



Reading Buses' Real Time Information "Completing the Connection' 1 Year Monitoring Report

Document No. 02 | rev 1.0

23 June 2022



Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
0.1	xx May 2022	1 Year Monitoring Report – first working draft	GD	n/a	n/a	n/a
1.0	23 June 2022	1 Year Monitoring Report – issued	GD	GD	SA	GD

Distribution of copies

Revision	Issue approved	Date issued	Issued to	Comments
0.1	n/a	26 April 2022	Robert Williams Simon Gold Jake Osman	Issued as a first working draft for comment and inputs
1.0	G Dean	23 June 2022	Robert Williams Simon Gold Jake Osman Dan Barrett (all RB)	Issued for Reading Buses' and TVB LEP use

Reading Buses' Real Time Information

Project No: B2394400
Document Title: 'Completing the Connection' 1 Year Monitoring Report
Document No.: Document No. 02
Revision: rev 1.0
Document Status: Issued for use by Reading Buses and TVB LEP
Date: 23 June 2022
Client Name: Reading Buses
Client No:
Project Manager: Project Manager
Author: Graham Dean
File Name: Reading Buses Completing the Connection 1 Yr Monitoring Report Working Issued v1.0.docx

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1. Executive summary

Following the successful submission of 'Completing the Connection' of a Full Business Case (FBC) to the Thames Valley Berkshire Local Enterprise Partnership (TVB LEP), funding was awarded for three key elements to upgrade and enhance the Reading Buses' Real Time Information (RTI) system and a fourth element of an upgraded online ticket shop. This aimed to deliver, and has successfully delivered, the following outputs:

1. More reliable and better quality RTI data for buses from multiple operators in the region.
2. Easier and better-informed interchange between rail passengers and bus services at Reading and Newbury stations.
3. Equipping 51 buses with useful audible and visual RTI.
4. Easier and more convenient ticket purchase via smart or mobile media.

The project took place in various stages between October 2020 and March 2021 and was successfully delivered to budget and largely on time with each of the three suppliers and project partners such as Network Rail and Great Western Railway working well together and with Reading Buses.

It should be recognised, like many other projects, that the Covid-19 pandemic has had, and continues to have, a huge effect on the passenger transport industry, and especially on passenger numbers. At the time of writing (June 2022), bus passenger levels have partially recovered from the extreme lows during the various periods of 'lockdown' but are still approximately 23% under pre-Covid levels. Therefore, this should be borne in mind in terms of assessing the objective against criteria such as passenger numbers and modal shift.

Despite the challenges of Covid-19, this was a successful project, delivered on-budget and largely on-time. Such projects are highly deliverable and give real benefits to passengers and over time (post Covid) will encourage modal shift back to public transport.

Reading Buses are very keen to continue to work with TVB LEP to seek funding opportunities for the additional project of 'Enhancing the Connection' and other related projects to update and enhance the on-street RTI displays and other RTI functionality. Such projects, and the use of this type of technology, are essential in enhanced partnerships - building on the existing investment by local transport authorities and bus operators.

One of Reading Buses' Route Controllers using the RTI management information for proactive monitoring of service reliability and passenger information



2. Introduction

2.1 Background

Following the successful submission of 'Completing the Connection' of a Full Business Case (FBC) to the Thames Valley Berkshire Local Enterprise Partnership (TVB LEP), funding was awarded for three key elements to upgrade and enhance the Reading Buses' Real Time Information (RTI) system and a fourth element of an upgraded online ticket shop.

Jacobs was commissioned by Reading Buses to manage the project, and the RTI elements were supplied by the existing RTI supplier 'r2p' (<https://www.r2p.com/>). The ticketing elements were supplied by Passenger Technology Group (<https://www.discoverpassenger.com/>).

The project was delivered in the financial year 2020/21.

2.2 Purpose of this document

The purpose of this document is to evaluate the 12-month performance of the project in line with the requirements of the TVB LEP.

2.3 The effect of Covid-19



It should be recognised from the outset, like many other projects, that the Covid-19 pandemic has had, and continues to have, a huge effect on the passenger transport industry, and especially on passenger numbers. At the time of writing (June 2022), bus passenger levels have partially recovered from the extreme lows during the various periods of 'lockdown' but are still approximately 23% under pre-Covid levels. Therefore, this should be borne in mind in terms of assessing the objective against criteria such as passenger numbers.

The next chapter describes the logic model of the project.

3. Logic Model

3.1 Context and Rationale

The Full Business Case set out the context and rationale of this project, which was to:

"significantly enhance customer information for multiple operators' routes and ticketing enhancements with smart and mobile ticketing. It will help enable and encourage employees of local businesses, residents and visitors to switch to public transport for some or all of their journeys and help economic growth in the region".

3.2 Objectives:

The Full Business Case set out 5 objectives of this project to upgrade the RTI system and smart ticketing. These were:

1. Supporting and driving further economic growth in the local area.
2. Enable and encourage use of local buses instead of private vehicles.
3. Enable and encourage easy interchange between public transport modes, and other sustainable modes.
4. Make live information available to passengers.
5. Allow personalised purchase of mobile or smartcard-based tickets.

3.3 Resources and input

The resources and input to achieve this were defined as:

1. One core, multi-operator RTI system.
2. Three bus RTI departure screens at two rail stations.
3. Audio-visual customer information installations on 51 buses.
4. An online shop enabling smart travel via app or smartcard.

3.4 Outputs

Once accomplished, these activities will produce the following deliverables:

5. More reliable and better quality RTI data for buses from multiple operators in the region.
6. Easier and better-informed interchange between rail passengers and bus services at Reading and Newbury stations.
7. Equipping 51 buses with useful audible and visual RTI.
8. Easier and more convenient ticket purchase via smart or mobile media.

3.5 Expected outcomes

1. Higher passenger satisfaction with bus travel in the region.

2. More useful management information on bus service performance to help refine timetables to reflect real life traffic conditions.
3. More use of buses by passengers who currently struggle with audio or visual impairments.
4. Less use of cash transitions and more use of 'smart' ticketing to speed us bus boarding times.
5. Modal shift from the private car to the bus.

The success or otherwise of these outcomes will be evaluated later in this report.

The next chapter describes the scheme elements in more detail.

4. Scheme Details

4.1 Introduction

There are four different scheme elements which form the 'Completing the Connection' project. These are:

- A core, multi-operator Real Time Information (RTI) system.
- Three bus departure screens at rail stations – two at Reading and one at Newbury.
- Audio-visual customer information installations on buses which serve bus routes in the TVB area.
- An online travel shop - enabling smart travel via app or smartcard.

Each of these elements are described in detail below.

4.2 Central RTI System Upgrade (iConnex2)

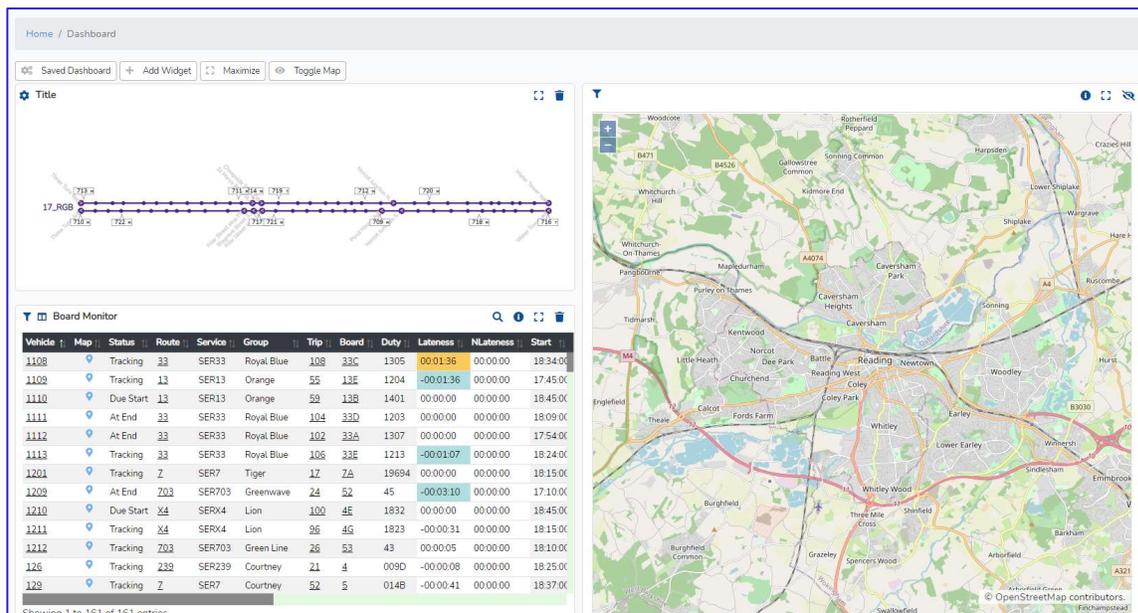
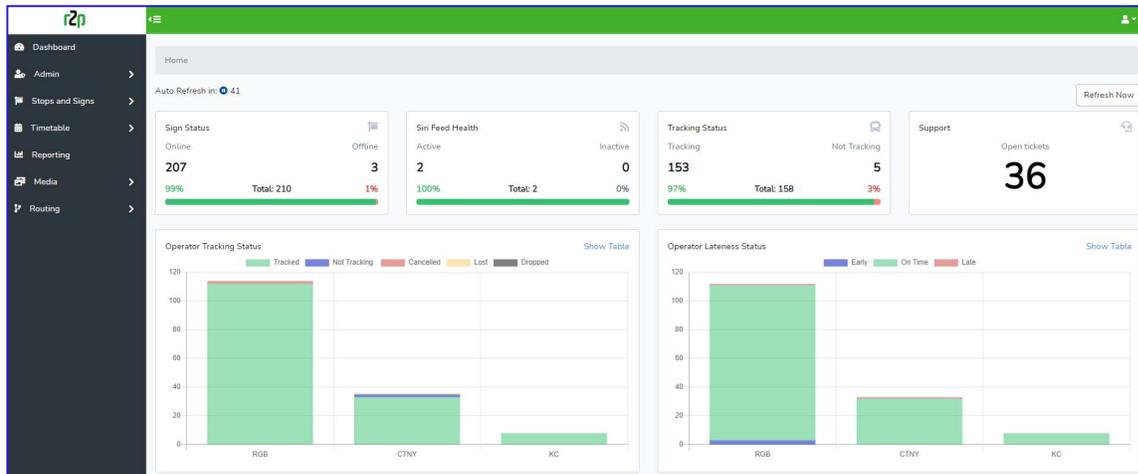
This element of the project upgraded the existing central RTI system software provided by r2p and used by Reading Buses. It brings together and enhances the functionality of three separate instances of the original iConnex1 software package holding data for Reading Borough Council, Reading Buses and Courtney Buses in a joined-up way. This will significantly enhance the provision and content of live journey planning information. The system is designed to support the addition and dissemination of live information for multiple operators' services that subscribe to the appropriate modules.

The single core RTI system has been developed in accordance with Open Data and Real Time Information Group (RTIG) standards, incorporating:

- One combined RTI system for Reading Buses operating companies - Reading Buses, Thames Valley Buses (previously Courtney Buses) and Newbury & District fleets - and existing managed on-street RTI displays.
- Enhanced algorithms through an updated RTI prediction engine.
- Enhanced content management system through a newly developed "Media" product with:
 - far more flexible content editor;
 - a more intuitive user interface;
 - flexible configuration to enable the display of different content on targeted routes or buses;and
 - an improved media player.
- Facilities for secure importing and management of schedule data by each respective operator to ensure commercial confidentiality.
- Enhanced user software interfaces for the tracking system and timetable database management portal.
- To future proof the system with the potential of other operators to join the scheme, providing the opportunity to access and use modules subscribed to, and to store RTI data in dedicated sections of the system for commercially confidential data.
- Facilities to export the data to local authority systems.

'Completing the Connection' 1 Year Monitoring Report

Example screen shots of the various vehicle management modules from the iConnex2 software:



Part of this deliverable was a public website interface (PWI) capable of showing live bus departure times for all Reading Buses' operating companies, and other bus operators as and when their data is made available through compatible data feeds. This has been branded 'Berkshire Bus Times' and can be seen at www.berkshirebustimes.com.

In addition to the original specification, the flexibility of the new iConnex2 system has allowed it to be linked to the Oxfordshire RTI system for the exchange of bus arrival time predictions for services that cross the local authority boundaries between both systems. This brings data from Oxford Bus Company, Thames Travel and Arriva The Shires services into the system.

The Berkshire Bus Times website

Service	Destination	Time
26 (RBUS)	Reading Station	Due
26 (RBUS)	Reading Station	3 min
26 (RBUS)	Reading Station	17 min
Z (RBUS)	Reading Station	24 min
T (RBUS)	Reading Station	26 min
26 (RBUS)	Reading Station	37 min
T (RBUS)	Reading Station	46 min

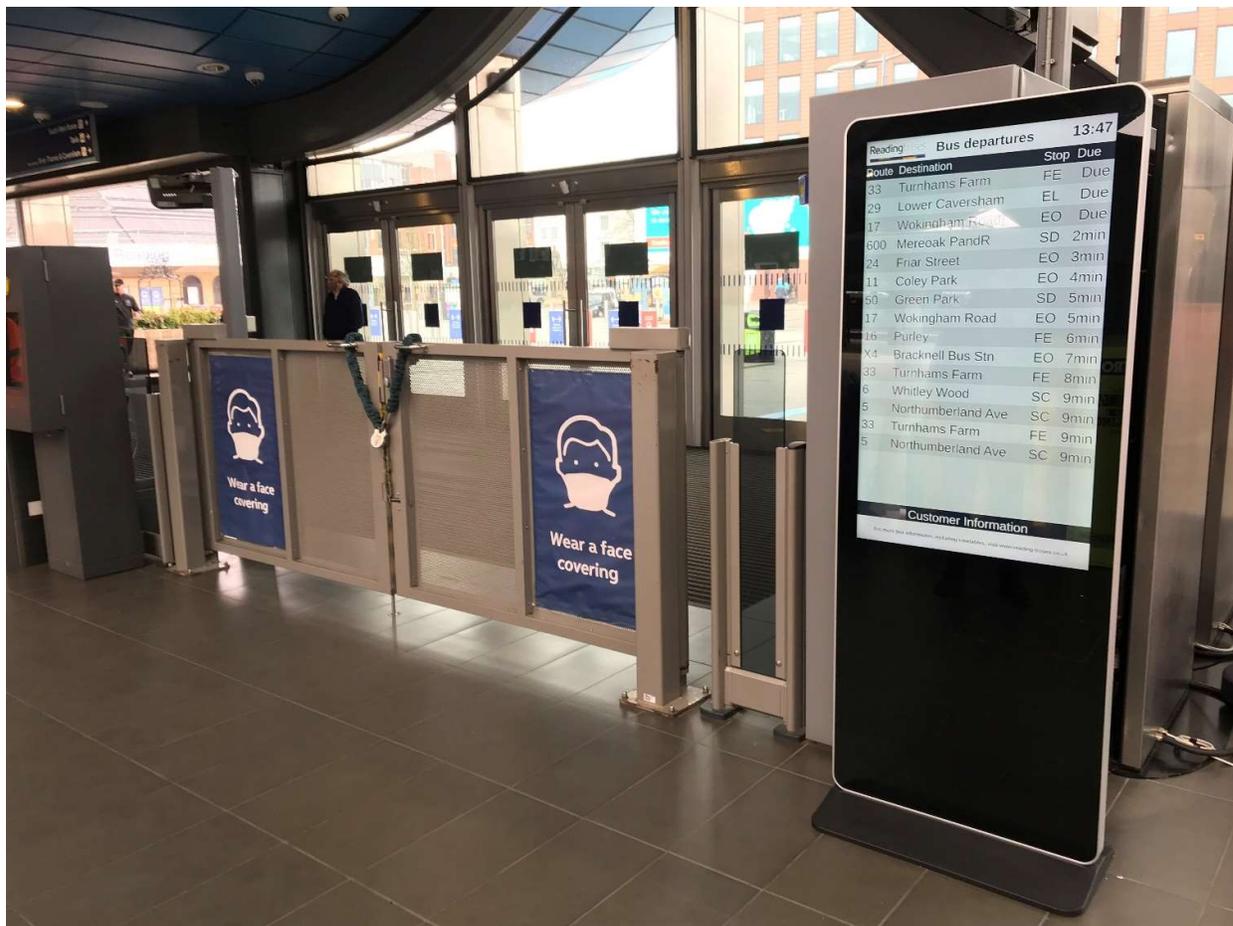
4.3 Rail Station Interchange displays

This element delivers three real time bus departure screens: two for Reading Railway Station and one for Newbury Railway Station. These are of a 'totem' style to show the maximum number of routes, stops and departures.

At Reading Station one display is installed outside the gate-line in the north entrance, and the second is inside the gate-line in the western entrance on the south side. This latter display is located near the bottom of the stairs and escalators and is shown in the image below.

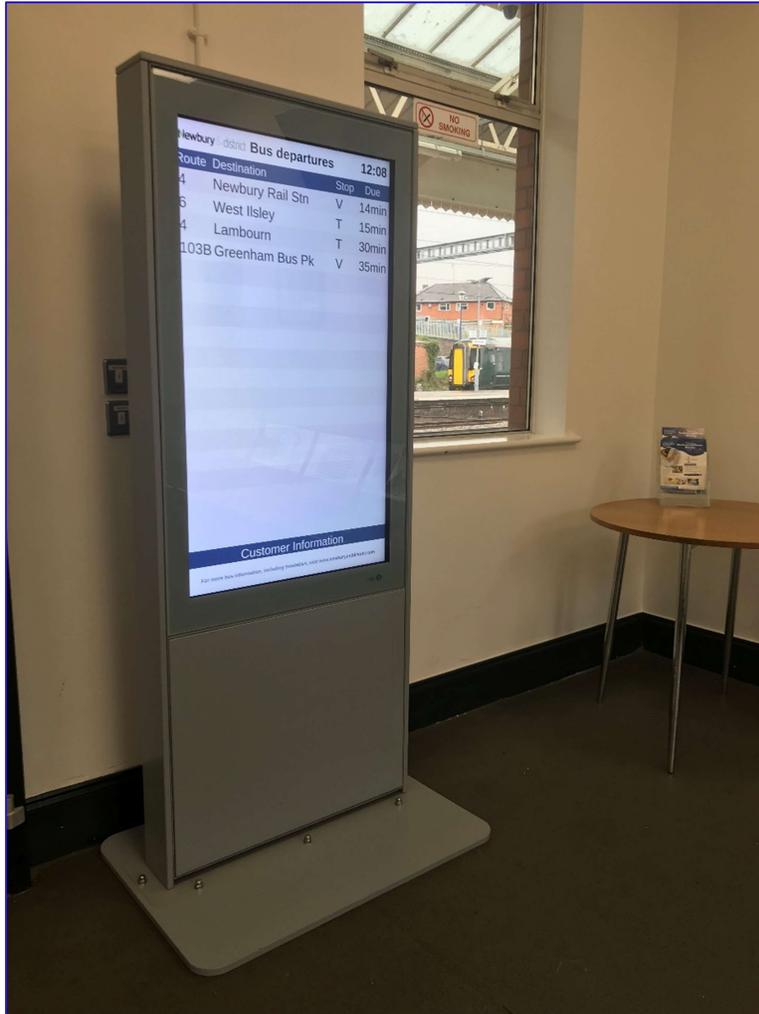
Both Reading Station displays are 'semi-ruggedised', which means they can withstand some temperature fluctuations and moisture as the station only partially enclosed, but they are not fully weatherproofed for full outdoor use.

One of Reading Station's RTI displays



At Newbury Station, it was agreed with Great Western Railway that, as the station is undergoing significant improvement works, as an interim measure, the display here would be located in the Platform 1 passenger waiting room. Once the station improvements are complete, the display will be moved to the Platform 1 gate-line. The gate-line here is more susceptible to weather fluctuations, so the display is 'ruggedised', which means it is suitable for outdoor use.

The Newbury Station RTI display

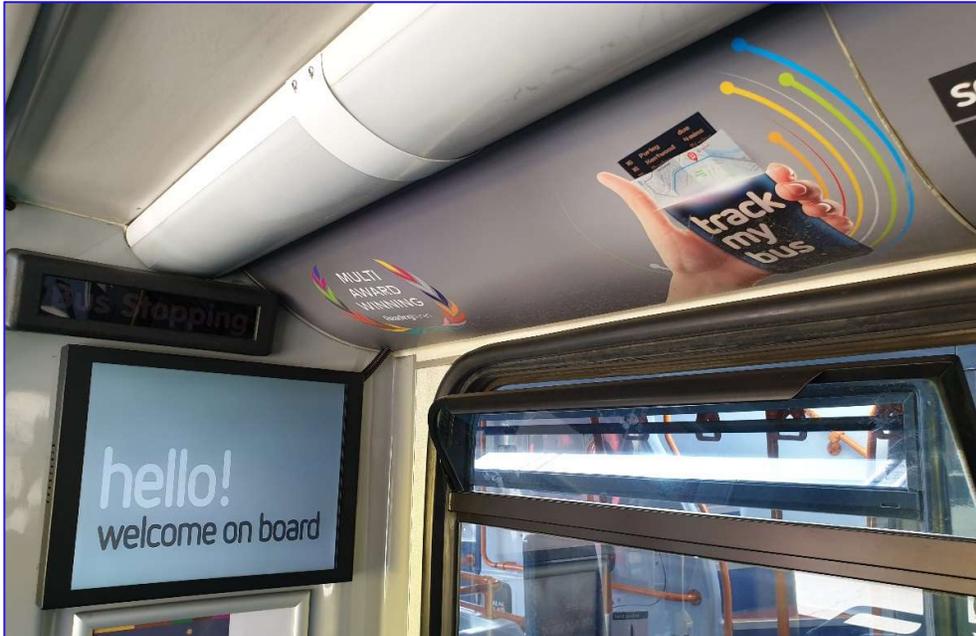


4.4 On-Bus next-stop audio and visual information

This element delivered on-bus next stop audio and visual information using full-colour screens and speakers. One screen is installed on single deck buses and two screens on double deck buses. An example of one of the on-bus screens and next stop information is shown below.

The screens can also show 'welcome aboard' messages and other public information and marketing messages, set up via the media editor in iConnex2.

Examples of the on-bus RTI displays





A total of 51 buses were equipped with audio visual equipment, comprising 33 Thames Valley Buses, 13 Newbury and District Buses and 5 Reading Buses. A further 12 Reading Buses vehicles were upgraded with additional screens to provide information on both decks of double deck buses.

These buses primarily operate on 34 different bus routes/groups of bus routes, covering the six local authority areas in the TVB LEP area.

Service reductions necessitated by the impact of Covid-19 subsequently led to the equipment that was fitted to four vehicles being removed and stored for future use as the vehicles are no longer in the fleet. Similarly, a further three vehicles have been replaced by brand new vehicles that require a different shaped screen, so the removed screens were stored for future use.

4.5 Online ticket shop

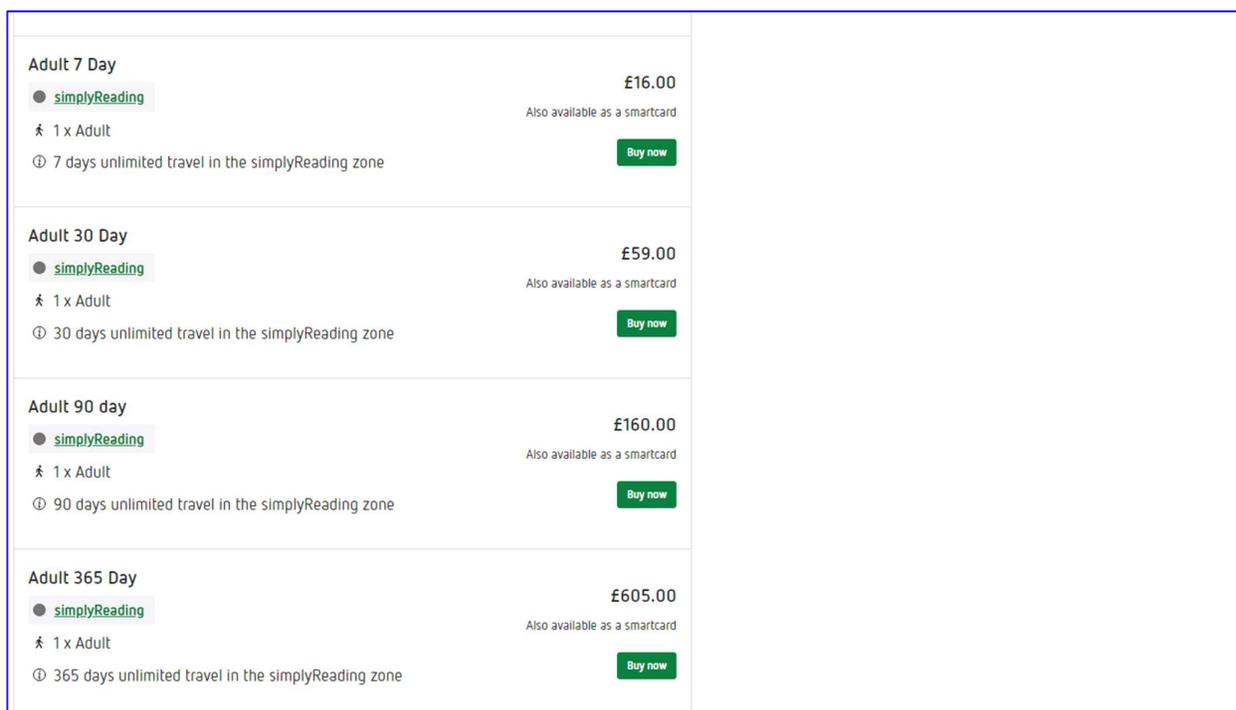
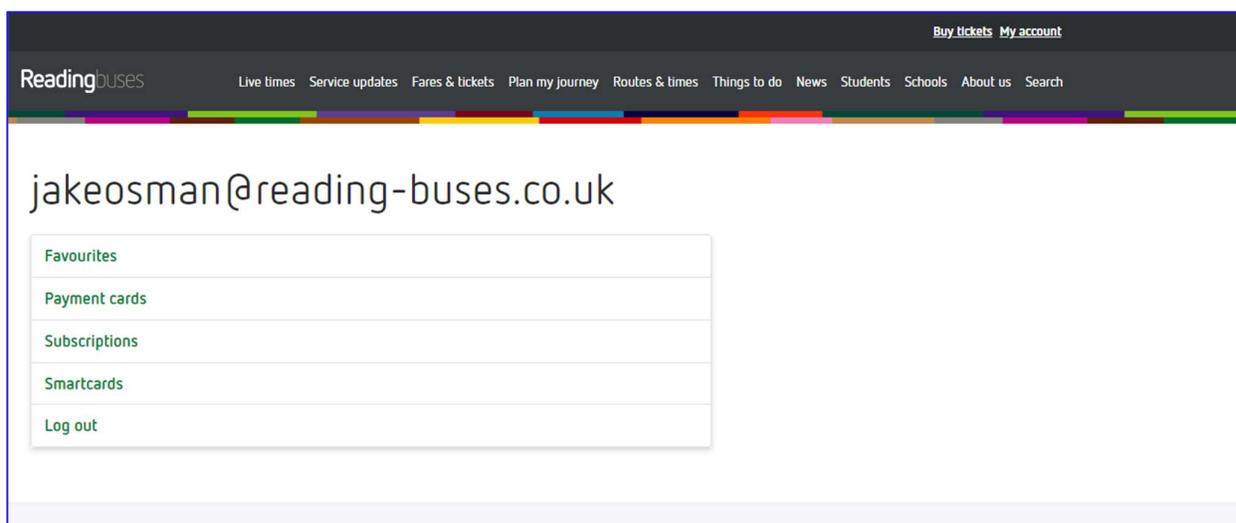
This element delivers a new online travel shop to:

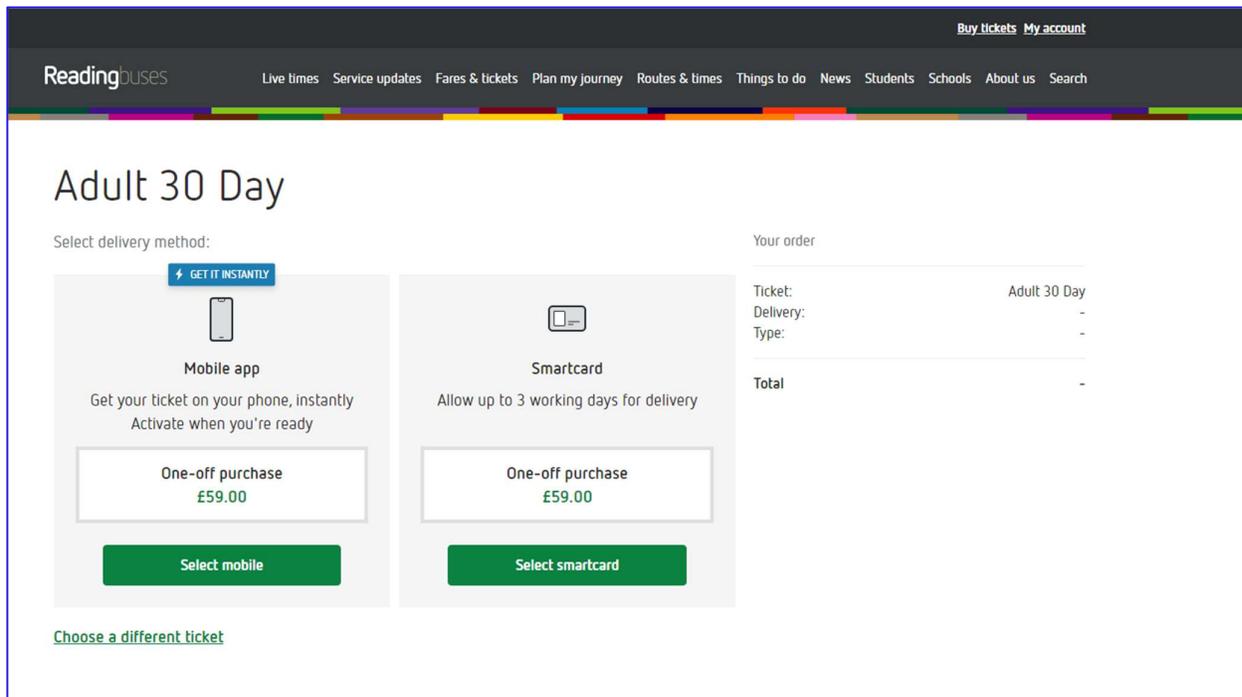
- Allow the online shop to be managed by bus operator staff (prices, tickets, descriptions, etc.).
- Provide mobile ticket and smartcard sales, the latter being achieved through integration with a back-office processing system provided by Unicar.

- Deliver a single login for both the website and app.
- Enable customers to choose how their ticket is received (mobile ticket or smartcard).
- Give customers the option to set up a recurring payment for specific ticket(s).
- Provide reports for both mobile ticket and smartcard sales.

This enables Reading Buses to allow customers to choose how they would like to purchase their bus travel (web or mobile) and choose how they would like to have their travel fulfilled (mobile ticket or smartcard) whilst still using the Unicard Card Management System to communicate smartcard transactions with the Host Operator or Processing System (HOPS).

Example screenshots from the online ticket shop

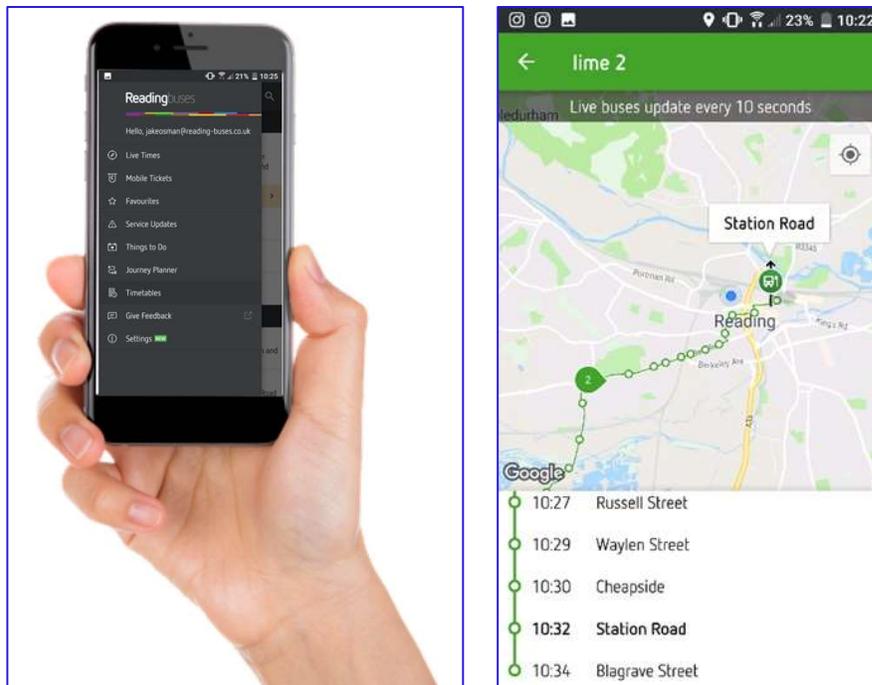




The shop was supplied by Passenger Technology Group, again an existing supplier to Reading Buses, to ensure compatibility with existing systems. The decision was taken not to carry out a full public launch of the online ticket shop at the height of Covid given that the overriding public message was to 'stay at home'.

The app also proved very useful for displaying messages directly to passengers' mobile phones and smart devices, especially concerning changing advice and service changes during the Covid period.

Example screenshots from the app



The next chapter describes the implementation of the project.

5. Implementation

5.1 Project Programme

The central RTI system upgrade took place between October 2020 and March 2021. It was split into phases for different elements of the functionality, enabling bus operator supervisors and service planners to be trained and test the different modules, giving feedback to the supplier (r2p) before it was formally rolled out. This enabled the different bus operators' information to be shown on one system. The website was also developed, and a 'soft launch' carried out for selected parties, to enable it to be tested and to obtain feedback before being rolled out to the public.

The two displays for Reading Station were successfully installed in March 2021 to a clearly agreed plan with the Network Rail managers at Reading. The Newbury rail station display was installed in April 2021 in the passenger waiting room on Platform 1 as the 'temporary' location due to the ongoing enhancements to the station. This installation was delayed by a few weeks because Great Western Railway, as tenant, needed to obtain landlord consent from Network Rail. This took longer than expected but was concluded successfully.

The on-bus displays and audio were installed between January 2021 and February 2021, and all proceeded to plan. Buses were generally fitted overnight between daily service in the two main depots, to an agreed process of installation and sign-off, before being returned to service the next day. No major issues were encountered. For example, buses were generally available when planned (subject to last-minute service changes) and 'reserve' bus fits were planned to cater for any last-minute changes.

The online ticket shop core functionality was delivered in March 2021, consisting of an Application Interface (API) to take data between the Passenger front end and Unicaud back-office system, and testing of that system.

The launch of the customer-facing system was delayed due to government Covid travel advice in force at the time. During this time, Reading Buses suspended the time remaining on customer's season tickets so that they could reactivate them when restrictions were relaxed. When restrictions started to relax in September 2021, new features of the shop were used to issue a free day ticket voucher to all customers who either had an app account or had created an account before a given deadline.

It also became clear that customer accounts from the old and new smartcard systems couldn't be merged, and that it would ultimately require all existing smartcard users to create a new account and re-register their card to use it again. Given the high level of usage of smart cards for school travel, and the emergence of the Omicron variant, the introduction of this element of the shop was postponed until a date when a full communications campaign could be undertaken without causing disruption to travel patterns. In the meantime, the opportunity was taken by Reading Buses to add further enhancements to the scope of the project (at their own cost) for a launch during 2022.

5.2 Project Management

Weekly project progress meetings were held with r2p, Reading Buses and Jacobs throughout the project to ensure delivery within the tight programme, and to ensure that all costs were kept within agreed budgets. Given the importance of the project, these weekly progress meetings included Reading Buses CEO, Finance Director and Chief Engineer (during the period of the on-bus installations).

Despite all meetings being held remotely via Teams rather than face-to-face, there were nonetheless excellent project communications and a positive working relationship, with all parties working to deliver the project successfully.

Monthly progress updates were given also given to TVB LEP.

5.3 Lessons Learnt

As described above, all parts of the RTI project went to plan. However, one key lesson learnt for RTI displays in railway stations is not to under-estimate the time required to obtain landlord consent from Network Rail where the train operating company (TOC) is the tenant. Even though the TOC was engaged at an early stage, and the project had TOC support, the approvals processes were lengthy and required many stages of internal TOC and Network Rail sign-off, despite the strong support of the local TOC team. It is interesting to compare Newbury Station to Reading Station, of which the latter is a much bigger station and with a much higher footfall, but where the approvals and consents were much easier as it was a Network Rail directly managed station.

In operation, it was found that the display screens at both stations were initially regularly unplugged, either by cleaners for their equipment or by customers wishing to charge their personal devices, and then were left powered off. The status of the displays is monitored continuously and remotely, and engineers were called out to respond on each such occasion. To avoid sending engineers to simply plug them back in, the issue was resolved through fitting a locked plug to the screen in Newbury waiting room and engaging with Network Rail employees in Reading.

With the e-shop, the difference between a software upgrade and having replacement software made it significantly more difficult to roll out the benefits to customers.

The next chapter describes the scheme costs of the project.

6. Scheme Costs

As described in the 'Completing the Connection' FBC document, the total capital funding of £1,541,243 ex-VAT came from the TVB LEP, with Reading Buses paying for the ongoing revenue costs.

The capital funding was paid monthly in arrears to Reading Buses by the Royal Borough of Windsor and Maidenhead Council on behalf of the TVB LEP following the acceptance of a monthly claim. Supporting invoices were provided.

The full agreed capital sum of £1,541,243 was spent and was claimed in financial year 2020/21.

Minor changes to the scope of the RTI elements with r2p, such as variations to a few on-bus screen-sizes, were documented and agreed through a summary change log and associated change control forms and used part of the small contingency budget. There was a small cost saving by r2p in relation to the contingency for on-bus equipment (such as extra brackets) and it was agreed with the TVB LEP that this could be used by Reading Buses on marketing and publicity of the RTI enhancements and online ticket shop.

The spend with all three suppliers (r2p, Passenger Technology Group and Jacobs) and Reading Buses were within the agreed ceiling budgets, as shown in Table 6.1 below.

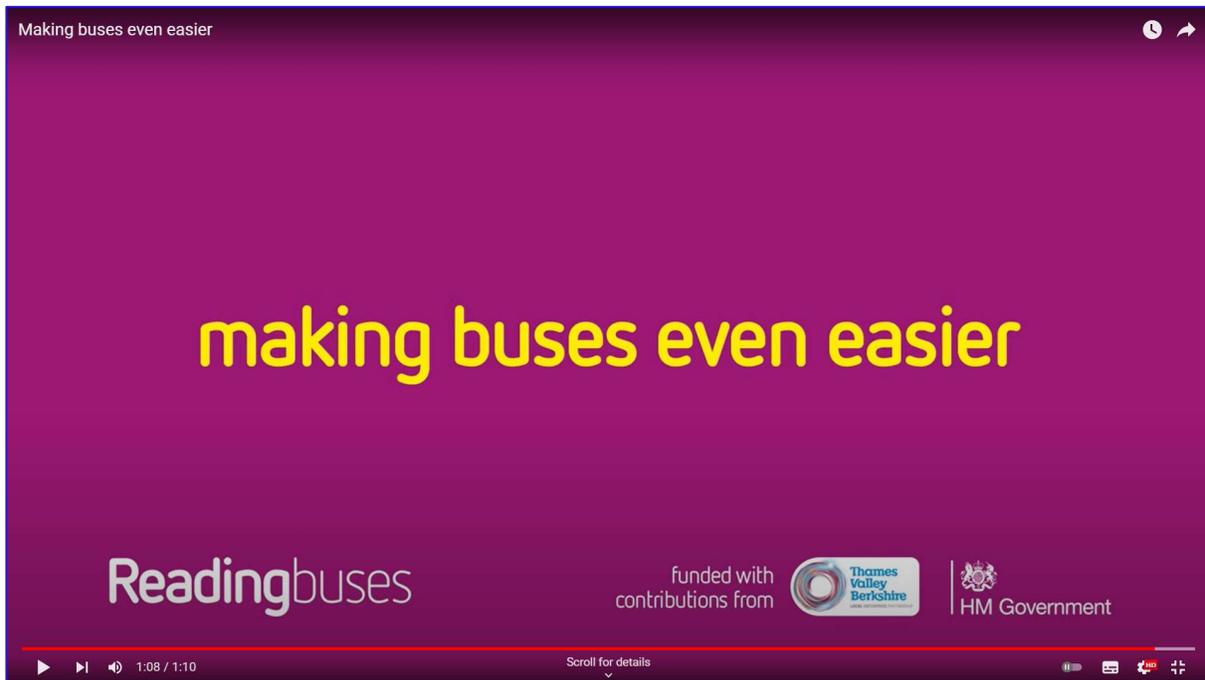
Table 6.1 Spend by Supplier

Totals by supplier	Total Forecast Cost	Actual Spend	Difference
<i>r2p invoices</i>	£1,393,093	£1,384,877	-£8,216
<i>PTG invoices</i>	£98,150	£98,150	£0
<i>Jacobs invoices</i>	£44,390	£44,390	£0
<i>Reading Buses</i>	£0	£8,216	£8,216
Totals	£1,535,633	£1,535,633	£0



This activity included publicity to inform existing and potential passengers about the improved information and ticketing on the app. This was key in driving the move from cash to cashless payments, especially important due to concerns about Covid, and included wrapping five bus rears from services across the TVB LEP area with appropriate messages, and a media launch (pictured above). A video "Making buses even easier" was also

produced for social media, with a full version being available for viewing at:
<https://www.youtube.com/watch?v=vUK9qnOTDjl>.



As agreed in the business case, Reading Buses has made provision in its forward planning for a revenue contribution of £1.045 million from its own budget towards running costs associated with the substantially enhanced RTI system and ticketing facility, covering five financial years. This is £209,000 per annum and covers ongoing software licenses, hosting and maintenance of servers, hardware failure, and technical support.

The next chapter describes the evaluation of the project.

7. Evaluation

7.1 Direct and indirect outcomes

The direct and indirect outcomes of this project, as set out in the logic model, were described earlier in this report but are also reproduced below. These are:

1. Higher passenger satisfaction with bus travel in the region.
2. More useful management information on bus service performance to help refine timetables to reflect real life traffic conditions.
3. More use of buses by passengers who currently struggle with audio or visual impairments.
4. Less use of cash transitions and more use of 'smart' ticketing to speed up bus boarding times.
5. Modal shift from the car to the bus.

Each of these are evaluated below.

7.2 Higher passenger satisfaction

Prior to Covid, the passenger watchdog, Transport Focus, conducted regular passenger satisfaction surveys, including in the TVB LEP area. It was expected to use this data to measure passenger satisfaction with bus travel in the region. However due to the pandemic and a significant drop in the numbers of people using public transport, the bus passenger survey was paused ([Link to Transport Focus Statement](#)).

The app gives users the opportunity to give feedback, and a selection of customer comments include:

it's very helpful and it's so much easier having the timetable in front of me and being able to purchase a ticket on my phone.
Easy to use. Finding the bus u need is really easy with clear stops and times. The tracker is a great tool for seeing just where the bus is and buying tickets is really simple and explanatory
It's great to be able to see the departures in real time. Saves much waiting time at bus stops. Well done!
Excellent really good
Easy to use
Rly usefully and efficient
Very good
App works very well 👍
I think it is brilliant the fact that actually shows you where the bus is
Easy to use
I am loving the readingbuses app!
Easy to use and affordable
It's a class app
mobile app is very good for tracking and buying tickets
This is the easiest bus app in the uk that I have used thank you

With the free travel promotion in September 2021, the Wokingham Today newspaper carried the headline “How you can travel on Reading Buses for free - Reading Buses is giving away free day tickets - but you have to be quick” <https://wokingham.today/how-you-can-travel-on-reading-buses-for-free/>. During the three-week promotion 2,934 new registrations were generated on a base of 98,673 app accounts, of which only 45,651 were active for ticket purchases in the last 12 months. All accounts were sent a free ticket, with 19,388 claimed (19.1%). Real time information is available through the app whether the app is used for a ticket purchase or not.

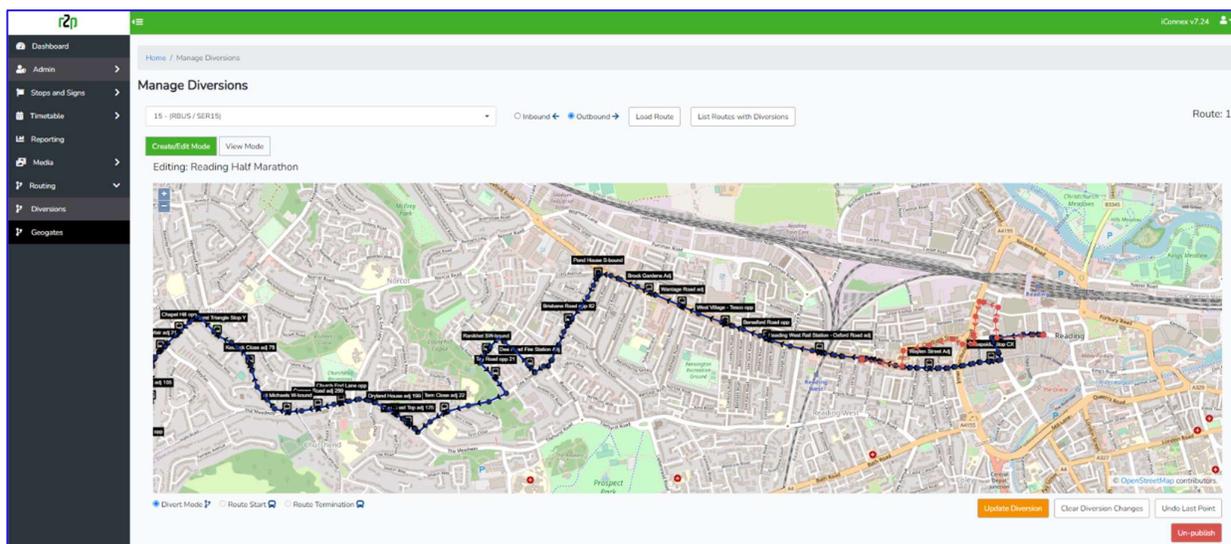
7.3 Management information on bus service performance

Data collected through the RTI system has proved invaluable in replanning the combined networks in response to the significant changes to travel patterns and traffic conditions during the pandemic. Data from the system, particularly from the October/November 2021 period prior to the emergence of the Omicron variant, has been analysed in depth to help plan post-pandemic service levels and journey times. New timetables were introduced on some routes based on this data in April 2022, with further changes currently being planned for October.

Because of these refinements to the timetables with the additional management information, Reading Buses start point punctuality has improved from 89.4% in 2018-19 to 93.4% in 2021-22, and mid-points from 78.2% to 85.2%.

The new diversion module has been helpful to ensure that bus stops not being served are not announced during planned road closures. Reading Buses and r2p continue to develop the functionality of this module through the ongoing support contract to make it even better in the future.

The new 'route diversions' module in iConnex2 to ensure realistic RTI predictions during diversions



The screenshot shows the 'Manage Diversions' interface in the i2n system. It features a sidebar with navigation options like Dashboard, Admin, Stops and Signs, Timetable, Reporting, Media, Routing, Diversions, and Geogates. The main area displays a table of diversions with columns for ID, Diversion Name, Type, Status, Start, End, From, To, Delay (min), Active, and Affected Route(s). The table lists 11 diversions, all for 'Reading Half Marathon 2022', with various start and end times and locations. Affected routes are listed as blue pill-shaped buttons, such as '13 - #BRUS / SER13 Outbound' and '44 - #BRUS / SER14 Inbound'. A search bar and pagination controls are also visible.

ID	Diversion Name	Diversion Type	Status	Start	End	From	To	Delay (min)	Active	Affected Route(s)
274	Reading Half Marathon 2022	Diversion	published	2022-04-03 09:30:00	2022-04-03 12:30:59	Blagrove Street stop EM	Huntley and Palmers Stop 5		Inactive	13 - #BRUS / SER13 Outbound, 44 - #BRUS / SER14 Inbound
273	Reading Half Marathon 2022	Diversion	published	2022-04-03 09:26:00	2022-04-03 13:26:00	Burghfold Road E-bound	Station Road Stop SD		Inactive	1 - #BRUS / SER13 Outbound, 2 - #BRUS / SER2 Inbound, 3a - #BRUS / SER2A Inbound
284	Reading Half Marathon	Diversion	published	2022-04-03 09:00:00	2022-04-03 13:44:00	Station Road Stop SA	Brookers Hill Opposite		Inactive	3 - #BRUS / SER3 Outbound, 6 - #BRUS / SER6 Outbound
279	Reading Half Marathon	Diversion	published	2022-04-03 08:55:00	2022-04-03 13:00:00	Wychwood Crescent opp	Blagrove Street stop EK		Inactive	21 - #BRUS / SER21 Inbound
278	Reading Half Marathon	Diversion	published	2022-04-03 08:55:00	2022-04-03 12:52:00	Blagrove Street stop EK	Wychwood Crescent Adj 114		Inactive	21 - #BRUS / SER21 Inbound
281	Reading Half Marathon	Diversion	published	2022-04-03 08:55:00	2022-04-03 13:28:00	Holybrook Crescent Opp	Blagrove Street stop EK		Inactive	26 - #BRUS / SER26 Inbound, 87 - #BRUS / SER87 Inbound, 90 - #BRUS / SER90 Inbound
272	Reading Half Marathon DIVERSION	Diversion	published	2022-04-03 08:55:00	2022-04-03 12:55:00	Blagrove Street Stop EP	Honey End Lane opp 94		Inactive	1 - #BRUS / SER1 Inbound, 2 - #BRUS / SER2 Outbound, 2a - #BRUS / SER2A Outbound
280	Reading Half Marathon	Diversion	published	2022-04-03 08:50:00	2022-04-03 13:30:00	Blagrove Street stop EK	Holybrook Crescent Adj		Inactive	36 - #BRUS / SER36 Outbound, 87 - #BRUS / SER87 Outbound, 90 - #BRUS / SER90 Outbound
282	Reading Half Marathon	Diversion	published	2022-04-03 08:49:00	2022-04-03 12:19:00	Dryland House opp 195	Station Road Stop SD		Inactive	15 - #BRUS / SER15 Inbound, 15a - #BRUS / SER15A Inbound, 33 - #BRUS / SER33 Inbound, 96 - #BRUS / SER96 Inbound
277	Reading Half Marathon	Diversion	published	2022-04-03 08:49:00	2022-04-03 12:57:00	George Street adj	Huntley and Palmers Stop 4		Inactive	17 - #BRUS / SER17 Inbound

7.4 Passengers with audio/visual Impairments

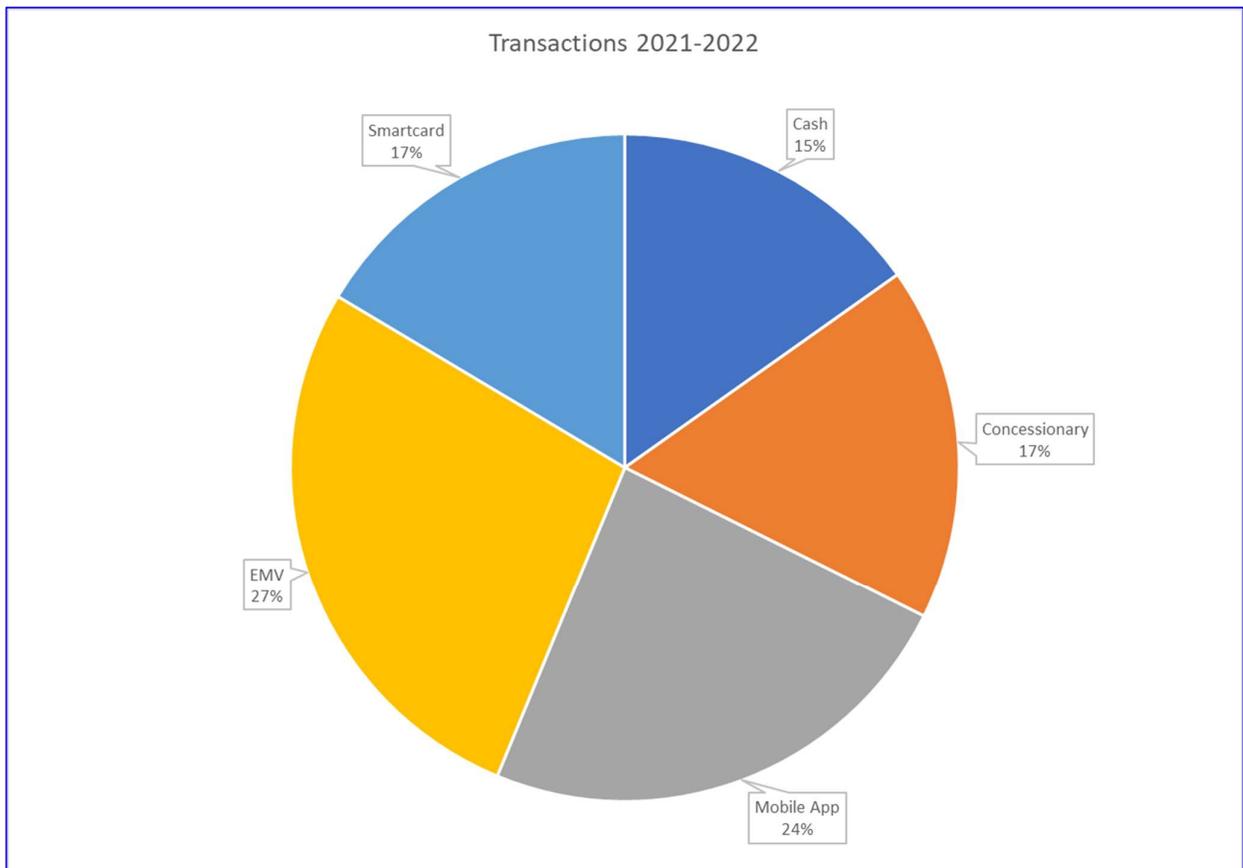
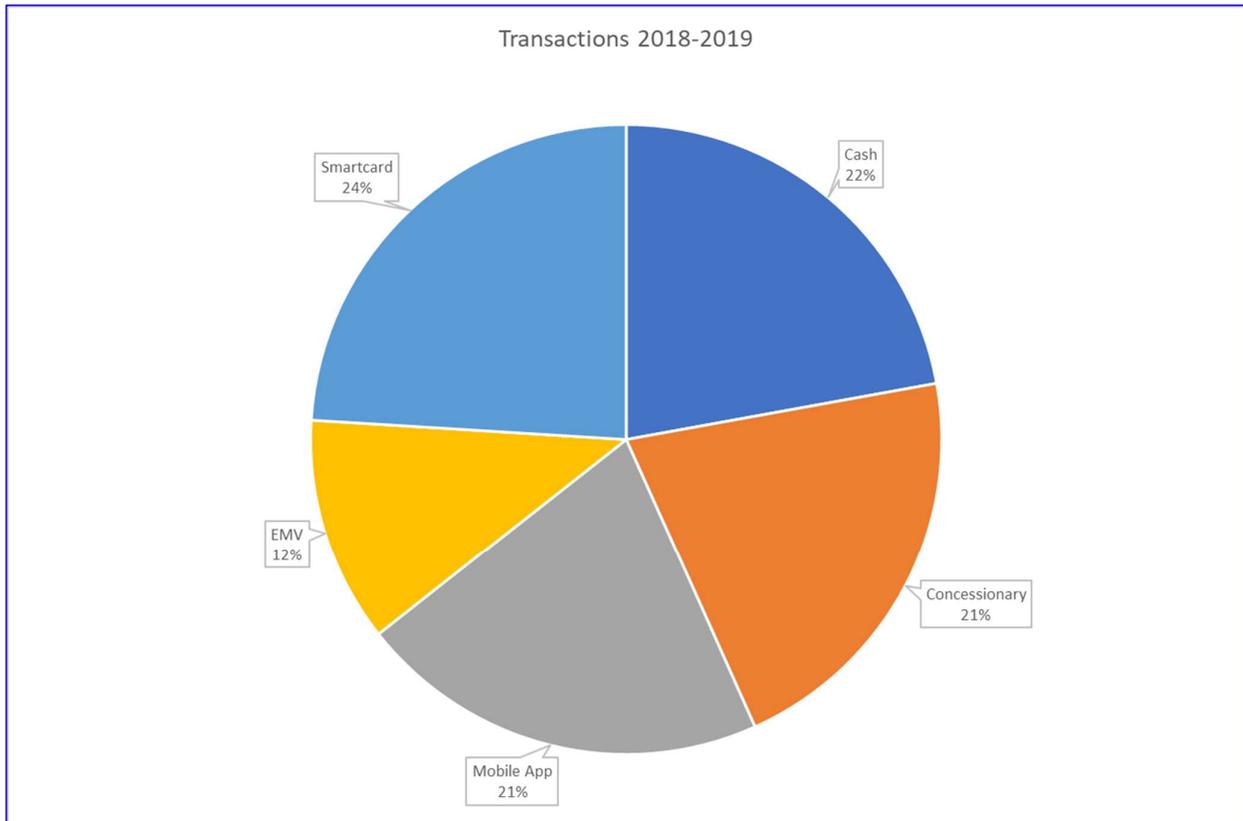
It was expected to be able to measure this through use of concessionary passes on buses, but again Covid has reduced use of bus services by concessionary pass users (see section 7.5 below). The COVID-19 pandemic has had a major impact on travel patterns, and the initial 'avoid public transport' messaging has significantly affected customer confidence, which will take some considerable time to restore. The level of customer recovery since the pandemic has been the lowest amongst the elderly and disabled concessionary pass users at around 65%, and the strongest recovery has been amongst children and young people, where the need to travel to school, college and University every day has maintained the demand for travel. Overall recovery is currently around 77%.

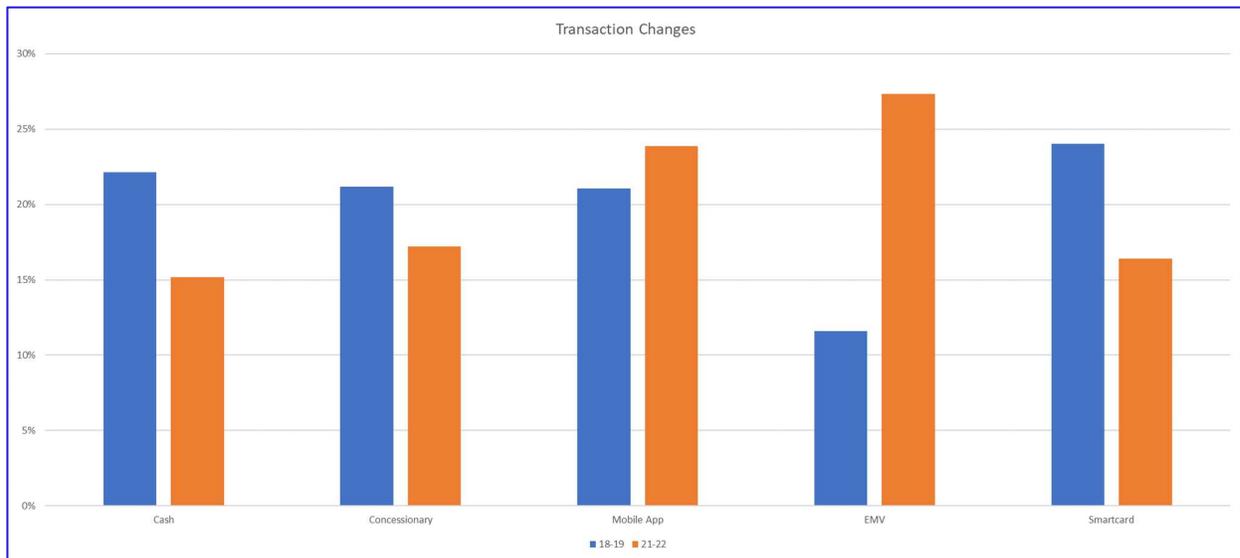
Unfortunately, due to the scale of the pandemic, it is not possible to identify a change in patronage that could be linked to the deployment of the improved systems funded by this project, although the aim to help improve confidence in using public transport across the Thames Valley region directly aligns with the same post-pandemic need to rebuild.

7.5 Less cash transitions

One of the expected outcomes from allowing personalised purchase of mobile or smartcard-based tickets was to reduce the amount of on-bus cash transactions to speed up journey times and to reduce the risk of Covid19 transmission. The below graphs show how the split of transactions has changed between 2018/19 and 2021/22. This shows that the percentage of cash transactions has reduced by 32% from an overall percentage of 22% to 15%.

Interestingly, in 2018-2019 the split of cash and EMV (contactless payment) transactions were 65% cash and 35% EMV. In 2021-2022 this had swapped to 35% cash and 65% EMV.





7.6 Modal shift from car to bus

As noted in section 7.4 above, the COVID-19 pandemic has had a significant impact on travel patterns, and the initial 'avoid public transport' messaging has significantly affected customer. Again, unfortunately, due to the scale of the pandemic, it is not possible to identify a change in patronage that could be linked to the deployment of the improved systems funded by this project, although the aim to help improve confidence in using public transport across the Thames Valley directly aligns with the same post-pandemic need to rebuild.

An example of a journey history report used to refine the timetable to reflect real life traffic conditions.

Journey History											
Date Range	2022-05-04 - 2022-05-10										
Time From	06:00:00										
Time Until	23:59:59										
Operator	RBUS										
Service	16										
Trip Number	12										
Location Type	ALL										
Operator Code	RBUS										
Route	16										
Trip No.	12										
Duty No	1106										
Driver Id	692121										
Fullname											
Scheduled Start	2022-05-04 07:55:00										
Vehicle Code	707										
Running No	168										
Depot Code	RBUS										
Direction	Inbound										
Location	Location Name	Seq.	Arrival	Departure	A	D	Dwell Time	Scheduled	Timing Point	Scheduled Dwell Time	Lateness
030051270001	Chestnut Grove adj 2	1	07:51:12	07:56:01	✓	✓	00:04:49	07:55:00	Y	00:01:01	
030056860001	Wintringham Way adj 21	2	07:56:27	07:57:06	✓	✓	00:00:39	07:55:00		00:02:06	
030051460002	Colyton Way SW-bound	3	07:57:38	07:58:46	✓	✓	00:01:08	07:57:00		00:01:46	
030054140001	New Hill adj	4	07:59:25	07:59:34	✓	✓	00:00:09	07:58:00		00:01:34	
030052430001	Footpath to Highfield Road opp	5	07:59:44	08:00:01	✓	✓	00:00:17	07:58:00		00:02:01	
030052610001	Goodliffe Gardens adj	6	08:00:31	08:00:41	✓	✓	00:00:10	07:59:00		00:01:41	
030056520001	Warley Rise opp	7	08:01:02	08:01:50	✓	✓	00:00:48	08:00:00		00:01:50	
030055850001	Talbot Way Adj	8	08:02:02	08:02:25	✓	✓	00:00:23	08:01:00		00:01:25	
030050040001	Addiscombe Chase opp	9	08:02:44	08:03:21	✓	✓	00:00:37	08:01:00		00:02:21	
030051780002	Denefield School opp	10	08:03:59	08:04:36	✓	✓	00:00:37	08:03:00	Y	00:01:36	
030051740001	Dark Lane Top on	11	08:05:53	08:06:36	✓	✓	00:00:43	08:05:00		00:01:36	
030052270001	Fairford Road adj	12	08:06:49	08:07:11	✓	✓	00:00:22	08:05:00		00:02:11	
030054500002	Dark Lane Foot adj 292	13	08:07:50	08:08:17	✓	✓	00:00:27	08:07:00	Y	00:01:17	
030051770002	Dell Road adj 240	14	08:08:44	08:09:08	✓	✓	00:00:24	08:08:00		00:01:08	
030056370002	Tring Road Shops adj	15	08:09:21	08:09:58	✓	✓	00:00:37	08:08:00		00:01:58	
039025340001	Brooksbys Road adj 160	16	08:10:38	08:11:02	✓	✓	00:00:24	08:10:00		00:01:02	
039026830001	Oak Tree Copse opp 103	17	08:11:44	08:11:52	✓	✓	00:00:08	08:11:00		00:00:52	
039026870001	Overlanders End adj	18	08:12:03	08:12:10	✓	✓	00:00:07	08:12:00		00:00:10	
039026440002	Kentwood Circle S-bound	19	08:12:37	08:13:25	✓	✓	00:00:48	08:13:00		00:00:25	

The next chapter makes some conclusions on the monitoring and evaluation of the project one year on.

8. Conclusions

8.1 Objectives

The 'Completing the Connection' FBC to the TVB LEP set out 5 objectives of this project to upgrade the RTI system and smart ticketing. These are listed below along with an assessment of whether they have been delivered / met:

1. Supporting and driving further economic growth in the local area - **delivered**
2. Enable and encourage use of local buses instead of private vehicles - **delivered**
3. Enable and encourage easy interchange between public transport modes, and other sustainable modes - **delivered**
4. Make live passenger information available - **delivered**
5. Allow personalised purchase of mobile or smartcard-based tickets - **delivered**

8.2 Resources and input

The resources and input to achieve this were defined as:

1. One core, multi-operator RTI system - **delivered**
2. Three bus RTI departure screens at two rail stations - **delivered**
3. Audio-visual customer information installations on 51 buses – **delivered (51 buses equipped plus 12 addition buses upgraded with extra / better displays 66)**
4. An online shop enabling smart travel via app or smartcard - **delivered**

8.3 Outputs

Once accomplished, these activities will produce the following deliverables:

1. More reliable and better quality RTI data for buses from multiple operators in the region - **delivered**
2. Easier and better-informed interchange between rail passengers and bus services at Reading and Newbury stations - **delivered**
3. Useful audible and visual RTI on 51 buses not currently equipped - **delivered**
4. Easier and more convenient ticket purchase via smart or mobile media - **delivered**

8.4 Direct and indirect outcomes

1. Higher passenger satisfaction with bus travel in the region – **anecdotal positive evidence this has been achieved from passenger feedback, but no formal Passenger Focus passenger survey due to Covid**
2. More useful management information on bus service performance to help refine timetables to reflect real life traffic conditions – **yes, clear evidence from service planners and route controllers**
3. More use of buses by passengers who currently struggle with audio or visual impairments – **unable to determine as use by concessionary pass holders is currently lower than pre-Covid times.**

4. Less use of cash transactions and more use of 'smart' ticketing to speed up bus boarding times – **yes, clear evidence from transaction data.**
5. Modal shift from the private car to the bus – **unable to determine as bus use is currently lower than pre-Covid times.**

8.5 Commentary

Despite the challenges of Covid-19, this was a successful project, delivered on-budget and largely on-time.

Such projects are highly deliverable and give real benefits to passengers, and over time (post-Covid) will encourage a modal shift back to public transport.

Reading Buses are very keen to continue to work with TVB LEP to seek funding opportunities for the additional project of 'Enhancing the Connection' and other related projects to update and enhance the on-street RTI displays and other RTI functionality. Such projects and the use of this type of technology are essential in enhanced partnerships, building on the existing investment by local transport authorities and bus operators.

(end)