1 shelter posited in the middle of the platform
Heating	No	No
Glazing	Partly - the front of the shelter is open, one half of the side panel is glazed the other is metal. This results in the seating area being hidden from view from anybody accessing the platform	Yes
Condition of seating / shelters	Adequate	Good
CCTV	No	No
Telephone	Yes at station entrance	No
Emergency response button	No	No
Security patrol	No	No
Staff presence (tickets purchasing & provision for movement of luggage	No	No
Number of spaces	5 spaces are available for rail users, there is also additional road side parking. A larger car park is set aside for rail freight employees	No station car park is present - only on street parking provision
Free / Charging	Yes at station entrance	n/a
Lighting	There is street lighting along the opposite side of the road	n/a
Expansion Opportunities	None	none
Condition of Car Park	The car park is uneven, this has resulted in 2 spaces being flooded. A blocked drain may also have contributed to this	n/a
Bus	Only information regards bus replacement service	Bus interchange is easy with a bus stop situated just outside the station entrance
Taxi	None	None
Pedestrian	Only pavements	Only pavements
Bicycle	6 Sheffield stands are provided. Cycle paths are clearly defined on pavements	No parking unavailable but there are plenty of signs providing directions for cycle paths
Kiss & Ride / Drop Off	None	None
Park & Ride / Dial a Ride	None	None
Coach	None	None
Ferry	None	None
Airport	None	None
	This station is in an area of heavy industry where local access is dominated by road. There was clear evidence of use - but patrons of this station probably on use the station when travelling to & from work. Away from this peak demand it is hard to see how else the station would be used. Working patterns within the area may not match those from other industries i.e. an increase use of shift workers. The rail service fails to match this potential source of custom	The station at the end of line. With no major attractions apart from walking and cycling along the Severn there is very little reason to visit this final stop. The rail line does however provide the most efficient form of transport to Bristol from this relatively remote village next to the new Severn crossing.
Short Term	A minibus service could be set to pick up rail users and transport them to surrounding industrial sites	Improve cycle parking facilities
Long Term	Improve car park	Create a reason to visit!!

Lawrence Hill

Photo supplied by author

Stapleton Road

Photo supplied by author

Appendix AA

Montpelier

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Redland

Photo supplied by author

Clifton Down

Photo supplied by author

Sea Mills

Photo supplied by author

Shirehampton

Photo supplied by author

Avonmouth

Photo supplied by author

St Andrews Road

Photo supplied by author

Severn Beach Station

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