



Issue no:
94

SEPTEMBER FARES REVIEW

Sunday 04 September sees the third and final fares revision of 2016.



The headline story for the forthcoming fares revision focuses on the introduction of a new "Bus Hopper" fare and the changes to Bus PAYG charges, to deliver what was one of the election promises of the new London Mayor Sadiq Khan.

Although the necessary changes are being made as part of the fares revision process, the public launch of this new feature has been deferred by one week and will be officially launched on Sunday 11 September.

The change will give bus users the ability to make a second bus journey free, within 60 minutes, effectively allowing interchange between routes.

Full details of how this change is being introduced, together with a summary of the other main changes being implemented as part of the forthcoming fares revision, appear on Pages 2 & 3 of this edition.

Also inside this month, on Page 7 we provide you with the final instalment of our countdown to the introduction of polymer bank notes on 13 September, taking a more detailed look at Scottish notes and on Page 11 we take a look at the impact of changes to the MFM to cater for polymer notes.

THIS PUBLICATION IS WRITTEN
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August & September 2016



INSIDE THIS EDITION OF THE TRU

IN THE NEWS

Pages 1-5 → Fares revision preview
→ Failed cards → Charity update

SPECIAL FEATURES

Page 6-7 & 10 → Coin algorithm explained → Scottish polymer notes → Contactless for Visitors

ASK OLLY!

Pages 8-9 → More of your letters answered

PROJECT UPDATES

Pages 11-15 → MFM upgrades → CHD Rollout → Other upgrades

AND FINALLY

Page 16 → Crimewatch → Looking ahead to TRU95

TRIVIA - Pages 5, 6 & 13

Answers on Page 15

KEY STORIES INSIDE

Page 2-3 September Fares Revision

We provide an in-depth look at some of the main changes planned as part of the forthcoming fares revision.

Page 5 Oyster Charity Update

We provide you with an update on a number of initiatives being explored to expand our scheme to support the Railway Children charity.

Page 10 Contactless for Visitors to London

As part of the continuing drive to encourage greater usage of contactless payments, a number of LU stations will be targeted as part of an initiative to inform visitors to London of the benefits they get from using contactless.

Pages 11-12 MFM Upgrades

It has been a busy few weeks, for POM upgrades, with some major steps forward a few setbacks. We bring you up to date on what has been happening behind the scenes.

ALSO INSIDE...



APOLOGIES FOR THE LATE PUBLICATION (AGAIN)!

We must yet again apologise for the later than planned publication of this edition of the TRU.

This time a combination of Annual Leave and some major issues with the recent *Polymer note upgrade* on MFMs fitted with BNR units have forced us into several fairly major rewrites of finished articles.

As a result we have delayed the final publication to allow us to include the latest information on the cause of this issue and what is being done to fix it.

Details of this are included in our Project Update on Page 11.



SEPTEMBER FARES REVISION

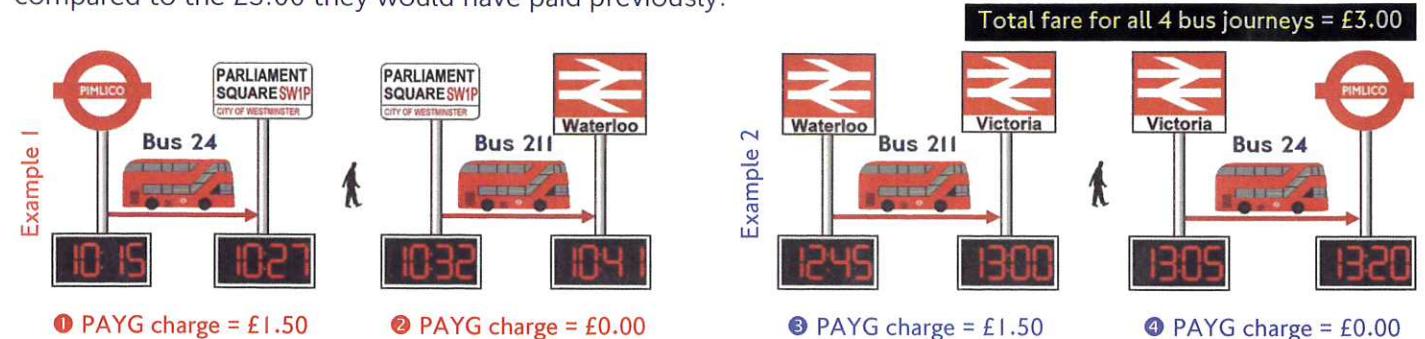
As mentioned in our lead article on Page 1, the next fares revision is scheduled to take place on Sunday 04 September. Significantly this will be the first fares revision to take place whilst services are running through the night on the first two Night Tube lines. We have summarised some of the main changes that are being made below.

BUS HOPPER

The most significant change will see the implementation of changes to capping arrangements to accommodate interchange between buses. From Sunday 11 September, Oyster and contactless customers using PAYG will be able to make a second bus journey within 60 minutes free of charge. This will effectively allow customers to interchange between routes in a similar way to rail interchanges.

The initiative utilises an existing Tram Feeder function which has been in use on a number of bus routes that link with the Croydon Tramlink service for many years. This allows customers using designated routes to change onto the Tram and vice versa, without having to pay an additional fare. From 11 September, all London bus routes will affectively operate as Tram feeder routes.

So in Example 1 (below left) if the customer boards a 24 bus from Pimlico, alights at Parliament Square and then catches a 211 bus to Waterloo Station, they won't be charged for this second bus journey paying only £1.50 compared to the £3.00 they would have paid previously.



This will also apply to customers who make a return journey within the hour e.g. a short shopping trip, even if they catch the same services and will obviously reduce fares for a number of bus customers. One other impact of the change is that some PAYG customers, who had previously made 3 or 4 bus journeys during the day may now find that they no longer reach the Bus & Tram cap, if they've only been charged 2 x £1.50 fares. This is demonstrated in Example 2 (above right), if the customer was to make the same journey back to Pimlico, then they again only pay £1.50 meaning the total PAYG charge for their return trip is £3.00.

Prior to the Bus Hopper change, they would have paid 3 x £1.50 fares for their first three bus journeys to reach the £4.50 Bus & Tram cap and only the fourth bus journey from Victoria to Pimlico would have been free.

REVISED FARES TO WATFORD JUNCTION

From Sunday 04 September there will be changes to PAYG fares, Daily and weekly caps and to the price of the Z1-9A Day Travelcard (Off Peak) covering journeys to and from Watford Junction.

These fares (set by London Midland) are historically changed at the September Fares Revision, rather than in January when other Travelcard and capping prices generally are. The new prices are shown in red in the table below.

Adult PAYG		Child PAYG		Day Travelcard (Off Peak)		Adult PAYG Daily Price cap		Child PAYG Daily Price cap	
Standard	Reduced	Standard	Reduced	Adult	Child	Peak	Off Peak	Peak	Off Peak
£9.30	£6.50	£4.65	£3.25	£17.40	£8.70	£22.60	£17.40	£11.30	£8.70

STAFF FARES LIST

As a result of these price changes, the NR Staff Fares lists for all stations have been updated with the new prices. The updated fares lists will be available via the T&R pages of the intranet at the beginning of September and can be accessed via the link below;

<http://onelink.tfl.gov.uk/sites/oyster/Fares%20List/SitePages/Home.aspx>



SEPTEMBER FARES REVISION

SINGLE TICKETS ISSUED BY VICs

Transport for London

16FBY16 DAY SINGLE 6.00 STD
16 FBY 16 HEATHROW

004186 96 0833 16FBY16 0740 06:00
This side up • Not for resale. Issued subject to conditions - see over

The fares revision will also see the resolution of an issue that has resulted in the capture of Single tickets issued from Visitor Information Centres (VIC) by the gates at a number of LU stations that are set up as Out of Station Interchanges (OSI). Gates will in future give these VIC issued tickets back to customers to allow them to interchange onto other services, in a similar manner to how LU issued tickets have always been given back.



CHANGES TO INTERCHANGES

Following the recent completion of escalator replacement works and the reopening of Paddington (Bakerloo) ticket hall, the temporary Out of Station Interchanges (OSIs) which were put in place between Paddington and both Warwick Avenue and Edgware Road (Bakerloo) stations will be removed from Sunday 04 September.



From the same date we will also be removing the OSI facility from the gatelines at Walthamstow Central following completion of changes to the gatelines within the station, which mean that customers requiring LU services no longer need to interchange between LOROL and LU.

We will also be making some adjustments to ticket acceptance arrangements in conjunction with the next phase of works at London Bridge (NR).

From the end of August works at London Bridge will switch and most South Eastern services to / from Charing Cross will again stop at the station. However, services into and out of Cannon Street will non-stop London Bridge. This will affect customers arriving on terminating Southern services, who had previously interchanged onto South Eastern to continue their journey into Cannon Street.

southeastern.



EXTENSION TICKETS

As part of a number of recent fares revisions, we have steadily increased the availability of extension tickets to NR destinations outside of London, so that "Boundary Zone Extensions" are now available at all stations for holders of Travelcards which include Zone 1.

As part of the forthcoming fares changes, we will be expanding the range of journeys from Buckhurst Hill to include Travelcards that do not include Zone 1 availability. This site has been selected as a trial, as the fare tables are unique to this station, whereas at other stations they are shared between stations that have the same fares. After successful deployment at Buckhurst Hill the wider selection of extension fares will be progressively made available at other stations at following fares revisions.

IMPORTANT REMINDER – 03/09/16



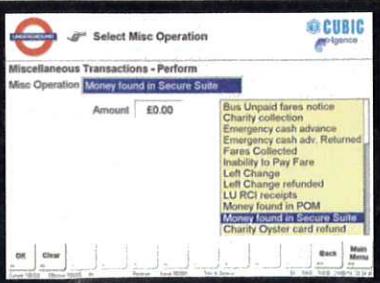
Station staff are reminded that to ensure all fares tables are downloaded correctly on fares revision night, the gates must not be powered down. Any gates that go offline or fail during this time period must be reported immediately to the CE Service Desk.



TOM MENU CHANGE

One final change will see an alteration to the TOM Miscellaneous transactions menu.

The current description "Money found in Ticket Office" is being changed to "Money found in Secure Suite" to reflect the fact that we no longer have any ticket offices.



SEPTEMBER FARES REVISION

T&R BOOK UPDATES

We will not be embarking on a major reprint of the T&R books on conjunction with the September Fares Revision, as the changes involved are relatively minor.

There are a number of changes that have taken place since the books were last reprinted and the main items are summarised in the table below:

Nature of change	Book & Section	Effective date	Reference
Inability to purchase tickets for NR journeys	Book 8, Section 3.5	19-08-2016	HIB 33-16
Withdrawal of Uncounted Bags	Book 4, Section 7	31-07-2016	HIB 29-16
Online Group Day Travelcards	Book 8, Section 7.6	23-05-2016	HIB 20-16
Introduction of Android Pay	Book 8, Section 9.4	16-05-2016	HIB 19-16
(Yellow) PAYG Only PTACs	Book 2, Section 5.3	01-05-2016	HIB 19-16
T&R App replaces Ticketing Consumables Form	Book 5, Section 1.7	27-03-2016	HIB 12-16
T&R App replaces Missed Collection form	Book 7, Section 7	27-03-2016	HIB 12-16
Restriction on use of non-chip bank cards	Book 5, Section 3.3	10-02-2016	HIB 06-16
Skimming Devices	Book 3, Section 1	Oct-2015	TRU87

However, we aim to reprint **T&R Book 4** at the end of September, to coincide with the planned completion of the CHD rollout, as this book was the only volume which was not reprinted for the January Fares Revision.

We will also be updating **T&R Book Appendix 5** which is not provided as a printed document, but can be viewed or printed from the T&R Books page of the intranet or by clicking [here](#).

IN THE NEWS

FAILED CARD PORTAL

Further to our last update in TRU92, the new Failed Card app has been further delayed and is now scheduled to be released on **Monday 19 September**. This will still only be available to

TSID card holders who had completed the module "[My role in privacy and data protection](#)" before **Thursday 25 August**.

Further users who complete the module after the cut-off date will be identified and added at the end of each month. Therefore, if you haven't already done so, you will need to complete this module online, which can be accessed from the Ezone pages or by clicking [here](#)



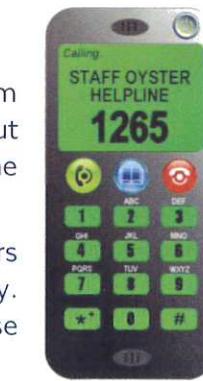
Please remember that although the new app is a useful additional tool, it should be used very much as a last resort when dealing with failed cards. The first approach should always be to advise the customer to obtain a new Oyster card and then link their old and new cards online.

STAFF OYSTER HELP LINE ACCESS

Over the last couple of months, the T&R team have received a large number of enquiries from staff who have recently completed their TMS assessment and have received their TSID card, but found that they were unable to check Oyster card details using the Staff Oyster Help Line facility, due to their employee number not being recognised.

The large number of staff going through TMS coupled with the need to remove large numbers of staff who have left LU from the database, made the updating process quite lengthy. However, the good news is that on the evening of **Friday 12 August**, a completely new database of all staff holding a TSID (as at Sunday 31 July 2016), was loaded onto the SOHL facility.

A majority of TSID card holders should now have access to the SOHL. Staff who have been issued with TSID cards since 31 July, will be picked up on future updates of the database, which we are hoping to run fortnightly.



IN THE NEWS

OYSTER CHARITY UPDATE

Regular TRU readers will be aware of our support for the Railway Children charity, through the Oyster card donation scheme we operate at **Heathrow T123, Heathrow T4, King's Cross and Liverpool Street stations**.

Over the coming months, we are hoping to build on this work through a number of exciting initiatives to expand the current scheme.

Firstly at Heathrow, we are looking to expand the number of Oyster donation boxes in conjunction with a joint initiative with Heathrow Airport. This will hopefully see a number of additional boxes located within the airport terminals, both airside and landside.



Making every journey better

This should address a problem that airport staff have noticed with customers who have failed to get a refund on their Oyster card dumping it within the terminals, rather than retaining it for a future visit.

The opportunity is being taken to obtain a number of additional boxes for use at LU stations. This will hopefully allow us to expand the current scheme to some additional gateway stations which have significant numbers of customers leaving London seeking refunds on their Oyster cards.

We are also looking to deploy some other boxes to key sites on a temporary basis in support of an initiative to encourage greater use of contactless payment. Here we would be targeting Londoners and regular customers currently using Oyster and trying to persuade them to switch to using contactless.

The scheme would encourage these customers to donate their existing Oyster card deposit and any unused PAYG balance to charity. In addition to supporting the objective of increasing usage of contactless, this will also hopefully also support the desire to withdraw old MiFare format Oyster cards, as outlined in previous editions of TRU.



The procurement of additional boxes will also give us the opportunity of revamping the posters and stickers that promote the scheme, as feedback from a couple of the existing sites has highlighted a large number of cancelled cards being deposited into the donation boxes by customers that have already cancelled their card and obtained a refund.

Recent organisational changes have made it increasingly difficult to process batches of donated Oyster cards that have been collected via the donation boxes and with the scheme potentially expanding and a backlog of cards to clear, we are seeking some help.

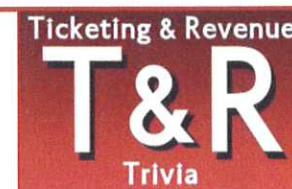
We would like to hear from anyone with a current TSID card that would like to do their bit for charity and devote a few hours to help process some of these cards. We can't promise the task is very exciting, but the end result is that we will be able to donate a substantial amount of money to one of our nominated charities.

If you can help us, please send your details and availability to Alan Mundy – email alan.mundy@tube.tfl.gov.uk

Part I – As well as Heathrow, Kings Cross and Liverpool Street, Oyster Charity boxes were also initially installed at Euston and Victoria stations. What we want to know is...

Q1) ...when were Oyster Charity boxes first introduced on London Underground?

- | | | | |
|---|-----------|---|---------------|
| A | May 2006 | B | November 2007 |
| C | June 2008 | D | August 2009 |

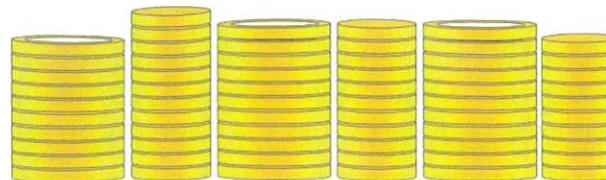


Answers on Page 15

SPECIAL FEATURE

COIN ALGORITHM EXPLAINED

In the *Ask Olly* feature in TRU93, we featured a letter from Hashim Tejan-Jalloh, concerning how the MFM dispenses change. In Olly's reply as space was limited in that edition, he promised to give a more in-depth explanation this month.



The issue has become a bit more topical following the recent issues with MFMs gutted with BNR units not dispensing notes.

Going back to TRU86, we featured an article to try to explain how the new change giving algorithm on the MFM Coin Handling Unit (CHU) worked.

At the time, we outlined a change from the original algorithm which always gave the customer the smallest number of coins, to one which took account of the amount of £1 and £2 coins in the hoppers of the CHU.

In the example we used, the device did not dispense £2 coins where the machine had a large volume of £1 coins. It will continue in this manner until the difference is less than 10% more than the number of £2 coins. This is illustrated by the table below, which shows the results of recent testing undertaken with Cubic to verify the algorithm is working as planned.

Ticket price	Amount tendered	Change given			Contents of £2 Hopper		Contents of £1 Hopper	
		£2	£1	10p	No of coins	Value	No of coins	Value
£4.90	£10.00	5	1		36	£72	53	£53
		5	1		36	£72	48	£48
		5	1		36	£72	43	£43
		5	1		36	£72	38	£38
		2	1		34	£68	37	£37
		2	1		32	£64	36	£36
		5	1		32	£64	31	£31
		2	1		30	£60	30	£30

What this does highlight is that if the MFM is topped up with a large volume of £1 coins, even if there are quite a lot of £2 coins in the hopper, none will be dispensed until the number of £1 and £2 coins has nearly equalised.

The other element which is now clear is that the algorithm works on the number of coins not the value. A lot of people had been viewing the hopper contents via the Service panel, to check the change levels and seeing similar values in the £2 and £1 hoppers had expected the MFM to be using both types of coin.

As can be seen in the example, with 36 x £2 coins in the device, a £2 coin is not given as change until the value of £1 coins has fallen to £38.

The current algorithm is based on the historical position of most stations accumulating and banking £1 coins, but having to buy in £2 coins.

In order for the MFM to dispense a mix of £1 and £2 coins, then the amount of both coins must be at a similar level.

Part 2 – Below are 5 clues to a station Olly has visited this month. Guess the station after the first clue and award yourself 5 points, 4 points if you require the second clue and so on until after the 5th and last clue you get just 1 point.

If you still haven't guessed after all 5 clues then it is "Nil Point".



Pts	I'm at a station which...
5	was one of the first LU stations to operate without a ticket office
4	used to be called something else, until taken by another nearby station
3	from 1976 was given its current name, which better describes its position
2	is an interchange with a National Rail station
1	has no lifts, is in zone 1 and serves four Underground lines

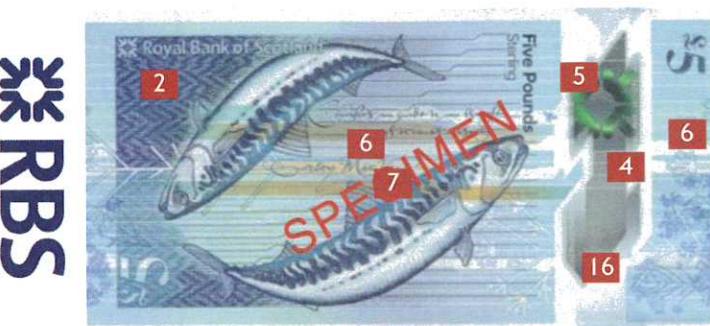
Answers on Page 15

SPECIAL FEATURE

SCOTTISH POLYMER NOTES

Plenty of attention has been focused on the Bank of England's decision to introduce polymer bank notes, but north of the border all three of the Scottish note issuing banks will also be introducing their own designs of polymer £5 notes. In fact they were well ahead of the game with the Clydesdale Bank issuing a commemorative polymer £5 note back in March 2015. One of these (very collectable) notes was accepted by a Victoria station MFM in late August, following the recent BNR upgrade.

As promised in TRU93, we have provided below some further detail on what these new notes will look like and some of their security features.



Key to features		4	Iridescence
1	Clear window	5	Ink changes colour
2	Raised print	6	Microtext
3	Embossed numeral	7	UV printing
LOOK	FEEL	TLT	CHECK

The current timeline for the issue of Scottish Polymer £5 notes are:

- Clydesdale Bank – 27 September 2016
- Bank of Scotland – 04 October 2016
- Royal Bank of Scotland – TBA November 2016

None of the Northern Irish banks that issue notes are currently planning to release polymer notes.

You can find more information on valid Scottish & Irish notes in an updated guidance document on the 'Ticketing General' page of the T&R section of the intranet or by [clicking here](#).

1. The first Scottish banknotes were issued by the **Bank of Scotland** in 1695. Although viewed with suspicion at first, they soon caught on once it became apparent that the Bank could honour its promise to pay and that paper was more convenient than coin. Scotland thus became one of the first countries to issue paper currency from choice.
2. The **Royal Bank of Scotland** founded in 1727, started issuing its own banknotes in December of the same year and just over 100 years later, on its opening day of 7 May 1838, the **Clydesdale Bank** did the same.
3. Early notes were printed in black and bound in books similar to a modern cheque book and would be cut or torn out by users. £1 notes were often torn into halves and quarters and were accepted as the equivalent of 10 shillings (50p) or 5 shillings (25p) in coin.

Source – The Committee of Scottish Bankers – for more banknote history [click here](#)

DID YOU KNOW?



Answers on Page 15



askolly@tube.tfl.gov.uk

From: [REDACTED]
Sent: 19 August 2016 19:26
To: Ask Olly
Subject: MFM Refund Anomaly

Hi Olly,

I've noticed that with the update overnight on our MFMs that it will no longer give refunds for customers with the MiFare cards, however on three instances today I've seen customers with the "D" on the back of their Oysters unable to get refunds, any reason why?

I look forward to your response

Hi [REDACTED]

Thank you for your email and for highlighting what you have seen since the recent MFM upgrade.

We have had a couple of similar reports from staff at other stations reporting similar experiences.

If you encounter this again, it would be useful to know whether the new screen saying "Unable to process the refund as this is an old type of Oyster card" (as featured in the TRU93) was displayed?

It would also be useful to note the Oyster card numbers involved so this can be investigated further.

The issue has been raised with Cubic who have identified an error within the table the device uses to establish whether a refund can be made. This should hopefully be resolved in the next software release.

Regards

Olly Oyster

Hi [REDACTED]

Thank you for your email.

Since the recent software and polymer note upgrades we have encountered issues with certain MFMs getting into a cycle where they cannot dispense notes and therefore give change and refunds in coin.

The issue is currently being investigated by Cubic, but has been hampered by the fact that Cubic have been unable to replicate the fault in their test environment, although we have seen it and extracted logs from devices on stations.

The issue is currently thought to be caused by the BNR not responding quickly enough to a request for change to be dispensed and once this happens, it is then ignored for subsequent transactions. A new version of software to address this will hopefully be available for trial at a couple of stations with BNRs this week.

In relation to an additional BNR for the Praed Street MFM, unfortunately there are no spare BNR units available at present and no immediate plans to purchase any further units.

Should this position change we will bear Praed Street in mind, but the allocation of further devices will be based on analysis of both cash take and refunds, as was done for the first and second batches of units when they were purchased.

Regards

Olly Oyster

askolly@tube.tfl.gov.uk

Dear [REDACTED]

Thank you for your email and some interesting questions.

The LU procedures for resolving journeys are based on agreements between TfL and the Train Operating Companies (TOCs) as they had specific concerns about the risk to their revenue through customers touching in using Oyster at one of their stations and then travelling to a destination outside of the London area and paying very little for that journey compared to the actual fare. As a result, the agreement was that journeys would only be resolved at station level if they were due to an error that the customer had clearly just made or a known incident, such as a station closure, power failure etc. These apply to both LU staff and at TOC stations where they have the facility to resolve journeys.

As you correctly state, there are now a number of options available to customers to get a wider selection of incomplete journeys resolved online or via the Customer Contact Centre. However, when these are processed there is a much greater level of journey history available than when you are checking the actual card on a POM. A member of staff at a station would also be unaware of whether the same customer had previous incomplete journeys resolved.

In response to the specific questions you have posed, the process of resolving the journey but leaving the maximum fare in place closes off the incomplete journey held on the card. There is a specific slot on the card that holds details of the last incomplete journey regardless of how long ago it was. Resolution of the incomplete journey clears this field and means that warning messages and the option to resolve the journey will disappear.

Customers can challenge incomplete journeys online or via the contact centre if they feel that they have been wrongly charged, so they would be able to claim for an overcharge even if the journey has been closed at the maximum fare on the card. This happens in any case if the customer has a second incomplete journey, as the Oyster card only holds the details of the last event.

In relation to your final question, the Autofill function or request for a refund on an incomplete journey operate independently to the actual card. It is therefore possible for a journey to still appear as an incomplete journey on the Oyster card, even though the journey has been resolved and the customer refunded online.

This is one of the reasons why after events such as the Notting Hill carnival, where automatic refunds are generated, that staff are advised not to resolve journeys on the affected dates.

The Auto Completion process is linked to the details held on the actual card and is applied when the gate detects a "current open journey". If the journey has been resolved by a member of staff, then Auto Completion will not work as there will not be a current incomplete journey to close.

Hope this answers your queries.

Regards

Olly Oyster

From: [REDACTED]
Sent: 07 August 2016 12:29
To: Ask Olly
Subject: Oyster Uncompleted Journeys

Hi Olly,

I'm finding the information about Uncompleted Journeys that we have "public facing" and our rule book rather a bit confusing (and rather unhelpful).

On the TfL website there's talk of Automatic Refunds and Automatic Completion. It seems to tell customers they themselves can get up to three maximum fare refunds per calendar month (seemingly without proof or problems) via an online form.

It seems to tell them that they'll try to be given automatic refunds and Auto Completion if they forget to touch in or touch out, or couldn't due to congestion.

But staff are told... (T&R Book 2, Section 10)

"If the incomplete journey was not the result of a known incident or recent customer error at your station, resolve the journey at the maximum fare indicated and advise the customer to contact the Oyster Helpdesk." (Sometimes it talks of maximum charge and sometimes maximum fare). On the face of it, this is far harsher than we're telling the public online.

I've always felt either cruel or unsafe (depending on the customer!) having an argument at a POM about how I'm going to cement the £7.70 Maximum Charge – and in some cases having to insist they add more money to travel again.

It also seems massively unfriendly to customers to have the website saying things so nicely and staff face-to-face being less so.

(Now the questions!)

What actually is the point in insisting on completing a journey for a customer if we're not going to vary the Entry/Exit Charge that's already on the card? Whom does this benefit?

Can a customer challenge a resolved-at-maximum journey using the online form after a member of staff has completed it for them?

If a member of staff resolves-at-maximum an incomplete journey, can / will Automatic Completion and Automatic Refund still work?

Thanks in advance,



SPECIAL FEATURE

CONTACTLESS FOR VISITORS

TRU has regularly plotted the growth in the use of contactless payments on the network. This month we turn our attention to a segment of our customers, where contactless usage could be increased and where there are potential benefits to the users.



Transport for London

Visiting London?
Join 3 million of our customers travelling with contactless bank cards

If your bank card has this logo you could use it to pay as you go

- It's quick, easy and secure
- You don't need to buy a ticket
- Just touch in and out and we'll work out the best fare
- It's the same fare as pay as you go on Oyster



Chances of transaction charges apply. Only one charge per day. Please check with your card issuer.


MAYOR OF LONDON 

Visitors arriving in London, be it at one of the major gateway stations, or at stations elsewhere on the network are faced with a decision as to how to pay for their travel. Traditionally this has usually been a choice between magnetic tickets / Day Travelcards and Oyster, but the acceptance of contactless payments now offers other options.

When assisting a customer who wants to obtain an Oyster card, one of the first things is to check whether they have a bankcard bearing the contactless payment symbol. Many people that haven't already used contactless payment may be unaware that their card has this facility.

For visitors, using contactless avoids the need to obtain an Oyster card and pay a deposit before travelling and the process of obtaining a refund of their deposit and any unused PAYG at the end of their visit.

Another major selling point is that the impact of any errors such as forgetting to touch-out, are not as immediate and can be automatically resolved before end of day payments are processed. It is certainly the quickest and easiest option for visitors from within the UK.

When promoting the use of contactless payment to overseas visitors, one question that often gets raised is around card usage fees and exchange rates. It is very difficult to answer this, as such charges will depend upon the customer's bank and type of account they have.

If asked one positive response is that it is unlikely to cost them more than using the same card to buy an Oyster card or magnetic ticket. Two key points to remember here:

- PAYG journeys will be charged as one charge at the end of the traffic day, not as individual transactions as each journey made
- Secondly the customer will only be charged for the journeys they actually make, so won't lose out on exchange rates on the refund of any unused credit
- If the customer uses a card to pay for an Oyster and PAYG top-up, they will be charged transaction and exchange rate fees.

To support the promotion of contactless payment to visitors, the 33 stations in the table below have been identified and will receive the whiteboard poster illustrated above.

BAKER STREET	GLoucester Road	Lancaster Gate	South Kensington
BAYSWATER	GREEN PARK	LIVERPOOL STREET	TOTTENHAM CRT ROAD
BOND STREET	HAMMERSMITH	LONDON BRIDGE	TOTTENHAM HALE
CANARY WHARF	HEATHROW T123	MARBLE ARCH	TOWER HILL
CHARING CROSS	HEATHROW T4	OXFORD CIRCUS	VICTORIA
COVENT GARDEN	HEATHROW T5	PADDINGTON	WATERLOO
EARLS COURT	HYDE PARK CORNER	PICCADILLY CIRCUS	WESTMINSTER
EMBANKMENT	KNIGHTSBRIDGE	RUSSELL SQUARE	
EUSTON	KINGS CROSS	STRATFORD	

A leaflet to support the promotion of contactless payment for visitors is also under development, but it's unlikely to be available for the launch of the promotion in the first week of September.

If you work at one of the stations listed above, you can do your bit by promoting the benefits of using contactless to any visitors you speak to.

PROJECT UPDATES

MFM POLYMER NOTE UPGRADE

The first phase of the device upgrades necessary for us to be able to accept polymer banknotes, was completed on **Friday 12 August**, when the last of the 97 MFMs currently fitted with Bank Note Recycler (BNR) units was upgraded to take the new notes.

The upgrade also resolved an issue involving acceptance of Scottish £1 notes, which we had seen at several BNR sites and which we previously reported on in TRU. The MFM will now no longer accept Scottish £1 notes and any customer attempting to use one of these will need to be advised to use a coin or another denomination of note.



Apart from loading images of the new notes for validation purposes, the upgrade also saw conversion of one of the two £5 recycler units to hold polymer notes, the other being retained for existing paper £5 notes. In the short term until the new polymer notes come into circulation, this will effectively reduce the number of current £5 notes MFMs can store for change giving.

This will continue as the notes come into circulation and will return to the previous capacity briefly when there is a 50:50 mix of notes in circulation. As the Bank of England's fairly aggressive rollout strategy kicks in they have set a target of 200 days to complete the withdrawal of the current paper £5 note.

The situation will eventually switch round to the point that few paper £5 notes are inserted into the MFM by customers and we are effectively only using part of the recycler capacity again.

To support the Bank's rollout strategy, it is likely that we would push for an early conversion of the second £5 note recycler, so that only polymer notes are dispensed. The MFM would continue to accept paper £5 notes, but these would go straight to the vault.

Unfortunately shortly after completion of the polymer note upgrade on the MFM, stations identified that their devices had stopped dispensing notes as change, even though the BNR was well stocked with notes. It was subsequently identified that testing by Cubic had been done against the latest version of MFM software (deployed to address the Oyster Refund Fraud issue) and no issues had been identified. In theory, it should have worked equally well with the earlier version of software deployed to LU devices, but inexplicably this was not the case.

Fortunately we were in a position that we had already started to deploy the new MFM software and at stations that had received this, the BNR was reported as behaving as it should. Unfortunately although resolving the issue on a number of devices, we continued to receive reports from staff indicating that many BNR units were still not dispensing notes.

Further investigation of device logs obtained by Cubic from devices at Piccadilly Circus, Euston and Victoria, have resulted in an internal timing issue between the MFM's PC and the BNR unit being identified over the last week. This seems to result from the BNR not answering a request for change quickly enough, after which the device ignores the BNR as an option for giving change. This then results in the BNR filling up with notes and customers receiving their change all in coin.

As we were going to print, the good news is that a revised version of MFM software has been developed with a fix to address this BNR issue and this was successfully deployed to MFM 34 at Victoria (Vic) and MFM 32 at Euston on **Thursday 01 September**.

The new software resulted in both devices then dispensing notes as they are intended to and as a result arrangements are being made to deploy this new software to all of the other MFMs at these stations on the night of **Friday 02 September**. We will then be looking to deploy this software to all other sites with BNR units as quickly as possible.

The second phase of MFM upgrades for polymer note acceptance commenced on **Tuesday 23 August**. This will see all devices that have the older Bank Note Acceptor (BNA) units upgraded. These upgrades will be completed by Cubic using a mixture of day and night shifts. Stations in central and inner London will be completed during the day (10.00 - 16.00 hrs) in a similar manner to how the BNR updates were completed.

Continued on page 12...

...continued from page 11

Upgrades at stations in Zone 3 and beyond will generally be undertaken at night. This should lessen the impact on customers, and should minimise the length of time that devices are in "card only" or "exact money only" modes, before and after the upgrade.

The upgrade programme is scheduled for completion by Friday 09 September, ready for the 13 September polymer note launch.

On the BNA units since all notes go straight to the note vault, we don't have to worry about separate treatment of paper and polymer £5 notes.

We had hoped that the upgrade and the loading of a new set of note images would allow all of our MFM to accept Scottish and Northern Irish notes.

However, as is often the case these days, at the last minute it was identified that there were some changes need to be made to the actual MFM software to enable it to identify the larger note set as being valid.

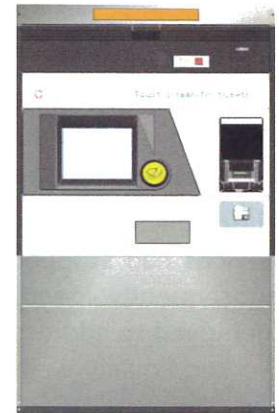
Hopefully the necessary change will be incorporated into a future MFM software upgrade, either in conjunction with the forthcoming PED upgrade, or in readiness for the acceptance of the £10 version of the polymer note.



Once removed from a POM polymer and paper notes can be banked together. There is no need to separate them.

MFM UPGRADES

As reported in our *Crimewatch* feature in TRU93, following a recent surge in Oyster card refund fraud on the MFM, a vanguard of a new version of software which prevents refunds on older MiFare Oyster cards was released as a Vanguard on Monday 08 August.



Following successful deployment, approval was given to rollout the software to all other MFMs over six nights, starting on Sunday 14 August, with the last devices being upgraded on the night of **Friday 19 August**. Deployment of this new version of software was also planned to resolve a problem that had occurred on MFMs fitted with a BNR (as outlined in our article on **Page 11**) and a number of other fixes we had been waiting to deploy.

These are:

- Refunds will no longer be available on older style MiFare Oyster cards (these cards do not have a black square with a white D on the back).
- Prevention of a potential fraud where two refunds on the same card could be obtained simultaneously from adjacent devices at a station
- Rectification of fault that caused MFM to fail if three consecutive refunds are processed
- On MFMs fitted with a BNR unit, ability to dump notes from recycler to note vault without having to also remove the coin vault
- Correction of defect where after customer performed search by destination and pressed "back" button displayed information didn't clear correctly

There have also been some further changes in the timescales for the deployment of new software for the AFM and for the implementation of new software and hardware for the PED (Chip & PIN) upgrade. We have therefore republished the table which appeared in TRU93, with the revised dates included.

Device	Polymer notes update	Oyster refund fraud fix	Defect fixes	Increase of bankcard limit	PED Upgrade
AFM	N/A	N/A	Vanguard Mid Sept. Completion 05 October.	Deployed with Defect fixes.	Completion March 2017.
MFM	COMPLETED <small>BNA → Completion 09 September</small>	COMPLETED	COMPLETED	COMPLETED	Vanguard End September. Rollout Oct 2016 - Mar 2017.
QBM	N/A	N/A	Rollout with PED upgrade.	To be advised	Completion End April 2017.

UPDATE!

GATE LCP

Since our last update in TRU92, there has been little change to the project which will eventually update all of our gates to operate with a new LCP.



Observations undertaken at other stations with E2 gates have identified a number of errors, such as ticket jams being indicated on the device, SCU and IPad, but where the gate continues to work normally and accept magnetic tickets.



Cubic are currently investigating this to determine whether they are true problems or not. We have a suspicion that they may either result from a communication problem between the LCP and other components of the gate, or as a result of the clearance of a condition not being communicated.

Any feedback from gateline staff on such issues would be very much appreciated.

For EI gates it is a similar position with trial software on a number of gates at Stratford. Cubic are currently hopeful of being able to rollout this version to all of the gates at Stratford as part of a proper vanguard and then to extend this to a second Vanguard site.



Given issues we had with the original vanguard at Bank (Waterloo & City) gateline, we are likely to deploy the EI LCP next to either Waterloo (Colonnade) or London Bridge (Main) as both sites have high volumes of NR magnetic tickets as a result of the interchanges there.

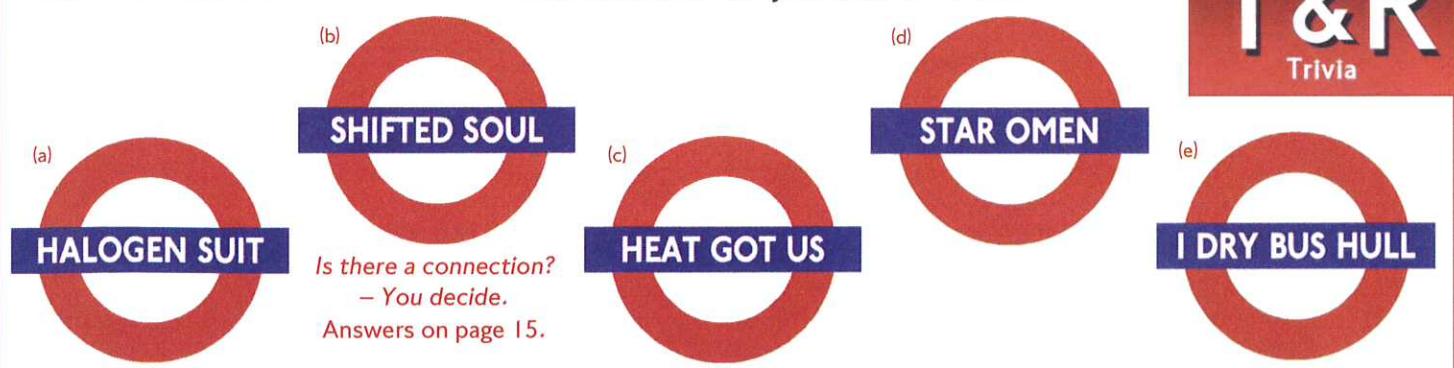


This extended Vanguard should then hopefully lead into the long awaited start of the rollout to other stations with EI gates. This upgrade will also see installation of the new Service Panel on EI gates.

Testing of the new EI gate software was scheduled for three weeks commencing on Tuesday 16 August, but the proximity to the fares revision, means that even if this goes well, we are not able to deploy the new software until after 19 September, when the fares revision moratorium will be lifted.

This will be a week later than normal due to the delayed implementation of the Bus Hopper change.

LAL MXIDE PU Part 3 – We've mixed up the letters in these station names. Can you work them out?



Ticketing & Revenue
T & R
Trivia



CASH HANDLING DEVICE ROLLOUT

Rollout of Cash Handling Devices (CHD) continues and the beginning of September sees the start of the penultimate wave of installations. Now that most central area stations have been equipped with CHDs, attention turns to stations at the extremities of the Metropolitan, Jubilee and District lines.

A further landmark will be reached on the night of **Thursday 08 September**, when the 250th CHD is due to be installed at Becontree.

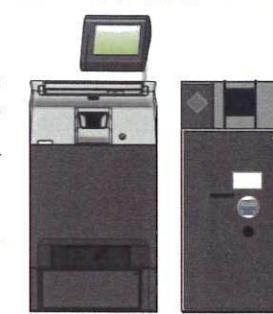
However, as we approach the end of the programme, progress is likely to slow as a number of the more difficult locations have been pushed to the end of the programme. This includes the sites identified for the "slimline" version of the note accepter.

Implementation of these units has been delayed due to a number of issues that were identified during the recent factory acceptance testing of the new unit. Hopefully Scancoin will be able to address these in time for a further acceptance rest in mid-September and for the first installations to take place at the end of the month.

This should allow time for briefing of LU users and the training of local G4S staff to make collections from these units.

As with our POMs, work has been going on to ensure that all CHDs are ready to accept polymer notes when they are launched on **13 September**. On system testing has recently identified that the devices have not been loaded with the latest note images, which should include the three new Scottish polymer notes that are featured on **Page 7**.

The chances of these being accepted by POMs is quite low and if notes cannot be deposited into the CHD, the procedure to be followed is the same as already used for valid coins and notes that the device will not accept. These should be remitted via a "Counted bag".

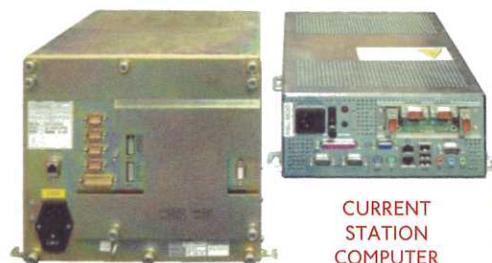


STATION COMPUTER UPGRADE

A further upgrade of our station computers (SC) is on the way, with plans to deploy the new SC3 Station Computer to LU sites shortly.

These units are already in use at NR, DLR and Tramlink locations where the SC is located within the cabinet of one of the Passenger Validators (PVal).

Initial deployment on LU will be as a trial at three locations:



- Oxford Circus (Main)
- Tooting Broadway
- Euston

These locations should give us a fair cross-section of stations with varying numbers of devices and transactions.



The initial Vanguard is currently scheduled for late October / early November 2016 and if successful is likely to lead on to a programme to replace the current SC2 Station Computers.



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If you are a TSID Card holder and not receiving the TRU by email, please check with your group administrator that you are included on your group's "+CSA (group)" distribution list.



SCU SCREEN REPLACEMENT TO GO AHEAD



In TRU87, we reported on a trial of a new flat screen Station Control Unit (SCU) monitor being trialled at Embankment and Green Park.

We are now pleased to be able to report that Cubic have agreed to replace all of the older type of monitors with the new flat screen version.

Originally it had been planned to replace monitors in Secure Suites and Station Offices but the order for the new monitors will now also cover ticket hall SCUs.



CURRENT CRT SCREEN SCU

Roll out of the new screen monitors is currently due to start in October and we are hoping to use the opportunity to recover disused pieces of equipment from stations. Recent visits gave revealed that at a number of sites where ticket office SCUs were scheduled to be removed during the post closure strip out of the ticket office, the equipment has often been left in place or had been disconnected and then left lying around the secure suite.

Just as clarification, there should be a SCU provided if the secure suite contains the station office and a window has been provided to allow monitoring of the gate line at certain times of day or if the suite contains 5 or more POMs.

At other sites there is no need for a SCU within the suite and the equipment should have been removed.

Although we are replacing the SCU monitor with more modern flat screen monitors, as part of the programme to regularly refresh our assets, the SCU remains one of the oldest pieces of ticketing equipment, dating back to the original UTS project in 1987.

However, plans are afoot to upgrade the entire SCU and hopefully move away from the current keyboard and monitor to a more modern design, hopefully using touchscreen technology within the next couple of tears.

We will update you in the development of these proposals in future editions of the TRU.



ANSWERS TO T&R TRIVIA

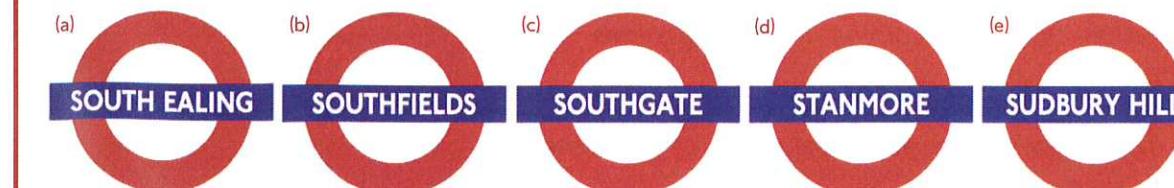
Pt. I	Oyster Charity boxes were introduced on LU in...
B	November 2007

Pt.2



WHERE'S WOLLY?

Pt.3	LAL MXIDE PU	All stations beginning with the letter "S"
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How did you do?

10p OR NOT 10p? – THAT IS THE QUESTION!

Last month we reported on a recent surge in Oyster Refund fraud and our plans to fix this via a software upgrade, which is covered in a further update on POM upgrades on **Page 12**.



This month we turn our attention back to the familiar topic of invalid currency. There are a small number of foreign coins which can 'trick' the coin validator and from time to time we get reports of batches of these being laundered through POMs.



However recent emails have largely been about **Hungarian Forints** which have turned up in bags of 10p pieces which have been delivered to stations as part of change deliveries.

This has been highlighted to the Financial Services Centre (FSC) who are following this up with the company that prepare and supply our change requirements.

NR TVM FIX

In TRU93, as part of our night tube coverage, we reported that an issue that had caused problems for night bus customers who checked or topped up their Oyster card on a NR TVM between midnight and 04.30, had been resolved.

CORRECTION!

Unfortunately, it has come to light since publication that the fix has yet to be rolled out to all TVMs.

It is therefore still possible that staff may see examples of Oyster customers who have been charged for a PAYG journey in the early hours of the morning, even though they still had a valid season ticket at the time the journey was made. Since the start of night tube operations on **Friday 19 August**, this could now potentially also affect LU journeys, as well as those made by night bus.

The latest update from Cubic has confirmed that the upgrade is underway and around 60 TVMs at locations close to stations served by Night Tube services had been upgraded as a priority before the service launched. Other devices are being picked up on a rolling programme, but until all have been done, there is a chance that customers topping up or checking their card on a TVM after midnight may still be affected.

TRU READERS' SURVEY

Respondents attempting to complete the on-line survey form on their iPads will no doubt have been frustrated that the pdf version did not work as we had planned. However, we have been truly impressed by some of the ingenious ways many of you found a way around this.

NEXT ISSUE

TRU95 is scheduled to be published in mid-October, although with the recent changes to project timescales and our desire to provide the most up to date information, anything could happen!

One of the main focuses of our next edition will be to provide a breakdown of the results of the recent *TRU Readers survey*.

We also plan a return of the popular *Oyster Explained* feature, plus;

- *Updates on all the major T&R projects, including some more detailed information on forthcoming POM upgrades and associated changes*
- *A further selection of letters to Ask Olly*
- *Plus the latest T&R news stories and a selection of our other regular features*



What's in a number?

- Lightning McQueen's number – the main character in Disney's "Cars"
- Microsoft Windows' landmark computer operating system
- The number of Theses posted by Martin Luther on the door of All Saints Church, Wittenberg in 1517.