Response to Rinkfield Report

Ref: c:\gij\pathway\miscdata\0b25.rinkfield\gij.rinkfield.responsev0.2.doc
Author: Gareth I Jenkins
Date: 11/02/2011 12:45:00
Version: 0.2

1.   Introduction

I have been asked by Post Office Ltd to produce a response to *Technical expert's report to the Court prepared by Charles Alastair McLachlan, a Director of Amsphere Consulting Ltd.* which I received on Thursday 11th February 2011.

I had seen a draft of this report on Monday 7th February and spent 3 hours with Professor McLachlan on Tuesday 8th February agreeing a number of changes in the hope of coming up with a joint report, which Professor McLachlan then produced. Although there is much agreement in terms of fact, I fell that I am unable to agree with the way in which the material is presented.

The purpose of this report is to highlight my views on Professor McLachlan's report and make it clear what my views are on the various hypotheses and facts.

There are a number of issues raised in Professor McLachlan's report that are outside my area of expertise and I believe need to be addressed separately by Post Office Ltd. I highlight such areas in this report.

I should point out that my expertise relates purely to the Horizon system operated by Fujitsu on behalf of Post Office ltd and does not extend to Post Office Ltd's back end systems or to their business processes. However in my view, any external systems are not relevant to the accounts as presented by Horizon since all transactions that are recorded on the system can be shown to have been carried out by a specific user.

2.   Background Information on the Horizon system

The Horizon system was initially put together as a pilot in 1996, and following an extensive pilot was rolled out to all Post Offices between 1999 and 2002. It has recently been replaced by the Horizon Online system which was piloted at the start of 2010 and the last Horizon system was replaced in September 2010. Horizon is used in every Post Office in the United Kingdom, which currently means about 11,400 branches. During that time, Horizon has processed millions of transactions each day with peak volumes of nearly 20 million transactions in a single day in the run up to Christmas.

Within Horizon, each Post Office stores details of all its transactions on the Hard disk of each PC within the Branch. There is a separate PC for each counter position.

Data from the branch is transmitted from each branch to Fujitsu's Data Centres using a variety of communications mechanisms. The software used to transmit the data from the Branches to the Data Centre is specifically designed to ensure that whenever contact is made between the Branch and the Data Centre any outstanding data is

exchanged between the two. In particular for many transactions there is no need for the Branch to be online.

3.   Rinkfield Branch

I am told that Rinkfield has a FAD code of 252418 and I have data for FAD Code 252418 from 1st June 2008 to 30th June 2009. There is a single Stock Unit AA and three counter positions. Trading Periods are rolled monthly with weekly Balance Periods (in general). The data shows that there are 3 counter positions.

The following Users operated in the Branch:

User Id		Earliest Date	Latest Date
GR		02/06/2008	27/06/2008
PB	GRO	02/06/2008	09/04/2009
AN		02/06/2008	06/06/2009
KM		02/06/2008	06/06/2009
MW	GRO	04/06/2008	04/06/2009
JC	GRO	09/06/2008	19/06/2009
BT		11/06/2008	03/04/2009
DH		04/08/2008	16/08/2008
AT	GRO	06/01/2009	03/06/2009
HC		14/04/2009	19/06/2009
MW	GRO	08/06/2009	08/06/2009
ZA	GRO	08/06/2009	08/06/2009
IK	GRO	10/06/2009	16/06/2009
ZP	GRO	10/06/2009	23/06/2009
SU	GRO	10/06/2009	30/06/2009
MW	GRO	11/06/2009	30/06/2009
FK	GRO	24/06/2009	30/06/2009

An audit was conducted on 8/6/2009 which discovered a significant Cash Shortfall.

4.   Comments on Professor McLachlan's Report

4.1   Section 1.2

This presents a number of Hypothetical issues which could be of concern.

I have to agree that all such issues could occur on a hypothetical system. However there is no clear evidence that any of these issues actually applies to the Horizon system. My concern is that some of the issues are raised as a means of casting doubt on the system rather than anything concrete.

In particular the issue relating to External systems in 1.2.3 is outside my area of expertise.

4.2   Section 2.2.1

This section presents a list of requests that have been made for further information. I feel it is up to Post Office Ltd to address why such requests were not granted.

In the note at the end of the section, I believe that Professor McLachlan is also happy that Remittances are correctly processed within Horizon.

4.3   Section 2.2.1

Professor McLachlan makes a point of comparing Horizon to a banking system. Over the years I am aware that Post Office Ltd has gone through a number of changes. In general, my view has been that they consider themselves to be a retail rather than a banking organisation. However it is for Post Office Ltd to define their positioning.

As far as Horizon and its operation is concerned we have complied with the requirements that Post Office Ltd have defined and also assisted Post Office Ltd in obtaining accreditation with various Financial Institutions that Horizon interfaces to. In particular there are specific requirements from Post Office Ltd to avoid printing receipts (or vouchers as Professor McLachlan refers to them). There are a number of Reports available to provide summaries of transactions as they have been recorded in the system to aid reconciliation should there be any discrepancies.

4.4   Section 2.3.1

This is an example of a hypothetical issue which might possibly have occurred, but for which there is no evidence of it having occurred. I note that Professor McLachlan accepts the fact that if the screen was poorly calibrated that a user might be expected to notice incorrect selection of menu items very easily and hence that there was an issue.

4.5   Section 2.3.2

This section purely says that if the User Interface design was poor, then it might lead to errors and that Post Office has not allowed an audit of the User Interface design.

There is nothing here that indicates any aspect of the User Interface design that presents any issues.

4.6   Section 2.3.3

The analysis I carried out of failed Debit card transactions is included in the embedded document in App B of Professor McLachlan's report.

Although the Fast Cash button is potentially a source of errors, there is nothing to indicate that its misuse has actually caused any errors.

4.7   Section 2.3.4

Training is outside my scope of expertise to it is up to Post Office Ltd to comment on this section.

However I accept that there were significant discrepancies on most days between the System's view of the Cash Holding and the Cash that was Declared as being on hand each day. I also accept that the list of possible explanations for this.

4.8 Section 3.1

It might be helpful if Post Office Ltd could explain the circumstances under which they monitor Discrepancies and under what circumstances they investigate them. It is clear that there were significant discrepancies at the end of each period, most of which were settled centrally (meaning that the postmaster wanted the discrepancy deducted from their pay). I have no knowledge of what are the typical levels of such discrepancies, but it does seem surprising that they were not investigated. I did note that the largest such discrepancy was subsequently resolved via Transaction Correction, and so clearly there was communication between the postmaster and Post Office Ltd in this case.

4.9 Section 4.4

I accept that this was the position at the end of the meeting. However I have since realised that agreeing the report as being a Joint Opinion, meant that I fully accepted everything in the report. As this report shows, although I accept the facts in the majority of the report, I do not accept the way in which they are presented. There are also some minor cases where I do not accept the facts.

4.10 Appendix D

I have restricted my analysis of what has happened in Rinkfield to the period 1st June 2008 to 30th June 2009. I note that the list of Transactions Corrections goes back to 2006. I am also aware that Professor McLachlan has classified them adding in Column L "Type" based on the words in Text 2.

I have no problem with this classification, but it is not clear what this is attempting to show and so I cannot comment as to the accuracy of such classification.

4.11 Appendix H

I am not completely clear as to how accurately this data has been produced. In particular I note that the total value in this spreadsheet is £35,134,446.01, while I make the total value to be £35,127,746.14. In particular as Horizon uses double entry bookkeeping I am surprised that Professor McLachlan's total is an odd number of pence. However I don't feel it worth looking for the missing £7,000 since I'm not sure exactly what the relevance of these totals are.

4.12 Appendix K

This spreadsheet has taken a subset of the events (excluding the report printed events of which there are a very large number), and from these extracted those of type Variance Check Discrepancy. I suspect (but have not checked) that these Variance

Check Discrepancies will correlate fairly well with differences I've recorded in column *Difference* in sheet *Correlation* in spreadsheet *CashMovements.xlsx* described in section 5.1. The fact that there is a variance on most days may well reflect poor counting of cash on hand. The fact that such Variances were identified on a regular basis and not addressed, does reflect on bad practice within the branch. A large discrepancy should be considered as an indication that something has not been entered on the system correctly and needs investigating. I note that there are some larger Discrepancies in this spreadsheet than in my Cash analysis. This is probably due to the fact that on some occasions the large variance did cause an investigation and presumably resulted in either further transactions being entered or the Cash on Hand being re-declared to correct the issue. In my view it is only the last Variance in a day that is relevant and so I excluded earlier declarations from my analysis.

4.13   Appendix L

All though the spreadsheet embedded in section 14.2 is called *Variance Check Discrepancies by Date*, it appears to be providing an analysis of a number of seemingly arbitrary products. As there is no explanation as to what is the intention behind this data I am unable to comment further. I believe that we had agreed on Tuesday 8th February that Professor McLachlan would produce a chart showing Discrepancies based on the data I provided him with which is part of Appendix B.

5.   Analysis included in Professor McLachlan's Report

The follow reproduces some analysis that I have carried out of data from the Rinkfield Branch which has been included in Professor McLachlan's report in Appendix B.

5.1   Cash Oddities

The underlying detail is in spreadsheet CashMovements.xls *embedded here.*

CashMovements.xls

The spreadsheet is described in Appendix A (section 7).

An analysis has been carried out to correlate the following 3 sets of data:

- Daily cash movements as recorded as Cash transactions on Horizon
- Daily Cash Declarations
- Opening Cash Figures when the Stock unit is balanced (normally weekly)

In particular it would be expected when the Stock Unit is balanced, then the last Cash Declaration matches :

- the Opening Cash Figure for the next period
- the cumulative System Cash position

FUJITSU RESTRICTED (COMMERCIAL IN CONFIDENCE)

In general this is the case. However there were a number of occasions when this was not so. The following subsections examine all these cases and provides and explanation in each case.

5.1.1 Last Cash Declaration does not match the Opening Cash Figure for the next period

This means that the cash position must have changed during the Balancing Process. The only way that that can happen is when Clearing Local Suspense prior to rolling over into a new TP.

Looking through all Balances during the year, there is Local Suspense to be cleared at the end of each Period. It is only cleared to cash once (when there was a surplus) and that is on 20/08/2008 for £291.74 which is the only example of these not matching.

On two other occasions Local Suspense is cleared by Cheque (when it is below the £150 Settle Centrally limit) and the other 10 balances were all Settled Centrally (and were all Losses – a total of £11,817.01).

5.1.2 Last Cash Declaration does not match the Cumulative System Cash Position

A possible explanation for this is that transactions in the new BP were carried out after the rollover, but on the same day. This can be checked by looking for transactions after the rollover time and checking to see if the cash values match the Cumulative Difference and if so there is nothing to worry about. In all cases of mismatches (and they are listed below), this was the case.

Date	Diff	Cumulative Difference	Comment
20/08/2008	-£291.74	£464.26	Cash Txn for -£291.74 and £756.00 done during / after balancing (A&L Cash Deposit)
03/09/2008	£0.00	£520.00	Cash Tx for £520.00 done after balancing (A&L Cash Deposit)
10/09/2008	£0.00	£580.00	Cash Tx for £10 and £570.00 done after balancing (A&L Cash Deposit)
17/09/2008	£0.00	£810.00	Cash Tx for £810.00 done after balancing (A&L Cash Deposit)
24/09/2008	£0.00	£300.00	Cash Tx for £300.00 done after balancing (A&L Cash Deposit of £500 and Lloyds withdrawal)
08/10/2008	£0.00	£300.00	Cash Tx for £300.00 done after balancing (A&L Cash Deposit)
15/10/2008	£0.00	£380.58	Cash Tx for £380.58 done after balancing (A&L Cash Deposit)
22/10/2008	£0.00	£600.00	Cash Tx for £600.00 done after balancing (A&L Cash Deposit)

05/11/2008	£0.00	£762.00	Cash Tx for £762.00 done after balancing (A&L Cash Deposit)
12/11/2008	£0.00	£516.16	Cash Tx for £516.16 done after balancing (A&L Cash Deposit)
03/12/2008		£330.00	Cash Tx for £330.00 done after balancing (A&L Cash Deposit)
30/12/2008	£0.00	£817.00	Cash Tx for £507.00 (various) and £310.00 done after balancing (A&L Cash Deposit)
04/03/2009	£0.00	£318.00	Cash Tx for £318.00 done after balancing (A&L Cash Deposit)
18/03/2009	£0.00	£817.00	Cash Tx for £817.00 done after balancing (A&L Cash Deposit)
25/03/2009	£0.00	£300.00	Cash Tx for £300.00 done after balancing (A&L Cash Deposit)
01/04/2009	£0.00	-£39.56	Cash Reversal for £39.56
13/05/2009	£0.00	£750.00	Cash Tx for £750.00 done after balancing (A&L Cash Deposit)
20/05/2009	£0.00	£500.00	Cash Tx for £500.00 done after balancing (A&L Cash Deposit)
03/06/2009	£0.00	£433.00	Cash Tx for £53.00 (paystation) and £380.00 done after balancing (A&L Cash Deposit)

When doing this investigation I found that in most cases these transactions were online cash deposits to A&L (Alliance and Leicester Bank – now part of Santander).

Unfortunately the Transactions Extract did not include the full details of the transactions so I went to the raw logs and extracted details of all A&L Cash Deposits during the 13 months. I did that by looking for all records containing the string <ProductNo>6478</ProductNo> (Product 6478 is an A&L Cash Deposit).

From this I could see that most of these A&L Cash deposits used the same PAN 5603730042295255, which I have subsequently been told belongs to the defendant. (The exception was on 03/12/2008.)

Looking over all the A&L Deposits there are 288 payments using this PAN for a total value of £152,556.22. This represents nearly one transaction every day and looking at them, the bulk of them were carried out outside normal working hours (ie before 9am or after 5:30pm). Note that there are about 948 A&L Deposits in total.

5.2 Analysis of Transactions associated with Rejected Credit Cards

Charles McLachlan has provided me with a spreadsheet *Card Product Ids Rejected Card Payments.xls* where he has identified cases where following a failed Debit / Credit Card payment, the Customer Session has been settled to Cash. This is to

---

support the claim that it may be possible to not notice the fact that the Debit / Credit Card payment had failed and to press Fast Cash to complete the session and not realised that no cash has been taken. I had started a similar analysis, and am happy to accept the 36 Customer Sessions that Charles identifies in sheet *Unique FASTCASH possibles* as being the ones that may be relevant.

> *I did note that when identifying possible failed Debit / Credit Card payments in sheet* Card Product Ids Rejected Card, *then Charles has ignored Product 7343* Maestro Int DC Payment. *There are 2 sessions where this was used as a payment and failed:*
>
> ♦ *44-252418-3-3643679-1*
>
> ♦ *44-252418-2-3559281-1*
>
> *I've checked both these sessions and I don't believe that they merit further investigation.*

I also accept that the total cash value of these 36 sessions is £19,775.87. However rather than examining all of these sessions, I feel that if we examine those for which the Cash value is £500 or more (8 sessions), then the value of the remaining sessions (£1,178.60 in total) can be considered immaterial.

Looking at these 8 sessions we have:

SessionId	Date	User	SaleValue	Comment
44-252418-2-3092831-2	15-Jul-08	KM	-£1,564.31	Covered by TC 6000214961112542000
44-252418-2-3092977-1	15-Jul-08	KM	-£1,564.31	Covered by TC 6000214961112542000
44-252418-2-3093049-1	15-Jul-08	KM	-£559.71	Covered by TC 6000214961112542000
44-252418-2-3093070-1	15-Jul-08	KM	-£500.00	Covered by TC 6000214961112542000
44-252418-2-3552143-1	19-Mar-09	KM	-£827.39	This was reversed in session 44-252418-3-3831002-1 at 11:56
44-252418-2-3556898-1	21-Mar-09	KM	-£4,988.45	This was reversed in session 44-252418-2-3556939-1 at 09:24
44-252418-3-3742463-1	22-Jan-09	BT	-£5,733.90	Session 44-252418-2-3440258-1 at 13:26 shows a Cheque for £5,733.90 being substituted for cash
44-252418-3-3828004-1	18-Mar-09	JC	-£1,527.39	There were 2 reversals in sessions 44-252418-2-3548869-1 and 44-252418-2-3548883-1 totalling this amount (the original session had two transactions and so were reversed separately)
44-252418-3-3910478-1	05-May-09	AT	-£1,331.81	This was reversed in session 44-252418-2-3647066-1 at 16:48

(User column annotated "GRO")

I believe that this shows that in all cases the failure of the Debit / Credit Card payment was noticed and so had no long term impact on the Branch's cash position.

---

6. Further analysis not included in Professor McLachlan's Report

6.1 Back Office Analysis

At the request of Charles McLachlan, I've carried out some further analysis – particularly of Back Office transactions.

These are included in the spreadsheet *Discrepancies.xlsx*.

Discrepancies.xlsx

In order to do this, I've extracted all Transactions in the following Modes into a separate spreadsheet *Discrepancies.xlsx* in sheet *Discrepancies etc*:

- DDN / DDP (Discrepancies when Balancing)
- SAP / SAN (Stock Adjustments)
- MG / HD (Transaction Corrections)
- HK (Housekeeping – including Clearing Local Suspense when Balancing)

I have further categorised the Mode HK transactions as follows:

- Audit

  These were carried out by the Auditor on 8/6/2009 to write off the Shortfall before installing a new Postmaster

- BAU

  These were normal Business As Usual Housekeeping transactions carried out using the normal HK menu

  I note that they are all related to Rem discrepancies.

  I also note that many of the TCs are for Rem Discrepancies. Some of them are clearly correcting such Remittance errors.

- Clear LS

  These are the Housekeeping transactions carried out when Rolling over a Branch to a new TP to clear any identified discrepancies. They are analysed further in section 6.1.1.

- TC

  These are where a TC has been accepted for a Rem discrepancy. Such TCs are normally settled to cash with instructions to then clear the Rem Discrepancy using HK.

The Transaction Corrections are discussed further in section 6.1.2

6.1.1 Clearing Local Suspense

The following table shows the Cash Discrepancies identified for each Period and how the were settled:

User		Date	Time	ProductNo	Prod Name	Amount
GR		18-Jun-2008	17:26:58	2	Cheque	-£27.44
KM		17-Jul-2008	17:37:38	6486	Settle centrally	-£4,792.32
JC		20-Aug-2008	18:43:05	1	Cash	£291.74
KM		17-Sep-2008	18:15:14	6486	Settle centrally	-£770.11
KM		15-Oct-2008	17:56:12	6486	Settle centrally	-£723.89
AN		19-Nov-2008	18:42:30	6486	Settle centrally	-£697.26
KM	GRO	17-Dec-2008	20:44:06	6486	Settle centrally	-£189.22
KM		14-Jan-2009	19:23:18	2	Cheque	-£31.08
KM		18-Feb-2009	19:01:35	6486	Settle centrally	-£311.47
KM		18-Mar-2009	18:52:18	6486	Settle centrally	-£1,711.88
KM		15-Apr-2009	18:57:37	6486	Settle centrally	-£1,052.99
KM		20-May-2009	17:45:13	6486	Settle centrally	-£1,251.57
SU		17-Jun-2009	18:06:20	6486	Settle centrally	-£316.30

Note that the system doesn't allow a User to settle centrally for amounts less than £150, which is presumably why 2 periods were settled by cheque as the amounts were small in these cases. The one case where there was a surplus, then the cash was withdrawn. I note that this was a different User from normal.

I also note that the Settle Centrally on 17/7/2008 relates to TC 6000214961125 42000 and problems on 15th July. (Though the amount doesn't match exactly.)

Note that it is my understanding that such Losses that are Settled Centrally are likely to result in subsequent deductions from the postmaster's remuneration.

6.1.2 Analysis of Transaction Corrections

I have copied in details of Transaction Corrections provided by Post Office Ltd in Andrew Winn's witness statement into sheet *TCs from POL*. I've also extracted all Transaction Corrections processed in the Branch into sheet *TCs in Branch*.

I've then attempted to correlate them for the overlapping period. I've done this as follows:

- In sheet *TCs in Branch* I've added in a column J which has the TC reference for each TC. I've identified 2 TCs which do not appear on the POL list (one of which was after the new Postmaster had taken over and so presumably beyond the scope of the POL list)

- In sheet *TCs from POL* I've added two columns:
  - Prod: This uses a lookup table to convert the Article into a Horizon Product to make it easier to match with the TCs in Horizon
  - OK? To indicate that a matching TC was found

- I note that TC 600040045712542000 is marked in POL's spreadsheet as being for £6.30, but was processed in Horizon as £63

---

7. Appendix A: Description of CashMovements spreadsheet

I have received from Penny Thomas data associated with ARQs 515 to 527 covering this period. For each month I have the following:

- Transactions Spreadsheet
- Events Spreadsheet
- Raw Horizon data in XML format

I have put together the info as follows:

- Transactions.xlsx

  Transactions spreadsheets for the full period

  I've enriched this with details of Product Name and Level info for further analysis

- Events.xlsx

  Events spreadsheets for the full period

  Declarations and Rollover Events have been extracted and analysed further

- Tidied.openingFigs.xlsx

  Extracts from Raw Logs for Opening Figures for the full period

  Cash Opening Figures have been extracted for further analysis

- CashMovements.xlsx

  Analysis of Cash position from the other 3 sources. The Sheets in this spreadsheet are:

Sheet	Useage
Daily Cash Movements	This has been derived from the Cash Transactions by adding up the SaleValue of all Cash Transactions (ie Product 1) from the Transactions Log for each day.
Cash Declarations	This has been derived from the Event Logs by looking for all events of type Declaration Complete and then further analysing these to extract the Type, Value and Till from the Event Text. Checks were also made for multiple declarations of a given type and Till for a day and those other than the last were discarded. Checks were also made for incomplete declarations (ie where no all Tills declared on a day) and these were also excluded (this only occurred for Stamps). These were then summed to produce the final declaration for each day in this sheet.
Prod 1 Opening Figures	I searched the raw logs for all messages containing the string "OpeningFiguresId" and from these I extracted all those for Container (ie Stock Unit) AA for ProdcutNo 1 (ie Cash)
BP Rollover Info	In the Event Log I extracted all Events of Type *Rollover Complete* and extracted from the Event text the Stock unit, the old and new TP and BP. From this I was able to identify the dates on which SU rollovers took place
TP Rollover Info	In the Event Log I extracted all Events of Type *Branch TP Rolled* and extracted from the Event text the old and new TP. From this I was able to identify the dates on which Branch rollovers took place
Month Lookup	A table to help convert dates from the Riposte format into an Excel format
Correlation	See below

The key sheet here is "Correlation" which pulls together all the info about Cash for each day during the period. The columns are as follows:

Column	Useage
Date	Date Note that I have included a "Start Point" column where I've inserted assumed figures such that the initial period balances correctly.
Cash Movement	The sum of all Cash Transactions in all Modes on that date Copied from Sheet *Daily Cash Movements*. It is blank if there is no entry in that sheet (eg Sundays and Bank Holidays when the Branch is presumably shut)
Cumulative Cash	Cumulative Cash position based on Transactions and an assumed Start Position such that Difference is zero at first balance period
Declaration	Copied from Sheet *Cash Declarations*. The entry for the previous day is carried forward if there is no entry in that sheet (eg Sundays and Bank Holidays when the Branch is presumably shut)
Opening Figure	Copied from sheet *Prod 1 Opening Figures*. It is blank if there is no entry in that sheet (eg any day when the Branch is not Balanced). In practice this is only present on Wednesdays.
Diff	This is the difference between the *Cash Declaration* column and the *Opening Figure* column (if not Blank). They should normally be the same.
Decl Movement	This looks at the differences between successive entries in Column *Declaration* to allow comparison with the cash movements.
Difference	This looks at the difference between the *Cash Movement* and the *Decl Movement* columns.
Cumulative Difference	This looks at the cumulative differences which is a better comparison. On Balancing days this should normally be zero. On other days it reflects the accuracy of the daily Cash Declarations.
TP Rollover	Set to Y if Date was TP rollover
BP Rollover	Set to Y if Date was BP rollover