

Measure title: **Public Transport Information for Blind and Partially Sighted People**

City: **Brighton & Hove** *Project:* **Archimedes** *Measure number:* **72**

Executive Summary

This measure aimed to improve accessibility and public transport provision for people who are blind or partially sighted in Brighton & Hove by providing audio devices, known as React units or talking bus stops, to relay the information displayed on Real Time Information (RTI) signage.

The ARCHIMEDES project allowed for 12 React units to be installed at 12 real time bus stops, thus improving access for those who previously used units in place at other locations in the city. In addition, the measure was able to fund a further 200 key fobs, which are used to operate the system, in order to allow a larger number of residents to gain access to the information and improve their confidence whilst travelling alone.

The evaluation for this measure focussed predominantly on awareness, acceptance and usage of the scheme with both public and user surveys conducted to assess the impact of the measure. However, there were issues with low response rates, particularly in relation to the post-implementation surveys meaning that there is a need to interpret the measure results carefully.

Nevertheless, the results do show a positive trend with the key findings being as follows:

- The measure has a favourable cost benefit ratio of €1:11.
- Increase in bus trips– User surveys indicate an increase in bus trips since the extension of the scheme through the CIVITAS project. For example, 25% more said that they travel by bus at least once a week.
- High user satisfaction– 100% of users surveyed at the end of the project wanted to see an expansion of the system to other bus stops within and beyond the city.

The evaluation concludes with the following key recommendations:

- Coordination with a local blind society is very valuable to planning, uptake and success of such measures.
- There is a need to consider the full journey and the system would benefit from an extension of audio visual information available on buses in order to help people disembark at the correct stop (complementing the units at bus stops which help them board the correct bus).
- Consideration should be given to expanding the system for use by those with other forms of disability such as learning difficulties. This will increase uptake and reduce the cost per person of the infrastructure.

A Introduction

A1 Objectives

A1 Objectives and Target Groups

A1.1 Objectives

The measure objectives are:

(A) High level / longer term:

- In Brighton & Hove, a major effort was put into influencing travel behaviour through marketing and awareness raising, allied with targeted infrastructure improvements aimed at easing journeys by alternative modes to the car.

(B) Strategic level:

- The objective of this measure was to make alternative modes of transport more accessible to people who are blind or partially sighted.

(C) Measure level:

- This measure sought to improve accessibility and public transport provision for people who are blind or partially sighted in Brighton & Hove by providing the existing Real Time Information displays at bus stops with an additional 12 audio devices known as React units.
- It also sought to provide a further 200 key fobs for residents who are blind or partially sighted to enable them to access the audible information at bus stops.

A1.2 Target groups

This measure targeted residents who are blind or partially sighted. It is difficult to quantify numbers in this group, though UK Department of Health statistics show that 1,900 people were registered as blind or partially sighted in Brighton & Hove in 2006. The Royal National Institute for the Blind (RNIB) estimates that registration is under recorded by 20% which would suggest that there were 2,375 people in the city who could potentially make use of the system at the outset of the project (which accounts for approximately 1% of the city's total population). The RNIB also estimated that sight problems will increase by about 11% between 2000 and 2020, which would mean that there are approximately 2,454 blind or partially sighted people in the city as of 2012.

The target area was the CIVITAS corridor and although the location of new React units was informed by consultation with the user group, all were located in this area.

A2 Description

This measure aimed to improve accessibility and public transport provision for people who are blind or partially sighted in Brighton & Hove by providing audio devices, known as React units, to relay the information displayed on real time information signage. A diagram is provided in Figure A2.1. The scheme works by the user pressing their key fob which links with the React unit which in turn informs the user of the real time bus information audibly. The ARCHIMEDES project allowed for an

additional 12 React units to be installed at 12 real time bus stops (for location map see Figure A2.2), thus improving access to real time bus information for the blind or partially sighted community. An additional 200 key fobs (used to operate the system) were made available to allow a larger number of residents to gain access to the information and improve their confidence whilst travelling alone. The scheme was promoted through a launch attended by the city’s mayor (Figure A2.3) whilst publicity material was produced and disseminated to the target groups via representative bodies. The information leaflet is shown in Figure A2.4 and was made available in Braille as required.

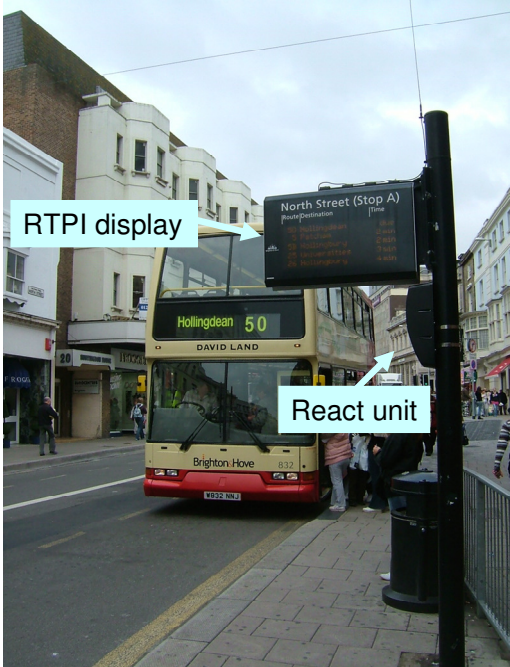


Figure A2.1: RTPI display and React unit



Figure A2.2: Map of React units in CIVITAS corridor



Figure A2.3: Launch of the first React unit

Talking bus stops

The Talking Bus stop system gives blind and partially sighted people access to real time bus information in Brighton & Hove.



The RNIB React units link into the city's Real Time Bus Information signs. The system enables you to hear announcements at bus stops telling you:

- which bus stop you are at
- which buses are coming
- when they are due to arrive

The announcements are triggered by key fobs which you carry. The fob will automatically trigger an audible message from the RNIB React speakers as you pass by and, if you need more information, you can push one of two buttons. The first button starts a message that gives further information about the bus stop location and the second tells you when the next few buses are due.

For an up to date list of where these units are, please visit www.journeymy.co.uk and go to the bus section of the website. Alternatively you can contact the Access Point Team for this information.

To apply for a key fob or for further information about the system, please contact the Access Point team on 01273 295555 or email them at: accesspoint@brighton-hove.gov.uk



Talking bus stops

in Brighton & Hove



Figure A2.4: Information leaflet

B Measure implementation

B1 Innovative aspects

The innovative aspects of the measure are:

- **New conceptual approach** - this measure was the first in the UK to provide orientation and real time bus information in an audible format for blind or partially sighted users.
- **Use of new technology/ITS** - this measure incorporated the already successful real time passenger information system with the well established RNIB React orientation system.
- **Targeting specific user groups** – this measure aimed to improve the accessibility of real time information for those who are blind or partially sighted.
- **New organisational arrangements or relationships** - this measure improved the working partnership with the RNIB, colleagues in the Adult Social Care department and the local and regional blind/partially sighted community.

- **New physical infrastructure solutions** – this measure provided equipment which allows blind or partially sighted users to access real time information and encourage them to use public transport in an attempt to promote modal shift.

B2 Research and Technology Development

N/A

B3 Situation before CIVITAS

In August 2007, Brighton & Hove became the first area in the UK to introduce talking bus stops for blind and partially sighted people, which included Real Time Information (RTI) and orientation messages. The system, known as ‘Talking Bus Stops’, was launched city-wide at 20 bus stops with an initial 70 key fobs being issued. By the beginning of the CIVITAS project, there were approximately 90 users of the system, though there had been no real promotion or evaluation of this system. The CIVITAS initiative will enable an expansion of the scheme, delivering React units at 12 more locations, together with 200 key fobs. In addition to this, the initiative also allowed a full evaluation of the scheme to be conducted, exploring the drivers and barriers, and recording the lessons learned. These enhancements were designed to inform the potential expansion of the scheme to other cities.

B4 Actual implementation of the measure

The measure was implemented in the following stages:

Stage 1: React Location (April 09–May 09)

Information from the React units on usage and discussions with stakeholders resulted in a number of additional locations being proposed. The recommended sites for new React units were circulated to the blind and partially sighted working group, comprising of members from the city’s blind and partially sighted community, a member of staff from the BHCC’s Access Team and a member from a local blind and partially sighted organisation for comment. The group was then brought together and asked to comment on and agree the final locations for the 12 new units.

Stage 2: Formation of orientation messages and ordering of units (June-July 09)

Once the final shortlist for new units had been agreed, work was undertaken in conjunction with the user group and the RNIB to agree on the content of the React unit orientation messages. Once finalised, the order for the new units was placed. The orientation/location messages for each unit were composed with input and guidance from the project working group. The messages were then recorded by the unit supplier and agreed by the Project Manager.

Stage 3: Installation of React units (September 09-March 10)

The installation programme was agreed with the contractor and the first React unit was installed in September 2009 with the remaining 11 following between January and March 2010.

Stage 4: Distribution of key fobs (Jan 10-March 10)

Ordering of the key fobs was passed to BHCC’s Access Team for distribution within the blind and partially sighted community. This was carried out through representative groups for the blind and partially sighted community, whilst known individuals are assigned an officer from the council’s Access Team who will meet with individuals to assess their wider needs and ways in which their lives can be improved. This includes accessing public transport and officers would offer key fobs to those for whom they identify talking bus stops as being a useful service. Those applying for a key fob through other means are asked to complete an application form which is assessed through the stance

generally taken is that if someone feels the need for access to the talking bus stops they are likely to benefit and it would be worthwhile to issue them with a key fob. This stage of the measure was accompanied by promotion of the scheme as described in Section A2 and shown in Figures A2.3 and A2.4.



Figure B4.3: Users of the system

Stage 5: Demonstration, monitoring, and evaluation (March 10 – July 12)

A user survey and a general public survey to test awareness were conducted in summer 2012. This sought to examine how awareness and usage of the scheme has changed since a user baseline survey was conducted in March 2008, and the baseline public survey conducted in November 2009.

B5 Inter-relationships with other measures

The measure is related to other measures as follows:

Personalised Travel Information Website (Measure no.71) – With the objective of making it easier for people to use public transport through the provision of information, this measure has a relationship with the Personalised Travel Information Website

In addition, work associated with the city's Local Transport Plan does include improving accessibility, for example, through dropped kerbs at crossing points and raised kerbs at bus stops which would complement the objectives of this measure. Whilst all new schemes are designed to meet national guidelines on access for blind or partially sighted users (such as the provision of tactile paving), there are no other projects specifically aimed at blind or partially sighted people as is the case with this measure.

C Impact Evaluation Findings

C1.0 Scope of Impact

This measure increased the number of talking bus stops across the city. The indicators selected focused on the target group (those who are blind and partially sighted) and their ability to move around the city with increased confidence (security) and ease (network).

In terms of economic measures, capital and maintenance costs were monitored, whilst awareness and acceptance were measured in order to assess travel behaviour. The surveys of both users and non users associated with these indicators were also intended to aid understanding of how the service is used and how it could be potentially expanded. Limitations are explored in Section C6.

C1.1 Impacts and Indicators

Table C1.1 Selection of Indicators

NO.	EVALUATION CATEGORY	EVALUATION SUB-CATEGORY	IMPACT	INDICATOR	DESCRIPTION	DATA /UNITS
	ECONOMY					
2b		Costs	Capital Costs	Capital costs	Cost per annum	Euro, quantitative, collected
2c			Maintenance costs	Maintenance costs	Cost per annum	Euro, quantitative, collected
	SOCIETY					
13		Acceptance	Awareness	Awareness level	Awareness of the policies/measures	Index (%), qualitative, collected, survey
14		Patronage	Acceptance	Acceptance level	Application figures for key fobs	quantitative, collected
15		Accessibility	Spatial Accessibility	Perception of accessibility	Perception of physical accessibility of service	Index (%), qualitative, collected, survey
17		Security	Security	Perception of security	Perception of security when using service	Index, qualitative, collected, survey
		Usage	Increasing bus travel by user group	Accessing information at React bus stops	Number of additional bus trips.	Quantitative, collected

Table C1.2 Methods for evaluation of indicators

No.	INDICATOR	TARGET VALUE	Source of data and methods	Frequency of Data Collection
2b	Capital	Accounts	Financial records (monitoring)	Before
2c	Maintenance	Accounts	Financial records (monitoring)	Annual
13	Society	General public	Large scale transport survey of the general public. The pre-implementation survey was undertaken in November 2009 and targeted 5,425 households by post and was also made available online. The survey was incentivised with a competition to win a £50 shopping voucher. 590 survey forms were returned, with a further 99 responses online, giving a total of 689 responses (12.7%). The post-implementation survey was conducted online only in July 2012 and had 49 responses. This was made available on the council's website and promoted accordingly. Theoretically all of the city's residents could comment but the absence of a sample means that it is not possible to provide a response rate.	Before and After
14	Society	User Group	Registration records of new key fobs issued	Ongoing
15,17	Society	User Group	Registration details used to target users and send out paper/online surveys. Telephone surveys were used where appropriate. Users were surveyed following the pre-CIVITAS trial in March 2008 (responses received from 23 of 38 registered users (60%)) and again at the end of the project in July 2012 (responses received from 181 of registered users (6%)).	Before and After
	Society	Usage	Originally data was to be downloaded from the React units to indicate usage. However, the user surveys (used for indicators 15, 17) have been used instead. See Section C6 for further information.	M/A

C1.2 Establishing a Baseline

The aim of this measure was to make alternative modes of transport more accessible, to both people who are blind or partially sighted, and the general public. Therefore key to the baseline was an appraisal of the perceptions of alternative modes prior to the intervention, as well as an initial awareness and acceptance survey covering the React units and key fobs already in operation prior to CIVITAS.

At the end of 2009 an awareness and acceptance survey was conducted to gauge opinion about the measure which was used as a baseline against the after survey.

In March 2008 (prior to the CIVITAS intervention) a user survey was conducted to test awareness and acceptance to the current scheme. This provides a baseline to take-up.

C1.3 Building the Business-as-Usual scenario

Given the specific target group for this measure it is felt that there are few other factors that could influence the indicators that have been selected to measure the success of the project. Therefore, though other CIVITAS measures such as the Personalised Travel Information Website (Measure 71)

and wider sustainable transport projects in Brighton & Hove are likely to contribute to carbon savings and an increase in bus patronage amongst the wider population, the barrier to using the bus for those with sight problems would not be overcome without the talking bus stops measure. It is therefore felt that the business as usual scenario would not need to incorporate such factors, as would be the case for other measures.

Instead, the business as usual scenario has been based on an estimate of the number of new users who would register each year without the scheme. Table C2.2 outlines the number of users for each year the project has been operational, which includes the two years since the initial units were installed prior to the expansion of the system through CIVITAS. This suggested that following the installation of the first units and initial wave of publicity, resulting in the registration of 52 users, the number of new registered users fell to 27 during the second year of the system's operation. It would be a reasonable assumption that under a business as usual scenario (i.e. without the additional CIVITAS units and publicity), the number of users would continue to increase in future years, but with the rate of increase continuing to decline year on year. Therefore, the business as usual scenario will represent an adjustment based on the increase in talking bus stop users that is likely to have occurred regardless of the decision to introduce the CIVITAS measure. Based on the pre-CIVITAS annual registration figures, there would be a 51.9% decline in the number of new users each year, which would provide 14 new users in the second year of CIVITAS, 7 in the third and 3.7 in the fourth. However, this does not account for the number of residents newly registered as blind or partially sighted. Therefore, incorporating this¹, the final calculation of new users under the business as usual scenario is as follows (rounded to the nearest whole number):

- Year 1 (actual): 27 extra users
- Year 2: 14.3 = 14 extra users
- Year 3: 7.3 = 7 extra users
- Year 4: 4.0 = 4 extra users
- Year 5: 2.4 = 2 extra users
- Year 6: 1.5 = 2 extra users

The above calculations have been used in relation to measures of usage and patronage of the system, whereby it is assumed that the additional users under the 'business as usual' scenario would have adopted the same travel habits as others who joined the scheme, with the distinction being that they would have joined the scheme and changed their travel behaviour regardless of whether the CIVITAS measure went ahead or not. In terms of awareness and acceptance amongst the general public it is assumed that there will be some decline each year as a result of reduced marketing activity; however, others will become aware through hearing or seeing the units and word of mouth. Despite this, in the absence of a robust calculation, it has been assumed that awareness and acceptance will not change under a business as usual scenario. Finally, when considering users' perceptions, the business as usual scenario is assumed to be the same as the situation prior to membership of the scheme. For example, perceptions of security and accessibility are measured by those who reported that they were using public transport more often following the introduction of the service with zero as a baseline which few other factors are likely to influence as discussed above.

C2 Measure results

¹ 1,900 people were registered as blind or partially sighted in Brighton & Hove in 2006. The RNIB estimated that sight problems would increase by about 11% between 2000 and 2020. This equates to 209 people or 10.5 per year. On the basis that 2.7% of those registered as blind or partially sighted were users of the talking bus stops in 2008, this would necessitate an adjustment of the business as usual scenario by an extra 0.3 users per year.

C2.1 Economy

Table C2.1 provides a summary of the costs of the measure. The cost of maintaining units is the same for all units, including those installed prior to CIVITAS. The measure has been evaluated independently of the React units installed prior to CIVITAS, therefore, the business as usual scenario is considered to be zero. It would be possible to increase the maintenance costs to account for all units; however, this would not accurately reflect the impact of the project as a large number are outside of the CIVITAS corridor and there is no impact on the individual maintenance cost per unit.

Table C2.1 Costs²

Indicator	Before (09/2008)	B-a-U (07/2012)	After (07/2012)	Difference: After-Before	Difference: After-BaU
2b Capital costs	N/A	€0.00 per React Unit (hardware & install)	€3,415 per React Unit (hardware & install)= €40,908	-€40,908	-€40,908
2c Maintenance costs	N/A	€0.00 per React Unit pa	€114 per React Unit pa= €2,736	-€2,736	-€2,736

C2.2 Society

At the start of the project there were 79 users (based on fobs issued for existing units from the first installation in December 2007 until the installation of the first unit in the CIVITAS corridor in September 2009). In the period since the first talking bus stop was installed as part of the CIVITAS measure, a further 102 fobs were issued. Table C2.2 provides a break down per year, with these figures providing input values for the Cost Benefit Analysis (CBA) in Section C2.6.

Table C2.2 Registered users

CIVITAS Year	Date	New Users	Cumulative CIVITAS Users
N/A	Dec 07- 14/09/08	52	
CY1	15/09/2008-14/09/2009	27	
CY2	15/09/2009-14/09/2010	57	57
CY3	15/09/2010-14/09/2011	20	77
CY4	15/09/2011-14/09/2012	25	102
Total		181	

A survey was undertaken in March 2008 with users of the talking bus stops prior to the CIVITAS intervention which assessed the impact of an initial trial prior to CIVITAS. This survey was repeated in July 2012 to assess the impact of the CIVITAS project. The first survey received 23 responses and

² Exchange rate at £1= 0.8784

the second 10 responses, so the low response rates do mean that the results need to be treated with caution. Nevertheless, the indications are that the measure has had a positive impact.

Before the scheme was introduced, 30% of respondents used the bus 3-5 times a week which rose to 47% following the pre-CIVITAS trial. In 2012, this had risen to 60% as shown in Figure C2.1, whilst there was a 25% increase in those travelling by bus more than once a week and 20% said they now use a greater number of buses or routes. It is worth noting that these figures may well be higher for a city beginning with no talking bus stop infrastructure, as shown by the results of the pre-CIVITAS trial in Brighton & Hove.

The positive figures for usage are perhaps explained by reference to Figure C2.1 which shows that 78% of respondents found it 'difficult' or 'very difficult' to obtain bus information prior to the introduction of talking bus stops, with this falling to 13% following the initial intervention and 0% by the end of the CIVITAS intervention. This can be directly attributed to the talking bus stops as 70% now say it is their primary source of bus information. Although it has not been possible to provide downloaded information from the React units (see Section C6), an indication of usage can be provided by data from a unit installed in the CIVITAS corridor³ before the project commenced. This indicates that information was requested on 23 occasions during the first five month period (5/12/2007-5/5/2008), representing 0.15 requests per day or 0.6 requests for every one user registered at this time. During the five month period to 5/5/2009 the number of requests had risen by over 100% to 51, representing 0.34 requests per day or 0.8 requests for every one user registered at this time. Were data to be available for the CIVITAS-funded units, a direct comparison with those installed previously would not be appropriate owing to the differences in bus frequencies and other characteristics between bus stops.

Given the results presented in this section, it is unsurprising that satisfaction with the service is high, with 100% of respondents requesting that it be rolled out to further locations in the city and beyond. This can be elaborated upon further by reference to the comments offered by users which are overwhelming positive, though suggestions for improvements have been put forward such as reliability and clarity. Recommendations are discussed further in Section D.4, whilst a selection of users' comments is provided below:

- 'I just wish other councils such as East Sussex would look at installing the system. I think the Real Time Information when spoken is often lost in the noise of the traffic, but overall I think it is great and I find the system really useful.'
- 'The system works for me very nicely but I have heard it in other areas and it has a real speak voice which sounds a lot clearer.'
- Expand to 'as many [bus stops] as possible.'
- 'I only wish that other local authorities including my own local authority come down to Brighton to see just how valuable this service is and follow your lead, I envy the [blind or partially sighted people] that live in Brighton, they are extremely lucky to have you as a local authority and a service like this. Most of us [blind or partially sighted people] in the rest of the country are still very much struggling when [it] comes to using buses.'
- 'The idea is great and it helps but it is not reliable enough.'
- 'Thank you very much.'

³ Eastern Road, Brighton

Meanwhile, the perception of security and accessibility indicators have been calculated based on the proportion of users who said that they were more likely to travel independently following the introduction of the system. This shows a positive impact as shown in Table C2.3.

Figure C2.1 Usage of talking bus stops- number of bus journeys per week

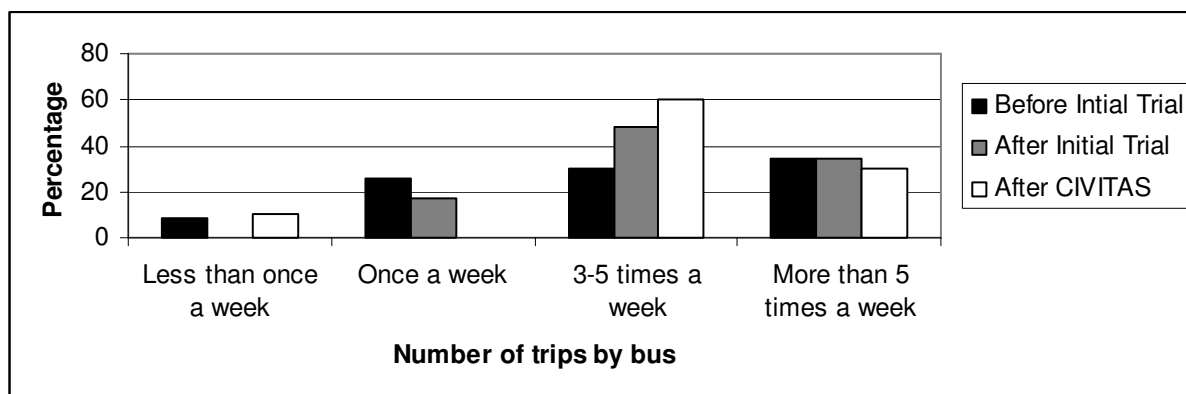


Figure C2.2 Perceived difficulty of obtaining bus information

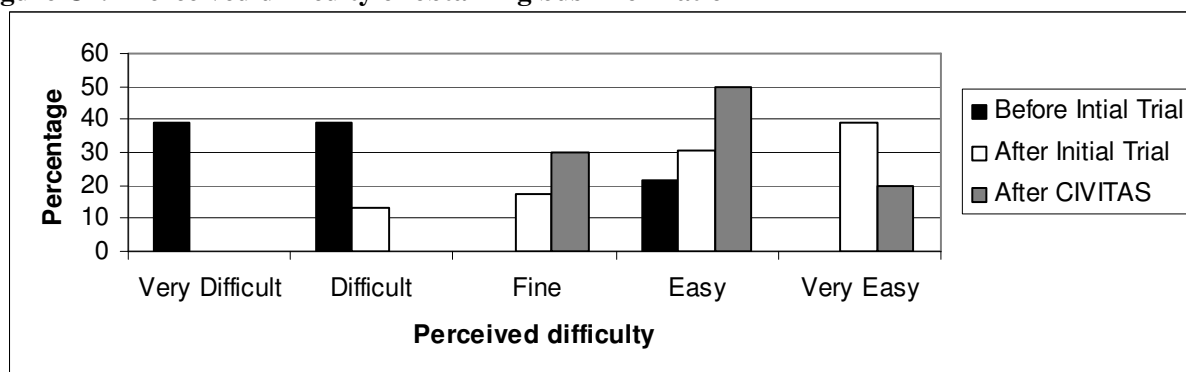


Table C2.3 Acceptance, accessibility, security and usage

Indicator	Before (September 2009)	B-a-U (July 2012)	After (July 2012)	Difference: After-Before	Difference: After-BaU
14 Acceptance level*	79	104	181	+102 (129%)	+77 (97%)
15 Perception of accessibility**	0%	0%	50%	+50%	+50%
17 Perception of security**	0%	0%	50%	+50%	+50%
Usage***	20,296	20,394	20,686	+390 (2%)	+292 (1%)

* Based on the number of registered users.

** Derived from the number of users who said that they are more likely to travel independently following registration to the system. The BaU can be assumed to stay the same as explained in Section C1.3.

***Based on change in bus trips by new users.

The surveys of users are complemented by consideration of awareness and acceptance surveys undertaken with the wider public at the start and end of the project. 689 responses were received to the pre-implementation survey and 49 responses to the post-implementation survey which is a vastly different response rate and does again mean that there is a need to consider the results cautiously. Nevertheless, at the start of the project, 61% said that they had heard about the talking bus stops, with a slight decline to 59% in 2012 whilst 15% said that they would use the service in 2008, falling to 12.2% in 2012. The derived results for awareness are shown in Table C2.4 and although the results may appear to be low, careful interpretation is required. For example, 12.2% is actually a high figure when it is considered that the talking bus stops are a relatively niche measure aimed specifically at those who are blind or partially sighted, whereas the survey was aimed at all members of the public. The higher numbers who said they would use the system in the pre-implementation survey compared to the after survey may in fact reflect a better understanding of what talking bus stops are for and who they are targeted at, albeit this assertion is contradicted by the results for knowledge of the service (Table C2.5). For example, people may have misunderstood prior to introduction that the talking bus stops would be a public information system that would be heard by all those in the vicinity of bus stops at all times, when they are in fact triggered only when a blind or partially sighted fob holder activates the system. Indeed, in 2012 65% gave the reason that they would not use them as being that they are not blind or partially sighted, suggesting that the majority of respondents understood the purpose of the system.

It should also be noted that the 2012 survey was undertaken two years after the main publicity drive through CIVITAS whereas the 2008 survey was undertaken six months after the initial launch. This provides further explanation for the apparent fall in awareness, though under the business as usual scenario (see Section C1.3).

Table C2.4 Awareness and acceptance

Indicator	Before (March 2008)	B-a-U (July 2012)	After (July 2012)	Difference: After-Before	Difference: After-BaU
13 Awareness level*	61%	61%	59%	-2%	-2%

*The percentage of people who had heard and/or read about talking bus stops.

Table C2.5 Knowledge of talking bus stops

Question		2008 (%)	2012 (%)
Aware of service?	Yes	61	59
	No	39	41
Knowledge of service	Very Well Informed	49	6
	Fairly Well Informed	20	23
	Not Very Well Informed	21	23
	Not Well Informed	11	47

C2.3 Cost benefit analysis

C2.3.1 Evaluation period for CBA

The lifetime of the measure has been taken as the five year period from the installation of the first unit in September 2009 at the end of the first year of the project. This has been taken as no significant capital costs were incurred in year 1 and five years provides a reasonable timeframe for benefits to be realised. It is also likely that after this period the technology will require an upgrade or further investment.

Years 1-4 are derived from actual results whereas years 5-6 are based on the earlier trend continuing. The future benefits have been calculated using the recommended discount rate of 3.5%.

C2.3.2 Method and values for monetisation

In each case, a number of assumptions have been made which highlight the need to treat the results of this CBA with caution. It is also felt that the nature of the measure which is not primarily aimed at delivering economic benefits make it less suitable for consideration through a CBA. For example, as covered in Section C2.3.6.4, there are a number of benefits to the individuals involved and society generally that are extremely difficult to quantify in a robust manner. Nevertheless, all the assumptions which have been made are referenced and explained in further detail below.

C2.3.3 Key impacts of the project and calculation

This section details the costs and benefits that have been identified together with how they have been calculated. The lifetime costs and benefits are summarised and compared in Section C2.3.5.

C2.3.3.1 Costs

The costs have been calculated on the basis of the initial capital outlay (manufacture and installation of React units, purchase of key fobs) and the maintenance cost per unit, each multiplied by twelve to cover all the units introduced through CIVITAS. These costs have been incurred by Brighton & Hove City Council.

C2.3.3.2 Benefit 1: Carbon saving

Carbon savings for each year have been calculated from the approximate increase in bus trips by users of the talking bus stops:

Before CIVITAS: 0% travelled by bus less than once a week

17.4% travelled by bus once a week

47.8% travelled by bus 3-5 times a week

34.8% travelled by bus 5+ times a week

After CIVITAS: 10% travelled by bus less than once a week

0% travelled by bus once a week

60% travelled by bus 3-5 times a week

30% travelled by bus 5+ times a week

- Assumption 1: Averages of category ranges have been used where necessary to enable a calculation to be carried out (<1 days = 0; 3-5 days = 4; >5 days = 5).

- Assumption 2: It is assumed that the views of those responding to the before and after user surveys are applicable to the cumulative number of new users registered at the end of each year of CIVITAS (Year 1= 0, year 2 = 57, year 3 =77, year 4 = 102). This would assume that the sample is representative and that the user survey captured those who may be registered and issued with a key fob but not using the service.
- Assumption 3: That any increase in bus journeys represent replacements for journeys undertaken by another mode and therefore generate a carbon saving. This does not account for the fact that some users may feel free to travel more because of the independence and convenience the system offers.
- Assumption 4: Journey length is based on the average trip length figure for the UK of seven⁴ miles.

Change in journeys for year 1

The React units were not installed through CIVITAS until the end of the first year of the project so there is no impact to calculate for year 1.

Change in journeys for year 2

The following calculation is based on the number of talking bus stop users (registered following installation of CIVITAS units) at the end of the second year and bus stop usage as reported by the pre and post-implementation surveys.

Pre-implementation bus journeys:

$$((17.4\%*57)*1) + ((47.8\%*57)*4) + ((34.8\%*57)*5) = 218.1 \text{ per week}$$

Total post-measure implementation bus journeys (end of year 2) =

$$((60\%*57)*4) + ((30\%*57)*5) = 222.3 \text{ per week}$$

Difference in journeys=

$$4.2 \text{ more bus trips per week or } 218.4 \text{ per year}$$

The calculation for the business as usual scenario (in accordance with the methodology outlined in Section C1.3) is as follows:

Pre-implementation bus journeys:

$$((17.4\%*14)*1) + ((47.8\%*14)*4) + ((34.8\%*14)*5) = 53.7 \text{ per week}$$

Total post-measure implementation bus journeys (end of year 2) =

$$((60\%*14)*4) + ((30\%*14)*5) = 54.6 \text{ per week}$$

Difference in journeys=

$$0.9 \text{ more bus trips per week or } 46.8 \text{ per year}$$

⁴ UK Department for Transport (DfT) 2010 National Travel Survey
(<http://www.dft.gov.uk/statistics/releases/national-travel-survey-2010/>)

Change in journeys for year 3

The following calculation is based on the number of talking bus stop users (who registered following installation of CIVITAS units) at the end of the third year and bus stop usage as reported by the pre and post-implementation surveys.

Pre-implementation bus journeys:

$$((17.4\%*77)*1) + ((47.8\%*77)*4) + ((34.8\%*77)*5) = 294.6 \text{ per week}$$

Total post measure implementation bus journeys (end of year 3) =

$$((60\%*77)*4) + ((30\%*77)*5) = 300.3 \text{ per week}$$

Difference in journeys=

$$5.7 \text{ more bus trips per week or } 296.4 \text{ per year}$$

The calculation for the business as usual scenario (in accordance with the methodology outlined in Section C1.3) is as follows:

Pre-implementation bus journeys:

$$((17.4\%*21)*1) + ((47.8\%*21)*4) + ((34.8\%*21)*5) = 80.3 \text{ per week}$$

Total post measure implementation bus journeys (end of year 3) =

$$((60\%*21)*4) + ((30\%*21)*5) = 81.9 \text{ per week}$$

Difference in journeys=

$$1.6 \text{ more bus trips per week or } 83.2 \text{ per year}$$

Change in journeys for year 4

The following calculation is based on the number of talking bus stop users (registered following installation of CIVITAS units) at the end of the fourth year and bus stop usage as reported by the pre and post-implementation surveys.

Pre-implementation bus journeys:

$$((17.4\%*102)*1) + ((47.8\%*102)*4) + ((34.8\%*102)*5) = 390.3 \text{ per week}$$

Total post measure implementation bus journeys (end of year 4) =

$$((60\%*102)*4) + ((30\%*102)*5) = 397.8 \text{ per week}$$

Difference in journeys=

$$7.5 \text{ more bus trips per week or } 390 \text{ per year}$$

The calculation for the business as usual scenario (in accordance with the methodology outlined in Section C1.3) is as follows:

Pre-implementation bus journeys:

$$((17.4\%*25)*1) + ((47.8\%*25)*4) + ((34.8\%*25)*5) = 95.6 \text{ per week}$$

Total post measure implementation bus journeys (end of year 4) =

$$((60\%*25)*4) + ((30\%*25)*5) = 97.5 \text{ per week}$$

Difference in journeys=

$$1.9 \text{ more bus trips per week or } 98.8 \text{ per year}$$

Change in journeys for year 5

The following calculation is based on the number of talking bus stop users (registered following installation of CIVITAS units) at the end of the fourth year plus an assumed rate of increase⁵ together with bus stop usage as reported by the pre and post-implementation surveys.

Pre-implementation bus journeys:

$$((17.4\%*132)*1) + ((47.8\%*132)*4) + ((34.8\%*132)*5) = 505 \text{ per week}$$

Total post measure implementation bus journeys (end of year 4) =

$$((60\%*132)*4) + ((30\%*132)*5) = 514.8 \text{ per week}$$

Difference in journeys=

$$9.8 \text{ more bus trips per week or } 509.6 \text{ per year}$$

The calculation for the business as usual scenario (in accordance with the methodology outlined in Section C1.3) is as follows:

Pre- implementation bus journeys:

$$((17.4\%*27)*1) + ((47.8\%*27)*4) + ((34.8\%*27)*5) = 103.3 \text{ per week}$$

Total post measure implementation bus journeys (end of year 4) =

$$((60\%*27)*4) + ((30\%*27)*5) = 105.3 \text{ per week}$$

Difference in journeys=

$$2 \text{ more bus trips per week or } 104 \text{ per year}$$

Change in journeys for year 6

The following calculation is based on the number of talking bus stop users (registered following installation of CIVITAS units) at the end of the fourth year plus an assumed rate of increase⁶ together with bus stop usage as reported by the pre and post-implementation surveys.

Pre-implementation bus journeys:

$$((17.4\%*166)*1) + ((47.8\%*166)*4) + ((34.8\%*166)*5) = 635 \text{ per week}$$

Total post measure implementation bus journeys (end of year 4) =

⁵ Because the number of new users as a % of the total dropped by 3% between year 3 and 4, it is assumed that this trend would continue (to 29%), providing 30 new users and 132 in total for year 5.

⁶ Because the number of new users as a % of the total dropped by 3% between year 3 and 4, it is assumed that this trend would continue (to 26%), providing 34 new users and 166 in total for year 6.

Measure title: Public Transport Information for Blind and Partially Sighted People

City: Brighton & Hove

Project: Archimedes

Measure number: 72

$$((60\%*166)*4) + ((30\%*166)*5) = 647.4 \text{ per week}$$

Difference in journeys=

12.4 more bus trips per week or 644.8 per year

The calculation for the business as usual scenario (in accordance with the methodology outlined in Section C1.3) is as follows:

Pre- implementation bus journeys:

$$((17.4\%*29)*1) + ((47.8\%*29)*4) + ((34.8\%*29)*5) = 111 \text{ per week}$$

Total post measure implementation bus journeys (end of year 4) =

$$((60\%*29)*4) + ((30\%*29)*5) = 113 \text{ per week}$$

Difference in journeys=

2 more bus trips per week or 104 per year

Carbon saving by year

If it is assumed that these journeys would be undertaken by another mode (e.g. taxi or car passenger) the carbon saving generated by the talking bus stops would be calculated as follows:

$(\text{Change in bus journeys} * \text{mean trip mileage}) / \text{miles per tonne of CO}_2^7 * \text{€ value per CO}_2 \text{ Tonne}^8$
=value of reduced carbon output (€)

$$\text{Year 2} = (218.4*7)/3001*125,400$$

This gives an estimated carbon saving and quantified benefit of **€63,883** per annum.

The corresponding business as usual value is €13,689.

$$\text{Year 3} = (296.4*7)/3001*125,400$$

This gives an estimated carbon saving and quantified benefit of **€86,698** per annum.

The corresponding business as usual value is €24,336.

$$\text{Year 4} = (390*7)/3001*125,400$$

This gives an estimated carbon saving and quantified benefit of **€114,076** per annum.

⁷ Travelling for 3001 miles equates to one tonne of carbon according to the UK Department for Environment, Food and Rural Affairs (DEFRA) 2006 “Environmental Key Indicative Factors” (<http://www.defra.gov.uk/publications/files/pb11321-envkpi-guidelines-060121.pdf>)

⁸ Based on IMPACT (2008) *Handbook on estimation of external costs in the transport sector*

Measure title: Public Transport Information for Blind and Partially Sighted People

City: Brighton & Hove

Project: Archimedes

Measure number: 72

The corresponding business as usual value is €28,899.

Year 5 = $(509.6 \times 7) / 3001 \times 125,400$

This gives an estimated carbon saving and quantified benefit of **€149,059** per annum.

The corresponding business as usual value is €30,420.

Year 6 = $(644.8 \times 7) / 3001 \times 125,400$

This gives an estimated carbon saving and quantified benefit of **€188,606** per annum.

The corresponding business as usual value is €30,420.

C2.3.3.3 Benefit 2: Users' stated value of Real Time Information

Stated preference research undertaken for BHCC calculated the value of standard Real Time Information (electronic displays only) to passengers using the bus as approximately €0.14 per person using the bus stop. This research was based on the stated value of the Real Time Information in terms of time together with the average value attributed to the latter.

- Assumption: It is assumed that this value is directly applicable to those blind or partially sighted users who can now access the system having previously been unable to do so.

If this is applied to the above increase in usage of the Real Time Information as a result of the talking bus stops project (derived from the additional bus trips per year made by users registered since the installation of CIVITAS-funded units) the value to the additional users can be calculated at **€30.6** for year 2, **€41.5** for year 3, **€54.6** for year 4, **€71.3** for year 5 and **€90.3** for year 6.

The corresponding businesses as usual values are €6.6 for year 2, €11.6 for year 3, €13.8 for year 4, €14.6 for year 5 and €14.6 for year 6.

C2.3.3.4 Non-quantifiable benefits

Some additional benefits have been identified that it is not possible to quantify and therefore have been excluded from the CBA. These are considered below, together with an explanation for their omission.

Research elsewhere has argued that the case for transport accessibility improvements (as opposed to the clear social benefits) can be made on the basis of savings to public services, for example a health professional may not have to travel to the user's house as they will have greater mobility and be able to reach central service locations. This is discussed further by Maynard (2009)⁹; however, for the purposes of this measure there is no data on the purpose of the journeys made by the bus stop users and it is felt that the accuracy of making an assumption in this respect would be questionable. Similarly, the benefits to individuals of having greater mobility and independence are difficult to accurately quantify as a benefit, though there are likely to be wider benefits to mental and physical health with a resultant economic benefit in terms of savings for health budgets. However, if this benefit could be quantified, there would be a need to relax the assumption made in Section 2.3.6.2 that the increase in bus trips represents a carbon saving based on a switch from less sustainable modes of

⁹ Maynard, A. (2009) Journal of Transport and Land Use (2) p21-30 *Can measuring the benefits of accessible transport enable a seamless journey?*

transport as the former would imply that the measure is causing *more* journeys to be undertaken as opposed to the same journeys being undertaken differently.

It is also not possible to quantify the benefits of increased bus patronage in terms of revenue for operators as the users of the talking bus stops are entitled to free bus travel as a result of their disability.

C2.3.4 Life time cost and benefit

The lifetime costs and benefits are summarised in Tables C2.5-2.8.

Table C2.5 Capital cost in the evaluation period (not discounted)

	Cases for comparison	Cost (e.g. €200,000)
Year 1	CIVITAS measure	0
	Reference case (or BAU)	0
Year 2	CIVITAS measure	40,908
	Reference case (or BAU)	0
Year 3	CIVITAS measure	0
	Reference case (or BAU)	0
Year 4	CIVITAS measure	0
	Reference case (or BAU)	0
Year 5	CIVITAS measure	0
	Reference case (or BAU)	0
Year 6	CIVITAS measure	0
	Reference case (or BAU)	0

Table C2.6 Maintenance cost in the evaluation period (not discounted)

	Cases for comparison	Values (e.g. €200,000)
Year 1	CIVITAS measure	0
	Reference case (or BAU)	0
Year 2	CIVITAS measure	2,736
	Reference case (or BAU)	0
Year 3	CIVITAS measure	2,736
	Reference case (or BAU)	0
Year 4	CIVITAS measure	2,736
	Reference case (or BAU)	0
Year 5	CIVITAS measure	2,736
	Reference case (or BAU)	0

Year 6	CIVITAS measure	2,736
	Reference case (or BAU)	0

Table C2.7 Savings from reductions of environmental emissions (not discounted)

	Cases for comparison	Values (e.g. €200,000)
Year 1	CIVITAS measure	N/A
	Reference case (or BAU)	N/A
Year 2	CIVITAS measure	63,883
	Reference case (or BAU)	13,689
Year 3	CIVITAS measure	86,698
	Reference case (or BAU)	24,336
Year 4	CIVITAS measure	114,076
	Reference case (or BAU)	28,899
Year 5	CIVITAS measure	149,059
	Reference case (or BAU)	30,420
Year 6	CIVITAS measure	188,606
	Reference case (or BAU)	30,420

Table C2.8 Other cost/benefit in the evaluation period (not discounted)¹⁰

	Cases for comparison	Values (e.g. €200,000)
Year 1	CIVITAS measure	N/A
	Reference case (or BAU)	N/A
Year 2	CIVITAS measure	30.6
	Reference case (or BAU)	6.6
Year 3	CIVITAS measure	41.5
	Reference case (or BAU)	11.6
Year 4	CIVITAS measure	54.6
	Reference case (or BAU)	13.8
Year 5	CIVITAS measure	71.3
	Reference case (or BAU)	14.6
Year 6	CIVITAS measure	90.3
	Reference case (or BAU)	14.6

¹⁰ Based on stated preference surveys of the value of Real Time Information

C.2.3.5 Comparison of the lifetime costs and benefits

Tables C2.9- C2.11 provide a comparison of the lifetime costs and benefits, including a consideration against the business as usual cost.

Table C2.9 Lifetime cost/benefit of CIVITAS measure (Discounted)

	Capital cost	Operation cost	Maintenance cost	Other cost	Revenue	Savings from journey time savings	Other benefit	Savings from reductions of environmental emissions	Total cost	Total Benefit	Net cost
Year 1	0	N/A	0	N/A	N/A	N/A	0		0	0	0
Year 2	40,908	N/A	2736	N/A	N/A	N/A	30.6	63,883	43,644	63914	-20,270
Year 3	0	N/A	2736	N/A	N/A	N/A	41.5	86,698	2,736	86740	-84,004
Year 4	0	N/A	2736	N/A	N/A	N/A	54.6	114,076	2,736	114131	-111,395
Year 5	0	N/A	2,643	N/A	N/A	N/A	68.9	144,018	2,643	144087	-141,444
Year 6	0	N/A	2,554	N/A	N/A	N/A	84.3	176,066	2,554	176150	-173,596
Total	40,908	N/A	13,406	N/A	N/A	N/A	280	584,741	54,314	585022	-530,709

Table C2.6.11 Lifetime cost/benefit of the reference measure/case

	Capital cost	Operation cost	Maintenance cost	Other cost	Revenue	Savings from journey time savings	Other benefit	Savings from reductions of environmental emissions	Total cost	Total Benefit	Net cost
Year 1	0	0	0	N/A	N/A	N/A	N/A	N/A	0	0	0
Year 2	0	0	0	N/A	N/A	N/A	6.6	13,689	0	13,696	-13,696
Year 3	0	0	0	N/A	N/A	N/A	11.6	24,336	0	24,347	-24,347
Year 4	0	0	0	N/A	N/A	N/A	13.8	28,899	0	28,913	-28,913
Year 5	0	0	0	N/A	N/A	N/A	14.6	30,420	0	30,435	-30,435
Year 6	0	0	0	N/A	N/A	N/A	14.6	30,420	0	30,435	-30,435
Total	0	0	0	N/A	N/A	N/A	61.2	127,764	0	127,825	-127,825

C2.3.6 Summary of CBA results

Although there are limitations with the methodology and a number of assumptions have been made, the CBA indicates that the benefits of the talking bus stop measure significantly outweigh the initial capital outlay and maintenance costs with an cost benefit ratio of €1:11 (meaning that the accumulated benefits over the project lifetime are approximately eleven times the accumulated costs).

Table C2.5.23 Lifetime changes in costs and benefit (discounted)

	Changes in Costs	Changes in benefits	Net cash flow	Cumulative cash flow
Year 1	0	0	0	0
Year 2	43,644	63,914	20,270	20,270
Year 3	2,736	86,740	84,004	104,274
Year 4	2,736	114,131	111,395	215,669
Year 5	2,643	144,087	141,444	357,113
Year 6	2,554	176,150	173,596	530,709
Total	54,314	585,022		

C4 Achievement of quantifiable targets and objectives

No.	Target	Rating
1	Influence travel behaviour	**
2	Easing journeys by alternative mode to cars	**
3	Make alternative modes more accessible to people who are blind or partially sighted	**
4	Provide 12 React units	**
5	Provide 200 key fobs	*
NA = Not Assessed O = Not Achieved * = Substantially achieved (at least 50%) ** = Achieved in full *** = Exceeded		

C5 Up-scaling of results

If funding were available the intention would be to equip all remaining Real Time Information signs with React. This would require another 108 sites to be equipped and would also assume that the CIVITAS corridor could be expanded in order to include sites within the rest of the city. The scheme could also be expanded to include targeting others who may have difficulty distinguishing between bus services at bus stops such as elderly residents or those with learning disabilities.

C6 Appraisal of evaluation approach

The original intention had been to measure an increase in patronage on buses and attribute this as a success of the measure. However, it is not possible to distinguish between additional users of bus services who became additional users as a direct result of the talking bus stops. The closest measurement that can, and has been, used is a survey of fob holders to ascertain whether they now travel by bus more than they did before the installation of the additional React units. Similarly, it is not appropriate to ascribe a value to the increased patronage in terms of revenue as all users of the talking bus stops will be eligible for free bus passes.

In addition, the original plan had been to make use of data downloadable from the units themselves. However, difficulties were experienced as the React units do not store data for an extended period of time, meaning that this has to be downloaded manually on a regular basis. Software difficulties have prevented this, with the units being compatible only with a Bluetooth receiver and outdated operating system. With the compatible devices used to download the data having reached the end of their lifespan it has proved difficult to replace them with other technology having moved on. This had not been foreseen at the outset of the evaluation given the relatively short time period since the installation of units. At the time of writing, the React unit suppliers had been working on a fix for some time, which it was hoped would allow data to be downloaded for consideration within the measure evaluation period; however, unfortunately no progress has been made.

Finally, the response rate to the public survey sent to random households in the city was low at 590 (11%), despite it being incentivised with a £50 shopping voucher. As a result an online survey was launched in an attempt to increase the response rate; however, this only yielded a further 99 responses. With the response rate to the baseline postal survey being so low, it was difficult to justify a repeat given the cost and resources required for such an exercise. This is set against a backdrop of a number of consultations taking place in the city and some external perceptions that too much time and money was spent on such processes. With this in mind, it is felt that survey fatigue forms a major reason for the low response rate, especially for a survey asking general information on knowledge of a project as opposed to views on plans showing infrastructural improvements which are likely to generate greater interest and debate. As such, it was deemed to be more productive and acceptable to undertake an online survey. Although this only yielded 49 responses, the experience of more recent consultations would indicate that a wider postal survey was unlikely to generate a significantly larger response rate, as these have been limited for many more controversial (to which people are more likely to respond) consultations. The low response rates also mean that there is a need to raise a caveat against the representativeness of the surveys.

C7 Summary of evaluation results

The key results are as follows:

- **Positive cost-benefit ratio** – The measure has a favourable cost benefit ratio of €1:4.
- **Increase in bus trips**– User surveys indicate an increase in bus trips since the extension of the scheme through the CIVITAS project. For example, 25% more said that they travel by bus at least once a week.
- **High user satisfaction**– 100% of users' surveyed at the end of the project wanted to see an expansion of the system to other bus stops within and beyond the city.

C8 Future activities relating to the measure

Fobs will continue to be issued to new users who have applied or the relevant bodies have identified as being likely to benefit from the system.

Meanwhile, further expansion of the system may be possible as part of a forthcoming project GPRS upgrade to the city's Real Time Information system which currently operates using outdated technology which is limiting its expansion. Developments with the React technology, including the possibility of integrating it within the Real Time Information signage, means that talking bus stops are likely to be much more affordable in the future. BHCC will be working closely with the RNIB to determine how the development of talking bus stops in Brighton & Hove is continued beyond the CIVITAS project.

In addition, new buses introduced on some routes in 2011 are now equipped with audio information. This will help to make the whole journey easier for blind or partially sighted individuals and it is possible that they will be more willing to use the talking bus stops if they are confident that they will

Measure title: **Public Transport Information for Blind and Partially Sighted People**

City: **Brighton & Hove**

Project: **Archimedes**

Measure number: **72**

be able to exit the bus at their desired location, not just board the correct bus. Further expansion of the onboard system is the responsibility of local bus operators and is their decision whether they choose to do so or not.

D Process Evaluation Findings

D.0 Focused measure

	0	No focussed measure
X	1	An innovative project
	2	Could deliver against the original aims
	3	Met criteria for CBA to be performed against Measures from a range of Work Packages

D.1 Deviations from the original plan

This measure was largely implemented according to the original plan though there were some amendments to the original schedule and minor amendments to the measure outputs. The main deviations can be summarised as follows:

- 12 React units were installed rather than the 10 originally planned. This was because the unit cost had fallen and it was possible to extend the implementation of the measure to other sites within the CIVITAS corridor.
- The final units were installed in March 2010 as opposed to October 2009. Although some of the CIVITAS-funded units were installed and operational by the target date, a software problem was identified with the existing units which delayed the full expansion of the scheme. However in the intervening period, the supplier was able to resolve the software issue, at which point the remaining new units were installed.
- Upon installation of all 12 units, it became apparent that not all were functioning correctly and both the supplier and installation contractor spent a large amount of time investigating causes and identifying a solution.
- The above delay was translated to the distribution of the new fobs and whilst a launch took place on schedule following the installation of the first units, some of the additional marketing activity took place when all units were fully operational.
- 102 key fobs were issued in the three years following the installation of the first unit in September 2009, compared to the 200 purchased. The system is promoted through the local representative bodies for blind and partially sighted people, together with relevant local authority and health service departments. Realistically, it is not felt that there is a more appropriate way to identify potential users of the scheme and the fobs will continue to be issued as applications are made.

In terms of the measure evaluation plan, there were some deviations and limitations which are discussed in Section C6.

D.2 Barriers and drivers

D.2.1 Barriers

Preparation phase

- No barriers were encountered at the preparation stage.

Implementation phase

- **10. Technological** – Software and technological issues delayed the installation and publicity by six months according to the original schedule. It is not uncommon for IT-based projects to be subject to such issues; however, they were resolved and the units are now operating satisfactorily.
- **5. Involvement, communication**– Promotion of the units relies on representative bodies for blind or partially sighted groups. As such, the presence of a dedicated society in Brighton & Hove would have benefited the measure, though other regional bodies were very helpful in terms of planning and promotion.

Operation phase

- **10. Technological** – Although very well received, suggestions for improvements of the system have focussed on providing a clearer, more personable voice (as opposed to than the current computer generated text-to-voice audio) and improving the sensitivity of the key fob devices. Some users have found that they need to be stood in a specific location to activate the system, which can be difficult at a busy bus stop.

D.2.2 Drivers

Preparation phase

- **8. Organisational:** The success of the pre-CIVITAS trial provided political and public support for the expansion of the scheme under CIVITAS as well as existing experience for the personnel involved in the project.
- **5. Involvement, communication** – The involvement of local interest groups and stakeholders ensured that the installation of React units was prioritised to the stops where demand for the service was greatest. Feedback from user surveys could also be incorporated into the planning and design of the measure.
- **9. Financial** – A fall in the cost per unit enabled the system to be expanded to a greater number of sites than originally planned enabling the project to benefit a greater number of people than would otherwise have been the case (12 as opposed to 10).

Implementation phase

- **10. Technological** – Software issues were a barrier but the agreement put in place with the contractors ensured that efforts were made to identify fixes to the system until it was deemed by BHCC to be operating satisfactorily. It was also agreed that any additional software problems would be dealt with in a timely manner and at no additional cost to the project as part of a one year warranty period.
- **5. Involvement, communication** – BHCC undertook a number of promotional activities for this measure as part of the wider project dissemination. This included publications in City News, the council's magazine which was distributed to all households in the city at the time, website and intranet promotion and press releases to local newspapers and key groups such as Age Concern and the RNIB.

Operation phase

- **5. Involvement, communication** – The passing of the key fob distribution process to BHCC's specialist Access Team ensured that users could be identified. User surveys have indicated the worth of the system and positive feedback from residents.

D.2.3 Activities

The following section provides a summary of the main activities associated with this measure. Further information is provided in Section 4.

Preparation phase

- **7. Planning** – One of the main activities associated with the preparation phase was to identify locations for the new React talking bus stop units. This was determined by assessing usage data from the existing units and holding discussions with stakeholder groups, which consisted of representatives from the blind and partially sighted community as to their preferred sites and those that were most needed and would bring the greatest benefit. This process allowed a final list of 12 new sites to be drawn up.
- **5. Involvement, communication** – There was a need to determine the content of the messages relayed from the React units. This was determined by working with representatives from the blind and partially sighted community with the aim of ensuring that the information was worthwhile and contained everything that blind and partially sighted bus users would need in order to board the correct bus.

Implementation phase

- **10. Technological** – The 12 units were installed. Testing of the technology subsequently took place and BHCC worked with the supplier to ensure that the system was seen to be functioning effectively and reliably before the project was signed off. This ensured that software problems did not lead to the roll out and promotion of an unreliable system, which may have been detrimental to uptake of the measure. Not allowing user access to the system until software problems were proven to have been eradicated is likely to have contributed to high user satisfaction levels.
- **5. Involvement, communication** – Dissemination activities were undertaken by BHCC with the aim of increasing awareness and subsequently uptake of the scheme. These activities included local press advertisements, leaflets and press releases that were sent to target groups representing the local blind and partially sighted community.

Operation phase

- **1. Political/ strategic**– The installation of the first unit was accompanied by a launch attended by the city’s mayor. On completion of all units, leaflets were distributed to target groups alongside press releases and other appropriate publicity.
- **5. Involvement, communication** – This process was managed by BHCC’s Access Team. Eligible residents were targeted and offered key fobs both independently and as part of consultation process where services are discussed with the individual concerned and they are made available of the facilities available.

D.3 Participation

D.3.1. Measure Partners

- **1. City, 1 Leading role, Sustainable Transport, BHCC** – Led on the project and held overall responsibility.

D.3.2 Stakeholders

- **Sensory Services, Access Team, Adult Social Care Department, BHCC** – Consultees in the planning phase and managed the registration of new users and distribution of key fobs.
- **RNIB** – Representative body for blind and partially sighted people and supplier of the React units
- **Siemens Traffic Controls** – Installed the React units.
- **Talking Bus Stops Working Group** – Consists of users, support workers from East Sussex Association for the Blind, The Guide Dog Association and BHCC Project Manager. This group contributed to the decision as to where to site the new units.

D.4 Recommendations

D.4.1 Recommendations: measure replication

Through its success in Brighton & Hove, this measure demonstrates the potential to be replicated elsewhere. Those investigating the possibility of this may wish to consider the following recommendations, together with the recommendations relating to barriers, drivers and actions outlined in Section 4.2.

- **Recommendation 1: Consider expanding the target audience for the measure beyond those who are blind or partially sighted**

If talking bus stops are introduced elsewhere, there is an opportunity to offer it to a greater range of people and groups who would benefit from the technology, which may include the elderly and people with learning difficulties or other forms of disability. This will allow more people to access the system but also by increasing the potential market size for the measure, the easier it will be for those replicating the measure to justify and secure funding for the introduction of such infrastructure.

- **Recommendation 2: Complement the talking bus stops with talking buses**

The measure as has been introduced in Brighton & Hove only improves one element of the bus journey for blind or partially sighted people- the boarding of the bus. To complement this, the provision of audio information on buses would ensure that the full journey is considered. This is because the talking bus stops help users to get on the correct bus but unless audio information is installed on public transport, users may still experience difficulties when identifying where to disembark.

- **Recommendation 3: Consider the development of the system to reflect technological developments**

There is scope to further develop the system to enable compatibility with smart phones and other personal electronic devices which would reduce the need for the key fobs and their distribution.

D.4.2 Recommendations: process (related to barrier-, driver- and action fields)

- **Recommendation 1: Good communication**

Success is dependent on good communication with working and user groups together with a good level of promotion to ensure that there is awareness of the system.

- **Recommendation 2: Work with local groups representing potential users**

The presence of a local society representing blind and partially sighted people in the immediate area would contribute greatly to the likely success of the project.

- **Recommendation 3: Undertake rigorous trials**

To undertake a number of trials by activating fobs at new units in order to be confident that the message is being triggered within a reasonable distance of the bus stop and that the audio is clear. This is important as an initial poor experience of the technology by a first time user is likely to dissuade them from using it again in the future. As such, BHCC avoided promotion of the new React units until software problems had been rectified which positive results from the user survey would suggest was the correct approach.