Programme Business Case

# Modernising New Zealand's Land Information Platform & Services

October 2018

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## Appendices

## Glossary

| Acronym/ Term | Meaning |
|---|---|
| **2D** | Two Dimensional |
| **3D** | Three Dimensional |
| **aaS** | As a Service |
| **AoG** | All of Government |
| **API** | Application Programming Interface |
| **ASaTS** | Advanced Survey and Title Services |
| [redacted] | [redacted] |
| **AWS** | Amazon Web Services |
| **BCR** | Benefit Cost Ratio |
| **BERL** | Business and Economic Research Limited |
| [redacted] | [redacted] |
| **Capex** | Capital Expenditure |
| **CFA** | Crown Framework Agreement |
| **CFO** | Chief Financial Officer |
| **COTS** | Customised Off The Shelf |
| **CPI** | Consumer Price Index |
| **CRM** | Customer Relationship Management |
| **CSD** | Cadastral Survey Dataset |
| **DBC** | Detailed Business Case |
| **DCE** | Deputy Chief Executive |
| **Dev** | Development |
| **DevOps** | Development and Operations |
| **DC** | Data Capture |

| Acronym/ Term | Meaning |
|---|---|
| **DG** | Data Generation |
| **DSL** | Datacom Systems Limited |
| **DTM** | Discharge Transfer Mortgage |
| **EGI** | Cabinet Economic Growth and Infrastructure Committee |
| **ELT** | Executive Leadership Team |
| **EPMO** | Enterprise Programme Management Office |
| **FTE** | Full Time Equivalent |
| **FY** | Financial Year |
| **G2G** | Government to Government Partnerships Office |
| **GCDO** | Government Chief Digital Officer |
| **HR** | Human Resources |
| **IBC** | Indicative Business Case |
| **ICT** | Information and Communications Technology |
| **ILM** | Investment Logic Mapping |
| **IQA** | Independent Quality Assurance |
| **IP** | Intellectual Property |
| **IPS** | Integrated Property Services nitiative |
| **IT** | Information Technology |
| **ITMS** | Information Technology Managed Services |
| **IS&D** | Information Strategy and Delivery |
| **ISO** | International Organisation for Standardisation |
| **KPI** | Key Performance Indicator |

| Acronym/ Term | Meaning |
|---|---|
| **KPMG** | Klynveld Peat Marwick Goerdeler accounting firm |
| **LDS** | LINZ Data Service |
| **LMS** | Learning Management system |
| **LINZ** | Land Information New Zealand |
| **LOL** | Landonline |
| **LOLA** | Landonline Alternative |
| **LTSA** | The Land Title and Survey Authority of British Columbia |
| [redacted] | [redacted] |
| [redacted] | [redacted] |
| **MSA** | Master Services Agreement |
| **MSP** | Managing Successful Programmes |
| **NZIER** | New Zealand Institute of Economic Research |
| **Opex** | Operating Expenditure |
| **Ops** | Operations |
| **PD** | Programme Director |
| **PI** | Programme Increments |
| **PIF** | Performance Improvement Framework |
| **PMO** | Programme Management Office |
| **POC** | Proof of Concept |
| **PPPs** | Public-Private Partnerships |
| **PV WOL** | Present Value Whole of Life |
| **QA** | Quality Assurance |

| Acronym/ Term | Meaning |
|---|---|
| **QRA** | Quantitative Risk Assessment |
| **RACI** | Responsible, Accountable, Consulted and Informed |
| **RAIDD** | Risks, Assumptions, Issues, Decisions and Dependencies |
| **SAFe** | Scaled Agile Framework |
| **SAP** | Systems, Applications and Products |
| **SIBA** | Spatial Industry Business Association |
| **SLA** | Service Level Agreement |
| **SME** | Subject Matter Expert |
| **SoW** | Statement of Work |
| **Spearman Rank** | Measure of correlation |
| **SRO** | Senior Responsible Owner |
| **SSBC** | Single Stage Business Case |
| **SSCF** | Significant Service Contract Framework |
| **TAs** | Territorial Authorities |
| **TOM** | Target Operating Model |
| **TPK** | Te Puni Kōkiri |
| **TQA** | Technical Quality Assurance |
| **UAT** | User Acceptance Testing |
| **UI** | User Interface |
| **UX** | User Experience |

# EXECUTIVE SUMMARY

**Providing continuity and making land information services more useful, accessible and responsive will retain New Zealanders' confidence in property rights in a changing world.**

**This programme will provide a reliable, available and secure platform to:**

- improve the agility and efficiency of the survey and title land information services
- enable improved end-to-end processing across the wider property system
- improve the accessibility and quality of property rights information

The professional bodies representing customers are strongly supportive of the proposed investment. Overall, it will enable LINZ to provide continuity, enhance services and be well positioned to meet future needs.

**What will LINZ do?**

- Modernise and de-risk its core IT system through an incremental rebuild
- Change the way it works to deliver better services to its customers and meet its regulatory responsibilities

[redacted]

The programme will take five years with a deliberately phased approach to scaling up, bringing the skills and practices together for successful delivery. It will use NZ ICT resources and adopt industry-standard approaches.

## Papatūānuku, is the land

The land defines who and what we are, from plains to mountains, cities to farms, and national parks to urban lots. These are our tūrangawaewae, our place to stand.

Kaitiakitanga—effective use, and ownership of land and sea—has underpinned societies for millennia. Tangata whenua have a special connection to the land.

Property rights, maps and charts underpin modern democracies—they are the basis of our understanding of 'what is where' and our place in the world. Location has the power to unlock the potential of so much other information. It can drive better decision-making, benefiting our economy, environment and communities.

Careful management of the land and sea has never been more challenging. Access to water, the impacts of climate change and increasing urbanisation are complex problems that must be resolved if societies are to sustain and flourish.

Land Information New Zealand (LINZ) is the Government's regulator of survey and title information, and provides the only way to legally register ownership of land. It maintains the official record of property boundaries. Landonline is the IT system that holds and maintains these official records via a number of services.

There are 12,000 active, direct users of these services, including conveyancers, surveyors, territorial authorities and search-only customers. Tens of thousands of others are indirect users of the information LINZ holds, from home buyers searching property websites, to modellers working on natural hazard management.

## Landonline is showing its age

The core register of New Zealand's survey and title information is held by the Landonline technology system. As part of a first generation digital transformation, LINZ implemented Landonline between 1998-2002 to reduce paper and rationalise its organisation. As a result, 87% of title transactions are completely automated—one of the highest rates in the world.

However, Landonline is now a 20 year old system [redacted] and is expensive and slow to respond to changing requirements. Its core software language is not recommended for any new development. Users cannot access Landonline without installing special software, and it only works on Microsoft Windows personal computers.

Risks are growing and the consequences of outage or compromise of land information are grave, not least as the Crown guarantees title and compensates for any errors. There is no practical fall-back to a manual system should Landonline become severely compromised. Given the five year duration of the programme, deferral of a decision will mean LINZ 'runs out of runway'. Any delays to proceed into the next phase of the programme will have a knock-on effect, delaying subsequent tranches and LINZ's ability to achieve the investment objectives, [redacted] in a safe timeframe.

## Why make improvements?

Confidence in property rights underpins living standards and is critical to the financial and banking system on which the economy relies. Good quality property information helps people to make better decisions around land use and development.

The driving forces behind this investment are to:

- avoid a loss of confidence in property rights
- deliver on a backlog of customer improvements that will make it easier and faster to work with LINZ
- be ready for future change.

### Alignment to LINZ priorities

LINZ completed its Outcomes Framework in 2017 and is developing its property system strategy. Bridging from these strategies to operations will be achieved through shifts to the operating model.

The Executive Leadership Team (ELT) regards these shifts as a core part of its work in 2019 and beyond. They are neither simple nor quick, and will require changes to capability, skills and ways of working. It has put in place governance mechanisms to support and guide the changes.

### Alignment to Government priorities

The Government has a strong focus on improving the wellbeing of New Zealanders—beyond their material wellbeing. This programme will ensure information on land is more accessible, and that it's easier to transact changes to the property rights associated with it. It will contribute to the dimensions of wellbeing identified in the Treasury's *Living Standards Framework*, making it easier to integrate property information and enabling better decision making for:

- material standard of living
- housing
- jobs and earnings
- civic engagement and governance
- safety.

LINZ worked closely with Te Puni Kōkiri (TPK) and the Ministry of Justice (MoJ) on the proposed Māori land reforms leading up to Government consideration of the Te Ture Whenua Māori Bill, and the role LINZ could play. LINZ's expertise in developing and running modern electronic Land Registers, and the synergies with information already held about Māori Freehold land, was relevant.

LINZ continues to engage with MoJ (including the Māori Land Court) and TPK to stay informed on Māori land developments.

## The preferred way forward

### Evaluating options

In 2015, it was agreed by Cabinet that the best investment would be in a highly flexible, second-generation modular land administration IT platform. During 2018, LINZ updated and re-evaluated the evidence supporting this decision after almost three years of detailed investigation into other options, including developing a proposal to move to an as a service model (aaS) on a platform provided by a credible 3rd party, [redacted]

In making the decision to move away from aaS and the [redacted] platform, LINZ worked closely with Central Agencies to ensure it applied lessons from other Government IT projects, to avoid pitfalls and adopt best practice.

To achieve a highly flexible, second-generation modular land administration IT platform, LINZ's recommended approach is to invest in modernising Landonline through a programme of customer-centric agile development, with on-going capability to address technology risks and provide better services for its customers.

For this programme to be successful, LINZ is aware of the large shift in operating model and organisational culture required.

Rebuilding Landonline (using agile development) will ensure LINZ has control and ownership of the solution, allowing for continuous improvement and constant reprioritisation around LINZ and its customer

needs. This will keep the customer at the centre of the programme, and functionality created will be more likely to meet needs. Achieving influence and control over [redacted]

## Programme outline

The priority for the programme is to deliver early wins for customers [redacted]. LINZ plans to deliver the programme in four tranches, and will scale up in a deliberate manner to grow capability and build confidence.

The programme will heavily rely on NZ based ICT[1] resources through a mix of staff, capability partners, contractors and suppliers. The intention is to grow LINZ's capability over time, and review the ability to change during each tranche.

A summary of the tranches and product roadmap is as follows:

**Tranche 1: Search and notices** *(March 2019 – May 2020)*

Allow registered customers and the public to purchase real-time copies of LINZ products through a new website, and also programmatically with smart APIs. Improve the workflow of conveyancers by integrating notification of territorial authorities and financial lenders, into the main Landonline system.

**Tranche 2: Customer improvements** *(June 2020 to November 2021)*

Replace the customer access to Landonline with new web-based tools, improving the workflow and removing constraints on the way they work.

**Tranche 3: Staff improvements** *(June 2021 to January 2023)*

Replace the staff access to Landonline with new web-based tools, improving workflow and removing constraints.

**Tranche 4: 3D and innovation** *(December 2022 to November 2023)*

Allow registered customers to interact with LINZ programmatically, permitting integration with conveyancing tools and survey software. Implement 3D capabilities into the system (requires wide consultation and removal of existing customer/staff access first).

LINZ plans to begin tranche 1 following a mobilisation phase, and will seek approval from Ministers prior to embarking on tranche 1, and each subsequent tranche. From tranche 2 onwards, this programme will enable LINZ to develop:

- a state land register which will provide up-to-date digital information, for land held by Central and Local Government agencies in a single place
- a Māori land register by facilitating automatic entry of records provided by the Māori Land Court into the titles register
- a 3D dataset of buildings and infrastructure to support smart cities initiatives, and to better connect property information.

## Managing change

The programme has developed a measured change approach in consultation with stakeholders. As customers are the primary beneficiaries of this second-generation digital change, there has been significant effort to work closely to understand current user expectations and behaviour. LINZ is confident that customers will be ready for change when it occurs.

For LINZ, there are significant changes to the operating model underway. This will better position it for the opportunities ahead, and to make the most of the technology change. For staff, there will be new ways of working and changes to internal processes. No major reductions to Landonline operations staff are proposed.

[1] NZ ICT means using people and organisations that contribute to, and grow the skill base of the ICT industry in NZ.

## Costs, benefits & affordability

Customers will be the primary beneficiaries of this investment, delivered by modernising the core, and offering streamlined and extended services. Users currently pay all the costs through regulated fees, which have not been changed since 2011.

[redacted]

The benefits of this investment are set out in **table 1** with the detailed method for calculating monetary benefits provided in Appendix F.

**Table 1: Summary of benefits, costs and capital injection**

| **Business continuity** | **Benefits** |
|---|---|
| Continuity of service | Maintained |
| **Non-monetary incremental benefits** | **Benefits** |
| Faster change cycle | Achieved |
| Ease of use and automation | Achieved |
| Public search of survey and title records | Delivered |
| Improving information | Delivered |
| Enabling innovation through the use of 3D cadastral data | Delivered |
| Mitigation of technology risks | Achieved |
| **Incremental monetary benefits to users** | **Benefits** |
| Reducing time per transaction | $34.9-45.5m |
| Providing notice of sale information | $39.3-45.4m |
| Providing mortgage registration information | $42-48.4m |
| Web search service | $2.0m |
| Reducing error rates | $1.1-1.5m |
| **Total benefits** *(PV WOL)* | **$119.4-$142.9m** |
| **Whole of life costs** *(PV WOL)* | **$98.5-$120.4m** |
| **Repayable capital injection required** *(85th percentile)* | **$95.4m** |

## Managing risk

Embarking on a programme of this scale is challenging for LINZ. It is inherently conservative in its approach to implementation, with a slow scale up to allow the organisation to build capability and learn.

The major risks to the execution of the programme are:

- *LINZ's lack of recent experience with major projects*. This is mitigated by the strengthened governance and support arrangements in place since early 2018; these will be further bolstered by having more external resources at the start.
- *Uncertain costs and timeframes.* These will be mitigated by undertaking proofs of concept before beginning development work, and getting teams functioning well before growing the size of the programme. There will be regular check-in points with Central Agencies, independent assurance and ultimately with Ministers.
- *Customers and staff may be slower to change than anticipated.* This will be mitigated through proactive change management and communications.

The recent Gateway review commented:

*"At this point there are several outstanding risks which will need careful management going forward, but these risks appear to be well understood and mitigated, particularly by adopting a Programme approach that delivers ASaTS capability in tranches, with single stage Project business cases prior to each tranche."*

## Assurance

LINZ has a rigorous programme of independent quality assurance that is regularly reviewed by Central Agencies, augmented by its executive seeking independent advice on issues of concern.

The most recent Gateway review rated the programme as amber/green, and KPMG's Independent Quality Assurance (IQA) review of the programme business case concluded that all cases achieved 'fully meets' against the assessment criteria.

## Ready to begin mobilisation

Following independent and Central Agency reviews, LINZ is confident it has a robust plan and is ready to begin. This next phase of mobilisation will be intensive, and LINZ has estimated it will be ready to start implementation of tranche 1 in March 2019.

LINZ intends to submit the single stage business case for tranche 1 at the start of 2019, subject to mobilisation progress and assurance activities, including:

- request of funding drawdown for tranche 1
- detailed scope and plans for tranche 1
- detailed resourcing and procurement arrangements for tranche 1.

Key mobilisation activities include:

- gateway review
- IQA health check
- engaging capability
- defining key operating model shifts
- establish leadership and governance arrangements.

# PROGRAMME HISTORY

## Programme Milestones

LINZ follows Treasury's best practice for major projects, using the Better Business Case framework. This starts with an Indicative Business Case (IBC) that establishes the case for change and canvasses a wide range of options; followed by a Detailed Business Case (DBC) that confirms the case for change and develops the preferred option.

LINZ has prepared this programme business case for Cabinet consideration of the final implementation and investment decision by Ministers.

### Indicative Business Case

In 2013 LINZ developed an IBC, which considered broad options for reinvestment including public-private partnerships (PPPs), concession models (outsourcing to a private consortium) and a preferred option.

The Cabinet Economic Growth and Infrastructure (EGI) Committee noted in November 2013 that LINZ needed to begin work on a second-generation investment. This was to improve the quality and range of the survey and title services that LINZ provides to its customers, upgrade the technology base to ensure system flexibility, and to enable integration with other central and local government property functions.

### Detailed Business Case

The draft DBC identified the development of a LINZ-owned modular technology solution as the preferred investment option, and LINZ entered Budget 2015 discussions in November 2014. However the DBC and funding bid were deferred from Budget 2015, and in April 2015 LINZ was encouraged to investigate alternative funding and/or provision models. This investigation included stakeholder and technology vendor engagement (including engagement with LINZ's counterparts in comparable international jurisdictions), as well as research on market developments and innovation.

The final DBC and the case for change was approved by Cabinet in November 2015, in preparation for returning to Cabinet in 2016, with a report back on the validity of alternative funding and delivery models.

### 'as a service' investigation

As a result of this work, a funding model based on aaS emerged as a preferred delivery option to replace Landonline. Under an aaS model, a supplier's system would be modified to LINZ's specifications and LINZ would pay to use the system (akin to renting).

In April 2016, Cabinet approved LINZ going to market with an Expression of Interest for an aaS option, with the proviso that if aaS did not prove viable, LINZ would return to Government for capital to reinvest in the system. In October 2016, LINZ selected a supplier for pre-contract work to establish the viability of aaS.

By November 2017, LINZ had fully explored the development of an aaS construct and concluded that a pure aaS model could not be delivered. LINZ sought capital investment from Government in Budget 2018 to continue the development of the new service.

### Alternative delivery pathway emergence

Since concluding in November 2017 that an aaS delivery model was not viable, and that capital for a LINZ owned solution would be required, the delivery model was re-evaluated. This allowed LINZ to reconsider leveraging off the Landonline platform. This fresh look identified new possibilities for looking at how to achieve the programme objectives, including:

- putting the system in public cloud for hosting and delivery
- adopting agile and DevOps, the widely adopted industry practice of operations and development engineers participating together

in the entire service lifecycle, from design through the development process to production support
- the potential to unbundle Landonline and transition functionality to a new platform.

This resulted in the identification, analysis and assessment of the recommended pathway 2 delivery approach.

## Change in approach

In terms of the wider context, the ICT environment has changed considerably since the programme's inception, with the shift towards more iterative development of large technology systems (as opposed to a 'big bang' approach).

Taking learnings from comparable IT projects, the proposed preferred pathway for the programme now includes four tranches over a five year period. Compared to a single project, the programme tranche approach avoids the risks in committing up front to a complex single project with a lead vendor. Experience suggests these projects typically:

- take longer to deliver
- cost more than expected
- don't deliver all the forecast benefits
- are difficult to change the scope or requirements as government or customer needs change.

Each tranche will:

- work within the overarching scope and budget contained within the programme business case as approved by Cabinet
- be subject to a separate single stage business case
- have the oversight of Central Agencies and be subject to the Treasury Better Business Case process
- be approved by joint Ministers
- provide opportunity to update the scope and reflect changes in Government or customer priorities.

## Work to date

The programme has worked closely with stakeholders and staff to gain a detailed understanding of the desired capabilities, requirements and outcomes. Under the new delivery approach, this information is used to develop product backlogs and features that drive the development and priorities.

## Budget 2018

Budget 2018 discussions concluded with LINZ being asked to prepare a final business case, for Ministers to make investment decisions based on a crown repayable capital loan.

## Programme title

Previous business cases have used the Advanced Survey and Title Services (ASaTS) title for this programme. The acronym will no longer be used; instead this business case will be using the title 'Modernising New Zealand's Land Information Platform & Services' and LINZ will consider a new name for the programme in the near future. This is to more accurately capture the intention of the programme, and reflect the recommended pathway.

# THE STRATEGIC CASE

## Updating the case for change

This section outlines the context for land information, why LINZ and its customers are seeking investment, and why decisions need to be made now.

It updates the Indicative Business Case and the Detailed Business Case, to reflect current priorities and knowledge LINZ has gained.

**Key points:**

- Confidence in property rights and accurate land information are critical for New Zealand
- Buyers and sellers place complete reliance on the services LINZ provides on its record of survey and title information, and the Crown guarantee of title
- The core of this service relies on Landonline, a 20 year old technology system that is showing its age
- It is very difficult to add the new functionality that customers are waiting for, and almost impossible to add new registers and integrate it with other information sources
- Change is needed to provide continuity of service and enhance the services customers require
- The investment contributes to Government priorities and aligns well with wider LINZ strategies.

## Purpose

**Providing continuity and making land information services more useful, accessible and responsive will provide New Zealanders with continued confidence in property rights in a changing world.**

This programme will provide a reliable, available and secure platform to:

- improve the agility and efficiency of the survey and title land information services
- enable improved end-to-end processing across the wider property system
- improve the accessibility and quality of property rights information.

## Context

**Land and sea matter. Throughout history, humans have been attached to the land and sea by powerful emotional, social and economic bonds.**

Kaitiakitanga—effective use, and ownership of land and sea—has underpinned society for millennia. Tangata whenua have a special connection to the land.

Property rights, and maps and charts, underpin modern democracies—they are the basis of our understanding of 'what is where', and our connections and place in the world. Location has the power to unlock the potential of so much other information. It can drive better decision-making, benefiting our economy, environment and communities.

Careful management of the land and sea has never been more challenging. Access to water, the impacts of climate change and increasing urbanisation are complex problems that must be resolved if societies are to sustain and flourish.

As a highly digital organisation, LINZ is conscious that it needs to contribute to the Government's priority of growing NZ ICT capability. It needs to continue to make its services accessible, to allow New Zealanders to thrive in a digital world.

LINZ has been a forefront digital agency since the early 2000s when it went through three phases of digital transformation: paper to digital record conversion (1998-2001), electronic processing internally (2002-2005), and finally compulsory electronic lodgement externally (2006-2009). Paper lodgement for solicitors and surveyors was eliminated; processes automated, with staff efficiency reductions and offices closed through the implementation of Landonline.

Today approximately 87% of title transactions are fully automated against business rules in real time with no LINZ staff intervention. LINZ led the world in publishing open and free access to property data, and it continues to apply, use, and contribute to the development of international geospatial and property information standards. Whereas the Landonline initiative was based on new technology, digital transformation, and property system efficiencies - this programme is based on a second-generation technology refresh.

**The core of New Zealand's authoritative land information is held by LINZ in its land information platform, Landonline.**

LINZ's customers use a variety of LINZ services to hold and change land information. Landonline administers the foundational property datasets for where property is and what rights attach to it, and provides the only way New Zealanders can register title and adjust boundaries through surveying.

As the Crown guarantees title (registered ownership is backed by a statutory compensation regime for loss arising from error or fraud), and total reliance is placed on title records when land is bought or sold, the system and its supporting technology needs to deliver the highest levels of integrity.

LINZ's core role in the property system is to provide:

- a robust transactional platform for transferring rights, restrictions and responsibilities for property, as legal ownership is dependent on registration
- complete, comprehensive, authoritative, and accurate property information
- confidence and certainty in property rights.

In doing so, it will:

- ensure Crown Property is well managed
- integrate new data
- maximise openness and accessibility
- maintain standards
- ensure trust.

Land information is not static. As an example, the Kaikoura earthquake resulted in a significant amount of work to adjust cadastral survey information—from high tide marks to property boundaries. Information needs to be continually updated as customer and government interest's change, as well as for movements in New Zealand's landform.

The property system can be divided into two sub-systems of rights (rights, restrictions and responsibilities in respect of a property); and information (public information about a property, e.g. location, consents, and address).

LINZ is responsible for advising on, and administering, the regimes under which rights and information are defined, guaranteed and changed. Its two key records are:

- survey records in the cadastre, with approximately 2.5m primary survey plans defining the spatial boundaries of land parcels
- titles records in the register of titles, with approximately 2.2m titles defining the legal rights to land parcel(s).

## Customers and Stakeholders are ready for change

Landonline has been well managed and maintained since it went live in 2000. Its data model and underlying business logic remain world class, and provide the ability to undertake complex mathematical adjustments.

[redacted]. The core software is approaching end of life and is not recommended for new development.

LINZ has not delivered material benefits to its customers using Landonline for almost five years, while the programme has been through its analysis and business case phases. These customers are wholly reliant on Landonline, and strongly supportive of this programme.

### Who uses Landonline?

LINZ takes a broad view in defining its customers, as a person, group or organisation who uses LINZ's products and services, either directly or indirectly. This may include property investors/developers, Iwi, emergency services.

There are around 12,000 active users, made up of:

[redacted]

- 2,450 search-only users (e.g. real estate agents and banks)
- 315 territorial authority users across 78 organisations
- 7,680 conveyancers (e.g. lawyers)
- 1,600 surveyors.

Tens of thousands of others are indirect users of the information LINZ holds, from home buyers searching property websites to modellers working on natural hazard management.

Users pay for all costs of the system through regulated fees. Fee income fluctuates with activity in the property market and was $72 million (2016/17) and $69 million (2017/18 provisional accounts).

## Customer support for the programme

LINZ has developed the requirements for this programme alongside the professional body stakeholder groups for our customers and user community. It has also worked with territorial authorities, major search and data customers, such as the commercial banks, and the Real Estate Institute of New Zealand.

Collectively, the three key stakeholder bodies—the New Zealand Law Society Property Law Section and the Auckland District Law Society Property Law Committee, (both representing property lawyers); and Survey and Spatial New Zealand (representing cadastral surveyors)—have expressed strong support for the programme and its scope. They:

- agree and support the programme business case to modernise the land information platform and services, enabling LINZ to provide continuity, enhanced services and be well positioned to meet future needs
- have confidence in LINZ's proven track record in delivering the world-leading Landonline system, and appreciate and support the programme approach being taken, to deliver a new electronic land administration system across a number of tranches
- consider it is imperative for LINZ and government to commit and deliver on the programme outcomes, to ensure continuity of service for property rights provided to New Zealanders.

## Improvements for customers

There are a range of customer interests that this programme addresses:

- securing continuity of service on behalf of all property owners
- transacting customers who have been waiting a long time for improvements that cannot be delivered in Landonline. The system has fallen behind the operations of its customers, including that it doesn't allow for mobility. For example, surveyors working in the field, and can only work with Microsoft Windows personal computers
- transacting customers expect technology to provide an easier, more streamlined experience when buying, selling or developing property. For example, more end-to-end integration of information, processes and compliance requirements across local and central government
- central and local government want advice of changes to property information, new registers and integrated information. For example, natural hazards, and climate change
- financial institutions want advice of changes to property information, such as when a mortgage is registered or released
- data customers require LINZ data to power up both private and public sector Geodetic Information Systems, such as Farmsonline for stock location, emergency services for responding to emergency events and allocation of mineral rights
- reducing duplication of customer effort through integration
- for all customers, property rights data needs to be accurately represented in 3D (Landonline only represents it in 2D). With approximately 85% of New Zealanders living in urban areas, LINZ expects to see continued growth in multi-storey buildings

with multiple owners and property interests. Representing in 3D will enable innovation to support future planning, and provide a better evidence base to inform decision makers.

In addition to direct customers of these services, there is a wider stakeholder interest in having a better functioning property system for all New Zealanders.

## Policy and Regulatory Changes

The programme will deliver a modular system that can be built upon to provide additional capability in the future, such as registers for Māori state (Crown) land. Both were highlighted in LINZ's recent PIF as priorities. The Programme could build these registers with Ministerial authorisation via the SSBC process for tranche 2 (from 2020).

If LINZ must respond to policy and regulatory changes, a modular and flexible platform will allow the programme to build these capabilities in a future tranche as directed by Ministers.

## New Services

LINZ will develop and offer a number of new services that will streamline and extend current service offerings, including:

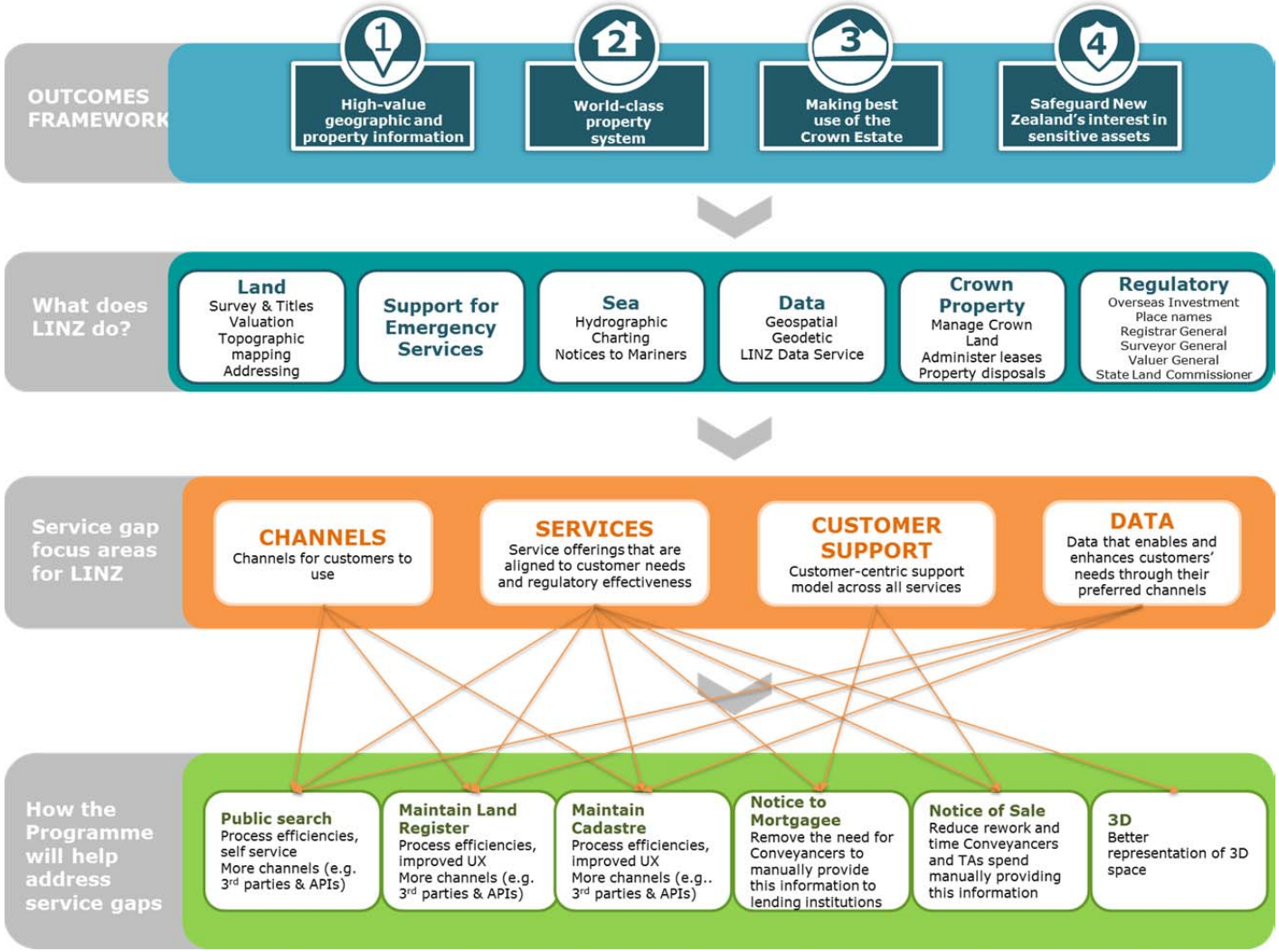
- notice of Sale service
- notice of Mortgage registration, and
- web-based search.

Once the programme is substantially progressed, it will be much simpler to add the functionality required to support enhanced registers and decision making. The programme will enable integrated property services – a framework for structured linking of data about a property, enabling better decision making through integrated property information for customers, stakeholders and government.

All these projects would require business change within LINZ and other organisations, and may require policy and/or regulatory change.

Customers and downstream intermediaries will be able to create a wider range of new services, with the ability to directly connect in real time to property information. These are likely to include disaster management, property information and smart cities products—and others that have not been conceptualised. The link between LINZ outcomes and services is shown in **figure 1**.

**Figure 1: Alignment to LINZ services**



# Aligning across Government

## How does the programme contribute to improving wellbeing?

The Government has a strong focus on improving the wellbeing of New Zealanders—beyond their material wellbeing. This programme will directly contribute to five of the 12 domains of wellbeing identified in the Treasury's Living Standards Framework. It will also have significant benefits for future wellbeing and New Zealand's ability to safeguard wellbeing over the long term. Specifically, the programme will contribute to:

**Market outcomes**

**1)** *Income and consumption* by enabling people to make property-related decisions that better fit their needs and circumstances, by having access to more complete and integrated property information, with lower search costs. Property-related decision making is critical to all New Zealanders. With relevance to Māori land owners, finding accurate information about their land is of prime importance. LINZ and the Māori Land Court have in the past completed significant work to align and maintain currency between their respective sets of Māori Land information, Māori Land Court Orders, and the status of land (ensuring Māori land parcels are flagged and not unintentionally dealt with). This programme will allow LINZ to continue to increase the accuracy of the Māori land record and the efficiency of recording Māori Land Court Orders.

**2)** *Housing* by enabling central and local government to formulate better-informed housing plans, including better use of land resources and infrastructure to deliver better housing outcomes. The programme will seek to enable new forms of property information such as 3D cadastral datasets for high intensity built-up urban areas and critical underground infrastructure. Increased digital and connectable property information is required to support Smart City initiatives for urban planning and investment. These initiatives will also support the governments Kiwibuild Plan, to build 100,000 new homes for first home buyers in the next 10 years.

**3)** *Jobs and earnings* in the property development and construction industries, by enabling developers and builders to more readily identify realistic development opportunities and risks, increasing both the efficiency and the resilience of the industry. The programme will enable more information and data to better support the property industry, and will increase the efficiency of cadastral surveying plan lodgement and approval processes.

**Non-market outcomes**

**4)** *Civic engagement and governance* by continuing to assure the public's strong confidence in NZ's property system, and enabling a "one-stop-shop" for all non-private property data that New Zealanders value. A modern land administration platform will be secure, mitigate risks and threats and underpin the state guarantee of title for New Zealanders' home ownership and other property assets.

**5)** *Safety* by enabling significant improvements in property-related emergency management, through more detailed and granular information at the building level (entry points, floor-by-floor data etc.).

In turn, these direct impacts have flow-on benefits for the other domains of wellbeing:

**Future wellbeing (long term)**

- *Building financial/physical capital* by better-informed assessments of risks and returns in relation to property purchase, investment and development decisions through access to more complete and integrated property information

- *Maintaining natural capital* by providing a base for location-specific data about environmental conditions (such as water management; pest control; coastal erosion) to be linked to property data (ownership; boundaries; rights and responsibilities)
- *Building social capital* by strengthening public confidence in a "single source of truth" about property in New Zealand, thereby reducing instances of inaccurate and conflicting information, and strengthening people's trust in and understanding of New Zealand's property system.

**Safeguarding wellbeing (long term)**

- *Resilience* key property-related risks to long-term wellbeing include safeguarding the system against increasingly-sophisticated cyber threats, keeping ahead of rising public expectations in the wake of rapid technology improvements, and responding to the changing ways in which all New Zealanders, including Iwi, are thinking about land, property and its ownership. The programme provides a platform for much stronger responses to all such risks.

## Alignment with digital policy direction

LINZ has worked closely with GCDO since the programme's inception. The programme approach and structure is consistent with the emerging digital themes contained within the Government Digital Strategy. Data, processes and business rules will be shared, open and reusable. The drivers and approach to this programme are consistent with the conclusions of the Controller & Auditor General on how well the public sector manages and uses information.[3]

## Alignment with procurement practices

MBIE has advised it is comfortable that good procurement practice has been applied throughout the procurement process to date. LINZ will continue to use all-of-government capabilities and contracts, and expects to utilise the recently launched Marketplace for procuring in-scope digital services.

## Linking to LINZ's outcomes framework

In line with Government's digital expectations, LINZ is taking a wider view of the property system than it had previously. It has been defining its target operating model (how the organisation works with its customers and manages internal functions), and the shifts it needs to make, to reach the performance challenges set out in its Performance Improvement Framework (PIF) review.

In late 2017, LINZ completed a new outcomes framework laying out its strategic direction for the next 10 years. This Outcome Framework elaborates on how LINZ will achieve its strategic plan which set a goal of protecting New Zealanders' property rights by regulating and administering the survey and title system.

This programme will directly contribute to the achievement of two LINZ outcomes for New Zealand: a world class property system; and high-value geographic information.

This programme represents a critical stage for LINZ as it seeks to provide continuity, enhance services and enable future change.

[3] Controller & Auditor General - Reflecting on our work about information – Presented to the House of Representatives under section 20 of the Public Audit Act 2001 August 2018

## Alignment with LINZ's Performance Improvement Framework

See Appendix B for LINZ's four outcomes and three key challenges for the next 10 years that LINZ reviewed in early 2018 as part of the regular PIF review process. This was made public on 22 August 2018. The reviewers commented specifically on this programme:

*"Previous attempts by LINZ to seek funding to develop such platforms and to update current technology have either stalled or are being reconsidered. However, the case for investment is becoming increasingly compelling as agencies from across government and the private sector struggle to access the validated information they require to manage risk, make smart investment choices, responsibly manage and plan for the Crown's current and future asset requirements and reduce inefficiency."*

*"…Not least is the requirement to future-proof one of the critical LINZ systems, the Landonline platform, and ensure that the absolute confidence New Zealanders enjoy regarding their property titles is ensured through the delivery of the Landonline upgrade project. This will be a critical building block in compiling New Zealand's authoritative land information platform and one which underpins overwhelming value nationally, locally and individually."*

# Investment objectives

The programme's four investment objectives have been updated and linked to the problems, benefits and the LINZ outcome framework as shown in **figure 2**.

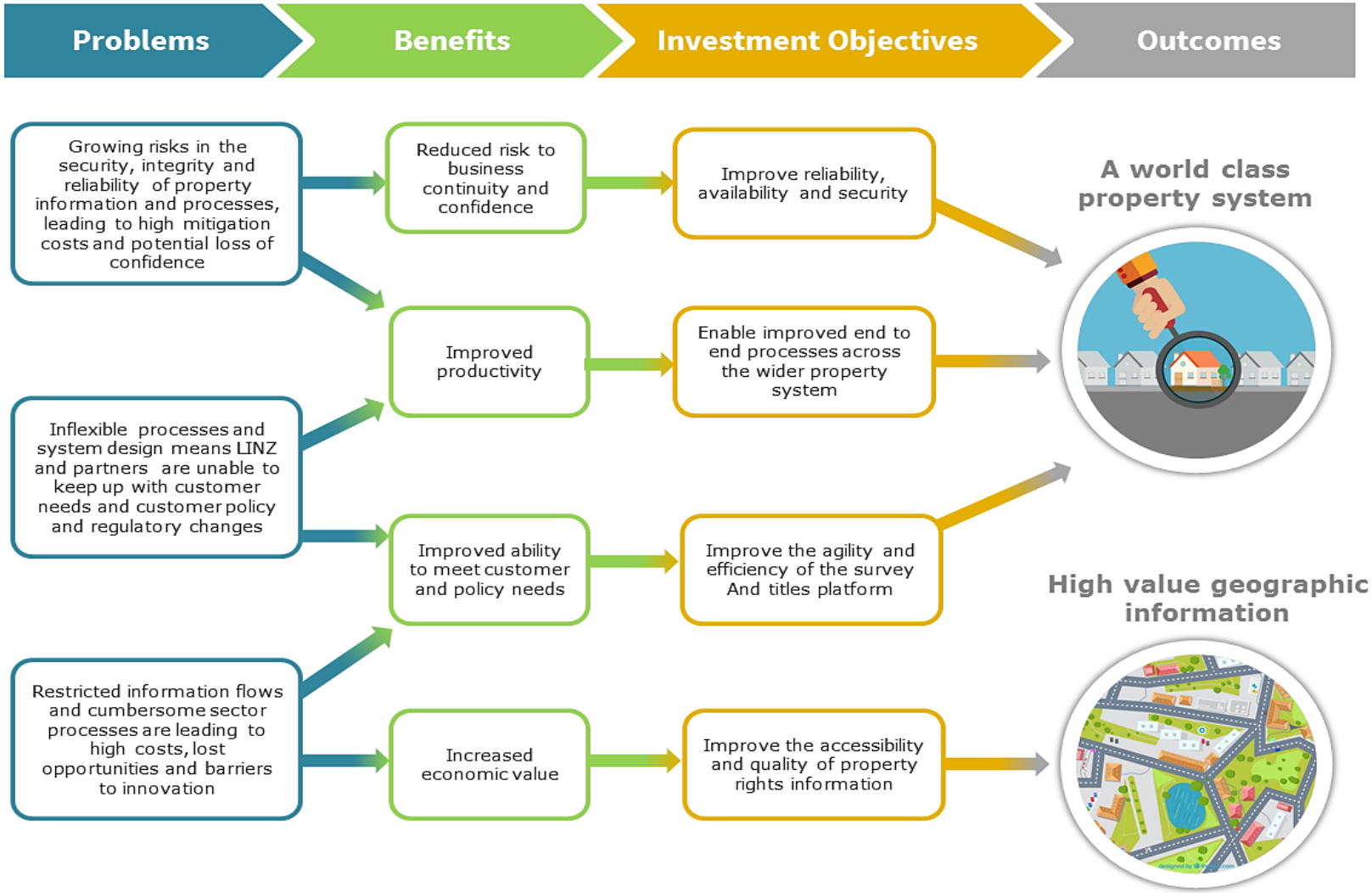
Measures and targets have been developed for each of the investment objectives and their mapping to problem statements and weightings.

The scope and approach for determining measurements for investment objectives labelled *'Improve reliability, availability and security'*, and *'Improve the accessibility and quality of property rights information' in* **figure 2** will be confirmed in tranches 2 and 3.

It is expected to take five years for LINZ to undertake the work on its operating model, and to deliver the proposed technology changes. These improvements reflect LINZ's commitment to sustaining and expanding the quality, and range of digital land information services for its customers. No major policy or regulatory changes are required other than to adjust fees for users in line with investment and minor changes such as the collection of survey data in 3D.

See Appendix C for full details of the Investment Logic Mapping (ILM).

**Figure 2: Alignment of problems, benefits and investment objectives to outcomes**



## Managing the programme's risk profile

Overall, the programme's risk profile continues to be rated as High. This is developed from three interrelated assessments using Treasury's Risk Profile Assessment:

- strategic risk profile – Low
- scope and complexity – Medium
- project delivery capability and approach – High.

LINZ has worked closely with Central Agencies in its development of two key mitigation strategies on the project delivery capability and approach by taking:

- a phased approach with a series of tranches. This allows Ministers to have formal check points before further tranches are started.
- an Agile approach to development, where the organisation can adjust and learn as it goes, without making large and long-term contractual commitments.

LINZ has considered a range of strategic and programme risks that would result in the investment objectives not being relevant or able to be realised as referred to in **table 2**.

**Table 2: Summary of strategic risks**

| Strategic risk | Mitigation |
|---|---|
| A significant number of customers move to transacting land dealings through private mechanisms (e.g. distributed-ledgers like blockchain), resulting in a proportion of software not being required. | Keep abreast of disruptive use cases for land title registry (such as blockchain), and modify the tranches and product roadmap accordingly. |
| Insufficient fee revenue from significant and prolonged contraction in the property market, making LINZ unable to meet operating costs from 3rd party revenue until fees are reviewed. | Mitigations for managing large external shocks to the property market include dipping into the $10 million memorandum account balance, ensuring public cloud hosting arrangements allow for close matching of volumes to actual costs, reassignment of internal LINZ resource and deferral of some lower priority development activities until completion of a user fees review. |
| Competing priorities or other legislative changes may impact LINZ's ability to deliver its agreed investment objectives within the timeframes set. For example, changes to the Overseas Investment Amendment Act 2018 may require the programme to introduce additional scope such as how property data is recorded and managed. | The programme approach (tranches) and an Agile delivery provides the opportunity to recognise changing priorities. |
| The proposal to shift the system to an off-shore cloud solution [redacted] may introduce privacy, data sovereignty and availability challenges for LINZ. | LINZ will carry out full due diligence on the security and privacy impacts of moving the Land Register and Cadastre to the cloud, in conjunction with GCDO and other advisors.<br><br>LINZ has been working closely with the GCDO on our service hosting plans and use of the public cloud. We are aligned to the GCDO's Cloud First strategy and they are supportive of our approach. We will continue to work closely with them as our due diligence and planning continues.<br><br>An initial assessment has been carried out by Crown Law to assess potential impacts to the proposal as a result of relevant legislation (Land Transfer Act, Privacy Act, Cadastral Act etc.). No major concerns were identified. |

## Constraints & dependencies

The programme seeks to minimise disruption to customers' experience during development, while balancing organisational pressures. Key programme constraints are:

- maintaining the stability of the current environment during delivery
- the capacity of LINZ, and its survey and title services customers, to absorb change
- project assurance & monitoring, being high risk, the programme requires major project assurance and reporting requirements. This includes internal and external assurance, and formal Gateway reviews at each key stage.

Further details on risk and dependency management are covered in the Management Case.

## Independent quality assurance

During the programme, the Chief Executive has commissioned formal reviews and sought external advice about governance arrangements, project health and technology development options.

### KPMG IQA

KPMG has undertaken an Independent Quality Assessment (IQA) on the business case in August 2018, concluding that the overall business case provides a new reader with sufficient understanding of the purpose of the project. All cases achieved 'fully meets' against the criteria they were assessed against.

### Gateway review – ready to proceed

The most recent Gateway review rated the programme as amber/green:

A/G *"Successful delivery appears probable, however constant attention will be needed to ensure risks do not materialise into major issues threatening delivery."*

It reported: *"The programme has made excellent progress in addressing the recommendations of the last Gateway Review with only one recommendation still under action. The Programme is currently in a healthy position:*

- *The reassessment of delivery options has resulted in two clearly viable solutions.*
- *Communications and engagement with key internal and external stakeholders is good.*
- *The LINZ ELT is highly engaged in the Programme and appreciates the impact the programme will have on the wider LINZ organisation.*
- *The team is working together well.*
- *The programme has refocused on LINZ customer value, with the customer value arising from each tranche now clearly understood.*
- *LINZ is clearly focusing on what must be delivered to meet its strategy."*

*"… the programme is currently in a good position to meet its objectives, but there is still a long way to go. Although there are no significant issues at this stage, the programme will require careful management to ensure successful delivery."*

# THE ECONOMIC CASE

## Outlining the preferred way forward

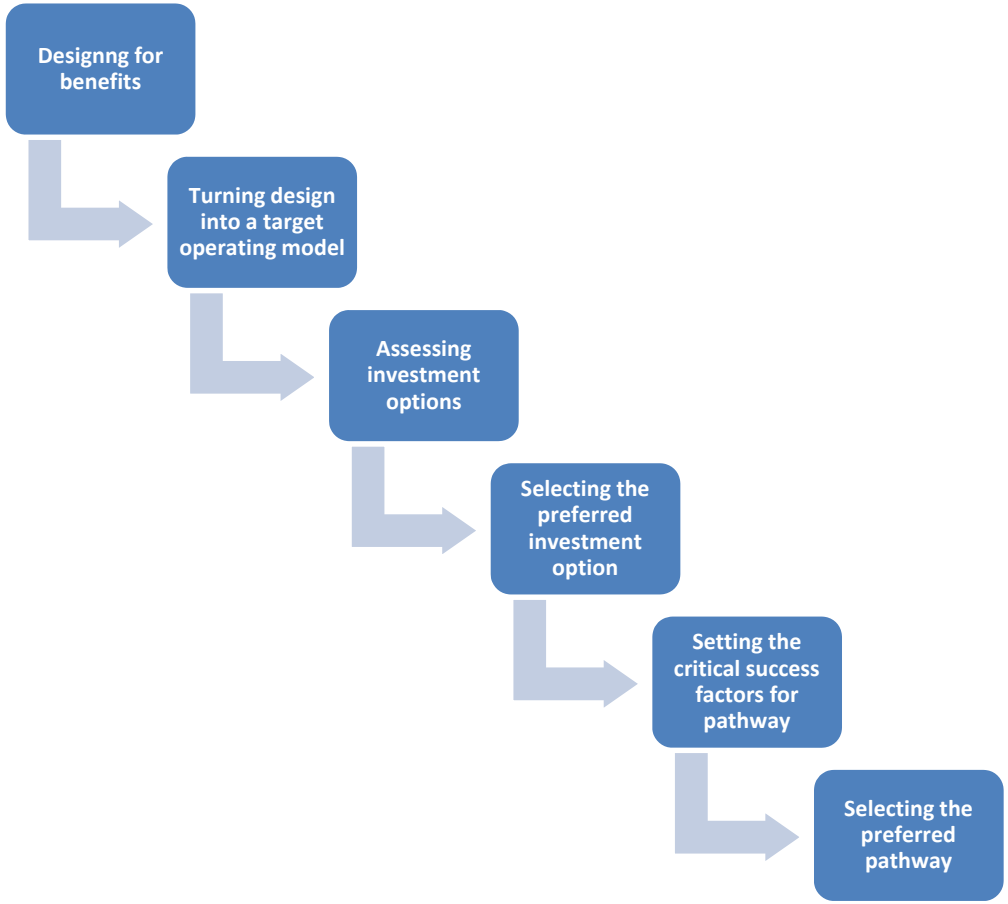
This section outlines the requirements of the land information platform and services, options for achieving the investment objectives, and updates the costs and benefits for the programme.

**Key points:**

- This investment enables second generational digital change supporting LINZ regulatory responsibilities, while being more customer-centric and enabling performance improvement across the property system. The programme design aligns to the required changes in LINZ operating model and has been informed by customer needs
- LINZ's preferred investment option offers an acceptable benefit/cost ratio, and LINZ has confirmed with Central Agencies that it remains sound
- LINZ has thoroughly evaluated two quite different delivery pathways in identifying its recommended approach. The proposed approach maintains the underlying data model and business logic, making the transition substantially less complex and risky than migrating to a new platform
- Rebuilding Landonline in an Agile manner will enable LINZ to stay customer focused while actively managing legacy technology risk
- Delivering the investment across four tranches provides Ministers with greater choice around investment bundles, and the ability for LINZ to ensure later drawdown investment proposals remain valid, to meet evolving customer and business needs
- The recommended delivery approach of rebuilding Landonline with NZ ICT resources has a lower capital cost, and realises savings in operating costs sooner, [redacted]
- Quantified risk assessment modelling shows the recommended delivery pathway will be between 33-40% cheaper than the alternative
- Operating cost provisions allow for on-going reinvestment in freshness and maintenance, to avoid technical and service obsolescence in the future.

## Approach to selecting investment options

LINZ has taken a standard approach to selecting investment options, starting with benefits to be generated. Within the preferred option, LINZ considered two pathways which were assessed against relevant critical success factors.




## Designing for benefits

Although the primary driver for investment is for business continuity, LINZ has taken a customer-focused design approach in its development of the programme through user research and collaboration. Following approval, it will undertake:

- further Agile internal capability building and organisational readiness preparation
- rapid prototyping and testing, especially for user facing systems
- detailed design, development and deployment against a product backlog.

## Turning design into a target operating model

A key part of this work was the definition of the future target operating model (TOM) which describes the externally and internally facing layers for action shown in **table 3**. LINZ is seeking to shift its external value proposition, as the technology and internal processes are progressively developed.

It will be one of the first agencies to embark on the second generation of digital change. From LINZ's perspective, this programme will be about shifting to be more unified and customer centric while undertaking its regulatory role, as opposed to the focus on first generation transformations in eliminating manual transactions and reducing its size (as LINZ did with Landonline in the early 2000s).

This programme is primarily focused on shifting the channels, processes, information and technology layers of the TOM, and some influence on the people and location layers (see **table 3**). LINZ will deliver the other shifts within baseline, and ensure it continues to meet Government's expectations for sound regulatory stewardship.

**Table 3: Current to future state of TOM layers**

| Operating model layers | | Current State | Future State | In scope for programme? |
|---|---|---|---|---|
| External | Customer | Siloed, based on responsibility and current touch points. Disjointed customer experience. | Products and services are designed to include the end to end customer experiences by segment. | No |
| | Services | Service designed for regulatory effectiveness with limited testing with external customers. | Service design approach directly informed by customer needs and regulatory effectiveness. | No |
| | Channels | Landonline limits number and performance of channels. | LINZ will use or create channels that meet customer needs first time with low effort, including through APIs. | Yes |
| Internal | Processes | Processes are aligned to LINZ's view of customer needs and regulatory inputs. | New processes include system level design and integration, co-design of services integrated within DevOps delivery of technology solutions. | Yes |
| | Information | Use of raw data, including linking it with other relevant data is not optimised. | The right data is received, governed, integrated and stored the right way. | Yes |
| | Technology | Information sharing and agility to make changes to existing technology is limited. | Technology supports the delivery channels, promotes better use of data and enables easier information sharing. | Yes |
| | People | Leadership, workforce and talent management are focussed on individual roles. | Leadership, workforce and talent management all support a customer-centric mind-set to exercising regulatory responsibilities. | No, other than change management and training |
| | Organisation | Business groups are structured based on LINZ's operations and delivery approach. | Functions are grouped to drive customer-centric services. | No |
| | Location | Survey and title operations are based in three NZ locations and support is centralised in Wellington. | Proximity to customers, service designers and developers support the service design approach and expedite the development of a high quality solution delivered iteratively. Core LINZ functions based in Wellington. | Partial – where it relates to technology |

# Assessing investment options

## Summary

Improving the technology platform (Landonline) to ensure the continuity of survey and title services, acts as the foundational constraint on shifting to the target operating model. The approach to identify and confirm the preferred investment option was:

1. The indicative business case (IBC) identified and assessed seven potential investment options. The preferred option was to offer additional services and redevelop parts of the service delivery model introducing interoperability (Option 6 in the IBC and DBC).
2. The detailed business case (DBC) revisited the shortlisted options and confirmed the preference for Option 6. Since then, improvements to Māori Land Service, State Land Register and Integrated Property Services have been de-scoped from delivery. However, they will be enabled and significantly easier to develop as a result of the programme.
3. LINZ has revisited the investment options in consultation with Central Agencies, and has confirmed Option 6 remains the preferred option.

## Options considered

**Table 4** sets out the history of options from the IBC to this programme business case (PBC). Option 6 is highlighted in light blue.

**Table 4: History of options**

| IBC options | DBC options | PBC options considered |
|---|---|---|
| 1. Base case | 1. Base case | 1. Base case |
| 2. Maintenance only | 2. Not shortlisted | 2. Not shortlisted |
| 3. Incremental improvements to service delivery | 3. Not shortlisted | 3. Not shortlisted |
| 4. Some changes to service delivery | 4. Some changes to service delivery | 4. Some changes to service delivery |
| 5. Implement interoperability and make Landonline Workspace contestable | 5. Implement interoperability and make Landonline Workspace contestable | 5. Not shortlisted |
| 6. Offer additional services and redevelop parts of the service delivery model introducing interoperability (preferred bundle) | 6. Offer additional services and redevelop parts of the service delivery model introducing interoperability (preferred bundle) | 6. Offer additional services and redevelop parts of the service delivery model introducing interoperability (preferred bundle) |
| 7. Transformation of the service delivery model including interoperability | 7. Transformation of the service delivery model including interoperability | 7. Not shortlisted |

## Selecting the preferred option

**Table 5** below provides a high level view of the investment options considered against the programme benefits described in the strategic case. A detailed table is included in Appendix D.

### Table 5: Investment Options Compared

| Goal | Modernise survey and title services | | | Reduced risk to business continuity and confidence | Incremental estimated capital cost (nominal) |
|---|---|---|---|---|---|
| Benefit | Enable improved economic wellbeing | Improved productivity | Improved ability to meet customer and government needs | Maintain continuity | |
| Option 1. Base case | Not achieved, as Landonline services will be maintained in the short team, but it will become increasingly difficult and costly to maintain over time, leading to degradation of existing services and barriers to delivering new services. | | | Not achieved, as existing risks to the system will remain. | $0 |
| Option 4. Some changes | Not achieved, as has the same challenges to develop as the base case option. While the outdated PowerBuilder programme will be code-ported to a more modern language, it will be more complex to enhance and test, and will also require a platform shift by 2026, making investment in the 'code-port' unusable. | | | Improved, creating an internet-based customer interface [redacted] | $35.2m * |
| **Option 6. Preferred** | **Achieved** | | | **Achieved** | **$106.6m (QRA 50th)** |

* Option 4 cost has not been subject to a QRA and is as modelled (consistent with DBC costing).

## Selecting the preferred pathway

Two distinct programme delivery pathways for Option 6 were developed:

- Pathway 1 involves changing to a new platform developed by [redacted]
- Pathway 2 involves keeping the data and business logic from Landonline and rebuilding it.

Cost benefit and quantified risk analysis has been undertaken for each delivery pathway. A considered approach was taken to assess both pathways to identify the most suitable for achievement of Option 6.

## Critical success factors

In consultation with Central Agencies, four critical success factors were developed with detailed specific criteria to assess the pathways. These are outlined in **table 6**.

**Table 6: Critical success factors**

| Critical success factors | Specific criteria |
|---|---|
| **Strategic direction**<br><br>How well the option meets the agreed investment objectives and integrates with other strategies, programmes and projects. | • Alignment to wider LINZ initiatives and strategic direction<br>• Alignment to other ICT initiatives, standards and strategies in government<br>• Investment in NZ ICT industry capability<br>• Share development with other Land jurisdictions outside of NZ<br>• Ease of doing business to remain among the best in the world. |
| **Solution quality**<br><br>How well the option meets business needs and service requirements, and ability to be flexible and change as customer needs change. | • Meets solution, business and user requirements<br>• Control and ownership over solution and on-going service at minimal cost (including roadmap, data, IP, rights), and our ability to effect change<br>• Impact on LINZ staff/customer titles and cadastre at least as good as current services and delivers enhancements<br>• Secure, sustainable, resilient and safe platform enabling appropriate access with effective disaster recovery<br>• LINZ ability to change and be flexible as priorities, legislation and technologies change. |
| **Delivery confidence**<br><br>How well the option is likely to be delivered given the organisations ability to respond to the changes required, and matches the level of available skills required for successful delivery. | • Ability to form and maintain strategic relationships with vendors (including vendor capability, proximity, ease of process and team integration)<br>• Implications on the LINZ operating model including degree of LINZ responsibility for System and Business Integration<br>• Viable plan to execute e.g. readiness testing, modular approach utilising "best of breed" including public cloud<br>• Trade-off between control i.e. retaining future options/ability to change and vendor confidence. |
| **Value for money**<br><br>How well the option optimises value for money i.e. the optimal mix of potential benefits, costs and risks. How well the option matches the ability of potential vendor/s to deliver the agreed scope, and is likely to result in a sustainable arrangement that optimises value for money. | • LINZ ability to scope and manage contracts, integration with the vendor and ability to influence<br>• Risk of variation as a result of scope changes post contract signing. |

## Preferred pathway assessment

Key LINZ business owners assessed the pathways against the criteria and identified a preferred pathway. This was supported by significant evaluation of key programme artefacts detailing the differences and commonalities between the two pathways.

The programme board provided a series of judgements to the ELT in support of a preferred pathway recommendation.

Based on its review of the key factors and expert advice, ELT concluded that pathway 2 to develop Landonline was its preferred way forward.

**Table 7** summarises the fit of these pathways against the success criteria detailed in **table 6**, as well as a financial comparison.

**Table 7: Delivery pathways for Option 6**

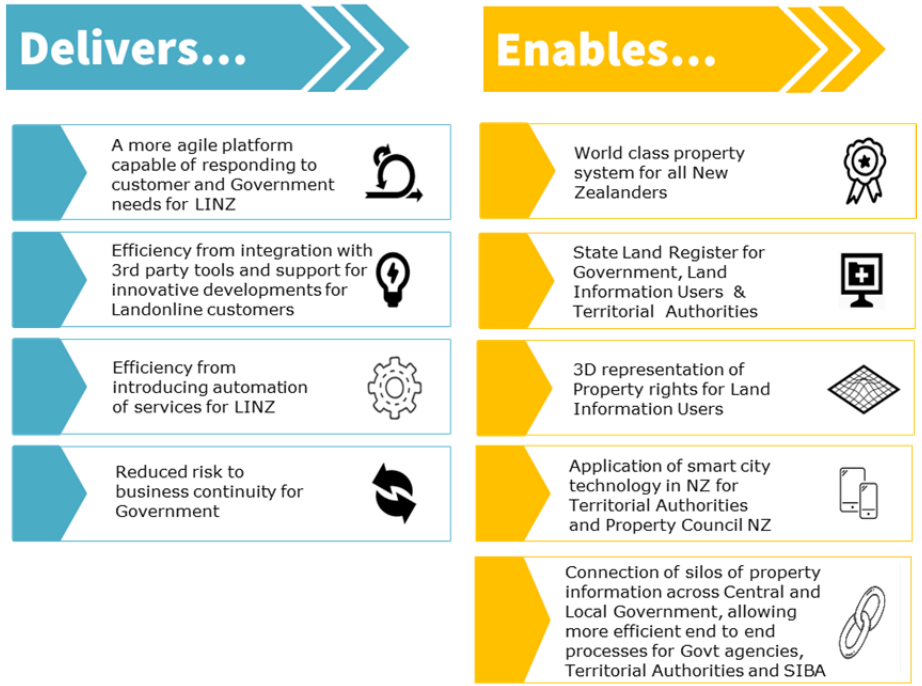
| **Assessment category** | **Pathway 1 -** [redacted]<br>Change platform | **Pathway 2 – LOLA** (preferred)<br>Develop Landonline |
|---|---|---|
| Strategic fit | Acceptable | Acceptable - stronger |
| Solution quality | Acceptable | Acceptable - stronger |
| Delivery confidence | Acceptable | Acceptable |
| Value for money (non-price) | Acceptable | Acceptable - stronger |
| Capital cost range ($m) | $180.2 - $203.5 | $106.6 - $128.2 |
| Operating cost range ($m) | $48.7 - $62.5 | $31.9 - $51.7 |
| Total incremental cost range ($m) | $228.9 - $266.0 | $138.5 - $179.9 |
| Benefit: cost ratio range (QRA 50th percentile) | 0.7 – 0.8 | 1.2 – 1.5 |

## Delivering scope

**Figure 3** sets out who is impacted by the capabilities that the programme delivers, and describes the future opportunities that are enabled (but not delivered). In developing the programme, LINZ has focused on where it can play its part (from leading to supporting) across improvements to the property system.

As the programme progresses, LINZ will be able to identify whether the mix of 'deliver versus enable' is right, particularly depending on responses from the private sector and territorial authorities. It will report to Ministers on priorities for change as part of seeking drawdowns for subsequent tranches.

**Figure 3: What the Programme will deliver and enable**




## Scope Change during programme definition phase

The following scope changes were approved by the business during the definition phase:

***Māori Land Service:*** Deferral of the Te Ture Whenua Māori legislation has placed the scope of this work on hold. This programme will be able to meet any legislative requirements from tranche 2 onwards.

***State Land Register:*** A stand-alone project within LINZ has been stood up to fully investigate requirements necessary to proceed into detailed design. This project will work with the programme as it defines its requirements.

***Integrated Property Service (IPS) initiative:*** A stand-alone project within LINZ has been stood up to undertake direct customer engagement in order to inform the requirements of an integrated property system and how property data relationships will be managed. This project will work with the programme as it defines its requirements.

***Geodetic Data Maintenance:*** Geodetic data is better maintained and managed using specialised tools by the LINZ Geodetic team. The programme will import geodetic data to support the management and maintenance of the Cadastre.

# The preferred pathway

## Roadmap

LINZ's preferred way forward is to rebuild Landonline with NZ ICT resources through a series of tranches. The first five years focuses on [redacted] stabilising the platform, rebuilding customer and staff user functionality in modular architecture and delivering identified customer improvements. During this period LINZ will continue to shift towards its target operating model and develop its team of staff and suppliers. The programme change management team will work closely with the business to understand how these operating model changes impact people and technology. Engagement, communication and education activities will be tailored accordingly.

A summary of the tranches and product roadmap is as follows:

**Tranche 1: Search and notices *(March 2019 – May 2020)***

- Build a public web search capability
- Electronically notify banks and territorial authorities for changes in ownership or mortgages
- Search customers moved off current system
- Public APIs to provide search products
- Improve LINZ productivity.

**Tranche 2: Customer improvements** *(June 2020 to November 2021)*

- Customers can upload and validate surveys
- Customers can submit land title dealings
- Move all customers off the current system
- Move back end database to cloud (upon success of proof of concept in tranche 1)
- Ability to introduce policy change or new registers.

**Tranche 3: Staff improvements** *(June 2021 to January 2023)*

- Improve staff processing
- Move all staff off the current system [redacted]

**Tranche 4: 3D and innovation** (December 2022 to November 2023)

- Implement capability to enable 3D cadastre for survey
- Public APIs to enable conveyancing and surveying work from customers' own tools
- Back end database moved to cloud (if not moved in tranche 2).

LINZ plans to begin tranche 1 following a mobilisation phase, and will seek approval from Ministers prior to embarking on tranche 1, and each subsequent tranche. From tranche 2 onwards, this programme will enable LINZ to develop:

- a state land register which will provide up-to-date digital information, for land held by Central and Local Government agencies in a single place
- Māori land register by facilitating automatic entry of records provided by the Māori Land Court into the titles register
- build a 3D dataset of buildings and infrastructure to support smart cities initiatives, and to better connect property information.

The roadmap seeks to optimise the trade-off between quick action to reduce risk, and delivering opportunities, while allowing LINZ to scale up and learn in a prudent manner. This will be achieved by doing some simpler parts early as the programme scales up, running proofs of concept, and delivering the quicker improvements for transacting customers. A more detailed description of the roadmap by tranche is covered in **table 8**. After the five year rebuild, LINZ will maintain the DevOps model to ensure solution freshness and ability to continue to meet government and customer needs.

**Table 8: Detailed description of tranches and product roadmap**

| | Mobilisation (Oct 2018 – Mar 2019): Readiness for Implementation | Tranche 1 (Mar 2019 – May 2020): Search and notices | Tranche 2 (Jun 2020 – Nov 2021): Customer improvements | Tranche 3 (Jun 2021 – Jan 2023): Staff improvements | Tranche 4 (Dec 2022 – Nov 2023): 3D and innovations |
|---|---|---|---|---|---|
| Activities | • Procurement strategy and plan<br>• Capability transition plan<br>• Recruitment of resources<br>• Contract Management & Relationship frameworks<br>• Methodology and tools<br>• Physical location set up<br>• Detailed tranche 1 plan<br>• Establish programme governance & leadership<br>• Agile training<br>• Gateway 3 and baseline IQA<br>• Single stage business case<br>• 3rd party software procurement | • Build new website for public and customers<br>• Build new product search API for customers<br>• Build notice to mortgagee with banks<br>• Build notice of sale with territorial authorities | • Improve customer titles dealings<br>• Improve customer survey submission<br>• Improve territorial authority certification<br>• Improve validation of survey plans<br>• Work with survey software providers | • Improve staff titles processing<br>• Improve staff survey processing<br>• Replace back-end automated processing<br>• Complete 3D cadastre specification | • Move backend database to the cloud<br>• Implement 3D cadastre<br>• Implement survey and title APIs |
| Key outcomes | Readiness to begin implementation:<br>• On-boarded capability for tranche 1<br>• Sufficient progress on operating model activities, including:<br>- Customer, service and channels management defined<br>- Cross-LINZ working group formed<br>- Product Owners identified<br>- Defined activities to design new functions and processes | • The public can now obtain LINZ products in real time<br>• Registered customers can obtain real time products more easily and through APIs<br>• Notice of Sale service, to inform territorial authorities electronically<br>• Notice to Mortgagee service, to inform banks electronically | • Survey customers can upload and validate surveys<br>• Titles customers can submit land titles dealings<br>• Territorial authorities can certify<br>• All customers on new system and customer access for Landonline removed, [redacted] | • All staff moved to the new system<br>• The PowerBuilder access to Landonline can be removed, resolving technology risk | • Backend database moved to the cloud<br>• Survey and title customers can interact in real time through their own software |

| | Mobilisation (Oct 2018 – Mar 2019): Readiness for Implementation | Tranche 1 (Mar 2019 – May 2020): Search and notices | Tranche 2 (Jun 2020 – Nov 2021): Customer improvements | Tranche 3 (Jun 2021 – Jan 2023): Staff improvements | Tranche 4 (Dec 2022 – Nov 2023): 3D and innovations |
|---|---|---|---|---|---|
| Key outcomes for customers | | • Conveyancer time saving for notice to mortgagees, and notices of sale<br>• Easier searching of property information<br>• Search-only users have reduced support calls and time taken per transaction | • Reduced time spent repeating activities for title transactions<br>• Reduced time spent repeating activities for surveys<br>• Reduced requisition rate for surveyors | | • Reduced time spent interacting with LINZ<br>• Enabled innovation through the use of 3D cadastral data |
| Key outcomes for the Crown | | • Confidence in LINZ's ability to deliver | • Ability to implement emergent policy with customer-facing change | • Ability to implement emergent policy with staff-facing change<br>• Continuity of service risk resolved | • Increased availability, quality, currency and usability of information |
| Key outcomes for LINZ | | • Improved LINZ productivity<br>• Reduced e-search call volumes<br>• Reduced manual search processing | • Reduced customer support burden<br>• [redacted] | • Mitigation of technology risk<br>• Title process efficiencies<br>• Improved business reporting<br>• Greater automation of title transactions | • 3D cadastre implemented |

## Approach to develop pathways

Maintaining the underlying data model and business logic[4] makes the transition substantially less complex and risky than migrating to a new platform, from a technology point of view. As a result, managing co-existence of new and old can be focused at the application layer, with APIs linking to the database and its stored procedures. The current components of Landonline will be maintained and supported (as far as they can) until the new functionality is delivered, and the last parts will be retired around four years after the programme starts, unless security or software end-of-life considerations need to be prioritised to provide continuity of service.

From a change management point of view, customers and staff will have a different user experience and interfaces. LINZ will provide most of these interfaces, and will also expose APIs where 3rd parties can provide value-added services. For surveyors, they will be able to generate and validate survey plans before lodging with LINZ, reducing the cost and time of rework compared to today. LINZ is confident that the market for 3rd party survey and title support products is emerging, and by providing basic functionality and APIs, it can nudge developers to accelerate release of products. It will maintain its existing international relationships, including with the Land Title and Survey Authority of British Columbia, whom it has worked with over the last two years. While unlikely to result in revenue generation, it will provide opportunities to share thought leadership, roadmaps, skills and intellectual property.

While LINZ will retain ownership of the underlying IP underpinning the solution, LINZ intends to make this available for reuse in New Zealand as part of the Integrated Property Services initiative and broader property system initiatives. LINZ also remains open to sharing its IP, knowledge, practices and lessons learned in collaboration with other land administration jurisdictions and as part of the New Zealand Government-to-Government Partnerships Office (G2G Know-How) offering.

The system has a modular design and a flexible development methodology and will follow the LINZ Enterprise Architecture principles. The modular design (including separation of concerns via API) and development methodology chosen, allows LINZ to deal with change. Blockchain has been specifically considered and, while not in the immediate plan, falls in the non-repudiation part of the system and could be incorporated in a future tranche.

[4] Business logic refers to the code in the system that makes decisions based on the real world business rules, as opposed to the code in the system that deals with infrastructure, presentation, or non-functional elements.

# Programme benefits and costs

## Benefits of investment

Investing in the preferred investment option for this programme will provide the continuity of service New Zealanders expect from their property information system of record. It will also deliver incremental non-monetary and monetary benefits to users over the next five years, and enable Government and customers to implement change in a much more responsive way than can be delivered today.

These benefits contribute to economic wellbeing by providing continuity of service—without which there would be significant economic damage.

## Incremental non-monetary economic benefits

Maintaining service continuity for New Zealanders to transact property and raise finance is absolutely critical to a well functioning economy. There is high confidence in the integrity of property ownership. New Zealanders have approximately $1.079 billion (rbnz.govt.nz/statistics/key-graphs/key-graph-house-price-values) in residential housing stock alone, and confidence in their ability to transact this wealth underpins the New Zealand economy. Banks accept title to land as security for a mortgage or personal loan, which can be used to leverage other ventures and economic activity. The high level of confidence in property rights is supported by the low level of compensation paid to the public for claims against title transactions.

The state guarantee of title is estimated to save property buyers more than $246 million each year they would otherwise incur in title insurance costs.

A full table is included in Appendix E.

## Incremental monetary economic benefits

The quantified economic benefits are largely consistent with what has been used for the DBC – with the majority relating to direct time savings which accrue to users of survey and title services. The main difference is that LINZ staff efficiency savings (which made up a very minor portion of the total quantified benefits[5]) are no longer included. LINZ staff efficiency savings will be investigated and considered at a later stage, and if appropriate will be included during future single stage business case submissions.

The assumptions used to underpin the benefits modelling have been developed based on:

- the February 2014 customer survey sent to all Landonline users
- interviews done as part of the external stakeholder engagement process, including interviews with cadastral surveyors, conveyancers, banks, and territorial authorities
- Landonline statistics on the number of transactions and requisition rates
- NZIER sourced transaction volume forecasts and predicted volume forecasts beyond the NZIER forecast period
- interviews with LINZ subject matter experts.

The assumptions and inputs used to underpin benefit modelling are detailed in Appendix F. **Table 9** displays the present value of whole of life benefits that would be delivered under each pathway. The small difference between the two relates to a timing difference in the benefit realisation profile.

[5] For pathway 2, these make up 5% - 6% of the total quantified benefits(~$7m)

**Table 9: Present value of the range of whole-of-life quantified economic benefits**

| Benefit Area | Pathway 1 | | Pathway 2 | | DBC* | |
|---|---|---|---|---|---|---|
| | Total PV of Benefits ($m's) | | | | | |
| | Low | High | Low | High | Low | High |
| Better interface with Customers | 35.8 | 46.8 | 34.9 | 45.5 | 27.5 | 34.0 |
| Reduced survey requisition rate | 1.2 | 1.6 | 1.1 | 1.5 | 1.3 | 1.5 |
| Notice of sale direct to territorial authorities | 33.1 | 38.2 | 39.3 | 45.4 | 19.2 | 23.7 |
| Notice of mortgage registration direction to lending institutions | 42.8 | 49.3 | 42.0 | 48.4 | 23.4 | 28.6 |
| Web-based search | 1.9 | 1.9 | 2.0 | 2.0 | 3.3 | 3.9 |
| Total | 114.8 | 137.8 | 119.4 | 142.9 | 74.7 | 91.7 |

*Note that the pathway 1 and 2 benefits used the current Treasury ICT discount rate of 7%, whereas the DBC used the 2014 Treasury discount rate of 9.5%. The DBC benefits are therefore comparably understated.

# Development of the cost models

## Background

The cost models for each pathway have been developed from the tranches and product roadmap. They are underpinned by detailed resource and technical transition plans.

There are fundamental differences between the two pathways with one being more arms-length development, and one integrated into LINZ. For each pathway, the programme has worked to apply consistency for programme-wide activities e.g. change management. A conservative approach has been applied to the development of the cost models. The common elements are:

- the programme has been broken into four main tranches with a further tranche to deal with enhancements
- start with small blocks of work giving direct value to customers and enabling LINZ to build capability, confidence and achievement of productivity goals
- do proofs of concept and identify solution fall-backs early
- development and testing effort is built around respective team structure and overheads
- retain existing concepts and terminology from Landonline where possible, including careful definition for migration to [redacted] data model in pathway 1, and retaining the data model and underlying business logic in pathway 2
- benchmarking costs against development parameters for other projects, and overhead against other NZ government projects
- adopting a cautious approach to validation of inputs
- identifying required personnel types (LINZ, contractor and capability partner), along with the number of FTEs and expected utilisation by project phase and stage
- identifying non-personnel costs, incremental to those incurred in baseline
- commissioning an independent quantitative risk assessment to model risk and sensitivities for each pathway.

Further details on the pathway 2 cost assumptions are detailed in Appendix G and [redacted] cost assumption in Appendix L.

## Incremental modelled costs

Costs are considered incremental to the LINZ baseline expenditure and are estimated without provisioning for contingency (which has been accounted for during the quantitative risk assessment process—discussed in the Quantitative Risk Assessment section). Costs are reported in two periods:

- *Programme period*: Estimated costs over the five year (pathway 1) and 5.2 year (pathway 2) programme implementation period. The programme period includes mobilisation as well as the programme build phase
- *Whole-of-life*: Estimated costs over the 12 year forecast period for the business case. This takes into consideration the life of the programme asset (assumed as 10 years) which commences two years into the mobilisation/build phase.

Costs in this section are in nominal terms and do not include depreciation or capital charge. The Financial Case considers the affordability of the proposed investment, including the impact on costs of the capital charge and depreciation. **Table 10** shows a breakdown of the programme costs by capital and operating expenditure. Hosting costs reflect the incremental costs and financial benefit of LINZ moving from its current service provider [redacted].

**Table 10: Incremental programme period modelled costs for two pathways**

| Programme period costs ($m) | Pathway 1 | Pathway2 |
|---|---|---|
| **Capital expenditure** | | |
| System build | [redacted] | 37.5 |
| External system implementation resourcing | [redacted] | 1.5 |
| LINZ direct personnel cost for build | [redacted] | 61.3 |
| Assurance costs | [redacted] | 4.5 |
| **Total incremental capital expenditure** | **169.6** | **104.9** |
| **Operating expenditure** | | |
| Operations/Maintenance | [redacted] | 2.6 |
| Hosting | [redacted] | (1.9) |
| Training, change management & engagement | [redacted] | 10.8 |
| Ongoing LINZ support, licenses and software | [redacted] | 0.6 |
| **Total incremental operating expenditure** | **20.9** | **12.1** |
| **Total incremental programme period costs** | **190.5** | **117.0** |

**Table 11** shows the incremental whole of life modelled costs over the 12 year period, with pathway 1 displaying incremental costs of $201.5m, and pathway 2 with a 29% reduced spend of $142.8m.

**Table 11: Incremental whole of life modelled costs for two pathways**

| Whole of life costs ($m) | Pathway 1 | Pathway 2 |
|---|---|---|
| **Capital expenditure** | | |
| System build | [redacted] | 37.5 |
| External system implementation resourcing | [redacted] | 1.5 |
| LINZ direct personnel cost for build | [redacted] | 61.3 |
| Assurance costs | [redacted] | 4.5 |
| **Total incremental capital expenditure** | **169.6** | **104.9** |
| **Operating expenditure** | | |
| Operations/Maintenance | [redacted] | 32.1 |
| Hosting | [redacted] | (11.9) |
| Training, change management & engagement | [redacted] | 11.9 |
| Ongoing LINZ support, licenses and software | [redacted] | 5.8 |
| **Total incremental operating expenditure** | **31.9** | **38.0** |
| **Total incremental whole of life costs** | **201.5** | **142.8** |

# Quantitative Risk Assessment

The modelled costs of both pathways were subject to a Quantitative Risk Assessment (QRA). The objective of the QRA process was to develop a picture of the potential impact that risk could have on the costs of the investment (both positive and negative). The QRA quantifies the probability of occurrence and the potential impact of key risks.

## Risks quantified

The following risks were identified and used in the QRA exercise. The uncertainty in the cost drivers affected by these risks was first explored by 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 were then captured. These are summarised as:

- scope uncertainty
- implementation duration uncertainty
- resource rate uncertainty (for internal LINZ, contractor and capability partner)
- uncertainty over the mix of resource types (internal LINZ versus contractor versus capability partner)
- on-going costs to support the new system
- uncertainty as to when the Landonline hosting and maintenance costs cease.

The detailed description of the risks, key assumptions and inputs are in Appendix H (pathway 2) and Appendix M (pathway 1).

## Relative significance of risks

The key risks that have the most significant impact on capital costs under the QRA are represented graphically and in order of relative significance in **figures 4 & 5**. For both pathways, programme duration and the resource mix (permanent, contract or capability partner) are the most significant cost drivers.

**Figure 4: Pathway 1 capital cost key risk drivers**

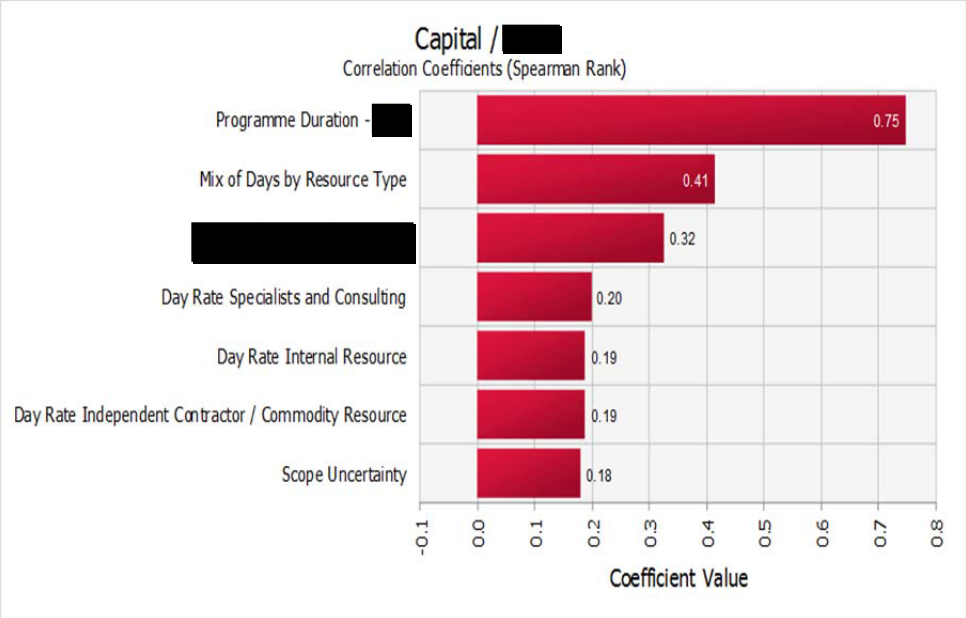
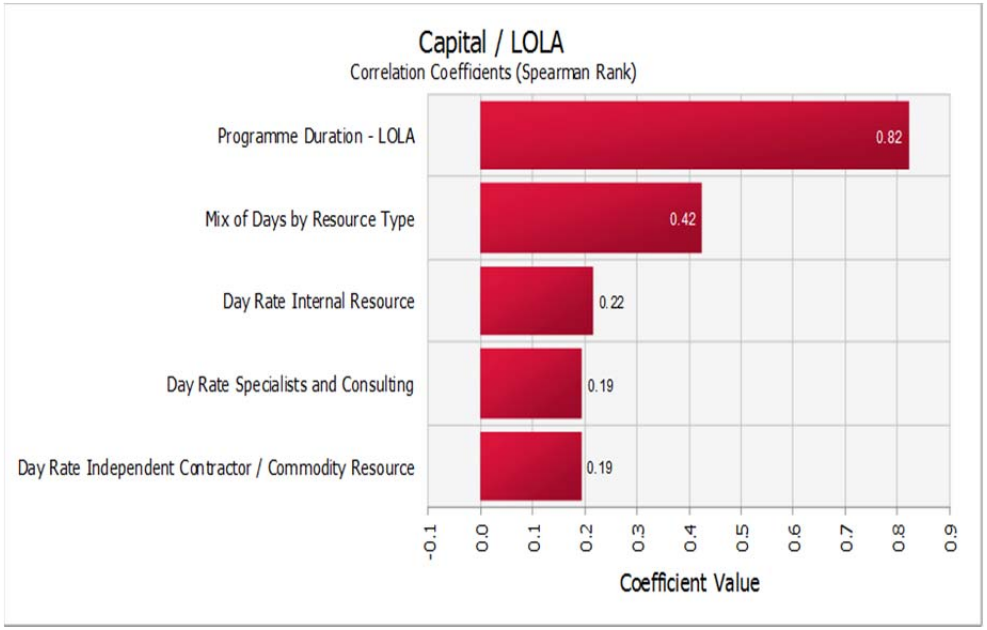


**Figure 5: Pathway 2 capital cost key risk drivers**




## Summary of the cost range

The results of the QRA relate to whole of life nominal costs at the 50th and 85th percentile cost points. The QRA 50th percentile has been adopted as the expected/most likely programme cost with the QRA 85th percentile used as the cost including contingency. These cost ranges have been used to inform the proposed funding delegations for programme budgeting. **Table 12** displays the results of the QRA and the movement in both capital and operating costs between the 50th and 85th percentile cost points.

LINZ considers the resulting level of cost contingency (16% for pathway 1, and 30% for pathway 2) is appropriate for the programme risk profile, with the difference between the pathways reflecting the difference in delivery models (e.g. fixed firm price for pathway 1 vs. DevOps for pathway 2) and the greater amount of time spent investigating pathway 1.

**Table 12: Quantitative risk assessed whole of life cost range**

| Expenditure category ($m) | Modelled cost | Expected cost *(QRA 50th percentile)* | Cost including contingency *(QRA 85th percentile)* | Contingency % *(between 50th & 85th percentile)* |
|---|---|---|---|---|
| **Pathway 1 - [redacted] Capital Build** | | | | |
| **Whole of life costs** | | | | |
| Capital expenditure | 169.6 | **180.2** | 203.5 | 13% |
| Operating expenditure | 31.9 | **48.7** | 62.5 | 28% |
| **Incremental whole of life programme costs (excl. capital charge & depreciation)** | 201.5 | **228.9** | 266.0 | 16% |
| **Pathway 2 – LOLA Capital Build** | | | | |
| **Whole of life costs** | | | | |
| Capital expenditure | 104.9 | **106.6** | 128.2 | 20% |
| Operating expenditure | 38.0 | **31.9** | 51.7 | 62% |
| **Incremental whole of life programme costs (excl. capital charge & depreciation)** | 142.8 | **138.5** | 179.9 | 30% |

## Benefit cost ratio

The benefit cost ratio (BCR) expresses the ratio of the monetary benefits of a project relative to its monetary costs (expressed in present value terms). The higher the BCR, the greater the marginal economic benefits of the investment option relative to its costs. A BCR of greater than one indicates that the marginal quantitative economic benefits of the investment exceed the marginal quantitative costs.

The BCR analysis has been completed using a discounted risk-adjusted whole-of-life cost over and above the 'do nothing' option.

**Table 13** displays the benefit cost ratio for both pathways, noting that the pathway 1 option produces a benefit cost ratio of less than one at the 50th percentile for both the low and high benefit range.

**Table 13: Benefit cost ratio for pathway 1 and pathway 2**

| Benefit cost ratios | Pathway 1 - [redacted] Capital Build | | | Pathway 2 - LOLA Capital Build | | |
|---|---|---|---|---|---|---|
| | No QRA | QRA 50th percentile | QRA 85th percentile | No QRA | QRA 50th percentile | QRA 85th percentile |
| **Benefits** | | | | | | |
| Present value whole of life benefits (high) ($m) | 137.8 | **137.8** | 137.8 | 142.9 | **142.9** | 142.9 |
| Present value whole of life benefits (low) ($m) | 114.8 | **114.8** | 114.8 | 119.4 | **119.4** | 119.4 |
| **Costs** | | | | | | |
| Present value whole-of-life costs ($m) | 152.8 | **168.7** | 187.9 | 101.2 | **98.5** | 120.4 |
| **Benefit cost ratio (against do nothing)** | | | | | | |
| Benefit cost ratio (high) | 0.9 | **0.8** | **0.7** | 1.4 | **1.5** | **1.2** |
| Benefit cost ratio (low) | 0.8 | **0.7** | **0.6** | 1.2 | **1.2** | **1.0** |

# THE COMMERCIAL CASE

## Sourcing the services and products required for delivery

This section outlines the need for support from the marketplace for the recommended delivery pathway.

**Key points:**

- Most of the programme procurement is for people and professional services. Market analysis confirms the resource needs can be accommodated
- The need for Agile expertise and capability requires a combination of LINZ staff, contractor and capability partner expertise
- All procurement will be consistent with the Government *Rules of Sourcing*, and LINZ will source from AoG and GCDO Marketplace solutions where possible
- While contractual commitments to vendors are intended to be tranche by tranche to avoid vendor lock-in and allow for broad ICT market involvement, the procurement strategy will facilitate programme continuity and retention of knowledge and IP
- Supplier and contract management is key for success, and frameworks will be established consistent with MBIE's *Significant Service Contract Framework*
- The programme will build LINZ's commercial capability to enable successful performance over the life of the programme
- LINZ may procure some aspects of the solution from 3rd party suppliers, where market capability and capacity provides good choice and on-going innovation.

## What services are required

The majority of programme spend during the build phase is for resourcing LINZ staff, contractor, capability partner and professional services.

LINZ proposes to procure and manage the following services and capabilities:

- capability partner(s) with demonstrable depth in required Agile skillsets and programme delivery e.g. Release Train Engineer and Scrum Masters)
- specific consulting and advisory services including assurance, legal, communications, technical advice
- software, tools, cloud infrastructure including [redacted], delivery/management support tools and APIs
- LINZ contingent labour—independent contractors or consultants directly engaged by LINZ such as developers, testers, Agile experienced project managers, stream leads
- LINZ staff roles e.g. Product Owners, Security Analyst, Product Manager, Finance Business Partner, Procurement Manager, subject matter experts, trainers, System Architect Lead
- on-going management and transition of existing Landonline commercial arrangements, e.g. Datacom (ITMS and Hosting)
- solutions for Dataset Creation and Diagram Generation services to surveyors
- corporate support capabilities (via LINZ corporate) such as human resources, legal, facilities, procurement, desktop, and finance.

## Procuring services

### Sourcing strategy and context

There will be significant effort required for LINZ to successfully establish an Agile delivery model and business operating model. New ways of governing, reporting, making decisions and capabilities will be required.

LINZ recognises that success of an Agile delivery programme will be heavily dependent on appropriately skilled team members. LINZ plans to progressively establish its capability in Agile delivery by starting with a small core of key LINZ staff, and relying on contractor and capability partners for resource augmentation, while it builds in-house capability over the programme.

Given that implementing Agile at scale is new for LINZ, the programme has commissioned a market scan from market participants experienced in partnering in Agile delivery. The programme has also engaged with Customs and Ministry of Social Development (MSD) about their experience and findings from moving to Agile.

The approach to sourcing and programme ramp-up reflects this analysis and feedback. A gradual step-up of Agile capability and opportunity to 'learn by doing' will take place in tranche 1, prior to the more technically challenging aspects of the programme being addressed in later tranches.

The Wellington Agile market is continually growing in response to demand and compared to the size and number of other Agile initiatives, LINZ has been advised that its demand profile for key Agile skills is measured and relatively minor. Market analysis indicates the size and gradual ramp-up of the programme development teams can be accommodated within the Wellington market. Tranche 1 development starts small, peaking in June 2021 with six multi-disciplinary development teams each with eight team members.

LINZ intends to use a small group of capability partners on a tranche by tranche basis to provide specialist and professional services to the programme. LINZ is aware of the importance of maintaining momentum, continuity and retention of IP. Effective supplier relationship management and good use of AoG panel arrangements and the GCDO Marketplace solution, will enable LINZ to achieve this without repetitive and time consuming procurement activities. LINZ does not intend to outsource the overall integration responsibilities.

3rd party providers will be contracted to provide some aspects of the programme solution, e.g. Dataset Creation and Diagram Generation products.

LINZ is aware that risk sharing and incentive models can be successful with capability partners within a scaled Agile environment, however outcome-based contracting can be difficult when a delivery path is inherently iterative.

LINZ expects stand-up and mobilisation to take five months (October 2018 to February 2019) prior to being ready for implementation of tranche 1.

**Table 14** outlines the key procurements required within each tranche of the programme.

## Proposed procurement approach

The key procurement principles for the mobilisation phase and tranche 1 include:

- all procurement will comply with LINZ's procurement policy and the Government Rules of Sourcing with use of AoG contracts, common capability contracts, panel providers and GCDO Marketplace solution preferred
- LINZ will avoid supplier lock-in by aligning contract terms to tranche 1 work packages
- LINZ will aim to achieve commercial arrangement(s) with selected service provider(s) that appropriately address quality, time, value for money, risk sharing, competitiveness and benefits
- the programme will develop procurement approaches for specialist resourcing requirements as required
- resourcing to support augmentation of LINZ permanent and backfill roles will be consistent with LINZ HR policy and practice
- procurement planning will reflect the programme investment objectives
- an overarching procurement strategy for the programme is in place, and a procurement strategy and plan has been prepared for the mobilisation phase.

## Commercial and procurement capability building

Programme procurement, commercial and finance functions will be under the leadership of the LINZ CFO, part of the Corporate Finance, Procurement and Facilities team. During programme mobilisation, LINZ will fill permanent procurement and finance business partner roles, and establish and transition across to the contract management framework.

**Table 14: Key procurement requirements by tranche**

| Timing | Category | Skills/Services/Technology to be Procured |
|---|---|---|
| **Mobilisation and Tranche 1** | Agile Capability Partner | • PMO, higher level Agile, scrum master & Agile squad roles |
| | Consultancy | • Agile Consultant |
| | Contractor Resources | • PMO and Agile squad member roles |
| | Technology/Solutions | • Business Rules Solution (COTS)<br>• Dataset Creation/Diagram Generation (3rd Party)<br>• Project Management & Testing Tools etc. (COTS/Cloud)<br>• Cloud System Infrastructure ([redacted])<br>• Cadastre and Landonline database cloud migration POC's |
| | Transition | • Datacom strategic supplier review |
| **Tranche 2** | Agile Capability Partner | • PMO, higher level Agile, scrum master & Agile squad roles |
| | Contractor Resources | • PMO and Agile squad member roles |
| | Technology/Solutions | • Cloud System Infrastructure ([redacted]) |
| | Transition | • Datacom strategic supplier management |
| **Tranche 3** | Agile Capability Partner | • PMO, higher level Agile, scrum master & Agile squad roles |
| | Contractor Resources | • PMO and Agile squad member roles |
| | Technology/Solutions | • Cloud System Infrastructure ([redacted]) |
| | Transition | • Datacom strategic supplier management |
| **Tranche 4** | Agile Capability Partner | • PMO, higher level Agile, scrum master & Agile squad roles |
| | Contractor Resources | • PMO and Agile squad member roles |
| | Technology/Solutions | • Cloud System Infrastructure ([redacted]) |
| | Transition | • Datacom strategic supplier management |

## Supplier Contract and Relationship Management

The programme will develop a contract management strategy consistent with management of Agile contracting/relationships and the MBIE *Significant Service Contract Framework (SSCF).*

The following principles will be applied. We will:

- work with our 3rd party provider(s) to undertake formal and informal reviews of the service and delivery, and action any review outcomes
- work with our 3rd party provider(s) to understand obligations, continuously identify and manage issues and risks (including health & safety)
- regularly engage with our 3rd party provider(s) to enable us to identify opportunities and make changes to the service to incorporate value, enhancements and build in innovations
- ensure our leaders are briefed and/or engaged in relevant meetings with the provider(s)
- work with our 3rd party provider(s) to ensure their health & safety practices and business continuity and disaster recovery plans are able to respond to events
- record and respond to suggestions or concerns raised by our 3rd party provider(s).

As part of completing the tranche 1 single stage business case, a tranche 1 contract management plan will be prepared. The programme will consult with MBIE (responsible agency for the SSCF) and LINZ Corporate Procurement, in drafting the contract management strategy and plan for implementation.

During programme implementation, LINZ remains highly reliant on Datacom as its IT enterprise services provider and outsource provider for Landonline operations/maintenance services. The programme will work closely with the LINZ Information Strategy and Delivery team (IS&D) for effective relationship and contract management of Datacom during this transition.

# THE FINANCIAL CASE

## Affordability and funding

This section outlines the programmes affordability, [redacted] and requirement for capital funding for the preferred pathway 2. For comparative purposes, information on pathway 1 is contained in Appendix L: Financial comparison of pathway 1 [redacted] and pathway 2 (LOLA).

**Key points:**

- Survey and title services operate on a full cost-recovery model, including the recovery of associated depreciation and capital charge. Costs are recovered through fees paid by Landonline users (mainly cadastral surveyors and conveyancers, operating on behalf of property purchasers/sellers, and land developers). User fees were last increased in 2011
- Fee setting is policy led and requires extensive consideration. LINZ proposes to commence a fee review to consider options including the wider policy implications of changes for individual fee payer groups, and report back to Ministers in August 2019.
- Survey and Title fee income fluctuates with activity in the property market, with fee revenue being $72 million (2016/17) and $69 million (2017/18 provisional accounts)
- [redacted]
- LINZ Budget 18 Capital Bid forecast a capital injection of $103.0 million ($135.9 million less LINZ accumulated depreciation of $32.9 million). To minimise the demand for and cost of capital, LINZ is proposing a repayable Crown Capital Injection with the programme requiring $95.4 million at the 85th percentile, i.e. $7.6 million less than the Budget 18 Bid. [redacted]

## Funding and affordability overview

**Table 15** summarises the funding and affordability aspects of the preferred investment option.

**Table 15: Summary of funding and affordability aspects**

| Category | Preferred investment option |
|---|---|
| **Main capital funding source** | Landonline depreciation funding and Crown capital injection (repaid) |
| **Expected whole of life cash cost** *(QRA 50th percentile)* | $156.7 million<br>• Capex: $106.6m<br>• Opex: $31.9m<br>• Capital charge: $18.2m |
| **Whole of life cash cost including contingency** *(QRA 85th percentile)* | $204.9 million<br>• Capex: $128.2m<br>• Opex: $51.7m<br>• Capital charge: $25.0m |
| **Impact of investment** [redacted] (between QRA 50th percentile and QRA 85th percentile) | Total whole of life costs [redacted] of $156.7m - $204.9m [redacted] |
| **Impact on the Crown** (QRA 85th percentile) | Repayable Crown capital injection of $95.4m<br>Period of Crown capital drawdown: Year 2 - 7<br>Timeframe to repay from initial drawdown: 10 years |

### Funding constraints

The funding constraints of the investment relate to both:

1. the amount of Crown capital funding that LINZ will be requesting (noting that LINZ has $32.9 million of LINZ capital to contribute); and

[redacted]

## Survey and title 3rd party fee levels

[redacted]

Survey and title services operate on a full cost-recovery model including the recovery of associated depreciation and capital charge through fees paid by Landonline users (mainly cadastral surveyors and conveyancers, operating on behalf of property purchasers/sellers and land developers). Fees for survey and title services are periodically reviewed based on the level of the survey and title memorandum account balance. LINZ is required to set fees by Order in Council and it is published in its regulations. Typically, a fees and charges review would take 6-12 months, and subject to direction, LINZ intends to report to Ministers in August 2019 on options and implications.

LINZ has a fees and charges governance committee in place, to review and advise on the appropriate level for survey and title 3rd party fees in order to fully cost recover, as well as to align to when users will receive the quantified benefits associated with the investment. [redacted]

## Funding for capital expenditure

LINZ has $32.85m of capital funding available to contribute towards the programme. This is primarily sourced from accumulated Landonline depreciation funding. The capital funding shortfall is proposed to be sourced via a repayable Crown capital injection. As large scale IT projects are recommended to be provisioned for at the 85th percentile, LINZ's funding request is also at the 85th percentile (consistent with advice from Treasury).

The details of the Crown capital injection are displayed in **table 16**, noting that the Crown capital injection is forecast to be repaid within 10 years (from the date of the initial drawdown). The total Crown capital injection required is also displayed, noting a $95.4 million Crown capital funding requirement.

### Programme capital Budget Bid 2018

LINZ submitted a bid as part of Budget 18 for a Crown capital injection of $103.0 million. This was agreed as a repayable capital injection subject to Cabinet agreement to the business case. The Crown capital requirement is $7.6 million less than the $103.0 million indicated in the Budget bid.

### Annual phasing of pathway 2 Crown capital injection and repayment funds

**Table 17** details the estimated annual phasing of the $95.4 million Crown capital injection, indicating that the first capital injection drawdown will not be required until year 2. The repayment of the Crown capital injection will be repaid over 4 years post the last Crown capital drawdown in year 7.

LINZ will utilise the $128.2 million of depreciation funding (as this becomes available each year) in order to repay the Crown capital injection. This means that at the end of its 10 year life, LINZ will be left with the $32.9 million of original Landonline depreciation funding for future capital investment.

**Table 16: Capital funding required at 85th percentile**

| **Capital Funded by the Crown at QRA 85th percentile ($m)**<br>*over 12 year whole of life* | **Preferred investment option** |
|---|---|
| **Based on a repaid Crown Capital injection** | |
| ***Capital injection required*** | |
| Capital requirement *(at 85th percentile cost)* | 128.2 |
| **minus**: available LOL depreciation | (32.9) |
| **Crown capital injection required** | 95.4 |
| ***Budget 18 Capital Bid*** | |
| Budget 18 Capital Bid | 135.9 |
| **minus**: available LOL depreciation | (32.9) |
| Crown capital injection requested | 103.0 |
| **Funding shortfall (-) or funding contingency (+)** | 7.6 |
| ***Details of Crown Capital loan*** | |
| *Period of Crown capital drawdown(Years)* | Year 2 - 7 |
| *Timeframe to repay from initial drawdown* | 10 Years |
| *Capital charge cost* | 25.0 |

**Table 17: Annual phasing of Crown capital injection and repayment**

| Whole of life 85th percentile cost ($m) | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Y11 | Y12 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Funding requirement for capital expenditure** | | | | | | | | | | | | | |
| Incremental capital expenditure | 19.0 | 18.2 | 22.7 | 23.0 | 20.9 | 12.2 | 12.2 | - | - | - | - | - | 128.2 |
| **Minus** available LINZ capital | (22.7) | (3.7) | (3.5) | (3.0) | - | - | - | - | - | - | - | - | (32.9) |
| **Crown capital injection required** | **-** | **10.8** | **19.3** | **20.0** | **20.9** | **12.2** | **12.2** | **-** | **-** | **-** | **-** | **-** | **95.4** |
| Depreciation | - | 3.4 | 5.7 | 8.2 | 10.8 | 12.6 | 14.6 | 14.6 | 14.6 | 14.6 | 14.6 | 14.6 | 128.2 |
| **Repayment of Crown capital injection** | - | - | - | - | - | - | - | 55.2 | 14.6 | 14.6 | 10.9 | - | **95.4** |

## Indicative capital funding required by tranche

While the details of the capital funding requirements for pathway 2 will be outlined by tranche in future SSBC's, **table 18** gives an indicative view of expected capital funding requirements for each of the four tranches (at the 85th percentile cost point). Note that this view will be further refined during each SSBC submission.

**Table 18: Indicative capital expenditure by tranche for pathway 2**

| Capital funding required by tranche | TOTAL ($m) |
|---|---|
| **Pathway 2 capital expenditure** | |
| Tranche 1 | 35.0 |
| Tranche 2 | 33.3 |
| Tranche 3 | 38.7 |
| Tranche 4 | 21.1 |
| **Total capital expenditure** | **128.2** |

## Funding for operating expenditure

[redacted]

### Impact of funding programme with a repayable Crown capital injection

[redacted] Note that under a repayable Crown capital injection, as proposed, the capital charge payment is significantly reduced compared to if LINZ retained the capital and did not repay the injection. Consistent with DevOps practice and to avoid technical and service obsolescence in the future, budgeted operating cost provisions allow for on-going reinvestment in system freshness and maintenance.

### Proposed programme expenditure delegations

After consultation with the Treasury, LINZ proposes three levels of delegation in respect of authorising programme expenditure, reflecting the outcome of QRA modelling. The proposed delegated whole of life cost level is exclusive of both capital charge and depreciation.

It is proposed that:

- joint Ministers (Minister of Finance, Minister for Land Information and Minister for Government Digital Services) have delegated authority to approve programme whole of life expenditure between the 50th percentile ($138.5 million) and the 85th percentile ($179.9 million), as costed in **table 12**.
- expenditure over the 85th percentile will require further Cabinet approval
- once joint Ministers have released funding for an individual tranche, it is proposed that the LINZ Chief Executive has delegated authority to spend programme whole of life costs of up to the QRA 50th percentile for each approved tranche.

**Table 19: Impact of the programme investment [redacted] on a repayable Crown capital injection**

| **TOTAL [redacted] ($million) over 12 year whole of life period** | **Expected cost** (50th percentile) | **Cost including contingency** (85th percentile) |
|---|---|---|
| **Pathway 2 - LOLA Capital Build** *(repayable Crown capital injection)* | | |
| Programme operating expenditure | 31.9 | 51.7 |
| plus: capital charge | 18.2 | 25.0 |
| **plus: depreciation** | 106.6 | 128.2 |
| **Total operating expenditure** | 156.7 | 204.9 |
| **Incremental operating expenditure [redacted]** | **156.7** | **204.9** |

# THE MANAGEMENT CASE

## Setting up for successful delivery

This section describes the governance and management arrangements for implementation, the change impacts and change management approach for the programme as a whole, and how benefits will be tracked as the programme progresses.

**Key points:**

- Programme governance requires decentralised decision making
- The programme will be managed across 4 tranches, with a mobilisation period prior to commencing tranche 1
- The delivery approach focuses on delivering customer benefits early [redacted], and applying a software engineering culture and practice that aims at unifying software development (Dev) and software operation (Ops), 'DevOps'
- The methodology will be a hybrid of Scaled Agile Framework (SAFe) and Managing Successful Programmes (MSP)
- Development teams will be led by LINZ Product Owners
- Assurance will be based on GCDO's AoG portfolio, Programme and Project Assurance Framework
- External assurance providers will be sourced using the GCDO Assurance Services Panel
- Resources required to implement the solution will be a mix of staff, contractors, capability partners and suppliers
- Risks will be managed using LINZ's Risk Management Framework based upon the ISO 31000 Risk Management Standard
- ELT members will be responsible for benefit realisation
- The change management approach will be based upon best practice.

## LINZ Operating Model

LINZ's ELT has taken direct ownership for defining and leading the operating model changes required to deliver its strategy and outcomes framework. This work has been underway since 2017 and its importance was echoed in the performance challenges set out in the 2018 PIF. These changes directly relate to the shifts required for the success of this programme, and will have wide-ranging implications for the organisation. These are neither simple nor quick, and will involve changes to capability, decision making, and entrenched ways of working.

The ELT wants this programme to be at the heart of LINZ. While this is likely to increase the likelihood of success, it will place earlier pressure on improving decision-making and managing interdependencies with other parts of the organisation than a more isolated programme would. Within the wider changes, the programme-specific shifts relate to executing Agile at scale, reorienting property system services to customers, establishing an appropriate ICT operating model, and more structured collaboration between the operational, regulatory and programme teams.

The ELT recognises that LINZ is not big enough to grow and hold all capabilities in-house, and so it will focus on being clear about the culture it wants to create and bringing together the skills and methodologies from a range of sources. It is likely that this will involve direct hires to build long-term capability supported by secondments from across the system, capability partners, and contracting skilled individuals.

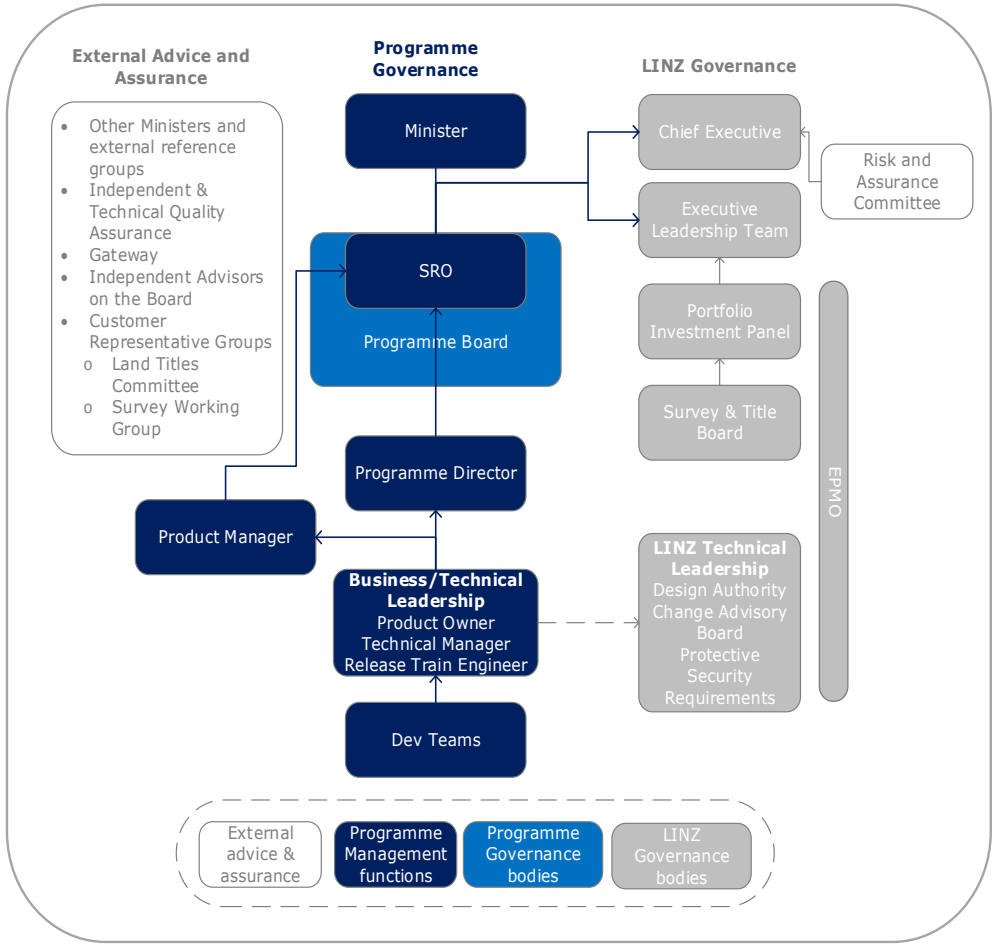
As described in the commercial case, it also will be resetting its commercial relationship with incumbent suppliers to ensure Landonline's database and current applications continue to be supported.

Mobilisation and tranche 1 have been scoped to allow the organisation to get into development and "learn by doing", consistent with good Agile practice. This will provide customers with value early in the programme, before the programme embarks on the more demanding and mission-critical work involved with tranches 2 and 3. This will give time for the organisation to prepare, have a soft start into implementation, and then incrementally adjust its approach as the programme progresses.

## Programme Governance

The governance and management structures, and processes have been developed from lessons learned from other large Government programmes and are based on the Scaled Agile Framework (SAFe)**.** There is a deliberate process to mobilise before the full development effort starts, and LINZ expects that the structures and processes will need to adapt as the programme progresses. The programme governance structure is outlined in **figure 6.** In particular, decision making is reasonably decentralised to reduce delays, improve product development flow and throughput. This will facilitate faster feedback and more innovative solutions. SAFe recognises that not all decisions will be decentralised, e.g. decisions that are strategic that have far-reaching impact, and are outside the scope, knowledge, or responsibilities of the teams.

## Figure 6: Governance Structure




## Key Governance features

- **Executive Leadership Team** sets the strategic direction and is accountable for programme benefits and outcomes
- **Senior Responsible Owner** holds overall decision rights over the programme, and is responsible for ensuring the programme meets its objectives and delivers the projected benefits. Delegation of decision making rights to Product Owners to ensure that critical decisions can be made quickly
- **Programme Board** supports the SRO in ensuring the programme achieves the objectives and benefits stated in the Business Case, by providing guidance and support
- **Programme Director** responsible for overall successful delivery of the programme as delegated by the SRO. Manages the programme, ensuring it remains aligned to the organisation operating models and strategies
- **Product Manager** responsible for identifying customer needs, prioritising and guiding work through the programme. Accountable for content decisions for the Agile release trains
- **Product Owner** empowered LINZ senior representatives who ensure development teams create engaging products, and deliver business value, by meeting the needs of existing or new customers. Understand business strategy, market needs, and the competitive landscape and, critically, what customer needs are currently unfulfilled or emerging. Make fast, local content decisions on behalf of the development team
- **LINZ governance bodies** will be inputs into the programme governance structure and also be reported to, as required
- **External advisors** sit on the programme board providing advice to the senior sponsor and executive leaders
- **External assurance** will be provided at key decision points throughout the programme.

## Empowering decision making

One of Agile's core tenets is the value of 'individuals and interactions' over 'processes and tools' The idea is to foster a high-velocity decision making process, which hinges on open and honest communication in a co-located environment.

Agile requires a shift from the classic command and control model, to a team-based model in which teams self-organise and make decisions. This model will allow us to embark on the Agile journey and will allow us to evolve over time; while needing to reconcile to the wider LINZ operating model changes. It is acknowledging that as LINZ evolves, a hybrid approach with MSP will be leveraged as required throughout the programme.

Expectations will need to be reset, which will require the different governance groups and individual leaders to undergo Agile training, tailored specifically to their roles. This will help them understand their role in the new Agile environment.

Leaders will be responsible for creating the environment that encourages the Agile teams to be high-performing and produce value. In order for these teams to achieve this, business leaders will need to understand what empowerment looks like, to help them move towards a more decentralised decision making model, and empower Product Owners, who are responsible for the end product, to make decisions. Product Owners will be heavily engaged with the business to help build confidence in the move to empower them to make decisions, and will be accountable throughout the programme for the product they are delivering. Demonstrations of the product will be provided regularly throughout each tranche to key internal and external stakeholders, to ensure business and customer needs are being met.

Leaders empower teams through their commitment to them, their support of them, and their own behaviours around them.

During mobilisation, the programme will be working with the business to identify Product Owners, determine decision making rights, establish governance and leadership roles/groups, clearly define accountabilities and responsibilities, and train teams in Agile.

## Multi-disciplined governance teams

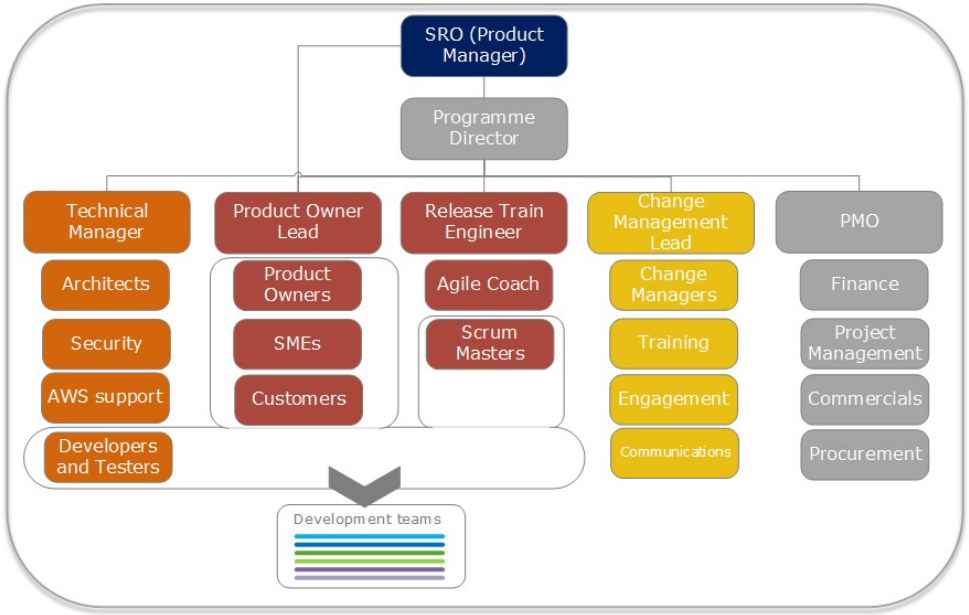
Multi-disciplined governance experts and leaders will be required to share information and knowledge across a diverse range of areas, to ensure the successful delivery of the programme for LINZ, the Government, and New Zealanders. Transforming the leadership model to a flattened hierarchy, is essential to flexibly respond to emerging opportunities and the pace of change. Experience in the following areas (as examples) will need to be considered during mobilisation, as the governance teams are being established:

- remaining aware of digital service evolution
- experience with other Agile programmes and new developments
- governing large programmes
- experience with large organisational change and aligning to government priorities and organisation operating models
- independence
- customer focused
- focus on designing land information services for a digital world
- focus on collaborative ways of working and engagement to avoid silos from the rest of the organisation and other government transformations
- awareness of changing stakeholder needs.

# Programme Management

The management structure to support programme delivery is provided in **figure 7**. This is supported by a resourcing strategy and detailed resourcing plan. Roles are a mix of contractors, LINZ staff, capability partners and suppliers.

**Figure 7: Management Structure**




## Key management features

- **Programme Management Office** hygiene for overall programme including project management functions, commercials, financial management, and procurement
- **Platform (Technical Manager)** lead shared technical and architectural vision for solution under development
- **Release Train Engineer** lead and coach for Agile methodology, facilitates events and processes, and assist teams delivering value
- **Product Manager** guiding the work through the programme, and developing programme vision and roadmap
- **Change Management** preparation/readiness, training to support new ways of working, communications, and engagement with internal and external customers
- **Development teams** are cross-skilled across development, languages, UI/UX, data modelling, and testing. Teams will fluctuate throughout the programme and the on-going life of the resulting system.

# Programme Delivery

The delivery approach enables transitioning the majority of external customers to the new platform as quickly as possible, to manage the inherent risks associated with continuity of Landonline, while balancing the need to keep Landonline operating in parallel as functions transition. This enables external customer benefits to be realised early, reducing reliance on Citrix and PowerBuilder, maintaining internal operations and ensuring there are viable off ramps and opportunities to roll back. The transition is expected to take about 5 years.

## Delivery Approach

The solution is focused on renovating the current Landonline developed system in an incremental manner over a 5 year period. This will remove the legacy front-end PowerBuilder client software and [redacted], and provide new modern web front-end interfaces. It retains existing business logic and database design from Landonline, and will be designed specifically for LINZ customer and staff needs.

The Landonline system will be ported into new technologies, and application components will be split into smaller, manageable modules.

New components will be developed to support the modernised front-end using modern software frameworks, languages, security practices and [redacted] cloud platform capabilities. This will allow changes and modifications to be made faster and more efficiently in comparison to the current architecture.

The sequencing of transitioning to the new system has been developed based on lessons learned during the definition phase, to meet the following outcomes:

- deliver customer value and benefits early
- [redacted]
- enable enhancements and maintenance to be done more efficiently
- reduce the risk of managing delivery of large pieces of work by making them smaller, more independent pieces.

## Methodology

The basis of this delivery path is an application of 'DevOps', a software engineering culture and practice that aims at unifying software development (Dev) and software operation (Ops), and 'Scaled Agile Framework' (SAFe), a way of achieving scale and parallelisation in software development. While most of the constituent projects will be run using this methodology, the overall programme will follow Managing Successful programmes (MSP), and at times, a waterfall approach may be required within some components of delivery. To bring Agile and programme management approaches together successfully, the following considerations will need to be made throughout:

- governance—empowering people to make decisions
- speed of Agile—short iterative sprints within programme tranches. Clear programme blueprint to maintain line of sight to vision and benefits
- attitude in the organisation—while Agile can be highly effective; the organisation needs to ensure it remains fit for purpose throughout delivery
- team collaboration—right balance of 'give and take' between programme management and Agile professionals with sharing of skills and knowledge.

DevOps advocates automation, short development cycles, frequent delivery, and flexible prioritisation. Small independent teams are created and given a mandate to create and support software. This approach calls for a different authorising approach. Pieces of work are commissioned in small chunks and the work can be reprioritised relatively easily, by a more frequent delivery cycle of smaller items.

# Programme Capability and Resource Management

## High level capability approach

A challenge for LINZ is to modernise the Landonline platform, whilst ensuring the continuity of land and title services for our customers. To do this, LINZ needs to develop its capability at the same time as delivering the programme outcomes. Trends and influences impacting New Zealand will need to be assessed regularly, to understand the impact this might have on capability planning. Scenario-based planning, environmental and market scanning, and impact assessments will be undertaken during each tranche to manage this. Clear performance measures will also be developed to assess progress against outcomes. **Table 20** shows how LINZ's outcomes translate through to programme activities and utilisation of resources.

**Table 20: Outcomes through to resourcing**

| | |
|---|---|
| **What are our goals for New Zealanders** | **Outcomes**<br>• A world class property system<br>• High value geographic information. |
| **What difference are we making** | **Impacts**<br>• Improve reliability, availability and security<br>• Enable improved end to end processes across the wider property system<br>• Improve the agility and efficiency of the survey and titles platform<br>• Improve the accessibility and quality of property rights information. |
| **What activities are we undertaking** | **Outputs**<br>• Web search, notifications of sale to technical authorities, and notice to mortgagees with banks<br>• Improvements for customer survey submissions and titles dealings<br>• Improvements for survey and titles processing staff<br>• 3D and innovations, and APIs for integrated data. |
| **How are we using our resources** | **Resources**<br>• Open digital infrastructure<br>• Uplift workforce skills and culture<br>• Invest for the future<br>• Adopt system thinking<br>• Build partner ecosystem. |

## Factors to build capability

LINZ is at the start on its Agile journey, and significant work is required to focus on how we build capability, engage and develop staff, including:

- staff require training to adopt the Agile mind-set, principles and ways of working
- key roles such as Product Owner's need to be agreed, defined and then filled
- build cross-functional and self-directing teams.

## Attracting and retaining capability

LINZ's ability to establish, attract and retain high performing staff within the programme, is dependent upon how people, internally and externally view LINZ and the programme as an opportunity to grow, develop, learn and contribute.

**Current environment-** The August 2018 PIF review of LINZ highlighted the following:

- *"As an organisation, LINZ has a very positive culture that is consistent across the organisation. In general, people like working at LINZ and feel fondly towards the organisation, its purpose and operations"*
- *"Staff consistently referred to LINZ as a family-like organisation, where people build strong relationships with colleagues, and enjoy both professional and social relationships"*
- *"The staff engagement survey in 2018 revealed an overall engagement score of LINZ staff at 70%"*
- *"This overall engagement score compares favourably to the 63% average engagement of the 14 government agencies that completed the same survey"*
- *"LINZ provides good customer service to the majority of its customers it interfaces with. LINZ staff generally go to great lengths to meet or exceed individual customer's expectations in their dealings with them"*
- *"There is no doubt that there are very smart and well qualified people in LINZ and therefore the focus should not be on size, but on being smart and the quickest route to being smarter is leveraging the existing capability through agility. To be Agile, LINZ will need to ensure it is rewarding and reinforcing the appropriate behaviours, encouraging the unique contributions of individuals and fostering a genuinely collaborative spirit "*
- *"It is unlikely LINZ will ever receive the level of resources that may be warranted, and therefore it needs to take a non-linear approach to building capacity, which includes offering secondments into critical work programmes or projects with different experiences and expertise to staff from other agencies or the private sector, with strong reciprocal advantages and benefits"*
- *"A full range of options must be considered and the programme will continue to be a major call on resourcing and specialised skills for an agency of LINZ's limited size and experience of large programmes"*
- *"Consider how to put in place the expertise and resource for a programme of this nature".*

## Programme capability to deliver outcomes

The capability required to deliver our outcomes to a high level of performance now and in the future has been categorised into the four areas below in **table 21**. Skills of the team members will be complementary comprising a diverse range of experience and viewpoint.

**Table 21: Capability required to deliver outcomes**

| Capability category | Purpose | Work to do |
|---|---|---|
| **Leadership and Governance** | Ensuring LINZ has the leaders and governance in place to perform well now, and in the future to meet its outcomes and contribute to government wide priorities. | • Clearly defined roles, characteristics and skills of good leaders<br>• Different levels of leadership and clear decision making matrix<br>• Development and training for leaders<br>• Attracting strong internal and external competition for senior positions<br>• Transparency<br>• High sector/business knowledge among senior leaders<br>• Independent advisors at governance level. |
| **Technical** | Ensuring LINZ has the ICT and internal management systems to achieve outcomes and contribute to government wide priorities. | • ICT strategy and operating model<br>• Aligned governance and planning between BAU and programme ICT change<br>• Clear roles and responsibilities of technical resources including reporting lines and decision making. |
| **Customers and stakeholders** | Ensure relationships required to achieve outcomes are built and managed. | • Identifying critical skills to represent, build and manage customers and stakeholder interests<br>• Leveraging organisational capability and knowledge<br>• Clear alignment with operating model. |
| **Programme** | Ensuring LINZ has the skills and competencies to achieve its outcomes in collaboration with central agencies, as well as seizing opportunities and managing challenges regarding people capability. | • Contract management plan and people management strategies<br>• Attracting and recruiting staff<br>• Engaging, managing and developing staff<br>• Review of Contractor, LINZ staff and capability composition throughout<br>• Building a culture that supports achieving outcomes<br>• Processes for managing progress towards outcomes and how these are linked to other LINZ performance management processes. |

## Tranche view of resource transitions

In tranche 1 (from March 2019) approximately 35-70 resources will be required in a staggered approach and at the peak (during tranche 3, June 2021) approximately 87 resources will be required. These are a combination of LINZ staff, contractors and capability partners.

**Table 22** shows the transition of resources over tranches.

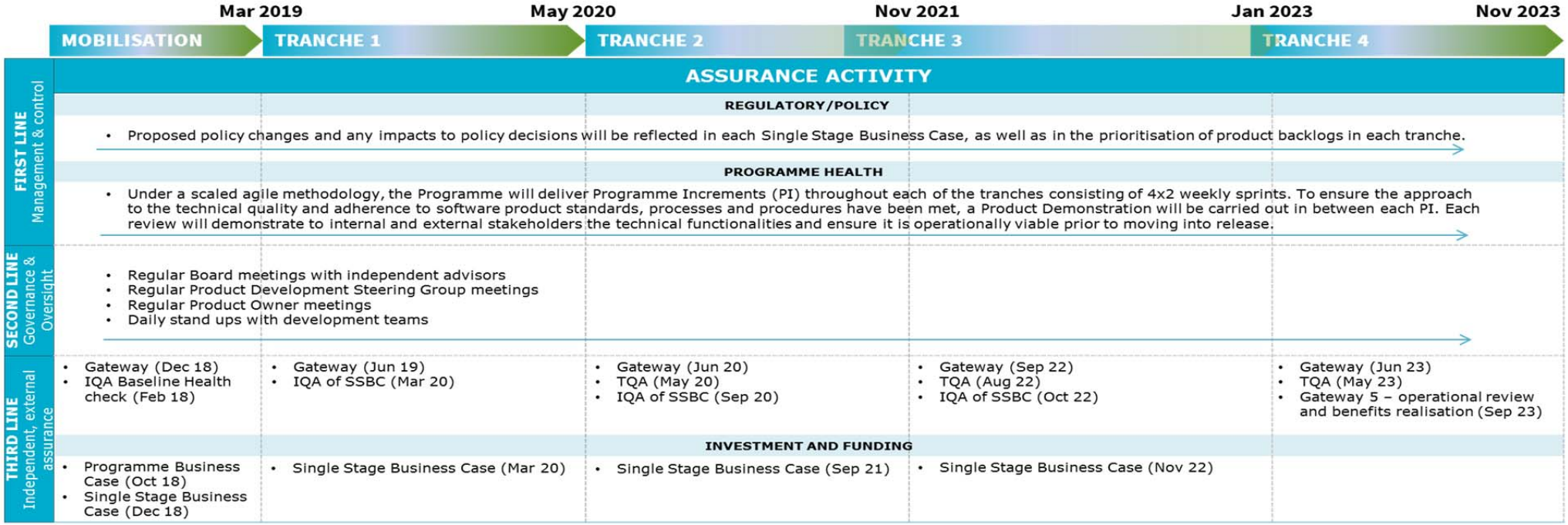
**Table 22: Transition of resources over tranches**

| Tranche | Resource transition plan | Capability transition plan |
|---|---|---|
| **Tranche 1** | • Programme leadership (PMO, PD, project managers, coordinators, finance, HR, procurement) required throughout all tranches<br>• Change, training, engagement and communications required throughout all tranches<br>• Technical support required throughout all tranches<br>• Three development teams (product owners, scrum masters, testers, developers) start during tranche 1, and 1 development team finishes at the end of tranche 1. | While LINZ's desire is to grow internal capability over the life of the programme, some capability will need to be outsourced to contractors and capability partners as LINZ maturity grows. The programme will be looking to recruit all SMEs and Product Owner roles with business knowledge, in-house for the duration of the programme. Where there is opportunity to leverage LINZ internal resources for other positions and skills, this will be the preferred approach. However, these skills will need to be complemented by industry experts from a range of contractors and capability partners. |
| **Tranche 2** | • 4th development team comes on at the end of tranche 1 ready to start tranche 2 and the 5th comes on at the start of tranche 2. | During each tranche the composition of LINZ staff, contractors and capability partners will be assessed considering a number of factors including LINZ maturity, capability, wider external factors and current state of programme delivery. |
| **Tranche 3** | • 6th development team comes on at the end of tranche 2 ready to start tranche 3 and the 7th comes on at the start of tranche 3.<br>• Two development teams finish during tranche 3 leaving four development teams for the remainder of the programme. | Assess composition of LINZ staff, contractors and capability partners. |
| **Tranche 4** | • Four development teams operating during tranche 4. | Assess composition of LINZ staff, contractors and capability partners. |

## Programme Assurance Management

The programme will be Agile and responsive to emergent risks, and therefore its selection and use of assurance activities. The 'Three lines of defence' model will continue to form the cornerstone of assurance planning as the programme activity transitions from the current platform into its development and implementation activities. Key assurance activities will be regularly reviewed and updated on a three monthly cycle at a minimum, alongside the detailed Programme Assurance plan, to ensure assurance activities align to programme decisions and milestones, and any emergent programme risks. This will involve undertaking regular IQA and Gateway reviews, bi-monthly meetings with Central Monitoring Agencies, regular reporting to boards and steering groups, and regular reporting to Treasury as part of a major project monitoring process. The last Gateway review concluded that "the programme is currently in a healthy position" and "is in a good position to move forward to the next phase". **Figure 8** provides a view of the anticipated assurance activities across the tranches.

**Figure 8: Assurance Activity**



## Quality Assurance

Specific tools and techniques, such as continuous integration, automated unit testing, pair programming, test-driven development, design patterns, behaviour-driven development, domain-driven design, code refactoring, and other techniques are often used to improve quality and enhance product development agility. The idea is that the quality is built into the software and always has demonstrable software for the customers. The following quality approach will be used:

- develop a quality assurance plan and define quality metrics
- adopt a test-driven development approach with continuous testing
- embed QA expertise within each product team to influence development and operational processes
- QA/developers to code automated tests and improve approach to screening for quality
- QA review data from automated tests and use it to expose the likely causes of defects, and where they are likely to occur again if not addressed
- QA owns continuous improvement and quality tracking for example identifies problems in the product, environment and process and recommend changes.

## Lessons Learned

LINZ has reviewed the lessons learned from the delivery of other Landonline projects, as well as GCDO and Treasury Gateway Unit lessons learned registers, and other agency projects. The following lessons have been applied to the structure and design of the programme and the associated assurance plan:

- Ministerial Inquiry into the Novopay Project
- Immigration New Zealand's *Vision 2015* programme
- Customs Joint Border Management System
- NZ Government top 10 lessons from ICT, enabled Projects and Programmes
- NZ Gateway Reviews, Lessons Learned Report 2017
- Independent Governance Review, March 2017
- LINZ Vendor and Contract lessons learned, November 2017
- Internal lessons learned including internal team survey on a high functioning team, January-March 2018
- LINZ Portfolio lessons learned.

A major change the programme made during the definition phase was to move away from a project, and take a revised approach to deliver a programme with tranches to mitigate a number of issues and risks the project was facing, which focused on:

- not delivering the project in one big bundle
- delivering customer value earlier
- reducing [redacted] and continuity of service risks
- having commercially, technically, and operationally viable off-ramps.

At a high level, these lessons that have been learnt can be summarised as follows:

- be clear on the problem and evaluate options
- set up your programme properly
- leadership commitment and build trusted relationships
- get the right team—governance and programme
- use effective assurance
- ensure vendors are clear on scope and manage performance
- involve users
- ensure stakeholders are engaged, their needs are understood, and the change is managed
- ensure effective risk and issue management and mitigation processes are in place.

LINZ has incorporated these into its planning for the programme.

## Benefit and Risk Management

ELT members will have responsibility for ensuring delivery of the programme's benefits. A Benefits Management Plan has been developed detailing the approach to both the management and realisation of benefits. It aims to provide a complete view of all the benefits, their dependencies and the expected realisation timescales. It provides the engagement on how to identify, map, monitor and review the benefits to be realised. It also outlines the benefit ownership and reporting.

A supporting economic benefit quantification document contains the detailed assumptions used to quantify the marginal economic benefits associated with the programme. It also includes the quantified benefits and information regarding each benefit area and how this links back to the programme scope.

## Reporting

Programme reporting enables effective management and allows the Programme Director, EPMO, Executive Leadership Team, and other key stakeholders to:

- monitor progress to ensure alignment with LINZ priorities and outcomes
- provide a channel for issue and risk escalation
- control the budget, resources, schedule and deliverables associated with the programme to ensure overall objectives and benefits are delivered
- engage effectively with the Programme's stakeholders.

The PMO will facilitate regular programme progress reporting with the agile squad teams to discuss programme progress, budgets, risks, issues and dependencies. These will be timed to support programme governance group meetings and all internal/external reporting requirements.

## Risk Management

LINZ utilises a Risk Management Framework based upon the ISO 31000 Risk Management Standard and administered by the LINZ internal Risk and Assurance team. The programme is using this framework to manage programme risks from both delivery and strategic perspectives.

Key to this process is the programme risk and issue register which is used to record and manage all programme risks. A risk management plan has been created that articulates the approach, process and plan for managing risks. A risk scoring system is being put in place to more effectively identify risks for escalation and prioritisation that is based on likelihood, consequence, timeframes and impact horizon. Refer to Appendix I for a summary of the Management risks.

## Benefits realisation

Appendix J provides a view of benefits realisation by tranche. Effective benefit management and realisation planning will:

- indicate the extent to which benefits are being realised
- focus on high impact and high priority benefits to maximise use of resources
- give early warning of potential problems and create the opportunity to adapt the benefits or changes to enable the overall objectives
- ensure that achieved benefits are measured, reported and communicated.

# People Change Management

## Change management approach

The change management approach and activities will be based on recognised best practice (i.e. prepare the change, manage the change, reinforce the change) and utilised where fit for purpose.

For LINZ, there are also significant changes to be made in its operating model to better position it for the opportunities ahead and to make the most of the technology change. The programme change management team will work closely with the business to understand how the operating model changes will impact customers and our LINZ people.

Detailed impact assessments and change management plans will be developed at each stage of the programme for impacted people, and we will tailor engagement, communication and education activities accordingly.

## Guiding Principles

The following guiding principles will be used to inform and guide the development of the Change Management approach and plans.

**Business led, programme enabled** to ensure the programme change is successfully embedded within the business, the change must be business led, with support and coordination from the programme team. The business must drive the direction of the change, be the greatest advocates, and have primary responsibility for achieving the benefits.

**Increased change leadership capability** to build committed leaders across the organisation to guide organisational behaviour, to ensure they actively and visibly lead and support the change.

**Informed stakeholders** will participate and be committed to the change, by employing open and consultative communication approaches.

**Tailored approach** for individual business units and customers recognising that each person's journey will vary.

**Functionality released when it makes sense** although new functionality is created continually under Agile methodology, it will be released to customers and LINZ people when it makes sense for them to receive it. A customer experience design tool will be created to help determine this.

**Capable users** will have the ability and knowledge to enable them to perform their role efficiently. The programme will provide an innovative just-in-time training strategy to minimise the impact of the change on our customers and business as usual.

**Change effectiveness** will be measured at appropriate intervals through multiple channels, as our impacted users move along the change journey.

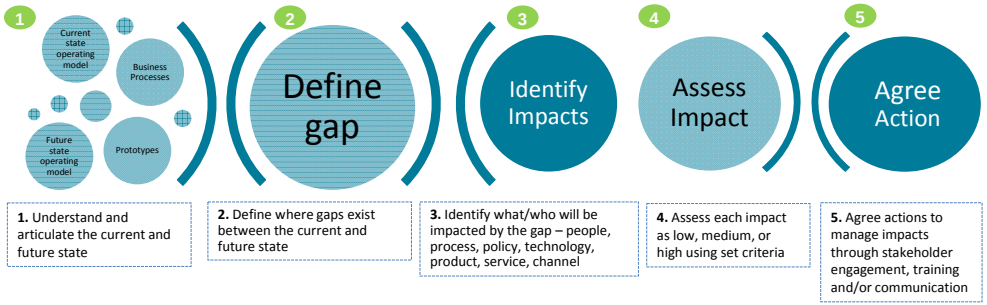
**Resource will be provided from within the business where possible**. Specialist change management resource will be required to manage a change of this magnitude. Although LINZ does not currently have change management capability in-house, it is important that where possible, resource is provided from the business so knowledge is kept within LINZ (e.g. trainers).

**Aligned workforce** designed to support the organisational change required, and be positioned to adapt to the on-going changing environment.

## Impacts

The quality and comprehensiveness of assessing change impacts will play a large part in determining the success of the programme. Detail overlooked or not captured during tranches, will be quickly identified by LINZ people and customers after go-live, and could impact the successful adoption of the programme. The process to analyse our impacts is shown in **figure 9**.

**Figure 9: Impact analysis process**




Although the underlying processes and terminology will be consistent with the current Landonline system, all impacted users will have a new interface in which to perform their daily tasks, and new capabilities will be required to gain efficiency. The scope and scale of change will be fully assessed during each tranche as part of the Change Management Plan.

Property Rights staff will be impacted by high level changes introduced by the programme and all LINZ Business Units impacted to a lesser degree. There are more than 200 staff within Property Rights located across three regions—Hamilton, Christchurch and Wellington.

Customer groups will be impacted by the programme, as the system they use to interact with LINZ in the future will look different. There are approximately 7680 conveyancers, 1600 surveyors, 2450 search users and 78 territorial authorities impacted.

## Customer Engagement

Engagement started with our customers in 2013 to gather feedback, understand their needs, and input into our requirements.

LINZ maintains well-developed and collegial relationships with users and the industry, both at peer relationship and at group level. Since its inception, the programme has established engagement channels with customers and will continue to do so, as the programme evolves. These relationships are particularly important to our successful implementation.

The Engagement Director role has been established within the programme to focus on stakeholder engagement. A significant number of engagement activities have occurred which include face-to-face meetings, emails, workshops, surveys, updates to sector boards, and presentations at industry events. Representative customer bodies strongly support the programme and its scope. Stakeholders will continue to be consulted throughout the programme, and the stakeholder engagement plans will dictate timing of engagement with various customer groups. The stakeholder engagement process is shown in **figure 10**.

**Figure 10: Stakeholder engagement process**


## Voice of Customer

It is critical we capture the customer voice throughout the programme. This is being addressed through:

1. **Customer Representative Groups.** We have established representative groups for survey and title customers, and these groups are a key interface between the programme and the recipients of the change.
2. **Customer Representation** A solicitor and surveyor are embedded in the programme team to help represent the customer community. They are the conduit to the customer representative groups and their wider community, and also keep the programme abreast of global and local trends in the customer environment that may cause disruption.

# Appendix A: Chief Executive's statement

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7/9/2018

## Chief Executive's Statement: Modernising New Zealand's Land Information Platform & Services Programme Business Case

The purpose of this business case is to support Cabinet's consideration of a decision to invest in modernising New Zealand's land information platform and its services. This investment will provide continuity and make land information services more useful, accessible and responsive.

Through this programme, Land Information New Zealand's services will be improved and provide New Zealanders with continued confidence in property rights in a changing world.

LINZ is well positioned to embark on the changes set out in the programme business case. It recognises that these programmes are complex and it has integrated lessons identified from other projects into its planning. There are four tranches of work across five years. Before a tranche of work begins, joint Ministers will consider a single stage business case to check progress and approve funding for the next tranche.

LINZ is ready to implement the changes necessary to deliver the programme successfully. This includes further developing the leadership and governance to support effective agile decision making, as well as procuring experienced resources from within the NZ ICT market. Given the inherent risk of the programme, considerable emphasis is being placed on developing the capability, tools and techniques required.

I have full support from Andrew Crisp (the permanent Chief Executive of Land Information New Zealand) to recommend this investment.

Yours sincerely

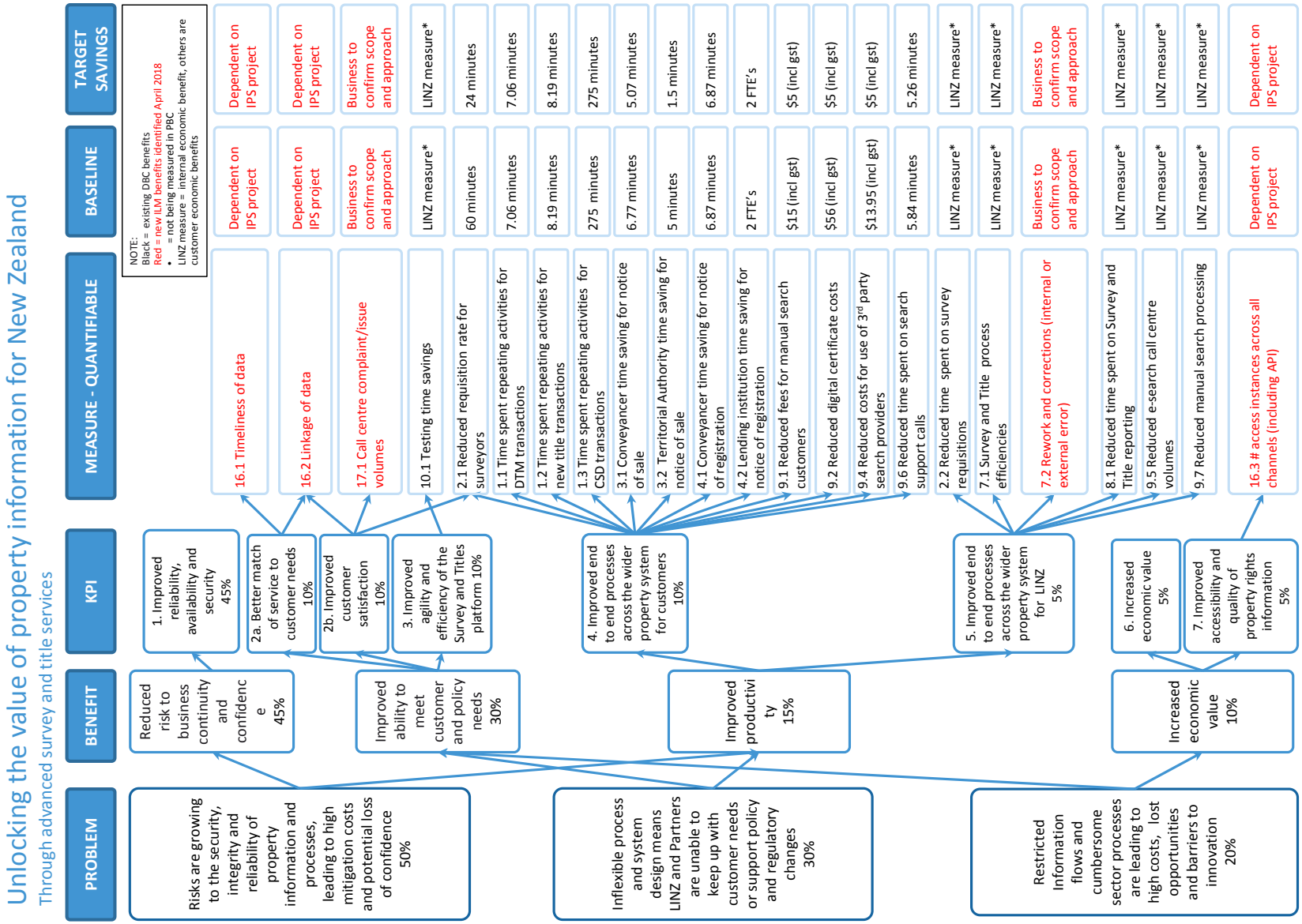
Lisa Barrett
**Acting Chief Executive**
Land Information New Zealand

www.linz.govt.nz New Zealand Government

# Appendix B: LINZ's Outcomes Framework


| Challenge | Water | Resilience and climate change | Urban areas |
|---|---|---|---|
| Description | Contribute to better management of fresh water, including quality and allocation (3-waters are in 'urban areas'). | Support efforts to prepare for, mitigate and adapt to the impacts on land and sea of climate change and one-off events (natural and man-made). | Contribute to managing and responding to pressures on urban areas from population growth. |
| LINZ's value-add | Build on our existing strengths and expertise in managing data, the property system, land and foreign ownership to:<br>• Support better government, council and private decisions by enabling access to key high-value, linked datasets<br>• Target direct improvements through our operational responsibilities. | | |
| Possible Actions illustrative only | • restrictions on foreign ownership of water rights<br>• datasets to support councils' planning for water quality and access<br>• use Crown Estate to rehabilitate waterways, lakes | • mitigation measures (e.g. riparian planting) in overseas investment consents<br>• datasets to support hazard mapping, research and forecasting of events and climate change<br>• advise government on long-term options for Edgecumbe, etc. | • identify surplus/underutilised land for housing<br>• datasets to support local infrastructure planning<br>• require overseas investors to build new houses<br>• deliver IPS to support councils' urban planning |
| Iscritical | LOW MEDIUM **HIGH** | LOW MEDIUM **HIGH** | LOW MEDIUM **HIGH** |
| Solvable | LOW MEDIUM **HIGH** | LOW **MEDIUM** HIGH | LOW MEDIUM **HIGH** |
| Our impact | LOW **MEDIUM** HIGH | LOW **MEDIUM** HIGH | LOW MEDIUM **HIGH** |

# Appendix C: Investment Logic Map



# Appendix D: Summary of Investment options

| | Base Case | Option 4 | Preferred option (option 6) |
|---|---|---|---|
| Description | Current Landonline service levels will be maintained in the short term; however, it will become increasingly difficult and costly to maintain this over time. In the medium to long term, LINZ expects this may lead to a degradation of the existing services and will impose barriers to delivering new services. | The base case will involve a 'code-port' of the outdated PowerBuilder programming into a modern programming code. The 'code-port' has a good chance of success but the resulting code is likely to be complex to enhance and test. [redacted] It is expected that a platform shift would be required by 2026, with much of the investment in the 'code-port' and user interface not being reusable. | The preferred option will deliver a modular technology platform that modernises the core platform, and delivers customer enhancements (such as web-based access)<br>It enables innovation opportunities on areas closest to our key intermediaries (surveyors, conveyancers and territorial authorities). |
| Strategic fit against LINZ strategic outcomes and government priorities | Doing nothing will not enable LINZ to enhance its support for delivering strategic initiatives. | The base case does not enable LINZ to enhance its support for delivering strategic initiatives. | Strong alignment with LINZ's strategies (Outcomes Framework, IPS, State Land Register, Cadastre 2034 and Conveyancing 2020), aligned with the Government priorities, will contribute to Kiwibuild. |
| **Fit against investment objectives** | | | |
| Ensure the sustainable continuity of services and integrity of information | This option will leave existing risks to the system. | This option will reduce some of the current risks to the business from the underlying technology platform. [redacted] | This option will address current risks to the business from the underlying technology platform. |
| Improve the agility and efficiency of the survey and title platform | No improvement. | No improvement. | This option will improve the agility of the business in responding to new regulatory responsibilities or policy changes. It will allow LINZ to manage the provision of survey and title services more efficiently. |
| Improve the services provided to customers to reflect the way they work | No improvement. | No improvement. | This option will enable the introduction of new and innovative services as well as enhancements to existing services for customers. |

| | Base Case | Option 4 | Preferred option (option 6) |
|---|---|---|---|
| Enable improved end to end processes across the wider property system | No improvement. | No improvement. | This option will enable direct computer-to-computer links that provide for increased interoperability between LINZ's survey and title system and systems maintained by Central Government, Local Government and private companies that need instant access to property rights information, to enable more efficient processes for New Zealanders. |
| Improve the accessibility and quality of property rights information | No improvement. | No improvement. | The option will provide computer-to-computer links that will increase the use of programme data across NZ. |

**The table below** reflects the original seven investment options that were investigated during the Indicative Business Case Phase.

The assessment of the investment options against the critical success factors is shown in the table. The higher the score, the more the investment option meets the critical success factors. The investment options were rated on a relative range from one (poor) to five (excellent) against each other. It was assumed all investment options could be designed in such a way that they met the hurdle criteria of maintaining the integrity of the property rights system. The critical success factors were not weighted (i.e. each success factor was given an equal level of importance).

| Critical Success factors | Description | Investment Options | | | | |
|---|---|---|---|---|---|---|
| | | 1<br>Base case | 4<br>Some changes to current service offering and enhance service delivery | 5<br>Implement interoperability and make Landonline Workspace contestable | 6<br>Offer additional services and redevelop parts of the service delivery model introducing interoperability (preferred bundle) | 7<br>Transformation of the service delivery model including interoperability |
| **Alignment with LINZ's other strategic priorities and capabilities** | • increase the productive use of location based information<br>• enable appropriate economic, environmental and recreational uses of Crown-owned and used land<br>• is aligned to LINZ's key skills and capabilities, with a particular focus on specialist technical knowledge and expertise relating to land law. | 1 | 3 | 4 | 5 | 5 |

| Critical Success factors | Description | Investment Options | | | | |
|---|---|---|---|---|---|---|
| | | 1<br>Base case | 4<br>Some changes to current service offering and enhance service delivery | 5<br>Implement interoperability and make Landonline Workspace contestable | 6<br>Offer additional services and redevelop parts of the service delivery model introducing interoperability (preferred bundle) | 7<br>Transformation of the service delivery model including interoperability |
| **The delivery of location based property services and information is future proofed** | • takes a medium-term (~10 year) view of customers' and government's needs<br>• aligns with the Better Property Services vision<br>• enables interoperability with customers' systems and other government systems<br>• is sufficiently agile to be able to respond to future changes<br>• provides resilience to future demand changes and financial pressures<br>• is aligned to All of Government expectations. | 1 | 2 | 3 | 5 | 5 |
| **Potential to improve the quality of service provided** | • delivering services in a way which customers find easy to use<br>• enabling transactions to be completed in a digital environment<br>• providing continuity of electronic processing functionality<br>• providing a complete and accurate view of Maori and Crown land records which can be easily obtained<br>• potential for innovation in how services are delivered. | 1 | 2 | 3 | 5 | 5 |
| **Potential to improve value to government and customers** | • reducing duplication and improving efficiency of business processes<br>• reducing duplication of ongoing investment<br>• reducing customers' time spent interacting with government. | 1 | 2 | 2 | 4 | 5 |
| **Cost and affordability** | The affordability of the option to LINZ and its customers, taking into account the ability to fund the bundle within existing funding constraints. | 5 | 5 | 4 | 3 | 1 |

| Critical Success factors | Description | Investment Options | | | | |
|---|---|---|---|---|---|---|
| | | 1<br>Base case | 4<br>Some changes to current service offering and enhance service delivery | 5<br>Implement interoperability and make Landonline Workspace contestable | 6<br>Offer additional services and redevelop parts of the service delivery model introducing interoperability (preferred bundle) | 7<br>Transformation of the service delivery model including interoperability |
| **Ease of implementation** | The potential of the option to be executed, minimising risks and minimising the impact of change on business as usual activities to customers and LINZ. | 5 | 4 | 3 | 2 | 1 |
| **TOTAL** | | **14** | **18** | **19** | **24** | **22** |

# Appendix E: Qualitative economic benefits

| Benefit ID | Benefit Area | Description of benefit |
|---|---|---|
| 10.2 | **Improved agility and efficiency of the survey and titles platform** | The system will deliver changes to our customers more regularly. Delivering changes or enhancements to the requesting customers sooner will help LINZ meet our customer business needs. (ILM March 2018) |
| 11.0 | **Enable LINZ to respond to changing customer and business needs** | The system will have a more componentised design that makes it easier to make system changes without having to test the whole system end-to-end, as is the case currently. This will make it easier for LINZ to meet current and future customer expectations and business needs in an Agile and proactive manner. |
| 12.0 | **Improved customer satisfaction** | The programme will significantly improve the quality of existing services and offer new services to the public, making it easier to interact with LINZ in a digital environment. |
| 12.1 | **Improved customer satisfaction** | The system will provide an updated look and feel making it more intuitive, so that less user training will be required. Users will be able to easily personalise settings to reflect the way they use the system and they will be able to easily search for material. The system will also interface with all common modern systems/channels including mobile devices.<br>Many cadastral surveyors undertake their work in the field and they want to be able to access information contained within Landonline when they do so. Of cadastral surveyor respondents to the customer survey, 79 respondents (31% of surveyor respondents) identified benefits from accessing information on mobile devices. They confirmed they wanted access to information in Landonline on a variety of devices. |
| 12.2 | **Improved end to end processes across the wider property system for customers and LINZ** | The system will increase the level of automation in survey and title transactions. This will include improving automated quality checking of survey plans before their submission. Currently the requisition rate is at 40%, leading to time delays, inefficiencies and increased costs for customers. Improving the pre-validation of survey plans and automating simple survey transactions will be a key focus area for the system. |
| 12.3 | **Improved accessibility and quality of property rights information** | Currently, only users who purchase and install Landonline licence software are able to search for information on their official title and survey information. The system will provide a web application that will allow the public to search and access any records held in The system and will allow members of the public buying and selling property to easily search titles to check the restrictions applying to a property (e.g. easements). It is expected the search mechanism will use familiar (Google Maps style) spatial maps to make it easier for customers to identify the land record they want. |
| 13.0 | **Improved accessibility and quality of property rights information** | The system will deliver increased availability, quality, and currency of information to survey and title users, data consumers (via the LINZ Data Service (LDS)) and the public. Products and services built using location information create hundreds of billions in revenue for the world economy.[6] Free, accessible location information drives innovation and greater productivity across the economy, underpins planning, decision making and improves the safety and prosperity of communities. The system will contribute to this |

[6] *What is the economic impact of geo services?* a report prepared for Google by Oxera, January 2013. Geo services are defined here as an industry comprising all interactive digital mapping and location based services.

| Benefit ID | Benefit Area | Description of benefit |
|---|---|---|
| | | through enabling access to information via the internet, creating the capability for greater linkages between the key property datasets, and enhancing the capabilities of Landonline around 3D data. |
| 13.6 | **Better match of service to customer needs** | The system will deliver 3D parcel capability. How this will be made available to external users is yet to be decided. It is expected that 3D data will provide for more effective decisions, create innovation and make it easier for surveyors to interact with LINZ.<br>**Enabling government to make more effective policy, operational and planning decisions**<br>Once 3D visualisation of property rights is available, it is expected that central and local government will be able to make more effective policy, operational, and planning decisions, especially in high density urban areas. Planning and building smarter cities and transport systems will cut down on energy costs and could assist in avoiding accidents, reducing emissions, enabling changes in travel behaviour, and making cities more healthy and productive.<br>**Creating innovation by enabling 3D data to be integrated with other spatial information**<br>Land and property developers, as well as other users of cadastral information, are expected to derive benefits from 3D data being available for integration with other spatial information (e.g. a land developer could take cadastral data, including 3D, and add topographic data, aerial imagery, utility information, and building data to present a clear picture of the land being developed). Without the cadastral data (including 3D) it will be significantly harder to interpret the land development constraints.<br>3D visualisation will allow better understanding of multilayer ownership rights for complex structures and dwellings such as apartment blocks. Making 3D cadastral data digitally available and integrated in the 2D cadastre will make it possible to query air-space parcels. Having a 3D capable cadastre will allow people to query whether any ownership rights are in conflict, rather than having to rely on paper based drawings that are difficult to interpret.<br>**Potential benefits from 3D identified by customers**<br>As part of the development of the DBC, the customer survey asked what the potential benefits of 3D visualisation would be. The general themes from surveyor responses were that 3D will provide:<br>• a better understanding of complex properties such as unit titles<br>• a better understanding of the vertical component of rights<br>• faster understanding of rights<br>• better understanding of easements.<br>The general themes from conveyancer responses were that 3D will provide:<br>• reduced time spent interpreting data<br>• easier ability to visualise complex developments<br>• help with interpreting what was happening with unit titles and apartment buildings<br>• easier identification of properties and easement areas and their relationships to other properties.<br>As part of the development of the IPS objectives, key customers were surveyed. The results from this work indicated that 55% of respondents thought the integration of 3D information will result in productivity |

| Benefit ID | Benefit Area | Description of benefit |
|---|---|---|
| | | and/or cost improvements of more than 10%.[7] |
| 14 | **Improved reliability, availability and security** | Components of Landonline are reaching their end-of-life, for example, the core mapping software within Landonline is no longer supported. As time progresses the number of components in Landonline that need to be replaced will increase and the cost for replacing them and integrating them into the aging Landonline code and monolithic architecture is expected to increase.<br>The core of the Landonline system is built using the PowerBuilder software development language and accounts for approximately half of the business logic in Landonline. Gartner advises that users should reassess continued investment in PowerBuilder on a three year sliding window and only consider this technology to be a safe investment for the next five years.<br>Other technologies that are aging and will present a risk in the future include the Informix Database. |
| 15 | [redacted] | [redacted] |
| 18.1 | **Increased economic value** | BERL Assessment of the value to New Zealand economy - The value delivered by the New Zealand Torrens system provides benefit to the New Zealand economy. The programme will maintain this level of benefit to the economy. (ILM March 2018). |
| 18.2 | **Increase economic value** | ACIL Tasman assessment of value to New Zealand economy - The use and reuse of spatial information provides benefit to the New Zealand economy. The programme will maintain and may increase the level of benefit reported. (ILM March 2018). |

[7] Land Information New Zealand, *Survey and Title Services Indicative Business Case*, Wellington, 2013 p. 86

# Appendix F: Quantified economic benefit assumptions and inputs

| Customer Economic Benefits | | | | | |
|---|---|---|---|---|---|
| ***Benefit*** | ***Benefit Area*** | ***Source of Information*** | ***Inputs used*** | ***Pathway 1*** | ***Pathway 2*** |
| **IMPROVED PRODUCTIVITY** | **Better interface with customer systems** | • Customer Survey questions in 2014<br>• Volumes extracted from LOL team | • FY17 DTM transactions = 255,497<br>• Weighted average of time savings = 7.06 mins<br>• FY17 conveyancer charge out rate = $300-350 | Tranche 2<br>mth 19 – 36 | Tranche 2<br>mth 21 - 38 |
| | | • Customer Survey questions in 2014<br>• Volumes extracted from LOL team | • FY17 new title transactions = 10,102<br>• Weighted average of time savings = 8.19 mins<br>• FY17 conveyancer charge out rate = $300-350 | Tranche 2<br>mth 19 – 36 | Tranche 2<br>mth 21 - 38 |
| | | • NZIS Survey conducted in 2018<br>• Volumes extracted from LOL team | • FY17 CSD transactions = 10,699<br>• Weighted average of time savings = 114.55 mins (FY17 = 275 mins, validated in new survey conducted in 2018)<br>• FY17 surveyor charge out rate = $115-155 per hour | Tranche 4<br>mth 37 - 60 | Tranche 4<br>mth 51 - 62 |
| | **Reduced survey requisition rate** | • Customer Survey questions in 2014<br>• Volumes extracted from LOL team | • FY17 CSD transactions requisitioned = 5,019<br>• Average time = 60 mins<br>• FY17 surveyor charge out rate = $115-155 per hour | Tranche 4<br>mth 37 - 60 | Tranche 4<br>mth 51 - 62 |
| | **Notice of sale information being sent directly to territorial authorities** | • Customer Survey questions in 2014<br>• Volumes extracted from LOL team | • FY17 council notifications = 212,564<br>• Weighted average of time savings = 6.77 mins<br>• FY17 conveyancers charge out rate = $300-350 | Tranche 2<br>mth 19 – 36 | Tranche 1<br>mth 6 - 20 |
| | | • Customer Survey questions in 2014<br>• Volumes extracted from LOL team<br>• FY17 Council staff time validated by WCC | • FY17 council notifications = 212,564 (30% assumed to require rework)<br>• Average time savings = 5 mins<br>• FY17 council staff time = $80 | Tranche 2<br>mth 19 – 36 | Tranche 1<br>mth 6 - 20 |
| | **Direct notification of mortgage registration to lending institutions** | • Customer Survey questions in 2014 | • FY17 lending institution notification = 164,645<br>• Weighted average of time savings = 6.87 mins<br>• FY17 conveyancers charge out rate = $300-350 | Tranche 1<br>mth 4 - 18 | Tranche 1<br>mth 6 - 20 |
| | | • Information obtained from banks in 2014, then increased | • Two FTE required for bank staff to manually update bank records | Tranche 1<br>mth 4 - 18 | Tranche 1<br>mth 6 - 20 |

| Customer Economic Benefits | | | | | |
|---|---|---|---|---|---|
| **Benefit** | **Benefit Area** | **Source of Information** | **Inputs used** | **Pathway 1** | **Pathway 2** |
| | | by CPI | • FY17 average bank staff time = Increase by CPI rates of FY14 rate of $65 pa (estimated based on discussions with 4 large banks) to $71,748 p.a. | | |
| | **Easier searching of property information through web based searching** | • Volumes extracted from LOL team | • FY17 manual search transactions = 9,181<br>• Current fees for manual searches = $15 (GST inclusive) | Tranche 1<br>mth 4 - 18 | Tranche 1<br>mth 6 - 20 |
| | | • Volumes extracted from LOL team | • FY17 LOL customers with e-search licence = 2,453<br>• Current fee for digital certificate = $56 (GST inclusive) | Tranche 2<br>mth 19 – 36 | Tranche 1<br>mth 6 - 20 |
| | | • Customer support statistics - volume obtained from Operations team | • FY17 calls to LINZ call centre made by e-search customers = 4,706<br>• Average call time (based on customer support stats) = 5.84 mins<br>• The value of the e-search customers time is based on what has been used to value council staff time = $40 per hour (assumed as FY14 charge) FY17 = assume CPI applies to hourly rate | Tranche 2<br>mth 19 – 36 | Tranche 1<br>mth 6 - 20 |
| | | • FY17 volume obtained from IPS team | • REINZ house sales FY17 = 89,277 with 10-20% assumed to use 3rd party title search for each sale/purchase equates to 17,855 - 35,710 title searches | Tranche 2<br>mth 19 – 36 | Tranche 1<br>mth 6 - 20 |
| **IMPROVED ABILITY TO MEET CUSTOMER AND POLICY NEEDS** | **Improved customer satisfaction** | • FY17 – commentary from Group Manager Titles Scott Warman<br>• DCE's Kathy Mansell, Robbie Muir | • NEW<br>NOTE: This measure was identified in the ILM workshop March 2018.<br>FY17 - There is no current mechanism to capture complaints. Call and email volumes are available but need to clearly define what the 'issues' are. The business need to determine the scope and approach of this measurement.<br>DCE's confirmed they are keen to have this measure in place, and agreed to take it forward for developing. | TBC | TBC |

# Appendix G: Pathway 2 cost and financial modelling assumptions

Key costing assumptions used for the pathway 2 investment solution:

- **QRA cost risk:** It is assumed that the cost risk added at the 85th percentile will adequately cover all cost risks that may eventuate (up to the 85th percentile).
- **Assumed annual inflation:** 2% CPI has been assumed on all costs expect for personnel, which has assumed a 2.5% annual inflation factor.
- **Mobilisation phase:** Commences from the programme business case Cabinet decision approval. The mobilisation phase lasts for five months and covers the costs of getting the capability partner and development team on board, setting up the physical environment, and in general, getting the programme ramped up and ready to commence implementation from month six.
- **Build phase**: Four years & nine months as per the pathway 2 delivery plan. Four separate tranches are assumed, which include different work packages. Single Stage Business cases for each tranche will be submitted to Cabinet for funding approval during the 4.75 year build, prior to the commencement of each tranche.
- **Whole of life period & asset life:** 12 year whole of life period and an assumed 10 year asset life, which commences two years into the 5.25 year mobilisation/build phase.
- **Future capital enhancements:** Consistent with the programme model, we do not include any future capital enhancement cost post the 4.75 year build period.
- **Whole of life period & asset life:** 12 year whole of life period and an assumed 10 year asset life which commences two years into the five year mobilisation/build phase.
- **LINZ resources for build:** Would be sourced as LINZ FTE, contractors and capability partners (consultants). The mix and number of resources is as per the resource plan finalised by the programme PMO on 20th July 2018.
- Over the 4.75 year build phase, 80% of the development staff effort is assumed to be used on the capital development (CAPEX/Build), and the remaining 20% is used for ongoing operations support (OPEX/BAU).
- **Data migration**: The current architecture view has meant that data migration is not required. However, there is a risk that data migration will be required which will impact costs. The main source of uncertainty is around the current Informix data potentially having to be migrated to a system that has a different data structure.
- **Training requirements:** This programme requires slightly less training support than was assumed for pathway 1, because the underlying processes and terminology will be consistent with the current system. Approximately 5% less for non-resource training materials, and approximately 20% reduction for trainers from the business, training co-facilitators, go-live support and instructional designers.
- **Business Rules:** Business rules extraction is assumed as 70% less than the requirements for the programme.
- **Assurance**: Is based on what has been proposed in the programme assurance plan. LINZ will source IQAs, TQAs, gateway reviews etc. from external 3rd party suppliers.
- **LOL hosting & maintenance cost reductions**: [redacted]

# Appendix H: Pathway 2 Model data and key assumptions

| Risks | Percentile | 10 | 50 | 90 |
|---|---|---|---|---|
| **Mix of Days by Resource Type** There is uncertainty over the final mix of internal to contractor to specialist consulting required to deliver the programme. This risk reflects this uncertainty. | | | | |

| | Optimistic | Expected | Pessimistic |
|---|---|---|---|
| Internal Resource | 65% | 49% | 35% |
| Independent Contractor / Comm | 20% | 32% | 40% |
| Specialists and Consulting | 15% | 20% | 25% |
| | 100% | 100% | 100% |

| | | | |
|---|---|---|---|
| **Day Rate Internal Resource** [redacted] | [redacted] | [redacted] | [redacted] |
| **Day Rate Independent Contractor/Commodity Resource** [redacted] | [redacted] | [redacted] | [redacted] |
| **Day Rate Specialists and Consulting** [redacted] | [redacted] | [redacted] | [redacted] |
| **Programme Duration–years** The risk of software development effort to rebuild Landonline, including PowerBuilder complexity. The cost impact of longer duration (e.g. additional complexity or productivity shortfalls) can be partially mitigated by altering ramp-up and down of development teams. | | 4.0 | 5.0 | 7.0 |
| **On-going costs as % Capex**<br>'Support and freshness' provision is intended to ensure the solution avoids technical debt and continues to meet government and customer needs under a Dev-Ops model. This level has been set based on external advice and compares to the industry norm of 22% for SAP and Oracle. LINZ notes Landonline has a range of different attributes to license offerings such as SAP or Oracle, however considered it important to allow for sufficient ongoing opex to maintain system freshness. QRA modelling allows for the actual amount required for freshness and ongoing maintenance to be less than this amount. Note this is added to a further 11.5% already in the business to support the pathway 2 solution, making total opex as % capital = 21.3%. | | 7.8% | 9.8% | 10.8% |
| **DSL Hosting Cost Savings – years to achieve savings** - Transitioning off Landonline including migration of the Landonline database into the cloud (AWS) will achieve significant cost savings while also providing benefits in terms of resilience, performance and redundancy. Complexity impacts on the timing to realise cost savings, and LINZ proposes to conduct a POC in tranche 1 to confirm the viability of early transition. Extensive modelling on private vs public cloud hosting environments has informed LINZ's confidence in the reasonableness of proposed cost reductions. LINZ notes the dynamic nature of cloud services and pricing and this was considered as part of quantified risk assessment modelling. | | 2.0 | 3.0 | 5.5 |
| [redacted] | | [redacted] | [redacted] | [redacted] |

# Appendix I: Delivery Risks, Assumptions, Constraints & Dependencies

The programme approach to control management is embedded in the programme's methodology. Guidelines have been established for consistent identification, classification and management of risks, assumptions, dependencies and constraints at strategic, programme and operational/business levels and a summary of these have been provided in the tables below.

## Management Risks

| Description and Controls | Treatment | Probability/ Severity |
|---|---|---|
| If the Landonline database is unable to be moved into the cloud, then interfaces and processing will be in the cloud with the underlying database remaining in the current Landonline system, requiring an alternative solution taking more time and costs, potentially impacting customer experience through delays in system responsiveness. | Full analysis and due diligence work is planned to be undertaken during tranche 1 for moving to the cloud. This includes examining privacy, security, availability, data sovereignty, and off-shoring. [redacted] | Possible<br>High |
| If an event occurs that requires the programme to alter the transition plan (e.g. unexpected legislative change or components within Landonline fail before their planned replacement), then reprioritisation of transition activities will be required, potentially delaying delivery of customer value and benefits in order to maintain continuity of service or meet new objectives, extending timeframes and costs. | The programme will operate under an agile delivery approach, and any deviations or legislative changes will be proactively managed throughout the life of the programme, through continuous monitoring and assurance management. Regular engagement will continue with the Landonline BAU team, LINZ Executive and Central Agencies to ensure alignment. | Likely<br>High |
| If there are complexities within Landonline beyond what has been estimated (e.g. new interfaces cannot be built without significant impact on the current Landonline system or data isn't sufficiently reusable), then assumptions for duration and cost of the programme will be longer and more expensive, and trade-offs may be necessary to balance the changes required, impacting the functionality offered by the programme. | Product backlogs are being developed for tranche 1 that will describe the work and effort required, ensuring visibility of any complexities as they arise. Proofs of concepts are also planned within tranche 1 to evaluate the modularity of the Landonline code. | Possible<br>High |
| If LINZ is unable to get traction on its operating model shift required to support implementation of the Programme, then this will cause delays to commencing implementation, [redacted] and delivering value to customers. | The Programme is working closely with the business to ensure alignment to the operating model, and changes that are required to implement the programme will be ready prior to the commencement of each tranche. | Possible<br>High |
| If LINZ enters a state of flux and is unable to acquire the resource or capability to build or deliver via DevOps and SAFe Agile methodologies, then the speed to which the programme can develop and release products may be inhibited, resulting in schedule slippage, | Strategies are being developed to source and retain experienced people for effective succession, and involve a higher proportion of external resources in the first three years of the programme. Procurement plans will be socialised with agencies early to test market capacity and availability and ensure the right | Possible<br>High |

| Description and Controls | Treatment | Probability/ Severity |
|---|---|---|
| increased costs and benefits delayed or not realised. | resources will be sought. | |
| If there is a security breach or threat to Landonline during the build phase which may cause the system to become vulnerable or fail, then LINZ may be temporarily unable to offer survey and title transaction processing, or incur compensation and settlement claims where settlements involve incorrect information or additional costs, and will likely suffer reputational damage. | LINZ carries out regular monitoring of any security or identity threats to Landonline and this will continue throughout the life of the programme. LINZ will continue to invest in an IT security capability and monitor Landonline to proactively identify threats. There will be uplift in technical controls for Landonline to respond to new breaches or threats. | Possible<br>High |
| If the Programme runs slow and/or invests in dead-ends, then there may be missed opportunities to innovate as a result of governance and/or management failure. | 'Town planning' (the way the programme will operate) is currently underway and will include an approach to innovation so that emerging opportunities are fully exploited.<br>Governance arrangements are being established prior to each tranche comprising of multi-disciplined governance experts, with Agile training and on-going capability building, tailored for the various levels of governance and programme teams.<br>Detailed design work to be undertaken during tranche 1, and providing appropriate contingency allowances.<br>External assurance and central agency monitoring is planned regularly throughout each tranche. The tranche investment model makes it easy for Ministers to influence priorities and scope/direction of the programme. | Possible<br>High |
| If customers and staff do not embrace, nor adopt change, then the programme's objectives may not be met. | Change management strategies and activities continue to be developed and are based on recognised best practice.<br>Change will be business led, with support and coordination from a specialist change management team. Customers and staff have been, and will continue to be closely involved throughout the programme, with change effectiveness continually measured. | Possible<br>High |
| If there is delay to a decision to proceed into mobilisation, then commencement of tranche 1 will be delayed, and subsequent delivery tranches, impacting LINZ's ability to resolve the PowerBuilder and Security risks within a safe timeframe. | The programme has regular and effective engagement with the Minister and will ensure early indication of any delays to a decision. Resources will be allocated to securing alternative PowerBuilder development and additional security measures will be implemented. | Possible<br>High |

## Management Assumptions

- Landonline will operate in [redacted] (Cloud)
- Landonline will continue to be maintained and enhanced in parallel to the delivery of the system
- Data migration is not complex as it is purely lift and shift
- Trainers are available from the business
- Build duration is 4.75 years
- The programme will be able to readily find subject matter experts and skilled resources in LINZ, and the local market place
- Changes to systems that interact with Landonline and Landonline bau, will need to be governed and managed in a consistent manner, to prevent impacts during transition
- Product Owners will be available from the business and allocated to the programme
- Governance and leaders will provide appropriate delegations to Product Owners, to ensure effective and expedient decision-making during build & implementation
- Existing SLAs will not be the same as end state SLAs
- LINZ operating model changes required to implement the programme, will be made at the appropriate times before each tranche
- Approximately 300 staff and 12,000 customers will be impacted by the programme.

## Management Constraints

- Lifespan of PowerBuilder development language
- Commitments LINZ has made to realising customer benefits
- Shortage of skilled resources, and a need to drive effective resource management
- Constant shifts in business conditions requiring programme to adapt, in order to remain aligned to strategy and goals
- Business resources assigned to the programme may not be fully dedicated if they maintain responsibilities within operations, e.g. Product Owners
- Regulatory bodies imposing standards and quality requirements for programmes.

## Management Dependencies

- Landonline is still a live system with active development planned. Until responsibility is taken by the programme, Landonline must be kept fit for purpose. Ensuring these enhancements are aligned with programme changes is essential.
- Other LINZ projects required to deliver functionality to support the delivery of the programme, including:
    - CRM replacement
    - Modernising access to Landonline – Entrust Signing and RealMe login.
- 3rd Party Software suppliers to deliver Dataset Creation and Diagram Generation functionality
- System changes in the banking sector and by territorial authorities, required to effectively receive notice to mortgagees and notice of sale in tranche 1
- Migrating the core survey and titles records from current hosting to [redacted] must be done in parallel
- The Land Transfer Act 2017 will be activated in November 2018. LINZ is fully aware of the changes required to comply with the act, and is currently testing these changes for Landonline (ready for implementation during November 2018). These changes have minimal impact to the programme, and will be incorporated into the product backlogs for implementation of the re-built system. There is no direct Tranche 1 impact.

# Appendix J: Benefits realisation tranche view

| | May 2020 | Nov 2021 | Jan 2023 | Nov 2023 |
|---|---|---|---|---|
| | TRANCHE 1 | TRANCHE 2 | HE 3 | RANCHE 4 |
| **WHAT IS BENG DELIVERED** | | | | |
| **WORKPACKAGES** | **PRODUCT SEARCH**<br>• New website for public and registered customers<br>• LINZ product search API<br>• Self Admin | | | |
| | | **CADASTRE** | | |
| | | • A Surveyor Portal | • LINZ Survey staff now working in the renovated system | • Surveyor API<br>• 3D Cadastre<br>• Re-platform of Cadastre data |
| | | **TITLES** | | |
| | • Notice to Mortgagees<br>• Notice of Sale | • An eLodgement Discharge Transfer Mortgage pilot<br>• 100% E-Lodgement | • Auto-Registration of Land Transfer Dealings<br>• Step-down functions migrated | • Re-platform of Land Titles Register Data<br>• Conveyancer API |
| | | **OTHER** | | |
| | | • Territorial Authority eCertification by Councils | | • Work Management & Messaging Requests functionality |
| **COST** | $35M | $33.3M | $38.7M | $21.1M |
| **BENEFITS** | | | | |
| **QUANTIFIABLE BENEFITS** | **Improved customer productivity**<br>• Notice of Registration time savings for conveyancers and banks<br>• Time savings for conveyancers and Territorial Authorities from Notice of Sale.<br>• Registered search users' reduced calls and time taken per transaction, and reduced costs for use of 3rd party providers.<br>**$2.05M Web-based Search**<br>**$45.2M Notice of mortgage registration**<br>**$42.4M Notice of Sale** | **Improved customer productivity**<br>• Reduced time spent repeating activities for Discharge Transfer Mortgage transactions and new title transactions. | | **Improved customer productivity**<br>• Time spent processing CSD transactions and surveyor requisition rates are both reduced.<br>**Improved customer satisfaction**<br>• Reduced call centre complaints and improved customer satisfaction survey results.<br>**$40.19M Better interface with customer systems**<br>**$1.33M Reduced survey requisition rate** |
| **QUALITATIVE BENEFITS** | **Improved LINZ productivity**<br>• Reduction in e-search call volumes and manual search processing . | | **Reduced risk to business continuity and confidence**<br>• Technology [redacted] risks are mitigated.<br>**Improved LINZ productivity**<br>• Title process efficiencies<br>• Improved Survey and Title business reporting<br>• Greater automation of title transactions. | **Improved productivity (15%)**<br>• Easier digital interaction with LINZ, web-based public for S&T records and 3D Cadastre.<br>• Survey process efficiencies & fewer rework and corrections.<br>• Greater automation of survey transactions.<br>**Reduced risk to business continuity and confidence (45%)**<br>• Increased availability, quality, currency and usability of information.<br>**Improved ability to meet customer and policy needs (30%)**<br>• Reduced functional testing and length of change cycle.<br>• Timeliness and linkage of data<br>• Enable LINZ to respond to changing customer needs<br>**Increased economic value (10%)**<br>• Access instances across all channels<br>• Enable value to New Zealand economy |

# The delivery pathway 1 appendices (Commercial, Financial and Management Cases)

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

## Appendix L: Financial comparison of pathway 1 [redacted] and pathway 2 (LOLA)

| Category | Pathway 1 - [redacted] | Pathway 2 - LOLA |
|---|---|---|
| **Main capital funding source** | Landonline depreciation funding and Crown capital injection (repaid) | Landonline depreciation funding and Crown capital injection (repaid) |
| **Expected whole of life cash cost** *(QRA 50th percentile)** | $273.8 million<br>• Capex: $180.2m<br>• Opex: $48.7m<br>• Capital charge: $44.9m | $156.7 million<br>• Capex: $106.6m<br>• Opex: $31.9m<br>• Capital charge: $18.2m |
| **Whole of life cash cost including contingency** *(QRA 85th percentile)** | $320.4 million<br>• Capex: $203.5m<br>• Opex: $62.5m<br>• Capital charge: $54.4m | $204.9 million<br>• Capex: $128.2m<br>• Opex: $51.7m<br>• Capital charge: $25.0m |
| [redacted] | | |
| **Impact on the Crown** (QRA 85 percentile) | Repayable Crown capital injection of $170.7m<br>Period of Crown capital drawdown: Year one - seven<br>Timeframe to repay from initial drawdown: 12 years | Repayable Crown capital injection of $95.4m<br>Period of Crown capital drawdown: Year two - seven<br>Timeframe to repay from initial drawdown: 10 years |

## Capital funding required at 85th percentile

| **Capital Funded by the Crown at QRA 85th percentile ($m)**<br>*over 12 year whole of life* | **Pathway 1-** [redacted] | **Pathway 2 - LOLA** |
|---|---|---|
| **Based on a repaid Crown Capital injection** | | |
| ***Capital injection required*** | | |
| Capital requirement *(at 85th percentile cost)* | 203.5 | 128.2 |
| **minus**: available LOL depreciation | (32.9) | (32.9) |
| **Crown capital injection required** | 170.7 | 95.4 |
| ***Budget 18 Capital Bid*** | | |
| Budget 18 Capital Bid | 135.9 | 135.9 |
| **minus**: available LOL depreciation | (32.9) | (32.9) |
| Crown capital injection requested | 103.0 | 103.0 |
| **Funding shortfall (-) or funding contingency (+)** | (67.6) | 7.6 |
| ***Details of Crown Capital loan*** | | |
| *Period of Crown capital drawdown(Years)* | Year 1 - 7 | Year 2 - 7 |
| *Timeframe to repay from initial drawdown* | 12 Years | 10 Years |
| *Capital charge cost* | 54.4 | 25.0 |

## Impact of the Programme investment on [redacted] – on a repayable Crown capital injection

| **TOTAL** [redacted] **($million)**<br>*over 12 year whole of life period* | **Expected cost**<br>*(50th percentile)* | **Cost including contingency**<br>*(85th percentile)* |
|---|---|---|
| **Pathway 1** [redacted] **Capital Build** *(repayable Crown capital injection)* | | |
| Programme operating expenditure | 48.7 | 62.5 |
| **plus**: capital charge | 44.9 | 54.4 |
| **plus:** depreciation | 180.2 | 203.5 |
| **Total operating expenditure** | 273.8 | 320.4 |
| **Total operating expenditure** [redacted] | 273.8 | 320.4 |
| | | |
| **Pathway 2 Landonline Alternative Capital Build** *(repayable Crown capital injection)* | | |
| Programme operating expenditure | 31.9 | 51.7 |
| **plus**: capital charge | 18.2 | 25.0 |
| **plus:** depreciation | 106.6 | 128.2 |
| **Total operating expenditure** | 156.7 | 204.9 |
| **Total operating expenditure** [redacted] | 156.7 | 204.9 |

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]