Cabinet Paper material
Proactive release

Minister & portfolio	Hon Chris Hipkins, Education
Name of package	Education Resourcing System for Schools and Early Learning Services: Approval of Implementation Business Case
Date considered	29 November 2021
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These documents have been proactively released:

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Date considered: 29 November 2021
Author: Minister of Education

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Date considered: 29 November 2021
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Date considered: 25 November 2021
Author: Cabinet office

Material redacted

Some deletions have been made from the documents in line with withholding grounds under the Official Information Act 1982. Where information has been withheld, no public interest has been identified that would outweigh the reasons for withholding it.

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In Confidence

Office of the Minister of Education

Cabinet Government Administration and Expenditure Review Committee

Approval of the Implementation Business Case and Drawdown of Tagged Contingency for the Education Resourcing System for Schools and Early Learning Services

Proposal

1. This paper seeks Cabinet's approval of the Implementation Business Case for the Education Resourcing System, and approval to draw down tagged contingency funding to complete the Education Resourcing System.

Relation to government priorities

2. The Education Resourcing System (ERS) is delivering to two government priorities: investment in critical public services and investing in critical infrastructure. The ERS is a critical piece of infrastructure development to enable the Government to protect its ability to provide funding for education services and to enable the timely implementation of new funding policy, including equity funding-related changes which cannot be readily deployed in existing systems.

Background

3. Budget 2021 provided funding to complete the replacement of the 30-year-old EDUMIS system and related changes to 53 associated systems, which enable around $8.4 billion per annum operational and resources funding administered by the Ministry of Education to be paid to schools and early learning services, and the calculation of the staffing entitlement for schools.

4. EDUMIS is no longer fit-for-purpose and has reached end of life. The new replacement ERS will transform education funding processes from high-risk systems and manual processes to simple, easy to use and easy to understand, accurate, largely systematic and timely digital processes.

5. The Budget 2021 funding was a crucial investment in protecting the government's ability to fund the education sector reliably and transparently and to swiftly implement responses to emerging or urgent needs.

6. The ERS has a large whole-of-life cost and Cabinet Circular CO (19) 6 specifies that projects with whole-of-life costs above ~$25 million need to have Cabinet approved Business Cases.

Budget 2021 funding

7. To fund the ERS Programme for 2021/22, Budget 2021 provided a total of $12.018 million capital and $3.515 million operating funding for 2021/22 [CAB-21-MIN-0116.10 initiative 13274 refers].

8. To fund the ERS Programme for 2022/23 and outyears, Cabinet agreed to establish a tagged contingency of $17.160 million capital funding for 2022/23 and 2023/24, and $11.127 million operating for the same period plus $3.865 million per year for outyears, contingent on the Business Case for the ERS being approved by Cabinet [CAB-21-MIN-0116.10 initiative 13530 refers].

Background to the 2021 Implementation Business Case

9. In Budget 2015 Cabinet approved operational funding of $17.690 million over four years with $3.890 million per year for outyears, to deliver and support the ERS. Capital costs were funded from the Ministry's baseline [CAB Min (15) 12/2/(8) initiative 8628 refers].

10. The Ministry selected its preferred external supplier to develop and build the ERS. The following eighteen months of development work helped the internal Ministry team understand better the complexity of the funding system and the likely solution, and it became clear it would be necessary to re-specify the project and re-estimate the costs of delivering a solution.

11. In 2019 the Ministry ended its contract with the supplier, in-part for delivery performance below expectations, and chose to move solution design and development in-house, with a subsequent period of remediation, consolidation, and recruitment of a replacement team, including an increase in business leadership and representation.

12. Over 2019 and 2020, the Ministry prepared comprehensive business and technical requirements to underpin a re-estimate of the cost to successfully complete the programme. This was completed in July 2020. A delivery approach was adopted that enabled effective and efficient monitoring of performance and the delivery of a fit-for-purpose solution.

13. The approach and the business case have been assessed by independent reviewers. The most recent independent external review by Equinox IT in April 2021 stated, "To date the delivery approach is working effectively and being refined through the use of continuous improvement techniques…the usual risks of the programme taking longer or costing more are being closely monitored."

14. The most recent external Independent Quality Assurance Checkpoint, performed by PwC in May and June 2021, provided a Delivery Confidence Rating of 'Possible' and a comment that the Ministry is "incredibly close" to a 'Likely' rating.

15. The ERS programme team has been operational for over 18 months and is a well-functioning, connected and technically capable team. The ERS programme is well underway with a June 2022 delivery for Release 1 – for the Ministry only.

16. The team has proven itself with a successful delivery of a platform and in-production elements for Additional Relief Teacher Funding, operational funding for playgroups, and 'make-a-payment' functionality (for ad-hoc payments) and there has been strong adoption by the sector. These initial elements were the basis of a rapid response to provide COVID-19 funding to schools since April 2020.

17. As of 30 July 2021, the following funding has been facilitated through the ERS, with schools and playgroups having been successfully migrated from paper-based manual systems to an online digital experience with the ERS:

    a) Total of 23,168 requests with $229.3 million paid to schools and playgroups.

    b) Online requests since 1 January 2021:

        i. Additional Relief Teacher Funding for sick leave 99.9%;

        ii. Playgroup operational funding 96.7%.

    c) Systematic payments for jury service – i.e. removed the administrative overhead of the previous manual application process.

    d) COVID related payments – 5,460 requests with $52.3 million paid to schools as 9 July 2021.

18. The ERS has been designed to be the information technology foundation for the implementation of an equity index, should it replace the current decile funding basis for schools and early learning services. Re-configuring the current 30-year-old end-of-life EDUMIS system is not a viable alternative for the Ministry.

Analysis

19. This paper seeks Cabinet approval of the Implementation Business Case and thereby approval to continue the updated approach to completing delivery of the ERS.

20. The Implementation Business Case was approved by the Ministry of Education on 3 June 2021 and endorsed 28 June 2021 by the Treasury and by the Digital Public Service branch in the Department of Internal Affairs. The final Implementation Business Case is attached (Annex 1).

21. The Budget 2021 investment by Government, including the tagged contingency, brings the total Government investment in the ERS over the nine years 2015/16 to 2023/24 to $118.710 million.

Strategic case for the investment

22. The Ministry of Education is responsible for administering around $8.4 billion per annum in operational and resources funding to 2,500 schools, 4,600 early learning services and 700 playgroups impacting 800,000 learners and 220,000 children in early learning.

23. ERS will provide the Government with a reliable, flexible and agile education funding system with the integrity to support the thousands of schools and early learning services which deliver education and services to children and young people, their whānau and community. A modern funding system can support all schools and early learning services, and quickly reach those who need extra support. The solution will underpin an equity index which will provide a fairer system of funding. The COVID-19 pandemic has shown the vital importance of having flexible and adaptive systems enabling nimble responses specific to those most in need.

24. Modernising the education funding system will ensure the integrity of government funding, will provide a simple and easy to use system for schools and early learning services, and will ensure the Ministry can better forecast need and be nimble in its responses to that need. The benefits are outlined below:

Integrity of Crown funding systems

24.1. the Crown and Government have assurance that funding obligations will be met accurately and in a timely manner;

24.2. the Ministry has probity of funding process with automation to minimise funding errors;

Self-service and improved support for schools

24.3. schools and early learning service have access to accurate, reliable and up-to-date information on the funding they have been paid and are entitled to, including systematic payment on entitlement rather than after application;

24.4. new customer channels including online applications for funding;

24.5. inter-operability of Ministry data and systems and new tools and processes enabling a single view of a school or early learning provider account and the sector having only to talk to one person for support with all their entitlements or funding;

Improved and agile policy and planning

24.6. the Ministry can quickly respond to policy shifts, new needs and trends, and easily redeploy investment;

24.7. the Ministry can forecast roll changes at a school level, enabling better planning and better advice to government;

24.8. the Ministry can anticipate and predict impact of policy and service changes through better forecast and scenario modelling using near real time data disaggregated to school-level, enabling better policy design, delivery, and advice;

24.9. improved efficiency of service delivery and the ability of services to achieve outcomes through easy and rapid implementation of new policy.

The existing legacy system is failing

25. To accommodate the current aging system, the Ministry calculates around 20% of school funding manually, with 73 of the 98 different funding components being manually calculated and/or processed outside the platform. The 98 funding components are a mix of entitlements, application based or automated payments. There are 52 different types of application-based staffing allocations that can be made, in addition to entitlement staffing, based on rolls, year levels, and school type.

26. Early learning services payments also have multiple manual steps and multiple components for each payment to the 4,600 service providers in NZ, made repeatedly during a year.

27. The manual processing required to support the education funding system is a significant reputational risk to the Ministry and Government. The complexity and high degree of manual work required to facilitate each operational funding cycle means errors can and have been introduced, and the inflexibility of the systems means even for one error, the entire payment process for all schools or early learning services must be reversed out and re-done. This requires external expertise and can take several days to complete.

28. Five of the last six payment instalments have needed reversal and re-doing, and while the Ministry tries to minimise these, it expects process and system failures to recur, and consequent costs to continue, and the risk of public exposure to increase.

29. New policy or funding initiatives are difficult and risky to add to the funding system, introducing further manual work arounds under existing components, or new manual processes run entirely outside the system, all with additional costs and staffing and increased risk of human error in processing.

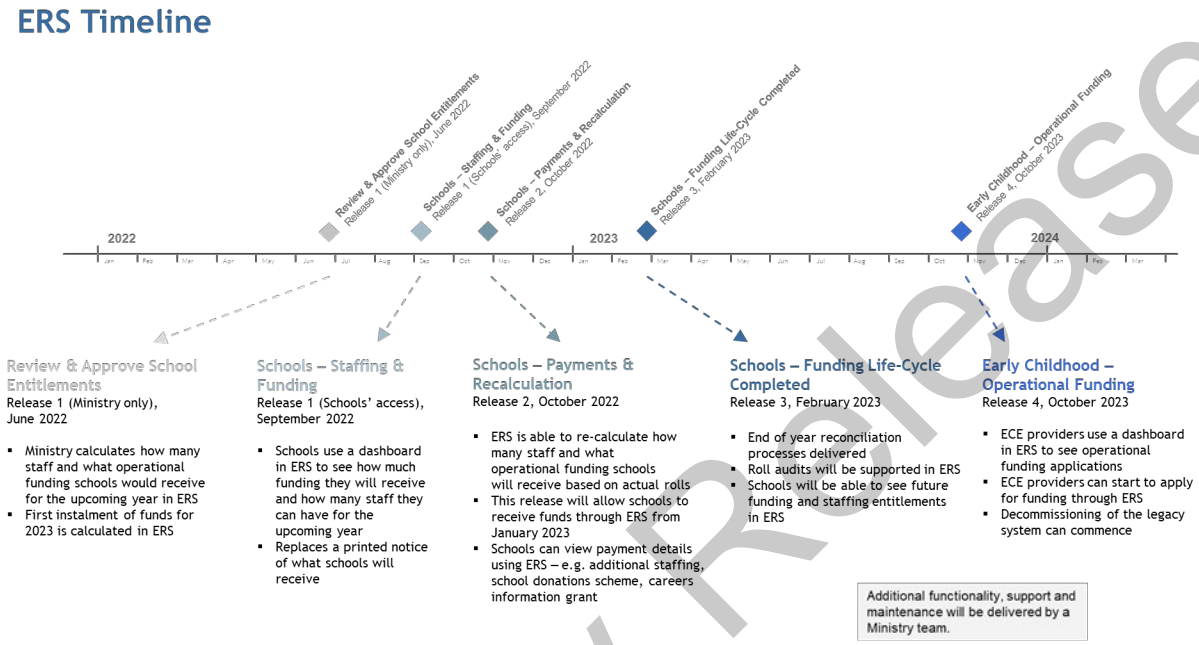
30. Sector feedback from schools and early learning services is that they cannot see all their payments in one place, understand their entitlements, or easily forecast their cash flows. They do not always receive the funding they are entitled to and find it difficult to reconcile payments with their entitlements. Applications for funding are largely paper-based and manually processed which can take weeks, with no visibility on the progress of applications.

31. The data held in the funding system does not provide the Ministry with a timely or clear view of what services and funding it is providing, nor the ability to forecast need or service demand. This substantially impacts the timeliness and resource required to maintain and improve the quality of the advice the Ministry can provide the

Government.

Implementation of the Education Resourcing System

32. The Education Resourcing System will be released incrementally from June 2022, and is expected to be complete by the end of calendar 2023.



Risk Assurance

33. The ERS programme uses established risk management processes consistent with the requirements for a programme of this size. Assurance activities have and will be used to validate that risks are appropriately managed. We have learnt from previous large Ministry programmes and from external programmes and have adjusted accordingly.

34. The programme has effective governance and oversight arrangements and uses independent reviews from external third-party assurance providers such as PWC and Equinox IT on a regular (usually 6-monthly) schedule.

35. The top three risks for the ERS programme are

35.1. Realising the benefits in the timeframes indicated, especially due to the difficulties with a tight labour market and other government major change programmes for the scarce skills the programme needs. The programme is now fully resourced and is on schedule to meet the scheduled implementation dates in 2022.

35.2. Schools and early learning services understanding and being comfortable with the changes. Initial engagement activities have shown a positive reception for the ERS. The Ministry has extensive engagement and information activities planned and is working closely with the sector.

35.3. Changes to the scope and timeframes of the programme resulting from external factors, including the on-going impacts of COVID-19. The ERS programme team is able to work remotely and so much of the work can continue during alert level 4 restrictions. Some aspects of the work benefits from face-to-face collaborative approach, such as development and testing, and the ERS programme will closely monitor staging and timing for this work around any alert level 4 restrictions.

Financial Implications

36. With Cabinet approval of the attached Implementation Business Case and Drawdown of Tagged Contingency for the Education Resourcing System for Schools and Early Learning Services, the Ministry will begin final implementation of the new system. The final tranche of capital and supporting operating funding will be appropriated from the Budget 21 tagged contingency for *Completion of the Education Resourcing System for Schools and Early Learning*.

Legislative, Climate, Population, Human Rights Implications

37. This paper has no legislative, climate, population, or human rights implications.

Consultation

38. The Treasury and the Digital Public Service branch of the Department of Internal Affairs have been consulted on this paper.

Communications

39. None required.

Proactive Release

40. The Minister of Education intends to release this Cabinet paper proactively.

Recommendations

The Minister for Education recommends that the Committee:

1 **note** that the Ministry is building a new system, the Education Resourcing System, to modernise the payment system for the $8.4b per annum operational funding administered by the Ministry of Education and paid to schools and early learning services;

2 **note** that on 12 April 2021, Cabinet [CAB-21-MIN-0116.10 initiatives 13274 and 13530 refer]:

2.1 **agreed** to fund the completion of the transition to the new Education Resourcing System;

2.2 **agreed** to establish a tagged contingency *Completion of the Education Resourcing System for Schools and Early Learning* of up to the amounts as follows in Vote Education to provide for the transition to the new system:

	$m - increase/(decrease)				
	2021/22	**2022/23**	**2023/24**	**2024/25**	**2025/26 & out years**
Operating Contingency	-	5.522	5.605	3.865	3.865
Capital Contingency	-	12.941	4.219	-	-
Total	**-**	**18.463**	**9.824**	**3.865**	**3.865**

2.3 **invited** the Minister to seek final approval of the Implementation Business Case and draw down from the tagged contingency by 30 June 2022;

3 **agree** that the Implementation Business Case for the Education Resourcing System for Schools and Early Learning Services has been satisfactorily completed;

4 **agree** to increase spending to provide for completion of the transition to the new Education Resourcing System, with the following impacts on the operating balance and net core Crown debt:

	$m - increase/(decrease)				
Vote Education	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26 & out years**
Operating Balance and Net Core Crown Debt Impact	-	-	-	-	-
Operating Balance Only Impact	-	3.569	3.642	1.902	1.902
Net Core Crown Debt Only Impact	-	12.941	4.219	-	-
No Impact	-	1.953	1.963	1.963	1.963
Total	**-**	**18.463**	**9.824**	**3.865**	**3.865**

5 **approve** the following changes to appropriations and departmental capital injections to the Ministry of Education to give effect to the policy decision in recommendation 4 above:

	$m - increase/(decrease)				
Vote Education **Minister of Education**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26 & out years**
Capital Injection: Ministry of Education - Capital Injection	-	12.941	4.219	-	-
Multi-Category Expenses and Capital Expenditure: Primary and Secondary Education (MCA) *Departmental Output Expense:* Support and Resources for Education Providers (funded by revenue Crown)	-	5.522	5.605	3.865	3.865
Total Operating	**-**	**5.522**	**5.605**	**3.865**	**3.865**
Total Capital	**-**	**12.941**	**4.219**	**-**	**-**

6 **agree** that the expenses and departmental capital injection incurred under recommendation 4 above be charged against the *Completion of the Education Resourcing System for Schools and Early Learning* tagged operating and capital contingency previously established by Cabinet [CAB-21-MIN-0116.10 initiatives 13274 and 13530 refer], which will close the contingency.

Authorised for lodgement

Hon Chris Hipkins

Minister for Education

MINISTRY OF EDUCATION
TE TĀHUHU O TE MĀTAURANGA

Implementation Business Case

Education Resourcing System (ERS)

PIA Programme ID	MOE: 0086	PIA Work Classification Outcome	Major
Programme Director	Patrick Rogers		
Senior Responsible Owner (Deputy Secretary)	Katrina Casey Deputy Secretary, Sector Enablement and Support	Business Owner (Group Manager)	Helen Hurst Associate Deputy Secretary, Resourcing & Early Learning Delivery, Sector Enablement and Support
Funding sought by this business case	(As reported in the Financial Case)	Responsibility Centre (RC)	(As reported in the Financial Case)
Funding Source (Ministry/Cabinet)	(As reported in the Financial Case)	Recorded on the ICT Investment Plan (Yes/No)	Yes
ICT Initiative Ref	(Projects/Programmes with an ICT component)	Procurement	(As reported in the Commercial Case)

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Programme Director	Patrick Rogers
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Document History

This table provides a history of changes made when completing this document.

Version No.	Date	Summary of Changes
Version 0.1	10 November 2020	Initial draft sent to signatories, Steering Committee members and reviewers.
Version 0.2	12 November 2020	Related documents list added.
Version 0.3	18 November 2020	Incorporating feedback from signatories, Steering Committee members and reviewers and circulated for comment from the same stakeholders.
Version 0.4	26 November 2020	Incorporating further feedback from stakeholders and sent to signatories, Steering Committee members and reviewers.
Version 0.5	4 December 2020	Incorporating further feedback from stakeholders and programme team.
Version 0.6	11 December 2020	Incorporating final edits from stakeholders and programme team.
Version 0.7	18 December 2020	Incorporating edits from the ERS Governance Board.
Version 0.8	18 January 2021	The reduced functionality option moved to the discounted options section and incorporation of feedback from Kate Tibbitts.
Version 0.9	15 April 2021	The 'Extend the life of EDUMIS' option moved to the discounted options section. Minor edits to version 0.8. Sent to signatories, Steering Committee members and reviewers for endorsement.
Version 0.95	4 May 2021	Added reference to the Ministry's strategic risks, updates to programme risks, and sent to the ERS Governance Board members for endorsement.
Version 0.96	27 May 2021	Incorporating feedback from the Chief Digital Officer, minor edits, and financial updates for alignment with the Budget '21 bid.
Version 1.0	1 June 2021	Final version approved by the Senior Responsible Officer.

Related Documents

This table lists the documents that support the Business Case

Document	Name and Link
Amendment Act/Bill	
Cabinet/Minister Paper(s)	
Project or Programme Mandate	
Research papers	

Document	Name and Link
Statement of Work (if applicable)	
Other	ERS Programme Business Case v0.8, March 2016 ERS Implementation Business Case, November 2016 Update to ERS BC Strategic Case, October 2019 ERS Architectural Change, January 2020 Equinox ERS Architecture Technical Quality Assurance report Quality Assurance Report, August 2020 ERS Programme Report, September 2020 PWC Education Resourcing System: Programme Health Check and Estimations Approach Independent ERS Delivery Cost QRA, November 2020
Programme Artefacts	ERS Programme Assurance Plan update for SC review, 2019 ERS Six Monthly Assurance Schedule – August 2020 – January 2021 ERS Programme Quality Management Plan, October 2019 ERS Risk Register ERS Benefit Management Strategy ERS Benefit Tracker ERS Programme Change Management Strategy ERS Internal Communications and Engagement Strategy v2.0 ERS External Communications and Engagement Strategy v2.0 ERS Training and Adoption Strategy

Senior Responsible Owner Approval

The Senior Responsible Owner is asked to approve:

Role	Approval	Signed
Senior Responsible Owner **Katrina Casey** Deputy Secretary, Sector Enablement and Support	I confirm that: – the full initial and ongoing business costs, business resource requirements, and process changes necessary to achieve the benefits have been identified – the key business-related project/programme dependencies, risks and mitigations have been identified and where appropriate included in the estimated costs – the costs include developing the necessary processes to determine and report on actual benefits realised – the delivery timeframes based on the scale of work and business resources requirement are achievable – there is a high level of confidence that the proposed benefits will be able to be achieved as set out in the business case – the range of delivery options assessed and evaluated was considered appropriate to lead to an optimal decision from a business perspective – need for ongoing independent quality assurance (IQA) is identified and where necessary is included in costing – I agree with the recommended option.	Date 3.6.21

Business Owner Approval

Role	Approval	Signed
Business Owner **Helen Hurst** Associate Deputy Secretary, Operational Delivery, Sector Enablement and Support	I confirm that: – I have reviewed the document and agreed to the proposed investment in asset management as described in this document.	Date 1.6.21.

Endorsements

Role	Approval	Signed
Project and Investment Advice **Melissa O'Carroll** Group Manager Corporate Strategy and Performance Hub	I confirm that: – The project classification has been determined and is clearly stated – The appropriate project/programme construct with appropriate governance has been identified – The appropriate areas of the business have been engaged and/or consulted – There is evidence of robust options scoped and analysed – Problem statement(s) are articulated clearly and in measurable terms – A Benefit Profile has been completed and is annexed with the document – The right strategic links have been made.	Date 1.06.21 MMC
Investment Management **Mark Flintoff** Chief Financial Officer	I confirm that: – Proposed sources of funding for operating and capital, departmental and non-departmental are clear – Availability of existing funding has been confirmed, and limitations on future funding are fairly and accurately represented – Costings have been produced using appropriate templates and validated by finance (reviewed by Finance Manager and Strategic Finance) – Project and Whole-of-Life costs are robust and use net present values where appropriate. Note: In the event of no or reduced budget funding, choices need to be made quickly at a senior level around the future of the programme. This may include a scope and delivery approach review, and, extending the life of the programme in order to spread the fiscal burden over a longer timescale.	Date 1.6.2021 Mark Flintoff
ICT **Stuart Wakefield** Chief Digital Officer	I confirm that: – The problem has been adequately identified – The technology and design direction is consistent with Education System Digital Strategy and direction – Likely systems and technology impacts have been identified – The ICT component of the project's scope is appropriate – The assessment of the ICT costs and resource requirements, for both release and ongoing operation over the life of the asset, is appropriate and includes any necessary or likely required upgrades / refreshes – The assessment of the ongoing ICT operational costs and FTE is appropriate – The key related ICT risks and mitigations have been identified and costed – The ICT assumptions are appropriate – The ICT dependencies have been identified – Link to ICT roadmap is identified – The writer has engaged with the Digital Identity team to complete the IAM Impact Assessment – IAM requirements have been considered and are appropriate.	Date 2/6/21 Stuart Wakefield
Internal Audit and Assurance **James Jong** Chief Internal Auditor Internal Audit	I confirm that: – Assurance planning and budget are commensurate with risk.	Date 1 JUNE 2021 James Jong

Role	Approval	Signed
Engagement and Communications **Lindsey Brittain** Group Manager Communications and Stakeholder Engagement	I confirm that: – Key stakeholder audiences have been considered – The needs of Māori and Pacific learners and their parents/whānau have been considered, along with those with learning support needs – High level potential communication risks and mitigations have been identified – The Communications team has been consulted on a high-level communications approach and resourcing – Sufficient budget has been allocated to ensure the project communicates effectively – The right strategic links have been made.	Date 1/6/21
Legal Services **Jan Breakwell** Chief Legal Advisor	I confirm that: – The Legal Services team has been consulted regarding this project/ programme – The proposed legal approach is appropriate for the outcomes sought – Appropriate costs and timeframes for legal advice have been factored into the project/ programme budget and milestones.	Date 1/6/21
Procurement **Alison Murray** Chief Procurement Officer (acting)	I confirm that: – If required, the business case has been submitted to the Ministry of Business, Innovation and Employment for advice and feedback. – Strategy is consistent with Ministry Policy and Government Rules of Sourcing.	Date 1/6/21
People Capability **Kate Tibbitts** Chief People Officer	I confirm that: – The People and Organisation Change Strategy is consistent with the Education People Strategy and direction – A robust Organisation change impact analysis will be undertaken on a per release basis and delivery options assessed and evaluated once that is understood – The assessment of the ongoing People and Organisation Change operational costs and FTE are appropriate – The key related People and Organisation Change risks and strategies to mitigate these have been identified and costed – The assessment of the People and Organisation Change costs and resource requirements, for both implementation and ongoing operation, is appropriate – Organisation change impact strategies are considered appropriate – People and Organisation Change dependencies have been identified – Options are analysed from a People and Organisation Change impact perspective (do ability).	Date 1/6/21.
ERS Programme Governance Board	Endorsed by the ERS Programme Governance Board	Email approvals received by 27 May 2021
ERS Programme Steering Committee	Endorsed by the ERS Programme Steering Committee	Email approvals received by 3 May 2021

Reviewers

The following additional stakeholders were consulted:

Stakeholder	Title
Grayson Mitchell	Solution Architecture Practice Manager, Business Enablement and Support
Wendy Hamilton	Chief Data Steward, Data and Information Stewardship, Evidence Data and Knowledge
Keith Newton	Group Manager, ECE, Sector Enablement and Support
Natasha Barnett	Group Manager, Resourcing, Sector Enablement and Support
Karen Fisher	Change Assurance Principal, Strategy Planning and Governance
Shirley Hepburn	Senior Manager, Web & Applications Services, Business Enablement and Support
Tim Mallon	Senior Solicitor, Legal Services, Strategy Planning & Governance
Neville Bannister	Senior Manager - ICT Assurance, Business Enablement and Support
Jan Venter	Change Assurance Manager, Strategy Planning and Governance
Dayton Hight	Senior Manager, Operations & Infrastructure Services, Business Enablement and Support
Emma Craigie	Manager, Corporate Strategy & Performance
Monira Sos	Principal Advisor, Corporate Strategy & Performance

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1. Glossary and Business Definitions

1.1. Glossary

Acronym	Meaning
API	Application Programming Interface
BAT	Business Acceptance Testing
CAPEX	Capital Expenditure
CSF	Critical Success Factor
DPSB	Digital Public Service Branch
ECE	Early Childhood Education
EDK	Evidence Data and Knowledge
EDUMIS	Education Management Information System
ERS	Education Resourcing System
ESDS	Education System Digital Strategy
FIRST	Funding Information and Regulatory Systems Technology
GETS	Government Electronic Tender System
GST	Goods and Services Tax
ICR	Investor Confidence Rating
ICT	Information and Communications Technology
ICTGB	Information Communications and Technology Governance Board
IT	Information Technology
ILM	Investment Logic Mapping
ImBC	Implementation Business Case
IQA	Independent Quality Assurance
MDF	Ministry Delivery Framework
MOE	Ministry of Education
NPC	Net Present Cost
OPEX	Operating Expenditure
PIA	Privacy Impact Assessment
RFI	Request for Information
RFP	Request for Proposal
ROI	Registration of Interest
RPA	Risk Profile Assessment
SDLC	Software Development Life Cycle
SIF	System Interoperability Framework
SOW	Statement of Work
SRO	Senior Responsible Owner
TQA	Technical Quality Assurance

Table 1. Glossary

1.2. Business definitions

Term	Explanation
Application Programming Interface (API)	Documented way of how one system can talk to another system in a well-defined manner.
Early Childhood Education (ECE)	Used to refer to the ERS functionality required to support early learning services
Education Sector Logon (ESL)	User IDs/accounts used in schools for access to Education sector applications.
Education Management Information System (EDUMIS)	The current resourcing system.
Epic	A breakdown of the ERS system (schools and early learning services) into over 100 blocks that together comprise the functional scope of the ERS system and that are the basis of an Agile delivery approach adopted by the programme.
Education Resourcing System (ERS)	The system in development for calculating and managing operational funding and staffing for the Education sector
Feature sets	A breakdown of the ERS system for early learning services into around 60 blocks that together comprise the functional scope, used before the adoption of an Agile delivery approach.
Identity and Access Management (IAM)	A security and business discipline that enables the right individuals to access the right resources at the right times and for the right reasons.
PRINCE2	A structured project management method and practitioner certification programme.
Oracle Fusion	The Ministry's financial management system.
Oracle Intelligent Advisor	Tool which enables automation of service processes, policies, rules, and regulations.
Small Business System (SBS) (also known as RADs)	Refers to Microsoft Access or in some cases spreadsheet models, which facilitate and support some key business outcomes. Some of the SBS calculate operational funding or staff entitlements and process payment requests through to the Oracle Fusion or to Education Payroll Limited (EPL) for payment. These systems have a Microsoft Access User Interface (UI), but SQL server database backend.
Refactoring of code	The process of restructuring existing computer code without changing its external behaviour. Refactoring is intended to improve the design, structure, and/or implementation of the software (its non-functional attributes), while preserving its functionality.
Sprint	A set period of time, currently set as 3 weeks, during which specific development tasks must be completed.
Steel-thread	A block of development that encompasses critical and/or high-risk processes, that once completed demonstrates the achievability of an element of the solution for the purpose of de-risking delivery.
Tranche	A time-boxed group of sprints delivering a portion of the solution.

Table 2. Business Definitions

2. Executive Summary

2.1. Introduction

This Implementation Business Case (ImBC) is an update to the ImBC previously submitted November 2016, which approved funding of $70.58 million to deliver and support the Education Resourcing System (ERS) to enable the Ministry to provide operational funding to schools and early learning services in a reliable, fair and efficient manner.

This modernisation of the Education school and early learning services funding system is underway, with first stages/products successfully implemented. The Education Resourcing System will replace the 30-year-old EDUMIS system that is nearing end-of-life, and associated Small Business Systems (SBSs), which together process around $8.4 billion per annum for schools and early learning operational funding.

9(2)(g)(i), 9(2)(b)(ii)

Since the Ministry took over as primary integrator in May 2019, development continued on the Microsoft and Oracle platform. The base technologies were validated in 2017 and confirmed as fit for purpose[1]. These technologies were re-confirmed in the later Solution Architecture Design approval by the Ministry's Design Authority in February 2020. Significant gains have been made in delivery, including platform and in-production elements for Additional Relief Teacher Funding (ARTF), operational funding for playgroups and 'make-a-payment' functionality (for ad hoc payments) and there has been strong adoption by the sector in these areas. A capable delivery team is also now in place, but the original ImBC is now at the end of initial time and funding. The Ministry needs further funding to deliver the remainder of the solution.

The next stages of the work are crucial to the success of our plans to improve the reliability, accuracy, and flexibility of the funding system. Clarity around business requirements and robust estimation techniques have positioned the ERS Programme well for successful completion.

This ImBC seeks formal approval to continue the updated approach to complete delivery of the Education Resourcing System (ERS), and seeks an investment of new funding of up to $49.38 million between 2020/21 and 2023/2024; and signals an on-going funding requirement after the first four years of $3.87 million per annum.

This will take total programme expenditure over the nine years from 2015/16 to 2023/24 to $118.71 million, and out-year costs to $7.76 million per annum thereafter. Whole of life costs will increase from $60.24 million to $101.41 million.

[1] ERS IQA Report by Equinox IT, July 2017

2.2. The Strategic Case

A modern funding system is at the heart of a collective and responsive partnership between the Ministry and the sector.

Commentary on the change since the 2016 Programme Business Case:

The high-level Strategic Case has not materially changed since the original 2016 Programme Business Case. However, system, business and reputational risks have increased and are materialising as significant issues on an ongoing basis. This context is set out in more detail in this business case.

The Ministry of Education is responsible for paying around $8.4 billion per annum in operational and resources funding to 2,500 schools, 4,600 early learning services and 700 playgroups impacting 800,000 learners and 220,000 children in early learning.

The funding system enables the Government's education and wellbeing services to be delivered to children, young people and their whānau, and it must align to the Government's expectation for a responsive and collective education system delivered in partnership with the sector.

The funding system needs to be easy and simple to understand and use, so schools and early learning services get the funding they are entitled to in a timely and accurate way. Schools and early learning services expect online approvals and automated approvals for entitlements, and to be paid promptly, accurately, and transparently. The sector expects the Ministry to be swift and agile in implementing new responses to emerging needs – both nationally and locally.

The Ministry requires high quality disaggregated information which can provide a complete view of investments across the system, and a flexible system which enables the Ministry to work with the sector to nimbly re-deploy investments to meet school, region or sector need.

The Government needs a reliable and timely funding system with the integrity to support the thousands of schools and early learning services which deliver education and services to children and young people, their whānau and community.

Modernising the funding system is a key lever for Government getting resources to the children and young people, schools and early learning services which need them and for freeing schools and early learning services from unnecessary administration and compliance burden, enabling them to spend more time teaching and supporting children and young people.

To protect the Government's ability to keep providing education services and implement new funding policy (e.g., equity-related changes) in a timely way, it is crucial the education funding system has the necessary up-to-date systems, processes and tools.

The following problems have been identified:

- Risks and constraints with the current legacy funding system
- Lack of ability to support timely funding policy changes
- Complex and fragmented systems and processes
- Risk of operational funding issues

The existing legacy education funding system is not fit for purpose, presents a very high business risk to the Ministry and government, and needs replacement. To accommodate the aging system the Ministry calculates around 20% of school funding manually, with 73 of the 98 different funding components having to be manually calculated and/or processed outside the platform. Early learning services payments also have multiple manual steps for each payment to the 4,600 services in NZ. The manual processing required to support the education funding system is a significant reputational risk to the Ministry and Government.

The complexity and high degree of manual work required to facilitate an operational funding cycle means errors can and have been introduced, and the inflexibility of the systems means even for one error the entire payment process for all schools, or early learning services, must be reversed out and re-done, via a

'rollback.' A rollback requires external expertise and takes days to complete. Five of the last six payment instalments have needed a rollback, and while the Ministry tries to minimise these it expects process and system failures to recur, and consequent costs to continue, and the risk of public exposure to increase.

New policy or funding initiatives are difficult and risky to add to the funding system, introducing further manual work arounds under existing components, or new manual processes run entirely outside the system, all with additional costs and staffing and increased risks of human error in processing.

Sector feedback from schools and early learning services is that they don't find the current funding process easy to use or simple to understand. Schools and early learning services cannot see all their payments in one place, understand their entitlements, or easily forecast their cash flows. They do not always receive the funding they are entitled to and find it difficult to reconcile payments with their entitlements. Applications for funding are largely paper-based and manually processed which can take weeks, with no visibility on the progress of applications.

Furthermore, the data held in the funding system does not provide the Ministry with a timely, automated or clear understanding of what services and funding it is providing, nor the ability to forecast need or service demand. This substantially impacts the timeliness and resource required to maintain and improve the quality of the advice the Ministry can provide the Government.

The funding system and associated processes we have are no longer acceptable to schools and early learning services, the Government, or the Ministry.

By 2024 the proposed investment will enable the Ministry to achieve the following **investment objectives**:

1. Improving productivity and efficiency by reducing the time and cost of delivering our services
2. Improving agility so that policy changes are made in a timely and cost-effective manner
3. Improving the integrity of the funding system so payments are made accurately and in a timely manner
4. Minimising the increasing risk of protracted system outages or intermittent system failures to enable continuity of funding to early learning services and schools
5. Improving the effectiveness of investments in the education system through better information, analytics capability and targeting
6. Improving the experience of the sector by making it easier and simpler to engage with the education funding system and to receive the funding to which they are entitled

Equity index

Although the proposed Equity Index changes are in the scope of a separate Equity Index business case, foundational work is being done in the ERS to accommodate this change from a Decile for both schools and ECE. Full requirements for an Equity Index for schools are expected to be provided to the ERS programme by 31 March 2021. This will enable implementation in the ERS for the schools' releases for the 2023 year. If this policy is required to be implemented for the 2022 school year, equity index entitlements will need to be calculated and managed through a manual interim arrangement outside the core systems which would be both costly and high risk in terms of potential payment errors.

2.3. The Economic Case

Commentary on the change since the 2016 Programme Business Case:

Relative to the 2016 Programme Business Case, the Economic Case now reflects the current options to complete the programme. The narrow range of options is indicative of the fixed legislative and policy frameworks that the programme must deliver to.

Overview of the options

A robust process of identifying long list and short-listed project options was undertaken and overseen by the Governance Group. Following the selection of the short-listed project options, these were combined into two short-listed programme options, as summarised in Table 3 below.

Short list combined options

Option A (Core Functionality) is the preferred option. It is expected to enable most of the benefits to be realised post programme and is considered the most cost-effective.

Combined option	Description
Option A – Core functionality (PREFERRED)	Option A will achieve 93% of the business benefits. It meets all the critical success factors.
Option B – Comprehensive functionality	Option B will achieve all the business benefits. However, it is more costly and there is an increased level of risk and complexity with this option. This option could be done after option A completes if funding is available and benefits are valued.

Table 3. Combined short list options summary

What does the preferred option deliver?

The preferred option delivers a new education resourcing system (ERS) for both Ministry and sector users which will enable the following:

- All funding and staffing requests to be made by sector online.
- The sector has online access to submit applications, view progress and payment details.
- Only 5% of manual calculations (low volume and highly complex), managed outside the ERS by Ministry staff.

Functionality will include:

- Core ERS calculations (95%) done in the 'rules engine' with some manual calculations only.
- Intelligent workflow with some steps automated, and requests going straight to 'Endorse' if there are no exceptions
- 95% of entitlements paid automatically
- All application-based requests available for schools and early learning services staff to enter online.
- Limited payment data available for schools and early learning services staff to download
- Payment Service has capability to service other applications in the future
- The foundational work for the equity index to the extent that it is defined as at 31 March 2021 (however implementation of equity index policies is subject to detailed requirements and analysis and is not in the scope of the ERS Programme)

This option will reduce the risk that schools and early learning services are not paid on time or accurately and hence reduced the reputational risk to the Ministry. Few manual internal controls will be required to support the process.

The system is being built by a highly capable and experienced Ministry project team utilising the Oracle Intelligent Advisor business rules engine and hosted on Microsoft Azure cloud services. The system will be delivered in a series of phased releases over a three-year timeframe.

When will benefits be delivered?

The ERS Programme is already delivering some benefits with the releases delivered to date.

Playgroup operational funding was delivered in October 2018. There was almost no negative reaction from the sector and adoption is now 95%, well above the target of 80%.

Schools also have had early experience with the ERS through the Additional Relief Teacher Funding and Make a Payment processes (funding value of $163.9 million in the last 12 months). Adoption is now 99%. 90% of schools (2,260 out of 2,500) have now had payments through ERS and are gaining familiarity with the system.

Further benefits for schools are expected to start flowing from late 2022 onwards and early learning services from late 2023 onwards.

2.4. The Commercial Case

Commentary on the change since the 2016 Programme Business Case:

Given the in-progress state of the programme and the now well-established in-house programme team, the Commercial Case covers the procurement activities remaining to complete the programme.

This programme has been underway for five years, with the main technology procurement completed in 2015/2016 using an RFI/RFP process. Therefore, this case focuses on the procurement activities remaining to complete the ERS Programme which includes procurement of the following:

- Software licencing – ERS and development tools
- Oracle Intelligent Advisor consultancy and support
- UI/UX application design work
- EDUMIS decommissioning
- Testing services
- Security review/testing services
- Printing
- Consultancy
- Project personnel

2.5. The Financial Case

Commentary on the change since the 2016 Programme Business Case:

The Financial Case now sets out the financial projections through to 2024 to complete the programme. Whole of life costs have increased from $60.24 million to $101.41 million and additional funding is required.

The table below summarises project expenditure by year and the annual funding required. While several options have been identified in this business case, costings specifically for the Preferred Option are shown.

Exclusive of Inflation

Financial case for preferred option							
$millions	*Total 2015/2016 - 2019/2020*	*2020/2021 Year 1*	*2021/2022 Year 2*	*2022/2023 Year 3*	*2023/2024 Year 4*	*Total 2015/2016 - 2023/2024*	*2024/2025 and on-going out-years **
Programme capital expenditure (inc. contingency)	25.283	9.753	12.018	12.941	4.219	**64.214**	
Programme operating expenditure (inc. contingency)	16.692	3.595	3.333	3.893	1.486	**28.999**	
Total programme expenditure (inc. contingency)	41.975	13.348	15.351	16.834	5.706	**93.214**	
Ongoing operating expenditure	4.336	2.561	4.072	6.519	8.009	**25.497**	7.755
Total expenditure	46.311	15.909	19.423	23.352	13.715	**118.710**	7.755
less funding from existing baselines	(45.440)	(10.349)	(3.890)	(4.890)	(3.890)	**(68.459)**	(3.890)
Capital funding required		5.560	12.018	12.941	4.219	**34.737**	
Operating funding required			3.515	5.522	5.605	**14.642**	3.865
Total funding required		5.560	15.533	18.463	9.824	**49.380**	3.865
Economic Case (Net Present Costs $2020)**						**41.083**	

* the permanent annual uplift required to the Ministry's on-going appropriations

** Economic case Net Present Costs are calculated over 13 years and exclude contingency

Table 4. Preferred option financial summary

Affordability

The total programme expenditure over the course of delivery (2015/16 to 2023/24) is estimated to be $93.21million[2], including $41.98 million sunk cost, and appropriate contingency of $5.12 million. The Ministry does not have capacity within its capital or operating funding for the balance of the programme cost without significant service and programme trade-offs, and will therefore be seeking additional capital funding of $34.74 million and additional operating funding of $14.64 million over the remaining four years of this business case (2020/21 to 2023/24).

We are also seeking a permanent annual uplift to the Ministry's ongoing operating appropriation of $3.87 million per annum from 2024/25 onwards to service depreciation and capital charge expenses resulting from the increased capital requirement.

This will take total programme expenditure over the nine years from 2015/16 to 2023/24 to $118.71 million, and out-year costs to $7.76 million per annum thereafter. Whole of life costs will increase from $60.24 million to $101.41 million.

2.6. The Management Case

Commentary on the change since the 2016 Programme Business Case:

The Management Case now sets out the detailed programme processes that have been developed as the in-house programme team has been established, including the development approach, release schedule and the change management approach for the sector and Ministry business teams.

Processes are in place to ensure successful delivery of the programme. Independent assurance has been provided, that gives further confidence of the robust and coherent approach to implementing the new business and technology solutions and for managing the associated business change.

The ERS Programme approach to delivery is hybrid utilising both agile and waterfall methodologies as appropriate.

The programme is governed by the ERS Steering Committee and the ERS Programme Governance Board. A comprehensive assurance plan is in place and along with the implementation of recommendations from recent independent reviews, means the programme is positioned for successful delivery with a robust estimation processes applied to a defined set of high level requirements and implemented through an optimised Software Development Life Cycle (SDLC).

Four releases are planned to deliver the functionality required to schools and early learning services:

- Release 1 (schools) – June 2022 - Provisional Roll (includes Learning Support)
- Release 2 (schools) – October 2022 - Confirmed (Actual) Rolls & some application-based funding types
- Release 3 (schools) – February 2023 - Remaining application based and year end processes
- Release 4 (early learning services) – July 2023 - Funding functionality

The figure below shows a high-level view of the planned releases.

[2] The Financial Case presents the required implementation costs over the first four years and the increase in baseline funding required from year five, while the Economic Case adopts a thirteen year assessment period on the basis that ten years represents an expected life of the solution and completion is expected in July 2023. The Net Present Cost shown the Economic Case for the Preferred Option (excluding contingency) is $41.08 million.

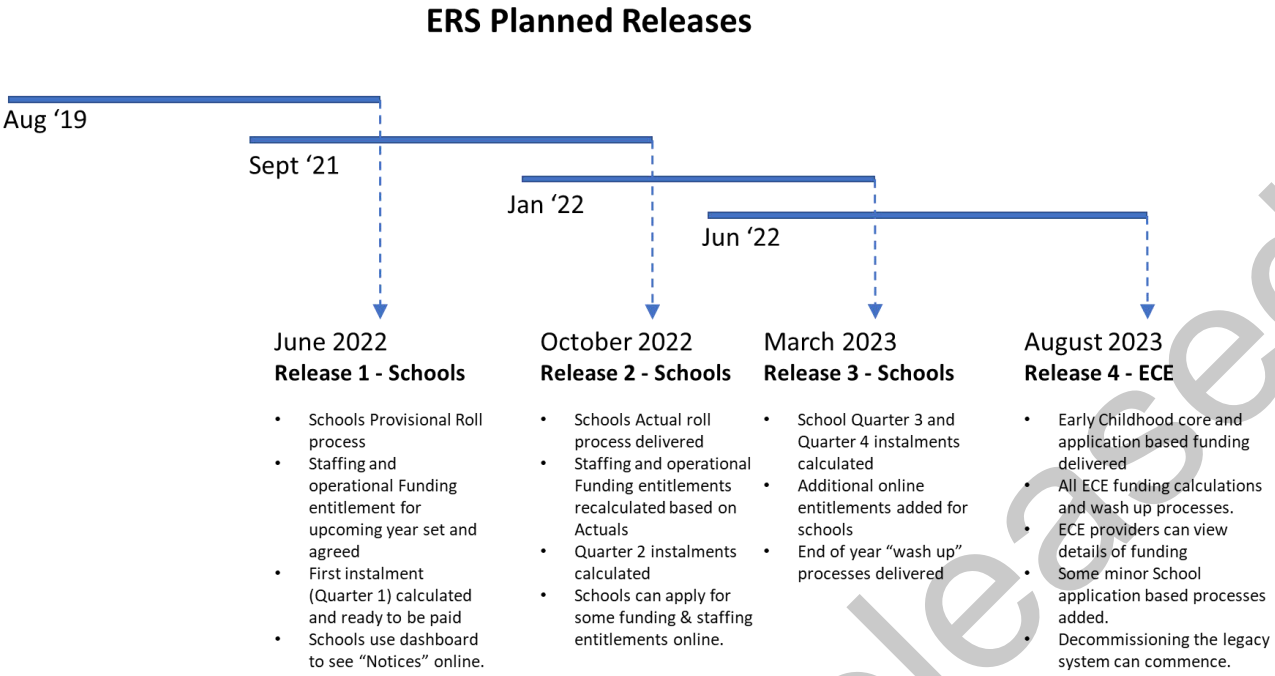


Figure 1. ERS planned releases

The ERS delivery team comprises of both Ministry permanent staff and contractors. The team has been operational for 18 months now and is a well-functioning, connected and technically capable team.

Change management approaches for the previous releases have been successful and similar approaches will be used for future releases to ensure high uptake of system use.

2.7. Recommendations and next steps

This business case:

- Seeks agreement to implement the preferred investment option (Option A), and
- Seeks approval to invest new funding of up to $49.38 million between 2020/21 and 2023/24 to complete the ERS Programme.

3. Introduction

This Implementation Business Case (ImBC) is an update to the ImBC previously submitted November 2016, which approved funding of $70.58 million to deliver and support the Education Resourcing System (ERS) to enable the Ministry to provide operational funding to schools and early learning services in a reliable, fair and efficient manner.

The modernisation of the Education school and early learning services funding system is underway, with first stages/products successfully implemented.

The Education Resourcing System will replace the 30-year-old EDUMIS system that is nearing end-of-life, and associated Small Business Systems (SBSs), which together process around $8.4 billion per annum for schools and early learning operational funding.

Since the Ministry took over as primary integrator in May 2019, development continued on the Microsoft and Oracle platform. The base technologies were validated in 2017 and confirmed as fit for purpose[3]. These technologies were re-confirmed in the later Solution Architecture Design approval by the Ministry's Design Authority in February 2020. Significant gains have been made in delivery, including platform and in-production elements for Additional Relief Teacher Funding (ARTF), operational funding for playgroups and 'make-a-payment' functionality and there has been strong adoption by the sector in these areas. A capable delivery team is also now in place, but the original ImBC is now at the end of initial time and funding. The Ministry needs further funding to deliver the remainder of the solution.

The next stages of the work are crucial to the success of our plans to improve the reliability, accuracy, and flexibility of the funding system. Clarity around business requirements and robust estimation techniques have positioned the ERS Programme well for successful completion.

This ImBC seeks formal approval to continue the updated approach to complete delivery of the Education Resourcing System (ERS), and seeks investment of new funding of up to $49.38 million between 2020/21 and 2023/24; and signals an on-going funding requirement after the first four years of $3.87 million per annum.

This will take total programme expenditure over the nine years from 2015/16 to 2023/24 to $118.71 million, and out-year costs to $7.76 million per annum thereafter. Whole of life costs will increase from $60.24 million to $101.41 million.

Purpose

The purpose of this business case is to:

- reflect that the compelling case for change is current and valid for the delivery phase of the programme, and that the programme benefits can be achieved;
- outline how technology decisions align with and support the intended capabilities and outcomes;
- set out the approach to development by the Ministry team utilising personnel from the market;
- confirm that the proposed arrangements are affordable, and
- put in place detailed management arrangements for successful delivery.

This investment proposal follows the Better Business Cases guidance. This ImBC is organised around a five-case structure designed to systematically ascertain that the investment proposal:

- Is supported by a compelling case for change – the 'Strategic Case';
- Optimises value for money – the 'Economic Case';
- Is commercially viable – the 'Commercial Case';
- Is financially affordable – the 'Financial Case', and
- Is achievable – the 'Management Case'.

[3] ERS IQA Report by Equinox IT, July 2017

4. Background

The 2016 ImBC was prepared subsequent to the Programme completing the RFP process, 9(2)(b)(ii) [redacted]

[redacted]

- [redacted]
- [redacted]

Independent quality assurance delivered in September 2017 triggered the first major review and reset attempt for the programme, 9(2)(b)(ii), 9(2)(g)(i) [redacted], in January 2019 the programme again entered a formal stage of review, 9(2)(g)(i) [redacted] with the Ministry assuming the role of primary integrator including supporting and remediating in-production solution elements.

9(2)(b)(ii), 9(2)(g)(i) [redacted]

- [redacted]
- [redacted]

These issues caused considerable delay and expense in the delivery of the original ImBC, which is now approaching the end of the initially approved time and funding. However, significant gains have been made in several areas of delivery, including platform and in-production solution elements for Additional Relief Teacher Funding (ARTF), operational funding for playgroups and 'make-a-payment' functionality. There has been strong adoption by the sector of in-production solution elements, where the Ministry is seeing over 95% of applications moved from paper applications to online submissions in these areas.

Following the recruitment of an experienced in-house delivery team, we know that a capable delivery team is now in place, with technical quality audits endorsing that previously observed issues in code quality and management have been resolved. Nevertheless, the Ministry needs substantial further funding to deliver the remainder of the solution, and to de-risk the funding distribution for schools and early learning facilities.

Programme composition

The ERS Programme is split into two related projects:

1. The Education Resourcing Technology (ERT) project delivers the new technology and manages its configuration over the length of the programme to deliver the Ministry's resourcing requirements. There are two streams to this project for the two distinct customer bases
    a. Early learning
    b. Schools
2. The EDUMIS Transition (ET) project manages changes to non-ERS systems during the transition. This project will remove any dependency on EDUMIS replacing, where required, integration of any retained business systems with ERS and will eventually decommission the EDUMIS system.

History of programme to date

The following timeline shows the key milestones since the commencement of this programme of work.

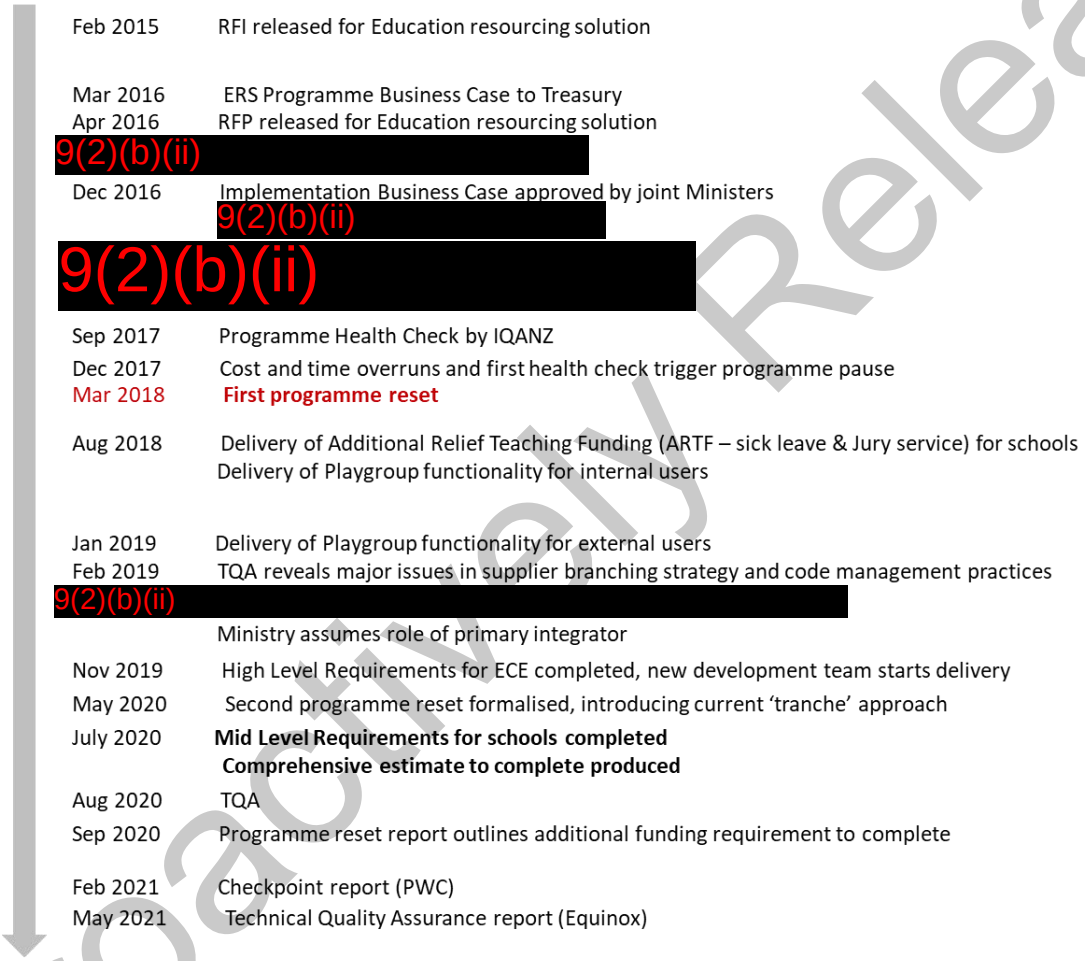


Figure 2. Timeline of key milestones

Original Funding

Budget 2015 approved funding of $41.03 million over ten years towards the development of a new education-wide funding platform that would be flexible and agile, enabling the Ministry of Education to respond to policy change effectively.

The allocation noted that the existing funding system would be unsupported post calendar-year 2019; that proposed policy changes are not likely to be implementable without a new information technology funding platform; and that a Business Case for the Education-Wide Funding System would be submitted for Cabinet approval in July 2015.

Programme Business Case

The original ERS Programme Business Case of December 2015 noted the estimated indicative total cost of the new system would be between $93.52 million and $98.82 million. The preferred option and the procurement approach were outlined in the Programme Business Case and the Technology Addendum, and formal approval to approach the market to seek proposals was provided by Cabinet on 21 March 2016.

This business case was determined to be affordable, supplementing the $41.03 million commitment in Budget 2015 with the balance supplied from a mix of existing funding sources, the Ministry's internal capital programme, and proposed baseline savings.

Tender

The ERS tender process was conducted in line with best practice for a procurement of this size. A two-stage procurement process was conducted, first via a Request for Information (RFI, 2015), then shortlisting to five suppliers, followed by a closed Request for Proposal (RFP, 2016). After evaluating the five responses to the closed RFP, two suppliers were invited to provide a Proof of Concept to ensure they had the ability to deliver a working demonstration that aligned with its proposed solution and reference checks.

A preferred shortlisted supplier was selected in September 2016 following the successful completion of Proof of Concept and reference checks.

Implementation Business Case

The ERS Implementation Business Case of 2 November 2016, sought approval to finalise the contracts to invest up to $14.32 million with the preferred supplier at the time, and a further $56.26 million to deliver and support the Education Resourcing System (ERS) Programme ($70.58 million total). That Implementation Business Case noted that the Programme had completed the RFP process and had negotiated a Heads of Agreement, a design Master Services Agreement and a design Statement of Work with the recommended technology supplier.

Retrospective – the tender and implementation business case

9(2)(g)(i) [redacted]

The Ministry, 9(2)(g)(i) made a range of assumptions as regards the breadth and complexity of implementing the ERS. The (then) lack of documented requirements and the limited Business Analysis resource dedicated to the programme, potentially contributed to optimism bias in the selection of the preferred supplier. 9(2)(g)(i) [redacted]

Had these factors been better understood, it may well have become clear that the funding available at the time was not sufficient to deliver the ERS. In the event, the evaluation team, comprising 20 individuals from across the Ministry, selected a delivery partner on the basis of information known and the affordability constraints as set out above, only for the extent of complexity and delivery challenges, and the associated increasing cost estimates to emerge later.

9(2)(b)(ii) [redacted]

[redacted]

Over subsequent months, delivery deadlines were missed, and cost estimates exceeded. A Programme Health Check by IQANZ in September 2017 signalled that the likelihood of the programme meeting its Stage 1 objectives within time, budget and agreed quality levels was "in doubt", reinforced as further delays were experienced through the following month. On 19 December 2017, the ERS Governance Board instructed the programme to place all development work on hold while an urgent review of the delivery was undertaken. 9(2)(b)(ii) [redacted]

First programme reset

In March 2018 the Ministry agreed to a revised development approach, referred to as the programme "*Reset*", with Stage 2 work grouped into 16 work packages, each designed by the supplier. 9(2)(b)(ii) [redacted]

9(2)(b)(ii) [redacted] the ERS Programme budget was revised at the time of the reset in March 2018. Capital was increased to $29.5 million, from $22.5 million, while one-off operating expenses decreased to $20.0 million, from $24.4 million. Further savings were found in the ongoing operating budget in order to cover the remaining shortfall without requiring new investment.

9(2)(g)(i) [redacted]

A second Programme Health Check, conducted by PwC in November and December 2018, concluded that these problems were so severe that the programme was "Highly Unlikely" to meet its next delivery milestone, which at the time was June 2019 for schools.

In February 2019, the report from a third Technical Quality Assurance (TQA) review, performed by Assurity, found significant issues with branching strategy and code practices, 9(2)(b)(ii) [redacted], including five times more branches than might reasonably be expected in a development of this size, including a corrupted master branch.

Second programme reset

In March 2019 the ERS Programme Governance Board reviewed a range of options to remediate the programme's issues, [redacted] The Ministry engaged PwC to provide independent oversight to this process, and a second layer of independent advice through an independent advisor engaged by the Chief Executive Officer to interview major contributors and present separate findings.

Following these reviews, 9(2)(b)(ii) [redacted] with the Ministry assuming delivery responsibility of the ERS in May 2019, and support responsibility in June 2019.

9(2)(g)(i) [redacted]

Current phase and approach

By June 2019 the Ministry had completed its first intake and onboarding of experienced software developers to remediate and stabilise the elements of the ERS solution in production and continue work on the solution. Development was based on a revised and approved Ministry architecture, a common technical foundation, and a combination of high level and detailed level requirements that had been completed for ECE. In parallel, mid-level requirements were completed in March 2020 for schools.

With the full scope of the solution documented from a functional and technical perspective, in July 2020 a comprehensive re-estimate of the time and cost to complete the programme was completed.

A delivery approach was adopted that enabled effective and efficient monitoring of performance and the delivery of a fit-for-purpose solution. The approach is based on a hybrid of an optimised 'Agile' software development process within a 'Waterfall' framework to support fixed timeframes and dependencies associated with sector business cycles.

The programme is scheduled to run for nine fixed-time tranches over three years, delivering functionality for schools in July 2022 for the 2023 school year and for ECEs during 2023.

Tranche 2 is nearing completion with development tracking ahead of schedule and the team is operating under a proven delivery model. The programme has demonstrated a culture of continuous learning and improvement through ongoing revision and updates to processes and practises and will continue to refine estimates and plans based on these learnings.

The interventions undertaken have been independently reviewed and their effectiveness to realise programme delivery endorsed in the form of a Technical Quality Assurance report May 2020 (Equinox),an Independent Quality Assurance (IQA) report August 2020 and Checkpoint report February 2021 (PwC), and a further Technical Quality Assurance report May 2021 (Equinox).

Functionality delivered to date

Elements of ERS are in place and the solution to-date is operating successfully across several funding types for schools and playgroups, including for Additional Relief Teacher Funding (ARTF), operational funding for playgroups and 'make-a-payment' functionality, as outlined below:

- A total of 20,789 requests have been processed in the ERS with $205.7 million paid to schools and playgroups (as at 26 May 2021).
- There are currently over 5,800 sector users.
- 5,315 payments have been made for COVID-related support totalling $50.4 million.

For those funding types already implemented in the ERS, the following has been achieved:

- Significant process efficiency with an average reduction of 75% of previous process steps.

The underlying technology choices from Microsoft and Oracle have been verified as fit-for-purpose[5].

[5] Verified through a Technical Quality Assurance report performed by Equinox, July 2017.

5. Strategic Case

By revisiting the strategic case identified in the earlier ERS business case documentation[6] we ensure that a compelling case for change remains current and valid for the implementation phase of the programme and that the programme benefits can be achieved.

Commentary on the change since the 2016 Programme Business Case:

The high-level Strategic Case has not materially changed since the original 2016 Programme Business Case. However, system, business and reputational risks have increased and are materialising as significant issues on an ongoing basis. This context is set out in more detail in this business case.

5.1. Strategic Context

In New Zealand there are over 1.5 million learners from early childhood to tertiary education, more than 85,000 early childhood and schoolteachers working in around 8,000 providers and a further 400 tertiary providers. In 2020/21 government expenditure on Vote Education is approximately $13.94 billion with Vote Tertiary ($3.54 billion) taking that to $17.48 billion for the financial year.

Most of Vote Education is used to fund the provision of education and educational services for early childhood, primary and secondary education in accordance with current legislation, regulations and policies. The Ministry manages and administers the disbursement of these funds, of which approximately $8.44 billion (FY 2019/2020) is distributed directly to schools and early learning services in the form of grants, claims and staffing entitlements, collectively known as *resourcing*[7]. It is essential that funding is both accurate and paid on time to prevent major disruption to the sector.

There are 52 different types of application-based staffing allocations that can be made, in addition to entitlement staffing based on rolls, year levels and school type. To assist schools to plan their staffing, but limit the risk of overstaffing, the Ministry calculates funding based on both provisional and confirmed rolls. There are 98 components to operational grant funding, which are a mix of entitlements, application based or automated payments.

There are around 4,600 early learning services that rely on our timely payments of funding for covering more than 200,000 children. There are multiple funding types such as child funded hours for attendance, 20 hours free, targeted funding for disadvantage, and isolation funding.

The current resourcing technology, the *Education Management Information System* (EDUMIS) administers this investment in early learning services and schools, but it is cumbersome, costly to change, reliant on manual processing and other associated systems which drive significant operational risk, and is underpinned by an outdated 30-year-old legacy IT platform that is nearing end of life.

Alignment to existing strategies

The following table highlights how the relevant parts of the existing strategies/plans are in alignment with the proposed investment.

[6] Refer ERS Programme Business Case

[7] Refer Education Act 1989

Existing Strategy	Alignment to Proposed Investment
Ministry Objectives	*It is fundamental that the Ministry pays schools and early learning services in a timely and accurate way to enable the Ministry's strategic educational outcomes.* *'Learners at the centre' – Learners with their whānau are at the centre of education.* This investment will deliver a funding system that will ensure that children at schools, kura and early learning services have access to the resources delivered by timely funding ensuring they are supported to have what they need to thrive. Each child's whānau and community need the ERS to enable appropriately resourced institutions. *'Barrier-free access' – Greater education opportunities and outcomes are within reach for every learner.* This investment will deliver a funding system that will ensure that specialist funding entitlements reach the learners that need these e.g. Learning Support. It will deliver the capability necessary to provide equity index funding across the early learning and schooling sectors. *'World class inclusive public education' – New Zealand needs a world class inclusive public education system that meets the needs of our diverse population, now and in the future.* This investment will deliver a funding system that will support a world class inclusive public education by doing the following: For schools, kura and early learning services: • Reduce their administrative and compliance burden • Increase the payment of entitlements due to automation replacing some application-based processes • Create certainty about their financial outlook • Enable better decision making around the choices they offer children and parents For the Minister and Government • Enable responsive and robust policy advice • Enable timely implementation of new funding policy • Provide assurance that financial resources are well managed by the Ministry, schools, kura and early learning services For the Ministry • Is flexible, reliable and simple to use • Is automated wherever possible • Enable timely implementation of new funding policy • Makes efficient use of resources

Table 5. Alignment to existing strategies

Note that this section has been updated with current strategies and is therefore different to the equivalent section in the original ERS Programme Business Case.

5.2. Problem definition

The original *ERS Programme Business Case* identified the following problems:

> This programme is a response to the following fundamental issues confronting the Ministry:
>
> 1. The current EDUMIS resourcing information technology system for both schools and early learning services is approaching end of the period over which it can be readily supported, along with increasing support costs, which presents a significant risk to continuing to determine and deliver resources.
> 2. Fragmented and out of date systems and processes that incur a high cost of compliance on the Ministry and the sector.
> 3. The need for more transparency, accountability and control over the significant financial investment made in the education sector.
> 4. The lack of a flexible, adaptive and responsive resourcing system that can support current and future resourcing determination and delivery.

The following sections builds on and expands these problems:

Problem 1 – Risks and constraints with current legacy funding system

The current EDUMIS resourcing system for both schools and early learning services is approaching the end of the period over which it can be readily supported, along with increasing support costs. This presents a significant risk to continuing to determine and deliver resources.

System risks and constraints with EDUMIS

There are several known systems risks and constraints with EDUMIS:

a. Resources – the current personnel, through DXC, that support EDUMIS are near or past retirement age which is a key and increasing risk.

b. Development language – approximately 30% of EDUMIS is developed using COBOL and the remaining 70% in 'C'. COBOL is used for the batch processes which runs the funding calculations for schools' operational grant and early learning services funding. These comprise a significant portion of the Ministry's funding.

   Currently there is a reliance on a single vendor person to support the COBOL code within EDUMIS. It is increasingly difficult to find COBOL developers who have not retired, and it is not a compelling career path for attracting and training new personnel. The COBOL programming language first appeared in 1959 and largely ceased to be used in 2002[8].

   There is a significant risk to the Ministry relying on legacy COBOL code and coders, which is unlikely to be supportable in the near future, for critical funding provision.

c. Hardware and software – are reaching end of life and potentially moving onto increasingly expensive extended support where that is available, including:

   i. Oracle Rdb (database) standard support ends in September 2020[9], with Extended Support available until September 2023.

[8] https://en.wikipedia.org/wiki/COBOL

[9] See https://www.oracle.com/database/technologies/rdb-learnmore-orardb-lifesupport.html

ii. Hardware, rx2800 i4 Itanium servers, reaches the end of standard support in March 2023, with extended support available a minimum of 5 years after the yet-to-be-published obsolescence date[10].

d. Mixed vendor support risk – at one time HP was a single provider of hardware, operating systems and application support but now the Ministry is required to have relationships with three separate vendors, all who have a decreasing interest in supporting the aging combination of end-of-life products that make up EDUMIS.

Strategic and design constraints

EDUMIS is not compliant with the GCSB's Protective Security Requirements (PSRs) which is required for Certification and Accreditation and is used to inform all-of-government protective security status reporting.

EDUMIS user interfaces are based on legacy Windows technology and will cause ongoing complexity, delays and additional costs as end-user devices are periodically updated.

Problem 2 – Lack of ability to support timely funding policy changes

Currently, EDUMIS does not provide a flexible, adaptive and responsive resourcing system supporting current and future resourcing determination and delivery. The design constraints that exist in EDUMIS mean that relative to a modern system it is slow and expensive to implement changes to funding policy.

Also, EDUMIS is not designed to process child level data and cannot be readily adapted to support child level data if it is required to support future funding policy.

Problem 3 – Complex and fragmented systems and processes

Currently complex, fragmented and out of date systems and processes incur a high cost of compliance on the Ministry and the sector resulting in inefficiencies and ineffectiveness. The business impact of this is as follows:

a. EDUMIS does not provide an online interface or capability for the sector. Therefore, sector processes including Provisional Roll notices, operational funding and staffing requests through EDUMIS are PDF-based, downloaded through the School Data Portal and then submitted by email to the Ministry.

b. The associated manual processing required in the Ministry and/or regional offices drives increased resourcing costs, and results in poorer outcomes for the sector and the Ministry in terms of responsiveness, process risk, data accuracy, debt recovery and audit.

c. For the sector, there is no single view of the current funding and staffing status for a school or early learning service.

d. The funding applications eco-system which includes EDUMIS and associated Small Business Systems (SBSs) requires manual interventions for data integration and process steps.

Problem 4 – Risk of operational funding issues

There is insufficient transparency, accountability and control over the significant financial investment made in the education sector.

Internal Audit and Assurance has noted the following issues with assurance control risks given the processing volume and scale of payments through EDUMIS:

a. High reliance on spreadsheets for determining payments. The use of spreadsheets increases the risk of errors as change controls are informal and it is difficult to identify formula errors in complex spreadsheets.

[10] See https://h20195.www2.hpe.com/v2/getpdf.aspx/4aa4-7673enw.pdf

b. Limited audit trail. Much of the audit trail is maintained manually outside of the system. The audit trail is therefore only available on-site and requires institutional knowledge to navigate. There is a risk over time the audit trail for significant payments may not be readily accessible when required or could be lost.

c. User interface is restrictive. Users are often required to manually enter data into the system in different formats and breakdowns to the original determinations. Once the data has been entered it needs to be reviewed and reconciled with the original determinations. This process is inefficient and prone to errors. There are some payments the system is unable to process including $49 million of annual payments to Te Kura that must be entered directly into Oracle Fusion.

d. Limited alerts and dashboard functionality. EDUMIS relies heavily on user knowledge and workflows outside of the system to identify and resolve data anomalies e.g. roll outliers and debt recoveries. There is a risk some of these processes could be missed. This has resulted in over or underpayments requiring follow up to resolve.

e. Limited data flow back to EDUMIS from Oracle Fusion. EDUMIS is not able to receive payment information back from Oracle Fusion for cancelled payments. Debt management is managed in Oracle with no automatic feed of information back to EDUMIS. EDUMIS payment information is therefore incomplete and it is difficult to reconcile the two systems.

f. IT general controls. The Ministry's external auditors Ernst Young (EY) are currently unable to rely on the IT general controls for EDUMIS. They have assessed both change management and logical access controls as ineffective.

These operational risks have manifested as five major funding issues over the past 18 months:

a. Incorrect January 2020 payments and notices – manual payments created in December 2019 for the next January 2020 payment automatically defaulted the year to the current year (i.e. 2019 instead of 2020) and were not manually updated to 2020. This was not picked up for the January 2020 payment and notices.

b. Payments not appearing on payment notices –. There have been numerous times where payments have not appeared on payment notices. There are multiple systems and processes involved in leading up to the generation of payment notices. Accuracy relies on two manual processes, (1) the Finance team pulling payments in, and (2) the Resourcing team checking the 'Trial Run' to ensure totals are correct prior to committing to the generation of payments and notices.

c. No payment made – as per (b) above, a General Ledger code was changed by the business, which resulted in the payment file being rejected by one of the systems.

d. Payment errors (up to 400% over payment) – roll data was sent multiple times from the Schools Roll Return Interface (SRRI) system to EDUMIS resulting in a payment being four times as much as it should have been. This process is reliant on Ministry staff across different business groups following their processes precisely and carrying out exception checks to identify processing errors.

e. Incorrect December 2020 payment notices – manual payments created early in November 2020 for December 2020 caused downstream system issues necessitating an EDUMIS rollback. This resulted in incorrect payment notices.

5.3. Investment objectives

The Investment Objectives articulated in the original *ERS Programme Business Case* were refreshed (as part of the 2019 Strategic Case update and agreed by key stakeholders) and mapped to a specific benefits area

where appropriate. The investment objectives were further refined as part of the preparation for this ImBC and are now as follows:

1. Improving productivity and efficiency by reducing the time and cost of delivering our services

   [Benefit 38, KPI 1: Reduction of time spent to carry out administrative tasks (Ministry)]

2. Improving agility so that policy changes are made in a timely and cost-effective manner

   [Benefit 96, KPI 1: Time to deliver and implement funding policy changes]

3. Improving the integrity of the funding system so payments are made accurately and in a timely manner

   [Benefit 84, KPI 2: Reduction in funding errors]

4. Minimising the increasing risk of protracted system outages or intermittent system failures to enable continuity of funding for early learning services and schools

   Benefit 84, KPI 1: Decommission of the legacy EDUMIS system and associated systems is achieved]

5. Improving the effectiveness of investments in the education system through better information, analytics capability and targeting

   [Benefit 96, KPI 2: Capability, accuracy and traceability of policy modelling]

6. Improving the experience of the sector by making it easier and simpler to engage with the education funding system and to receive the funding they are entitled to

   [Benefit 96, KPI 3: Access for education providers to funding data, information and submission

   Benefit 38, KPI 2: Reduction of time spent to carry out administrative tasks (school/early learning providers)]

The benefits and KPIs referred to above are further explained in Section 5.5.

Existing arrangements and business needs

As stated in section 5.2, the fundamental issues confronting the Ministry and its resourcing function persist. The business capability to deliver resourcing (e.g., data collection and storage, returns and claims processing, calculations, payments and staffing entitlements, notifications etc.) continues to be a requirement.

Compounding the business problems is the fact that EDUMIS is reaching the end of the period over which it can be readily supported which, along with increasing support costs, presents a significant risk to the ongoing ability of the Ministry to continue to pay early learning services and schools.

The shift from current to future state for resourcing needs to be enabled through the development of new capabilities, as shown in the table below:

Current state attributes *(Existing arrangements)*	**Capabilities required to fill gap**	**Future state attributes** *(Business needs)*
Siloed ways of working	Funding data in the same place Funding related Small Business Systems (RADs) decommissioned or rationalised	Single source of truth
Complex, manual, potentially error prone processes **Complex process and system integration** **Fragmented systems** **Fragmented business rules management**	Technology providing flexibility, transparency and secure access A simple data collection interface that is user friendly and supports agreed data standards and provides validation of data entered at source Online access for schools and Service Providers via Student Management Systems or sector portal	Supportive, flexible and adaptive (e.g., the ability, where possible, to make changes without software changes – i.e., business rules, access etc.) Secure Enabling
Limited forecasting and planning tools	Tools that enable scenario modelling and what if analysis on 'real' data Forecasting capability with appropriate data inputs Better information leading to better decisions	Supports scenario testing Focus on the child and the benefit to the child
Poor / minimal sector communication	Better information available to schools and Service Providers informing investment decisions	Access to funding status and history, as well as online funding application workflows
Information is not easily available for other education sector stakeholders to utilise	Data sharing and access enabled where agreed	Ability to provide access to data
Limited reporting and monitoring capability	High quality data collected on a timely basis where possible Complexity removed from data model Data collected at the 'lowest level' where possible Clear and complete documented requirements for operational reporting Flexibility in the provision of operational reporting to easily accommodate new operational reporting requirements	On time and accurate data Funding data available for business intelligence reporting and analysis

Current state attributes *(Existing arrangements)*	Capabilities required to fill gap	Future state attributes *(Business needs)*
Current funding is supported by a 30-year old legacy system and sub-systems **Delay and difficulty in supporting priority policy changes**	Legacy systems decommissioned or rationalised Minister able to adjust policy with confidence that true impact of change is understood It takes less time, less effort and lower cost to change policy Service providers, schools and other parties are confident of policy settings and the impact of change on their operations	Major policy changes can be implemented more quickly, e.g. within a 12-month window Policy rules that can be easily updated in a rules engine

Table 6. Existing arrangements and business needs

5.4. Scope

The programme scope is unchanged from the original ERS Programme Business Case. For clarity, it is included here:

In Scope

The following areas of operational funding are in scope:

- Early Childhood Education
- School Operational Grants
- School Staffing
- Special Education [now Learning Support]

Included in scope is the transitioning of all EDUMIS modules and associated funding small business systems. Those items that do not directly involve resourcing operations are included provisionally under the programme so that they do not 'slip through the cracks'. Once the complexity and effort required to completely transition off EDUMIS is more fully understood then some of this work may be removed from the programme scope, into a separately managed business driven project.

In line-of-sight

- School Transport (ensuring alignment with current initiatives; i.e. STRAS project)
- School Property (ensuring alignment with current initiatives; i.e. Helios project)
- Tertiary Education Commission (TEC) funding. Though the implementation of TEC is out of scope at this stage; TEC is enthusiastic regarding evaluating sharing the Ministry's new resourcing service.
- Budget restrictions have meant that the enhancement to a school's event-based model (for example something similar to ELI) has been deferred.

Out of Scope

The following business areas are out of scope:

- Funding policy review/development
- Organisational re-structure
- Re-use opportunities for agencies that do similar work

- ENROL manages enrolments and informs Attendance Services
- Some non-funding RAD's that are not connected in any way to EDUMIS, a detailed impact assessment will determine this but as an example 'stand-down and suspensions' and 'early leaving' are not in scope
- Novopay (**now called "Ascender Pay")** – payment of teacher salaries

Scope additions

- Roll Audit process[11] - this provides the Ministry with a level of assurance that schools have claimed the correct resourcing entitlement through verification of the accuracy of student numbers submitted by school in the roll returns and used in determining resourcing entitlements.
- Architectural change to simplify and increase the flexibility of the solution design[12].

Funding policy changes

The implementation of new policy is not funded within the ERS Programme. Any changes to funding policy during the ERS Programme will represent additional scope which will need an impact assessment and may result in the need for dual implementation of the new policy in EDUMIS and ERS, and potentially manual implementation outside these core systems.

Equity index

Although the proposed Equity Index changes are in the scope of a separate Equity Index business case, foundational work is being done in the ERS to accommodate this change from a Decile for both schools and ECE. Initial requirements for an Equity Index for schools are expected to be provided to the ERS programme by 1 May 2021 and the final requirements by 16 July 2021. This will enable implementation in the ERS for the schools' releases for the 2023 year. If this policy is required to be implemented for the 2022 school year, equity index entitlements will need to be calculated and managed through a manual interim arrangement outside the core systems, which would be both costly and high risk in terms of potential payment errors.

Design Principles

The following design principles have been established that clarify scope:

- The ERS will continue to use existing data sources for early learning services and schools.
- The ERS will collect data at a student level (if available) but aggregate it as is required to fit existing funding policy.
- The ERS will implement current (at the time of writing this ImBC) funding policy.

5.5. Benefits

The original ERS Programme Business Case identified high level benefits through an Investment Logic Map (ILM) exercise conducted in 2014.

The ERS Programme has since implemented a new Investment Benefit Profile under direction from Project Investment and Advice (PIA) following the Ministry's current benefits management approach.

The following table details the high-level benefit domains and associated KPIs along with measures for each KPI. This information is supported by the full Investment Benefit Profile in Appendix 1.

[11] Agreed at the ERS Steering Committee meeting 13th May 2020

[12] Approved at the ERS Steering Committee meeting Nov 2019 based on advice from the Ministry Design Authority

Benefit	KPI	Measure
38 – Reduction of time to complete a task or produce an output This is to continuously improve efficiency in both MoE and schools and improve the interactions and relationships between MoE and schools leading to an increase in trust.	KPI 1: Time spent by Ministry staff to carry out administrative tasks	1. The effort (measured in time) to complete yearly/quarterly operational resourcing reviews and process the associated payments (different baselines for each resource type).
	KPI 2: Time spent by school / early learning services staff to carry out administrative tasks	1. The amount of time school / early learning services staff spend on administration related to operating funding (different baselines for each resource type). 2. The elapsed time to process an application from filling in the request to approval (not payment) (different baselines for each resource type).
84 – Reduce the overall risk profile of an activity An unsupported and end-of-life tech system presents a major risk to the MoE's ability to deliver reliable, trusted funding to schools. A modern end-to-end integrated system enables efficiency gains, reduces human and other errors, and improves trust in the system and the MoE/school relationship.	KPI 1: Decommission of the legacy EDUMIS system and associated systems is achieved	1. The EDUMIS system is decommissioned with no ongoing associated operating and capital costs. 2. Existing in scope Small Business Systems (SBSs) are decommissioned.
	KPI 2: Reduction in funding errors	1. There is a reduction of funding errors.
96 - Improved responsiveness within the education system The ability to model and promptly implement funding policy changes will greatly improve the MoE reputation as well as the ongoing operational relationship between MoE, schools and other appropriate stakeholders.	KPI 1: Time to deliver and implement funding policy changes	1. The time it takes to implement a change to the system once a policy has been approved for deployment.
	KPI 2: Capability, accuracy and traceability of policy modelling	1. Survey of new modelling capability, covering accuracy and traceability to live rules, robustness of input and output data, capability to finely model alongside specific policy drafting.
	KPI 3: Access for education providers to funding data, information and submission	1. Number of support queries following implementation of online processes. 2. Sector adoption of online funding applications and processes.

Table 7. ERS benefits, KPIs and measures

5.6. Risks, constraints and dependencies

Risks

Risks result from uncertain events that undermine the achievement of benefits. As the ERS Programme is already underway, the risks are subject to ongoing frequent reviews, and mitigations are incorporated in the planning for both the programme and the delivery projects.

The main risks that might prevent, degrade or delay the achievement of benefits and investment objectives are detailed below.

Main Risks	Description	Mitigations
Insufficient Capex and Opex funding ***(realised as an issue)***	IF the approved Capital Budget and Operational Funding for the ERS Programme is insufficient BECAUSE the amount approved in the business case is less than is required to complete the scope of the programme THEN the full scope of the programme will not be delivered and EDUMIS will not be able to be decommissioned.	- Include programme milestones to assess the scope, resourcing and cost to deliver the remaining work - Obtain approvals to changes to the business case depending on the outcome of the assessments
Delayed delivery of business benefits	IF there is reduced functionality delivered in Release 1 BECAUSE of MVP decisions necessary to meet the critical path to delivery for schools in June 2022 THEN the full benefits as articulated in this business case may not be delivered to end users until later releases	- Product Management Group oversight of scope and delivery to ensure the delivery timeline is not missed - benefits management and stakeholder engagement plan - business change management planning including documentation of manual processes
Stakeholder expectations re delivery of detailed business requirements	IF stakeholders haven't been consulted and informed on what will be delivered by the ERS in detail THEN stakeholders could perceive that ERS does not deliver the requirements as expected.	- Ongoing communication of the ERS scope to stakeholders - Manage stakeholder expectations - Validate and confirm with stakeholders through iterations
Stakeholder expectations re technology vs. process	IF stakeholders haven't been consulted and informed on the boundary of what will be done by the ERS solution and what process need to be completed by the MoE Business Units THEN stakeholders could perceive that ERS does not deliver the requirements as expected.	- Ongoing communication of the ERS scope to stakeholders - Manage stakeholder expectations - Validate and confirm with stakeholders through iterations
Key programme milestones	IF the new approach adopted by the Ministry does not meet the current timelines expected for the delivery of ERS BECAUSE • the planned approach does not deliver at the expected velocity • development estimates made on high level requirements prove to be inaccurate • data migration estimates made without confirmed data model • inadequate contingencies included for each element of the plan THEN expected delivery of schools and early learning services will be in jeopardy	- Ensuring requirements are sufficiently understood by delivery team - Delivery to be focused on a release approach rather than individual work packages

Main Risks	Description	Mitigations
Implementation of current funding policy in ERS	IF new funding policy is required during the implementation of existing funding policy in ERS BECAUSE the timeframe for implementation is long and there is inadequate coordination with Policy or major new policy requires implementation during the course of ERS development THEN rework may be required incurring additional time and cost.	- The Governance Board includes Deputy Secretary for Education System Policy to guide the programme and inform the optimal timing of policy change.

Table 8. Main risks

Enterprise Risk Profile

From an enterprise risk perspective, the proposed investment reduces the likelihood and impact of risks occurring within the Ministry's strategic risk quadrants of System Leverage, Organisational Capacity & Capability, and Information Quality. Failure to achieve the investment objectives would directly impact Trust & Confidence in the Ministry.

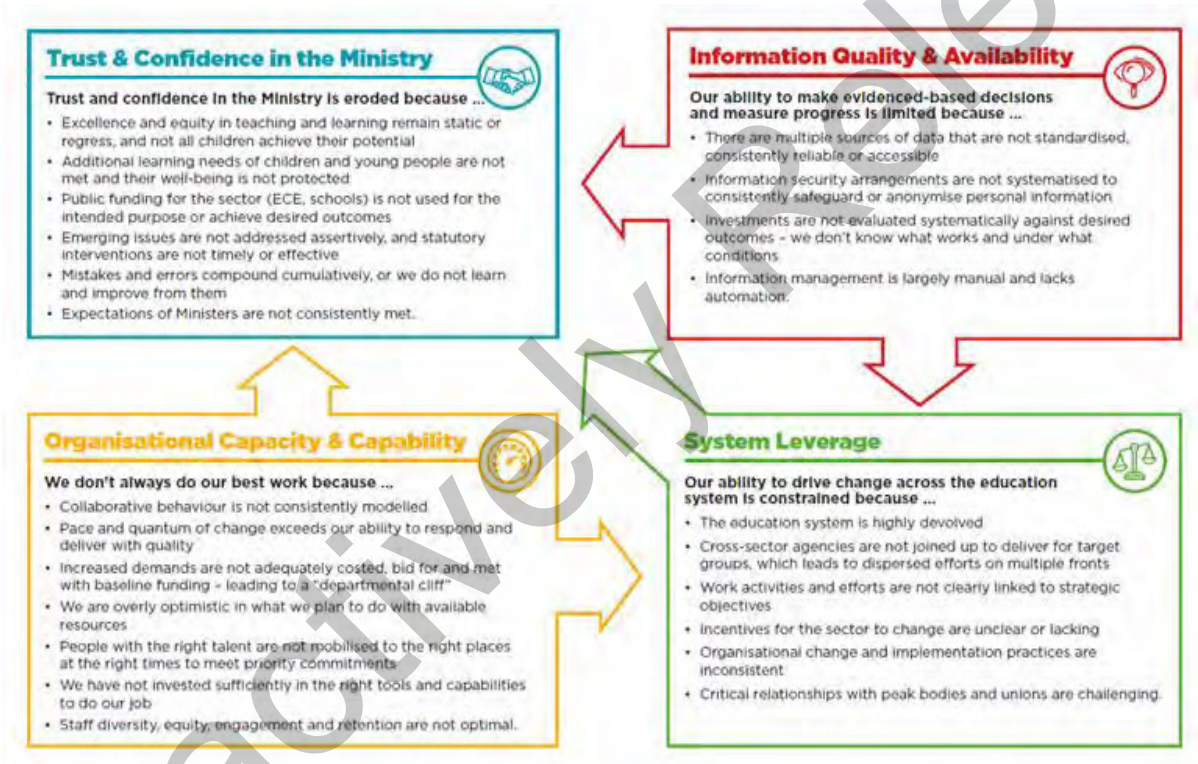


Figure 3: The Ministry's Strategic Risk Quadrants

Constraints

The key constraint for the ERS Programme is that EDUMIS causes significant limitation on Ministry's business and presents a significant risk to continuing to determine and deliver resourcing as follows:

- It is inflexible, slow and high risk to update for new funding policy, e.g. equity policy changes, to the extent that it cannot support major new policy initiatives in a timely and responsive way.
- This drives increasing manual calculations and processes outside of the core system which leads to funding errors and reputational risk to the Ministry and Government.
- It is running on an old platform, with increasing support costs, and this locks the Ministry in to an old development language and specific support resources.

Dependencies

At the time of writing, there are no projects identified outside of the ERS Programme that will compromise delivery of the solution and its intended benefits.

The EDUMIS Transition Project (part of the ERS Programme) is dependent upon the delivery of the ERS so it can decommission EDUMIS. The EDUMIS Transition Project is focussed on the de-coupling of EDUMIS from related systems by transitioning data and interfaces from EDUMIS to the ERS.

6. Economic Case

6.1. Introduction

The Economic Case evaluates the preferred options for the proposed additional investment in the Education Resourcing System. The options were revisited and analysed to ensure the preferred option is optimal for the successful delivery of the programme.

A series of workshops were conducted with the project team and key stakeholders in the development of the Economic case.

Commentary on the change since the 2016 Programme Business Case:

Relative to the 2016 Programme Business Case, the Economic Case now reflects the current options to complete the programme. The narrow range of options is indicative of the fixed legislative and policy frameworks that the programme must deliver to.

6.2. Critical success factors

The critical success factors (CSFs) and investment objectives assist in defining the short list options and inform the decision-making criteria used for options development.

Stakeholder agreement on the CSFs was obtained during a workshop. The table below outlines the five agreed CSFs.

Critical success factor	Broad description
Strategic Fit and Business Needs	How well the option meets the agreed investment objectives, related business needs and service requirements, and integrates with other strategies, programmes and projects
Potential Value for Money	How well the option optimises value for money and minimises risk
Supplier Capacity and Capability	How well the option matches the ability of potential suppliers to deliver the required services, and is likely to result in a sustainable arrangement that optimises value for money
Potential Affordability	How well the option can be met from likely available funding, and matches other funding constraints
Potential Achievability for the Ministry	How well the option is likely to be delivered given the organisation's ability to respond to the changes required, and matches the level of available skills required for successful delivery

Table 9. Critical success factors

6.3. Long list options and initial options assessment

Dimension framework

The dimensions used to create the options were developed in collaboration with project team members and key stakeholders. Workshops were held during October 2020 to ensure the dimensions of the options reflected the business needs.

The design of the options includes different levels of implementation for each dimension. The dimensions and options are illustrated below. Each dimension is described in the table following.

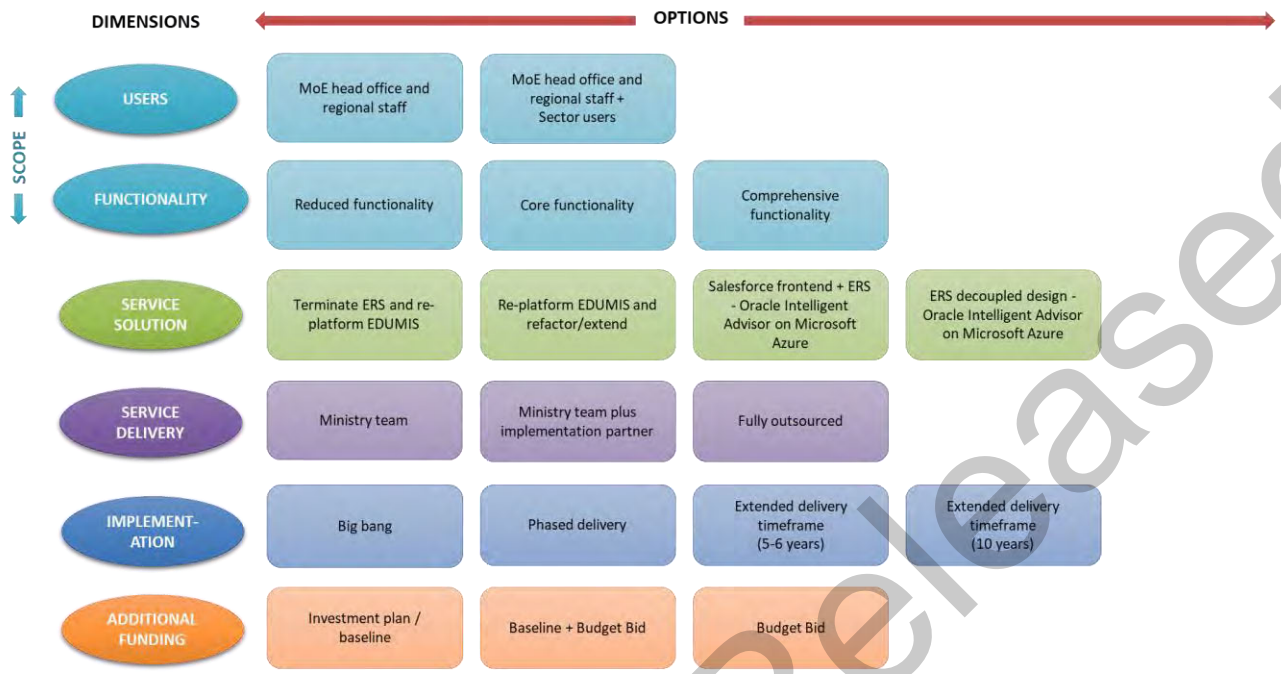


Figure 4. ERS dimensions and options

Dimensions	Descriptions
Users	This dimension indicates the users (MoE head office and regional staff + Sector users) who can access and use the Education Resourcing System. The options are cumulative and are defined at a user group level.
Functionality	This dimension indicates the level of functionality that will be delivered. The options are cumulative. The details of the functionality scope for each option is in Figure 4.
Service Solution	This dimension indicates the options on how the ERS will be delivered. The options are described in the following sections and Table 9.
Service Delivery	This dimension indicates who will provide the services.
Implementation	This dimension indicates when services can be delivered.
Additional Funding	This dimension indicates the various options considered for the additional funding required to complete this investment.

Table 10. ERS dimensions

Shortlisting process

Workshops were held during October 2020 to filter a long list of options against their ability to deliver on the Investment Objectives and Critical Success Factors.

The outcome of this exercise is documented in Appendix 2 Options assessment – the long and short list.

Appendix 3 - Options identification and assessment, details the reason for each dimension option outcome i.e. whether it was classified as preferred, possible or discounted.

The dimension options highlighted in red in the diagram below summarise the dimension options taken forward into the shortlist:

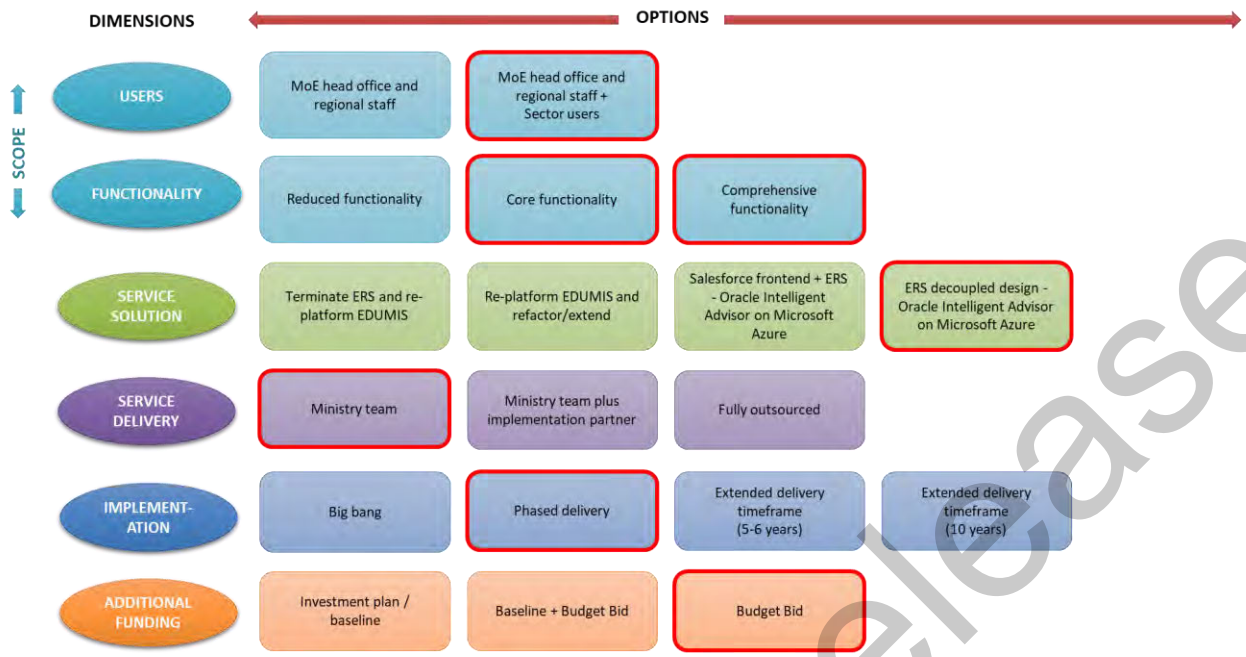


Figure 5. ERS options taken forward for shortlist

A scope of functionality for the two options is detailed in the diagram below. The diagram shows a subset of functionality-related dimensions and options and the options that have been taken forward into the shortlist. The functionality options were finalised in workshops conducted in October 2020, where functionality options were considered in depth with key business stakeholders.

ERS functionality options taken forward to shortlist. *Shading represents each option and its scope.*

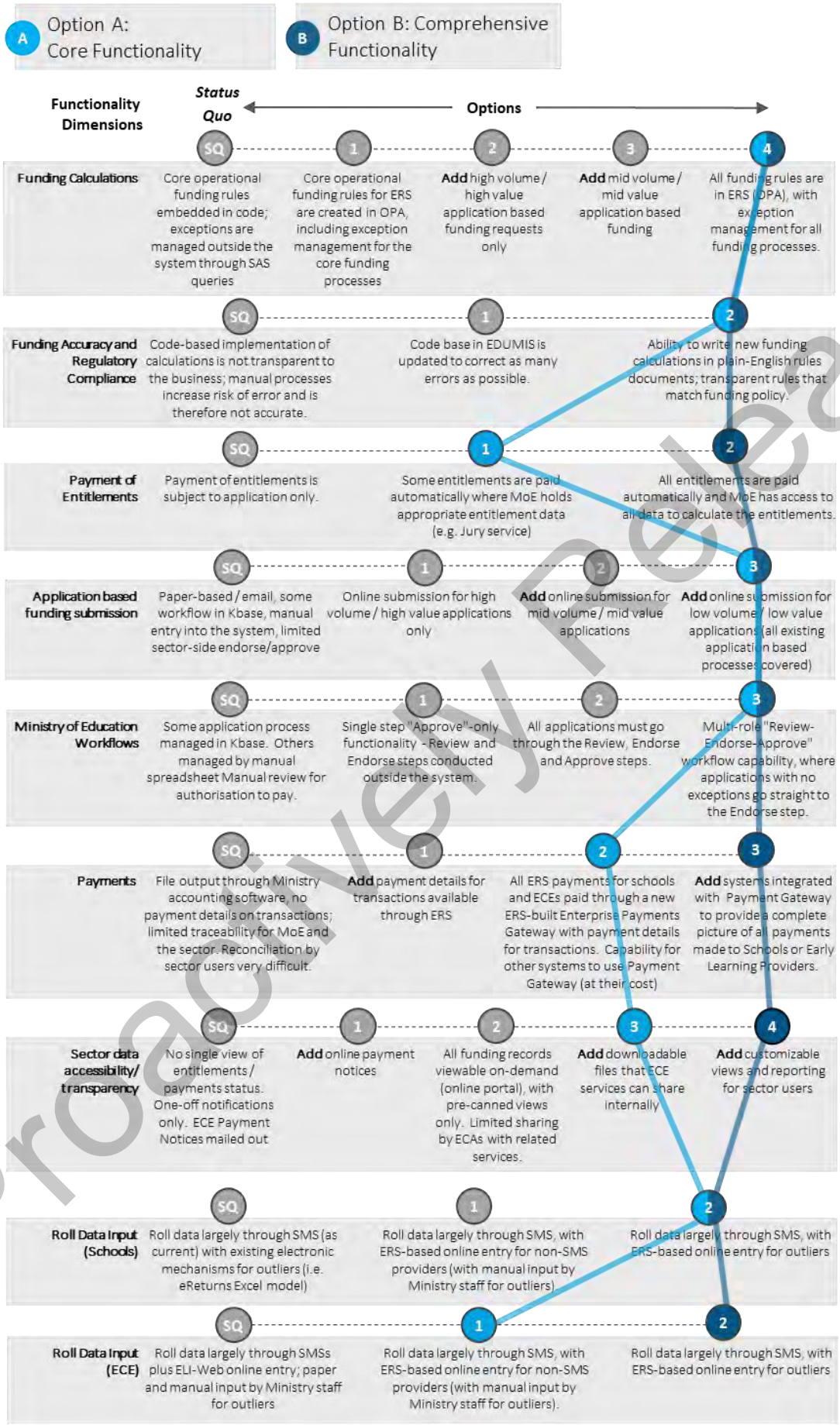


Figure 6. ERS functionality options taken forward to shortlist

6.4. Short-list options and preferred way forward

The selected dimensions options were combined to produce the following shortlist:

1. Option A – Core functionality
2. Option B – Comprehensive functionality

The components of each option are described in the table below.

	Option A Core functionality	Option B Comprehensive functionality
Scope options		
Users: MoE head office and regional staff + Sector users	✓	✓
Core functionality	✓	
Comprehensive functionality		✓
Service Solution options		
ERS decoupled design - Oracle Intelligent Advisor on Microsoft Azure	✓	✓
Service Delivery options		
Ministry team	✓	✓
Implementation options		
Phased delivery	✓	✓
Funding options		
Fully funded Budget Bid	✓	✓

Table 11. ERS shortlist options

Note that there is only one area of difference between options B and C and that is around the level of functionality. All other aspects of the three options are the same.

Functionality comparison of options A and B

The following table describes each of the options, provides a summary of key functionality for each option along with the key business risks and disbenefits associated with each option.

	Option A: Core Functionality	Option B: Comprehensive Functionality
Option Description	• Continue ERS delivery and deliver within 3-year timeframe. • Incorporate existing Production elements. • Small Business Systems and EDUMIS decommissioned. • All funding & staffing requests online. • Sector has online access to submit applications, view progress and payment details. • 5% of manual calculations, managed outside ERS by Ministry staff.	• ERS delivered within 3-4 year timeframe. • Enhanced scope delivered. • Sector has quality experience, all applications online, flexibility to download data for analysis. • Small Business Systems and EDUMIS decommissioned. • Enterprise capability for payments delivered, and other solutions integrated for use.
Dimension Summary	• **Core** ERS Calculation in OIA with some manual calculations. • **Intelligent** workflow, some steps are automated, and requests go straight to Endorse if no exceptions. • **95%** entitlements paid automatically. • **All** application-based requests available online for schools and ECE providers. • **Limited** Payment data available to download for schools and early learning services staff online. • Payment Service has capability to service other applications.	• **All** ERS Calculation in OIA. • **Intelligence in workflow**, requests go straight to Endorse if no exceptions. • **All** Entitlements paid automatically. • **All** application-based requests available online for schools and early learning providers. • **Customisable** Payment data available for schools and early learning providers. • Payment Service has capability to service other applications.
Key Business Risks / Disbenefits	• **Low** risk that schools and early learning services are not paid on time or accurately. • **Few** manual internal controls needed. • **5%** of schools funding manually calculated outside of system. • **Minimal** reputational risk.	• **Low** risk that schools and early learning services are not paid on time or accurately. • **Minimal** manual internal controls needed. • **Less than 1%** of schools funding manually calculated outside of system. • **Minimal** reputational risk.

Table 12. ERS shortlist options comparison

Common components of options A and B

MoE head office and regional staff + Sector users

The system must be able to be used by the Ministry head office and regional staff to administer funding as well as the school and early learning provider administrative staff to apply for funding online and monitor what funding has been provided by the Ministry.

ERS decoupled design - Oracle Intelligent Advisor on Microsoft Azure

The ERS system consists of the following:

- Oracle Intelligent Advisor - flexible entitlement funding engine with business rules which is maintained separately from the core ERS application
- A service layer (user interface) developed in 'C#' and JavaScript code
- A group of custom developed decoupled services e.g., Rolls & Attendance, Funding Processing, etc.
- Microsoft Azure cloud services for hosting
- Payments via Oracle Fusion
- Interfaces from other Ministry systems for funding calculations

This is basically the same solution adopted previously by the project, except for the architectural change to use a decoupled design approach. This design approach uses a separation of core components which allows for greater flexibility and reuse and therefore more easily enables change in the future when technological improvements emerge.

The diagram on the next page illustrates the ERS system that is being built at a conceptual level.

Ministry team

The ERS Programme team that that is now in place is considerably more capable than under the previous approach working with an external vendor, hence the preferred approach is to use the Ministry team with the Ministry acting as the primary integrator. Capabilities of the team by functional area are as follows:

a. Business Analysis – the team has defined the breadth and depth of the ERS requirements to a level of detail that gives confidence that any remaining unknown requirements are likely to be minor.
b. Development – the core development team has been involved in similar significant software development projects in New Zealand and has proven itself in terms of the quality of the deliverables with the defect levels for delivered code being markedly lower than previously. The Equinox Technical Quality Assurance (TQA) report November 2019 independently and strongly endorsed the capability.
c. Testing – the team has been in place for nearly two years and understands the business context for the ERS, which leads to better testing outcomes.
d. Continuous Deployment pipeline (DevOps) – a consistent, predictable, fast deployment process has been established and proven many times over. 9(2)(g)(i) [redacted]
e. Architecture – the very experienced architecture team brings a level of design detail and security focus that was not present previously.
f. Data Migration, Interfaces and Oracle Intelligent Advisor (OIA) – the team has had long-standing experience in the programme and fully understands the interrelationship of upstream and downstream systems, and the rules that need to be built and supported in OIA.

Phased delivery

The phased implementation of the solution will enable the Programme to work with the sector and Ministry personnel to optimise operational processes, providing a faster, more transparent and flexible funding process, delivering on the benefits stated.

Fully funded Budget Bid

A fully funded Budget Bid is the most likely scenario to fund this investment as there are insufficient funds in the Ministry baseline and Investment plan.

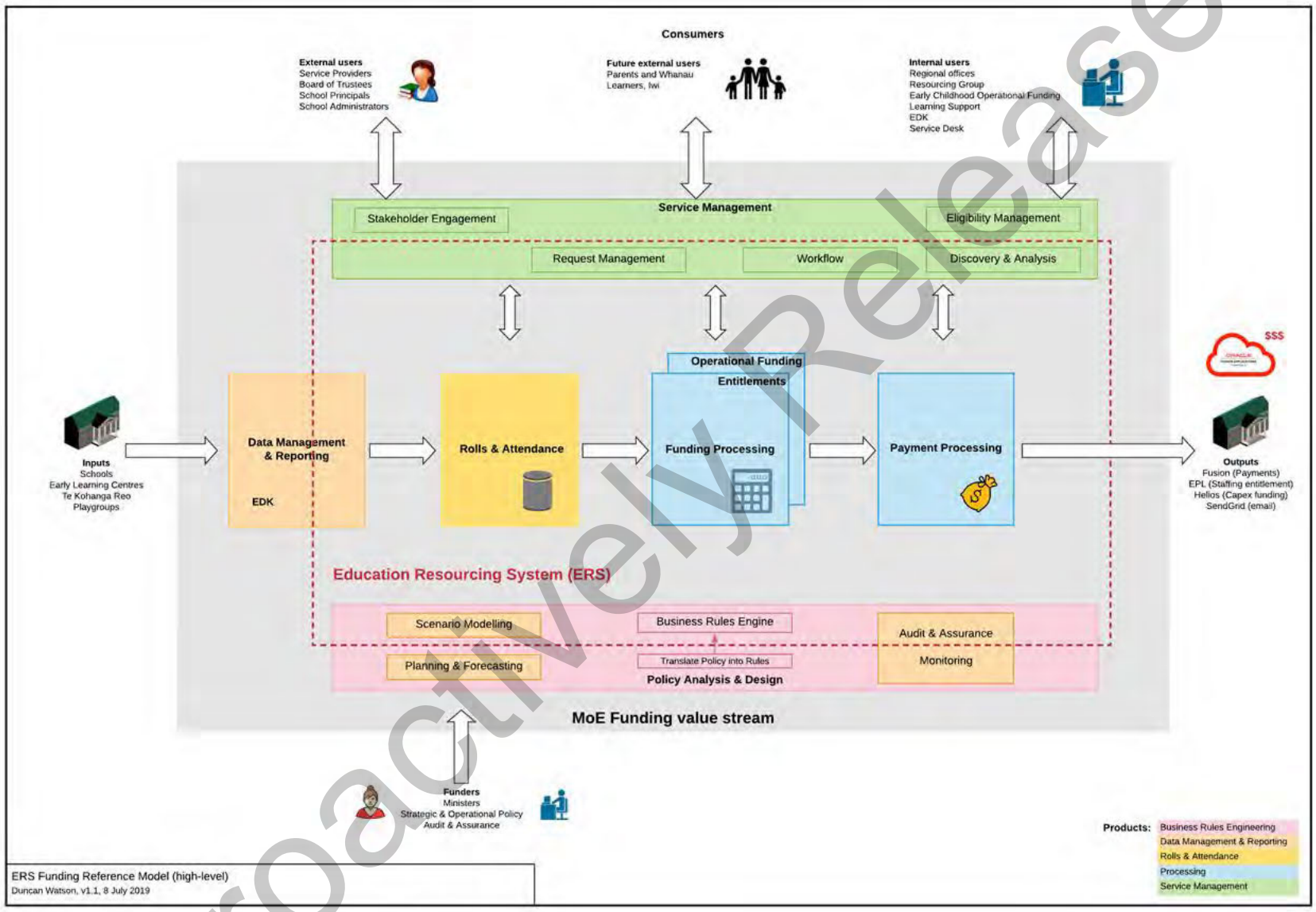


Figure 7. ERS Conceptual Model

Benefits comparison

Benefit criteria have been scored as follows:

- 10 if fully met,
- 0 if not met
- between 3-7 if partially met (low, medium and high)

The scoring of each benefit was workshopped with key business stakeholders in November 2020. The group also agreed on the weightings for each.

		Option A Core Functionality		Option B Comprehensive Functionality		
Benefits	**% Weighting**	***Raw score***	***Weighted score***	***Raw score***	***Weighted score***	**Weighting**
Reduced Ministry effort to administer	20	High (7)	1.4	Fully Met (10)	2	20
Reduced Sector effort to administer	10	Fully Met (10)	1	Fully Met (10)	1	10
Reduced time for approval process	5	High (7)	0.35	Fully Met (10)	0.5	5
Decommissioning EDUMIS	15	Fully Met (10)	1.5	Fully Met (10)	1.5	15
Decommissioning Small Business Systems	5	Fully Met (10)	0.5	Fully Met (10)	0.5	5
Reduced time to implement policy	10	Fully Met (10)	1	Fully Met (10)	1	10
Improved modelling capability	5	Fully Met (10)	0.5	Fully Met (10)	0.5	5
Improved Sector visibility	5	Fully Met (10)	0.5	Fully Met (10)	0.5	5
Increase in online applications	10	Fully Met (10)	1	Fully Met (10)	1	10
Reduction of errors	15	Fully Met (10)	1.5	Fully Met (10)	1.5	15
	100		**9.25**		**10**	**100**

Table 13. Benefits comparison

As expected, the weighted benefit score is higher with increasing functionality, however options A and B are close in terms of scores.

Implementation risk comparison

Implementation risk has been scored as follows:

- 0 – low risk
- 10 – high risk

Option	Implementation risk	Score
Option A Core Functionality	Under this option all the integration points are known, and data inputs use existing mechanisms. Most of the application-based processes will be online. Workflow has some intelligence to automate some steps and entitlements are calculated automatically utilising Ministry and sector data sources.	3
Option B Comprehensive Functionality	Under this option, there are more integration points with other Ministry system that make payments to schools. Integration brings technical and data complexity and therefore a risk of overrun/additional effort. All of the data inputs are gathered electronically and built into ERS. These add additional risk to implementation. There is a risk that the additional effort under this option, would threaten the delivery timeframe for the first schools schedule release for July 2022, which lays the foundation for the 2023 school year.	5

Table 14. Implementation risk comparison

Option A has a low implementation risk, while there is an increased risk for option B which delivers the most functionality.

Cost summary

The non-inflated, non-discounted cost of each option is outlined in the table below.

Cost comparison of shortlist options	Units	Option A: Core Functionality	Option B: Comprehensive Functionality
Programme capital expenditure*	$m	34.925	37.425
Programme operating expenditure*	$m	11.196	11.896
Total programme expenditure*	$m	46.121	49.321
Ongoing operating expenditure (years 5 - 13)**	$m per annum	7.755	8.130
Net Present Costs ($2020)***	$m	41.083	44.125

**excludes sunk costs* ***net of savings, includes depreciation and capital charge* ****NPC calculated over 13 years*

Table 15. Cost comparison of the combined short list options

Shortlist options comparison summary

The following table summarises the shortlist option comparison by presenting the following:

a. Net Present Costs
b. Weighted benefit score
c. Assessment of the options against the critical success factors
d. Implementation risk

The final section provides a summary of scores by applying scores and taking the following into account:

a. Net Present Costs
b. Weighted benefit score
c. Implementation risk (note that these scores have been inverted for the scoring process i.e. 10 – low risk (i.e., lower risk is preferable) and 0 – high risk)

Table 16. Shortlist options comparison summary

Option A is the preferred option.

Options analysis and conclusion

Option A – Core functionality (PREFERRED)

This option will achieve 93% of the business benefits and it meets all the critical success factors.

Option B – Comprehensive functionality

This option costs $3.0m more than option A. It will achieve all the business benefits. However, there is an increased level of risk and complexity with this option. This option could be done after option A is completed if funding is available and benefits are valued. Any decision to progress Option B utilising funding from underspend on Option A would be subject to approval and release of funding by the Ministry Leadership Team.

What does the preferred option deliver?

The preferred option delivers an education resourcing system for both Ministry and sector users which will enable the following:

- All funding and staffing requests to be made by sector online.
- The sector has online access to submit applications, view progress and payment details.
- Only 5% of manual calculations (low volume and highly complex), managed outside the ERS by Ministry staff. The 5% refers to percentage of overall funding value and percentage of funding application volumes.

Functionality will include:

- Core ERS calculations (95%) done in the rules engine
- Intelligent workflow with some steps automated, and requests going straight to 'Endorse' if there are no exceptions
- 95% of entitlements paid automatically
- All application-based requests available for schools and early learning services staff to enter online.
- Limited Payment data available for schools and early learning services staff to download
- Payment Service has capability to service other applications in the future
- The foundational work for the equity index to the extent that it is defined as at 1 May 2021 (however implementation of equity index policies is subject to detailed requirements and analysis and is not in the scope of the ERS Programme)

This option will reduce the risk that schools and early learning services are not paid on time or accurately and hence reduce the reputational risk to the Ministry. Few manual internal controls will be required to support the process.

The system will be built by a highly capable and experienced Ministry project team utilising the Oracle Intelligent Advisor business rules engine and hosted on Microsoft Azure cloud services. The system will be delivered in a series of phased releases over a three-year timeframe.

6.5. Discounted options

The following other service solutions were considered and discounted.

Ministry platform	Description	Reason for discounting
Terminate ERS and re-platform EDUMIS	This option involves ceasing the ERS Programme and retaining EDUMIS for an extended period. The long-term extension of EDUMIS would require at a minimum re-platforming of the application because the end of support for the current hardware, database and operating system software is September 2026, and a replacement for EDUMIS would take several years to determine and implement which would be beyond the end of support.	While re-platforming would address database, operating system and hardware layer system risks with EDUMIS, it would not mitigate the pressing strategic, design and operational business risks that the ERS Programme is seeking to address for the Ministry. As a replacement system will still be required at some point, this option will simply defer the cost of replacement to a future programme such as ERS and result in increased cost over the long term. The cost of terminating the ERS Programme and re-platforming EDUMIS is estimated to be $43.0 million over 10 years, plus write-off of a portion of ERS capex including commitments to date. Some of the elements of the ERS functionality currently in-use for 'make a payment' and playgroups may be retained in this option. Re-platforming retains the existing EDUMIS legacy COBOL code and therefore the significant risk related to aging personnel familiar with EDUMIS would not be mitigated. This option has been discounted as it does not meet all the investment objectives. However, a Ministry report has been produced showing that this is a technically viable option and would be valid as an "offramp" if required, should the ERS Programme encounter unforeseen issues, external shocks or fall significantly behind schedule.

Re-platform EDUMIS and re factor/extend	This option combines a re-platform of EDUMIS with a re-architecting and refactoring of EDUMIS. Work on the ERS platform to date would be terminated with this option. The re-platforming will address the database, operating system and hardware layer but retain the COBOL and 'C' codebase of EDUMIS. Rearchitecting the EDUMIS platform would be required to address areas of business and technical risk that have been identified. Refactoring of existing EDUMIS code would be required to convert the COBOL (30% of overall codebase) and 'C' (70% of overall codebase) and to extend current functionality. The delivery time is uncertain as this option has not been analysed in detail, but delivery would be a significant multi-year undertaking with re-platforming having to be done first, followed by recoding of the COBOL rules before any further refactoring and extension work could be done.	While re-platforming would address database, operating system and hardware layer system risks with EDUMIS, it would not mitigate the pressing strategic, design and operational business risks that the ERS Programme is seeking to address for the Ministry in a reasonable timeframe. So, while re-platforming would address current system technical risks with the EDUMIS platform, it would not mitigate the following: a. EDUMIS cannot be readily adapted to support child level data if it is required to support future funding policy. b. design constraints that exist in EDUMIS mean that relative to a modern system it is slow and expensive to respond to changes in funding policy. In theory, the following could be addressed albeit over a much longer timeframe: • Compliance with the GCSB's Protective Security Requirements (PSRs) • A new service layer (online interface) for the sector • Automation of error prone manual processes • A single view of the current funding and staffing status for the sector A large portion of the costs outlined for the "Terminate the ERS Programme and re-platform EDUMIS" would be incurred as well as a substantial write-off (Appendix 4). The refactoring and code conversion would be an additional cost to the coding of the required business functionality. As re-platforming retains the existing EDUMIS legacy COBOL code, the significant risk related to aging personnel familiar with EDUMIS would not be mitigated until the legacy code is recoded in another language. This option has been discounted as it does not meet all the investment objectives. Business benefits are realised at the end of a significant multi-year under-taking, and it retains many of the design constraints of the legacy system.

Salesforce frontend + ERS - Oracle Intelligent Advisor on Microsoft Azure	This solution uses a flexible entitlement funding engine with business rules (Oracle OIA) hosted on Microsoft Azure Cloud services. The differentiator is that is has a Salesforce front-end service layer instead of the ERS service layer which is built using C# and JavaScript.	A Salesforce service layer will have a very high total cost of ownership with the Salesforce licensing model for the user base of Ministry and sector users. The Ministry is still in the process of confirming the future investment in the Salesforce as an education shared services platform following which the foundational work for a centralised Salesforce platform would need to be done. It would be premature for the ERS Programme to go down the Salesforce path until the direction and sector licence funding is confirmed. As the ERS source code is written and owned by the Ministry, there is no cost for the Ministry to use the compiled code apart from the underlying supporting infrastructure, which has a significantly lower TCO than using Salesforce. The foundational work for the ERS service layer is already well-advanced. Moving the service layer to Salesforce would be another significant architectural change with an associated write-off of the existing investment. Therefore, this option has been discounted on the basis of unaffordability.

Table 17. Other service solutions considered

Further detail on these options and how they were discounted through the shortlisting process is available in Appendices 2-4.

Rationale for discounting delivery over an extended timeframe

Delivery over an extended timeframe will delay benefits realisation significantly, continuing the risk and cost of manual effort to support existing funding processes.

The primary disadvantage of this approach is that it fails to reduce the current risk of an operational funding failure resulting in delayed or incorrect funding payments to schools and early learning services, privacy breaches, and associated reputational risk to the Ministry. It would also delay mitigating the risk around business flexibility and the inability to respond quickly to legislative change. There is an increased risk of not being able to find resources to support EDUMIS over an extended timeframe.

Benefits for ERS would be delayed, and additional staffing will need to be retained for both schools and early learning to manage the manual processes over a longer duration.

It is anticipated this option would cost more than the ERS completion estimate, albeit costs are spread over a longer time period.

Further detail on these options and how they were discounted through the shortlisting process is available in Appendices 2-4.

7. Commercial Case

7.1. Introduction

The Commercial Case outlines the commercial considerations and framework for engaging with providers in the market for the preferred option.

Commentary on the change since the 2016 Programme Business Case:

Given the in-progress state of the programme and the now well-established in-house programme team, the Commercial Case covers the procurement activities remaining to complete the programme.

This programme has been underway for five years, with the main technology procurement completed in 2015/2016 using an RFI/RFP process. Therefore, this case focuses on the procurement activities remaining to complete the ERS Programme.

The main remaining procurement is related to programme personnel. The current programme team consists of approximately 50 contractors and 10 permanent staff. Engaging personnel in this way has enabled the Ministry to fill roles with skilled, experience staff that are not available on the permanent or fixed term markets. However, with secured funding, the Ministry is committed to transitioning to fixed term and permanent staff where opportunities arise. More than half of the planned future team growth is expected to be recruited in the form of permanent hires, and all opportunities to proactively manage costs down without sacrificing quality will be considered at each stage of the development cycle as appropriate.

The commercial arrangements, and associated relationships, will be managed by Business Enablement and Support (BE&S) and Sector Enablement and Support (SE&S) groups within the Ministry with commercial advice provided by Procurement. They will be owned by the Deputy Secretary, SE&S.

7.2. Procurement strategy

Background

The procurement approach aligns with the Ministry's procurement policies, the Government Procurement Rules, and the Government principles of procurement.

The Ministry will leverage mandated procurement panel partners where possible and look for potential outcome-based products and services that deliver value for money.

The appropriate procurement plan(s) will be produced to cover the remaining procurements as required.

Commercial arrangements

The following table describes the commercial arrangements for each of the individual procurements.

Commercial arrangement	Purpose of arrangement
Software licencing - ERS	The Ministry has procured Microsoft Azure and Oracle Intelligent Advisor (OIA) software licenses as one of the components from the RFP conducted in 2016. Annual license agreements are in place for the duration of the ERS build and these will become part of ongoing operational costs when the ERS is handed over to the business. 9(2)(j) [redacted]
Software licencing – development tools	The Ministry has procured Tosca and other software development tools software licenses. Any software testing or other development tools are procured as appropriate from time to time. Where there is an existing government or Ministry arrangement in place it will be utilised, otherwise these tools will be procured from an AoG panel supplier. There are various license agreements in place. 9(2)(j) [redacted].

Commercial arrangement	Purpose of arrangement
OIA consultancy and support	The Ministry has procured Oracle Intelligent Advisor (OIA) consultancy and support from Monad Solutions Ltd as one of the components from the RFP conducted in 2016. The Ministry will engage Monad to do OIA rules development and testing, as well as mentoring and training to build internal capability in this work. A direct Service Agreement was entered into in 2019 with statements of work being used to engage this service provider. 9(2)(j)
UI/UX Application Design Work	The Ministry has procured UI/UX application design services (including wireframes and prototyping) from Pikselin Ltd. These services were direct sourced under the Web Services Common Capability Services Agreement. Statements of work are being used to engage this service provider. 9(2)(j)
EDUMIS decommissioning	The Ministry has procured project management and technical support services from Optimation. These services are directly sourced via a Master Services Agreement. A Statement of work is in place to engage this service provider. 9(2)(j)
Testing services	The Ministry will engage a supplier of professional testing services from the AoG panel to plan and undertake automation testing. Statements of work will be used to engage these service providers. 9(2)(j)
Security review/testing	The Ministry will engage a supplier of professional security services from the mandated Security Related Services (SRS) panel to plan and undertake a Security Design Review, a Security Risk Assessment, Control Validations and Certifications. Statements of work will be used to engage these service providers. 9(2)(j) .
Printing	The Ministry will procure printing services (i.e., banners, flyers, desktop handouts) to support user training directly from Bluestar, the Ministry's preferred printing supplier. 9(2)(j)
Consultancy	The Ministry will engage suppliers of professional consultancy services from the All of Government panels for the following: - Assurance activities 9(2)(j) for the remainder of the programme consisting of: - 5x Comparison Audit Opinion 9(2)(j) - 3x Programme Health Checks 9(2)(j) - 4x Gateway Reviews 9(2)(j) - 3x IQAs for readiness for service 9(2)(j) - 3x TQAs 9(2)(j) - 4x Control Validation Audit (including penetration and performance testing) 9(2)(j) - 2 Board members 9(2)(j) for the remainder of the programme Consultancy Service Orders will be used to engage these service providers.
Project personnel	The Ministry will engage project team members as required. As the programme is already underway, procurement is for contract extensions, and new personnel as required. 9(2)(j) The section below on Programme Resourcing discusses the procurement options in more detail.

Table 18. ERS commercial arrangements

7.3. Personnel sourcing options

The option of returning to market and using an implementation partner to provide development personnel, or full outsourcing, for the remainder of delivery of the project was discounted 9(2)(b)(ii) in May 2019. At that point it was deemed that returning to the market had a low potential yield 9(2)(g)(i) Instead, the preferred delivery option was a Ministry team with the Ministry as primary integrator, a decision reinforced during the shortlisting exercise for the Economic Case.

The personnel sourcing options considered in this section assume that the Ministry will retain this primary integrator role. Once future funding is secured, the Ministry will proactively review the options for procuring

Ministry team personnel as contracts come up for expiry, as personnel leave, or whenever new personnel are required.

The following options exist for procuring project personnel:

a) Engage contract personnel from the AoG recruitment panel.
b) Engage permanent/fixed term personnel.
c) Engage personnel via suppliers which provide the type of personnel required. An RFQ/RFP process would be required to suppliers on panels such as the NZ Defence Force panel. Note that the Ministry will remain the primary integrator and supplier personnel would be part of the project team and report in directly to the programme/project managers.

Procurement option	Advantages	Disadvantages
Contract personnel	• Improved access to skilled personnel • Fast delivery with experienced contract personnel • Greater agility and flexibility	• More expensive than permanent/fixed term personnel
Permanent/fixed term personnel	• Potential opportunities for overall cost reduction • Fuller employment across New Zealand i.e. afford to engage and employ a higher number of fixed/permanent staff than contractors • More structured control of critical functions and skill sets • Retention of intellectual property • Opportunities to upskill and develop less experienced personnel • Improved business customer satisfaction and retention benefits	• The Ministry pay structure limits its ability to offer market rates for permanent/fixed term personnel, with a higher likelihood that less skilled/experienced personnel may be engaged. This risk may result in: o Slower delivery of the project potentially leading to higher costs overall o Guidance required from experienced personnel diverting their delivery effort, hence slowing down overall delivery o Greater management support being required o Less knowledge of best practice processes or the application of a variety of models • Potentially limited market of experienced personnel looking for permanent/fixed term roles.
Personnel from suppliers	• Greater access to skilled personnel • Faster delivery	• More expensive – i.e. pay higher margin on contractor base rates

Table 19. Personnel procurement options

As the project team is currently comprised of 50 contractors and 10 permanent / fixed term personnel, there is no expectation of any need to procure personnel from suppliers which will be more costly than the budgeted option.

The programme has budgeted for the following resourcing plan:

Engagement type	Budget	FTE
Contract	$35,679k	57.4
Permanent/fixed term	$7,360k	20.7
Total	**$43,039k**	**78.1**

Table 20. Programme resourcing summary

The project has budgeted for ongoing support resources, and all of the currently identified support team members intended to support the solution post go-live have already been hired as permanent staff and provided back to the delivery team. As additional roles that fit the Ministry's future support intentions are confirmed, these too will be engaged as soon as is practicable and brought into the delivery team, replacing contractor roles, in a similar transition.

The programme has also already achieved reduced contract rates (with low single digit margins from AOG panel suppliers) and will continue to negotiate further reductions on long term renewals in key roles that require the specialist experience of a contractor.

For all other roles, once funding is secured, the Ministry will review where opportunities exist to transition roles to lower cost alternatives. This approach can be formalised by doing the following:

a) Identifying all contract roles with readily available skillsets.

b) Engaging a resourcing specialist from the central resourcing team to prepare position descriptions and create fixed term roles where realistic to do so.

c) Manage the transition of contractors to fixed term to optimise personnel costs where possible (over the course of six to twelve months).

It is not anticipated that all roles on the programme team can readily be replaced by permanent/fixed term roles without significantly jeopardising the delivery timeframe for funding provision to schools and early learning via the ERS (and hence resulting in no overall cost saving), particularly where skillsets and experience are not otherwise available on the open market. Decisions on individual roles will need to be managed on a case-by-case basis.

The programme will endeavour to select the most cost-effective option in each case.

Payment mechanisms

During the implementation:

- payments for the proposed procurements will be based on defined milestones being achieved (does not apply to personnel hired onto the project);
- payments will be made in arrears, on acceptance by the Ministry, and
- no payments will be made in advance of work performed.

All payments will be made by invoice referencing the given purchase order and directed to the Accounts Payable team. The invoice will be registered and paid through the Fusion system.

Key contractual terms

Standard terms and conditions, per the Ministry contracting panels, will be used.

Contract management

The commercial arrangements, and associated relationships, will be managed by Business Enablement and Support (BE&S) and Sector Enablement and Support (SE&S) groups within the Ministry with commercial advice provided by Procurement. They will be owned by the Deputy Secretary, SE&S.

8. Financial Case

8.1. Introduction

The purpose of the Financial Case is to determine the costs and summarise the overall affordability of the recommended short list option over the life of the investment and identify capital and operating funding requirements.

Commentary on the change since the 2016 Programme Business Case:

The Financial Case now sets out the financial projections through to 2024 to complete the programme. Whole of life costs have increased from $60.24 million to $101.41 million and additional funding is required.

8.2. Approach to financial analysis

The financial model supporting this analysis was designed by the Ministry and received independent review from PwC. The model includes cash flow analysis covering a four-year period from when the business case is approved for the programme delivery costs, and identifies any ongoing expenditure required.

Only direct financial and accounting impacts are included. There are no identified cash releasing financial benefits and therefore none are included in this section.

Key costs underpinning the financial analysis of the projects include:

- Capital expenditure, and the resulting depreciation and capital charge
- Project implementation costs paid out of operating appropriations
- Ongoing operating costs after the implementation has been completed to maintain assets and services at agreed service levels going forward

To determine the cost of the preferred option we have:

- sought specialist accounting expertise from the Ministry's Finance team to ensure all assumptions and financial treatments adhere to Ministry and Treasury requirements;
- identified the major cost elements;
- utilised internal knowledge and expertise gained from experience on previous projects and in the delivery of the project to date, and
- engaged the knowledge of IT specialists.

8.3. Key assumptions for financial analysis

Key assumptions for the financial analysis supporting this programme include:

Assessment period

- The project start date for financial modelling purposes is assumed to be June 2015, consistent with previous project costings. Costs in relation to the financial years 2015/2016 through 2019/2020 are summarised in this section for brevity and detailed in full in Appendix 5.
- The operational life of all proposed ERS assets created is assumed to be ten years and this is the depreciation period over which the costs are amortised.
- Other assets proposed to be developed during the course of delivery are also assumed to be ten years and depreciate accordingly.
- The programme comprises a combination of implementation costs (incurred during the delivery of the ERS solution) and ongoing licensing and support expenditure.

Capital Charge

- Capital Charge is applied at a rate of 6% per year on the first $8.54m of funding and applies to all financial years to 2019/20 inclusive (reflective of the published rate at the time it was incurred).
- Capital Charge for 2020/21 and later years is applied at a rate of 5% in line with currently published guidance.

Personnel and contractor costs

- Internal Ministry personnel costs are based on the mid-point of the salary bands for each role, and contractor costs on current market rates. Resource utilisation rates provide for leave.

Training delivery

- Training for early learning and school administration staff will be delivered on a regional roll out basis.

Assurance activities

- Independent Assurance activities, and the frequency and cost of these reviews, are drawn from the programme's Assurance Schedule and informed by the expertise of the Ministry's internal Audit and Assurance functions.

Ongoing support

- Ongoing support costs post-deployment are based on the market tested arrangements reached with an external vendor in 2017 for post-go live production support. This effectively represents 5-6 FTE on a permanent basis should support be provided internally.
- An additional four named FTEs recruited following the approval of the implementation business case remain included in this model.
- FTE reductions are included reflecting Ministry administrative savings that will be unlocked post-deployment.

Licencing

- For licensing required during delivery, actuals incurred in the 2019/20 financial year have been used as a guide.
- For longer term costs, written quotes have been obtained for the provision of required services.

Ministry overheads

- In addition to the costs outlined in this financial case, the Ministry must incur overheads in relation to ERS delivery activity estimated at $1.3 million per year.

8.4. Preferred option financial summary

The table below summarises the financial analysis of the preferred option. A complete version of this table is included in Appendix 5.

Per Financial Case							
Financial case for preferred option							
		1	2	3	4		
$millions	*Total 2015/2016 - 2019/2020*	*2020/2021*	*2021/2022*	*2022/2023*	*2023/2024*	*Total 2015/2016 - 2023/2024*	*2024/2025 and on-going out-years **
Programme capital expenditure							
ERS Programme	*0.150*					**0.150**	
ERS Technology Platform	*24.825*	9.753	12.018	12.941	0.213	**59.750**	
ERS EDUMIS Transition	*0.308*					**0.308**	
Contingency					4.006	**4.006**	
Total Capital	*25.283*	9.753	12.018	12.941	4.219	**64.214**	
Programme operating expenditure							
Project operating expenditure							
ERS Programme	*6.551*	1.308	1.083	1.023	0.229	**10.193**	
ERS Technology Platform	*2.101*	0.723	0.723	0.723		**4.271**	
ERS EDUMIS Transition	*4.801*	1.053	0.386	0.027		**6.268**	
ERS Business Transformation	*3.239*	0.511	1.141	2.119	0.146	**7.157**	
Contingency					1.111	**1.111**	
Total project operating expenditure	*16.692*	3.595	3.333	3.893	1.486	**28.999**	
Total programme expenditure	*41.975*	13.348	15.351	16.834	5.706	**93.214**	
On-going operating expenditure							
EDUMIS & Resourcing Savings					(1.147)	**(1.147)**	(1.401)
ERS Ongoing Costs	*1.811*	0.361	0.638	0.638	1.171	**4.619**	1.171
Depreciation & amortisation	*1.359*	1.495	2.028	3.928	6.021	**14.832**	6.021
Capital charge	*1.165*	0.705	1.406	1.953	1.963	**7.192**	1.963
Total on-going operating expenditure	*4.336*	2.561	4.072	6.519	8.009	**25.497**	7.755
Total Operating	*21.028*	6.156	7.405	10.412	9.495	**54.496**	7.755
Total expenditure	*46.311*	15.909	19.423	23.352	13.715	**118.710**	7.755
Total revenue							
Less funding from existing baselines							
Departmental Capital Funding	25.283	4.193				**29.477**	
Departmental Operating Funding	20.157	6.156	3.890	4.890	3.890	**38.983**	3.890
Total internal funding	45.440	10.349	3.890	4.890	3.890	**68.459**	3.890
New funding required		5.560	15.533	18.462	9.825	**49.380**	3.865
Capital funding required		5.560	12.018	12.941	4.219	**34.737**	
Operating funding required			3.515	5.522	5.605	**14.642**	3.865
Total funding required		5.560	15.533	18.463	9.824	**49.380**	3.865
Economic Case (Net Present Costs $2020)**						**41.083**	

* the permanent annual uplift required to the Ministry's on-going appropriations
** Economic case Net Present Costs are calculated over 13 years and exclude contingency

Table 21. Preferred option financial analysis summary

The table above shows the total programme costs required to be funded during the implementation period, which is expected to be completed over the next four years of the programme, as well as ongoing operating expenditure covering the running costs of developed products. Further ongoing expenditure will be incurred as the system is fully implemented and is expected to have a permanent annual funding requirement of $3.87 million per annum from 2024/2025 onwards.

8.5. Affordability and funding

The Ministry has explored whether savings can be made, and the implementation business case demonstrates a refining of the costs within the project work streams. However, the Ministry does not currently have capacity within its capital or operating funding for the entirety of the programme without significant service and programme trade-offs and will therefore be seeking additional funding from this business case.

The programme is due to exhaust its existing capital and one-off operating expenditure ceilings in the course of the 2020/2021 financial year, and the scale of the additional funding required to complete the delivery of the system means that meeting the additional funding need is unaffordable if funded entirely from baselines. The Ministry has a capital allowance of $23 million per annum for digital investment, which is consistently oversubscribed, and meeting the demand for ERS funding would represent approximately 50% of this envelope.

The Ministry has considered the implications of such a commitment, and at the time of writing, indicates that internally meeting these costs would require undertaking one or more of the following trade-offs:

- Slowing, postponing or terminating existing investment commitments (e.g. Te Kete Ipurangi[13] replacement, Te Rito[14]).
- Slowing or postponing in-flight base case 'keep the lights on' investments, such as investment in cybersecurity, payroll, or provision of devices (all of which carry critical risks).
- Closing the door to any new digital investments, further limiting our ability to address new base case investments (putting service delivery at risk), implement Government policy, or invest in the performance, efficiency or scaling of services in response to increases in demand.

The balance of funding that cannot be covered by savings or other funding sources is subject to a 2021 Budget bid.

Funding could be released in annual stage-gates if required. This would be managed within the programme portfolio governance process and any report back requirements that may be set by Treasury or the Minister. At the end of each year it is expected that the programme priorities will be reassessed against actual achievement before confirming funding for the next year.

8.6. Risks and uncertainties

The uncertainties affecting the major elements in the one-off capital and operating expenditure from 1 July 2020 estimate were assessed during a workshop held on 23 October 2020 with members of the project team, with additional meetings relating to some cost components held over the following week.

The uncertainties identified and assessed for their possible impact on the one-off capital and operating costs from 1 July 2020 were as follows:

- uncertainty in the overall scope of the technology platform development, *i.e.* the extent to which the epics baseline constitutes a full and comprehensive representation of the requirements;
- uncertainty in the development points, *i.e.,* uncertainty in the estimate of units of effort assigned to functional epics by the programme team;
- uncertainty in the sprint velocity assumptions, *i.e.* the rate at which required functionality can be developed;
- uncertainty in the increase in productivity from deploying the second development team, *i.e.* the negative impact of managing two teams in parallel on the overall productivity that can be realised;
- uncertainty in the days worked to achieve the development outputs, *i.e.* uncertainty in the number of input working days required to sustain the velocity modelled, compared to those costed in base assumptions;
- uncertainty in the cost of the people resources used on the project, *i.e.* the potential for price variability on purchased contractor and internal staff hours;

[13] Platform the Ministry currently uses to publish curriculum, teaching and learning support materials for teachers and educational leaders.

[14] A national repository that will allow learner information to be shared safely and securely as learners move through their education.

- uncertainty in the cost of EDUMIS transition work, *i.e.* the potential for cost variance in the decommissioning of the existing funding system and the small business systems ecosystem around it;
- uncertainty in the cost of business transformation/change management work, most notably uncertainty as to the necessity to allow for regional staff backfill during training and change activities; and
- uncertainty in the impact of the duration of the technology platform development, when applied to other time-dependent project costs, *e.g.,* the effect of delivery time overruns on programme management, assurance and licencing costs (among others).

The uncertainties in these one-off delivery cost estimate components and cost drivers were explored by first considering what would constitute the absolute best- and worst-case values (to establish the extremities of the probability distribution function). The optimistic, pessimistic and most likely risk scenarios on the element values were then evaluated in discussion amongst the workshop participants, and figures for each case were recorded, except for the technology platform duration uncertainty which was derived from the simulation using the total platform development cost as a reasonable proxy for duration, and then applied to the other time-dependent costs.

8.7. Quantitative Risk Analysis

A Quantitative Risk Analysis assessment was carried out to determine the range of delivery cost outcomes for the project from 1 July 2020 to its completion, taking uncertainty into account, and to analyse the sensitivity of the estimated cost to the uncertainties modelled. The assessment was facilitated by Mike Wood of Broadleaf Capital International.

The analysis utilised three-point estimates of the possible variation in each element under consideration by considering optimistic, pessimistic and most likely scenarios for each one. These scenarios and the range of values each element could take on were developed at a workshop on 23 October 2020 and some additional meetings during the following week. The outcome of the quantitative analysis was used in a Monte Carlo simulation model to evaluate the overall uncertainty in the ERS one-off capital and operating expenditure from 1 July 2020.

The table below shows the estimated probability distribution profile of each of the key cost components. These probability distributions were estimated based on the judgement of the project team. A value of 0% represents no change to the base case value, while a negative value represents a reduction from the base case value and a positive value represents an increase from the base case value.

Uncertainty	Optimistic	Most Likely	Pessimistic	Delta
Technology platform - Scope/list of Epics	-10%	-5%	0%	*relative*
Technology platform - Points (conversion from sizing)	0%	10%	25%	*relative*
Technology platform - Velocity	33%	15%	-10%	*relative*
Technology platform - Team numbers	-8%	-3%	0%	*relative*
Technology platform - Productivity increase from 2nd team	-$1.72m	-$0.43m	0	*absolute*
Technology platform - days worked per annum	-10%	-7.5%	-1%	*relative*
Resources cost	-10%	0.0%	10%	*relative*
Technology Platform development duration (applied to time-dependent costs)	-18.7%	7.1%	32.4%	*relative*
EDUMIS Transition	0%	20%	30%	*relative*
Business Transformation - Resources	-15%	-10%	-5%	*relative*
Business Transformation - Change activity	-$1.41m	-$0.96m	0	*absolute*

Table 22. ERS QRA inputs

The graph below shows the probabilistic range of assessed values from the QRA analysis, representing the total delivery costs remaining (from 1 July 2020) to complete the ERS solution and may be summarised as follows:

- The average (mean) outcome of the modelling is for a requirement of $42.6 million to complete. This suggests that there is a 50% chance that the programme can be delivered for that amount, and a 50% chance that more will be required.
- The fully costed preferred option put forward in this business case sits approximately at the 70th percentile, i.e., there is a 30% possibility that funding will be sufficient.
- Increased levels of confidence are also marked at $50.0 million (85th percentile), $51.4 million (90th percentile) and $61.7 million (approximately the 99th percentile).

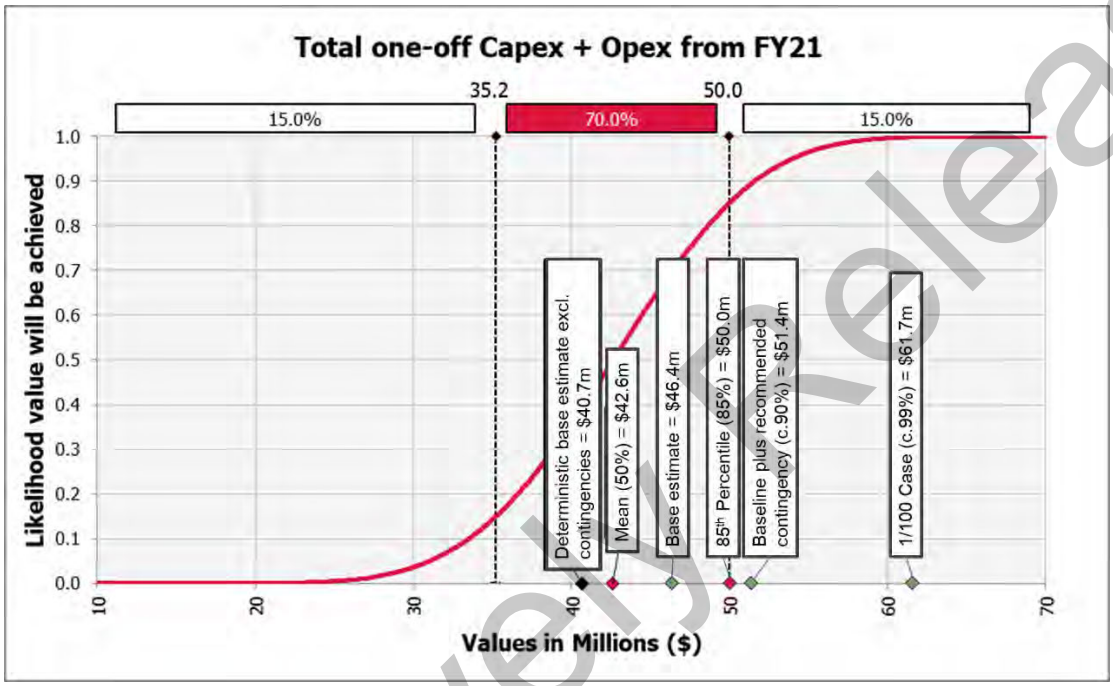


Figure 8. QRA total costs, in comparison to Ministry estimates

8.8. Recommended contingency

Technical quality assurance findings indicate confidence in the team's capability and processes. However, both internal modelling and external reviews note that the programme's delivery approach is relatively early in its implementation and the solution to be delivered remains large and complex.

We recommend a provision of $1.11 million operating contingency and $4.01 million capital contingency. This aligns with our internal development modelling, which projects that we will be able to complete the build and test of software towards the end of Tranche 9 (c. April 2023), at which our baseline costing is set, with a 73.9% confidence (based on available data as at 16 December 2020), but enables the Ministry to enter into (and complete) a tenth development tranche, should it be required. This aligns the total programme estimate and contingency with the 90th percentile of the QRA but is not driven by it.

If project risks materialise, delegation limits will be in place that determine the thresholds at which contingencies can be used and where decisions need to be sought from the governance board. We expect that any contingency would only be released following a report back to the Secretary for Education.

8.9. Sensitivity Analysis

Sensitivity analysis demonstrates the relative significance of the ERS expenditure uncertainties from 1 July 2020 and is represented graphically in the following figure. The dominant uncertainty is the sprint velocity

uncertainty, and the results are also quite sensitive to the uncertainties in the development points (the conversion from the development size estimate), and to uncertainties in resource cost (price).

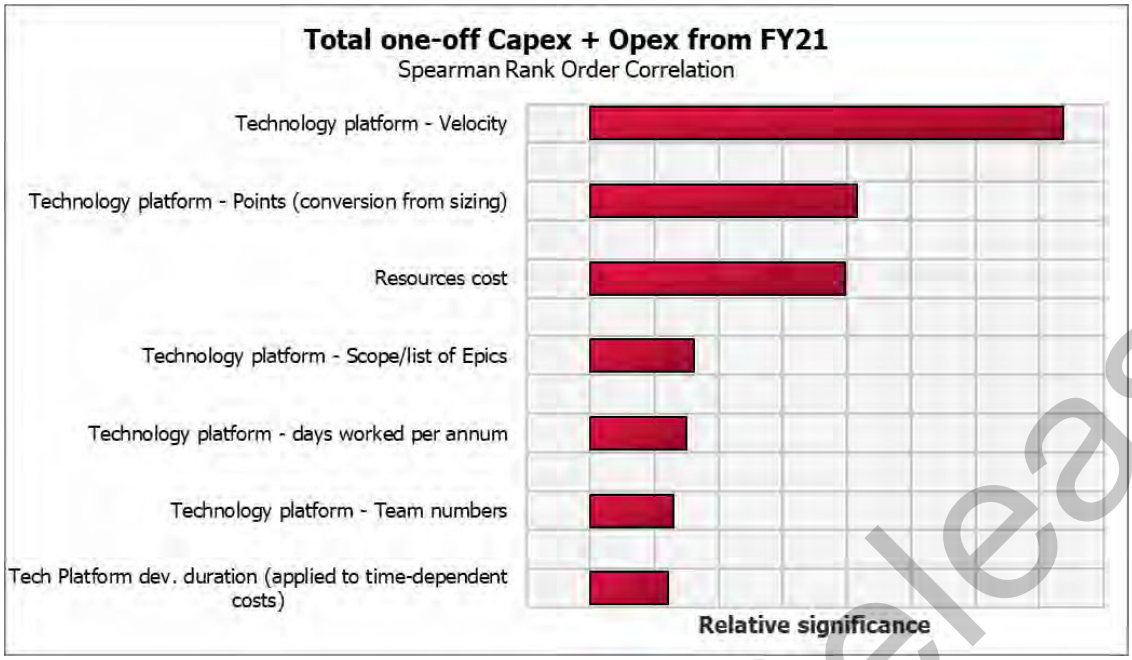


Figure 9. Sensitivity Analysis

9. Management Case

9.1. Programme approach

This section provides an overview of the processes in place to ensure successful delivery of the programme. These provide a robust and coherent approach to implementing new business and technology solutions and for managing the associated business change.

Commentary on the change since the 2016 Programme Business Case:

The Management Case now sets out the detailed programme processes that have been developed as the in-house programme team has been established, including the development approach, release schedule and the change management approach for the sector and Ministry business teams.

The programme uses common methodologies and consistent practices where possible, such as for:

- Governance arrangements
- Benefit management
- Risk management

The programme has developed approaches for:

- Project management planning
- Project delivery
- Change management

Methodology

The ERS Programme approach to delivery is bimodal utilising both agile and waterfall methodologies.

The programme will be managed according to Managing Successful Programmes (MSP) methodology and the constituent projects will be managed using PRINCE2 methodologies. The delivery approach, where possible, will be to deliver benefit early and minimise financial risk. To achieve this, it will apply the following disciplines:

- The programme will be delivered, as far as possible, though defined phases (tranches) which are individually costed and provide defined increases in functionality. The expectation is that at the end of each tranche, programme priorities will be re-assessed and a 'go: no go' decision made whether to continue to the next tranche. This approach encourages the regular delivery of tangible benefits and minimises the risk of sunk costs in the event of a decision not to proceed.
- Consistent with this approach, agile delivery tools will be used where appropriate, for example in the build phase of each tranche. Agile is based on clearly defined periods of activity ('sprints') – each of which must deliver useable, new functionality.
- Short-cycle, iterative development gives the programme the opportunity to demonstrate benefit early and to 'fail fast' if deliverables don't meet expectations.

An integrated delivery schedule and the delivery structure aligned to work-streams or within a work-stream is as follows:

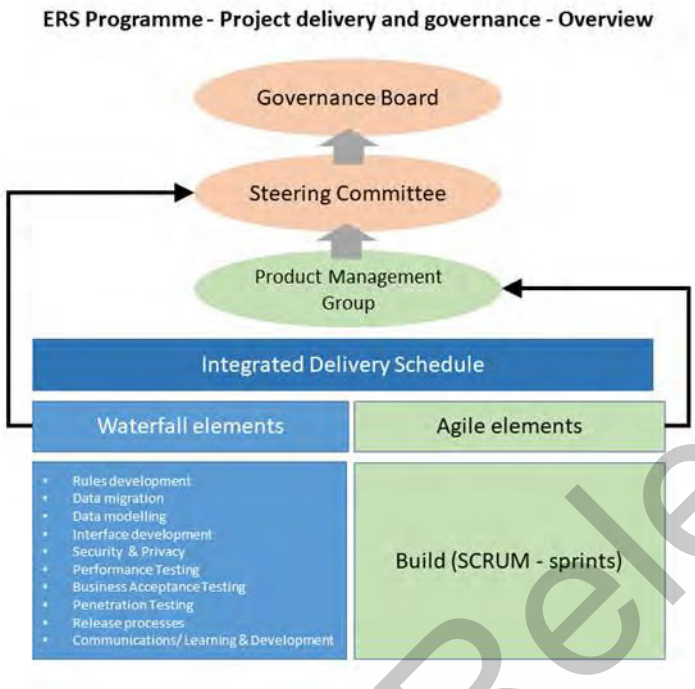


Figure 10. ERS Programme delivery and governance overview

Design principles

The programme has the following approved design principles that will define the scope and architecture for ERS:

WHAT…

1. ERS is the System of Record for funding education institutions.
    - ERS is a Funding system.
    - ERS is not a Payroll system.
    - ERS is not a Case Management system.
    - ERS is not an HR or Contracts Management system.
2. ERS is the authoritative source for calculation and record of education funding entitlements/payments. Data used to support identification of funding entitlements within ERS will be obtained and trusted from its agreed authoritative source.
    - ERS is primarily a calculations engine, using data received from master data sources to create a Payment/Entitlement record.
    - ERS will not update data obtained from an authoritative source; any errors or inconsistencies identified within funding processes will be passed back to the authoritative source for correction.
    - Where an authoritative source does not currently exist, a system will be determined to hold the operational data by augmenting an existing system or building a new system.
3. ERS will pay an entitlement automatically where it is due.
    - The impact of automatic entitlement type will be assessed on a case-by-case basis, with each case requiring an explicit approval.

HOW…

4. ERS will be designed with flexibility to allow the Ministry to implement future policy changes quickly and with minimum cost.

    - ERS will be based on loosely coupled architecture domains; it will not be designed as a monolithic application.
    - The architecture shall aim to achieve greatest value for money.
    - Configuration of components is preferred over customisation and bespoke code (noting that ERS is primarily a bespoke development).
        - Business processes will be changed if necessary, to avoid customisation.

5. ERS will design and implement efficient, streamlined and standard business processes.

    - Avoid manual processing. Solutions to address this in order of preference, are:
        1. Direct data access or digital feeds;
        2. Manual file upload by Ministry staff;
        3. Data entry by Ministry staff or online forms completed by sector users
            - Where (2) or (3) apply, a single standard flexible manual processing facility will be targeted.
            - The impact of avoiding manual processing will be assessed on a case-by-case basis, with each case considered marginal requiring an explicit approval.
    - ERS system processes will be designed to facilitate straight through processing.
        - Where possible, the system will undertake actions formerly performed manually so that consistency and the desired efficiencies can be realised.
    - ERS will utilise business rules to identify transactions outside normal parameters that may require manual intervention.

ERS will support data about students when it is required by ERS for funding calculations.

Projects

The ERS Programme is split into two interrelated projects:

1. The Education Resourcing Technology (ERT) project delivers the new technology and manages its configuration over the length of the programme to deliver the Ministry's resourcing requirements. There are two streams to this project
    a. Early Learning
    b. Schools
2. The EDUMIS Transition (ET) project manages changes to non-ERS systems during the transition. This project also removes any dependency on EDUMIS and follows through with eventual decommissioning, and integration with ERS instead of EDUMIS where required.

9.2. Deliverables

This section summarises what the programme will deliver. The rest of the Management Case addresses how the programme will be managed.

The ERT project will deliver a system that will provide the Ministry and the sector with the following:

a) Provision of a secure interface for school and early learning service users to interact with the Ministry for processes related to resourcing transactions.
b) Accurate calculations of the Guaranteed Minimum Formula Staffing (GMFS) and Operational Grant for each school, as part of the annual Provisional Cycle.

c) Accurate calculations of the instalment for each early learning service for the March, July and November payments. Includes the wash up from a previous instalment – forecast vs. actual.

d) Accurate calculations of adjustments to the resourcing based off actual roll data and other application-based changes, initiated by the Ministry or a school, received throughout a school year.

e) Provision of the capability for automatic entitlement payments to schools where data is available rather than forcing them to apply for that entitlement (e.g., Jury service payments).

f) Payments to schools and early learning services of what they are entitled to, in agreed/mandated timeframes.

g) Provision of a mechanism (through views and/or reports) for each school or early learning service to see the status of their resourcing transactions at any time. This will allow individual schools or early learning providers to manage their resourcing entitlements and for the Ministry to report on and analyse staffing and funding entitlements.

h) Interfaces with all upstream and downstream systems that use and/or provide data for resourcing calculations for schools and early learning services.

i) Provision of historical ERS data for the Ministry's use (analysis etc.) and legislative record keeping obligations, to the Ministry's data warehouse solution.

j) Appropriate internal controls that manage the risk inherent in the process of calculating and delivering funding to schools and early learning services.

The ET project is responsible for the decommission of the legacy EDUMIS system and associated Small Business Systems (SBSs) and moving integration from EDUMIS to ERS for any remaining SBSs.

ERS deliverables already in Production

The following three components of ERS are already in Production and functioning successfully:

1. Additional Relief Teacher Funding (ARTF) for sick leave and jury service:
    a) A user interface for schools to apply online for funding when employing relief teachers for teachers who are off on extended sick leave including attaching a medical certificate.
    b) Automatic payment for teachers who are on jury service. Data is gathered from the payroll system. The ERS calculates the entitlement and pays it to the school without the need for an application process.
2. Playgroup funding - an interface to collect data from playgroup providers in order to calculate and process the payments to which they are entitled.
3. Make A Payment – a payment mechanism to get ad hoc operational funding to schools.

9.3. Governance arrangements

The following programme, project management and governance arrangements are in place and outlined in the sections below.

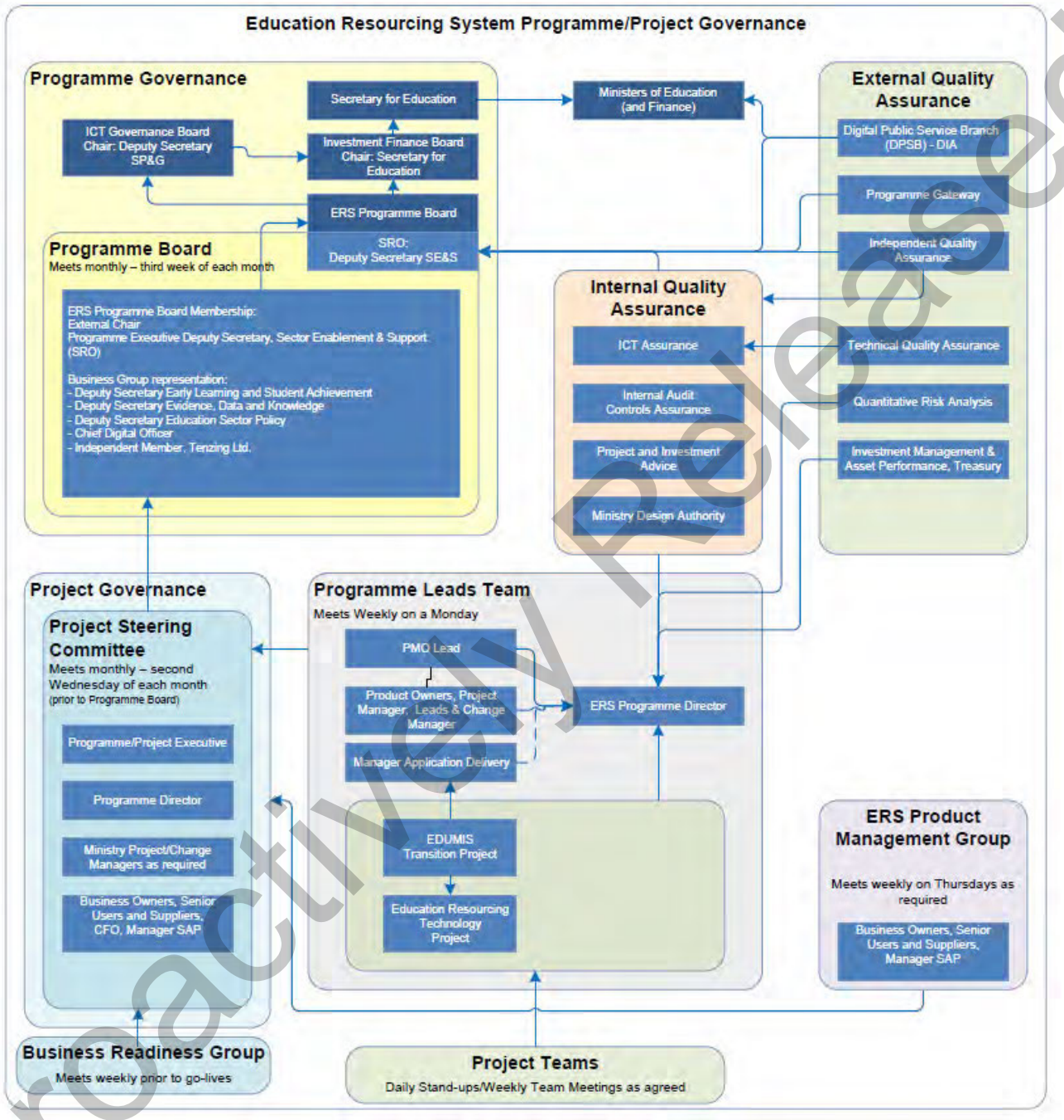


Figure 11. ERS Governance arrangements

ERS Programme Board (programme governance)

The ERS Governance Board reports to the programme Senior Responsible Officer (SRO) Katrina Casey. The Board will continue to run through the full life of the programme. The ERS Programme engages with the Governance Board through the Programme Director. The ERS Governance Board is chaired by an external independent Chair, and the board supports the SRO to deliver the programme.

The Board's role includes defining the programme's risk tolerance; confirming its strategic alignment; advising on how it impacts on stakeholders; ensuring it is delivering within agreed parameters; and that the programme is on track to deliver anticipated benefits.

Project Steering Committee *(project governance)*

The ERT and ET projects have a single steering committee to govern the projects and ensure successful dependency management and implementation/rollout, including the realisation of project benefits. Membership includes senior business owners, senior stakeholders and the Ministry's Chief Financial Officer.

Product Management Group

The Product Management Group is led by the Chair of the ERS Programme Steering Committee (Associate Deputy Secretary, Resourcing and Early Learning Delivery) and incudes the Product Manager, Group Manager Resourcing, Group Manager ECE, the Manager Application Delivery (Funding Systems) and the Manager Solution Architects in the ICT Strategy & Planning group as decision makers, and the ERS Programme Director. This group is supported by Product Owners and the ERS Project Managers.

The group has multiple responsibilities to ensure the final product is fit-for-purpose and built within financial constraints, including:

- making Minimal Viable Product decisions on functionality to be delivered;
- approving the content for entry into each tranche build phase;
- approving the deliverables upon exit of each tranche build phase; and
- recommending the final make-up of the 'Tolerance and Contingency' period, reserved for estimation or complexity uncovered within the tranche or for work to be brought forward from subsequent tranches, for approval of the Steering Committee.

The group meets on a weekly basis as required and reports through to the Steering Committee.

Business Readiness Group

The Business Readiness Group will have oversight of the leadup to major releases and will act as an advisory group to the Steering Committee. The Business Readiness Group will track progress for an agreed set of Deliverables that support a decision to Go Live and will endorse the decision to Go Live for each Release to Production. There is an approved Terms of Reference for the group. Membership includes all ERS Business Owners, some Directors of Education, Senior Manager - Web & Applications Services and Senior Manager - Operations and Infrastructure Services.

Programme and project assurance

The overarching objective of the ERS Programme Assurance Plan is to provide the Secretary for Education, the Ministry Leadership Team, the ICT Governance Board, the ERS Programme Board and the SRO with confidence that the ERS Programme is well managed and that the expected benefits will be delivered. Programme funding is held at the Ministry Leadership Team level and released on approval.

The Treasury Risk Profile Assessment for this programme was initially rated as "high".

The ERS Programme will align with the Ministry's approach to governance of risk aligned to the 3 Line of Defence model ("3LoD") illustrated below and as advocated by the Office of the Auditor General.

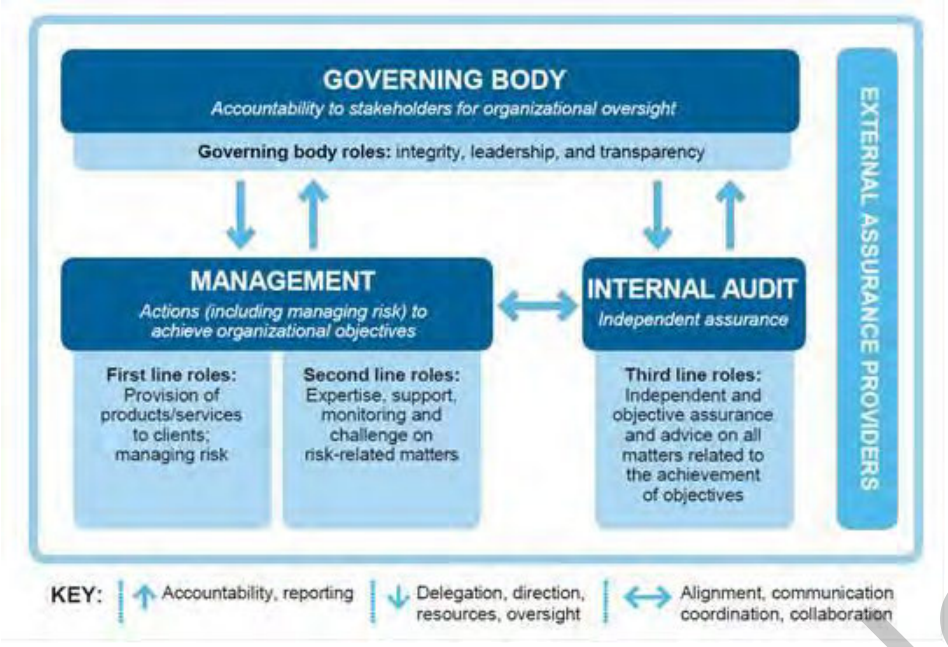


Figure 12. 3 Lines of Defence model

The first line of defence is compliance with the day to day project management processes and controls, including quality management.

The second line of defence is provided by the presence of effective governance and oversight arrangements, including clear and signed off terms of reference for all governance bodies and Ministry Delivery Framework mandatory documents.

The third line of defence is exercising the use of independent assurance that the SRO can obtain from either internal sources (e.g. Internal Audit and Assurance or Project and investment Advice (PIA team)) or external third party assurance providers selected from the Digital Public Service Branch (formally GCDO) sub-panel of the MBIE Consultancy Panel of qualified assurance providers, using the Consultancy Service Order (CSO) template available from Ministry Procurement.

In the Ministry, the Principles of Good Assurance are given effect by:

- classifying projects to provide risk-based guidance on applying the three line of defence;
- endorsement and advice on assurance planning and execution by the Ministry's Risk & Assurance team throughout the project lifecycle;
- endorsement and advice by dedicated procurement, privacy and cyber security teams;
- risk based assurance guidance within MDF templates i.e. Business Case ("BC"), Project Initiation Document ("PID"), Exception Reports and Governance Board Terms of Reference ("ToR")
- proactive engagement with central agencies on high risk projects;
- SRO and governance board awareness and demand for independent assurance, and
- use of pre-qualified independent suppliers GCDO assurance services providers' panel.

The programme manages risk-based assurance under the updated ERS Programme Assurance Plan that was approved by the ERS Governance Board in September 2019, based on assurance principles recommended in the latest guidelines from the Digital Public Service Branch (DPSB). A rolling six-monthly assurance schedule is used to outline the assurance activities for the upcoming 6-month period. The current Six-Monthly Schedule of Assurance Activities is for August 2020 – January 2021.

The programme has allocated $1,090,000 for assurance across the remainder of the programme.

Recent assurance activities

Ernst Young (EY) has been engaged to undertake independent assurance of the *Staffing and Funding* calculation process and approach recognising that the ERS is distributing around $8.4 billion per annum for schools and early learning operational funding

Two recent independent quality assurance assessments of the programme have been undertaken as per the 6-monthly assurance schedule.

a) the Equinox *ERS Architecture Technical Quality Assurance report*[15] gave an overall confidence rating for the successful delivery of the programme of "Possible" [16], noting issues exist that require programme management attention in order to achieve the next key milestone.

b) PriceWaterhouseCoopers (PwC) August 2020 *Education Resourcing System: Programme Health Check and Estimations Approach Independent Quality Assurance Report*[17] gives an overall confidence rating for the successful delivery of the next phase of the programme of "Possible". The next phase is assessed as the exit of Tranche 2 (December 2020). The report notes:

"The ERS Programme have completed the re-plan and prepared a baselined budget and timeline. A robust approach was followed, drawing on the limited data available and applying assumptions. These assumptions have not yet been proven, resulting in a risk that sizing and velocity assumptions are not realisable. We recommend a checkpoint is established in December 2020 to validate the actual timeframes and costs to those planned and assumed."

The scheduled Gateway review was impacted by COVID-19 and it has been rescheduled for December 2020. The review is timed to provide a basis, along with a further targeted report from PwC, to substantiate the cost of completing the programme.

9.4. Emphasis on security within the programme

Information security is the practice of defending information from unauthorised access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction. It is a general term that can be used regardless of the form the data may take (e.g. electronic, physical).

The ERS Programme will implement security services and capabilities that meet business objectives and align to government and education sector requirements. The programme will draw on and enhance existing standards and capabilities. In particular, the Education Sector Logon (ESL) will be a key component to support the diverse range of user access requirements.

The programme has some information security risks that need to be managed. The information which is stored in the ERS is classified as "SENSITIVE". The system will store and process large datasets some of which contain limited personal information belonging to education sector employees and learners (NSNs and Dates of Births only except for Learning Support which includes learner names as well). This presents complex issues for ensuring that the right information is available to the right entity at the right time.

The programme will take a risk-based approach to identifying the protective measures that are required to enable the secure delivery of the services. Information security threat assessments based on the Ministry's standard processes will be completed early in the programme lifecycle for each project to identify protective measures that will inform the solution architecture. The threat assessments will be revisited as designs progress to ensure that detailed design processes have not introduced new, or modified existing, risks.

ICT assurance processes will be based on an end-to-end audit of the protective measures implemented for each release and will support the formal certification and accreditation of services prior to going live, as

[15] The Equinox *ERS Architecture Technical Quality Assurance report* is attached as Appendix 17.

[16] Based on the Government Chief Digital Officer Confidence and Recommendation Priority Ratings.

[17] PWC's *Education Resourcing System: Programme Health Check and Estimations Approach Independent Quality Assurance Report* is attached as Appendix 18.

required by the New Zealand Information Security Manual and in compliance with the Protective Security Requirements.

The following approach has been agreed by the Senior Manager ICT Assurance and is being used within the programme.

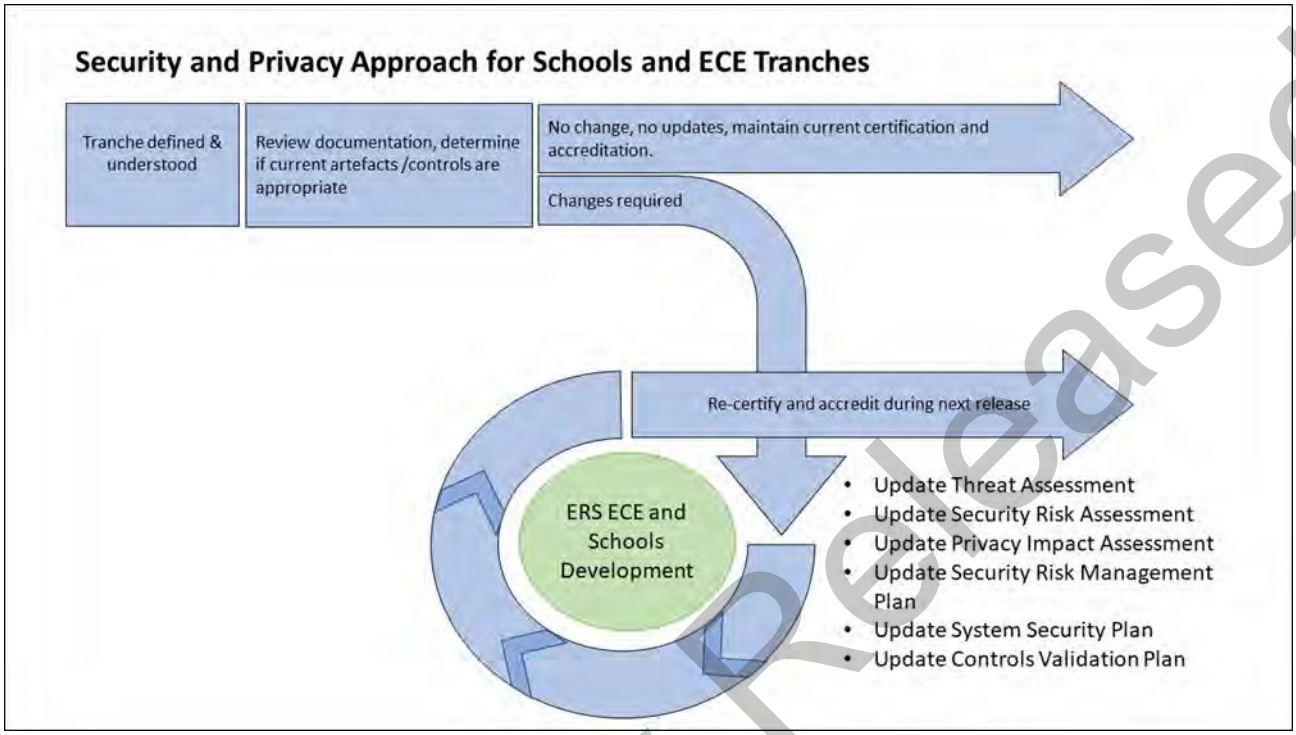


Figure 13. ERS Security and Privacy approach – Per Tranche

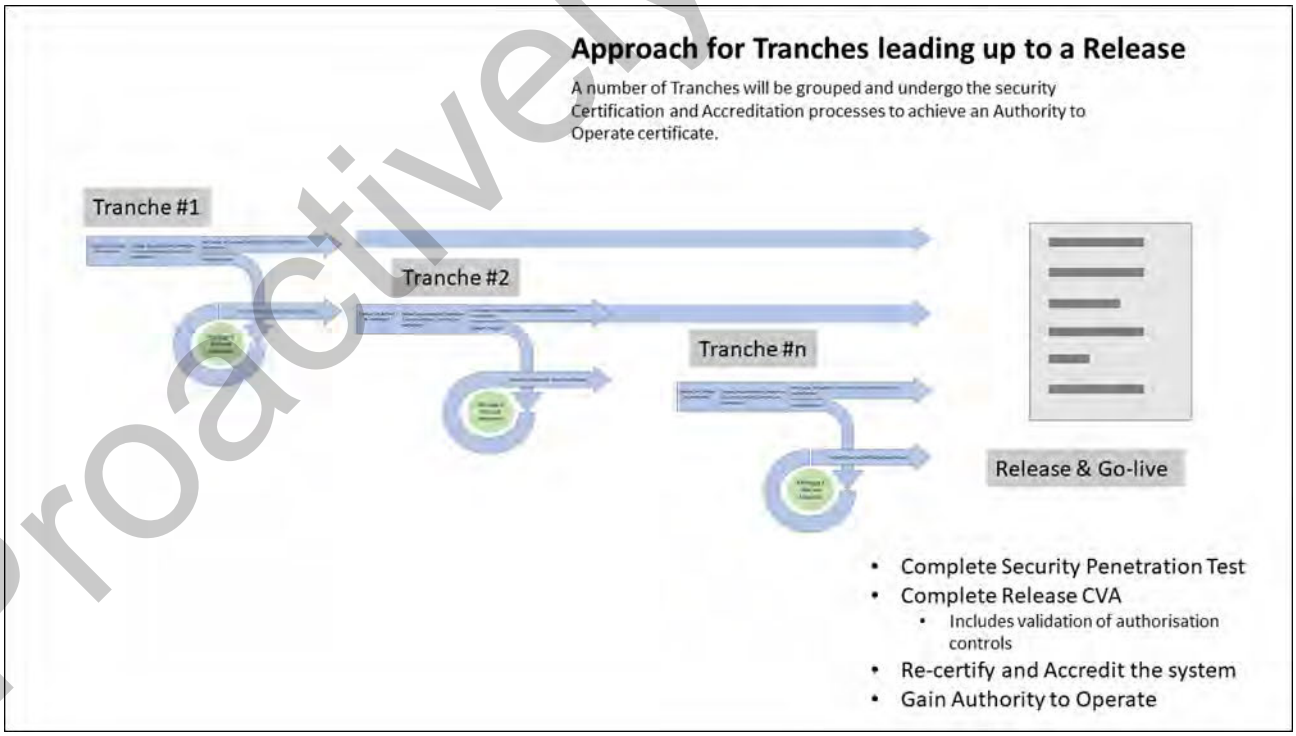


Figure 14. ERS Security and Privacy approach – Per Release

9.5. Emphasis on privacy within the programme

Privacy is an important consideration for the programme and the programme has adopted a Privacy by Design approach. It is important that education data is managed and used in a secure and transparent way to support the underlying principles of privacy and good data stewardship.

The Ministry's overall approach to privacy

The Ministry's Privacy and Information Security Strategy aims to raise the Ministry's privacy and information security capability and operational effectiveness and efficiency through:

- creating the appropriate privacy and information security frameworks (e.g. policies and standards, risk assessment tools);
- establishing specific privacy and information security programmes and targeted business-focused controls, including:
    - privacy and security by design
    - risk assessment, and
    - system certification and accreditation.
- undertaking privacy impact assessments (PIA) in line with guidance from the Office of the Privacy Commissioner (OPC). In line with existing Ministry processes, a PIA has been conducted for each of the releases already in Production and will be conducted for each future release within the programme.

Privacy by design

Implementing privacy requirements into systems and processes can be difficult as it requires business requirements to reflect social, legal and ethical considerations. The programme will follow a 'privacy by design' approach to address these concerns. Privacy by design is a holistic concept that integrates privacy management throughout an organisation including its information technology, business practices, processes, physical design and networked infrastructure. In practice for the programme this means:

- privacy will be considered as a core requirement for each system and initiative, from the beginning of the high-level design phase;
- proactive, preventive controls will be given preference in the design phases, and
- security controls will be reviewed alongside privacy controls, making sure security controls address the privacy risks identified.

9.6. Identity and Access Management

All External users of ERS (schools and early learning services) gain access using an Education Sector Logon (ESL) logon. For school users, most of them already have their ESL access in place. The Ministry has created a certifier role for early learning services in the Ministry's regional offices to allow Playgroup users to be approved to use ERS for their twice annual funding payments. Other early learning providers (Licenced providers) will also utilise an ESL logon to access ERS for their funding data and to monitor the status of their payments.

Access by Ministry users will be managed through integration with Azure Active Directory.

9.7. Project management methods

The proposed projects will be delivered and managed using a combination of:

- the Ministry Delivery Framework
- the appropriate selection of Agile or Waterfall delivery methodologies

The Ministry Delivery Framework

The Ministry's Project and Investment Advice (PIA team) has designed the Ministry Delivery Framework (MDF), to support a holistic approach to delivering the Ministry's strategic priorities. The framework outlines the pathway all new initiatives should take, from developing a strategy to realising benefits. The projects will be delivered in accordance with this framework, which is outlined in the figure below:

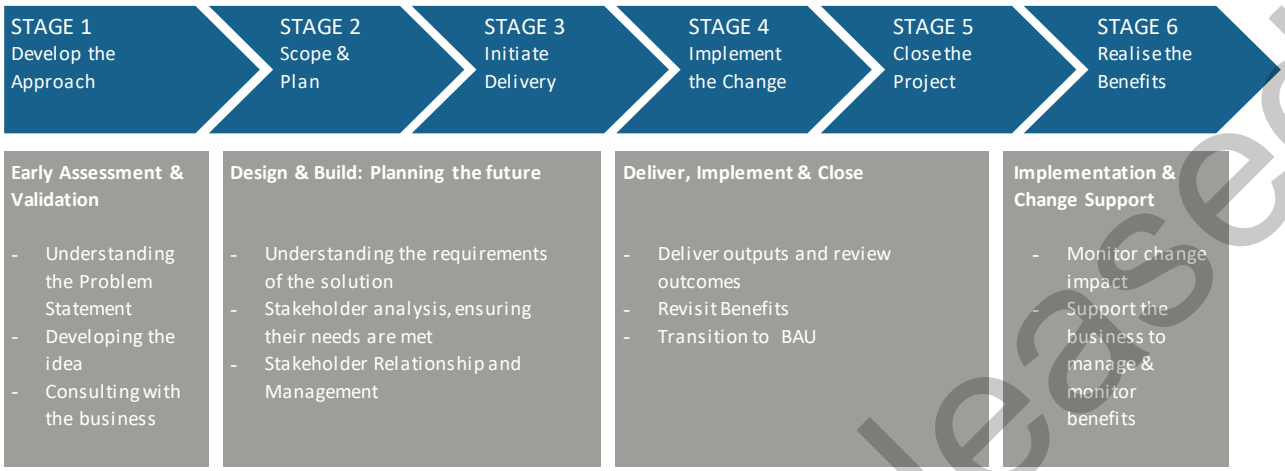


Figure 15. The Ministry Delivery Framework

In the following sections we outline the methods, tools, project structures and plans developed to date to support the overall project delivery approach.

9.8. Programme management processes

The programme has established plans for a range of core programme management disciplines, including risk management and benefits management.

Where relevant to this case details of risks and benefits have been woven into this document, for example: the Strategic Case establishes the project benefits and covers the key risks.

Risk assessment

The programme operates a risk register and uses established risk management processes consistent with the requirements for a programme of this size. Assurance activities have and will be used to validate that risks are appropriately managed. Learning have been noted from previous large Ministry programmes e.g., Novopay and external programmes e.g., New Zealand's 2018 Census.

The Treasury Risk Profile Assessment has been completed by the project team which has resulted in a rating of 'high risk' for this project.

Risk assessment workshops are conducted periodically with the Programme Steering Committee and the Governance Board. Both groups have conducted a risk assessment in the recent months (Sep and Oct 2020). The Programme team reviews risks and issues monthly.

Benefits realisation plans

The Strategic Case presents the benefit KPIs and measures. These are documented in more detail in the Appendix 1 – Investment Benefits Profile.

The ERS Benefit Management Strategy identifies high-level benefits, and the measurement strategy. The current Benefits Profile sets out the baseline, target and realisation timeframe for each measure and is being used to track the measures to ensure value is derived from the ERS Programme.

The business groups who will own the benefit realisation have been identified, and the roles and names of the benefits owners will be finalised and noted in a refreshed Benefits Realisation Plan for future releases. It is intended that they will be Tier 3 managers across the Sector Enablement and Support (SE&S) group. This is

to ensure that there is continuity beyond the end of the programme of work. The baselines for some of the measures have been finalised, but in some cases the baseline data still needs to be obtained.

With ERS Release 1 (Playgroups and ARTF) already in production, a Benefit Realisation Plan based off the previous approved business case and benefits was approved by the Steering Committee and Governance Board.

Quality management plan

A quality management plan has been developed for the programme to ensure quality of workstream deliverables and processes.

Reporting

All project work-streams will provide regular project updates, and exception reports where required. These will be summarised up into programme level updates.

Post programme and projects evaluation

The evaluation of the programme and projects will be undertaken in accordance with the PRINCE2 methodology. Project closure reports will be undertaken at the end of each project work-stream focussing on the successful completion of the project deliverables, success factors and lessons learned. It will also consider expected vs actual organisational impact and how well this was managed.

9.9. Programme delivery approach

Indicative timeline

The diagram on the next page presents an indicative high-level delivery timeline comprised of a series of 16-week tranches.

The programme will roll out the ERS solution over several Releases beginning with the functionality for schools, as schools has been given the highest priority by the Governance Board. The Releases have been scheduled to deliver the required functionality to match the current business process cycles. This is particularly important for schools as the annual cycle begins in July each year (known as Provisional Roll) and that lays the foundation for the whole following school year. So, if ERS deliverables were to miss the commencement of that Provisional Roll cycle, then go live would have to be delayed for 12 months.

The early learning services business cycle is three independent payment rounds and so there is more flexibility to deliver the early learning services functionality than there is for schools.

The estimation process used to inform this business case is broader based than previous approaches, with a complete view of high-level requirements and epics. Velocity data feeds into the estimation model over time. This process is outlined in Appendix 6.

The Epics were allocated to tranches taking three elements into account:

1. size of the epics as estimated
2. predicted points delivered per tranche
3. ensuring delivery of the functionality required for schools for the 2023 year

The Product Owners led a card sort of the epics and determined the order the epics needed to be delivered. An Excel model was used to compare the number of possible points per tranche (capacity), with the cumulative estimated points per epic. Epics were allocated to tranches so that tranche capacity was reached in each case.

The epic order by tranche with schools as a priority, was endorsed by the Steering Committee.

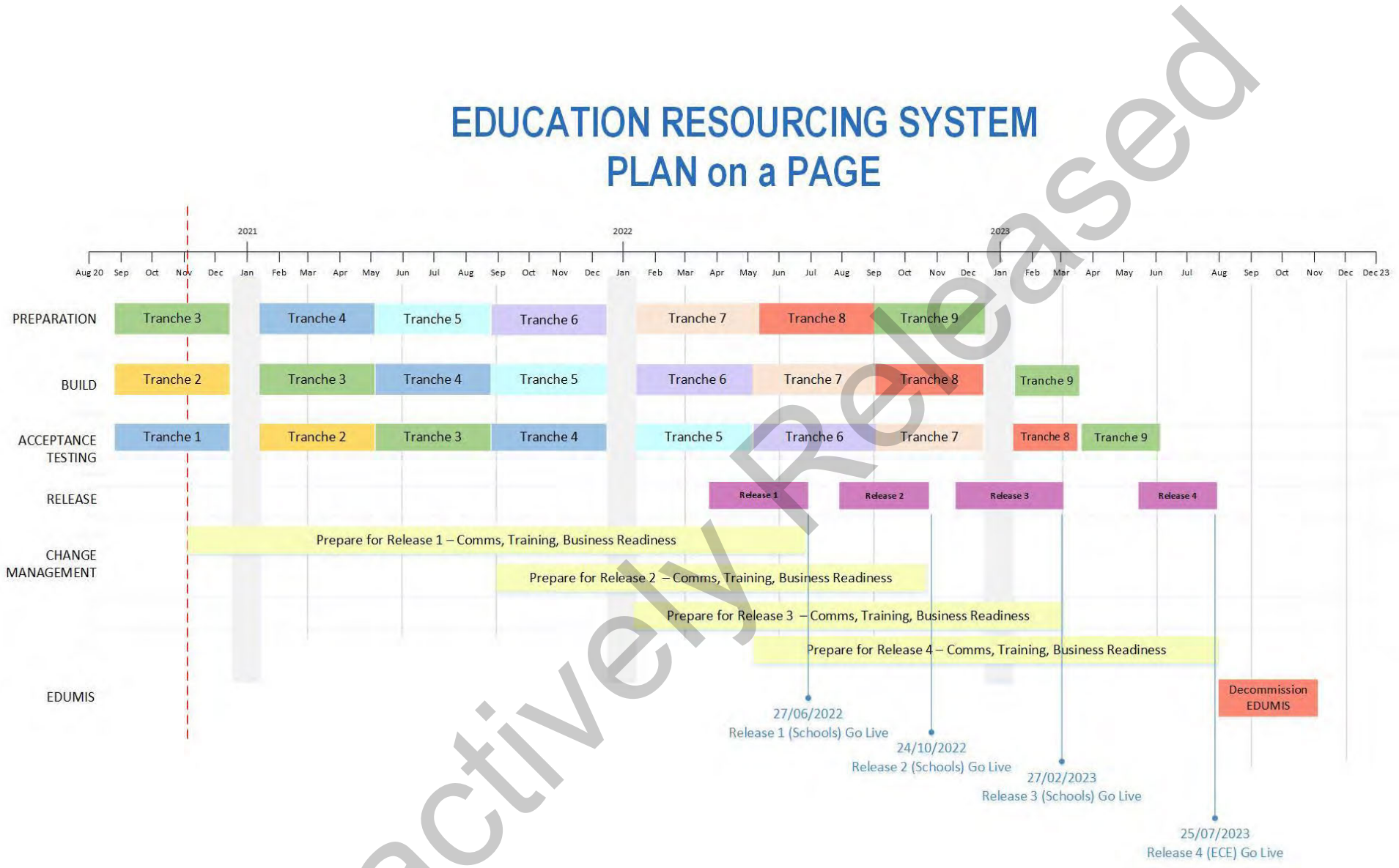


Figure 16. High level plan for delivery of preferred option

The following table describes what functionality will be delivered in each release.

Release #	Delivery date	Functionality delivered
1	June 2022	• Provisional Roll process functionality where the Ministry establishes the guaranteed minimum staffing and funding entitlements a school can expect for the 2023 school year. • Calculate the instalments and have the functionality to make the Quarter 1 payments to schools for the 2023 year. • Necessary interfaces required will be established to support this functionality and the initial and incremental migrations required from EDUMIS to ERS while the two systems are running in parallel. • External facing dashboards and present information to schools to see progress of their claims, both present and past.
2	October 2022	• Functionality required to allow schools to apply for ad hoc funding requests that impact staffing and funding entitlements after the Provisional Roll process is complete. • Staff in Regional Ministry offices will be able to comment on the initial Provisional Roll and provide feedback to the final Provisional Roll used to publish the Guaranteed Minimum Formula Staffing to schools. • Build on the external facing dashboards and present information to schools to see progress of their claims, both present and past. • Calculation of the Quarter 2 and Quarter 3 payments to schools and any wash up processes will be delivered.
3	February 2023	• Functionality required to accept and process actual and audited school rolls and recalculate entitlements based off the actual or audited roll data submitted. • Remaining application-based funding requests • Process to reconcile end of year staffing entitlements with actual usage by each school. • Finalise the external facing dashboards and present information to schools to see progress of their claims, both present and past. • An online calculator for schools to use to estimate their funding and staffing entitlements will be delivered.
4	July 2023	• Functionality required to accept and process all early learning funding data and requests, calculate the 3 annual instalments and quantify recoveries for overpayments to those providers. • External facing dashboards and present information to providers to see progress of their claims, both present and past. • Necessary interfaces will be established to support this functionality and the initial and incremental migrations required will be completed.

Table 23. ERS releases

Proposed delivery approach

The following diagram shows the activities involved and artefacts produced as past of an ERS tranche.

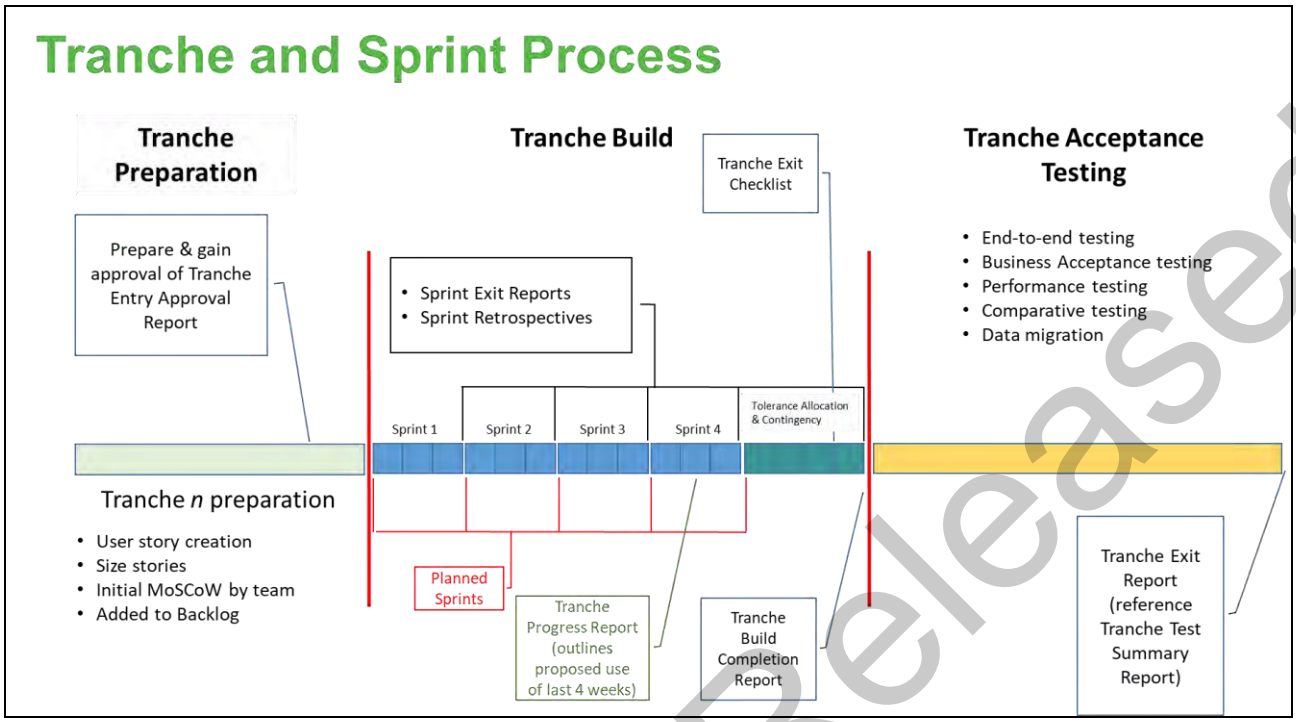


Figure 17. Tranche and sprint process

An ERS specific SDLC is being used for delivering the releases. It was developed in consultation with the ERS Programme team and reviewed by PwC in their November 2019 IQA review and found to be appropriate. This SDLC is outlined in Appendix 7.

The ERS Programme is introducing new capabilities that will advance and optimise core Ministry software design and development processes and assets including:

a. Use of Containers – this is a methodology that will improve the accuracy and efficiency of deploying code from development into production. It has also led to a move away from the in-house developed START/RAMP automated deployment technology (the ERS "Future State" infrastructure) to a commercial product, Terraform, that has wider Ministry application;
b. creating user interface standards, building on the Education Payroll (EdPay) user interface design to extend a consistent and familiar experience for sector users;
c. introducing In-Context help, similar to the solution already used by EdPay;
d. engaging additional DevOps personnel to work with the Terraform automated deployment tool to increase the rate of development and software quality, and
e. implementing an approach to support multi-lingual user interfaces for external facing functionality.

The refinements have been reviewed and endorsed in the Technical Quality Assurance report 7 May 2020 (Equinox) and the Independent Quality Assurance (IQA) report August 2020 (PwC).

ERS Programme delivery team

Delivering the ERS Programme requires several programme roles that play a critical part in ensuring alignment and integration between the various work streams.

The ERS Programme team was recruited to deliver the ERS solution 9(2)(b)(ii) [redacted]. Where capability did not exist within the Ministry, roles were filled by external contractors. In addition, some permanent personnel have been incorporated into the

delivery team to create an in-house knowledge and understanding of the ERS solution to facilitate a smooth transfer to business as usual (BAU). The intention is to add more permanent personnel to the team to ensure all aspects of developing the solution – design, analysis, build and test are covered by a BAU team that has "grown up" with the ERS solution.

This approach is both cost-effective and will help ensure a smooth and successful transition from the project to BAU.

The figure on the next page outlines the ERS Programme structure. The full programme team including all team members is in Appendix 8.

Ongoing support team

A support team will be established to support ERS once the system is handed over to BAU. This team will consist of the following:

- Four permanent personnel (these are currently working on the Programme and therefore being upskilled) - 2 Business Rules Analysts, 1 Developer and 1 DevOps Engineer.
- Some existing personnel currently supporting EDUMIS, who will transition to support ERS.
- There is a market tested budget allocation of $588,000 per annum for support costs which can be used to hire further personnel required to provide adequate Level 2 and 3 support for the ERS and implement minor funding policy changes in the system and manage rate changes. However, this excludes major policy changes such as equity index funding.

The ongoing costs to operate the ERS in this Business Case refers only to the minimal cost to operate the ERS and not for the ERS to be enhanced over time.

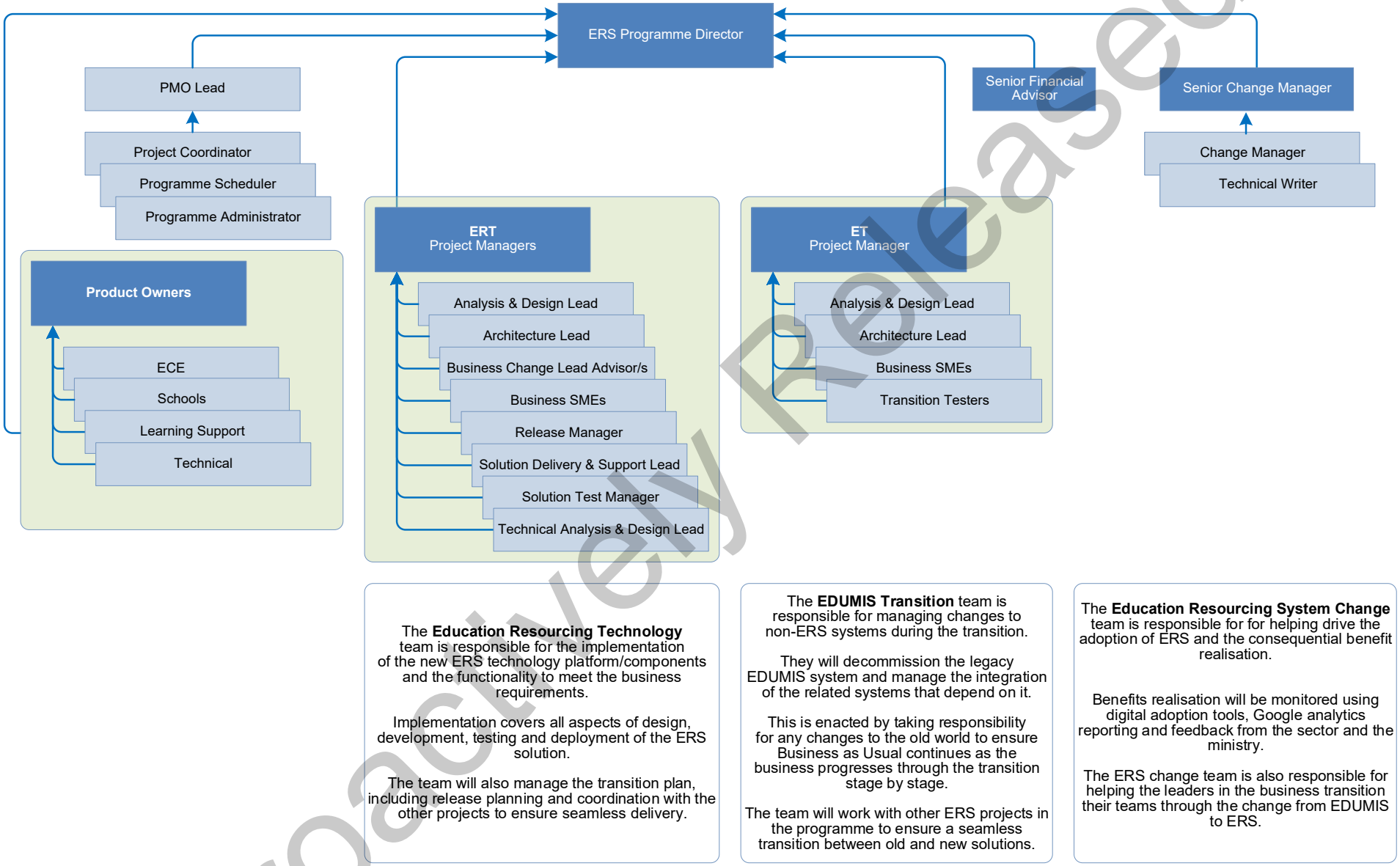


Figure 18. Programme and project teams

9.10. Change management strategy

The ERS Programme Change Management Strategy sets out the structured approach to managing the change process with our stakeholders. It outlines the seven work streams included in managing the ERS change process.

Now that it has been established that the ERS Programme will deliver in phases with major releases, e.g. for schools, and for early learning services separately, a detailed Change Management Plan will be developed for each release in parallel with the tranche-based development approach through which the scale and scope of change will be identified, in consultation with key Ministry groups including People Capability.

Stakeholder analysis

A high-level stakeholder analysis has been refreshed identifying the main groups impacted by the ERS Programme (Appendix 9). Key internal and external stakeholders, that have been identified as high impact, will be engaged throughout the key phases of the project. A more detailed and comprehensive analysis will be undertaken as an input into the change planning for each major release.

The figure on the next page shows the stakeholder influence / impact matrix.

Engagement with key stakeholders

Change management, communications and solutions will be developed through engagement workshops with our key stakeholders. This will ensure that the design and functionality of the ERS is based on a clear understanding of users' needs.

Stakeholder groups will be engaged across three categories of prospective users, being those who are the key actors in the current resourcing and staffing process. These will include:

- Ministry staff, including the Resourcing team
- school sector – primarily funding administrators and Principals
- early learning services sector – primarily funding administrators and service owners

The activities will include reviewing and refining the user interface design, process flows and user support guidance for the ERS. Ultimately, these groups will be represented in user acceptance testing prior to major releases.

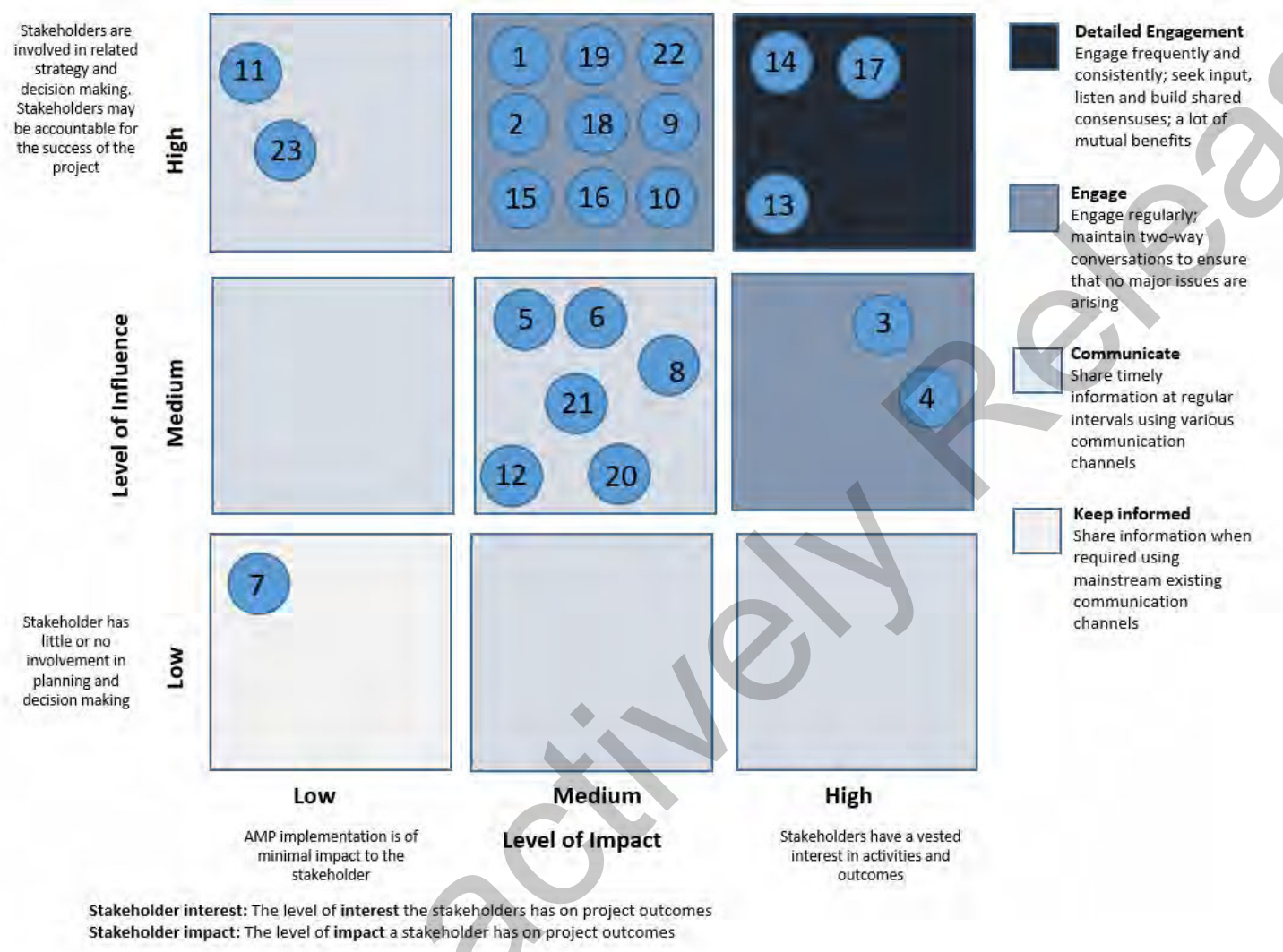
Other Ministry groups are key stakeholders in the delivery of the ERS, including:

- Sector Enablement and Support
- Corporate Communications team
- IT Group.

The ERS Programme has run external sector communications and engagement on an as required basis since 2017. The primary channels to date have been the School Bulletin and the Early Learning Bulletin, which reach key school and early learning stakeholders including sector bodies.

The first announcement was the School Bulletin of 20 November 2017.
https://www.education.govt.nz/assets/Documents/School/SchoolsBulletin/2017-Bulletins/Issue82Bulletin.pdf

Several further Bulletin items were posted to support the initial ERS releases in October and November 2018.



ERS Stakeholders

1. Early learning services sector users
2. Schools sector users
3. Schools Resourcing team
4. ECE Operational Funding team
5. Resourcing Contact Centre
6. Evidence, Data and Knowledge (EDK)
7. Learning Support
8. Small business system (SBS) users
9. Ministry Managers / Directors with the financial authority to approve payments and oversee processing
10. Regional advisors and support staff that process funding requests
11. Ministry Service Desk
12. Policy
13. Programme Team
14. Programme Governance Group members
15. Programme Investment and Advice (PIA)
16. Strategic Finance
17. ICT
18. Internal Audit & Assurance
19. Legal
20. Procurement
21. Comms
22. People Capability and Change
23. Sector peak bodies

Figure 19. Stakeholder influence / impact matrix

A plan was approved by the SRO to advise the following peak bodies in late 2017:

- Secondary Principals' Association of New Zealand (SPANZ)
- New Zealand Principals' Federation (NZPF)
- New Zealand School Trustees Association (NZSTA)
- School Executive Officers (SEO)
- New Zealand Post Primary Teachers' Association (PPTA)
- New Zealand Educational Institute (NZEI)
- New Zealand Association of Intermediate and Middle Schooling (NZAIMS)
- New Zealand Area Schools Association (NZASA)
- Te Runanga Nui o Ngā Kura Kaupapa Māori o Aotearoa (TRN)
- Ngā Kura-a-Iwi o Aotearoa
- Early Childhood Advisory Committee (ECAC)

The business owner at the time held back on this activity and nothing was sent. The plan for these bodies will be reviewed in early 2021 in consultation with People Capability.

The ERS Programme team engaged with a small number of playgroups through a Focus Group in 2018, in advance of the roll-out to playgroups in January 2019. Adoption of the ERS playgroup operational funding application is well beyond target, now at 95%.

The programme has also done initial engagement with schools through a survey in 2019, and a plan for wider engagement was approved by the SRO pre-COVID. This is under discussion for revival in 2021.

Change risk assessment

Risks identified in the development of change strategies and plans are folded-in to the programme's three-tier risk management approach and recorded in the programme risk register. These will be reported and escalated as required in line with the programme's risk management strategy.

Readiness for change

The programme will work closely with impacted stakeholder groups to assess readiness for change on a per release basis using change management tools including change impact assessments and readiness assessments.

The programme has gained insights into the appetite and readiness for change, and the model for support resources, through the early releases of functionality that has been delivered to date.

Playgroup operational funding was delivered in January 2019, with online support pages and a training screencast for users backed by engagement activity led by Change Champions in the regional offices. There was almost no 'noise' from the sector and adoption is well above target, now 95%.

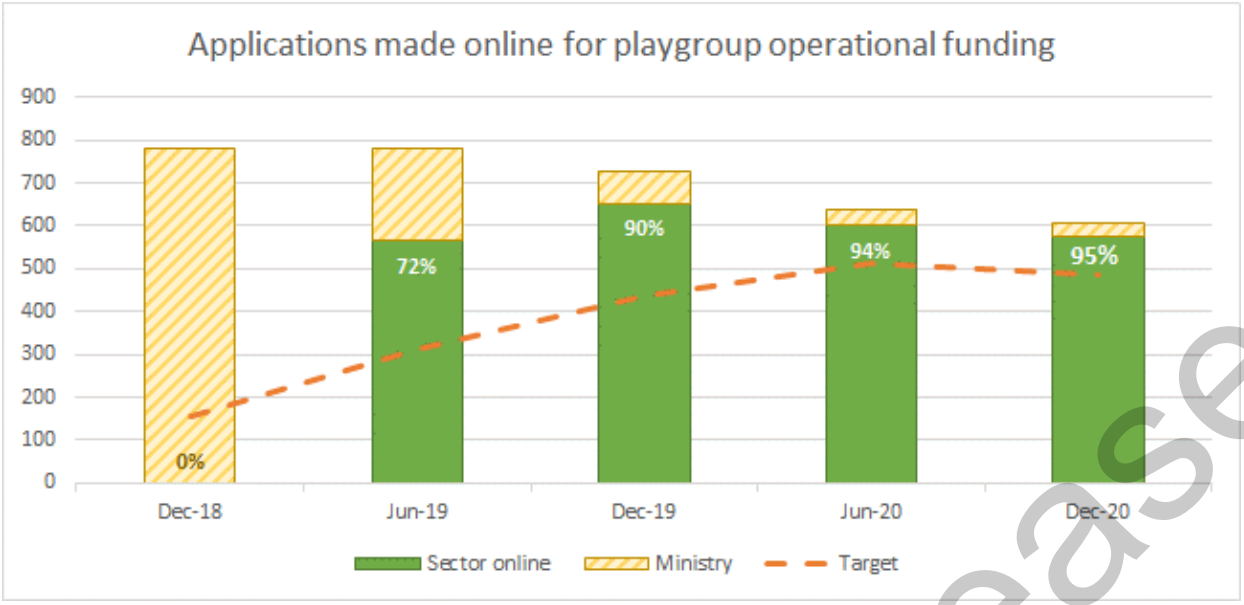


Figure 20. Percentage uptake of online funding requests by playgroups

Schools also have had early experience with the ERS through the Additional Relief Teacher Funding and Make a Payment processes since October 2018. The model of the rollout, with online learning materials where required was effective for this piece of functionality. Adoption is now 99%.

90% of schools (2,260 out of 2,500) have now had payments through ERS and are gaining familiarity with the system.

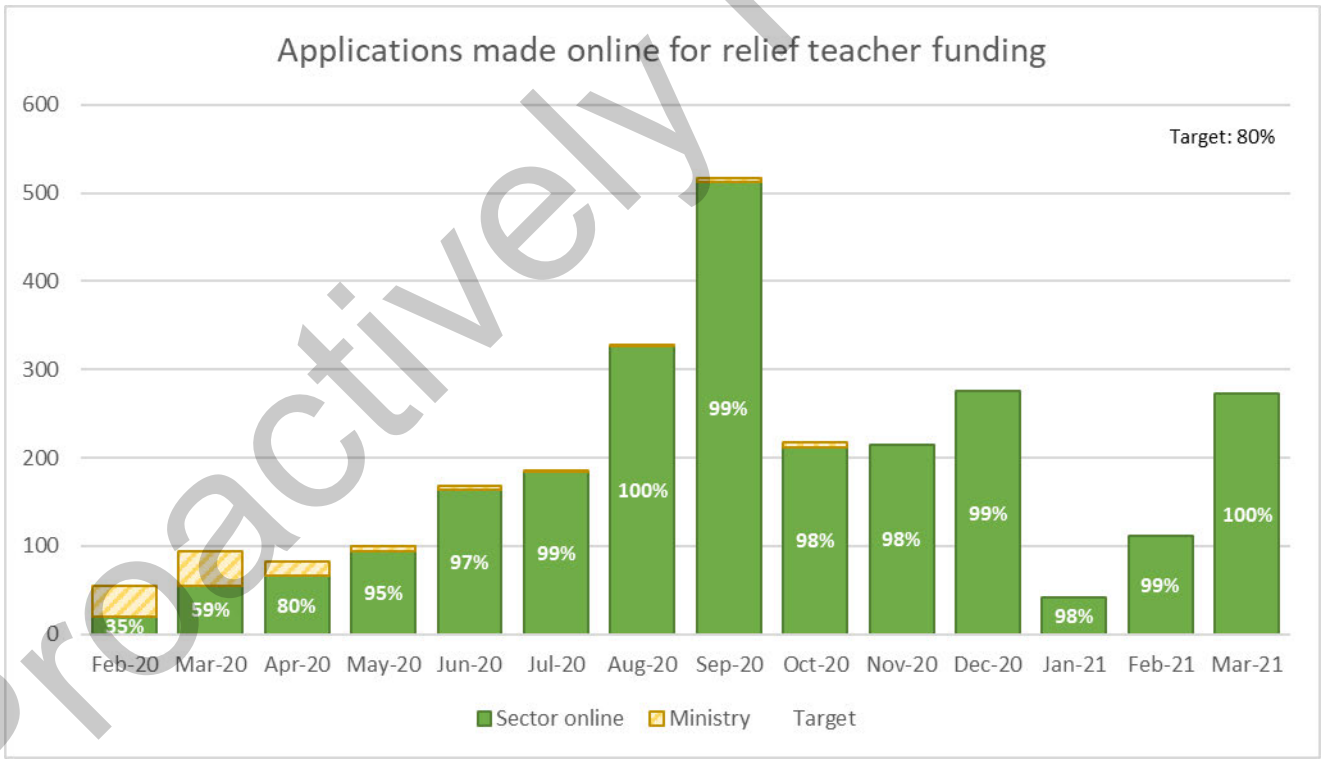


Figure 21. Percentage uptake of online ARTF requests by schools

Anticipated resistance

The programme has evidence that stakeholders are well disposed to digital adoption when the implementation is well managed and well supported. This is based on previous Ministry programmes including the Education Sector Logon, the experience with the ERS functionality that has been delivered so far, and other sector projects, specifically EdPay (from Education Payroll Ltd) which is the successful replacement for Novopay.

The programme will engage with People Capability to ensure a proactive approach is in place to help guide managers and unions.

Expected challenges

The following table outlines some of the key change related challenges.

Challenges	Description	Mitigations
Engagement of internal stakeholders	The internal stakeholders from the Ministry need to engage with the ERS Programme while carrying a high workload.	- Ensure we identify the necessary internal stakeholders and communicate to them the needs of the project. - Have dedicated business representative(s) embedded in the programme team.
Engagement fatigue in the sector	The sector is subject to frequent engagements from the Ministry.	- Ensure that this change is integrated with, and supports, wider planned changes in a coordinated way. - Ensure that the stakeholders invited are comfortable to meet the time requirements of participation. - Seek active buy-in from sector representatives who want to be involved in workshops and user acceptance testing. - Seek to avoid using the same stakeholders from the sector who are already engaged with other programmes.
Engagement from external stakeholders	If external stakeholders don't engage with the changes proposed by the ERS then the project may encounter resistance or limited adoption.	- Engage key external stakeholders early in the project and keep them engaged/involved throughout so that they assist with identifying the needs of the sector users. - Clear communications around the purpose of the ERS and the advantages for the sector.

Table 24. ERS change related challenges

9.11. Change management plan

The following change management principles and measures will guide change management planning. A detailed Change Management plan will be developed for each release in parallel with the tranche-based development approach through which the scale and scope of change will be identified.

Business transition methodology and framework

Change management guiding principles of engagement

The following change management principles will guide the change management and communication efforts to achieve buy-in, embed change and realise the benefits of the ERS Programme:

- Take a stakeholder-focussed approach when we plan through actively listening to our stakeholders who can inform and help design change.
- Build strong relationships and develop trust through being transparent throughout the process.

- Undertake stakeholder engagements with a clear understanding of each other's needs with a view to achieving the best outcome.
- Embrace culturally sustainable and inclusive approaches.
- Clearly communicate the purpose and the goals of the ERS to all stakeholders.
- Ensure engagement and communication are timely and relevant to the needs of our diverse stakeholders, and with constant review and feedback, amend these accordingly.
- Measure our success to ensure we have the right mix of communication, engagement, and collaboration.

Change management objectives

The change management objectives are to:

- engage stakeholders in understanding what the ERS changes will mean for people in their day to day jobs both in the sector and in the Ministry, in consultation with People Capability;
- prepare ERS leaders with the knowledge and collateral to communicate consistent ERS messaging with staff and colleagues in a timely fashion;
- identify learning needs and develop training for roles that will work differently leading up to and during the implementation of ERS;
- improve people's speed of adoption of ERS changes during implementation;
- improve people's proficiency using the ERS during implementation, and
- assist Benefit Owners in managing ERS benefit realisation.

Change management phases/activities

The following diagram summarises the ERS change management phases:

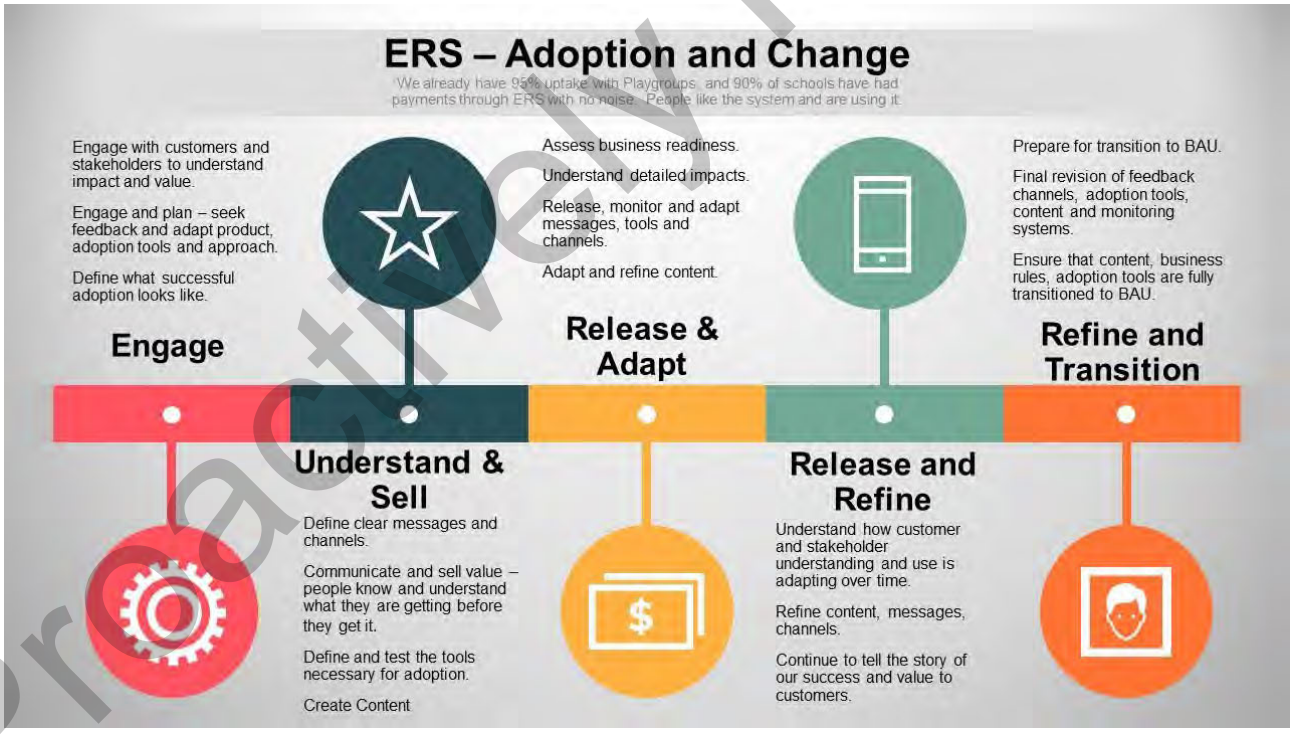


Figure 22. Change management phases

Overarching communications campaign

The Communications Strategy covers all phases of change management of the ERS, with detailed tactical communications plans to be prepared for each phase focused on major releases. The communications plans will be developed with input from relevant teams within the Ministry, including the Communications Group in the Strategy, Planning & Governance (SP&G) business group, as well as key external stakeholders. It will take account of feedback gathered through stakeholder workshops and build on approaches we know are

effective for communicating with our stakeholders and supporting them through change and digital adoption.

Training and adoption

The ERS Training and Adoption Strategy outlines the approach, user groups, deliverables and the model for assessment and evaluation of the effectiveness of education and training activities that will be developed on a per release basis and will include consultation with People Capability.

Ministry staff that are directly impacted by the new system will receive training tailored to their role under the new processes. Training will follow a blended learning approach that includes a mixture of in-product training and information, face-to-face sessions or e-workshops, self-paced e-learning modules, and on-the-job activities. The type of training offered will depend on the complexity of the function being learned.

Sector users will only require minimal training to use the ERS as the system design is intuitive. Given the high level of adoption of current ERS production applications, and the alignment with the interface design of EdPay, ongoing training support will be provided to the sector through in-product training or by Ministry Advisors and Contact Centre. Resources will be made available online to assist sector users. An option to phone the Ministry for assistance is also available. The advisors supporting the sector will be trained in advance of the sector going live so they will be familiar with the system and can provide help as needed.

Detailed plans have been developed, approved, and executed successfully for ERS releases to date. This model will be continued with the development of training and adoption plans on a per release basis and will include consultation with People Capability.

Training budget and indicative schedule

Provision has been made in the ERS Programme budget for an extensive training plan, including the development of training collateral such as videos and walk-throughs, and involving training workshops in head office and all regional offices, both for regional staff and, separately, for sector administrators and other impacted people.

This is planned to be linked to the release cycle in advance of each of the four major releases and includes:

- Print budget for launch banners, FAQs, desk items
- Training services recharge for creation of screencasts and walk-throughs
- Regional office visits per release (10 offices, two visits before first release and one for each subsequent release)
- Regional offices - 1x training workshop, 1x sector overview workshop (+Zoom) per release
- National Office - 4x training workshops per release
- Resourcing team capacity for additional support per release (2 FTE for 6 weeks)
- Recharge provision for Business Acceptance Testing (BAT) for National Office
- Recharge provision for BAT for the sector, including bringing 50 people to Wellington for each of the 4 releases
- Recharge provision for regional office Change Champions

Appendix 1. Investment Benefit Profile

The ERS Programme benefits were updated initially in September 2019 and adjusted again in November 2020 in accordance with the Ministry's current benefit profiling process.

ID	Key Performance Indicator	Measure Reference	Measure	Comment and status	Baseline	Target	Track from date	Track to date
1. Benefit Domain 38 – Reduction of time to complete a task or produce an output								
1.1	KPI 1: Time spent by Ministry staff to carry out administrative tasks	1.1.a	The effort (measured in time) to complete yearly/quarterly operational resourcing reviews and process the associated payments (different baselines for each resource type)	Measurement for operational funding will be subsequent to implementation of ECE and schools. In the meantime we will track time reduction for manual ARTF applications and Playgroup PG3s	MoE person days/round: PG=xx; ECE=aa; Schools provisional = zz; schools = zz	Reduction of 30%	1-Jul-18	30-Jun-23
1.2	KPI 2: Time spent by school / ECE staff to carry out administrative tasks	1.2.a	The amount of time school/ECE staff spend on administration related to operational funding (different baselines for each resource type)	Measurement for operational funding will be subsequent to implementation of ECE and schools. In the meantime we will track time reduction for manual ARTF applications and Playgroup PG3s	Sector person days/round: PG=xx; ECE=yy; ARTF=bb; schools provisional = zz; schools roll review = aa;	Reduction of 50%	1-Jul-18	30-Jun-23
		1.2.b	The elapsed time to process an application from filling in the request to approval (not payment)(different baselines for each resource type)	Current tracking for ARTF and Playgroups	PG=xx; ECE=yy; ARTF=bb; Schools provisional=zz; Schools roll review=aa;	Reduction of 50%	1-Jul-18	30-Jun-23
2. Benefit Domain 84 – Reduce the overall risk profile of an activity								
2.1	KPI 1: Decommission of the legacy EDUMIS system and associated systems is achieved	2.1.a	The EDUMIS system is decommissioned with no ongoing associated operating and capital costs	One-time measurement at end of programme		Yes	1-Jul-19	30-Jun-23
		2.1.b	Existing in scope Small Business Systems (SBSs) are decommissioned	One-time measurement at end of programme		Yes	1-Jul-17	30-Jun-23
2.2	KPI 2: Reduction in funding errors	2.2.a	There is a reduction in funding errors	Annual review and report	Build baseline from known major funding issues, and comparison reporting that will highlight where EDUMIS is paying in error.	Reduction of 50%	1-Jul-19	30-Jun-23
3. Benefit Domain 96 – Improved responsiveness within the education system								
3.1	KPI 1: Time to deliver and implement funding policy changes	3.1.a	The time it takes to implement a change to the system once a policy has been approved for deployment.	Cannot measure until after initial deployment, and the first instance of subsequent policy changes	Range: 1) parameter-change 2 wks; 2) small 8 wks; 3) medium 12 wks; 4) major 12-24 months	Range: 1) parameter-change 2 wks (no change); 2) small 4 wks; 3) medium 8 wks; 4) major <12 mths, with potential lead time for data sources, SMSs etc	1-Jul-19	30-Jun-23
3.2	KPI 2: Capability, accuracy and traceability of policy modelling	3.2.a	Survey of new modelling capability, covering accuracy and traceability to live rules, robustness of input and output data, capability to finely model alongside specific policy drafting	Cannot measure until after OPA deployment for schools	Current satisfaction with the ad hoc processes and spreadsheets	75% satisfaction with the new modelling capability	1-Jul-19	30-Jun-23
3.3	KPI 3: Access for education providers to funding data, information and submission	3.3.a	Number of support queries following implementation of online processes	Not yet clear whether we can separate ARTF and Playgroup (PG#) queries. If so we can commence tracking	No online access and existing number of support queries	25% reduction in number of queries received by the Resourcing Team	1-Jul-18	30-Jun-23
		3.3.b	Sector adoption of online funding applications and processes	Current tracking for ARTF and Playgroups	0% online submissions (all processes are paper-based)	80% submissions made online	1-Jul-18	30-Jun-23

Denotes benefits currently being tracked

Appendix 2. Options assessment – the long and short list

Options have been identified under the following dimensions:

Scale and Scope options – the key audiences and functionality of the solution

Service solution – how the services can be provided

Service delivery – who can, and who can assist to deliver the services

Implementation – whether the solution is phased into the sector or implemented in full

Options have been filtered against their ability to deliver on Investment Objectives (IO) and Critical Success Factors (CSF) to determine the short-list. 'Yes'-**Green**, 'Partial'-Amber and 'No'-Red.

Dimensions	Scope Options (What)					Service Solution Options (How)				Service Delivery (Who)			Implementation Options				Additional Funding Options		
	USERS		FUNCTIONALITY							DELIVERY APPROACH			IMPLEMENTATION						
Reference	SC01	SC02	SC03	SC04	SC05	SS01	SS02	SS03	SS04	SD01	SD02	SD03	IM01	IM02	IM03	IM04	FU01	FU02	FU03
Description	*MoE head office and regional staff*	*MoE head office and regional staff + Sector users*	*Reduced functionality*	*Core functionality*	*Comprehensive Functionality*	*Terminate ERS and re-platform EDUMIS*	*Re-platform EDUMIS and refactor/extend*	*Salesforce frontend + ERS - Oracle Intelligent Advisor on Microsoft Azure*	*ERS decoupled design - Oracle Intelligent Advisor on Microsoft Azure*	*Ministry team*	*Ministry team plus implementation partner*	*Fully outsourced*	*Big Bang*	*Phased Delivery*	*Extended Delivery timeframe (5-6 years)*	*Extended delivery timeframe (10 years)*	*Investment plan / baseline*	*Baseline + Budget Bid*	*Budget Bid*
Investment Objectives																			
1. **Minimising the increasing risk of protracted system outages or intermittent system failures** to enable continuity of funding ECE services and schools	Yes	Yes	Yes	Yes	Yes	Partial	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Partial	No	No	No	Yes
2. Improving productivity and efficiency by **reducing the time and cost of delivering our services** related to operational funding	Partial	Yes	Partial	Yes	Yes	No	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Partial	No	No	No	Yes
3. Improving agility so that **funding policy changes are made in a timely and cost-effective manner**	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Partial	No	No	No	Yes
4. **Improving the experience of the sector by making it easier and simpler** to engage with the education funding system and to receive the funding they are entitled to.	No	Yes	Partial	Partial	Yes	No	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Partial	No	No	No	Yes
5. Improving the effectiveness of investments in the education system through **better information and better analytics capability**	Yes	Yes	Yes	Yes	Yes	No	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Partial	No	No	No	Yes
6. Improving the integrity of the funding system so **payments are made accurately and in a timely manner**	Partial	Yes	Partial	Yes	Yes	No	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Partial	No	No	No	Yes
Critical Success Factors																			
CSF1. Strategic fit and business need	No	Yes	Partial	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Partial	Partial	Yes	Partial	No	No	No	Yes
CSF2. Potential value for money	Partial	Yes	Partial	Yes	Partial	No	No	Partial	Partial	Yes	No	No	Partial	Yes	Partial	No	n/a	n/a	n/a
CSF3. Supplier capacity and capability	Yes	Yes	Yes	Yes	Yes	Partial	Partial	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	n/a	n/a	n/a
CSF4. Potential affordability	Yes	Yes	Yes	Yes	Partial	Yes	Partial	Partial	Yes	Yes	Partial	No	Partial	Yes	Partial	No	No	No	Yes
CSF5. Potential achievability	Yes	Yes	Yes	Yes	Partial	Yes	Partial	Partial	Yes	Yes	Partial	Partial	Partial	Yes	Partial	No	No	No	Yes
Summary	Discounted	Preferred	Discounted	Preferred	Possible	Discounted	Discounted	Discounted	Possible	Preferred	Discounted	Discounted	Discounted	Preferred	Discounted	Discounted	Discounted	Discounted	Preferred
Short-List Options		↓		↓	↓				↓	↓				↓					↓
1. Option A – Extend life of EDUMIS (Do nothing)																			
2. Option B – Core functionality	SC02: MoE head office and regional staff + Sector users		SC04: Core functionality			SS05: ERS decoupled design - Oracle Intelligent Advisor on Microsoft Azure				SD01: Ministry team			IM02: Phased Delivery				FU03: Budget Bid		
3. Option C – Comprehensive functionality	SC02: MoE head office and regional staff + Sector users		SC05: Comprehensive functionality			SS05: ERS decoupled design - Oracle Intelligent Advisor on Microsoft Azure				SD01: Ministry team			IM02: Phased Delivery				FU03: Budget Bid		

Appendix 3. Options identification and assessment

The following sections outline the Long-list analysis from the Shortlisting workshop.

3.1 Scope dimensions and options

Dimension option	Rationale for outcome	Outcome
USERS		
SC01 - MoE head office and regional staff	This option was discounted as it failed to meet strategic fit and business need. This option would not improve the accessibility of information on resourcing to the sector and would not reduce the time and cost of administrative tasks for schools and early learning services in relation to operational funding.	Discounted
SCO2 - MoE head office and regional staff + Sector users	This option is preferred as it meets all investment objectives and all the CSFs.	Preferred
FUNCTIONALITY		
SC07 – Reduced functionality	This option is discounted because it only meets half of the investment objectives and 3 of the CSFs. Reduced functionality makes it less expensive and easier to achieve, however it does not meet business needs and strategic fit. Therefore, value for money is not met.	Discounted
SC08 - Core functionality	This option is preferred as it meets 5 of the 6 of the investment objectives and all of the CSFs.	Preferred
SC09 – Comprehensive functionality	This option is possible as it meets all the investment objectives, but only meets 2 of the CSFs. A comprehensive level of functionality would require more funding and achievability could become riskier. As a result, it may not be a value for money option.	Possible

3.2 Service solution dimension and options

Dimension option	Rationale for outcome	Outcome
SSO1 – Terminate ERS and re-platform EDUMIS (Do nothing)	This option was discounted as it failed to meet any of the investment objectives and only met 2 of the CSFs. It was discounted on the basis that it does not meet business needs, other than for de-risking technology aspects of the existing system. Therefore, it is not a good value for money option.	Discounted
SS02 – Re-platform EDUMIS and refactor/extend	This option was discounted as it failed to meet any of the investment objectives and met none of the CSFs. It was discounted on the basis that it does not fully meet business needs, other than for de-risking technology aspects of the existing system. Therefore, it is not a good value for money option.	Discounted

SS03 - Salesforce frontend + ERS - Oracle Intelligent Advisor on Microsoft Azure	This option is discounted as although it meets all the investments objectives, it only meets 2 of the CSFs.	**Discounted**
SS04 – ERS decoupled design - Oracle Intelligent Advisor on Microsoft Azure	This option is possible as it meets all the investments objectives and 4 of the CSFs.	**Possible**

3.3 Service delivery dimensions and options

Dimension option	Rationale for outcome	Outcome
SD06 – Ministry team	This option is preferred as it meets all of the investment objectives and all of the CSFs.	**Preferred**
SD07 – Ministry plus implementation partner	This option was discounted as it did not meet the value for money CSF. 9(2)(b)(ii) [redacted] the need to go out to tender again for an implementation partner for this option makes this option unaffordable and unachievable.	**Discounted**
SD08 – Fully outsourced	This option was discounted as it failed to meet 2 of the CSFs. Full outsourcing would not be a good value for money option, and it would also be unaffordable.	**Discounted**

3.4 Implementation dimension and options

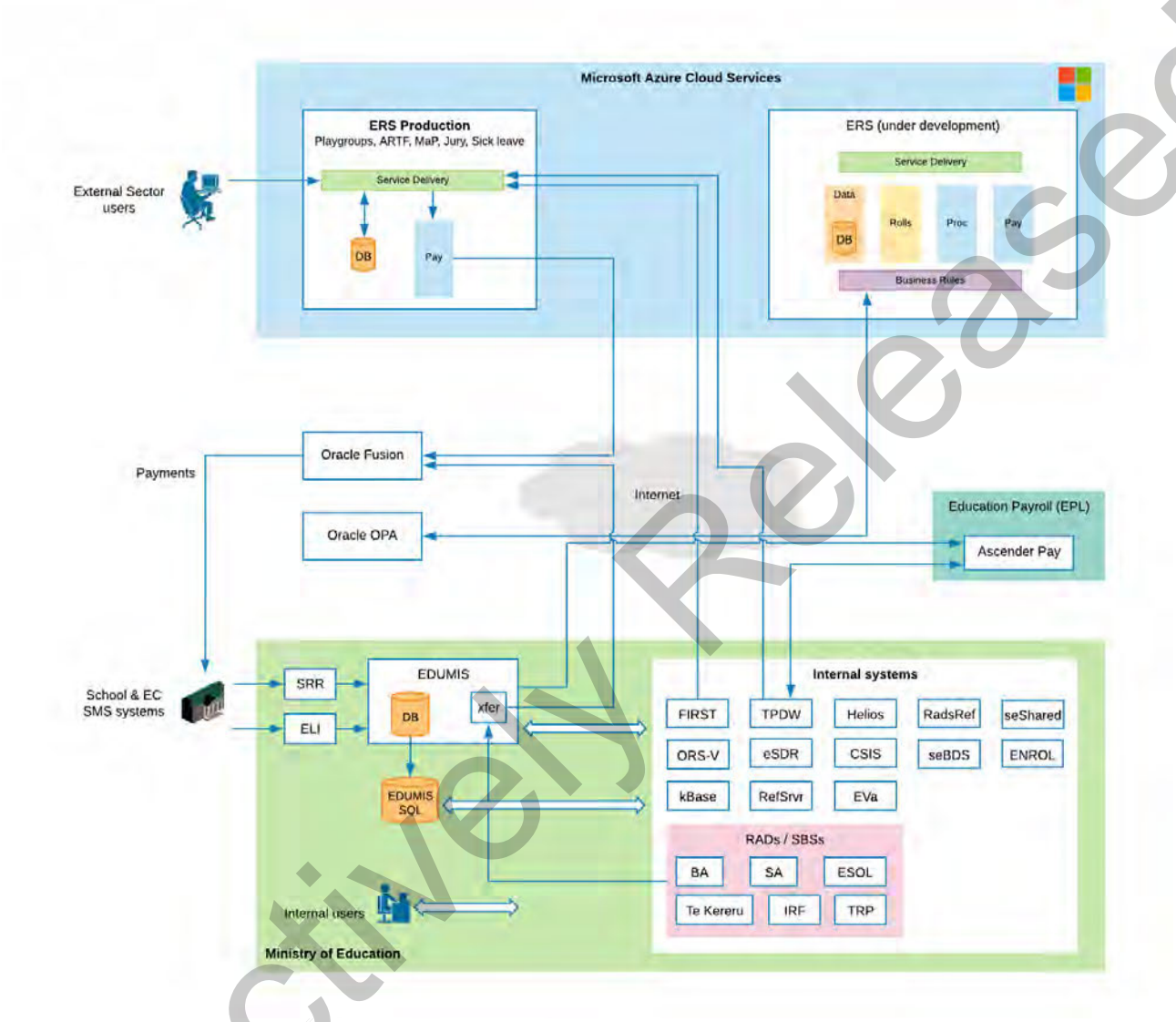
Dimension option	Rationale for outcome	Outcome
IMO1 – Big Bang	This option does not meet any of the investment objectives and only met 2 of the CSFs. A big bang is high risk option and any implementation failure would result in reputational damage. Delivery of all business benefits will be delayed to the end of the programme. It will also be more costly in terms of the personnel required to prepare for and manage a large implementation to the sector.	**Discounted**
IM02 – Phased Delivery	This option is preferred as it meets all the investment objectives and all of the CSFs. A phased implementation will reduce risk, enabling delivery in manageable chunks.	**Preferred**
IM03 - Extended Delivery timeframe (5-6 years)	This option does not meet any of the investment objectives and only met 1 of the CSFs. Delivery of all business benefits will be delayed over a longer timeframe. There will be increased risk as technology and system interfaces change over time resulting in a higher cost.	**Discounted**
IM04 - Extended delivery timeframe (10 years)	This option does not meet any of the investment objectives and only met 1 of the CSFs. Delivery of all business benefits will be delayed over a very long timeframe. There will be a high risk of technology and system interface changes over time resulting in a higher cost.	**Discounted**

3.5 Funding dimension and options

Dimension option	Rationale for outcome	Outcome
FUO1 - Investment plan / baseline	This option failed to meet all investment objectives and CSFs. Both Ministry baseline funding and investment plan funding are already significantly oversubscribed and cannot fund the completion of the ERS Programme.	**Discounted**
FU02 - Baseline + Budget Bid	This option failed to meet all investment objectives and CSFs. Ministry baseline funding is already significantly oversubscribed and there is insufficient partial funding for ERS within the Ministry baseline. Therefore, a partial budget bid could not be adequately supplemented to deliver the ERS.	**Discounted**
FU03 - Budget Bid	This option is preferred as it meets all of the investment objectives and all of the CSFs.	**Preferred**

Appendix 4. Background related to service solution and implementation options

4.1 Current state physical topology of EDUMIS and ERS



4.2 Terminate ERS and re-platform EDUMIS

The long-term extension of EDUMIS could be achieved by re-platforming from the current OpenVMS / Itanium operating system / hardware environment to a standard Windows/Linux/x86 environment.

A specialist vendor in this type of migration has been identified, a US/UK company named Sector7, and the Ministry has produced a report that shows re-platforming is technically viable, and could be implemented over a 12-month timeframe at an estimated cost of $1.51 million.

While re-platforming would address current system technical risks with the EDUMIS platform, it would not mitigate the range of strategic risks, design constraints and business impacts noted in Section 5.2, Problem definition, including:

a. the re-platforming will address the database, operating system and hardware layer but will not change the COBOL code, and therefore the significant risk related to aging personnel would not be mitigated;

b. EDUMIS cannot be readily adapted to support child level data if it is required to support future funding policy;

c. EDUMIS is not compliant with the GCSB's Protective Security Requirements (PSRs) which is required for Certification and Accreditation and is used to inform all-of-government protective security status reporting;

d. design constraints that exist in EDUMIS mean that relative to a modern system it is slow and expensive to respond to changes in funding policy;

e. EDUMIS user interfaces are based on legacy Windows technology and will cause ongoing complexity, delays and additional costs as end-user devices are updated;

f. a dependency on error prone manual processes, as highlighted by four major process errors in the past 18 months;

g. EDUMIS does not provide an online interface or capability for the sector. Sector processes including Provisional Roll notices, operational funding and staffing requests through EDUMIS would have to continue to be PDF based, downloaded through the School Data Portal or submitted by email to the Ministry;

h. the associated manual processing required in the Ministry and/or regional offices drives increased resourcing costs, and results in poorer outcomes for the sector and the Ministry in terms of responsiveness, process risk, data accuracy, debt recovery and audit;

i. for the sector, there is no single view of the current funding and staffing status for a school or early learning service, and

j. the funding applications eco-system which includes EDUMIS and associated Small Business Systems (SBSs) requires manual interventions for data integration and process steps.

The estimated cost of this option over 10 years includes the following cost components:

a. increased cost of funding system operation: the cost of "re-platforming" EDUMIS from the current OpenVMS / Itanium operating system / hardware environment to a standard Windows/Linux/x86 environment to mitigate certain system operational risks, cost of operation, increased cost of policy implementation of ~$14.2 million

b. unrealised Ministry financial benefits: ongoing cost of manual effort to support existing funding processes ~$2.8–3.8 million, to be further analysed

c. unrealised sector benefits: ~$7.8 million

d. write down of capital spend to-date: ~$8.2 million in work in progress will need to be assessed to determine how much will be retained under each option. In-service ERS assets currently hold a net book value of approximately $13.1 million are currently depreciating at a rate of $1.3 million per year, and should any of these in-production assets be replaced or disposed of, additional write-down would be incurred (with the balance continuing to amortise).

As this option does not address the problems defined in Section 5.2, it only defers the cost of replacement via a future programme such as ERS and hence increases the total cost of ownership.

The current EDUMIS technical maintenance and support arrangements can be continued at marginal cost until at least September 2026.

This option is an "off-ramp" to be called on if there is a significant delay or change to the ERS Programme.

4.3 Re-platform EDUMIS and refactor/extend

This option combines a re-platform of EDUMIS with a re-architecting and refactoring of EDUMIS. Work on the ERS platform to date would be terminated with this option.

The re-platforming will address the database, operating system and hardware layer but retain the COBOL and 'C' codebase of EDUMIS.

Rearchitecting the EDUMIS platform would be required to address areas of risk that have been identified.

Refactoring of existing EDUMIS code would be required to convert the COBOL (30% of overall codebase which runs the funding calculations for schools' operational grant and early learning services funding) and 'C' (70% of overall codebase) and to extend current functionality.

The delivery time is uncertain as this option has not been analysed in detail, but delivery would be a significant multi-year undertaking with re platforming having to be done first, followed by recoding of the COBOL rules before any further refactoring and extension work could be done.

While re-platforming would address database, operating system and hardware layer system risks with EDUMIS, it would not mitigate the pressing strategic, design and operational business risks that the ERS Programme is seeking to address for the Ministry in a reasonable timeframe.

So, while re-platforming would address current system technical risks with the EDUMIS platform, it would not mitigate the following:

a. EDUMIS cannot be readily adapted to support child level data if it is required to support future funding policy.
b. Design constraints that exist in EDUMIS mean that relative to a modern system it is slow and expensive to respond to changes in funding policy.

In theory, the following could be addressed, albeit over a much longer timeframe:

a. Compliance with the GCSB's Protective Security Requirements (PSRs) which is required for Certification and Accreditation and is used to inform all-of-government protective security status reporting
b. A new service layer (online interface) for the sector
c. Automation of error prone manual processes
d. A single view of the current funding and staffing status for a school or early learning service
e. Automated integration with remaining SBSs without the need for manual interventions

A decision would be required regarding whether to:

a. maintain two production systems, the re-platformed EDUMIS and the elements of the ERS in production, and the related requirement to update two systems when implementing funding policy changes;
b. decommission ERS when elements of ERS in production have been rebuilt on the re-platformed EDUMIS, or
c. decommission ERS and revert to previous paper processes.

A large portion of the costs outlined for the "Terminate the ERS Programme and re-platform EDUMIS" would be incurred as well as a substantial write-off. The refactoring and code conversion would also be an additional cost to the coding of the required business functionality.

As re-platforming retains the existing EDUMIS legacy COBOL code, the significant risk related to aging personnel familiar with EDUMIS would not be mitigated until the legacy code is recoded in another language. Finding COBOL trained resources is challenging as it is not a current software development language, and it would take approximately 2 years for suitable resources to become familiar with EDMUIS.

4.4 Delivery over an extended timeframe (Re-platform EDUMIS and build ERS incrementally)

This option requires the re-platforming of EDUMIS, and a notional incremental transition to an ERS over ten years, potentially continuing with some elements of the ERS solution in production (e.g., playgroup funding), and / or under development (e.g., Policy rules in Oracle Intelligent Adviser) and / or revert to the previous paper-based processes.

During the transition, support and maintenance would continue for EDUMIS, and / or elements of the ERS in production and / or elements of the ERS solution that may be completed.

An investigation into the viability of this option is estimated to cost more than $0.6 million owing to the complexity of the task.

Implementation of this option would cost significantly more than completing the ERS, as a large portion of the costs outlined for the "Terminate the ERS Programme and re-platform EDUMIS" would be incurred.

This option also does not address most of the funding system risks, constraints and impacts until all of the major new core functional components are ready for production. Given that Data Inputs, Rolls and Entitlements components are expected to be realised over years 3-10. Benefits realisation will largely fall at the end of the 10-year period, continuing the risk and cost of manual effort to support existing funding processes.

As re-platforming retains the existing EDUMIS legacy COBOL code, the significant risk related to aging personnel familiar with EDUMIS would not be mitigated. Finding COBOL trained personnel is challenging as it is not a current software development language, and it would take approximately 2 years for suitable personnel to become familiar with EDMUIS.

Current licencing costs would be substituted with other licencing and subscription costs of new solution elements – e.g. Salesforce.

Appendix 5. ERS Financials

Financial case for preferred option												
							1	2	3	4		
$millions	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total 2015/2016 - 2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Total 2015/2016 - 2023/2024	2024/2025 and on-going out-years *
Programme capital expenditure												
ERS Programme		0.150				*0.150*					**0.150**	
ERS Technology Platform		2.046	6.529	7.227	9.022	*24.825*	9.753	12.018	12.941	0.213	**59.750**	
ERS EDUMIS Transition		0.151	0.157			*0.308*					**0.308**	
Contingency										4.006	**4.006**	
Total Capital		2.348	6.686	7.227	9.022	*25.283*	9.753	12.018	12.941	4.219	**64.214**	
Programme operating expenditure												
Project operating expenditure												
ERS Programme	1.486	1.395	1.041	1.298	1.330	*6.551*	1.308	1.083	1.023	0.229	**10.193**	
ERS Technology Platform	0.069	0.556	0.554	0.367	0.555	*2.101*	0.723	0.723	0.723		**4.271**	
ERS EDUMIS Transition	0.330	0.897	1.237	1.376	0.961	*4.801*	1.053	0.386	0.027		**6.268**	
ERS Business Transformation		1.264	0.872	0.804	0.299	*3.239*	0.511	1.141	2.119	0.146	**7.157**	
Contingency										1.111	**1.111**	
Total project operating expenditure	1.884	4.113	3.704	3.845	3.146	*16.692*	3.595	3.333	3.893	1.486	**28.999**	
Total programme expenditure	1.884	6.460	10.391	11.072	12.168	*41.975*	13.348	15.351	16.834	5.706	**93.214**	
On-going operating expenditure												
EDUMIS & Resourcing Savings										(1.147)	**(1.147)**	(1.401)
ERS Ongoing Costs			0.303	0.936	0.572	*1.811*	0.361	0.638	0.638	1.171	**4.619**	1.171
Depreciation & amortisation			0.015	0.524	0.820	*1.359*	1.495	2.028	3.928	6.021	**14.832**	6.021
Capital charge			0.141	0.512	0.512	*1.165*	0.705	1.406	1.953	1.963	**7.192**	1.963
Total on-going operating expenditure			0.459	1.973	1.904	*4.336*	2.561	4.072	6.519	8.009	**25.497**	7.755
Total Operating	1.884	4.113	4.163	5.817	5.050	*21.028*	6.156	7.405	10.412	9.495	**54.496**	7.755
Total expenditure	1.884	6.460	10.850	13.045	14.073	*46.311*	15.909	19.423	23.352	13.715	**118.710**	7.755
Total revenue												
Less funding from existing baselines												
Departmental Capital Funding		2.348	6.686	7.227	9.022	25.283	4.193				**29.477**	
Departmental Operating Funding	1.884	4.113	4.130	4.990	5.040	20.157	6.156	3.890	4.890	3.890	**38.983**	3.890
Total internal funding	1.884	6.460	10.816	12.217	14.062	45.440	10.349	3.890	4.890	3.890	**68.459**	3.890
New funding required							5.560	15.533	18.462	9.825	**49.380**	3.865
Capital funding required							5.560	12.018	12.941	4.219	**34.737**	
Operating funding required								3.515	5.522	5.605	**14.642**	3.865
Total funding required							5.560	15.533	18.463	9.824	**49.380**	3.865

Economic Case (Net Present Costs $2020)** **41.083**

* the permanent annual uplift required to the Ministry's on-going appropriations

** Economic case Net Present Costs are calculated over 13 years and exclude contingency

Appendix 6. Estimation process

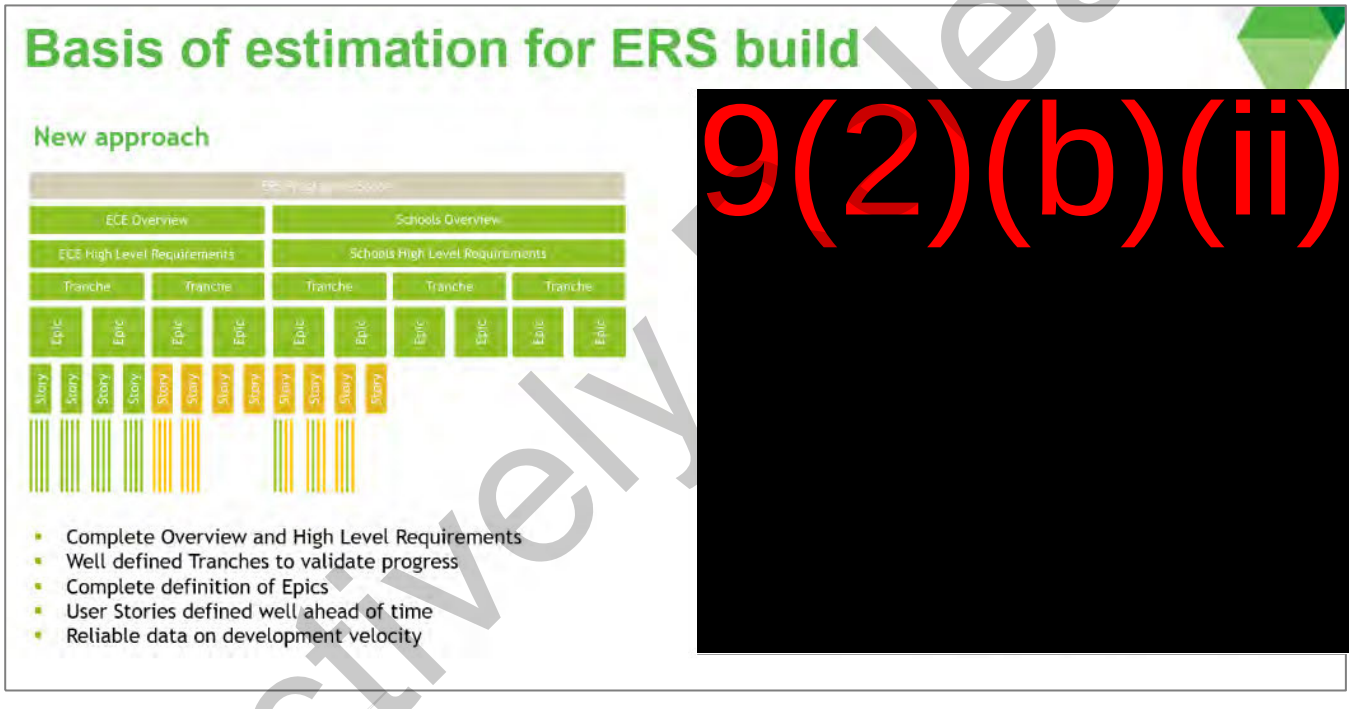
The programme has adopted an estimation approach for the ERS early learning services and school's solution build based on the following key elements:

a. a complete set of High-Level Requirements (HLRs) and processes covering the full scope of the solution for early learning services and schools

b. a definition of development technical and functional 'epics' for the complete programme that are derived from, and fulfil, the HLRs for the programme

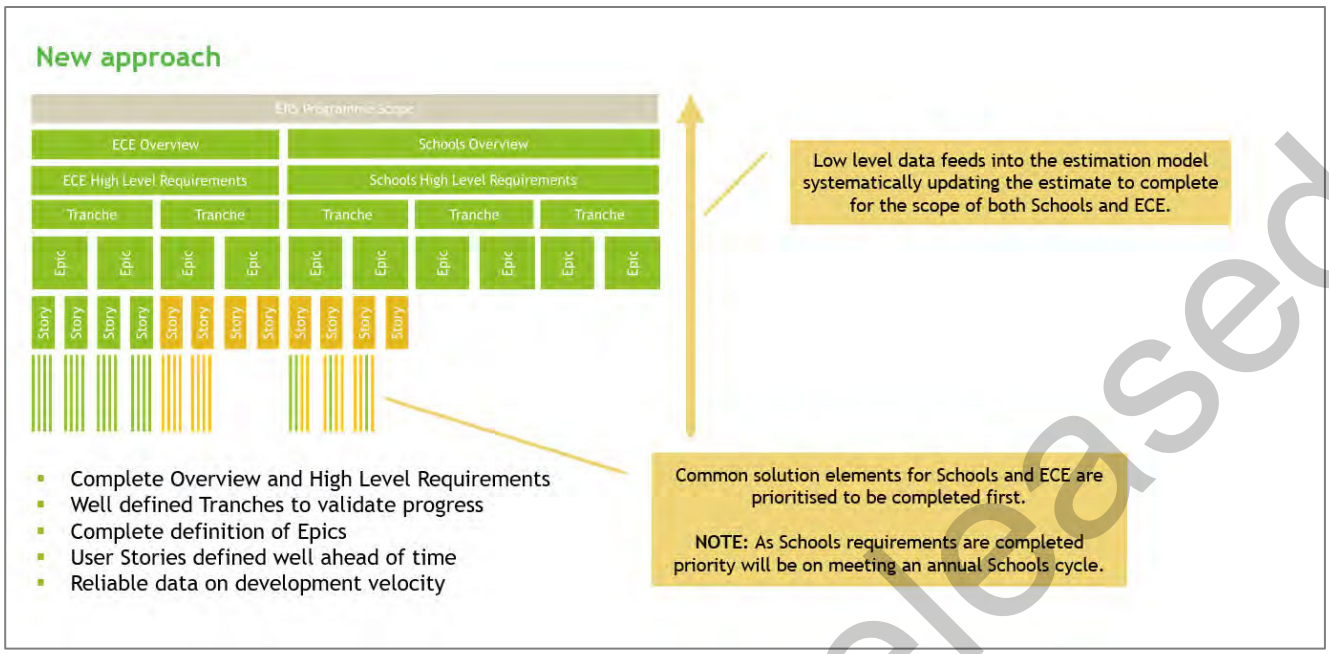
c. collective, relative sizing of these epics borrowing heavily from Delphi, and with Affinity Groupings techniques, ensuring there are independently derived inputs along with a robust challenge and consensus process

d. calibration of the rate at which epics of each size can be delivered based on the proven rate of delivery (velocity) of the development team



In addition to the estimate of the solution build, there is a more comprehensive consideration of other inputs including direct resource estimates, periodic fixed costs and programme fixed costs, informed by the project schedule.

There will be further refinement of the estimation over time, informed by actual data from sprint reporting and the real-time view of programme delivery. Appropriate controls have been designed to control for scope during detailing of requirements and while in sprint and will continue to be strengthened.



There are four recognised patterns that form part of the estimation.

a. Direct resource estimates – driven by activity
(@ hourly rate or subscription rate) – i.e. effort required for Data Migration, Change Management, Release Management; use of cloud resources, software licenses

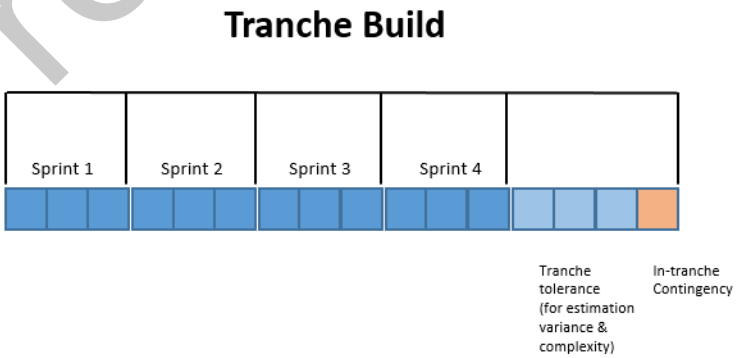
b. Periodic fixed costs
(@ set rate) – i.e. Independent Quality Assurance, Document Review, User Acceptance Testing

c. Block-stepped costs per sprint
(@ Sprint resource rate) – i.e. linked to development velocity including Developers, Testers, Oracle Intelligent Advisor Specialists, Business Analysts

d. 'Overhead' fixed costs
(@ hourly rate), including Project Management Office, Programme Leads

Calibration of the estimated sizing against current progress is dependent on the data of actual points delivered per sprint. The actuals data will feed into the estimation model to give increasing reliability of the estimated time to complete.

The estimation of the timeframe for programme delivery is based on delivery of the sized epics in fixed four-month blocks called tranches. Each tranche consists of four three-week sprints and then a final four-week period at the end.



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This final period includes allowance for expected *tolerance*[18] for estimation, discovery and complexity of three weeks, together with one week of in-tranche contingency referred to as "level one" (internal) contingency. This represents a 10.2% internal contingency and is included in the programme estimate to complete.

The actual nature of the consumption of this final period in the fixed tranche structure will be subject to approval by the ERS Steering Committee, and it may be a combination of some or all of:

a. tolerance for estimation or complexity uncovered in the tranche preparation stage, where sign-off will be through the Tranche Entry Report;

b. tolerance or contingency required once the tranche is underway, in which case approval will be sought through the Tranche Progress Report, and

c. future work brought forward from subsequent tranches where current in-tranche tolerance or contingency is not required, in which case prioritisation and approval will be sought through the Tranche Progress Report.

Time periods are allocated according to a fixed-time tranche delivery model. Where tolerance and/or contingency is not required within a tranche, work will be brought forward from future tranches on a prioritised basis subject to Product Management Group oversight and Steering Committee approval.

[18] PRINCE2 *tolerance* is permitted deviation within a plan, see https://project-management-basics.com/prince2005/prince2_69_controls_part_3

Appendix 7. ERS Software Development Lifecycle

High level

The SDLC starts with overarching documents that outline at a high level, the Scope, Business Architecture and High-Level Requirements. From these documents a Solution Architecture Design has been written, a Conceptual Data Model produced, and a Data Migration Approach developed. The High-Level Requirements will form the basis for production of a Test Strategy.

The intention of completing these documents up front, is to understand the end-to-end scope the ERS, as a basis to manage the orderly build of a fit-for-purpose solution via a minimum viable product (MVP) process. 9(2)(g)(i) [redacted]

All these artefacts will be utilised to guide the development through each tranche.

Tranche level

A tranche is an end-to-end set of functionality defined by epics and user stories that support business processes and can be tested by the business and accepted as "done".

Tranches will also be Performance Tested as each is delivered and progressed through to the Pre-Production environment as part of a Production Release candidate. See Figure 5 below.

Release level

As each Tranche of software is deployed to the Pre- Production environment, cumulatively they will make up the Production Candidate.

Each Release Candidate will progress through Penetration testing in the Pre-Production environment, Certification and Accreditation and an accompanying Transition and Communication Plan will be presented to the Governance Board for approval to go live.

During this phase, Penetration testing, a Transition and Communication plan will be finalised, the final data migration will occur, Certification and Accreditation will be achieved and the Release process will progress leading up to a decision by the Programme Governance Board to approve deployment of the Production candidate and Go Live.

A deployment run sheet will drive the Release process and Post Validation Testing will confirm the Production candidate is functioning as expected.

See Figure 6 below.

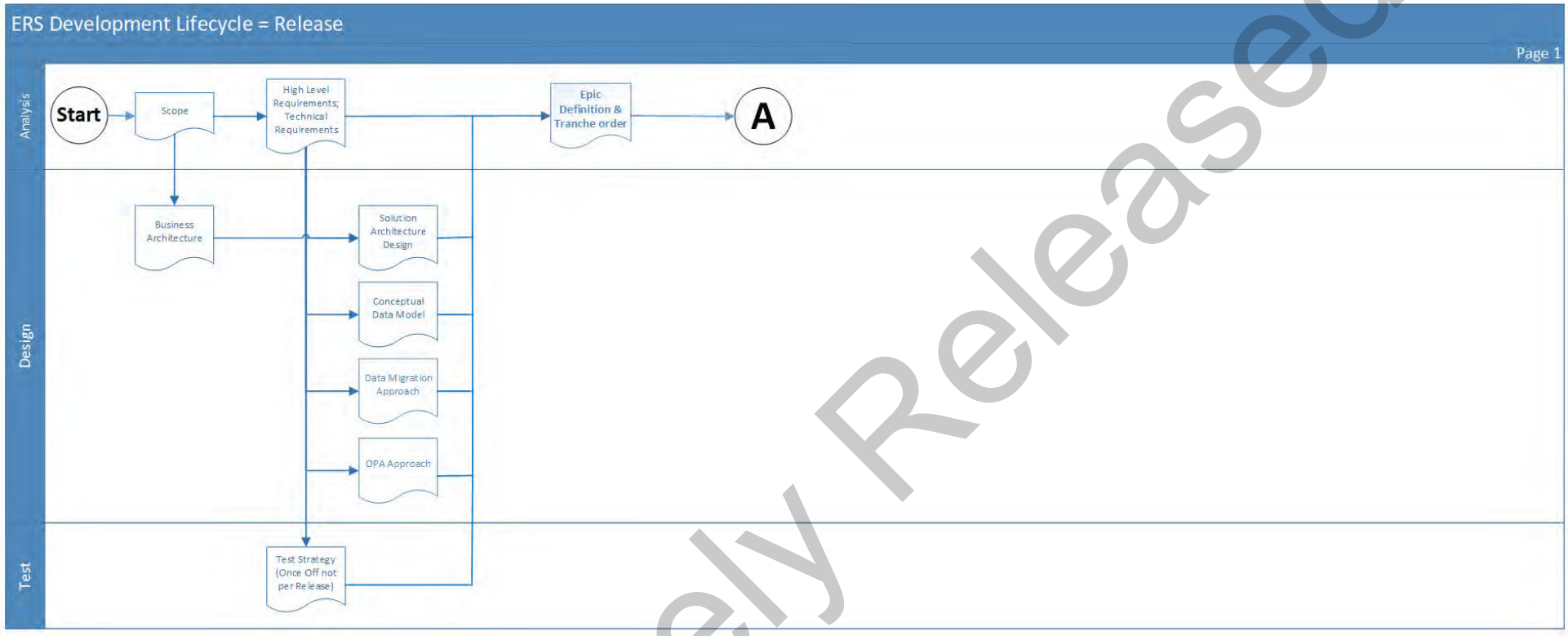


Figure 23. ERS SDLC – High Level

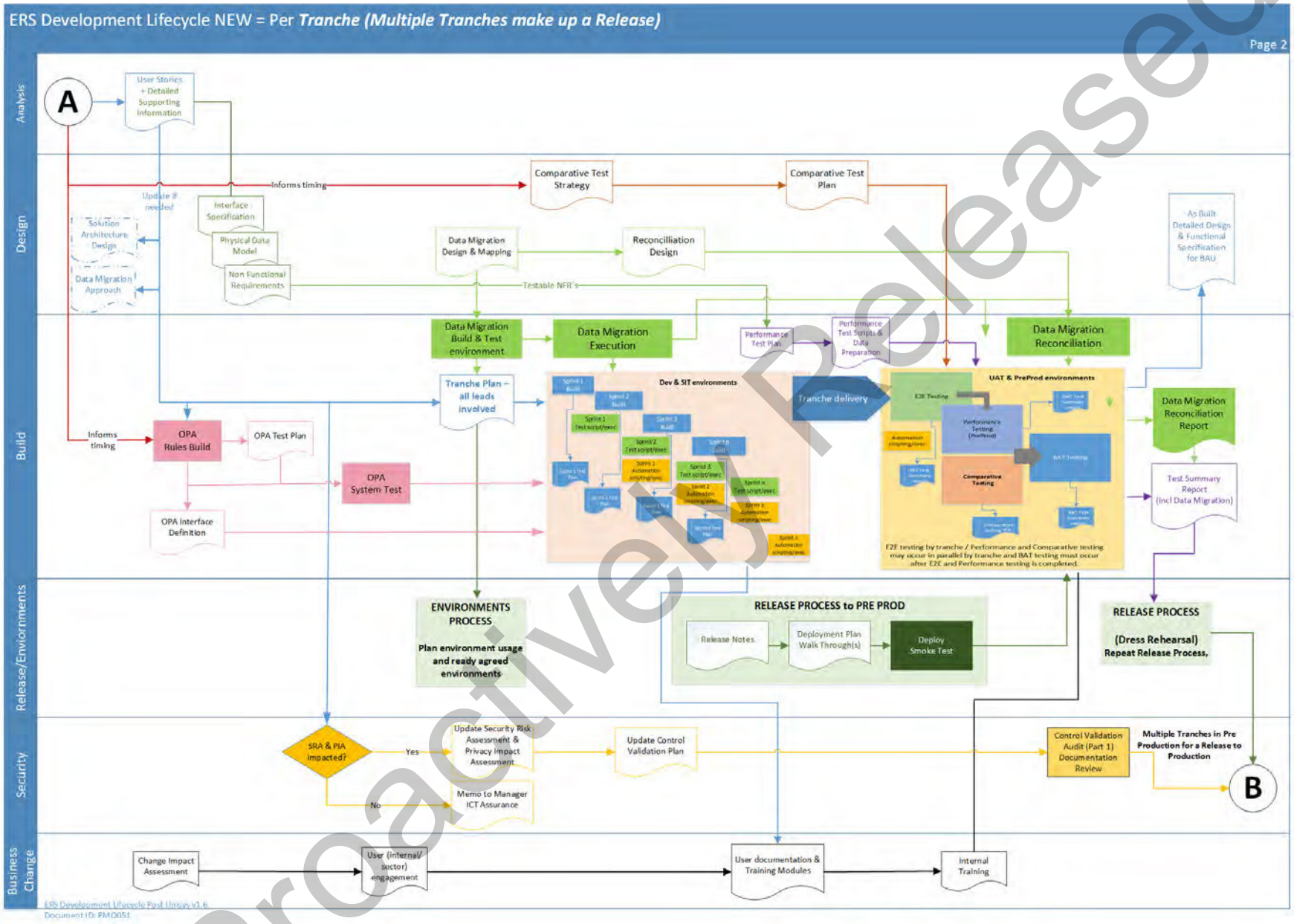


Figure 24. ERS SDLC – Tranche level

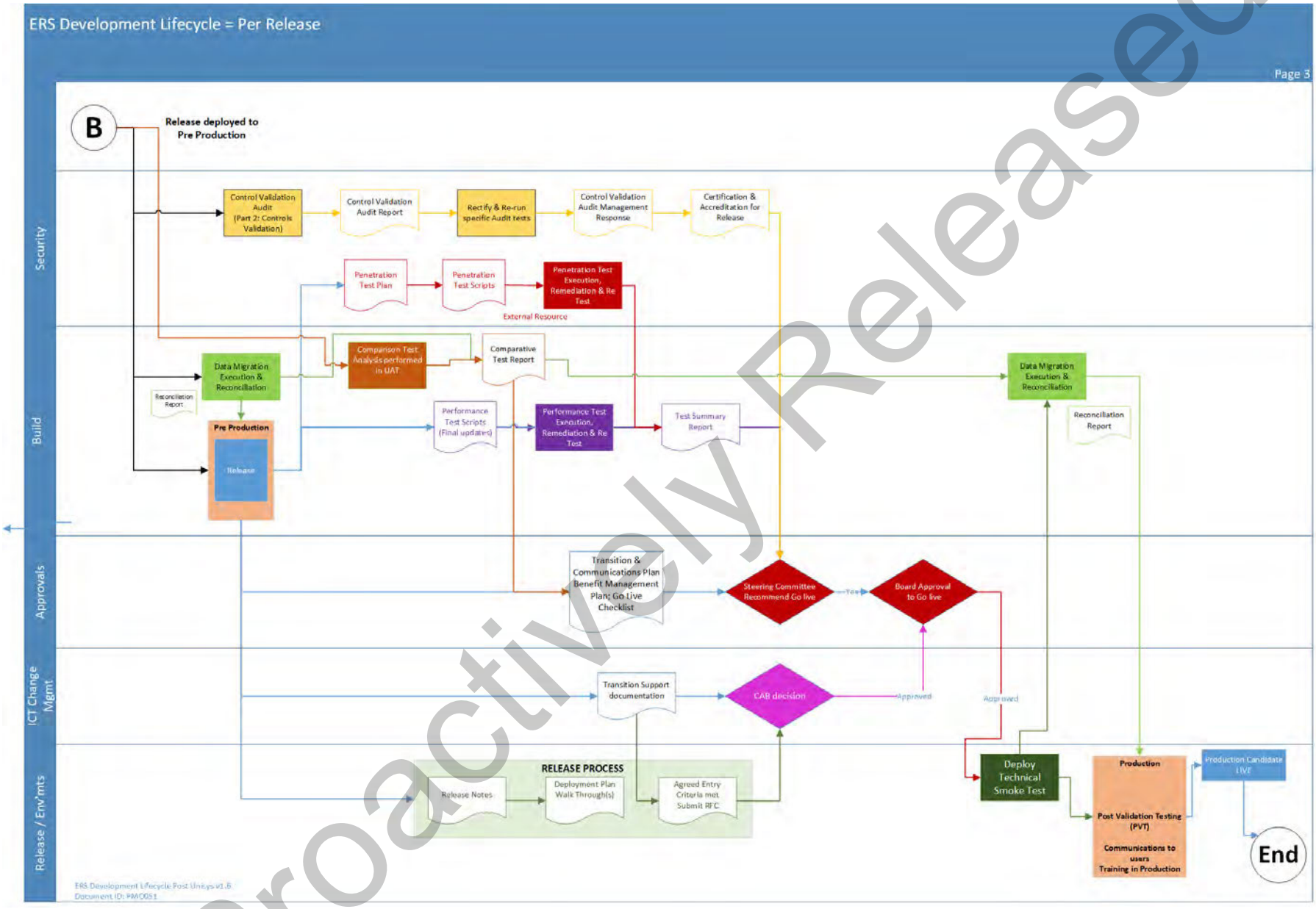
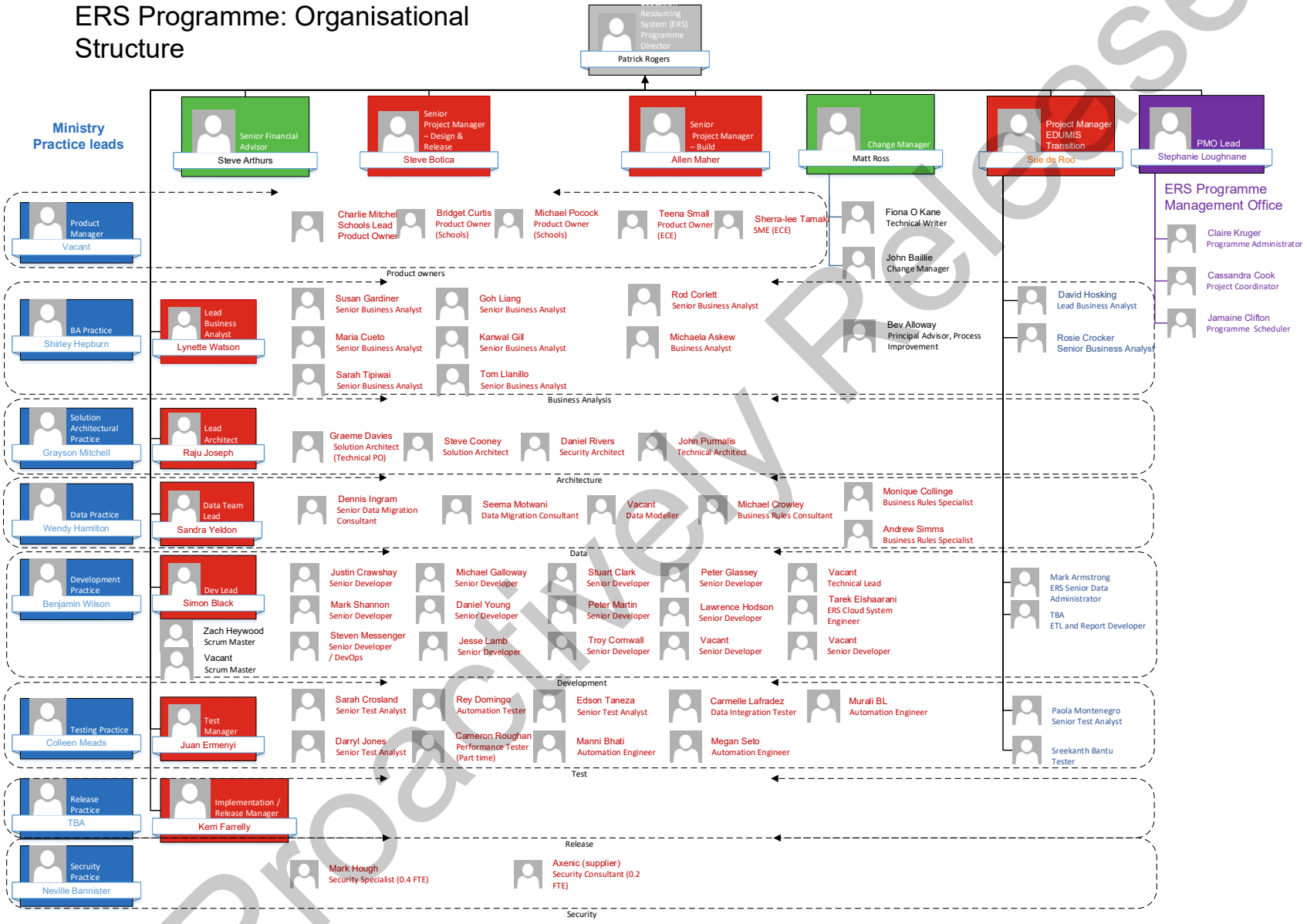


Figure 25. ERD SDLC – Release level

Appendix 8. ERS Programme structure



Appendix 9. ERS Stakeholder groups

Stakeholder Group	Potential impact (on group)	Their level of interest	Their ability to influence	What we want from them	What they want from us	Type of engagement (inform, collaborate etc)
1) Early learning services sector users	Medium	Medium	High	Engagement in the process User interface design input Testing and feedback Advocacy for change	Full engagement across end-to-end processes Clear timelines for project Clear guidance and support materials Platform that is trusted and reliable Clear communications	Collaborate
2) Schools sector users	Medium	Medium	High	Engagement in the process User interface design input Testing and feedback Advocacy for change	Full engagement across end-to-end processes Clear timelines for project Clear guidance and support materials Platform that is trusted and reliable Clear communications	Collaborate
3) Schools Resourcing team	High	High	Medium	Engagement in the process User interface design input Testing and feedback Advocacy for change	Full engagement across end-to-end processes Clear guidance and support materials Platform that is trusted and reliable Clear communications	Partnership
4) ECE Operational Funding team	High	High	Medium	Engagement in the process User interface design input Testing and feedback Advocacy for change	Full engagement across end-to-end processes Clear guidance and support materials Platform that is trusted and reliable Clear communications	Partnership
5) Resourcing Contact Centre	Medium	Medium	Medium	Engagement in the process	Clear guidance and support materials Platform that is trusted and reliable Clear communications	Collaborate

Stakeholder Group	Potential impact (on group)	Their level of interest	Their ability to influence	What we want from them	What they want from us	Type of engagement (inform, collaborate etc)
6) Evidence, Data and Knowledge (EDK)	Medium	Medium	Medium	Engagement in the process Advocacy for change	Clear guidance and support materials Clear communications	Collaborate
7) Learning Support	Low	Low	Low	Engagement in the process Advocacy for change	Clear guidance and support materials Clear communications	Inform
8) Small business system (SBS) users	Medium	Medium	Medium	Awareness and understanding of the ERS	Clear guidance and support materials Platform that is trusted and reliable Clear communications	Collaborate
9) Ministry Managers / Directors with the financial authority to approve payments and oversee processing	Medium	Medium	High	Engagement in the process Awareness and understanding of the ERS Advocacy for change	Clear timelines for project Understanding around engagement process and when it is planned Platform that is trusted and reliable	Collaborate
10) Regional advisors and support staff that process funding requests	Medium	Medium	High	Engagement in the process Awareness and understanding of the ERS Advocacy for change	Clear timelines for project Understanding around engagement process and when it is planned Clear guidance and support materials Platform that is trusted and reliable	Collaborate
11) Ministry Service Desk	Low	Medium	High	Awareness and understanding of the ERS platform	Clear communications Clear support processes and materials	Inform
12) Policy	Medium	Medium	Medium	Engagement in the process Awareness and understanding of the ERS	Platform that is trusted and reliable Clear guidance and support materials Clear communications	Collaborate
13) Programme Team	High	High	High	Maximum engagement	Clear timelines for project Understanding around engagement process and when it is planned Clear guidance and support materials	Partnership

Stakeholder Group	Potential impact (on group)	Their level of interest	Their ability to influence	What we want from them	What they want from us	Type of engagement (inform, collaborate etc)
14) Programme Governance Group members	High	High	High	Maximum engagement Availability and input as required within timeframes that are under pressure Available as an escalation path to resolve blockers or issues Secure funding	Clear timelines for project Understanding around engagement process and when it is planned Clear guidance and support materials Platform that is trusted and reliable	Partnership
15) Programme Investment and Advice (PIA)	Medium	Medium	High	Strategic support for the ERS Awareness and understanding of the ERS		Collaborate
16) Strategic Finance	Medium	High	High	Strategic support for the ERS Awareness and understanding of the ERS	Clear communications	Collaborate
17) ICT	High	High	High	Strategic support for the ERS Awareness and understanding of the ERS	Clear guidance and support materials Platform that is trusted and reliable Clear communications	Collaborate
18) Internal Audit & Assurance	Medium	Medium	High	Awareness and understanding of the ERS	Clear timelines for project Clear guidance and support materials Clear communications	Collaborate
19) Legal	Medium	Medium	High	Awareness and understanding of the ERS	Clear timelines for project Clear guidance and support materials Clear communications	Collaborate
20) Procurement	Medium	Medium	Medium	Engagement in the process	Clear timelines for project Clear guidance and support materials Clear communications	Collaborate
21) Comms	Medium	Medium	Medium	Engagement in the process	Clear guidance and support materials Clear communications	Collaborate

Stakeholder Group	Potential impact (on group)	Their level of interest	Their ability to influence	What we want from them	What they want from us	Type of engagement (inform, collaborate etc)
22) People Capability and Change	Medium	Medium	High	Awareness and understanding of the ERS Business impact and readiness assessments	Clear guidance and support materials Clear communications	Collaborate
23) Sector peak bodies	Low	High	High	Awareness and understanding of the ERS Advocacy for change	Clear timelines for project Platform that is trusted and reliable Clear communications	Inform

Inform – one-way communication; **Consult** – limited two-way communication; Involve – stakeholders involved in process; **Collaborate** – active working together; Empower – joint decision making

CAB-21-MIN-0508

Cabinet

Minute of Decision

Report of the Cabinet Government Administration and Expenditure Review Committee: Period Ended 26 November 2021

On 29 November 2021, Cabinet made the following decisions on the work of the Cabinet Government Administration and Expenditure Review Committee for the period ended 26 November 2021:

Out of scope

GOV-21-MIN-0047	**Education Resourcing System for Schools and Early Learning Services: Approval of Implementation Business Case** Portfolio: Education	CONFIRMED

Out of scope

Out of scope

Michael Webster
Secretary of the Cabinet

GOV-21-MIN-0047

Cabinet Government Administration and Expenditure Review Committee

Minute of Decision

Education Resourcing System for Schools and Early Learning Services: Approval of Implementation Business Case

Portfolio **Education**

On 25 November 2021, the Cabinet Government Administration and Expenditure Review Committee:

1 **noted** that the Ministry of Education is building the Education Resourcing System to modernise payment infrastructure for the $8.4 billion per annum operational funding administered by the Ministry and paid to schools and early learning services;

2 **noted** that in Budget 2021, Cabinet:

2.1 agreed to fund the completion of the transition to the new Education Resourcing System;

2.2 agreed to establish the tagged contingency 'Completion of the Education Resourcing System for Schools and Early Learning' of up to the amounts as follows in Vote Education to provide for the transition to the new system:

	$m - increase/(decrease)				
	2021/22	**2022/23**	**2023/24**	**2024/25**	**2025/26 & out years**
Operating Contingency	-	5.522	5.605	3.865	3.865
Capital Contingency	-	12.941	4.219	-	-
Total	**-**	**18.463**	**9.824**	**3.865**	**3.865**

2.3 invited the Minister of Education to seek final approval of the Implementation Business Case and draw down from the tagged contingency by 30 June 2022;

[CAB-21-MIN-0116.10]

3 **approved** the *Implementation Business Case for the Education Resourcing System for Schools and Early Learning Services*, attached to the submission under GOV-21-SUB-0047;

4 **agreed** to increase spending to provide for completion of the transition to the new Education Resourcing System, with the following impacts on the operating balance and net core Crown debt:

	$m - increase/(decrease)				
Vote Education	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26 & out years**
Operating Balance and Net Core Crown Debt Impact	-	-	-	-	-
Operating Balance Only Impact	-	3.569	3.642	1.902	1.902
Net Core Crown Debt Only Impact	-	12.941	4.219	-	-
No Impact	-	1.953	1.963	1.963	1.963
Total	**-**	**18.463**	**9.824**	**3.865**	**3.865**

5 **approved** the following changes to appropriations and departmental capital injections to the Ministry of Education to give effect to the policy decision in paragraph 4 above:

	$m - increase/(decrease)				
Vote Education Minister of Education	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26 & out years**
Capital Injection: Ministry of Education - Capital Injection	-	12.941	4.219	-	-
Multi-Category Expenses and Capital Expenditure: Primary and Secondary Education (MCA)					
Departmental Output Expense: Support and Resources for Education Providers (funded by revenue Crown)	-	5.522	5.605	3.865	3.865
Total Operating	**-**	**5.522**	**5.605**	**3.865**	**3.865**
Total Capital	**-**	**12.941**	**4.219**	**-**	**-**

6 **agreed** that the expenses and departmental capital injection incurred under paragraph 4 above be charged against the 'Completion of the Education Resourcing System for Schools and Early Learning' tagged operating and capital contingency, which will close the contingency.

Rebecca Davies
Committee Secretary

Present:
Hon Grant Robertson (Chair)
Hon Dr Megan Woods
Hon Chris Hipkins (Deputy Chair)
Hon Stuart Nash
Hon Kris Faafoi
Hon Peeni Henare
Hon Jan Tinetti
Hon Kiri Allan
Hon Dr David Clark
Hon Meka Whaitiri
Dr Deborah Russell, MP

Officials present from:
Office of the Prime Minister
Officials Committee for GOV