# Deloitte.

# Ministry of Education
# Novopay Technical Review

# Final Report

**19 March 2013**

# Contents

# Executive Summary

## The Novopay implementation has caused significant issues and frustrations.

The Novopay education payroll system went live in August 2012. The system supports an end-to-end payroll service provided by Talent2. The payroll service pays approximately 110,000 individuals over the course of a year. These people are employed by approximately 2,500 schools under 15 collective agreements.

The Novopay payroll system has suffered from performance issues. While the majority of payees have received the right pay at the right time, a significant minority has not. School staff and principals, both as individuals and through their professional organisations, have raised concerns about the efficiency and effectiveness of the Novopay payroll system. There has been a great deal of adverse publicity and public interest.

## The sector needs answers to key questions in order to have confidence in Novopay.

The service contract between the Crown and Talent2 runs to 31 July 2020 with a potential further term of two years. But many in the sector have low confidence that the Novopay solution is suitable for the long term because of persistent issues being experienced.

In response to these serious stakeholder concerns, the Minister with responsibility for Novopay has initiated a series of steps to determine the most appropriate way forward. One of the first steps is the Novopay Technical Review.

The overall goal of this Review, as defined in the Terms of Reference, is to assess the core Novopay payroll software platforms with respect to their stability and make recommendations to enable the Ministry to ensure that immediate issues are resolved in the short term and that the Ministry has suitable software platforms in place for the eight to ten year delivery of schools payroll.

The Terms of Reference require the following key questions to be addressed:

1. How stable are the Novopay core software platforms for the current delivery of schools payroll?

2. Can the Novopay core software platforms provide a technically stable platform for the delivery of schools payroll for the next eight to ten years?

3. What needs to occur immediately to give timely and effective resolution of the outstanding issues?

4. What needs to occur in the medium to long term to ensure that the Ministry has suitable software platforms in place for the eight to ten year delivery of the schools payroll?

5. How effective are the implemented quality assurance processes to ensure accuracy of manually captured data?

It is important to note that this Review is focussed on the current state of the Novopay system, and does not cover what has happened to create this situation in terms of allocating responsibility or reviewing prior decisions such as the selection of Talent2. These broader questions and issues are matters that will be addressed by the Ministerial Inquiry, to which the Review will be one input.

Questions 1, 2 and 5 are addressed in our conclusion, and questions 3 and 4 are addressed in our recommendations.

# Conclusions

**Key question 1:** While the underlying payroll calculator is consistently processing school pay runs, and producing accurate results for the majority of salaried payees, our assessment is that overall the core software platforms are not stable for the current delivery of schools payroll. This is driven primarily by a backlog of system issues (predominantly relating to customised functionality), and difficulties with the entry of data and interpretation of reports by schools.

**Key question 2:** While we believe that the Novopay core software platforms can provide a stable platform for the delivery of schools payroll for the next eight to ten years, this would require materially elevated and sustained effort and capability by both the Ministry and Talent2.

**Key question 5:** The quality assurance processes have not adequately prevented incorrect data from being entered, contributing to the business issues experienced. Key reasons include inadequate pre-validation of data, usability issues, insufficient monitoring of data entry and reporting issues.

Implementation of any new, complex payroll system will create a certain level of errors. These tend to come about because it is impractical to fully test all possible business scenarios before go-live, and because change can be difficult for users.

It is not unusual for even stable, mature Payroll systems to make errors and require manual processes. Indeed, the previous schools' payroll solution (that had been in place since 1996) also created errors that required management.

The defect numbers used in this Report are taken from the Ministry Novopay Defect Resolution Reports and the Novopay defect management tool, HP Quality Centre, which is managed by Talent2. Note that this tool captures system issues, but is also used to log other, non-system issues. We have reported only on the system-related issues, as advised by Talent2, and referred to these as defects. This will include clear instances where the system does not meet specification, as well as examples where specification may be met but the result is not fit for business purposes.

Currently, the defects are divided into two groups to help manage their resolution. Approximately 280 are being managed as part of the remediation programme that has recently been established, and the remaining items are being managed by Talent2's standard system support structure. We have been advised by the Ministry that prior to the remediation programme there were 613 open defects. As at 7 March 2013, the defect management tool showed 500 open defects.

A 'stable' system does not mean that all errors have been eliminated or that all stakeholder expectations have been met. Stability is reflected by well understood, controlled and predictable system outputs and support activity, based on data of sufficient quality, as shown in the table below:

| System Characteristic | What we would expect from a stable system | What we have observed |
|---|---|---|
| Number of business issues | A known number of well-defined business issues which is consistent over time and largely predictable. 0.5 – 1.0% errors in each pay run would not be unusual. | A largely unpredictable pattern of business issues which are not well defined. Recent analysis shows complaints about payments to approximately 1% of payees in pay period 25[1]. |
| Use of the system | Well-understood and consistent use of the system by users. | Inconsistent use of the system by end users who are uncertain of system behaviour and cannot reliably execute their tasks. Little management control by Talent2 over manual work-arounds that are implemented in response to issues, and therefore inadequate Ministry visibility. |
| Number of open defects | A known, manageable number of well-defined system defects. No 'fatal' defects and minimal 'very serious' defects which are closed rapidly. | A backlog of 500 open defects, including 44 'very serious' defects, some of which have been open for some time[2]. There are currently no 'fatal' defects open. |

---

[1] PriceWaterhouseCoopers Pay Period 25 Complaints Report

[2] Novopay Defect Resolution Reports and HPQC Defect Management Tool extract as at 7 March 2013

| System Characteristic | What we would expect from a stable system | What we have observed |
|---|---|---|
| Support processes | Well-understood, repeatable processes which consistently and efficiently manage system performance and maintenance. | Processes which are beginning to settle into a repeatable pattern, delivering consistent system performance but only very slow system maintenance. |
| System architecture | Well-understood and suitable system components on supported technology with a clear upgrade path. | Suitable system components on supported (though aging) technology, with dependence on key personnel for system knowledge and limited long-term plans. |
| Data | Information is generally reliable and of high quality. Some contained and known areas of data quality risk or poor quality. Processes and monitoring in place to ensure data quality is adequate for business needs. | There is no evidence that the database is corrupted, however risks to data quality are not well defined. Data quality is insufficiently considered in tactical responses. No formal process in place to assess and manage data quality. |

The conclusions are based on the Review's key findings:

- In some areas system functionality does not adequately support the business processes.

- Usability issues and lack of data input validations contribute to processing errors.

- School management visibility and control is limited by reports that are sometimes poorly presented or inconsistent.

- Data quality has been affected by system issues, raising the risk of future errors.

- Quality controls on data entry have not adequately prevented errors

- A high degree of customisation in high-impact areas has made on-going development more difficult.

- Aspects of the application architecture make customisation difficult.

- Service support processes have struggled to manage the volume of issues

## Recommendations

Over the next three months, the following needs to be achieved:

- The number of business issues being experienced needs to be reduced to a consistent level below 1% of staff reporting issues in any pay period, where errors are largely predictable in nature and managed through defined workarounds.

- Outstanding defects, particularly in high severity categories, need to be reduced, for example to no 'fatal' defects and no more than 10 'very serious' defects. As at 7 March 2013 there were no 'fatal' and 44 'very serious' defects.

- Processes that support the solution and management of work-arounds need to be raised to a mature level.

- The risk of poor data in the system through work-arounds and point fixes needs to be mitigated through specific analysis and quality management plans.

**Key question 3:** Our recommended actions to occur immediately are:

1. Strengthen the current remediation programme to incorporate our recommendations, then finalise, communicate and execute the plan.

2. Establish robust performance management processes and checkpoints to monitor remediation progress.

3. Establish a dedicated team, with clear leadership accountability to manage resolution end-to-end. Talent2 staffing needs to be increased, including a doubling of business consultants.

4. Implement stronger processes to prioritise and analyse issues, and manage the system support processes.

5. Increase engagement, communication and training to build user confidence. Schools should receive greater support depending on their needs.
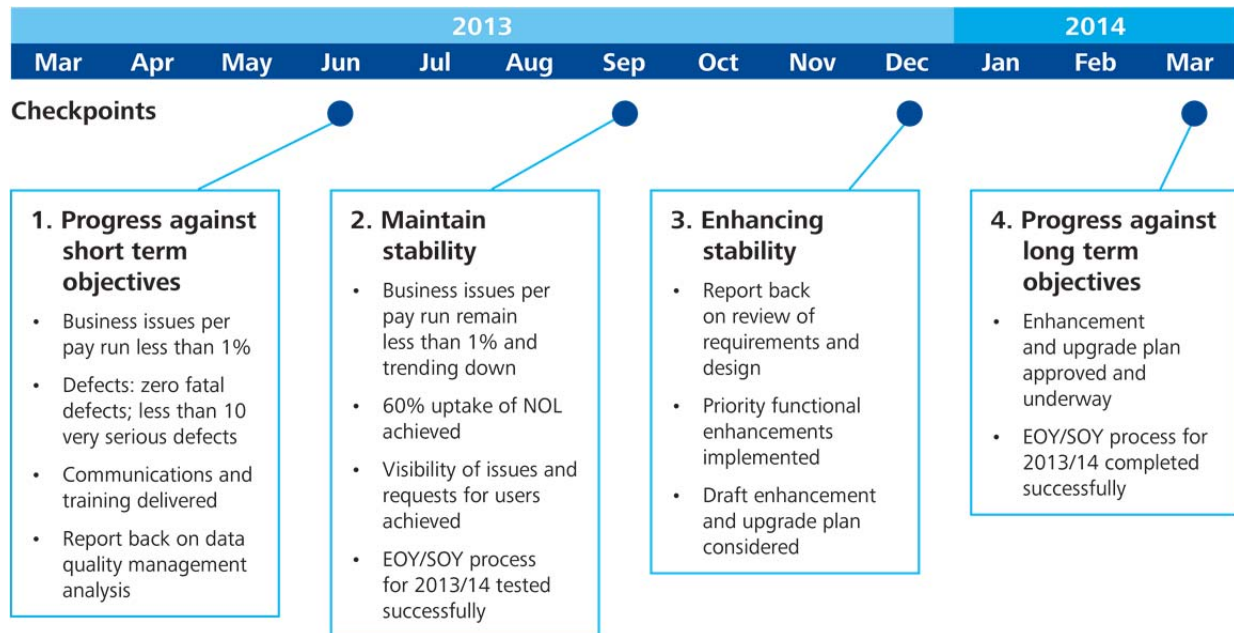
In addition to successful achievement of the short term objectives above, the following needs to be achieved over the next 12 months, in order for the Novopay system to remain stable for ten years:

- The number of business issues being experienced needs to be maintained at less than 1% in each pay period, with a predictable pattern of errors and established processes to handle each type of error.

- The EOY/SOY process for 2013/14 needs to be planned, built, tested and completed successfully.

- Stakeholders need to have confidence that the solution will be stable and serve requirements.

- Successful implementation of legislative changes, such as the upcoming tax changes.

- Significant progress on strengthening the functionality of the system.

**Key question 4:** Our recommended actions to occur over the next 3-12 months are:

6. Carry out a complete a review of the business requirements and solution design.

7. Develop an upgrade and enhancement plan.

8. Carry out specific build, test and deploy plans for key business processes such as EOY/SOY.

9. Provide effective communication of service requests and issues to users (3-6 months).

We have developed the following illustrative set of checkpoints for monitoring the implementation of our recommendations:



| | 2013 | | | | | | | | | 2014 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar |

**Checkpoints**

**1. Progress against short term objectives**
- Business issues per pay run less than 1%
- Defects: zero fatal defects; less than 10 very serious defects
- Communications and training delivered
- Report back on data quality management analysis

**2. Maintain stability**
- Business issues per pay run remain less than 1% and trending down
- 60% uptake of NOL achieved
- Visibility of issues and requests for users achieved
- EOY/SOY process for 2013/14 tested successfully

**3. Enhancing stability**
- Report back on review of requirements and design
- Priority functional enhancements implemented
- Draft enhancement and upgrade plan considered

**4. Progress against long term objectives**
- Enhancement and upgrade plan approved and underway
- EOY/SOY process for 2013/14 completed successfully

## Next steps

PriceWaterhouseCoopers has developed a remediation programme ('the Programme') on behalf of the Ministry in consultation with Talent2. The Programme has been estimated at 20 weeks duration.

The Programme covers some of our recommendations, but should now be strengthened to encompass all of our recommendations. In particular:

- We recommend simplified governance and programme management mechanisms that can expedite decision-making and include strong, independent subject matter expertise.

- We recommend establishment of clear performance targets – for example, based on the objectives above – and processes to manage and monitor performance of the remediation programme.

- We recommend a critical assessment of staffing needs and commitments. As the Programme is already underway each work stream should have clear staffing commitments but these are not evident. Contention on key staff is a significant risk, particularly given the amount of parallel work proposed.

- We recommend several changes to the work streams within the programme, particularly inclusion of work to test and manage data quality (more comprehensively than a focus on data entry accuracy), work to review the solution end-to-end (from business requirements to design), and specific planning for EOY/SOY processes.

- The schedule of parallel work streams is ambitious, particularly given that staffing has not yet been confirmed and needs to increase. We therefore also recommend that sequencing and timing of work streams is reassessed so that it can be matched to delivery capacity.

# Introduction

## Background

The Novopay education payroll system went live in August 2012.  The system supports an end-to-end payroll service provided by Talent2.   Previously, a payroll service had been provided by Datacom, supported by its own system. The service contract between the Crown and Talent2 runs to 31 July 2020 with a potential further term of two years.

The payroll service pays approximately 110,000 individuals over the course of a year. These people are employed by approximately 2,500 schools under 15 collective agreements.

The Novopay payroll system has suffered from performance issues.  While the majority of payees have received the right pay at the right time, a significant minority has not. School staff and principals, both as individuals and through their professional organisations, have raised concerns about the efficiency and effectiveness of the Novopay payroll system. There has been a great deal of adverse publicity and public interest.

The Minister with responsibility for Novopay has initiated a series of steps to help determine the way forward. As part of this process the Minister requested the Ministry of Education to commission the Novopay Technical Review ('the Review').

## Terms of reference

The overall goal of the Review is to assess the core Novopay payroll software platforms with respect to their stability and make recommendations to enable the Ministry to ensure that immediate issues are resolved in the short term and that the Ministry has suitable software platforms in place for the eight to ten year delivery of the schools payroll.

The Terms of Reference required the Review to answer the following key questions:

1. How stable are the Novopay core software platforms for the current delivery of schools payroll?

2. Can the Novopay core software platforms provide a technically stable platform for the delivery of schools payroll for the next eight to ten years?

3. What needs to occur immediately to give timely and effective resolution of the outstanding issues?

4. What needs to occur in the medium to long term to ensure that the Ministry has suitable software platforms in place for the eight to ten year delivery of the schools payroll?

5. How effective are the implemented quality assurance processes to ensure accuracy of manually captured data?

The Terms of Reference are included in Appendix B.

## Purpose of this document

This document represents the output of the Novopay Technical Review, addressing the key questions described above.

The purpose of this document is not to describe how the current situation was reached nor allocate responsibility. This document is also not intended to determine by itself whether or not the current systems should be replaced, as this decision requires consideration of a number of factors outside the Review's scope (such as commercial factors).

The following areas are outside of the Review's scope:

1. Review of the solution selection process or implementation project

2. Detailed review of the functional fit of the core systems to the requirements, or of the quality of the requirements themselves

3. Determination of the reasons for any system weaknesses identified

4. Review of the commercial arrangements between the Crown and Talent2, including the overall business model, contractual terms and pricing

5. Review of the capabilities of Talent2, beyond those directly relevant to maintaining a stable Novopay system

6. Review of the Ministry or broader sector IT environment

This Report is an input to the Ministerial Inquiry, which will consider many related aspects of the Novopay service.

## Structure of this Report

This Report contains the following sections:

| | |
|---|---|
| **Introduction** | Provides the background, purpose and other administrative information. |
| **Context** | Provides an overview of relevant background information which may assist readers with the interpretation of the remainder of the Report. |
| **Key Findings** | Presents the key findings from the Review, which support the answers to the key questions in the Terms of Reference. |
| **Conclusions** | Presents the conclusions of the Review, which answer key questions 1, 2 and 5 from the Terms of Reference. |
| **Recommendations** | Presents the recommendations of the Review, which answer key questions 3 and 4 from the Terms of Reference. |
| **Next Steps: Remediation** | Outlines the draft remediation plan that has been developed in parallel with this Review, and how well it is aligned with our recommendations. This is required in order to understand how current activity would need to change in order to implement our recommendations. |

Appendices provide a glossary, the Terms of Reference, a summary of information sources, and some analysis of the system defect data used in the Review.

## Disclaimer and limitations

This Report is prepared in accordance with the specific Terms of Reference between Deloitte New Zealand and the Ministry, and for no other purpose. Other than our responsibilities to the Ministry, neither Deloitte New Zealand nor any member of the network of Deloitte Touche Tohmatsu member firms, nor any partner, director, employee or agent of Deloitte New Zealand or any member of the network of Deloitte Touche

Tohmatsu member firms, accepts or assumes any duty of care or liability to any party in connection with this Report, the Review or Deloitte New Zealand's engagement with the Ministry.

This Report is based upon information provided by the Ministry, its contracted service providers and interviewees. Deloitte New Zealand has reviewed, and relied upon, this information. Deloitte New Zealand has assumed that the information provided was reliable, complete and not misleading, and that no material facts have been withheld.

Neither Deloitte New Zealand nor any member of the network of Deloitte Touche Tohmatsu member firms, nor any partner, director, employee or agent of Deloitte New Zealand or any member of the network of Deloitte Touche Tohmatsu member firms, accept any responsibility or liability for any loss, damage, expense or other consequence of such information being inaccurate, incomplete, unreliable or not soundly based, or for any errors in the analysis, statements or views provided in this Report.

This Report dated 8 March 2013 was prepared based on the information provided at the time. Deloitte New Zealand has no obligation to update this Report or revise the information contained in this Report due to events and information subsequent to the date of this Report.

## Acknowledgments

Throughout the Review, we have had the full cooperation and assistance of the Ministry's staff and management team.

Talent2 and its delivery partners have also cooperated in the Review, making information available and participating in interviews.

We would also like to acknowledge the contribution of the school principals and staff who showed us first-hand how they interact with the system, and explained the difficulties they face.

# Context

This section provides an overview of relevant background information which may assist readers with the interpretation of the remainder of the Report.

## Payroll System Construction

In general, payroll systems have two primary components:

1. The core payroll engine, responsible for storing and managing information, running payroll calculations and generating reports. The payroll engine will have a user interface designed for payroll administrators, and will communicate with other systems (such as finance systems and banking systems) through automated interfaces.

2. A self-service interface, which allows payees or administrators to perform standard tasks (such as timesheet entry and leave applications), and view information electronically (such as leave balances and payslips).

These components are provided by commercial payroll system vendors as base versions with functionality to support payroll business processes and comply with local legislation. New Zealand payroll legislation is complex and requires specific functionality, so vendors typically provide a fully-supported New Zealand version of their base product.

A payroll implementation project will configure and customise the base product to meet the specific needs of the organisation. Configuration involves adjusting system settings which govern the behaviour of the system (for example defining the allowances which payees can receive). Customisation involves writing new or modified code to provide functionality that the base product was not designed to provide (for example a new data entry screen or a non-standard report).

Large organisations can rarely rely on an unmodified base product, and it is rarely practical to build a payroll system from scratch.

# Novopay Components

The section below describes the key components of the Novopay service, with further detail provided on the technology components.

*Figure 1: Novopay Components Diagram*
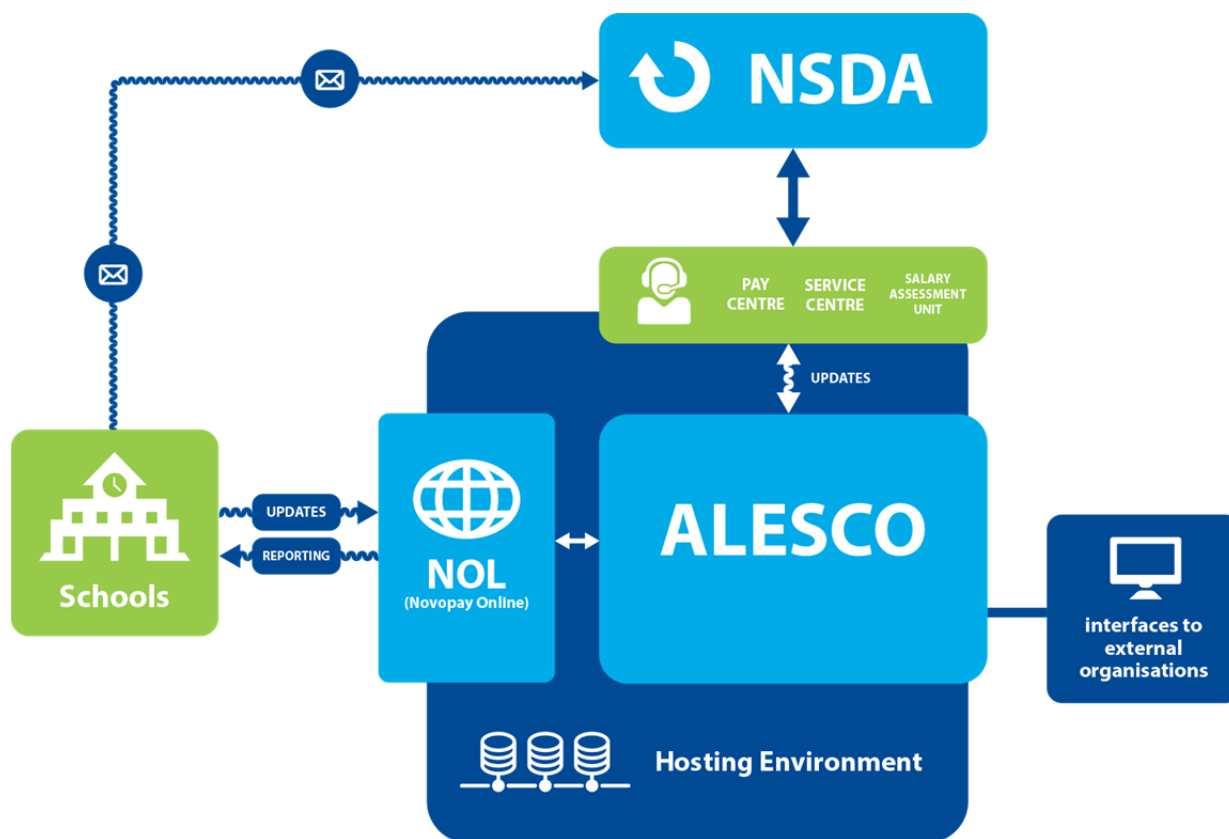


## ALESCO

ALESCO is a commercial software product used for managing and processing payroll information. It is the core payroll engine where information is calculated, processed and settled for each pay period.  ALESCO has a variety of 3$^{rd}$ party interfaces (for example to and from banks).

The ALESCO application is built in Oracle Forms and PL/SQL, using an Oracle database.

Under the Novopay arrangement the ALESCO application is used only by Talent2 staff.

## Novopay Online (NOL)

NOL is an interface used by administrative staff at schools to enter and update employee payroll information. It enables users to view and process employee and payroll information for schools.

The administrative staff access Novopay Online using an authorised username and password from any computer with an internet connection. It is available from 7.00am to 7.00pm, seven days a week.

Schools access Novopay Online through a web browser and do not require any other particular hardware or software.

## Novopay Service Desk Application (NSDA)

NSDA is a workflow tool which manages the processing of forms (for example to request the addition of a new staff member). Users send service and support e-mails to specified addresses that are routed to the tool. It is not part of the payroll system itself.

## Hosting Environment

The system components are hosted in New Zealand data centres on dedicated server and storage hardware. There is a full disaster recovery environment in a separate location.

## Novopay Support Model

The Novopay Service Desk is the single point of contact for users and provides initial support for service enquiries.

Talent2 teams at the Pay Centre provide further support, investigating issues and queries and handling specialist areas (such as debt management).

Issues can be escalated to Talent2 Business Information Systems - a team of system administrators and business consultants who fix or triage issues and determine whether to escalate to specialist teams, such as Talent2 Hosting Services who provide technical infrastructure support.

# Payroll issues

All complex business processes suffer a level of errors and issues, and the introduction of process and system changes typically results in an increased level of errors which can take some time to resolve. This is largely because it is impractical to fully test every possible business scenario before go-live, and because changes to processes and systems can be difficult for users.

In our experience it is not unusual for large payroll systems to go live with defects and produce errors in around 5% of payments in the first few pay runs. This would typically stabilise at less than 1% within three to six months. A well-managed implementation project would expect most of the errors, based on testing results, and plan workarounds and support mechanisms that are communicated to users, and implemented to mitigate the impact on users.

Issues experienced by users and payees can arise from a range of causes, such as inadequate training, backlogs of work from before go-live, gaps in the process or system and system defects. From an end-user perspective it is usually difficult to determine the underlying cause of an issue – what may appear to be random system behaviour could be due to a straightforward data entry error.

The Review is focused on the stability of the system. Accordingly, while we have been mindful of the types of issues being experienced, our work has not sought to identify exhaustively what is causing all business issues.

System issues are predominantly gaps (where the system simply does not support a business activity), defects (where an error prevents the system from working as intended) and weaknesses (where the system works as designed but contributes to business issues, for example by being hard to use).

Good practice requires system issues to be logged and tracked through to resolution. This requires initial analysis to determine the root cause and impacts, and assignment of severity ratings which guides the prioritisation of resolution activity. Issues are then generally resolved through one or a combination of the following:

- Configuration
- Customisation
- Definition of a workaround
- User training or communication
- Modification of data

- Changes to the base product
- Technical changes

If resolution requires a system change of any sort, the change should be developed and tested outside of the live system (on copies of the system set up specifically for this purpose). This requires careful management to ensure that changes are appropriately tested and do not conflict with one another.

Resolution can be made more difficult by the interaction of multiple system issues, and by non-system factors such as complex business processes or inadequate user training.

## Defect numbers in this Report

The defect numbers used in this Report are taken from the Ministry Novopay Defect Resolution Reports and the Novopay defect management tool, HP Quality Centre which is managed by Talent2. Note that this tool captures system issues, but is also used to log other items including:

- Requested future enhancements

- Non-system service delivery issues

- Issues that are still under investigation, which may or may not turn out to be system-related.

In the most recent information made available to the Review (as at 07 March 2013) there are 750 items in the tool. We have been advised by Talent2 that 500 of these are system-related, and we have used that filtered list throughout the Report. For consistency we have referred to these 500 items as defects. This will include clear instances where the system does not meet specification, as well as examples where specification may be met but the result is not fit for business purposes.

Currently, the defects are divided into two groups to help manage their resolution. Approximately 280 are being managed as part of the remediation programme that has recently been established, and the remaining items are being managed by Talent2's standard system support structure. We have been advised by the Ministry that at a point prior to the remediation programme being initiated the total number of open defects was 613.

It should be noted that the additional 250 items in the tool may include items that need to be addressed to provide an effective and stable solution.

# Key Findings

This section presents the key findings from the Review, which support the answers to the key questions in the Terms of Reference.

The following are the key findings of the Review:

- In some areas system functionality does not adequately support the business processes

- Usability issues and lack of data input validations contribute to processing errors

- School management visibility and control is limited by reports that are sometimes poorly presented or inconsistent

- Data quality has been affected by system issues, raising the risk of future errors

- Quality controls on data entry have not adequately prevented errors

- A high degree of customisation in high-impact areas has made on-going development more difficult

- Aspects of the application architecture make customisation difficult

- Service support processes have struggled to manage the volume of issues

This Report focusses on the key findings most relevant to the key questions from the Terms of Reference. More emphasis has been given to areas of weakness in the system rather than those elements which are working as expected. For example, the infrastructure supporting the application appears to be robust and managed appropriately, and 6 months have been completed without a pay day being late.

The key findings are described in greater detail below.

## In some areas system functionality does not adequately support the business processes.

There are several areas where the functionality of the Novopay system does not adequately support business processes, which is reflected by the nature and number of the business issues experienced by payees and the unresolved system defects. Issues with system functionality are widespread, and many are inter-related, magnifying the business impact of individual issues. The issues are predominantly in areas that have been extensively customised.

In some cases, remedial system changes have caused unexpected problems in other areas – for example manual occupancy changes resulting in inconsistences with position fractions and rosters.

Key areas of concern are:

- Annual leave and holiday pay for employees

- End of (School) Year / Start of (School) Year (EOY/SOY)

- Bulk leave and timesheet booking

- Terminations

- Service Accumulation

- Teachers' sick leave

- Debt management and recovery.

Put together, these areas account for around half of total open defects as at 07 March 2013 (237 out of 500). This is illustrated in Figure 2 below, and further details on system defects are provided in Appendix D:

*Figure 2: Number of unresolved defects affecting key areas of concern*
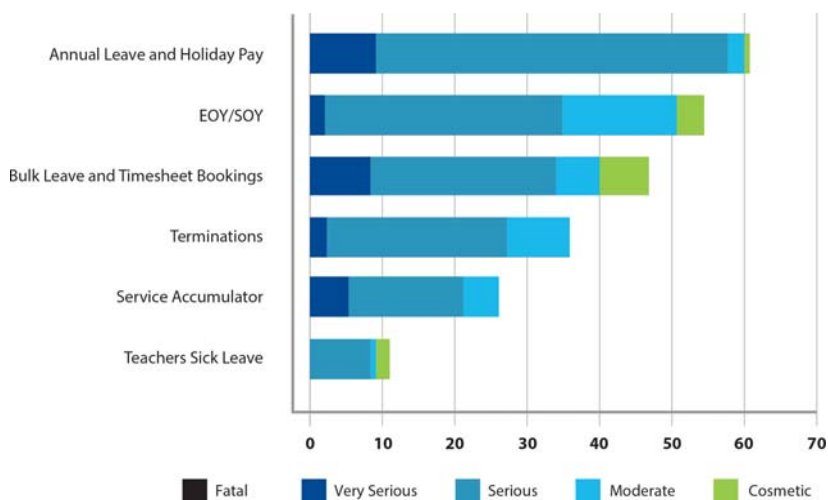


*Source: HP Quality Centre provided by Talent2 on 07 March 2013.*

We describe some of these system issues below.

- There are issues with annual leave and holiday payments for staff, particularly for the fourth vacation in the school year. Many are related to the EOY/SOY issues. Some are a direct result of data fixes, while others are the result of a lack of suitable calculation rules to cater for the more unusual scenarios presented by the process. In general, calculation errors related to non-teachers' holiday pay are due to the quality of leave balances transferred into the new system, rules for allowances to be included for holiday pay calculations, annualised employee holiday pay and school principal holiday pay.

- For the EOY/SOY process, key aspects of the functionality were not working correctly when the process started in late 2012. Issues were found with occupancy data, form validation on Novopay online, termination and employee change. Some data fixes were implemented as a remedial action to seek to ensure staff were terminated and re-hired according to the business process.

- Bulk file processing is particularly important at EOY/SOY and suffered from numerous defects affecting entry of important data. This complicated the EOY/SOY processing and made it more difficult to identify and fix system defects.

- The termination process, which drives the EOY process, uses annual leave payment calculation rules, occupancy changes and year to date totals to calculate employee payments. Many issues are experienced with terminations because of the problems noted above.

- Service accumulation is used to determine an employee's initial salary, their entitlement to service driven benefits such as increments, leave, service driven allowances, and the entitlement to termination benefits in some cases. Defects in this area have resulted in incorrect payments, such as some qualifications not being recognised after a staff member changes schools.

The high number of overpayments processed by the system, primarily due to the issues described above, has also increased the level of debt management activity. Debt recovery is currently managed outside the system, including manual calculations. Schools are faced with complex reconciliation, for example of employer tax payments.

## Usability issues and lack of data input validations contribute to processing errors.

A number of usability issues result in additional user effort, increased risk of incorrect information and contribute to user difficulties. Below are some of these issues:

- Navigation in Novopay Online is not always intuitive and does not consistently facilitate efficient data entry. Common examples are inconsistent tab key behaviour and the lack of linking between multiple screens in a process. There are also visibility issues, such as the Employee Changes Report screen requiring extensive scrolling.

- Some ALESCO configuration presents data to users in complex ways. For example users choose from 537 allowance codes to cater for 130 distinct allowances.

- Some data is presented inconsistently between screens and reports. For example, entering timesheet data for different types of staff is not standardised.

- Online form functionality has not always been accessible due to system defects, leading some users to revert to manual processing through paper-based forms.

- In some cases it is difficult to view submitted information. For example, once timesheet information is submitted there is no way to access that information until a report is available the next day. Users have tried to print the timesheet entry details before posting, in order to keep a record, but limitations on the number of entries on the printout make this an incomplete record. This has sometimes led to uncertainty, non-entry and duplicate entry of data.

- Browser compatibility issues have been reported, some of which are still to be addressed.

According to Ministry and Talent2 staff, user adoption of Novopay online is lower than expected. Some users are bypassing the system by submitting manual forms. This ultimately increases data input errors and delays as well as the demand on the Pay Centre to process high volumes of payroll inputs. In some cases users are avoiding the system and keeping their own manual records, due to their low level of confidence in the data entry process.

## School management visibility and control is limited by reports that are sometimes poorly presented or inconsistent.

The format of some key reports is poorly designed and difficult for schools to interpret.

The Staff Usage and Expenditure ('SUE') report is an example of this with entries for a single employee sometimes spanning several pages. Subtotals are not printed per employee making validation difficult.

Of additional concern to teachers and staff is the layout and content of payslips, which are difficult to read and present confusing descriptions and rates for payments. For example some calculation values in the negative tens of thousands are presented as hourly rates.

In addition to the formatting issues, several key end-of-period reports (such as the SUE report), the Annual Accrual Report and Banking Staffing reports do not always reconcile with each other. Conflicting information and totals are presented raising concerns with users about the integrity of the underlying data.

Because it is difficult to understand or trust the reports, school staff often rely on payees to report cases of overpayments and lodge complaints for incorrect calculations. This reactive approach contributes to the on-going appearance of business issues, creating additional effort and lowering confidence in the system.

Below is an illustration of the number of defects logged against key reports as at 07 March 2013. Further information on defects is provided in Appendix D.

*Figure 3: Number of Defects affecting Novopay reporting*
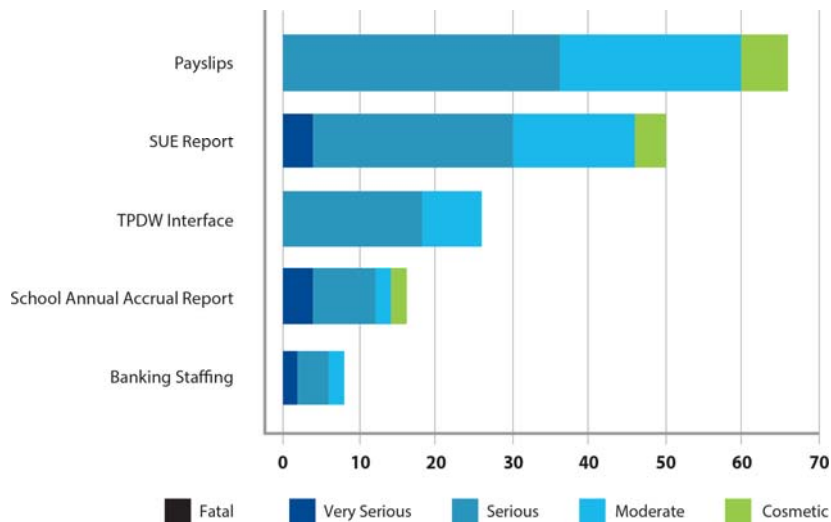


*Source: HP Quality Centre provided by Talent2 on 07 March 2013.*

A related issue is the extraction of data for interfaces to other systems and organisations, such as the Ministry's data warehouse, Inland Revenue and the Government Superannuation Fund. These interfaces have not consistently provided data in the appropriate formats, requiring manual intervention and disrupting processing at other organisations.

## Data quality has been affected by system issues, raising the risk of future errors.

The quality of data in the Novopay system has been affected by several factors including:

- The migration of some initial information transferred from the previous system (for example leave balances)

- Data entry errors including incorrect values, duplicate entry and non-entry

- Defects and workarounds which have produced incorrect results

- Data fixes which have unintentionally introduced inconsistencies.

There is no evidence that the underlying database is corrupted.

Payroll systems often rely on maintaining certain employee data throughout all payroll transactions. Cumulative totals are required for leave payments, tax calculation, ACC levies and termination processing. There is a significant risk that the quality of this data has degraded, which could cause issues with future calculations.

An example of potential flow-on effects is the End-of-year/Start-of-year process where system functionality could not be corrected in time for processing. As a result, occupancy changes were manually adjusted in ALESCO, resulting in errors including inconsistencies between position occupancy and rosters. A number of payroll calculations were adversely affected.

An example of the impact of workarounds is schools making manual payments directly to make up for Novopay under-payments. While there is a process for ensuring that these are subsequently reflected in the system, this process is not always followed leading to incorrect balances in the system.

## Quality controls on data entry have not adequately prevented errors.

The quality of data entry is dependent on the activities of school and Talent2 users, and the processes which transfer data from one to the other (primarily through online or manual forms).

Novopay Online has a number of validations built into the data entry screens, many of which have been custom-built for the Ministry. The usability issues described above have meant that use of this functionality has been lower than expected, with an increased proportion of manual forms submitted instead. This has driven larger-than-expected volumes at the Service Desk and Pay Centre.

The automated form processing tools have not been able to fully validate manual forms, increasing the risk of incorrect entry.

Data entry in the Service Desk and Pay Centre has caused a number of business issues, such as payees being allocated to incorrect schools. The ALESCO application has some validation but stronger validation would improve data entry. To a large degree the

system relies on validation reports that are executed periodically throughout the day. While this is appropriate for some validation checks (such as those which require complex calculations) others could be executed at the point of entry.

Backlogs in processing created issues through information not being entered, which sometimes had flow-on effects on calculations and further reduced confidence in the system.

Some specific transactions (such as account changes) require approvals within the Pay Centre, but there is no evidence of formal processes to control or track data entry errors. The increased volume of manual forms exacerbated this.

NSDA has not been made visible to schools as originally intended, making it very difficult for schools understand where requests are in the process without calling the Service Desk. NSDA has also confused users with multiple identification numbers for individual issues.

Where online entry is undertaken by schools, source documents are not forwarded to the Pay Centres for checking of data entry or later investigation. Schools are required to understand and interpret the collective agreements as well as legislation to ensure that they input the correct data. They then use a transaction report (available the following day) to verify input results for that pay period. In cases where they have identified errors on the transaction report and pursued efforts through the relevant Novopay forms to correct these, they have sometimes experienced processing delays which can result in incorrect payment.

## A high degree of customisation in high-impact areas has made on-going development more difficult.

Based on our experience with complex payroll systems, the Novopay system has a greater degree of customisation than we would expect.

The core ALESCO and NOL platforms have been extensively customised to meet the Ministry's requirements. As an indication of this, there are approximately 76 specified customisations, several of which are very complex. A number of them augment or replace standard functionality, and many are inter-related.

The customisations include new or changed screens, business logic, interfaces to other systems and reports. Most of the key customisations interact closely with base product functionality, and in a small number of cases, base product code has needed to be modified. Talent2 has incorporated some of the base product changes into the supported product.

The customisations are mostly in areas with a high user impact, such as Novopay Online. This exacerbates the business impact of issues with the customisations.

The degree of customisation will affect the effort and cost of on-going changes to the system, which could be defect fixes, improvements or product upgrades. For example, upgrades to the product will require every customisation to be analysed for possible flow-on impacts. Testing of changes (including regression testing) will be more complex than if there were fewer customisations.

There is a risk that local improvements are not implemented as change capacity is dominated by maintenance work, and that the system will not be kept up-to-date with the latest product version.

The amount of customisation also creates a heavy reliance on skilled people who understand the complexities of the system, raising capacity and continuity risks.

## Aspects of the application architecture make customisation difficult.

The ALESCO application has a number of characteristics which make it difficult to customise. Given the high degree of customisation, this is a significant factor in system stability.

Examples include:

- Coding standards vary from one part of the system to another

- Some coding practices in older areas of the system make the code hard to understand

- There are few standard routines, even for basic tasks such as recording transaction meta-data

- Data integrity is commonly handled by the application code, rather than the database.

In addition, documentation of the core product was not always available to customisation developers. Solution architecture documentation was requested but not provided.

As a result customisations and fixes are made more difficult to develop and are therefore more likely to contain defects. Issues are also harder to analyse where they involve customisations interacting with base product code.

The application architecture also contributes to security and privacy risks, for example through the lack of standard functions to record user and date information which are commonly used for auditing and verification of authorised changes.

The Office of the Government CIO is monitoring a range of security and privacy issues identified during the implementation project and in operation, including by some external reviews, including the Ernst & Young Novopay Assurance Review (in progress). The issues are caused by a range of factors including the underlying application architecture, workarounds implemented to compensate for system issues and system support practices. Most relate to the control of information within the system and the use of that information. These issues have been logged as defects so they can be tracked, and are therefore reflected in the defect numbers referred to in this Report. A number have already been addressed and others are in progress.

## Service support processes have struggled to manage the volume of issues.

Key Talent2 teams appear to have a consistent understanding of standard processes for defect, release and environment management. Formal process documentation was requested but not provided, including reports such as defect management reports.

There is insufficient Ministry and sector involvement in the defect management process. Specifically, the Ministry and sector are not sufficiently involved in analysing the user impact,, prioritisation of fixes and sector communication. The Ministry does not have sufficient visibility of the status and progress of defect fixes, given the number, age and severity of the defects.

There are capacity constraints across the defect management process. For example, Talent2 Business Consultants have large backlogs of analysis work.

These issues contribute to the slow defect closure rate relative to the rate of defects being raised, which has led to a large backlog of unresolved defects. As at 07 March 2013, 500 defects have been open for an average of 116 days (and this is relatively consistent across different severity levels).

Workarounds are not managed explicitly through a formal process, reducing visibility and control. This raises the risk of inconsistent application and retirement when system issues are permanently resolved. Some workarounds have introduced security and privacy risks, such as those noted in the Ernst & Young Novopay Assurance Review (in progress).

The service support processes generally work satisfactorily when not under stress, however they have not consistently withstood high-pressure situations, such as the difficult end-of-year processing. In these situations the processes have not always controlled system changes adequately, leading to some flow-on defects and business issues.

# Conclusions

This section presents the conclusions of the Review, which answer the key questions 1, 2 and 5 from the Terms of Reference.

Stability of a system is reflected in well understood, controlled and predictable system outputs and support activity, based on data of sufficient quality. Using our key findings we have assessed the system on several criteria, based on what we would expect for a system supporting business processes of this scale and complexity. A 'stable' system does not mean that all errors have been eliminated or that all stakeholder expectations have been met.

**Key question 1:** While the underlying payroll engine is consistently processing school pay runs, and producing accurate results for the majority of salaried payees, our assessment is that overall the core software platforms are not stable for the current delivery of schools payroll. This is driven primarily by a backlog of system issues (predominantly relating to customised functionality), and difficulties with the entry and interpretation of data by schools.

**Key question 2:** While we believe that the Novopay core software platforms can provide a stable platform for the delivery of schools payroll for the next eight to ten years, this would require materially elevated and sustained effort and capability by both the Ministry and Talent2.

**Key question 5:** The quality assurance processes have not adequately prevented incorrect data from being entered, contributing heavily to the business issues experienced. Key reasons include inadequate pre-validation of data, usability issues, insufficient monitoring of data entry and reporting issues.

## Key Question 1: How stable are the Novopay core software platforms for the current delivery of schools payroll?

While the underlying payroll engine is consistently processing school pay runs, and producing accurate results for the majority of salaried payees, our assessment is that overall the core software platforms are not stable for the current delivery of schools payroll. This is driven primarily by a backlog of system issues (predominantly relating to

customised functionality), and difficulties with the entry and interpretation of data by schools.

The following table outlines our expectations of a stable system, and what we have observed about the Novopay system.

| System Characteristic | What we would expect from a stable system | What we have observed |
|---|---|---|
| Number of business issues | A known number of well-defined business issues which is consistent over time and largely predictable. 0.5 – 1.0% errors in each pay run would not be unusual. | A largely unpredictable pattern of business issues which are not well defined. Recent analysis shows complaints about payments to approximately 1% of payees in pay period 25[3]. |
| Use of the system | Well-understood and consistent use of the system by users. | Inconsistent use of the system by end users who are uncertain of system behaviour and cannot reliably execute their tasks.<br><br>Little management control by Talent2 over manual work-arounds that are implemented in response to issues, and therefore inadequate Ministry visibility. |
| Number of open defects | A known, manageable number of well-defined system defects. No 'fatal' defects and minimal 'very serious' defects which are closed rapidly. | A backlog of 500 open defects, including 44 'very serious' defects, some of which have been open for some time[4]. There are currently no 'fatal' defects open. |

---

[3] PriceWaterhouseCoopers Pay Period 25 Complaints Report

[4] Novopay Defect Resolution Reports and HPQC Defect Management Tool extract as at 7 March 2013

**Novopay Technical Review**

| System Characteristic | What we would expect from a stable system | What we have observed |
| --- | --- | --- |
| System architecture | Well-understood and suitable system components on supported technology with a clear upgrade path. | Suitable system components on supported (though aging) technology, with dependence on key personnel for system knowledge and limited long-term plans. |
| Data | Information is generally reliable and of high quality. Some contained and known areas of data quality risk or poor quality. Processes and monitoring in place to ensure data quality is adequate for business needs. | There is no evidence that the database is corrupted, however risks to data quality are not well defined. Data quality is insufficiently considered in tactical responses. No formal process in place to assess and manage data quality. |

It is not unusual for a complex system to have these sorts of weaknesses to some degree. However, in our experience, it is unusual for a system to have all of these weaknesses to this degree for more than a few months.

From what we have observed, there are a large number of outstanding system issues in the current Novopay platform. The path to resolution appears to be slow, changes appear difficult to implement, and management visibility of resolutions is incomplete. As a result of these issues a number of work-arounds have been put in place, which create additional work, confusion and risk of errors.

The risk of underlying data quality issues increases with each pay cycle, as data fixes, workarounds, defects and manual processing can create incorrect data. Further defects are likely due to upcoming business events which haven't been tested in the live system, such as school accruals.

The consequences of these issues for teachers and other school staff is that a number are being underpaid, overpaid, or not paid at all. The errors reported in the PriceWaterhouseCoopers Pay Period Complaints Reports do not affect a large proportion of payees, but they do affect a large proportion of school administrators. There is an acknowledged, and very difficult to avoid, limitation to these reports in that they rely on complaints being lodged every pay period. In any case, the absolute numbers are higher than can be sustainably managed by the current arrangements in schools, at the Ministry and in the Novopay service.

## Key Question 2: Can the Novopay core software platforms provide a technically stable platform for the delivery of schools payroll for the next eight to ten years?

We believe that the Novopay core software platforms can provide a technically stable platform for the delivery of schools payroll for the next eight to ten years.

We do not believe that long term stability can be delivered by the current processes and resources. It would require materially elevated and sustained effort and capability by both the Ministry and Talent2.

The following table outlines what we believe is possible to close the gap between the system in its current state, and what would be expected of a stable system.

| System Characteristic | Requirements to close the gap |
| --- | --- |
| Number of business issues | By resolving defects and functionality gaps, the number of business issues can be reduced significantly. Effective analysis of issues can provide greater clarity of root causes and therefore a level of predictability before each pay run. This allows mitigation or contingency action to be put in place – e.g. reverting to manual processing for certain staff segments or case types. |
| Use of the system | Usability of the system can be enhanced, for example to help drive higher uptake of NOL. Management and communication protocols over work-arounds can be established so that use of the system becomes more standardised. |
| | Training and communication to improve understanding of the system can improve uptake and consistency of use. |
| Number of open defects | The number of open defects can be significantly reduced through greater capacity in analysis and resolution. While there are a number of factors which make resolution difficult (such as the degree of customisation), we have seen no evidence of a fundamental system issue that would make remediation infeasible. |
| Support processes | These can be further strengthened, particularly through structured, pro-active and more inclusive management. |

| System Characteristic | Requirements to close the gap |
|---|---|
| System architecture | Information and knowledge management tools can reduce key personnel dependencies. |
| | Explicit long-term plans can be developed to ensure continued support of the underlying software, plan upgrades, patches and enhancements. |
| Data | Formal data analysis processes and data quality management processes can be implemented, so that risks are understood and mitigation actions can be put in place. |

The work required to achieve long term stability is therefore feasible but difficult, and it is important to note that even with a technically stabilised solution certain characteristics would likely remain, for example:

- There would still be some defects requiring manual corrections or processing, by schools as well as the processing centres. All complex payroll systems experience an on-going level of defects.
- The solution would remain sensitive in some areas to incorrect process execution or data entry, or unusual cases.
- There would still be stakeholder concerns, for example relating to expectations and effort requirements to use the system effectively

## Key Question 5: How effective are the implemented quality assurance processes to ensure accuracy of manually captured data?

As noted in the key findings, the quality assurance processes have not adequately prevented incorrect data from being entered, contributing to the business issues experienced.

The weaknesses have been exacerbated by higher than expected volumes of data entry required, and the increased complexity due to the number of non-standard corrections and work-arounds.

The key gaps in the quality assurance processes are:

- Inadequate pre-validation of data for entry, partly due to technical issues in NSDA when processing scanned forms and partly due to insufficient system validation
- NOL usability issues which have reduced the quality of data entered by schools
- Insufficient monitoring and checking processes and staffing, including schools not being able to use NOL to delegate data entry to other staff. Talent2 has recently increased staffing in quality assurance roles for their data entry
- Reporting issues which make it difficult for schools to know whether they have entered data correctly.

# Recommendations

This section presents the recommendations of the Review, which answer the key questions 3 and 4 from the Terms of Reference.

We have identified two sets of measurable objectives: for the short term (the next three months) and for the longer term (up to 12 months). These will act as key performance measures, to gauge the effect of our short- and long-term recommendations. A draft remediation programme plan has been developed, and we have reviewed this specifically to gauge the extent to which it aligns with our recommendations. This is set out in the following section 'Next Steps: Remediation'.

Our recommended actions to occur immediately are:

1. Strengthen the current remediation programme to incorporate our recommendations, then finalise, communicate and execute the plan.

2. Establish robust performance management processes and checkpoints to monitor remediation progress.

3. Establish a dedicated team, with clear leadership accountability to manage resolution end-to-end. Talent2 staffing needs to be increased, including a doubling of business consultants.

4. Implement stronger processes to prioritise and analyse issues, and manage the system support processes.

5. Increase engagement, communication and training to build user confidence. Schools should receive greater support depending on their needs.

Actions to be put in place over the next 3-12 months are:

6. Carry out a complete a review of the business requirements and solution design.

7. Develop an upgrade and enhancement plan.

8. Carry out specific build, test and deploy plans for key business processes such as EOY/SOY.

9. Provide effective communication of service requests and issues to users (3-6 months).

## Key Question 3: What needs to occur immediately to give timely and effective resolution of the outstanding issues?

Over the next three months, the following needs to be achieved:

- The number of business issues being experienced needs to be reduced to a consistent level below 1% of staff reporting issues in any pay period, where errors are largely predictable in nature and managed through defined workarounds.

- Outstanding defects, particularly in high severity categories, need to be reduced, for example to no 'fatal' defects and no more than 10 'very serious' defects. As at 7 March 2013 there were no 'fatal' and 44 'very serious' defects.

- Processes that support the solution and management of work-arounds need to be raised to a mature level.

- The risk of poor data in the system through work-arounds and point fixes needs to be mitigated through specific analysis and quality management plans.

Progress towards these objectives will need to be monitored closely and frequently. This is particularly important for transparent communication and expectations management with end-users, and to inform longer term remedial actions that are planned and put in place. For example, if defects are being closed but the number of reported business issues remains high then other alternatives may need to be considered.

We have identified five action areas to support achievement of these objectives:

1. Strengthen the remediation programme plan to incorporate our recommendations, finalise, communicate and execute the plan.

2. Establish robust performance management processes and checkpoints to monitor remediation progress.

3. Establish a team, with clear leadership accountability to manage resolution end-to-end. Talent2 staffing needs to be increased, including a doubling of business consultants.  Ministry involvement needs to be increased.

4. Implement stronger processes to prioritise and analyse issues, and manage the system support processes.

5. Increase engagement, communication and training to build user confidence.

These actions should be put in place within 2-3 weeks.

## 1. Strengthen the remediation programme plan to incorporate our recommendations, finalise, communicate and execute the plan.

This recommendation is set out more fully in the following section 'Next Steps: Remediation'.

## 2. Establish robust performance management processes and checkpoints to monitor remediation progress.

To support achievement of the objectives, clear monitoring and performance measures need to be established and managed through a strong performance management process.

This should include milestones for key activities and definition of stability from an operational metrics perspective (e.g. the number of no-pays, percentage of errors). It should include specific checkpoints to monitor progress and achievement, for example quarterly as illustrated below:

*Figure 4: Suggested checkpoints to monitor progress*
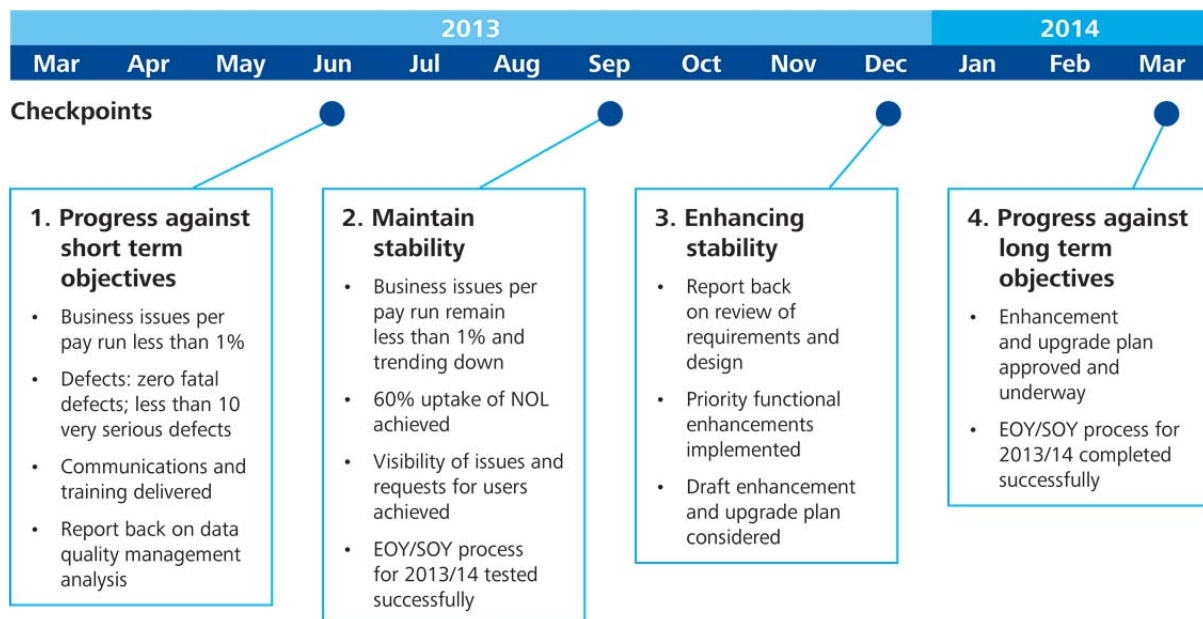
## 3. Establish a dedicated team, with clear leadership accountability to manage resolution end-to-end. Talent2 staffing needs to be increased, including a doubling of business consultants.

A suitably qualified and experienced programme manager for remediation needs to be appointed, to have overall accountability and responsibility for stabilisation actions and management reporting. This should be separated from the management of the day-to-day operations of the service and solution. Given that this role will need to work effectively across the Ministry, Talent2 and other stakeholders, the appointment will need to be carefully considered.

Clear accountabilities and responsibilities need to be established for this role and also for the operational management so that scope boundaries are clear. Management reporting should support the accountabilities through transparent management reporting against action plans, performance metrics and objectives.

The programme manager will need a team that is both sufficient in scale and has the right level of capability. It will therefore need to be a combination of staff from the Ministry, Talent2 and other providers in the market. In particular, establishment of this team needs to ensure that existing knowledge is retained (e.g. key people) and succession planning is in place to enable sustained knowledge management.

The team will need greater capacity than what is currently in place, particularly for analysis and resolution of defects, and for management of workarounds. This will require a step change, probably to double the current team size, particularly for Talent2 Business Consultants with suitable knowledge and experience of the solution.

## 4. Implement stronger processes to prioritise and analyse issues, and manage the system support processes

To be effective, the process for prioritising business issues needs to involve business representatives, service providers and technical staff.

While issue analysis will be predominantly technical, the process should also consider non-system issues for tactical resolution – for example, this might include developing manual processes for segments of employees that are over-represented in facing business issues.

An immediate priority for analysis is identification of system improvements (whether defect-related or not) that will materially reduce business issues, including NOL usability and reporting. The processes will need to provide a mechanism for rapid consideration of resolution options, involving customer and provider stakeholders, so that implications, timing and implementation of resolutions are well-understood and managed.

Work-arounds should be managed more formally, so they are centrally approved, communicated, monitored and closed in a controlled way. Where appropriate, work-arounds should be closed by formally incorporating them into standard practices.

A process needs to be established to analyse master data and transactional data to identify any issues that have already materialised, and potential sources of further risk. This process will need to consider quality management activities to mitigate risk as well as options to resolve any data problems.

## 5. Increase engagement, communication and training to build user confidence

Both operational management and remediation management should be proactively communicated to customers – particularly school staff receiving the payroll services, and Payroll Representatives who use the system.

A training programme needs to be developed and rolled out for Payroll Representatives to reduce errors and difficulties in using the system. This should also result in greater adoption and use of NOL.The training programme should include:

- Structured analysis of remedial training needs

- Increased temporary capacity for 'how-to?' help support

- Capture of feedback during the training process that may highlight improvement opportunities (e.g. screen layouts)

As schools vary widely in their use of the system, school staff should receive greater levels of support depending on their needs.

## Key Question 4: What needs to occur in the medium to long term to ensure that the Ministry has suitable software platforms in place for the eight to ten year delivery of the schools payroll?

In addition to successful achievement of the short term objectives above, the following needs to be achieved over the next 12 months, in order for the Novopay system to remain stable for ten years:

- The number of business issues being experienced needs to be maintained at less than 1% in each pay period, with a predictable pattern of errors and established processes to handle each type of error.

- The EOY/SOY process for 2013/14 needs to be planned, built, tested and completed successfully.

- Stakeholders need to have confidence that the solution will be stable and serve requirements.

- Successful implementation of legislative changes, such as the upcoming tax changes.

- Significant progress on strengthening the functionality of the system.

These further actions should be put in place to help achieve the objectives:

## 6. Carry out a complete review of the business requirements and solution design (6-9 months).

The purpose of this review is to identify the degree of change required to make the Novopay systems suitable for the long term.

This review should specifically determine whether to replace, enhance or simplify NOL.

The review will require high standards of documentation of the current system.

The review needs to consider the broad business requirements – not just system requirements – and should consider:

- Business processes which could be simplified

- Activities which could be performed more effectively manually rather than in the system

- Customisations which could be simplified

- Activities which could be reallocated to other users

- System improvements to make processing more robust and efficient

The conclusions of the review will need to be shared openly with stakeholders to establish confidence about a sustainable solution for the sector.

## 7. Develop an upgrade and enhancement plan (9-12 months).

Following the review, a clear upgrade and enhancement plan, with a five-year planning horizon, needs to be developed. The plan should reflect rigorous prioritisation to ensure that the Sector gains the most value from the enhancement work. The purpose of this is to ensure that:

- The system remains supportable through application of regular patches and core software upgrades.

- Modifications to improve the system are prioritised, planned and sequenced.

- Recommendations from the review of requirements and solution design can be implemented.

This plan needs to be communicated well, so that impacted parties understand the nature and timing of the way forward. The plan should recognise key business cycles and events (such as the schools accrual process).

## 8. Carry out specific build, test and deploy plans for key business processes such as EOY/SOY (6-9 months).

Because of the importance of getting the EOY/SOY process right (for example, to mitigate workload spikes and minimise incorrect payments), specific plans to build, test and deploy the process should be developed and executed. This should include engagement with schools, establishment and communication of contingency plans.

Other business processes may be considered for specific treatment.

## 9. Provide effective communication of service requests and issues to users (3-6 months).

Payroll Representatives need confidence that their service requests are being managed appropriately. Providing visibility through NSDA to track and follow up is important in building that confidence. It also means that Payroll Representatives understand the status of requests so that even where these are not progressed on time duplication and confusion can be more readily avoided, and the right actions can be taken to mitigate business impacts.

Implementation of these recommendations should make it possible for the system to be maintained in a stable state for ten years. The level of investment in on-going upgrades and enhancements (as defined in the plan described above) will determine how well the system performs and the benefits it brings to the sector.

# Next Steps: Remediation

This section outlines current remediation activity and how well it is aligned with our recommendations. This is required to support our answers to key questions 3 and 4, as the recommendations.

## Progress on a remediation programme has been made

A remediation programme ('the Programme') has been defined in consultation with the Ministry and Talent2 and presented to stakeholders. The Programme has been estimated at 20 weeks duration.

- The first eight weeks will implement short-term improvements to the service, as well as analyse and plan further larger changes.

- These further changes will be agreed and implemented over the following 12 week period and take into account allowable change windows within the payroll calendar.

The Project Initiation Document (draft Programme Initiation Document dated 28 February 2013) acknowledges that further work is likely to be needed, to be determined by analysis work in the initial 20 weeks.

The Programme includes three system releases to fix defects and alleviate functionality gaps, which would significantly reduce the number of defects. For example, according to estimates in the Programme Initiation Document, the number of 'very serious' defects could reduce to less than 20 after the third release planned for April 2013. The first release has already been implemented (delivering 87 out of a planned 97 defect fixes) and testing of the second release is in progress.

In addition to the Programme, the Ministry is increasing management attention and staffing in a number of areas, for example managing manual payments. The Ministry is also investigating possible alternatives to the current arrangements.

## The draft remediation plan needs to be strengthened and finalised.

The Programme covers some of our recommendations, but would need to be strengthened to encompass all of our recommendations. We have described in the table below the extent to which the Programme currently supports our recommendations.

| Recommendation | Comments |
| --- | --- |
| *Establish robust performance management processes to monitor remediation progress.* | The Programme includes directional objectives. To align with our recommendations, formal targets and clear performance management processes should be implemented. |
| *Establish a dedicated team, with clear leadership accountability to manage resolution end-to-end. Talent2 staffing needs to be increased, including a doubling of business consultants.* | The Programme has 20 work streams to be carried out in parallel, with the Programme Management Office responsible for managing the work streams and reporting on progress. One work stream (Release 1) has been completed already.<br><br>It is intended that Programme work streams will be separate from business-as-usual operations, but actual staffing for has not been confirmed.<br><br>Governance arrangements would be similar to what has been in place for the programme to date. To align better with our recommendations a simpler governance mechanism should be implemented, which directly involves senior stakeholders so that decisions can be made rapidly.<br><br>The Programme and governance teams may also benefit from more independent subject matter expertise in Payroll and large transformation programmes. |
| *Implement stronger processes to prioritise and analyse issues, and manage the system support processes.* | The Programme includes greater sector involvement in analysis, which aligns well with our recommendations. It also includes work to assess how data entry accuracy can be improved. In addition, we recommend specific process work to ensure that comprehensive and robust data quality analysis and management is in place, and system support processes are strengthened. |
| *Increase engagement, communication and training to build user confidence.* | The Programme has several proposed work-streams which focus on improving communication with stakeholders. They include engagement with key stakeholders, including schools, to help understand the root causes of users' issues. |

| Recommendation | Comments |
|---|---|
| *Carry out a complete a review of the business requirements and solution design.* | The Programme includes several parallel work streams analysing specific improvement opportunities. To better align with our recommendations, there should be a comprehensive review. |
| *Develop an upgrade and enhancement plan.* | The Programme includes some analysis of improvement opportunities, with subsequent implementations (which may be beyond the 20-week timeframe). More comprehensive, long-term planning should also be carried out to align with our recommendations. |
| *Carry out specific build, test and deploy plans for key business processes such as EOY/SOY.* | These activities are outside the scope of the current remediation plan, as they form part of 'business as usual'. We have included them in our recommendations because they will be key quality and improvement indicators for the performance of Talent2. |
| *Provide effective communication of service requests and issues to users (3-6 months).* | A review of NSDA is proposed in the Programme. Timeframes for implementation may need to be amended. |

Overall, the Programme includes many good improvement ideas and was developed deliberately to achieve progress within a specified duration. The Programme should be strengthened to incorporate our recommendations and finalised so that those initiatives which are not already underway can be launched, some certainty on the plans going forward can be provided to stakeholders, and appropriate governance and performance monitoring can be established.

Over time, we expect that the Programme will evolve, as analyses are conducted and progress against targets is made. Particular areas to focus on immediately are:

- We recommend simplified governance and programme management mechanisms that can expedite decision-making and include strong, independent subject matter expertise.

- We recommend establishment of clear performance targets – for example, based on the objectives above – and processes to manage and monitor performance of the remediation programme.

- We recommend a critical assessment of staffing needs and commitments. As the Programme is already underway each workstream should have clear staffing commitments but these are not evident. Contention on key staff is a significant risk, particularly given the amount of parallel work proposed.

- We recommend several changes to the workstreams within the programme, particularly inclusion of work to test and manage data quality (more comprehensively than a focus on data entry accuracy), work to review the solution end-to-end (from business requirements to design), and specific planning for EOY/SOY processes.

- The schedule of parallel work streams is ambitious, particularly given that staffing has not yet been confirmed and needs to increase. We therefore also recommend that sequencing and timing of work streams is reassessed so that it can be matched to delivery capacity.

**Novopay Technical Review**

# Appendix A: Glossary of Terms

| | Definition |
|---|---|
| Configuration | Configuration is the method of tailoring the system to meet the business requirements without the use of code development.  System settings can be adjusted to modify the behaviour of the system. |
| Customisation | Customisation is essentially source code development which is implemented in addition to base product functionality in the solution. This is often required for complex requirements not met by configuration. |
| Defect severity | System defects are usually categorised into severity ratings in order to help prioritise fix effort and timing.  The Novopay severity ratings are:<br>1. Fatal<br>2. Very Serious<br>3. Serious<br>4. Moderate<br>5. Cosmetic |
| Deloitte<br><br>Network of Deloitte Touche Tohmatsu member firms | Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee, and its network of member firms, each of which is a legally separate and independent entity. Please see www.deloitte.com/about for a detailed description of the legal structure of Deloitte Touche Tohmatsu Limited and its member firms. |
| Deloitte New Zealand | Deloitte New Zealand is a member firm of Deloitte Touche Tohmatsu Limited, operating in New Zealand, and the author of this Report. |
| Ministry | The Ministry of Education. |

| | Definition |
|---|---|
| Novopay | The New Zealand schools' payroll service provided by Talent2 under an agreement with the Ministry of Education. |
| Programme | The Novopay Remediation Programme, as defined in the draft Programme Initiation Document dated 28 February 2013. |
| Report | This report – the output of the Review. |
| Review | The Novopay Technical Review, having the scope defined in the Terms of Reference. |
| System, core platforms | These terms both refer to the main IT components of Novopay - Novopay Online and ALESCO - as described in the Context section of the Report. The scope of the Review includes the system management processes and data entry into the systems.  NSDA is relevant to data entry. |
| Technical stability | In the context of the Review, this is defined by a set of expected system characteristics based on industry norms, as described in the Conclusions section of the Report. |
| Terms of Reference | The terms of reference for the Review, as set out in Appendix B to this Report. |

# Appendix B: Terms of Reference

This section provides the Terms of Reference, dated 11 February 2013, for the Review as defined by the Ministry of Education.

## Purpose

The Minister with responsibility for Novopay is establishing a Ministerial inquiry into the issues that have arisen over the implementation of the education payroll system (Novopay) since it was implemented in August 2012, and taking steps to address the ongoing performance and stakeholder/public confidence issues in the system.

As part of this the Minister has requested the acting Secretary for Education to obtain an immediate independent assessment of the stability of the Novopay system as it has been implemented.

This document is a terms of reference for the assessment of the stability of the Novopay system. This review is referred to as the 'Novopay Technical Review'.

## Background

The Novopay education payroll system went live in August 2012, following an extended period of development. The contract between the Crown and Talent2 runs to 31 July 2020 with a potential further term of two years.

The Novopay payroll system has not performed well. 110,000 school employees are paid through the system in each year; and while the majority has received the right pay at the right time, a significant minority has not. School staff and principals, both as individuals and through their professional organisations, have raised serious concerns about the efficiency and effectiveness of the Novopay payroll system.

The Novopay implementation has been controversial. Stakeholders have little confidence in the system as deployed, and there has been a great deal of adverse publicity and public interest.

There are two parties to the Novopay contract – the Crown (the Ministry of Education) and Talent2. Other key stakeholders include boards of trustees (the employers of school staff), school principals, teachers and other school staff, and members of the wider school community – including parents, and the families of school staff.

The Ministry procures Novopay as a service from Talent2. The Ministry has a contract with Talent2 for eight years of operation with a provision to extend the contract for a subsequent two years.

The core systems that Talent2 uses to provide the Novopay service – most notably Alesco, the Novopay Online system, and the Novopay Service Desk Application (NSDA) – are owned by Talent2 and have been modified by Talent2 to meet the requirements of the Novopay service. Talent2 manages the hosting and delivery of the service – Novopay does not run on Ministry infrastructure.

## Requirement for a Technical Review

The Minister with responsibility for Novopay proposes to address the ongoing performance and stakeholder/public confidence issues with Novopay with a planned series of steps. The first of these is the Novopay Technical Review.

At the Minster's request, the acting Secretary for Education is commissioning an independent assessment of the stability of the Novopay system as it has been implemented (The Novopay Technical Review). This review will be conducted by a specialist in ICT systems and will enable the Minister to either take ameliorating actions required to stabilise the system and rebuild trust and confidence amongst stakeholders, or take steps towards alternative service provision if required. This review will use as one of its inputs the internal audit controls review work currently being undertaken by Ernst & Young.

The Minister's expectation is that this independent assessment will take place urgently.

## Goal

The goal of the Novopay Technical Review is to assess the core Novopay payroll software platforms with respect to their stability and make recommendations to enable the Ministry to ensure that immediate issues are resolved in the short term and that the Ministry has suitable software platforms in place for the eight to ten year delivery of the schools payroll.

## Objectives

The objectives of the Novopay Technical Review are to answer the following key questions:

1. How stable are the Novopay core software platforms for the current delivery of schools payroll?

2. Can the Novopay core software platforms provide a technically stable platform for the delivery of schools payroll for the next eight to ten years?

3. What needs to occur immediately to give timely and effective resolution of the outstanding issues?

4. What needs to occur in the medium to long term to ensure that the Ministry has suitable software platforms in place for the eight to ten year delivery of the schools payroll?

5. How effective are the implemented quality assurance processes to ensure accuracy of manually captured data?

## Scope

The scope of the Novopay Technical Review will include the following:

1. The stability of the core Novopay payroll systems – Alesco and Novopay Online as modified to meet the requirements of the schools payroll service

2. The technical suitability of the core Alesco payroll package for the stable operation of the schools payroll for the next eight to ten years

3. The technical suitability of the Novopay online interface used by schools for the stable operation of the schools payroll for the next eight to ten years

4. The current state of the Alesco solution architecture definition and other relevant documentation and the processes to maintain these.

5. The technical suitability of the system administration and support tools used to resolve issues and maintain a system stability over time

6. The effectiveness of the core platform software maintenance processes to ensure that the Alesco core is being, and will be, maintained to meet supplier recommendations and business needs (e.g. patches and upgrades)

7.  The effectiveness of how the customisations required for schools payroll have been identified, designed, and applied to the core Alesco package.

8.  The effectiveness of data entry into the system, including system validation and quality assurance.

Stability and technical suitability will include consideration of the following aspects of the system:

1.  High level functionality (whether the system performs business functions accurately and robustly)

2.  Application architecture (including the use of standard and custom-developed software)

3.  Data (including data quality and data migration)

4.  Resilience, performance, and scalability

5.  Security and privacy architecture.

The scope will NOT include the following:

1.  Review of the solution selection process or implementation project

2.  Detailed review of the functional fit of the core systems to the requirements

3.  Determination of the reasons for any system weaknesses identified

4.  Review of the commercial arrangements between the Crown and Talent2, including the overall business model, contractual terms and pricing

5.  Review of the capabilities of Talent2, beyond those directly relevant to maintaining a stable Novopay system

6.  Review of the Ministry or broader sector IT environment

## Governance

The review will be performed by an independent consultant based on information provided by the Ministry and Talent2. Maximum use will be made of information already available.

The appointed reviewer will report directly to the Acting Secretary for Education. The Office of the Chief Executive will facilitate the support required for the review.

# Appendix C: Information Sources

This appendix provides an outline of the information sources used during the Review.

## Documents

Background Documentation

- Request for Information (RFI) and Request for Proposal (RFP) documents

- Novopay vision and Novopay Group Organisation Chart

- The Benefits Realisation plan

Business Requirement Specification documents

Functional Design Specification documents

Security and Controls Assurance Reports

Internal and External Quality Assurance reports

Defect documentation including defect register, list of workarounds, list of bugs etc.

Disaster Recovery Plans/Procedures

Network and Infrastructure Diagrams

Security and Privacy documents including issues, test summaries, security review reports and test plans

Service Management documents including service improvements, KPI measurement, service capacity/availability and IT continuity documentation

Test documentation including test plans, strategy documents and summary reports

Status reports

Novopay Payroll Operations Manual and processing user guide

Relevant documents published by the Ministry under the Official Information Act

## Interviews

Interviews were conducted with:

1. Ministry of Education payroll staff and management

2. Ministry advisors

3. Talent2 staff and management

4. Talent2 sub-contractor staff and management

5. School payroll staff and principals.

We have also drawn on Deloitte's wider experience with payroll systems in general and ALESCO in particular.

# Appendix D: Defect Analysis

This appendix provides some high level analysis of the data in the defect management tool, HP Quality Centre.

The following is a box-and-whisker plot showing a summary of the age distribution of open, unresolved defects. The 'box' shows the lower quartile (25th percentile), median and upper quartile (75th percentile), while the 'whiskers' show the lowest and highest values. The white dot shows the mean.

*Figure 5: The age distribution of open defects as at 07 March 2013*
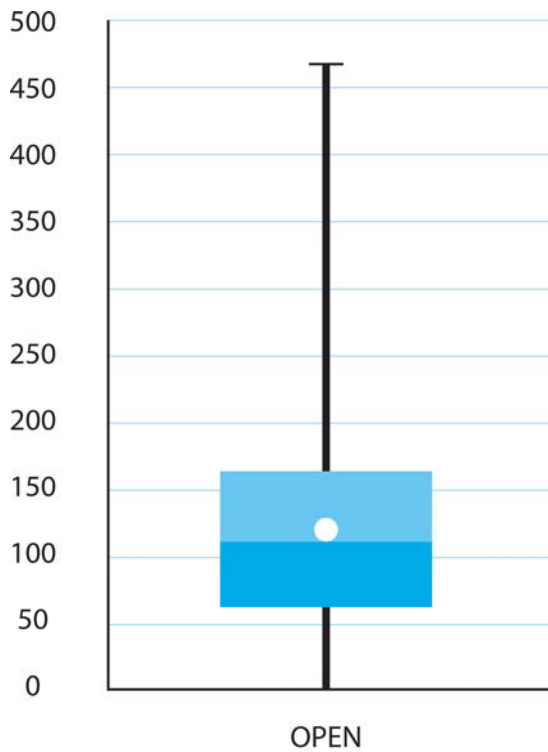


*Source: HPQC data provided by Talent2 on 07 March 2013.*

The following gives a historic view (as at 15 February) of the number of defects being opened and closed (the blue and green lines respectively).

***Unlike other defect data in this Report, this data is pre-release 1 (which happened over the weekend of 23-24 February 2013), and includes all items in the tool (some of which are non-system related). We requested more recent data but this has not yet been provided. The effects of release 1 are shown by the dotted line to illustrate the impact of the 87 defects reported resolved.***

*Figure 6: The rates of defect opening and closing as at 15 February 2013*



*Source: HPQC data provided by Talent2 on 15 February 2013, Ministry Defect Resolution Reports*

**Auckland**

Deloitte Centre
80 Queen Street, Auckland 1010
Private Bag 115033
Shortland Street, Auckland 1140
New Zealand
Tel: +64 (0) 9 303 0700
Fax: +64 (0) 9 303 0701

**Hamilton**

Deloitte House
24 Bridge Street, Hamilton East
Hamilton 3216
PO Box 17, Hamilton 3240
New Zealand
Tel: +64 (0) 7 838 4800
Fax: +64 (0) 7 838 4810

**Christchurch**

50 Hazeldean Road
Christchurch 8024
PO Box 248
Christchurch 8140
New Zealand
Tel: +64 (0) 3 379 7010
Fax: +64 (0) 3 366 6539

**Wellington**

Deloitte House
Levels 11-16, 10 Brandon Street
Wellington 6011
PO Box 1990, Wellington 6140
New Zealand
Tel: +64 (0) 4 472 1677
Fax: +64 (0) 4 472 8023

**Dunedin**

Otago House
481 Moray Place
Dunedin 9016
PO Box 1245, Dunedin 9054
New Zealand
Tel: +64 (0) 3 474 8630
Fax: +64 (0) 3 474 8650

www.deloitte.co.nz