Department of Employment and Workplace Relations

Review of the VET Student Loans IT Issue

Issued to Department of Employment and Workplace Relations on 6 April 2023

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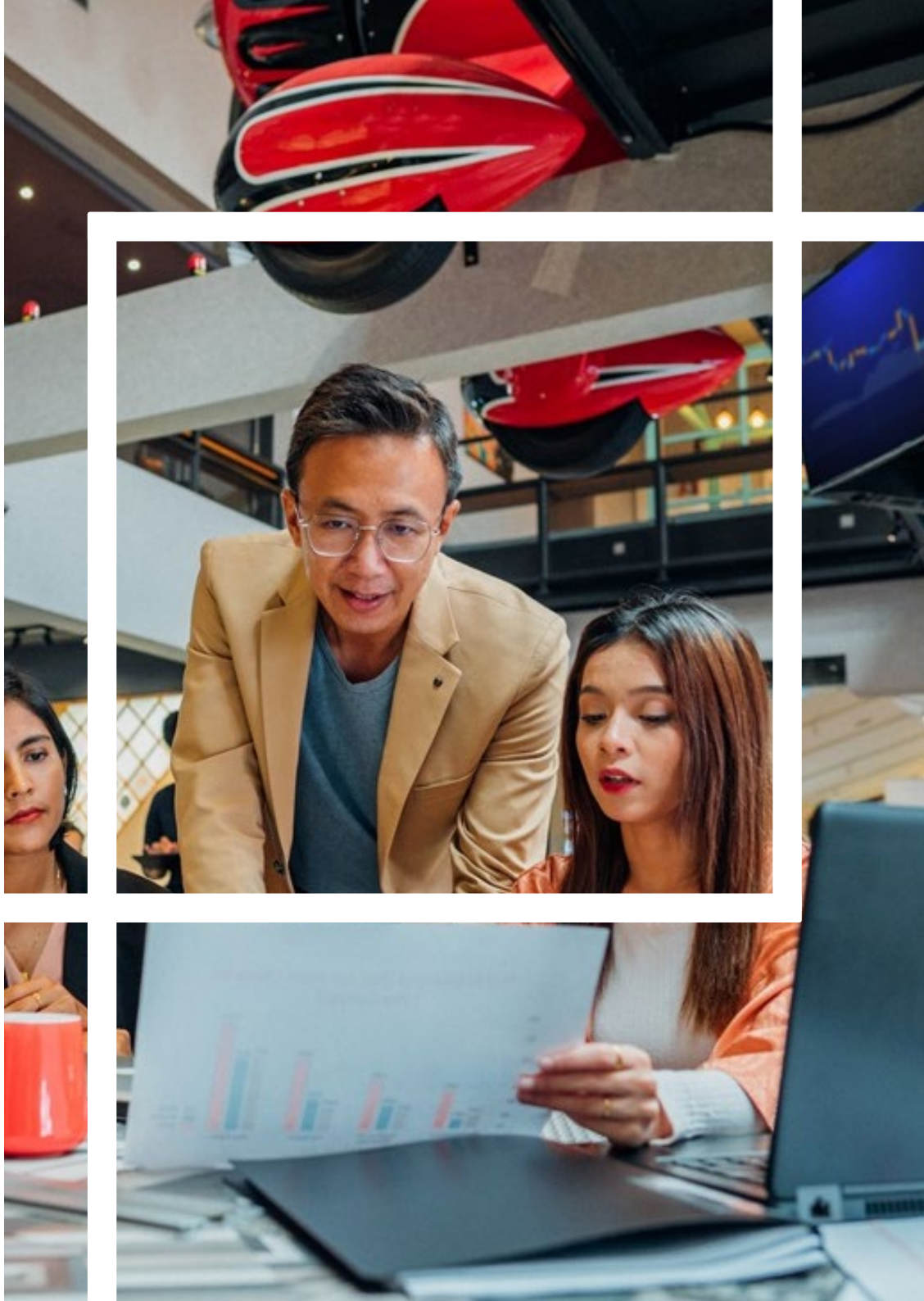

Contents

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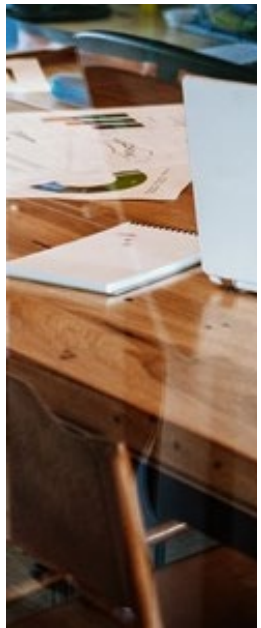
1 Executive summary



1a Executive summary

Context

The Department of Employment and Workplace Relations (the Department) manages the former VET FEE-HELP (VFH) scheme and the current VET Student Loans (VSL) Program, supporting students to undertake relevant vocational education training.

As a consequence of an IT update to resolve 'NULL USI' data fields on 7 July 2022, historical VFH and VSL debt records that were 'stuck' in the system were transferred to the Australian Taxation Office (ATO) on 2 August and 3 August 2022 ('**the issue**'). These records were for loans incurred by approximately 10,000 students between 2017 and 2022 with a total loan value of approximately $24m. In addition, records have been identified as 'stuck' between 2009 to 2017 and are currently undergoing investigation.

VSL and VFH are supported by two main IT systems:

- the VSL Payment System (VPAYS) which is owned and managed by the Department (only in-scope system for review)
- the Tertiary Collection of Student Information (TCSI system) managed by the Department of Education.

This review was undertaken to explore the issue further, understand the relevant impact factors and make steps to identify corrective action and to prevent reoccurrence.

Objective

The objective of Phase 1 of this review was to:

- Identify the key impact factors that contributed to the failure to process VFH / VSL debt data from VPAYS to TCSI relevant to the issue between the period 2017-2022 and why this was not detected.
- Commence the identification of impact factors that contributed to the failure to process the remaining VFH / VSL debt data (as identified by the Department) from VPAYs to TCSI over the period 2009-2022.

This was completed through relevant fieldwork between 20 October and 16 December 2023 (document analysis and interviews with key stakeholders) to validate findings regarding the VSL IT ecosystem (VPAYS, TCSI, Electronic Commonwealth Assistance Form (eCAF), and the HELP IT System (HITS)).

Note: Further detail on the scope is provided at ***Section 3a.***

Overall observations

This review has confirmed that VPAYS, as well as key elements of the broader VSL IT ecosystem (including system interactions with TCSI, eCAF and HITS), is not fit-for-purpose in meeting all stakeholder needs (see page 13 for further detail). This includes the inability to ensure that all information submitted by VET providers and students has been processed correctly and resulted in all student debt records being successfully sent to the ATO.

Overall, a number of key impact factors across system and process elements were identified that contributed to both the cause of the "NULL USI' stuck debt records and to why this issue was not detected sooner (noting the Department has taken steps to address some of these at time of reporting). With respect to the scope of this review:

System

The VPAYS solution is part of a complex VSL IT ecosystem involving many overlapping systems each with their own business rules and data requirements (as illustrated on page 21). Misaligned system data field requirements, with limited testing and reporting to identify this, has resulted in many potential causes of a debt record being 'stuck' in the system.

Process

Governance and risk management processes in place were not fit for-purpose to support ongoing business-as-usual (BAU) management of the systems (e.g. limited board oversight of proposed system changes, change processes not assessing relevant impacts – noting the complexity noted above and inaccurate documented risk treatments). Relevant risks are not appropriately managed and require attention to increase maturity.

Key impact factors

The key impact factors identified in this review have been highlighted below and further detailed in Section 2 and 3.

1. **Complex IT system environment** - Multiple factors are contributing to the complexity of the current VSL IT ecosystem. VPAYS was intended as an interim solution design with a lifespan no longer than two years from 2017. Evidence provided confirmed that data between VPAYS and TCSI can become misaligned, which can cause student loan records to be 'stuck' in the system.
2. **System quality assurance** - Testing practices on BAU IT fixes to address issues in VPAYS had gaps against better practice. This includes limited relevant business involvement, inability to test proposed changes across the entire VSL IT ecosystem and the need to increase test coverage (i.e. more than just confirming student loan data had been sent to TCSI).
3. **Ineffective data validation processes** - Student loan data is not validated to ensure successful transmission across the end-to-end process between VPAYS, TCSI and the ATO. This is likely to have contributed to (and will continue to contribute to) discrepancies in the student loan data flowing across systems not being found and investigated in a timely manner.
4. **Provider focused manual processes** - No automated system compliance controls were identified across the VSL IT ecosystem. This has placed a greater reliance on manual reconciliations and controls. Manual processes are focused on confirming provider payment accuracy, not the accuracy and completeness of student loan data.
5. **Existing governance arrangements** are not appropriate to resolve business-as-usual (BAU) IT issues related to the VSL IT ecosystem (e.g. for non-project changes to the systems).
6. **Escalation and prioritisation processes** - No consistent approach to the identification, prioritisation and escalation of system issues is in place. Analysis indicates that these activities occur on an 'ad-hoc' basis (i.e. through email discussions) and are not driven through structured frameworks, including relevant impacts for assessment, or using the DevOps IT management tool.
7. **Risk management practices** - Documented risk treatments relating to VPAYS have been assessed incorrectly as there is no evidence to suggest some treatments rated as "moderately effective" have been implemented.

This review has identified eight (8) short / interim term and three (3) medium to long term actions to address the shortcomings of the current system and to mature governance and risk management processes. These are outlined at Executive Summary sections 1d to 1g.

1b Executive summary – Identification and progress of 'issue'

Context

The table to the right provides a high-level summary of the key events involved in the release of historical VET student loan debts to the ATO in August 2022 (through *User Story 66492*). *User Story 66492* was an approved system fix within VPAYS, which was related to the population of USI fields within the system. This User Story is understood to be the cause of historical student records being transferred.

Events leading up to and following on from *User Story 66492* have been aligned to the expected stages of issue management (identification and resolution process). It commences with the earliest identified evidence of when the issue of relevant unprocessed student debt records was raised by departmental officials (approximately February 2022).

We have also provided links to the relevant key impact factors highlighed on the previous page.

Timings of key issue progression events and relevant impact factors

Issue stage *(timing)*	Key event	Relevant key impact factor
 **Identification** *(February – March 2022)*	VSL Branch and Digital Solutions Division (DSD) in discussions to assess issues updating student debt records as part of February 2022 provider payment run.	**1. Complex IT system environment & 7. Risk management practices -** Business first notified of potential gaps in relation to the progression of student records from VPAYS to TCSI.
	DSD investigated issue in DevOps IT management tool – 'Investigate metadata surrounding Feb 2022 debts'.	*N/A*
	Further DSD investigation identified 5 fixes requiring deployment – including User Story 66492 (NULL USI fix).	*N/A*
 **Assessment** *(March – May 2022)*	VSL Branch acknowledged issue and commenced involvement in initial investigation and prioritisation.	*N/A*
	DSD provided issue fix impact assessment and test summary reporting. VSL Branch approval to deploy into production received.	**6. Escalation and prioritisation processes -** Escalation of issue occurred through ad-hoc and unstructured mechanisms with limited consideration of stakeholder or system impacts.
 **Escalation** *(May 2022)*	VSL Branch provided issue priority and impact to VSL IT Projects Board (Board) for 'noting' in overarching issues register.	**5. BAU IT Governance -** There was no specific action requested of the Board (e.g. endorsement or decision). The proposed IT fix was approved by business team prior to the Board and provided for 'noting' only as part of an overarching register.
 **Resolution** *(May – July 2022)*	VSL Branch and DSD worked to implement 'NULL USI' issue fix prior to June 2022 TCSI pay run.	**2. System quality assurance -** Limited evidence of business involvement in testing of fix prior to implementation.
	June 2022 TCSI pay run, including fixed issue, was progressed through system with normal VSL Branch and DSD oversight.	**4. Provider-focused manual processes -** Manual control over provider payment run not designed to identify or resolve issues with student data transfer.
 **Readiness** *(August 2022)*	VSL Branch investigated enquiries related to release of historical student loans and identified broader issues.	**3. Ineffective data validation processes -** Limited ability to test changes (or fixes) across VSL IT ecosystem resulted in impacts being identified post-implementation (not during testing).
	VSL Branch commenced incident assessment and halts further debt transfers to the ATO.	*N/A*

1c Executive summary - High-level observations

Context

The table on the right highlights the key observations against agreed scope elements for this review. Observations were informed through analysis of available documentation and consultation with relevant stakeholders.

The full review scope is provided at *Appendix 3a*.

Note: The 'People' scope area referenced in Appendix 3a will be addressed in phase 2 of this review and was not considered in this report.

High-level observations against focus areas

Scope area	Focus area	High-level observations aligned to focus areas
System	Context and systems analysis	• **Multiple key impact factors were identified** over the course of the review that contributed to loan records within VPAYS and TCSI not being transferred to the ATO in a timely manner. These include: ○ The complexity of the VSL IT ecosystem (driven by the continuous patching of the interim VPAYS solution, reliance on multiple systems, and an increased reliance on manual processes). ○ The lack of an integrated testing environment across all relevant IT systems used for VSL to fully test proposed changes or updates prior to their release into production. ○ Immature use of data to confirm ongoing performance of the system (e.g. limited data reconciliation between systems, mismatches in mandatory data fields across systems and no data monitoring across the end-to-end solution). • **System notifications to identify unsuccessful data transfers between VPAYs and TCSI are not fit-for-purpose**. Existing notifications are limited to 'error messaging' between the systems, with no process in place to investigate these errors further. Additionally, there is no end-to-end reporting and monitoring of data across VPAYS, TCSI and the ATO (with departmental review indicating that adjusted debt records are being displayed outside the VSL / VFH legislative frameworks). • **Relevant impact assessments not completed prior to decision making** on progression of the change to release NULL USI stuck records. The process did not call for the assessment of potential impacts on stakeholders (e.g. students and / or providers). This limited the ability of VSL business areas to make an informed decision on the implementation of the fix.
	Control design and implementation	• **No processes (manual or automated) are in place to reconcile student debt** records or loan amounts between VPAYS, TCSI and the ATO. System process maps relating to all VSL IT systems did not identify any reconciliation controls related to student debt (confirmed by key stakeholders). • **Existing controls are focused on confirming payment integrity** rather than on managing risks relating to student loans. Key controls include a manual process performed on the provider payment run to assess completeness and accuracy of payments to providers (in arrears). These provider focused controls do not support identification of student data related issues.
	Change / release management	• **Deficiencies in departmental testing processes were identified** in relation deployment of changes in VPAYS. These included low levels of testing coverage to support deployment, a lack of business scenario testing (during User Acceptance Testing), limited System Integration Testing and a lack of regression and non functional testing (e.g. Performance Testing). • **Processes do not support appropriate change and release management practices for VSL IT systems** including, the informal nature of incident prioritisation, a lack of downstream or upstream system impact assessments and a lack of clear decision making or escalation authority.

Key: No action required on Focus Area | Some action required on Focus Area to address risk | Immediate action required on Focus Area to address risk

1c Executive summary - High-level observations (cont.)

Context

The table on the right highlights the key observations against agreed scope elements for this review. Observations were informed through analysis of available documentation and consultation with relevant stakeholders.

The full review scope is provided at *Appendix 3a*.

Note: The 'People' scope area referenced in Appendix 3a will be addressed in phase 2 of this review and was not considered in this report.

High-level observations against focus areas

Scope area	Focus area	High-level observations aligned to focus areas

System	Defect resolution	• **IT issue management processes established,** however, multiple gaps were identified including:
		  ○ Limited business involvement in the issue prioritisation processes.
		  ○ A lack of clear escalation and decision-making processes (including authority levels).
		  ○ Unstructured mechanisms to track and report on the progress of IT issues.
		  ○ Significant number of system issues being identified but not yet prioritised or resolved (see page 28).
		• **Defect reporting did not provide sufficient information** for business teams to understand risks, downstream impacts of defect fixes, and make informed decisions. Additionally, a formal reporting process for IT delivery was not identified and is limited to the Excel-based 'IT BAU Issues register' which has incomplete fields and verbal updates at governance forums.

Process	Risk management	• **While documented risk management plans are in place,** the plans require revalidation to confirm appropriateness for both project and BAU IT system management. The Risk Management Plan (ID #000172) identifies 4 key risks being managed, however, some documented treatments have been rated as 'moderately effective' but were not in place. For example, treatment 'T020996' - User Acceptance Testing) was listed as a moderately effective treatment without any UAT having been performed.
	Internal escalation mechanisms	• **No formalised approach to the identification, escalation and prioritisation of system issues** to support decision making. Activities which manage BAU IT issues occur on an 'ad-hoc' basis (i.e. through email discussions) and are not driven through structured frameworks or departmental management mechanisms. Analysis of IT BAU Issues Register (November 2022) indicates there are currently 41 issues identified for VPAYS (including 15 Priority 1 issues and 8 issues yet to be prioritised) – *See page 28 for further detail.* • **There are no commonly understood risk-based thresholds** (or escalation protocols) which help departmental staff determine what issues are considered higher risk and therefore require more senior oversight and / or greater prioritisation. • **VSL Program IT Board terms of reference confirm this forum does not have a specific role in BAU IT issue management** or any relevant decision-making authority. Additionally, prior to September 2022, there was no TCSI system representation.

Key: No action required on Focus Area | Some action required on Focus Area to address risk | Immediate action required on Focus Area to address risk

1d Executive summary – Suggested actions (Stage 1)

Context

Detailed in this section (1d – 1f) are the 11 suggested actions based on observations from this review. These actions address the observations identified by this review related to the systems and process scope areas (refer to **Section 2** for detailed observations).

These Stage 1 actions were identified as short term measures to manage the immediate risk of 'stuck' student debt loan records, while Stage 2 actions (next page) designed to address the issue moving forward. Stage 3 actions are designed to support longer-term resolution of this issue.

Suggested actions for Stage 1

While the suggested actions in this report relate to lowering the overall risk profile associated with "stuck" debt records, a risk remains that errors and issues may continue to arise in future. As these errors and issues occur, there will be a continued need to conduct similar rapid response activities to respond and remediate as appropriate.

A purpose built IT solution (and supporting business and people processes) to replace VPAYS solution would help to mitigate the risks identified in this report and reduce the risks of other issues that may occur in the future.

Scope area	Stage 1 (May to July 2023)
System	1. **Minimise impact of immediate risks presented by historical 'stuck' debt records**. This is to be done through: a) Initiating an audit check against student records to ensure records are correct and appropriate to apply to students ATO profiles, before records are transferred from the Department's IT systems to the ATO. b) Remediating historical student loan records held in the Department's IT systems to ensure they are correct and transferred to student ATO profiles. c) Working with the ATO to manage the release of historical loan records in a way that supports the implementation of debt waivers and student communication and assistance.

1e Executive summary – Suggested actions (Stage 2)

Context

Detailed in this section (1d – 1f) are the 11 suggested actions based on observations from this review. These actions address the observations identified by this review related to the systems and process scope areas (refer to **Section 2** for detailed observations).

These Stage 2 actions were designed to address the issue moving forward. Stage 3 actions (next page) are designed to support longer-term resolution of this issue.

Suggested actions for Stage 2

Scope area	Stage 2 (August to Dec 2023*)
System	**2. Establish interim processes to support the VSL IT ecosystem** through: a) Establishing a manual process for the reconciliation of student records as they are transferred from VPAYS, receipted in TCSI and to confirm the records are displayed correctly in ATO systems. b) Establishing a business process to investigate and action records which are not successfully transferred between VPAYS and TCSI (i.e. those identified via Action 1a). **3. Reassess the VSL IT ecosystem current state to inform future improvements** through: a) Documenting a consolidated view of the current state end-to-end business processes and system requirements supporting the VSL IT ecosystem. b) Completing prioritisation of outstanding BAU issues to ensure critical / high priority items are identified / resolved as required. **4. Validate whether existing system processes and requirements are fit-for-purpose** and meeting stakeholder needs by: a) Confirming whether there is alignment of business rules, legislation, business processes and system functionality. b) Identifying gaps that need to be addressed (as informed by process map outputs from Action 3a). **5. Review options available to the Department regarding development of a replacement IT solution.** This should: a) Consider indirect, intangible and opportunity costs of both options (investment in current VSL IT ecosystem or new IT solution). b) Leverage outputs from Action 4 as a foundation for determining future requirements and enhancements. *Note: Outcomes of Action 4 and 5 may inform the development of a business case for longer-term fit-for-purpose IT solution.* **6. Strengthen approach to BAU VSL IT ecosystem testing** by: a) Working with the ATO to improve the current approach by managing and maintaining a joint test environment with a view to establish a sustainable joint capability supporting integrated testing across all environments in the VSL IT ecosystem. b) Documenting and embedding a system impact assessment process to be completed prior to deployment of fixes or new features. c) Involving internal and external stakeholders across key stages of the testing lifecycle. d) Expanding testing coverage and incorporating scenario and non-functional testing when making system changes in BAU.
Process	**7. Mature supporting governance arrangements** for the oversight of the VSL IT ecosystem through: a) Documenting risk-based decision making and escalation thresholds for deployment of BAU fixes. b) Establishing a governance forum (new or by amending a current forum) with the remit to triage, impact assess and resolve production incidents / issues across the VSL IT ecosystem. **8. Revalidate the current VSL Program risk management plan** by: a) Confirming whether relevant risks have been captured and residual risks are within existing departmental risk appetites and / or tolerances. b) Confirm whether risk treatments have been appropriately assessed for effectiveness.

**Note: It is acknowledged that ideally these actions would be completed in the August to December 2023 timeframe, however it is likely that many of these actions will take longer to complete.*

1f Executive summary – Suggested actions (Stage 3)

Context

Detailed in this section (1d – 1f) are the 11 suggested actions based on observations from this review. These actions address the observations identified by this review related to the systems and process scope areas (refer to **Section 2** for detailed observations).

These Stage 3 actions were designed to support longer-term resolution of this issue and capability uplift at the Department.

Suggested actions for Stage 3

The actions identified for Stage 3 relate to maturing current practices and embedded ongoing better practices within the Department. These actions may take considerable time and effort to complete, however will provide great value to the organisation moving forward.

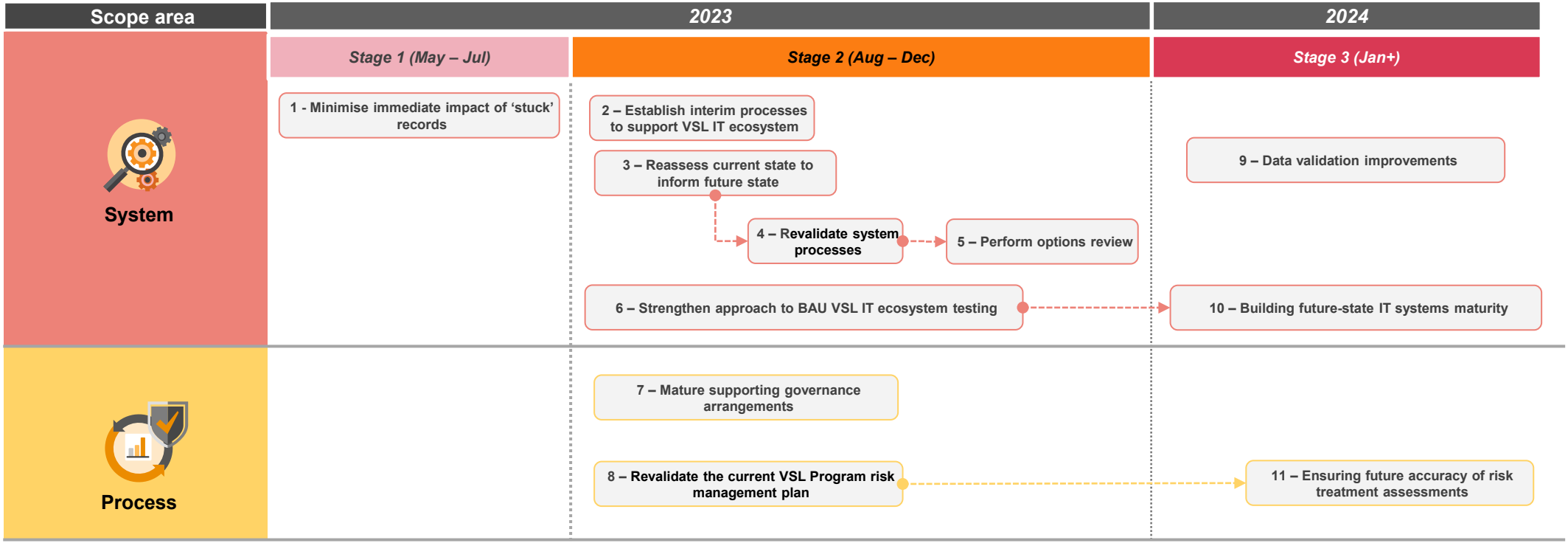
Scope area	Stage 3 (Jan 2024+)
System	**9. Improve quality of data validation controls across the VSL IT ecosystem** to decrease recurrence of stuck records by: a) Creating a data dictionary for use across systems to ensure terminology alignment and improvement of data validations. b) 'Locking down' some or all data entry fields after providers have entered relevant data. c) Implementing automated student debt record data validation functionality between systems (e.g. VPAYS and TCSI). **10. Implement future-state IT systems practices** through: a) Introducing a holistic testing framework and strategy across the VSL IT ecosystem. This should include establishing a whole-of-ecosystem test manager to support ongoing management of testing and system quality assurance. b) Automate a testing suite that can be used following changes to relevant IT systems (i.e. to confirm changes have caused no unintended consequences).
Process	**11. Ensuring accurate future assessment of program risk treatments** by: a) Establishing a scheduled review process to periodically check and challenge risk treatment effectiveness ratings. This should also include assessment of the strength of evidence supporting effectiveness ratings.

Note: It is acknowledged that these actions may take longer than 3-6 months to complete and that actions from Stage 1 and 2 may need to be completed beyond the Jan 2024 timeframe as well.

1g Executive summary – Systems suggested actions delivery plan

The timeline below provides an indicative delivery plan to support the implementation of suggested actions across each of the stages. Further detail and reference to suggested action numbering has been provided on the previous pages. These suggested actions have been designed to provide maximum impact for the VSL program across the short, medium and long term with key dependencies also identified.

Note: This delivery plan is indicative only and is intended to provide an example view of timeframes and should be used to inform implementation.



Note: These system and process actions were identified as a short-term interim measure only to manage risk of stuck student debt loan records. These will not resolve issue and the actions in Stage 3 are designed to support longer-term resolution of this issue. Outcomes of Action 4 and 5 may inform the development of a business case for longer-term fit-for-purpose IT solution.

Key: Suggested action — Dependency

2 High-level diagrams

2a High-level diagrams – VSL IT ecosystem overview

Context

The diagram to the right summarises the VET Student Loans (VSL) IT ecosystem. It highlights the key systems and integrations involved in handling VET debt records and provider payments. Risks and issues throughout the ecosystem have been identified which have resulted in student debt records remaining 'unprocessed' in multiple points.

Key risks / issues

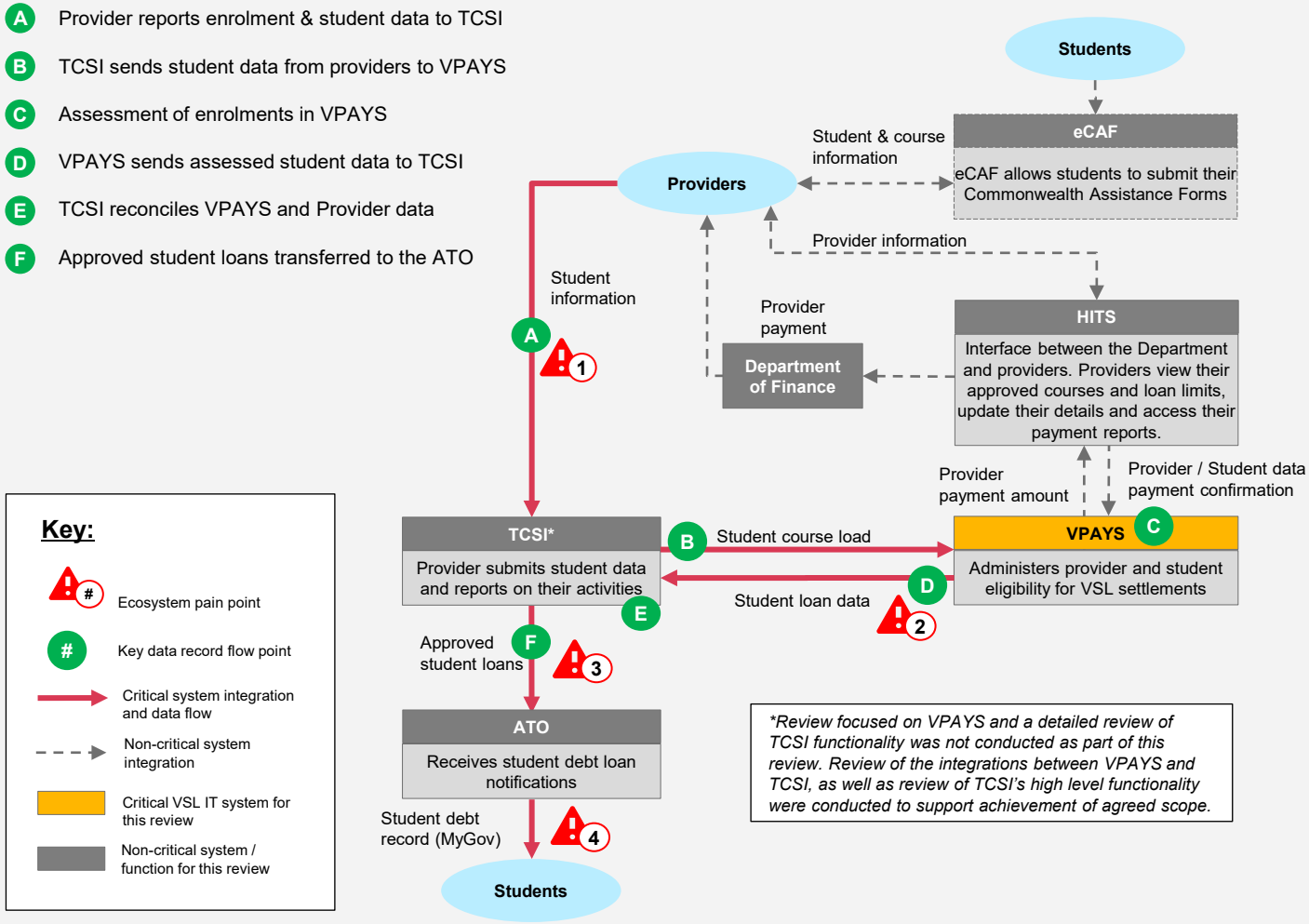
The following key risks / issues related to the VSL IT ecosystem were identified:

1. **Key fields required by TCSI to progress records to the ATO are not mandated for providers during data entry**. TCSI business rules require particular fields populated (e.g. Residential Code) to ensure records are appropriately assessed. These fields are not mandated when providers report enrolment and student data. This was noted to have resulted in unprocessed records in TCSI.
2. **Records which are unsuccessfully transferred between VPAYS and TCSI are not investigated / remediated**. Validation is limited to confirming that VPAYS has successfully sent the records to TCSI. Although errors are identified, there is no mechanism to resolve errors resulting in continued unprocessed records in VPAYS.
3. **Provider data is able to be updated during the time in which records are processed to ATO**. There is a 14 day gap between records leaving VPAYS and being sent to the ATO, during which providers are able to change student data. This can result in mismatches of data reconciled by TCSI, VPAYS and ATO, causing records to be unprocessed (impacting approximately 2% of records each month)
4. **There is no end reconciliation of records between VPAYS, TCSI and the ATO**. There is no mechanism by which records transferred across these systems are reconciled. Without this, it is impossible to confirm which records have been successfully transferred through VPAYS, TCSI and ATO reducing ability to identify issues.

VSL IT ecosystem and relevant pain points

Relevant steps in the successful transfer of a student debt records to the ATO

- A Provider reports enrolment & student data to TCSI
- B TCSI sends student data from providers to VPAYS
- C Assessment of enrolments in VPAYS
- D VPAYS sends assessed student data to TCSI
- E TCSI reconciles VPAYS and Provider data
- F Approved student loans transferred to the ATO



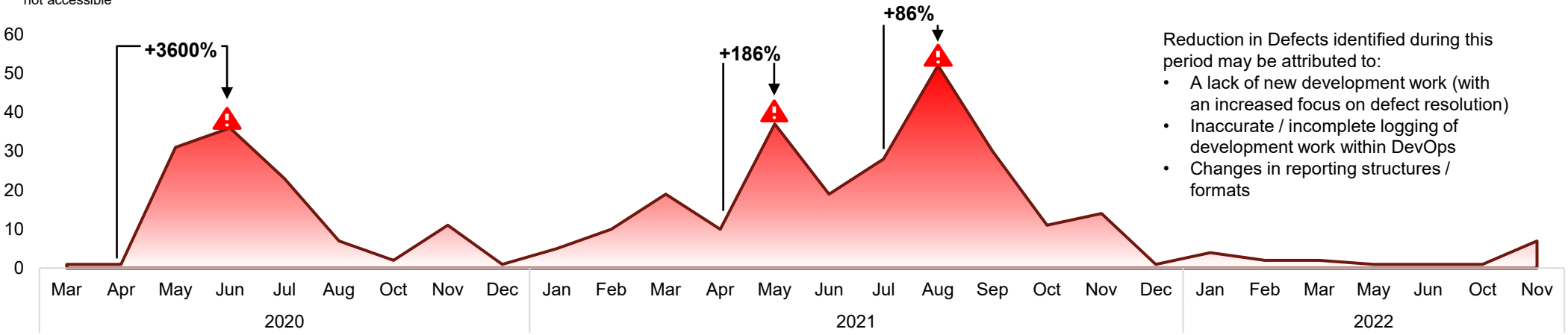
Note: *This diagram reflects only the data flows and components of the VSL IT ecosystem architecture relevant to the 'NULL USI' issue. This diagram is not reflective of the entire VSL IT ecosystem or data architecture.*

2b High-level diagrams – System stability analysis (Defects)

Chart 1 (below): This chart highlights the instability of VPAYS over the last three years (between March 2020 and November 2022), noting that there appears to be a significant downtrend in 2022 defects identified (potential explanation noted below). The multiple spikes in defect numbers identified throughout 2020 – 2021 indicate instabilty in the system and show significant levels of fluctuation compared to general software defect rates in a BAU environment (Chart 2).

***Limitation:** Data was only available from early 2020 as the previous tool (TFS) was not accessible

Chart 1: New VPAYS bugs identified over time

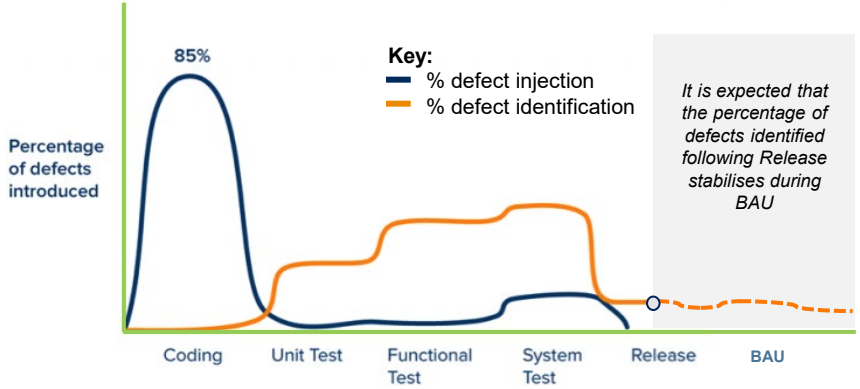


Reduction in Defects identified during this period may be attributed to:

- A lack of new development work (with an increased focus on defect resolution)
- Inaccurate / incomplete logging of development work within DevOps
- Changes in reporting structures / formats

Chart 2 (below): General software development environment tracking defects introduced across delivery phases. As seen in the progression into a BAU environment, defects should reduce over time, with stabilisation projected to occur post release.[1]

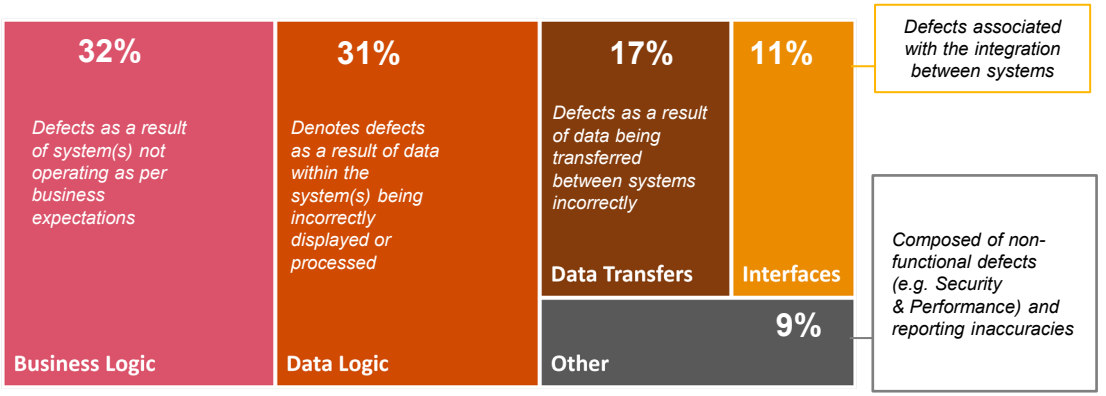
Chart 2: BAU defects industry comparison



[1]*Capers Jones: Applied Software Measurement: Global analysis of productivity and quality*

Chart 3 (below): Represents the key categories of defects raised and recorded in DevOps from March 2020 to November 2022. The majority of defects **(~63%)** can be attributed to foundational system issues (i.e. business logic / requirements and data-logic).

Chart 3: VPAYS bug categories



2c High-level diagrams – VPAYS BAU IT governance overview

Overview

The diagram to the right highlights the relevant governance and decision-making arrangements identified at the time of the progression of User Story 66942 (VPAYS issue fix that released NULL USI records).

Appropriate governance arrangements and protocols (including escalation thresholds) are critical to well-informed, and risk based, decision making.

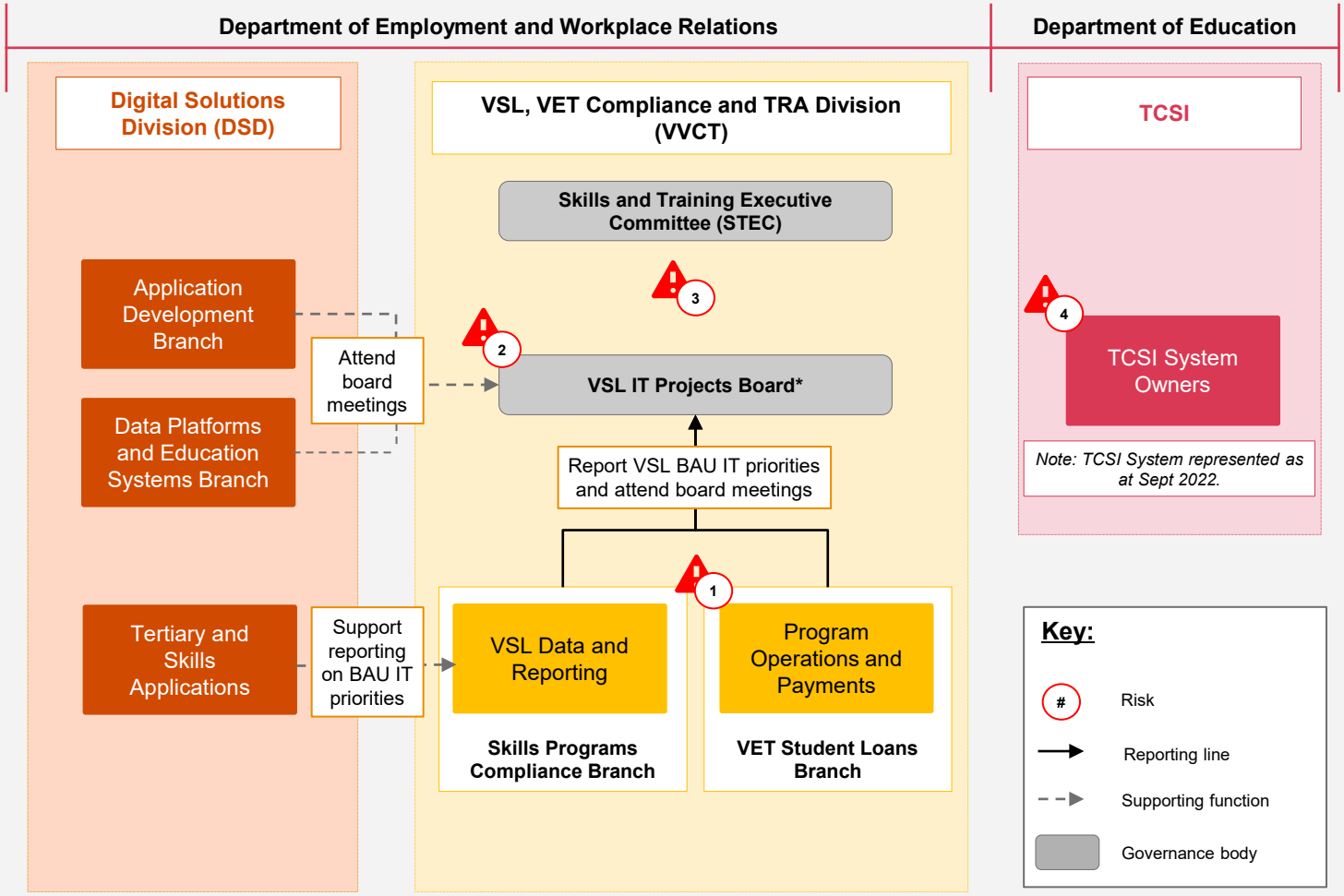
Strong governance becomes even more important where multiple stakeholder groups and systems are involved. This ensures all relevant risks are considered prior to any decision being made.

Risks / Issues

The following risks / issues related to the governance framework were identified during fieldwork:

1. **Approvals (into production) are made without clear decision making thresholds –** Decisions regarding BAU IT priorities and fixes (including approvals into production) are made at Director level before progression to Board (for information / noting). Value of the Board is unclear.
2. **VSL IT Projects Board is not a decision-making authority for BAU IT issues –** Any issue brought to the board is for noting / information only. No specific decisions are made. Meeting minutes indicated limited-to-no discussion on BAU priorities and fixes (although they were listed as agenda items). Value of the Board is unclear.
3. **Limited VET senior executive governance visibility –** There are no formal governance forums to facilitate reporting to VET Senior Executives beyond VSL IT Projects Board. This may lead to similar issues not being escalated in future.
4. **Inappropriate TCSI Business representation –** There was no TCSI business representation (Department of Education) on the VSL IT Projects Board to support decision making and risk analysis until recently (September 2022 – after issue occurred).

VPAYS governance arrangements for BAU IT Issues (prior to Sept 2022)



** Membership as reflected in March 2022 Terms of Reference included: Director and SES Band 1 officials (total of 8) across VCTD and DSD. Invited attendees (6 in total) included Assistant Directors in VCTD and Technical IT experts in DSD. The Chair of the Board was (and continues to be) the Assistant Secretary, VET Student Loans Branch.*

3 Detailed observations

3a Detailed observations – System

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
System – Context and systems analysis 	**1.** Confirm how the IT update deployed on 7 July 2022 released these student debt records, including:		
	1.1 Understanding the original need for the IT update	• **PwC was able to validate the original need for the IT update** which resulted in the 'Issue' through the Department's root cause analysis. The Department was responding to a number of debt record enquiries where it was discovered a missing USI data value was stopping debt records from progressing through the VSL IT ecosystem. Departmental analysis conducted in August 2022 (VSL – VPAYS Post Incident Report) identified the deployment of User Story 66492 as the root cause of the issue. Deployment of User Story 66492 was in response to known 'NULL USI' data issues which had resulted in records being 'stuck' within VSL systems. Note: *Review and analysis of development reporting software used to support the VSL Program (DevOps) confirmed traceability of record release to these events.* • **Analysis of DevOps indicated broader issues associated with the transfer of records between VSL platforms** were identified by the Department in February 2022 (User Story 66110). It is understood that these 'broader issues' highlighted the potential risks of 'stuck' or 'pending' records across the interfaces between VPAYs and TCSI. *Note: Issue identification and escalation activities which were undertaken for the incident have been noted on page 5.*	Ref. suggested actions 1a – c. **1. Minimise impact of immediate risks of 'stuck' debt records**, through: a) Initiating an audit check against student records to ensure records are correct and appropriate to apply to students ATO profiles, before records are transferred from the Department's IT systems to the ATO b) Remediating historical student loan records held in the Department's IT systems to ensure they are correct and transferred to student ATO profiles c) Working with the ATO to manage the release of historical loan records in a way that supports the implementation of debt waivers and student communication and assistance. .
	1.2 Confirming whether departmental change release process was adhered to, including whether adequate testing was performed prior to release.	• **A departmental process for the identification and resolution of IT incidents was documented** (IT Incident Management Workflow) and this was adhered to by business and IT team members to progress User Story 66492. A number of deficiencies were identified in the departmental incident management process, which have been further detailed in Observations at 5.1. • **Testing processes were inadequate to effectively manage risks inherent in change release process** – further detailed in Observations at 4.1. • Areas where change release processes could be strengthened are detailed in Observations at 4.2.	*Ref. suggested actions documented in Observations at 4.2.*

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

3a Detailed observations – System (cont.)

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
 **System – Context and systems analysis (cont.)**	**2.** Confirm whether the Department has the appropriate information systems and relevant processes in place in relation to:		
	2.1 identifying key technical impact factors that contributed to the issue of loan records (as identified by the Department) within VPAYS and TCSI not being transferred to the ATO and why this was not detected;	**Multiple technical impact factors were identified as contributing to stuck loan records** within VPAYs and TCSI not being transferred to the ATO. These key factors are noted below: • **Complex nature of the VSL IT ecosystem** – Over time, the VSL IT ecosystem, as well as its supporting architecture, has developed into a complex construct of data, integrations and processes. The following elements have been identified as key drivers to this complexity: ○ ***Evolution of "interim VPAYS solution" resulting in inefficient data flows / architecture of VSL systems*** – VPAYs was intended to be "utilised for a period of 24 months" as an interim solution from 2017. It has been operating as the key calculation engine for VET Student loans from 2017 to date through ongoing expansion and customisation. *Note: Page 21 provides a visual representation of the system architecture, its inefficiency and implications.* ○ ***Increased reliance on manual processes*** – The VSL IT environment is supported by various manual batch processes (e.g. manual monthly pay run processes) which have contributed to increased risk of errors through the end-to-end loan / payment transfer process. ○ ***Key VSL IT systems appear to be unstable*** – Analysis of Azure DevOps identified high levels of system instability within the VPAYS environment, with multiple (3) spikes in defects being recorded since 2020. Note that the most recent of these spikes was ~90% increase in defect numbers from July – August 2021, which may be attributed to system changes occurring during this time. Ongoing spikes in defects or production issues in a BAU environment is commonly indicative of an unstable system / or supporting ecosystem. *Note: Analysis of VPAYS defects identified over time (Page 14) and system issues identified over time (Page 28) illustrate this instability.* • **Data fields required by TCSI to send student debt records to the ATO are not mandated to VET providers** – For TCSI to send student debt records to the ATO it requires 4 key fields to be populated (1. Tax File Number (TFN), 2. TFN validated within 24hrs, 3. Country Code and 4. Residential Code). These critical data fields are not mandated at the time of data entry, and there is no real-time validation that these fields are populated correctly by providers. Stakeholders have indicated that non-population or incorrect population of this data has resulted in student debt records remaining unprocessed in TCSI. *Note that further technical impact factors which have contributed to stuck loan records are highlighted on the following page.*	Ref. suggested actions 3a – b. **3. Reassess current state to inform future improvements** through: a) Documenting a consolidated view of the current state end-to-end business processes and system requirements supporting the VSL IT ecosystem. b) Completing prioritisation of outstanding BAU issues to ensure critical / high priority items are identified / resolved as required. Ref. suggested actions 4a & b. **4. Validate whether existing system processes and requirements are fit-for-purpose** and meeting stakeholder needs by: a) Confirming whether there is alignment of business rules, legislation, business processes and system functionality. b) Identifying gaps that need to be addressed (as informed by process map outputs from Action 3a).

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

3a Detailed observations – System (cont.)

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
 **System – Context and systems analysis (cont.)**	**2.** Confirm whether the Department has the appropriate information systems and relevant processes in place in relation to:		
	2.1 identifying key technical impact factors that contributed to the issue of loan records (as identified by the Department) within VPAYS and TCSI not being transferred to the ATO and why this was not detected ***(continued)***;	• **Provider data is able to be updated during the time in which records are processed to ATO** – While there are some data fields VET providers need to update (e.g. student course completion) there are key fields that should not change that can result in student loan debt not being transferred to the ATO (e.g. debt value). There is a 14 day window in the current process that allows VET providers to update these key fields in TCSI which, if updated by providers, can result in data mismatches with original data. Where this occurs, student loans cannot be transferred successfully to the ATO. The following additional key impact factors have been identified during the review across multiple scope elements. These have been summarised below and reference provided to the area of more detailed observations (e.g. within control/implementation or change and release management sections): • **No formal process to investigate errors flagged during transmission of student records between VPAYS and TCSI** – Refer to Observations at 2.3. • **No visibility that records align as they move between different VSL IT systems** – Refer to Observations at 2.4. • **The VSL IT ecosystem does not utilise any automated data reconciliation across relevant system transfers** – Refer to Observations at 3.1. • **There is no integrated testing environment to adequately test proposed system changes** – Refer to Observations at 4.1	Ref. suggested action 5a & b. **5. Review options available to the Department regarding development of a replacement IT solution.** This should: a) Consider indirect, intangible and opportunity costs of both options (investment in current VSL IT ecosystem or new IT solution). b) Leverage outputs from Action 5a as a foundation for determining future requirements and enhancements. Ref. suggested action 9b. **9. Improve quality of data validation controls across the VSL IT ecosystem** to decrease recurrence of stuck records by: b) 'Locking down' some or all data entry fields after providers have entered relevant data.

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

3a Detailed observations – System (cont.)

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
System – Context and systems analysis (cont.) 	**2.** Confirm whether the Department has the appropriate information systems and relevant processes in place in relation to:		
	2.2 identifying key impact factors that contributed to the remaining large number of debts that have still not been transferred to the ATO (as identified by the Department) between 2009 and 2022.	*Note: Additional causes for these records yet to be transferred to the ATO (records with dates of records ranging between 2009 and 2022) will be investigated as part of Phase 1b of this review (to be completed in early 2023). It is likely that the key impact factors identified in this review will contribute to this cohort not being transferred as well.*	
	2.3 mechanisms in place to ensure that records held in VPAYS are successfully identified and transferred to TCSI (i.e., not just 'messaged').	• **There is limited validation of student records transferred between VPAYS and TCSI** (e.g. a automated or manual reconciliation of records within each system). This restricts the ability for the VSL Program to ensure that records are successfully transferred between these systems. Analysis of business processes (VSL data and reconciliation processes) identified the following pain points: ○ **Although 'error-messaging' occurs between these systems, there is no mechanism to conduct further analysis on these records.** Existing interfaces between VPAYS and TCSI allow for 'Error' messages to be returned to VPAYS if a record is unable to be transferred to TCSI. Documentation suggests that there is no ability to conduct further analysis (i.e. to identify re-occurring errors or undertake detailed categorisation) or take remedial action. ○ **There is limited capacity (system or manual processes) to trigger a 'Payment Re-assessments' within VPAYS** on a stuck record. Enabling the ability to trigger payment re-assessment would have allowed for the proactive resolution of stuck loan records as they occurred (if they are effectively identified as 'errored' records).	Ref. Suggested Action 2a & b. **2. Establish interim processes to support the VSL IT ecosystem** through: a) Establishing a manual process for the reconciliation of student records as they are transferred from VPAYS, receipted in TCSI and to confirm the records are displayed correctly in ATO systems. b) Establishing a business process to investigate and action records which are not successfully transferred between VPAYS and TCSI (i.e. those identified via Action 1a).
	2.4 the end to end processes in place to ensure alignment of data between the Department's systems (VPAYs), Education (TCSI) and ATO.	• **There is no consolidated reporting, process or monitoring in place to ensure alignment of data across systems** (i.e. between VPAYS, TCSI and ATO). Stakeholder consultation and review of system architecture indicates that there is no integrated reporting suite enabling end-to-end traceability between a student records, provider payments and student loans across the solution. Without consolidated reporting, the Department does not have a clear mechanism to accurately validate end-to-end data flows or proactively identify potential issues. • **Validation of student records does not occur over the entire VSL Program** and is currently conducted separately within relevant Departments (DEWR, DE and ATO) and systems – Refer to Observations at 3.1. • **Departmental analysis indicates that ATO reporting of loan adjustments processed through the VSL IT ecosystem is not meeting current legislative requirements.** Departmental review received on 16 November 2022 (*Background Briefing – ATO VSL Loan Debt Adjustments)* has identified that debt adjustments are causing original debts to the remitted and new total debt amounts to be created. The departmental review indicates this does not align with the *VET Student Payment Arrangements Act 2021*.	

3a Detailed observations – System architecture

The charts below contrast the risks of the current state VSL IT system architecture **(Chart A)** with the benefits of a better practice streamlined system architecture **(Chart B)**.

Review of system architecture documentation, integrations and data flows indicate that the current state VSL IT system architecture is representative of **Chart A**. This is representative of inefficient system architecture, whereby information and data flows have multiple touch points in a non-linear path. General business risk implications associated with adopting this structure have been noted below the diagram (e.g. increased complexity of any automated processes). Review indicates that many of these risks have been realised within the VSL environment.

This is contrasted with an example of streamlined architecture (**Chart B**) whereby systems with similar business functions / rules can be aligned to key processes in a linear path, the potential benefits of which are also noted.

***Chart A** – Current state architecture*

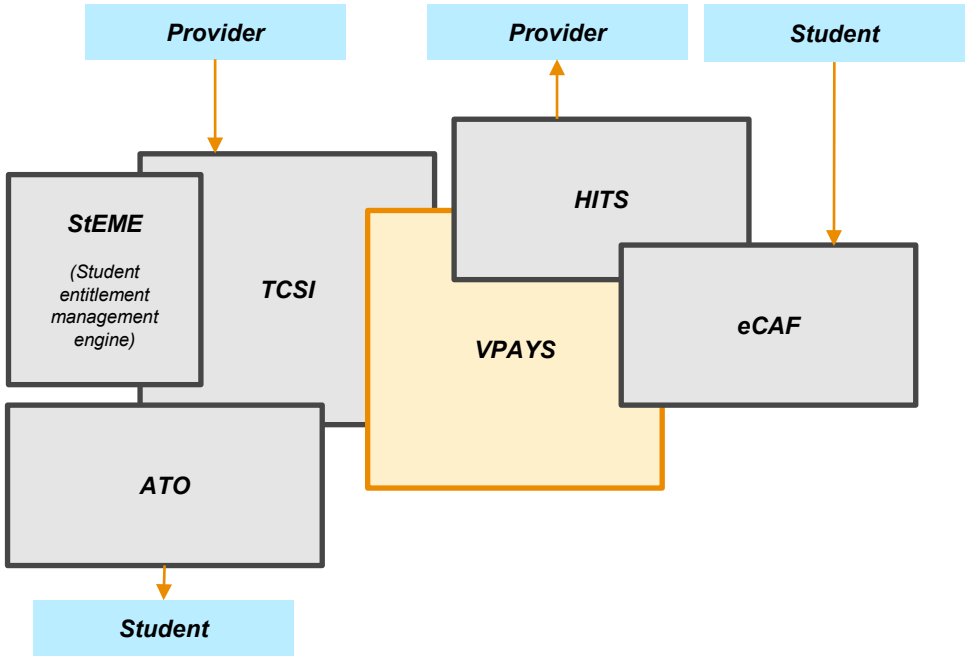
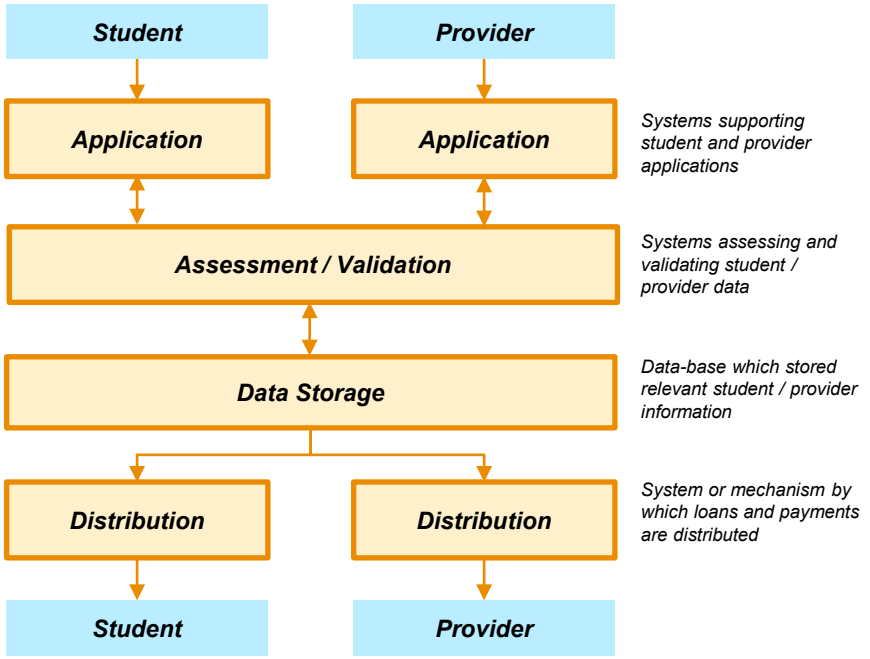


Chart B - Example of streamlined architecture



Risks

- Increased complexity associated with automation of processes
- Reliance on manual processes / activities
- Difficulty in identifying downstream or upstream impacts of individual system / integration changes
- Greater cost of maintenance of individual systems

Benefits

- Reduced risk when applying system changes / maintenance (downstream impacts are easier to identify)
- Standardisation and automation of processes and data flows
- Increased ability to apply data monitoring and reconciliation

3a Detailed observations – System (cont.)

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
 **System – Control and implementation**	**3.1** Identification of key system controls (automated and/or manual) and confirm whether they were operating effectively to manage risk associated with this issue (e.g. reconciliation mechanisms and reporting).	• **There is no process (either automated or manual) to reconcile student debt records** or loan amounts between VPAYS, TCSI and the ATO. The absence of this reconciliation process for student loan data was first confirmed through review of business process maps and subsequently validated with VSL business stakeholders on 31 October 2022. The lack of automated reconciliation between systems increases the risk of misalignment of student record information. • **Key controls are not designed to manage risks relating to student loans.** Key controls identified in documentation (including an external review performed in January 2020) such as that over the monthly provider pay runs performed on the 10th of each month are designed to manage risks associated with completeness and accuracy of payments to providers (in arrears). Stakeholder discussions (including with the Program Operations and Payments team) validated that controls were designed primarily with the integrity of provider payments in mind). *Note: This was later confirmed in writing on 22 November 2022.* • **No variance reporting of student debt records has been designed or implemented** to support risk remediation and enable more effective management and decision-making. This reporting would provide senior management with visibility over the quantum of affected student debts in the system and could help to inform remediation strategies. *Note: Refer to Observations at 6.1 – Risk Management for further detail on risk treatments implemented to manage key risks associated with the issue.*	Ref. suggested action 9a & c. **9. Improve quality of data validation controls across the VSL IT ecosystem** to decrease recurrence of stuck records by: a) Creating a data dictionary for use across systems to ensure terminology alignment and improvement of data validations. c) Implementing automated student debt record data validation functionality between systems (e.g. VPAYS and TCSI).

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

3a Detailed observations – System (cont.)

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	
 **System - Change and release management**	**4.1** Confirm appropriate testing (e.g. regression and UAT) was undertaken by the Department over VPAYs for major changes prior to implementation.	• **A consistent approach was observed during test execution and test reporting** prior to the deployment of system functionality. Through review of the approach undertaken for multiple defect fixes and feature implementations, a consistent approach was observed in relation to the execution of testing activities (e.g. DevOps categorisation) and supporting reporting (e.g. Test Summary Reports). • **VPAYs development and business teams do not have access to an integrated testing environment** (including instances of external systems across the VSL IT ecosystem). The lack of an integrated testing environment limits the ability of both development and business teams to undertake thorough testing activities, reducing visibility of potential impacts to downstream systems or business processes. For example, stakeholders confirmed the current testing environment does not enable access to ATO, meaning that critical data transfers are unable to be accurately validated. *Note: Stakeholders noted that the need for an integrated testing environment was previously raised as a potential area of improvement for the Program (ITE Solution Design document) in 2018. Further progression or discussion of the need for an integrated environment was unable to be confirmed.* • **Multiple limitations were observed with the departmental testing processes** during the deployment of changes in VPAYS, including: ○ **Active business engagement throughout the testing lifecycle was not observed.** Business involvement primarily occurred during sign off phases and was targeted toward seeking approvals to proceed to production, not confirmation that system updates were meeting stakeholder needs. Business involvement is expected during requirements gathering and test case development, prioritisation and sign-off stages. ○ **No evidence was identified of regression, system integration testing (SIT), or non-functional testing being undertaken.** Both SIT and regression testing are critical in identifying downstream and upstream impacts of system changes, with the latter providing a foundation for system 'roll-back' if adverse impacts are confirmed. Stakeholders indicated that testing of integrations to VPAYS are limited to ensuring that data is able to be successfully transferred to TCSI. ○ **Testing of changes to VPAYS is limited to unit testing by development teams**, and does not validate business scenarios (e.g. through User Acceptance Testing). Review of a sample of Test Summary Reports of functionality in VPAYS indicates that the validation of system functionality only occurs in the Unit Testing phase (i.e. testing which is conducted by IT teams and is focused on validating individual components of code or pieces of functionality). ○ **Test coverage for the deployment of features or defect fixes does not include an assessment of end-to-end system impacts.** Existing testing practices supporting changes to VPAYS (across Unit and User Acceptance Testing phases) do not include an assessment of downstream or upstream system impacts. The inability to accurately assess end-to-end system impacts can be attributed to the lack of an integrated test environment, the siloed nature of development activities occurring between systems (Refer to Observations at 4.2), and capacity limitations.	Refer suggested action 6a - d. **6. Strengthen approach to BAU VSL IT ecosystem testing** by: a) Working with the ATO to improve the current approach by managing and maintaining a joint test environment with a view to establish a sustainable joint capability supporting integrated testing across all environments in the VSL IT ecosystem b) Documenting and embedding a system impact assessment process to be completed prior to deployment of fixes or new features. c) Involving internal and external stakeholders across key stages of the testing lifecycle d) Expanding testing coverage and incorporating scenario and non-functional testing when making system changes in BAU.

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

3a Detailed observations – System (cont.)

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
 **System - Change and release management (cont.)**	**4.2** Confirm departmental change management processes relating to new functionality or bug fixes are appropriate and being complied with (through sample testing).	• **There is currently no mechanism to confirm traceability between functional requirements, business processes and testing activities** for departmental systems supporting VSL (e.g. single source of truth). Although DevOps is being utilised to track system changes over departmental systems, stakeholders noted that there is no single source currently in place to confirm and continually refine system requirements or business processes against. The lack of clear, accurate and consolidated set of functional requirements limits the ability to establish traceability to testing activities. • **A documented test strategy to support testing activities across the VSL IT ecosystem was not identified.** Current development, testing and deployment activities are currently managed separately across DEWR, DE and ATO. This has resulted in discussions regarding new functionality / bug fixes being conducted through ad-hoc mechanisms and reactive prioritisation processes which can contribute to ecosystem instability and quality assurance limitations. • **A clear ecosystem test manager with oversight across the VSL solution was not identified.** There is an opportunity for the Department to establish an ecosystem test manager role in order to provide greater assurance over end-to-end functionality and better manage current program risks (e.g. siloed systems and the ongoing development activities across VPAYS and TCSI).	Ref. suggested action 10a. **10. Implement future-state IT systems practices** through: a) Introducing a holistic testing framework and strategy across the VSL IT ecosystem. This should include establishing a whole-of-ecosystem test manager to support ongoing management of testing and system quality assurance.

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

3a Detailed observations – System testing review

The following diagram is a high-level analysis of the software testing practices undertaken by the Department to support deployment of functionality (both across defect fixes and new features). Key good practices and improvement opportunities across each of the key phases of software testing have been identified below.

Key phases of software testing

Test planning	Test case development	Test environment setup	Test execution & status reporting	Test closure
Detailed test plan outlining the scope, objectives, test governance approach (including test phase entry / exit criteria), resourcing, test environment usage, test data requirements, tools, and a detailed test schedule.	Written development of what to test (test cases) including detailed steps, expected results, positive and negative scenarios, supporting test data and validation of test coverage by business stakeholders.	Establishment of the environment where testing will be executed that reflects the real-world 'Production' environment including test instances of all required systems and interfaces.	Executing agreed tests that pass / fail, raising defects, triage of defects by business severity / priority, retesting defects. Provision of test execution progress against the plan, defects identified, risks and issues.	Provision of a Test Summary Report at the conclusion of testing. This includes the scope of testing, test coverage, test results, outstanding defects by severity, alignment to test exit criteria.

Key observations noted across testing phases

Key: Positive Observation | Improvement Opportunity

Test planning

- ⚠ Connection of testing activities to a clear requirement was not able to be identified / is not documented.
- ⚠ An overarching VSL IT ecosystem test strategy / framework was not identified. As a result, systems across the VSL IT ecosystem follow different testing approaches.
- ⚠ A VSL IT ecosystem test manager with oversight over the whole ecosystem was not identified. As a result, end-to-end implications are unable to be overseen effectively.
- ⚠ Sufficient resources were not allocated during test planning which limited the capacity of testing teams to develop detailed test cases.

Test case development

- 👍 Test cases were documented prior to the commencement of test execution.
- ⚠ Test cases were limited to unit testing and did not validate business scenarios through User Acceptance Testing (UAT).
- ⚠ Active business involvement during the development of test cases was not observed. Business engagement appeared to occur for the sign off of test completion (and approval into production).

Test environment setup

- ⚠ VPAYS development team do not have access to an integrated testing environment with instances of all internal and external systems within the ecosystem. The lack of an integrated test environment limits the ability to validate downstream and upstream impacts of the deployment of new functionality.

Test execution & status reporting

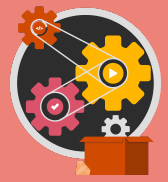
- 👍 Test cases were executed for relevant fix deployments and assigned a pass / fail result. Consistency was observed in this approach across a range of testing activities.
- ⚠ Assessment of end-to-end system impacts (downstream and upstream) was not conducted as part of test status reporting.
- ⚠ Evidence of appropriate System Integration Testing (SIT) was not identified in relevant fix deployments.
- ⚠ Evidence of regression or non-functional testing (load or performance testing) was not identified.

Test closure

- 👍 Test summary reports were produced for relevant fix deployments and approval was received from business areas.
- ⚠ Test summary reports did not clearly articulate the potential impacts of fix deployments to business.

3a Detailed observations – System (cont.)

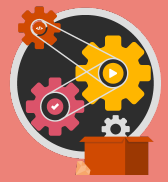
The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
 **System – Defect resolution**	**5.1** Confirm whether there are appropriate mechanisms in place for departmental officials to identify and resolve known bugs defects and issues.	• **IT Incident Management processes have been established** and were noted to have been most recently updated on August 2022 (post the relevant incident). This process includes clear separation between types of IT incidents (i.e. Data Fixes, Production Incidents or Production Support activities). These processes were followed by business and DSD IT team members throughout the resolution of the relevant defect, however some opportunities to improve the process were identified (see below). • Gaps identified in the existing incident management process include: ○ **Limited formal business involvement in the initial incident prioritisation process**. The current departmental process does not provide sufficient detail to guide business prioritisation activities. Incidents appear to be initially triaged by IT teams and then consolidated and escalated to business. Any business prioritisation and engagement following escalation occurs through ad-hoc mechanisms (i.e. via emails, messages and informal discussions). As a result, critical incident identification and / or decisions may be delayed or lost in the detail of other issues and system decisions. ○ **Further escalation or notification of incidents is not documented.** There is no documented mechanism to formally escalate incidents to a relevant authority and / or governance forum for decision making (See Observations at 7.1) • **Mechanisms to identify, track and report on IT issues are not fit-for-purpose** to enable effective management of issues. Once identified, issues are raised and recorded through a manually managed Excel Spreadsheet register for ongoing discussion (or noting). This increases the risk of issue duplication (similar / overlapping issue may already exist), missing issues or inefficient prioritisation (as manual workarounds may already exist). This has resulted in a large number of unprioritised IT issues, with over 50% of total identified issues yet to be prioritised (see page 28). *Note: 'Page 5' documents the events and activities leading into and during the defect resolution processed undertaken by the Program. The diagram on Page 25 also highlights individual pain-points in the process, as identified through review of documentation and stakeholder consultation.*	Ref. suggested action 7a. **7. Mature supporting governance arrangements** for the oversight of the VSL IT ecosystem through: a) Documenting risk-based decision making and escalation thresholds for deployment of BAU fixes.

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

3a Detailed observations – System (cont.)

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
 **System - Change and release management**	**5.2** Confirm any relevant identified risks or issues (e.g., defects) were recorded, reported and actioned appropriately.	• **Potential implications of the fix (which resulted in the release of records) appear to have been identified** (as at 5 May 2022) and review of IT Issues Registers (mechanism by which IT issues are escalated to Business stakeholders) highlighted the potential records impacted by the fix prior to deployment. • **The consequences of fix implementation did not appear to be clearly communicated or understood by Business** and impacts were not clearly articulated. The IT BAU Issues Register (5 May 2022) indicates that *'18,000 student records will be 'impacted' by the fix, while a total of 35,000 records may still remain stuck'*. There is no further explanation available which allows business to understand the '*impact*' to the original 18,000 records (e.g. immediate release and flow to the ATO through TCSI). Additionally, it is not clear from review of relevant IT Project Board minutes whether the issue was discussed in detail at a formal governance body. • **IT Reporting for BAU IT issues / defects do not provide clear business context and appears to have a systems focus.** Analysis of a sample of IT Reporting (Test Summary Reports, User Story Reports from May 2022) highlighted that documentation may not have provided business with sufficient detail to drive informed decision making. Test Reporting indicates that potential impacts are limited to system elements, with business implications not being clearly articulated. As a result, Business do not appear to have assurance that defects are effectively and appropriately resolved. • **No appropriate reporting of the status of IT delivery (particularly in relation to BAU defect resolution)** was provided for review. Reporting of the status of IT Delivery (particularly for defects) is limited to reporting of the 'IT BAU Issues Register' and verbal updates within IT Project Board as required. Status reporting associated with system bugs or issues, does not currently exist to support VSL IT systems (within DEWR).	Ref. suggested action 10b. **10. Implement future-state IT systems practices** through: b) Automate a testing suite that can be used following changes to relevant IT systems (i.e. to confirm changes have caused no unintended consequences).

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

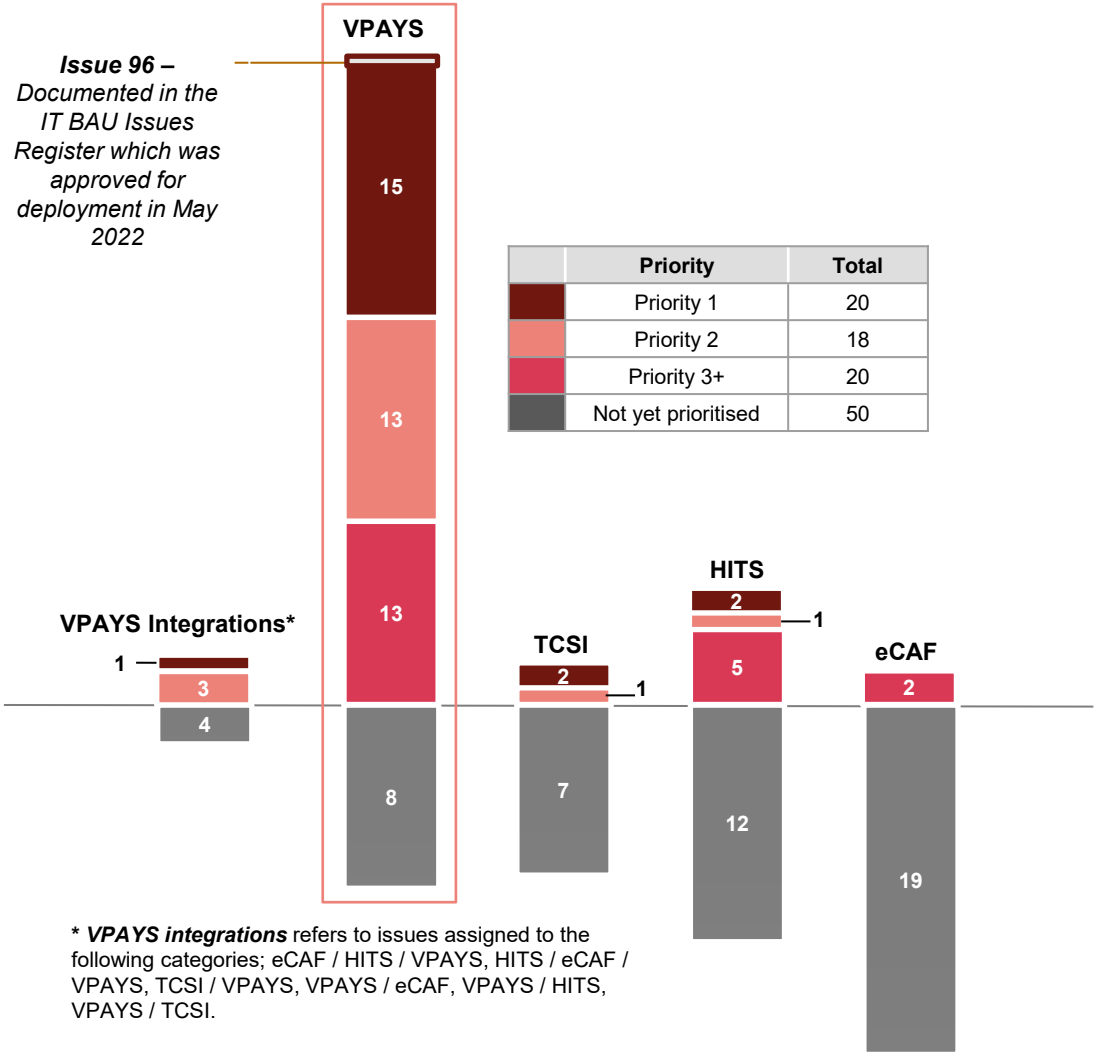
3a Detailed observations – System stability analysis (Issues)

Analysis below has been conducted on 'issues' documented within two separate mechanisms, utilising the IT BAU Priorities Register (Nov-2022) and Azure DevOps (as at 25 November 2022). Note that issues within these two mechanisms are unable to be reconciled due to both referencing different sets of issues, highlighting the unstructured nature of reporting as well as system instability.

Analysis of 108 'Issues' in the Nov 2022 in the IT BAU Issues Register

Analysis indicates that high numbers of issues are being identified for VPAYS, highlighting potential stability issues and the issue backlog requires prioritisation (~50% of issues yet to be prioritised).

Issue 96 – *Documented in the IT BAU Issues Register which was approved for deployment in May 2022*



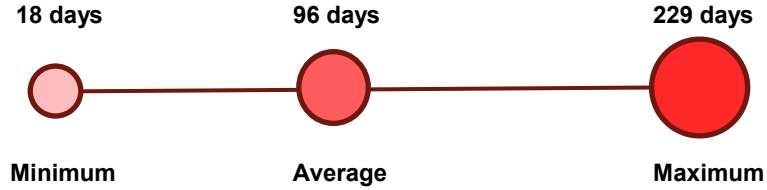
	Priority	Total
	Priority 1	20
	Priority 2	18
	Priority 3+	20
	Not yet prioritised	50

* ***VPAYS integrations*** refers to issues assigned to the following categories; eCAF / HITS / VPAYS, HITS / eCAF / VPAYS, TCSI / VPAYS, VPAYS / eCAF, VPAYS / HITS, VPAYS / TCSI.

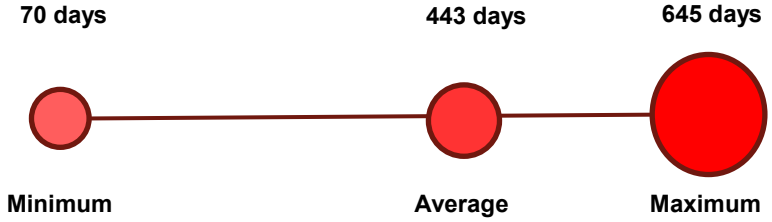
Analysis of 32 'Issues' captured as at 25 November 2022 in Azure DevOps

91% of **Issues** raised within DevOps remain open (as at 25 November 2022).

For the 3 issues that have been closed within DevOps, **time taken to resolve** has varied**.** On average, issues are taking **13 weeks** to resolve, acknowledging the small population of closed issues.



For the 29 issues that have remained open in DevOps, time which issues have remained open indicates potential capacity constraints and / or complexities associated with the issues or system. On average, **issues appear to be remaining open (without resolution) for an average of 443 days.**



Note: The high number of open Issues and extensive closure times may also be attributed to changes in reporting methodology.

3b Detailed observations – Process

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
 **Process – Risk management**	**6.1** Confirm the approach in place provided coverage over the identification, management, and reporting of relevant risks (e.g., system issues / defects, ability to complete any build as intended etc.)	• **Documented risk management plans are in place** with assessed key risks for the VSL program. Four Risk Plans were sighted covering the 34 months from November 2019 to September 2022. This shows that from November 2019 the risk plan has been approved at least annually, which aligns with the Department's Enterprise Risk Management Framework requirements. • **Risk plans do not adequately account for risk to student debt record accuracy as a result of IT system failure.** The 24 January 2022 risk plan (#000172 v1) identifies two risks that could apply to the VET IT issue: *1) Risk R003426 - IT systems fail to support effective program delivery, including increased risk of failed and incorrect payments, disruptions, and availability and quality of data* *2) Risk R003424 - Students are exploited, unsupported or improperly given debt* Subsequent to the impact of the historical student loans being sent to the ATO, the updated risk plan #000172 v2 (6 September 2022) has not been updated to reflect management of this risk in future. Given the impact of the issue it is expected that either a new risk and accompanying treatments would be created (or existing risks and treatments would be amended) to address the issue. • **No evidence of departmental review of effectiveness of risk treatments** and acceptance of risks was found to confirm whether risks and treatments have been appropriately assessed commensurate with the Department's risk appetite and tolerance thresholds. For example, the above IT systems risk **(rated high)** was accepted and approved by management in both January and September. However, that the Department's risk tolerance with respect to program delivery and technology is 'medium'.	Ref. suggested action 8a & b. **8. Revalidate the current VSL Program risk management plan** by: a) Confirming whether relevant risks have been captured and residual risks are within existing departmental risk appetites and / or tolerances. b) Confirm whether risk treatments have been appropriately assessed for effectiveness.

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

3b Detailed observations – Process (cont.)

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
 **Process – Risk management (cont.)**	**6.1 (cont.)** Confirm the approach in place provided coverage over the identification, management, and reporting of relevant risks (e.g., system issues / defects, ability to complete any build as intended etc.)	• **Controls / risk treatments identified to manage the risk of system limitation issues have been assessed as 'moderately effective' without adequate supporting evidence**. Five out of six IT risk treatments were assessed as 'moderately effective' by the Department. However, review of available control documentation, and validation through stakeholder discussions, did not support these effectiveness assessments. These are outlined below: ○ **T020997** - *Ongoing IT system issues (whether project or BAU) are prioritised and escalated to the VSL IT Project Board for resolution. Decisions, including the reasons, for temporary workarounds are documented*. Although there is monthly reporting on IT system issues and priorities to the VSL IT Projects Board, the Board is not a decision making authority (as per the TOR, and confirmed by stakeholders). IT issues and fixes are only reported to the Board for noting and information only. A sample of minutes reviewed confirmed the limited role that the Board plays in managing BAU related risks and issues. *Note: Decisions for deployment of fixes into production are made at the Director-level* (See Observations at 7.1) ○ **T020998** - *Quality controls and assurance mechanisms are established to monitor, resolve, and escalate data migration issues early*. Reconciliation controls (e.g. monthly pay run processes) focus on payments to providers. There is no specific reconciliation control performed over whether student loan amounts are accurately and completely transferred between VPAYS, TCSI and ATO and back to VPAYS (to help identify instances where student debts have not transferred to the ATO). This was corroborated through documentation review and through multiple stakeholders. ○ **T020996** - *Users effectively engaged throughout the application development process, including User Acceptance Testing (UAT) and sign off*. It was confirmed that there was no Business UAT testing completed (only limited Unit Testing and approval of outputs) for BAU IT issue fixes. The deployed fix which led to the pending loan records to be transferred to the ATO did not undergo any form of UAT testing, prior to deployment into production. Reliance was placed on advice and test reporting provided by IT. ○ **T020911** - *The VSL IT Projects Board is monitoring the resourcing to ensure that the necessary IT capacity and capabilities are available and prioritised to deliver our VSL projects and business as usual activities.* Discussions with stakeholders indicated resourcing constraints were, and continue to be, present for the VSL program which has impacted ability to prioritise and remediate IT issues and fixes (both business and IT). There are no specific thresholds or escalation protocols (See Observations at 7.1)	Ref. suggested action 8a & b. **8. Revalidate the current VSL Program risk management plan** by: a) Confirming whether relevant risks have been captured and residual risks are within existing departmental risk appetites and / or tolerances. b) Confirm whether risk treatments have been appropriately assessed for effectiveness.

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

3b Detailed observations – Process (cont.)

The table below identifies detailed observations and guiding criteria for each scope element. Observations are drawn from consultations with Program stakeholders and review of available documentation. Refer to *Appendix 4a* for the full review scope.

Scope element / guiding criteria		Detailed observations	Suggested Actions
 **Process – Internal escalation mechanisms**	**7.1** Confirm whether relevant internal escalation mechanisms were used appropriately regarding the identification and escalation of the issue.	• **There is currently no formalised approach towards the identification, escalation and prioritisation of system issues.** Activities which manage BAU IT issues occur on an 'ad-hoc' basis (e.g. through email discussions) and are not currently driven through structured frameworks or departmental management mechanisms. All BAU IT issue fixes are approved at the Director level with no further escalation processes identified. There are no documented approval or escalation mechanisms identified for when higher levels of authority (above EL2 Director) may be sought in relation to a BAU IT fix. There is also no documented criteria which an approver must consider prior to approving an issue fix into production. This reduces the transparency (and defensibility) of decision making. • **There are no clear risk-based thresholds (or escalation protocols) in September 2022 risk management plan** to help departmental staff determine what issues are considered higher risk and therefore require more senior oversight and / or greater prioritisation. All BAU IT priorities are determined at the Director-level and reported to the VSL IT Project Board for noting. There is no specific documented Senior Executive oversight or approval processes in place. This would also mean that prioritisation activities are not performed against clear assessment criteria that ensure consistency of assessment outcomes. • **The VSL IT Projects Board does not have a specific approval role in the management of BAU IT issues** according to its terms of reference. Lists of priority IT issues are included in board packs for 'noting'. Approvals for the deployment of functionality occurs outside of the IT Board meetings (via ad-hoc mechanisms such as email at the Director level). For example: ○ The approval for Issue 96 fix (5 May 2022) occurred prior to reporting to the Board on 10 May 2022. There was no documented discussion of this fix in the Board meeting minutes ○ Prior to September 2022, there is no evidence of TCSI business representation on the Board. This reduces visibility of potential impacts across the VSL IT ecosystem.	Ref. suggested action 7b. **7. Mature supporting governance arrangements** for the oversight of the VSL IT ecosystem through: b) Establishing a governance forum (new or by amending a current forum) with the remit to triage, impact assess and resolve production incidents / issues across the VSL IT ecosystem. Ref. suggested action 11a. **11. Ensuring accurate future assessment of program risk treatments** by: a) Establishing a scheduled review process to periodically check and challenge risk treatment effectiveness ratings. This should also include assessment of the strength of evidence supporting effectiveness ratings.

Key: No action required on guiding criteria | Some action required on guiding criteria to address risk | Immediate action required on guiding criteria to address risk

3b Detailed observations – Governance suggested future state

Overview

The diagram to the right suggests some key changes that could be made to VPAYs governance arrangements across both DEWR and DE. These will help manage the four key risks identified as part of this review.

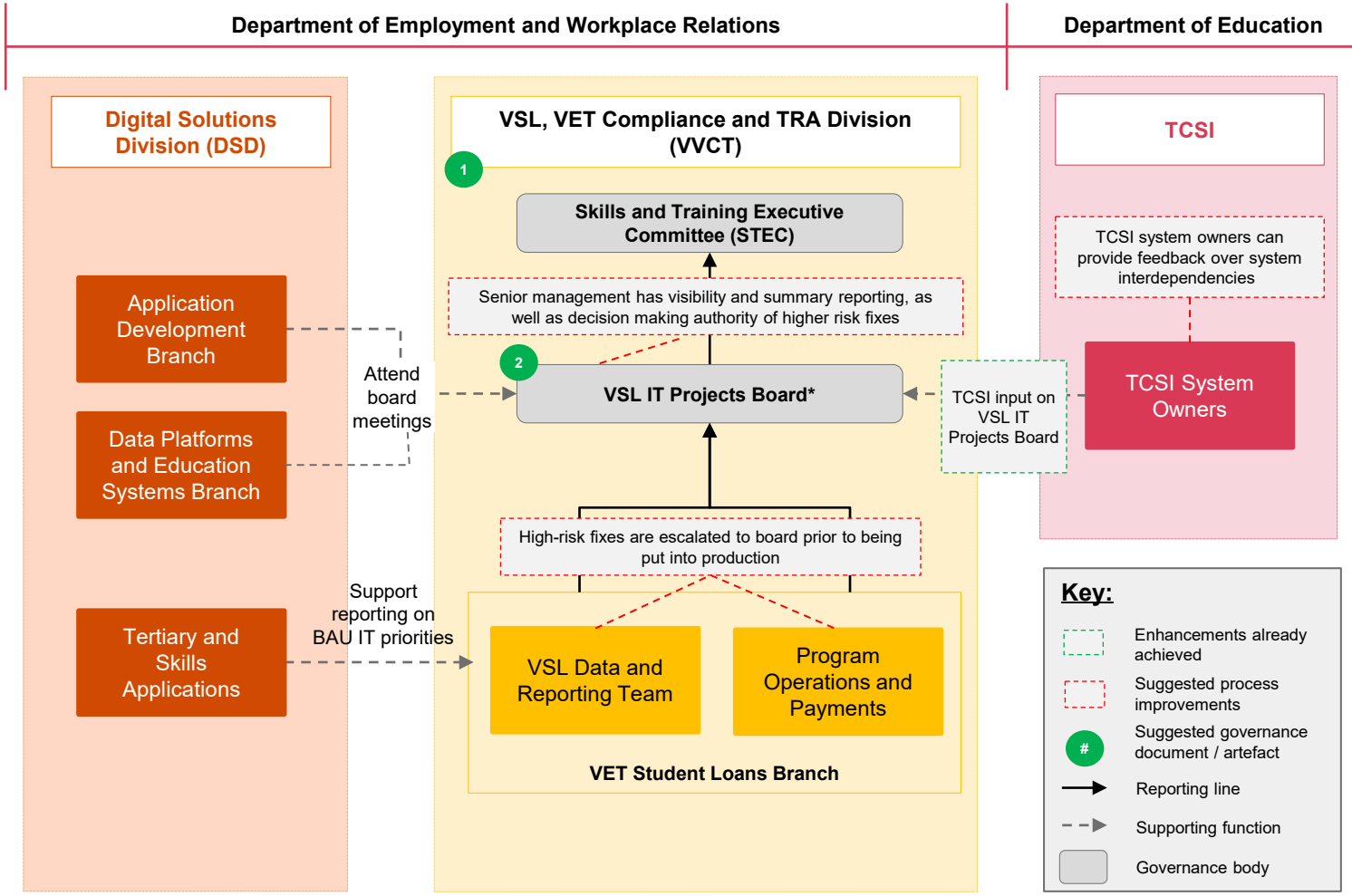
Note that there may be other governance structures which could be considered and this will largely depend on levels of resourcing, subject matter expertise and engagement with other agencies.

Where appropriate, we have highlighted changes which have already been made by the Department (prior to the commencement of this review).

The following changes would support future-state governance arrangements:

1. **Create an issue escalation process** that clearly articulates how to assess potential impact of proposed fixes and contains clear escalation thresholds.
2. **Amend VSL IT Projects Board Terms of Reference** to:
   i. give the board decision-making authority to approve IT BAU fixes into production that are escalated to it; and
   ii. include management reporting of known issues and issue resolution.

Future-state VPAYS governance arrangements for BAU IT Issues



* Membership as reflected in March 2022 Terms of Reference included: Director and SES Band 1 officials (total of 8) across VCTD and DSD. Invited attendees (6 in total) included Assistant Directors in VVCT and Technical IT experts in DSD. The Chair of the Board was (and continues to be) the Assistant Secretary, VET Student Loans Branch.

4 Appendices

4a Scope

The following table outlines the agreed scope of this activity as per the Statement of Requirements in the Work Order dated 20 October 2022.

Scope item	Focus area	Assessment criteria	
		Phase 1	Phase 2 (2023) – not included in this review
System	**Context and systems analysis**	• Confirm how the IT update deployed on 7 July 2022 released these student debt records, including: o understanding the original need, requirements for the IT update; and o confirming whether departmental change release process was adhered to, including whether adequate testing was performed prior to the release.	
		• Confirm whether the Department has the appropriate information systems and relevant processes in place in relation to: o identifying key impact factors that contributed to the issue of loan records (as identified by the Department) within VPAYS and TCSI not being transferred to the ATO and why this was not detected; o identifying key impact factors that contributed to the remaining large number of debts that have still not been transferred to the ATO (as identified by the Department) between 2009 and 2022; o mechanisms in place to ensure that records held in VPAYS are successfully identified and transferred to TCSI (i.e. not just 'messaged'); and o the end to end processes in place to ensure alignment of data between the Department's systems (VPAYs), Education (TCSI) and ATO.	
	Control design and implementation	• Identification of key system controls (automated and/or manual) and confirm whether they were operating effectively to manage risk associated with this issue (e.g. reconciliation mechanisms and reporting).	• *Confirm whether planned risk treatments have been designed and implemented to reduce the risk of occurrence of the issue.* • *Confirm whether an automated solution can be identified to support risk management.* *Note: This may involve an exploratory exercise of relevant datasets, understanding gaps in existing manual processes and building of dashboards*
	Change / release management	• Confirm appropriate testing (e.g. regression and UAT) was undertaken by the Department over VPAYs for major changes prior to implementation. • Confirm departmental change management processes relating to new functionality or bug fixes are appropriate and being complied with (through sample testing).	• *Confirm the appropriateness of mechanisms in place for testing existing and new functionality.* • *Confirm the appropriateness of mechanisms in place to control functionality releases into the production environment.*
	Defect Resolution	• Confirm whether there are appropriate mechanisms in place for departmental officials to identify and resolve known bugs defects and issues. • Confirm any relevant identified risks or issues (e.g. defects) were recorded, reported and actioned appropriately.	• *Confirm mechanisms are in place for ICT delivery teams to work with Business Teams to appropriately categorise the severity of identified defects.* • *Confirm the appropriateness of mechanisms in place to report on defects and their ongoing resolution.*
Processes	**Risk management**	• Confirm the approach in place provided coverage over the identification, management, and reporting of relevant risks (e.g. system issues / defects, ability to complete any build as intended etc.)	• *Confirm the appropriateness of current approach to risk management including documented practices, key controls, and adherence to agreed processes. This may include assessing stakeholder understanding of their roles and responsibilities.*
	Internal escalation measures	• Confirm whether relevant internal escalation mechanisms were used appropriately regarding the identification and escalation of the issue.	• *Confirm whether there are appropriate internal governance mechanisms to escalate to senior management any future issues for attention and/or action.*
People	**Capability**	N/A	• *Confirm whether there are appropriate internal governance mechanisms to escalate to senior management any future issues for attention and/or action.* • *Consider what training, coaching, procedures and/or role descriptions are required to ensure the right capabilities are in place moving forward*

4b Phase 2 Delivery Status

The following table outlines the agreed scope of this activity as per the Statement of Requirements in the Work Order dated 20 October 2022.

Scope item	Focus area	Assessment criteria		Delivery status for Phase 2
		Phase 1	Phase 2 (2023) – not included in this review	
System	**Context and systems analysis**	• Confirm how the IT update deployed on 7 July 2022 released these student debt records, including: o understanding the original need, requirements for the IT update; and o confirming whether departmental change release process was adhered to, including whether adequate testing was performed prior to the release.		**All Phase 2 criteria have been delivered in this report**
		• Confirm whether the Department has the appropriate information systems and relevant processes in place in relation to: o identifying key impact factors that contributed to the issue of loan records (as identified by the Department) within VPAYS and TCSI not being transferred to the ATO and why this was not detected; o identifying key impact factors that contributed to the remaining large number of debts that have still not been transferred to the ATO (as identified by the Department) between 2009 and 2022; o mechanisms in place to ensure that records held in VPAYS are successfully identified and transferred to TCSI (i.e. not just 'messaged'); and o the end to end processes in place to ensure alignment of data between the Department's systems (VPAYs), Education (TCSI) and ATO.		**Phase 2 criteria have been partially delivered in this report:** ✓ Assessment of key impact factors for the issue completed (**Observations at 2.1**). • Identification of historical key impact factors back to 2009 commenced, however needs to be completed ✓ Assessment of successful transfer mechanisms completed (**Observations at 2.3**). ✓ Assessment of end-to-end process oversight completed (**Observations at 2.4**).
	Control design and implementation	• *Identification of key system controls (automated and/or manual) and confirm whether they were operating effectively to manage risk associated with this issue (e.g. reconciliation mechanisms and reporting).*	• *Confirm whether planned risk treatments have been designed and implemented to reduce the risk of occurrence of the issue.* • *Confirm whether an automated solution can be identified to support risk management.* *Note: This may involve an exploratory exercise of relevant datasets, understanding gaps in existing manual processes and building of dashboards*	**Phase 2 criteria have been partially delivered in this report:** ✓ Assessment of risk treatment design effectiveness and implementation completed (**Observations at 6.1**). • Automated data reconciliation controls discussed (**Observations at 3.1),** however Phase 2 will expand on this opportunity for automation to support risk management.
	Change / release management	• *Confirm appropriate testing (e.g. regression and UAT) was undertaken by the Department over VPAYs for major changes prior to implementation.* • *Confirm departmental change management processes relating to new functionality or bug fixes are appropriate and being complied with (through sample testing).*	• *Confirm the appropriateness of mechanisms in place for testing existing and new functionality.* • *Confirm the appropriateness of mechanisms in place to control functionality releases into the production environment.*	**All Phase 2 criteria have been delivered in this report:** ✓ Assessment of the appropriateness of testing mechanisms completed (**Observations at 4.1).** ✓ Assessment of the mechanisms to control functionality releases into production was completed (**Observations at 4.2**). *Note: Provision of better practice testing frameworks/strategies may be included in Phase 2 to support maturing of practices.*
	Defect Resolution	• *Confirm whether there are appropriate mechanisms in place for departmental officials to identify and resolve known bugs defects and issues.* • *Confirm any relevant identified risks or issues (e.g. defects) were recorded, reported and actioned appropriately.*	• *Confirm mechanisms are in place for ICT delivery teams to work with Business Teams to appropriately categorise the severity of identified defects.* • *Confirm the appropriateness of mechanisms in place to report on defects and their ongoing resolution.*	**All Phase 2 criteria have been delivered in this report:** ✓ Assessment of appropriateness of mechanisms for categorising identified defects completed (**Observations at 5.1 and 5.2**). ✓ Assessment of appropriateness of mechanisms to report on defects and their ongoing resolution completed (**Observations at 5.2).**
Processes	**Risk management**	• *Confirm the approach in place provided coverage over the identification, management, and reporting of relevant risks (e.g. system issues / defects, ability to complete any build as intended etc.)*	• *Confirm the appropriateness of current approach to risk management including documented practices, key controls, and adherence to agreed processes. This may include assessing stakeholder understanding of their roles and responsibilities.*	**Phase 2 criteria have been partially delivered in this report:** ✓ Assessment of appropriateness of current approach to risk management completed (**Observations at 6.1**). • Further stakeholder consultation may be undertaken as part of Phase 2 to confirm ongoing management practices.
	Internal escalation measures	• *Confirm whether relevant internal escalation mechanisms were used appropriately regarding the identification and escalation of the issue.*	• *Confirm whether there are appropriate internal governance mechanisms to escalate to senior management any future issues for attention and/or action.*	**All Phase 2 Criteria have been delivered in this report:** ✓ Assessment of appropriateness of internal governance mechanisms to manage future issues completed (**Observations at 7.1**). *Note: Suggested governance structure provided on **Page 32**.*
People	**Capability**	*N/A*	• *Confirm whether there are appropriate internal governance mechanisms to escalate to senior management any future issues for attention and/or action.* • *Consider what training, coaching, procedures and/or role descriptions are required to ensure the right capabilities are in place moving forward*	**Phase 2 Criteria have been partially delivered in this report:** ✓ See 'internal escalation measures' above. • All findings related to training, coaching, procedures and/or role descriptions will be delivered in Phase 2 report.

Thank you

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