FINAL REPORT

Quantifying the impacts of moving to digital plans in NSW

Cost-benefit analysis

Prepared for
Office of the Registrar-General

June 2022

THE CENTRE FOR INTERNATIONAL ECONOMICS
www.TheCIE.com.au

The Centre for International Economics is a private economic research agency that provides professional, independent and timely analysis of international and domestic events and policies.

The CIE's professional staff arrange, undertake and publish commissioned economic research and analysis for industry, corporations, governments, international agencies and individuals.

CANBERRA
Centre for International Economics
Ground Floor, 11 Lancaster Place
Canberra Airport ACT 2609

Telephone +61 2 6245 7800
Facsimile +61 2 6245 7888
Email cie@TheCIE.com.au
Website www.TheCIE.com.au

SYDNEY
Centre for International Economics
Level 7, 8 Spring Street
Sydney NSW 2000

Telephone +61 2 9250 0800
Email ciesyd@TheCIE.com.au
Website www.TheCIE.com.au

Contents

BOXES, CHARTS AND TABLES

Summary

Background

A survey plan is a document which defines the extent of a land parcel property. It is central to the Torrens Title system, which applies to the majority of privately owned land in NSW. In NSW it is a requirement that every privately owned current parcel is based on a survey plan which defines its boundaries.[1]

Over recent years, NSW has been progressively moving towards a fully digital land title system.

- Most conveyancing transactions involving land within NSW now occur through eConveyancing.
- The process for registering deposited and strata plans has gradually moved towards digitisation; the first online lodgment was almost 25 years ago and LandXML began over 10 years ago. However, it remains a paper-based system.

With manual paper-based systems becoming increasingly obsolete, the NSW Government is now considering options to transition from paper to digital survey plans.

The reform process to date has included:

- establishment of a Steering Committee (including representation from ORG, DCS Spatial Services and NSW Land Registry Services) to oversee reform.
- stakeholder engagement, to support development of an industry led and co-designed solution. Two key groups of stakeholders have been established to support the reform:
  - Consultative Committee: A group of peak industry body and stakeholder organisation representatives who have been selected to oversee the design and implementation of a digital survey plans solution for NSW.[2]
  - Surveyor Working Group: Over 30 registered surveyors from a range of businesses and public sector agencies who are supporting the reform through the testing and evaluation of digital plans standards and services.

---

1 The other operating systems are: Old System Title (being those lands granted before 1863 and not yet converted to Torrens Title), and Crown Title (being those lands held in the name of the State of NSW for which a folio of the Register has not yet been created). Any parcel under these systems which are intended to be converted to Torrens Title must also be based on a suitable survey plan to enable it to be added to the Torrens Register.

2 A list of participating organisations is available at: https://www.registrargeneral.nsw.gov.au/landboundaries/digital-survey-plans/digital-survey-plans-consultative-committee.

- a review of digital survey plans completed by Grosvenor in 2019[3] identified barriers to the uptake of digital survey plans and highlighted opportunities presented by the update of digital survey plan data and provided recommendations to support digital survey plan uptake.
- a Discussion Paper of the reforms which was released in August 2021.[4] This document outlines the proposed reforms and has been used to inform the options which are assessed in the cost-benefit analysis.

The Office of the Registrar General (ORG) has commissioned the Centre for International Economics (CIE) to prepare a cost benefit analysis (CBA) of various options for transitioning to digital survey plans.

The need for government action

The current process for approving, lodging and registering surveyor plans remains a paper -based system. Although over 90 per cent of plans are lodged via ePlan (an electronic plan lodgment and validation system), the process still involves scanning and uploading paper documents in PDF format.

Issues with the current arrangements include:

- Process inefficiencies — there are various inefficiencies associated with a paper-based process, including the following.
  - There are some approval processes that occur linearly; that is, the next part of the process cannot commence, until a previous process has been completed (or a certificate issued). In general, this type of linear process can take longer than a concurrent process, where multiple activities/approvals occur concurrently.
  - Plans are often created in a digital format and then converted to a paper-based plan for lodgment. In general, digital data is of more use to subsequent users of the plan, so subsequent users will often need to re-digitise the plan.
- High requisition rates — NSW Land Registry Services (NSW LRS) reports that in 2021, around 61 per cent of plans were requisitioned due to errors or omissions identified in plan examination. Requisitions delay plan registration.
- Plan errors — despite a rigorous plan examination process, some plans are registered containing errors. Plans with errors undermine the integrity of the land titles system and can result in the following outcomes:
  - costs associated with rectifying these errors through plan amendments; or
  - legal disputes over property boundaries (including the costs associated with resolving these disputes)
- Useability of paper-based plans — survey plans can be difficult to interpret. Conveyancers and lawyers report that plans need to be attached to conveyancing

3 Grosvenor 2019, *Digital Survey Plans Review*, prepared for the NSW Department of Customer Service.

4 Office of the Registrar General 2021, *Transitioning from paper to digital survey plans: Discussion Paper*, August 2021.

contracts which conveyancers and lawyers must explain to their clients. As some plans can run to hundreds of pages, this increases the cost of reviewing contracts.

These issues can lead to the following outcomes.

- Delays in plan registration — under current processes, can delay plan registration.
  - The available data suggests that the median time from the issue of the survey certificate to plan registration is:[5]
    - ~5 months for deposited plans; and
    - 3-4 months for strata plans.
  - Delays in plan registration:
    - add to costs for developers; and
    - delay settlement for new buyers.
- Additional costs — the above issues can unnecessarily increase costs for various parties. Additional costs as a result of the issues identified above include:
  - Costs associated with digitising paper-based plans, including:
    - Surveyors that subsequently use plans
    - DCS Spatial Services to maintain the Digital Cadastral Database (DCDB) or when an approval authority has requested a plan to be digitised
  - Costs associated with resolving requisitions, incurred by surveyors and NSW LRS (which may be at least partly passed on through fees)
  - Costs associated with plan amendments, including costs incurred by surveyors, Spatial technicians, and NSW LRS.
  - Costs associated with reviewing contracts.

Technological change has allowed many manual processes — including regulatory processes — to be digitised. Examples of government processes that have been digitised include:

- NSW Planning Portal
- eConveyancing

Manual paper-based systems are becoming increasingly obsolete. As noted in the NSW Government's Digital Strategy:

- digital processes are generally faster, more convenient and more efficient than traditional paper-based and face to face ones.[6]
- customers who access online services are consistently more satisfied than those who have used other channels.[7]

---

5 Based on data from a large sample of plans recorded by DCS Spatial Services.

6 NSW Government, digital nsw, Designing our Digital Future, p. 7.

7 NSW Government, digital nsw, Designing our Digital Future, p. 5.

Objectives

The key objectives of the proposed reforms are to:

- make it easier to prepare plans and associated documents
- improve the quality of plans
- reduce time between subdivision works and construction of new homes
- improve customer service.

Options

Components of the reform proposal

There are three components to the reform package, with each progressively building on the previous component.

A. Move to an online plan creation to registration process.

- NSW LRS are currently finalising a new online process from plan creation to registration: NSW LRS Connect. The proposed reform would see the plans and forms on NSW LRS Connect becoming the single source of truth, for surveyor certified plans. It would also involve establishing a link between the NSW Planning Portal and NSW LRS Connect.
- Any changes to plans and associated documents could be monitored on NSW LRS Connect and would help improve document management and enable concurrent consent gathering.

B. Require digital data to be included as part of plan lodgments

- This proposed reform would require digital survey plan data to be provided as part of plan lodgment. The survey plan image, as distinct from the data, would remain the legal point of truth.
- This reform seeks to encourage adoption of 'data first, then drafting' approach by surveyors. This means that plan data will be checked as early as possible in the process, instead of immediately before or after lodgment.

C. Digital data considered the legal point of truth

- Under this proposed reform, automatically rendered diagrams based on the digital survey plan data will be the legal point of truth (currently the surveyor drafted plan is the legal point of truth).
- This requires visualisation of digital survey plans in multiple forms (e.g. rendering of lot diagrams)[8], which will include the seal affixed on or recorded against the digital survey plan by NSW LRS upon registration.
- Where a Lot Diagram cannot be rendered to an acceptable standard to enable plan examination, the surveyor drafted plan will be the legal point of truth.

---

[8] See: Office of the Registrar-General, *Transitioning from paper to digital survey plans: Discussion Paper*, August 2021, pp. 26-28.

As the reform components progressively build on each other, the specific options under consideration are set out in table 1. One of the questions the CBA seeks to answer is: how far should the reforms go?

1 Options under consideration

Reform components	Option 1	Option 2	Option 3
Component A	✓	✓	✓
Component B		✓	✓
Component C			✓

Source: CIE.

Impacts

The main impacts of each of the reform components are expected to be as follows.

- **Component A** involves transitioning to an online process from plan creation to registration via the NSW LRS Connect system. The main impacts of Component A include:
  - system related costs (including the costs associated with developing NSW LRS Connect and costs associated with establishing a link with the NSW Planning portal)
  - costs incurred by surveyors in transitioning to NSW LRS Connect
  - reduced delays associated with the potential for processes to occur concurrently
  - reduced requisitions
  - benefits associated with mandatory online lodgment
  - benefits associated with mandatory electronic signatures.
- **Component B** would involve mandatory lodgment of digital data, although the plan image (in PDF format) would remain the legal point of truth. The main impacts from Component B are expected to include:
  - system related costs (including development of new systems/tools), mostly incurred by NSW LRS
  - additional costs for surveyors to convert to the proposed layering standard (or adopt existing LandXML software)
  - possibly additional plan examination costs
  - reduced requisitions (and associated costs)
  - reduced plan amendments (and associated costs)
  - reduced costs associated with digitising paper-based plans
  - reduced costs for water authorities (and possibly some other infrastructure service providers).
- **Component C** would involve digital data (or an image rendered directly from digital data) becoming the point of legal truth. The main impacts of Component C are expected to include:

- system related costs (including development and maintenance of a new tool to convert digital data to a visual representation) incurred by NSW LRS
- reduced plan examination costs (compared with Component B)
- reduced requisitions (and associated costs)
- reduced plan digitisation costs.

Cost-benefit analysis

Based on the information available to date, the preliminary estimates suggest that Option 3 (which includes Components A, B and C) delivers the highest net benefit and is therefore the preferred option (table 2). Although these estimates exclude the costs associated with developing and maintaining the new IT systems, it is unlikely that these costs would be high enough to change these broad conclusions.

The different scenarios presented in table 2 refer to the assumptions made about plan examination costs under Component B. Although this assumption is potentially important, it does not affect the broad conclusion that Option 3 is the preferred option.

Other key findings include the following:

- If digital data were to become mandatory, without making the digital data (or an image rendered directly from it) the legal point of truth (i.e. Option 2), it is important that plan examination requirements do not increase to the point where the incremental costs outweigh the benefits.
- Although the identifiable incremental benefits of making digital data the point of legal truth (Component C) are modest, there is potential for this to lead to future reforms that could have significant benefits. Any potential costs and benefits from Component C may become clearer after Components A and B have been implemented. The question of whether the digital data should be made the legal point of truth could be re-considered at that time.

2 Estimated impact by option

	Option 1	Option 2	Option 3
	$ million	$ million	$ million
Scenario 1			
Benefits	299.48	394.73	412.35
Costs	- 4.13	- 132.68	- 23.74
Net impact	**295.36**	**262.05**	**388.62**
Scenario 2			
Benefits	299.48	394.73	412.35
Costs	- 4.13	- 23.74	- 23.74
Net impact	**295.36**	**370.99**	**388.62**

Note: Costs and benefits estimated over 30 years, using a discount rate of 7 per cent.

The distribution of net benefits is shown in table 3. Costs and benefits are allocated across stakeholder groups based on the direct impact of the proposed reforms. In practice, many costs and benefits are likely to be passed on, such as through fee changes.

- This analysis suggests that all stakeholder groups are expected to benefit from the proposed reforms, based on the impacts that were able to be quantified. It is not clear that there would be a net benefit to NSW LRS if the system development and maintenance costs were included. That said, these costs were factored into the lease price, so these costs have effectively already been incurred by the NSW Government.
- Most of the benefits of the proposed reforms (around 88 per cent) go to landowners/developers. This reflects the high cost of delays and therefore the significant benefits associated with any time savings. In practice, many of the costs and benefits incurred by other parties (including surveyors and NSW LRS) are also likely to be passed onto landowners/developers.
- The estimated benefit to councils reflects the potential benefits from mandatory electronic signatures. These benefits are achieved by those councils that are assumed to not voluntarily take up the option of using electronic signatures, which is already available. Note that these councils would need to improve their systems to realise these benefits.
- Surveyors are key stakeholders in this process, and apart from system development costs (incurred by NSW LRS), will bear the costs associated with transitioning to the new system. Nevertheless, there are also benefits for surveyors, including reduced costs associated with requisitions and plan amendments and time savings associated with drafting plans. In present value terms (using a discount rate of 7 per cent), surveyors will break even after about 8 years and there is estimated to be a modest benefit to surveyors over the 30 year CBA timeframe.

3 Net impact by stakeholder group

	Surveyors	NSW LRS	NSW Government	Councils	Developers	Sydney Water	Total
	$ million	$ million	$ million	$ million	$ million	$ million	$ million
Component A	1.72	0.60	- 1.40	21.78	272.66	0.00	295.36
Component B	7.26	8.93	5.29	0.00	52.95	1.20	75.63
Component C	3.32	0.34	0.00	0.00	13.96	0.00	17.62
Total	**12.30**	**9.87**	**3.89**	**21.78**	**339.58**	**1.20**	**388.62**
Share of total (%)	**3**	**3**	**1**	**6**	**87**	**0**	**100**

Note: Costs and benefits are estimated in net present value terms over 30 years, using a discount rate of 7 per cent.

Source: CIE estimates.

Although there is some uncertainty of the magnitude of some impacts, the CBA results are not critically dependent on any one assumption. The conclusions drawn from the CBA are therefore considered to be robust.

1 Introduction

Background

A survey plan is a document which defines the extent of a land parcel property. It is central to the Torrens Title system, which applies to the majority of privately owned land in NSW, which requires that every current parcel is based on a survey plan which defines its boundaries.[9]

Whenever a new parcel is created or an existing parcel is redefined or a new affecting interest is created, a new plan depicting new boundaries must be prepared for lodgment and registration with NSW Land Registry Services (NSW LRS). These plans include:[10]

- deposited plan
- strata plan
- community plans, and
- annexures to a dealing
- Plan processes and requirements are set out in legislation. The Registrar General is responsible for ensuring that plans comply with these requirements. Land survey and associated survey plans can only be conducted and prepared by registered land surveyors, who are registered under the *Surveying and Spatial Information Act 2002*.

Registered surveyors use a range of sophisticated digital measurement technology to conduct their investigations in the field and locate property boundaries. Using this data gathered through fieldwork, surveyors create plans using survey calculation and drafting software. However, the process of documenting this information in survey plans relies on manual paper-based processes. Moving towards digital survey plans may create opportunities to realise efficiencies and reduce errors in survey plans, which underpin the planning and land titling system in NSW.

Registered plans

Over the period from 2015 to 2020, there were generally 11 000 to 12 000 plans registered per year (table 1.1). Of the plans registered during this period:

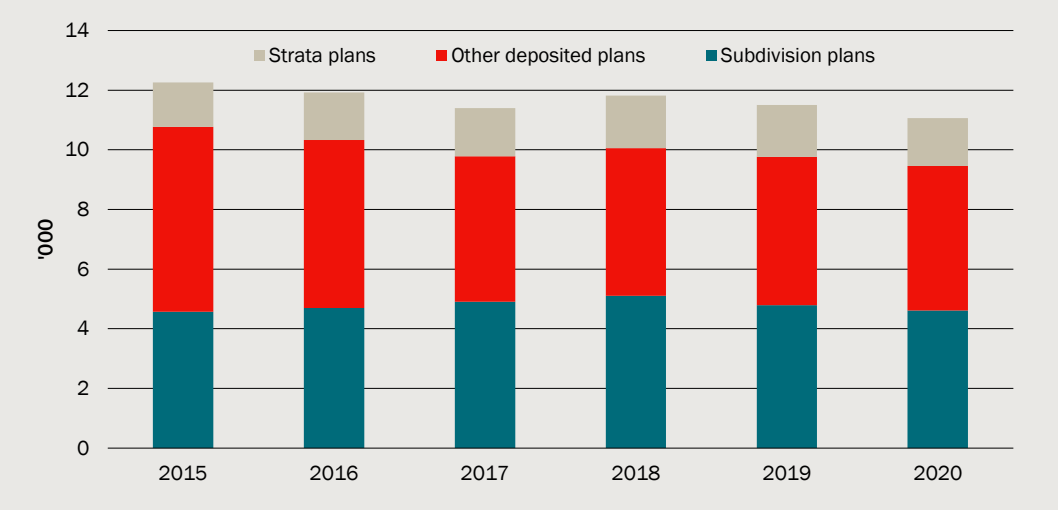
---

9 The other operating systems are: Old System Title (being those lands granted before 1863 and not yet converted to Torrens Title), and Crown Title (being those lands held in the name of the State of NSW for which a folio of the Register has not yet been created). Any parcel under these systems which are intended to be converted to Torrens Title must also be based ona suitable survey plan to noble ti to be added to the Torrens Register.

10 https://rg-guidelines.nswlrs.com.au/deposited_plans

- around 41 per cent could be broadly classified as subdivision plans (including: community plans, community subdivision plans, neighbourhood plans, neighbourhood subdivision plans, precinct plans, precinct subdivision plans and subdivision plans)
- around 45 per cent were other types of deposited plans (this includes various types of plans, with the most common types including: easement plans, consolidation plans, crown road enclosure plans and redefinition plans)
- around 14 per cent were strata plans.

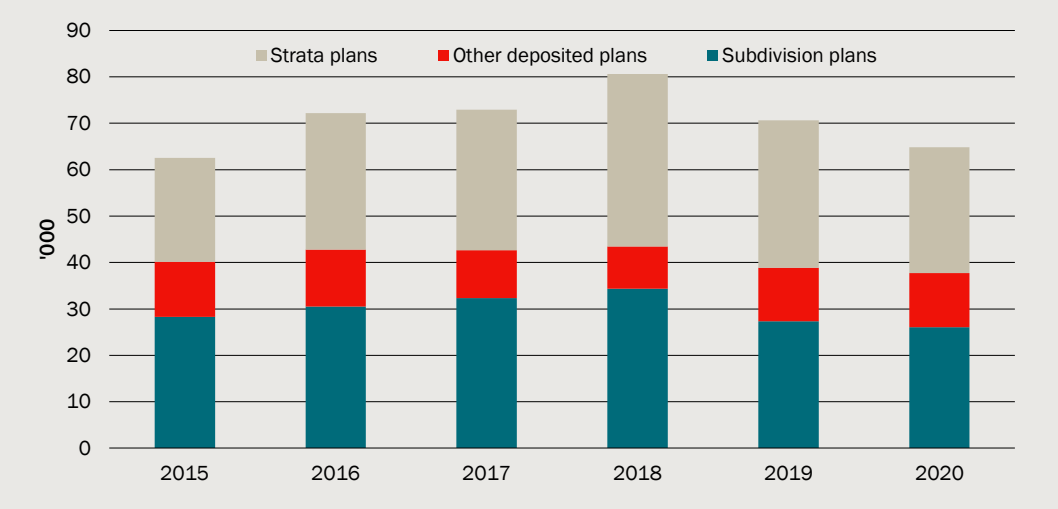
1.1 Number of plans registered



Data source: NSW LRS.

The number of lots included in these registered plans ranged between around 60 000 and 80 000 (chart 1.2).

1.2 Number of lots in registered plans



Data source: NSW LRS.

Average summary statistics of the plans registered over this period are shown in table 1.3.

1.3 Annual plan statistics 2015-2020 — summary

	Registered plans	Lots	Average lots per registered plan
	No.	No.	No.
Subdivision plans	4 778	29 818	6.2
Other deposited plans	5 249	11 116	2.1
Strata plans	1 634	29 700	18.2
Total	**11 661**	**70 634**	**6.1**

Source: NSW LRS.

Reform process

Over recent years, NSW has been progressively moving towards a fully digital land title system. Most conveyancing transactions involving land within NSW now occur through eConveyancing. However, the process for registering deposited and strata plans remains a paper-based system.

With manual paper-based systems becoming increasingly obsolete, the NSW Government commenced a strategic reset for establishing a fully digitised system for deposited and strata plans in 2019.

The reform process to date has included:

- establishment of a Steering Committee (including representation from ORG, DCS Spatial Services and NSW LRS) to oversee reform.
- stakeholder engagement, to support development of an industry led and co-designed solution. Two key groups of stakeholders have been established to support the reform:
- Consultative Committee: A group of peak industry body and stakeholder organisation representatives who have been selected to oversee the design and implementation of a digital survey plans solution for NSW.[11]
- Surveyor Working Group: Over 30 registered surveyors from a range of businesses and public sector agencies who are supporting the reform through the testing and evaluation of digital plans standards and services.
- a review of digital survey plans completed by Grosvenor in 2019[12] and identified barriers to the uptake of digital survey plan data, highlighted opportunities presented by the update of digital survey plan data and provided recommendations to support digital survey plan uptake.

11 A list of participating organisations is available at: https://www.registrargeneral.nsw.gov.au/landboundaries/digital-survey-plans/digital-survey-plans-consultative-committee.

12 Grosvenor 2019, *Digital Survey Plans Review*, prepared for the NSW Department of Customer Service.

- a Discussion Paper of the reforms which was released in August 2021.[13] This document outlines the proposed reforms and has been used to inform the options which are assessed in the cost-benefit analysis.

Scope and purpose of the Cost-Benefit Analysis

Cost-benefit analysis (CBA) is a commonly used tool to evaluate projects or policy decisions by quantifying and valuing changes compared to the existing policy position (i.e. base case). The CBA framework focuses on the 'welfare' of the community – the option that delivers the highest net social welfare compared to the status quo is considered to be the best option for society.

CBA does not provide the *optimal* solution but instead evaluates the alternative options presented. Further, the reliability of the conclusions also depend on the extent to which the major impacts can be robustly quantified.

Several CBA guidelines are available, which generally outline the same principles. This analysis has been developed based on the NSW Treasury CBA guidelines.[14] The key steps in a CBA are set out in box 1.4.

1.4 Key steps in a CBA

- **Articulating the decision that the CBA is seeking to evaluate**. For example, in relation to options considered in this study, the decision relates to whether to:
  - mandate online plan creation and registration processes
  - require digital data to be included as part of plan lodgments
  - define digital data as legal point of truth.
  - The way in which the CBA is framed and the information requirements will differ depending on the decision being evaluated.
- **Establishing the base case** against which to assess the potential economic impacts of changes. For this study, the base case will describe current arrangements for plan lodgment.
- **Quantifying the changes** from the base case resulting from the possible scenarios being considered. This focuses on the incremental changes resulting from the decision, such as costs of implanting new IT systems, changes in the number of requisitions, change in the time spent undertaking plan development tasks across stakeholders, and the time from commencing plan preparation and approval.
- **Placing values on the changes** and aggregating these values in a consistent manner to assess the outcomes.
- **Generating the Net Present Value (NPV) of the future net benefits stream**, using an appropriate discount rate, and deciding on the Decision Rule on which to assess

13 Office of the Registrar Genera 2021, *Transitioning from paper to digital survey plans: Discussion Paper*, August 2021.

14 NSW Treasury 2017, NSW Government Guide for Cost-Benefit Analysis.

the different options. The best decision rule is to choose the option that has the highest net benefits.

- **Identify distributional impacts,** from a distributional analysis which identifies the distribution of gains and losses from the proposed changes. This requires mapping the stream of future benefits and costs to stakeholders in the plan lodgment process.
- **Undertaking sensitivity analysis** on a key range of variables, given the uncertainties related to specific benefits and costs.

This report

The Centre for International Economics (CIE) has been asked by the NSW Office of the Registrar General to undertake a cost benefit analysis of options for transitioning from paper to digital plans.

CBA is a tool used to weigh up the benefits and costs (including financial, social and environmental benefits and costs, where relevant) of government policy decisions in a systematic and consistent way.

- CBA can help to identify which reform option is likely to deliver the greatest net benefit to the NSW community.
- CBA can also help to build support for reform among direct stakeholders and the public more generally in several ways.
- CBA can be used to help explain the rationale for reform and to communicate the benefits of a reform proposal to direct stakeholders and the community more broadly.
- CBA can also identify winners and losers from reform, by examining the distributional impacts of a reform.
- This can help to put any complaints/objections made by 'losers' into context.
- Identifying the losers from reform can also help with the development of approaches to either compensate those losers or help them transition to the new regulatory environment.
- CBA is also a mandatory requirement (where possible) for Better Regulation Statements (BRSs) and Regulatory Impact Statements (RISs), which are required when a significant regulatory change is made. As such, the CBA would become a key input into a future BRS or RIS (should regulatory changes be required).

The remainder of the report is structured as follows:

- chapter 2 outlines the case for government action, including describing current arrangements and problems or opportunities to improve processes
- chapter 3 outlines the objectives of the reforms and describes the options evaluated in the CBA
- chapter 4 outlines the impacts of the proposed options, and
- chapter 5 presents the CBA.

2 The need for government action

Current process for registering survey plans

Although survey plans can have other purposes, they play a key role in the residential (and other) development process, particularly:

- Subdivision plans — new housing developments require new folios of the register to be created through the registration of a subdivision plan. This can range from:
  - Small subdivisions where a homeowner may demolish an existing dwelling and build two new dwellings.
  - Large greenfield developments where land previously used for other purposes (such as agricultural uses) is subdivided into many lots for residential development.
- Strata plans — new multi-residence strata developments require a strata plan to create new lots within the scheme.

It is important to understand where the surveyor plan registration process fits into the broader development process.

Subdivision plans

The definitions of 'subdivision' are set out in section 6.2 *Environmental Planning and Assessment Act 1979* and section 195(1) *Conveyancing Act 1919*. The powers and responsibilities of a consent authority are set out in section 6.5(3) *Environmental Planning and Assessment Act 1979*.

Any plan that creates new boundaries for separate use or occupation constitutes a subdivision of the existing parcel.[15] In this regard, a 'plan of subdivision' includes any plan which:

- shows the division of an existing lot or lots into 2 or more new lots
- dedicates an existing lot as public road under section 9 *Roads Act 1993* or as public reserve or drainage reserve under section 49 *Local Government Act 1993*
- dedicates new road and/or road widening to the public, with a residue parcel
- shows a subdivision for lease purposes.
- If the lease (including any option for renewal) is for 5 years or less, subdivision consent is not required provided a statement is added to the Administration Sheet

[15] NSW LRS website, https://rg-guidelines.nswlrs.com.au/deposited_plans/subdivision_certificates/plans_requiring, accessed 11 March 2022.

- shows a subdivision for lease of a caravan park or mobile home estate under section 23H Conveyancing Act 1919
- shows the division of land held under perpetual lease, including a Western Division Perpetual Leasehold Title see Crown Land Management Act 2016.

The subdivision process typically follows these steps:

- Development consent is obtained from the consent authority (normally the local Council)
- A subdivision works certificate or construction certificate is obtained from the certifying authority, allowing subdivision works to be undertaken.
- A plan is prepared by a registered land surveyor.
- The developer (or surveyor or other land development consultant acting on their behalf) must gather plan consents from any party with an interest on title along with compliance certificates from service authorities, such as water, telecommunications and energy utilities.
- In addition, the developer (or the surveyor or other land development consultant acting on their behalf) applies for a subdivision or strata certificate from the certifying authority (normally the local council or a private certifier).
- The plan is lodged by the surveyor or alternate lodging party with NSW LRS who will examine and register the plan and create new folios of the register.

This process is summarised in chart 2.1, which shows the various instruments and concurrent activities in the subdivision process.

Development application

The subdivision plan process typically begins with a development application (DA) to the local council. For the preparation of the DA, the applicant will have developed a design (including the proposed number of new lots and their land area) for the new development and may also initiate communication with the relevant utilities regarding feasibility of the plan.

The first step concludes when development consent by the council. Depending on the scale and complexity of the development, conditions of consent with be issued, setting out the requirements for the development. These conditions may relate to provision of water supply, access, power or other conditions the council deems necessary.

Subdivision Works Certificate

A Subdivision Works Certificate (SWC) is required before commencing any subdivision works in connection with a development consent for the subdivision of land. The SWC verifies that:

- the detailed construction plans and specifications of the development are consistent with the development consent and complies with the Building Code of Australia and relevant standards

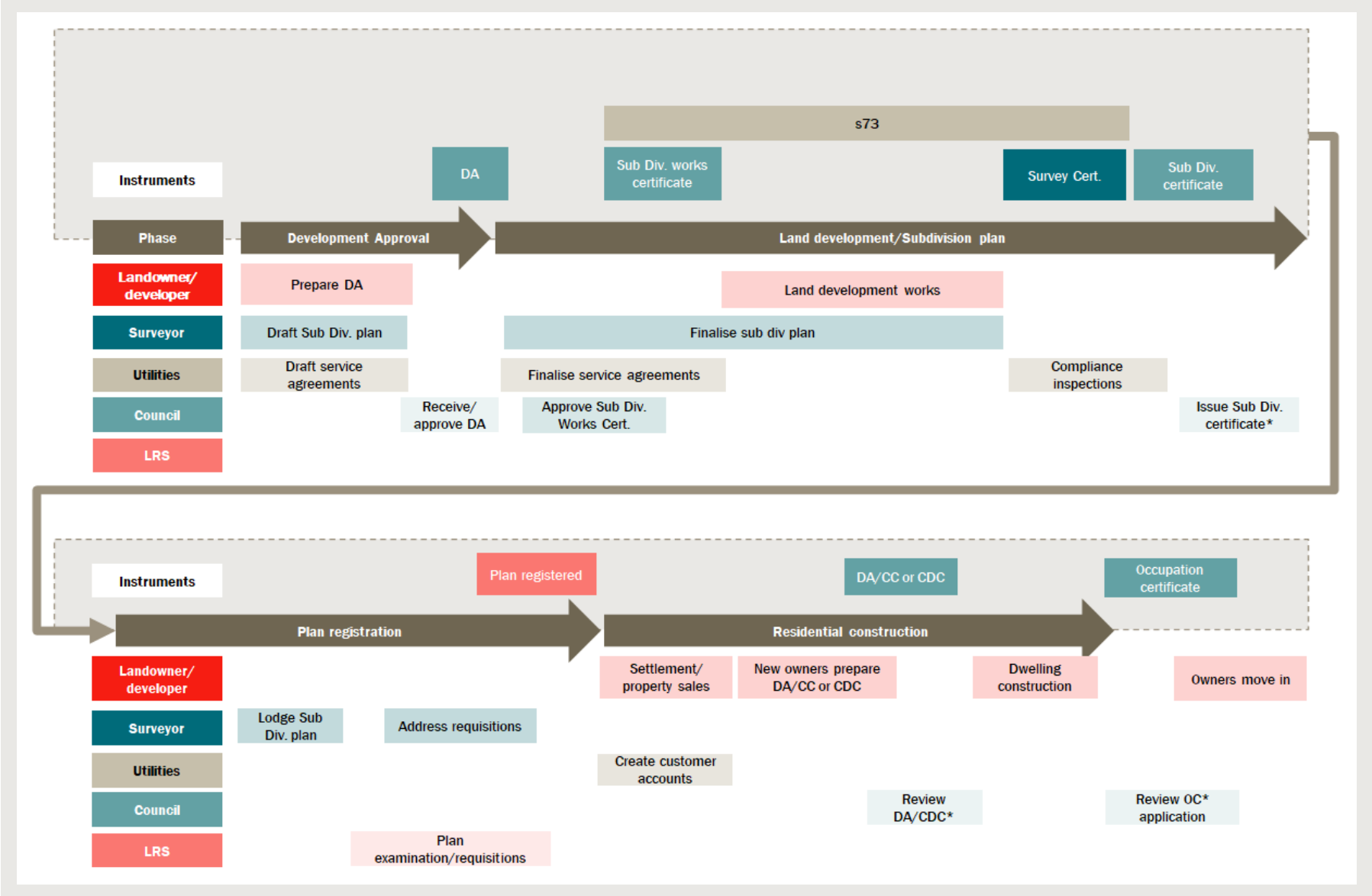
- all development consent conditions that must be satisfied before a SWC can be issued have been met.

Subdivision works include civil works such as sewerage works, roadworks and earthworks in connection consistent with the conditions of consent. SWCs are issued by either a local Council or a private certifier at the start of the construction process. SWCs do not apply to complying development certificates (CDCs) and some Crown developments.[16]

When the subdivision works are completed, the developer can apply for a subdivision certificate.

16 NSW Planning Portal, https://pp.planningportal.nsw.gov.au/post-consent-certificates/subdivision-works-certificate, accessed 24 May 2022.

2.1 Current sub-division process



Source: CIE.

Compliance with Sydney Water requirements

For regions serviced by Sydney Water, a Section 73 Compliance Certificate may be required in accordance with Section 73 of the *Sydney Water Act 1994*. The conditions for the issuance of a Section 73 Compliance Certificate are dependant on the scale and complexity of the building works.

Although other water authorities do not formally issue Section 73 Compliance Certificates, similar arrangements may be in place in other areas.

For developments that are considered 'low-risk', Sydney Water allows developers to submit the application as a 'Complying application'. This results in a reduced timeframe to get the Section 73 Certificate. Complying developments typically include developments that:

- have already met Sydney Water's servicing requirements
- only need to build minor works
- only need the building plans approved
- only need to complete other 'low-risk' requirements that are more than 10m from Sydney Water's stormwater channels.

Sydney Water will issue a Notice of Requirements letter that informs the developer of the construction and other requirements they must meet to service the development. All requirements need to be met before Sydney Water can release the Section 73 Certificate, which is required to submit an application for a Subdivision Certificate.

Plan preparation and Survey Certificate

A subdivision requires a survey plan to be prepared by a registered surveyor. Prior to submitting a final plan to the Council (or in some cases a private certifier), the registered surveyor must sign a survey certificate to certify that the land was surveyed in accordance with the requirements of the *Surveying and Spatial Information Regulation 2017*.

Subdivision Certificate

A Subdivision Certificate authorises the registration of a plan of subdivision under *Part 23 of the Conveyancing Act 1919*. The Subdivision Certificate:

- Certifies that the subdivision plan has been completed in accordance with the relevant development consent or CDC, in the case of complying development; and
- Authorises the registration of the subdivision plan for lodgment with the NSW LRS.

Before a Subdivision Certificate is issued, the relevant consent authority or registered certifier must be satisfied that the matters specified in *Section 6.15 of the Environmental Planning and Assessment Act 1979* have been addressed.

The following documentation would generally be required for a Subdivision Certificate:

- A subdivision plan,

- A copy of the relevant development consent (if a development application was lodged) or a CDC (if permitted under Complying Development),
- A copy of any relevant subdivision works certificate,
- A copy of an operative development consent and evidence of compliance with any conditions required to be fulfilled prior to issuance of subdivision certificate,
- A copy of detailed subdivision engineering plans,
- A certificate of compliance from the Water Authority (where relevant),
- Evidence that required drainage easements have been acquired by the relevant council (where relevant),
- Additional requirements for subdivisions involving subdivision work,
- Evidence of completion of any required subdivision work, or
- An agreement has been reached with the relevant consent authority as to payment for the cost of the work and the time for carrying out the work, or
- An agreement has been reached with the relevant consent authority as to security to be given to the consent authority with respect to the completion of the work.
- Anything else specified in Clause 157(2) of the *Environmental Planning and Assessment Regulations 2000*[17].

Once these requirements are met, the Council will issue the Subdivision Certificate and endorse the final plan of subdivision, Administration Sheet and 88b Instrument (if required). The surveyor or alternate lodging party then must gather signatures from certain parties, such as the owners and mortgagee, before they lodge the plan with NSW LRS.

Lodgment with NSW Land Registry Services

The surveyor or alternate lodging party can lodge the plan with NSW LRS for registration at the retail office or, for surveyors, electronically via ePlan.

Once a plan has been lodged, a NSW LRS plan examiner reviews the plan to ensure that existing interests are preserved and that the plan has been prepared in line with relevant legislation, regulations and lodgment rules. This includes ensuring that the common boundaries are formed with adjoining parcels and existing interests are preserved from one generation of title to the next.

Relevant NSW LRS service standards for deposited plans are as follows:[18]

- 85 per cent of new candidate deposited plans examined within 12 business days
- 100 per cent of new candidate deposited plans examined within 15 business days.[19]

---

17 https://pp.planningportal.nsw.gov.au/post-consent-certificates/subdivision-certificate

18 NSW LRS annual service level report to Customers, https://www.nswlrs.com.au/getattachment/d4399d53-e56d-48df-93db-0ac758e20ee1/NSW%20LRS%20service%20level%20report%20FY21, accessed 17 March 2022.

19 Around 80 per cent of deposited plans lodged are candidate plans.

If the plan contains an error or is missing information, the plan is requisitioned, which involves correspondence being sent to the lodging party and/or surveyor until the plan or associated document is corrected.

If the lodging party and/or surveyor have made changes to the plan and/or associated documents a new version is electronically relodged through the ePlan Portal. The new version is then reviewed by the plan examiner to determine if all errors or missing information have been resolved and the plan can be registered.

If all requirements are met, the plan is registered and a registration notice is issued to the lodging agent and the surveyor. Upon registration of a new plan:

- the prior title(s) is cancelled and new folios issued
- the plan and administration sheets are processed to be placed on public record, including the affixing of the Registrar General's Seal and the date.

Newly registered plans and associated folios are charted on the official digital cadastral map, showing all legal and other approved boundaries applying to land in NSW. The NSW land register is updated to reflect any new information generating a new edition of the folio(s).

After these preceding steps, the settlements of sales are permitted. The new owners can then initiate the development process for the construction of residential buildings.

Strata plans

All strata schemes are depicted in strata plans. The strata plan is a subdivision of a parcel of Real Property land into separate lots and common property. Strata plans differ from conventional subdivisions in various ways:

- all lots are defined as a cubic space and must be limited in height and depth.
- every strata plan must have a building on the parcel.
- the lots are defined on the floor plan by the building or other permanent structures within the parcel.
- everything within the parcel which does not form part of a lot is common property.
- it is the responsibility of the owners corporation to maintain and repair common property.
- the owners corporation is a body corporate of all of the lot owners in a scheme.
- each lot in a strata plan is allocated a unit entitlement based upon its value relative to the other lots in the scheme. The unit entitlement represents that lot's share of the common property.

Strata subdivision is the subdivision of a building or buildings into smaller cubic spaces, generally units or town houses. Just as a large parcel of land can be subdivided into smaller lots, each with a legal title that can be bought and sold, similarly, a building can be subdivided in three dimensions to create a number of smaller strata lots, also with a separate legal title that can be bought and sold.

All strata plans must be prepared by a land surveyor registered under the *Surveying and Spatial Information Act 2002*. A strata plan can only subdivide fee simple land (including leasehold land) under the *Real Property Act 1900 (Torrens Title).* A strata plan can subdivide one or more lots in a deposited plan (if it is more than one lot, they must be contiguous). This deposited plan is known as the base plan. The base plan must be a plan of survey which has connections to at least two Permanent Survey Marks.

A strata plan may not subdivide:

- a qualified or limited title
- a lot in a neighbourhood plan, or
- a perpetual lease from the crown.

The parcel to be subdivided must have a building or part of a building within its boundaries.

The current strata subdivision process is summarised in chart 2.2.

Planning and building approvals

The process starts with planning approval for a strata development. Planning approval is generally in the form of a DA approved by Council, but there are a small number of cases where planning approval is in the form of a CDC issued by a registered certifier.

In most cases, construction work cannot commence until a Construction Certificate (CC) is issued (a CC is not required when a CDC has been issued). The building must be consistent with CC documents and the development consent.

Plan preparation and Survey Certificate

As for subdivisions, a registered surveyor must prepare a strata plan and sign a survey certificate. The structure must be completed before the surveyor can sign the survey certificate.

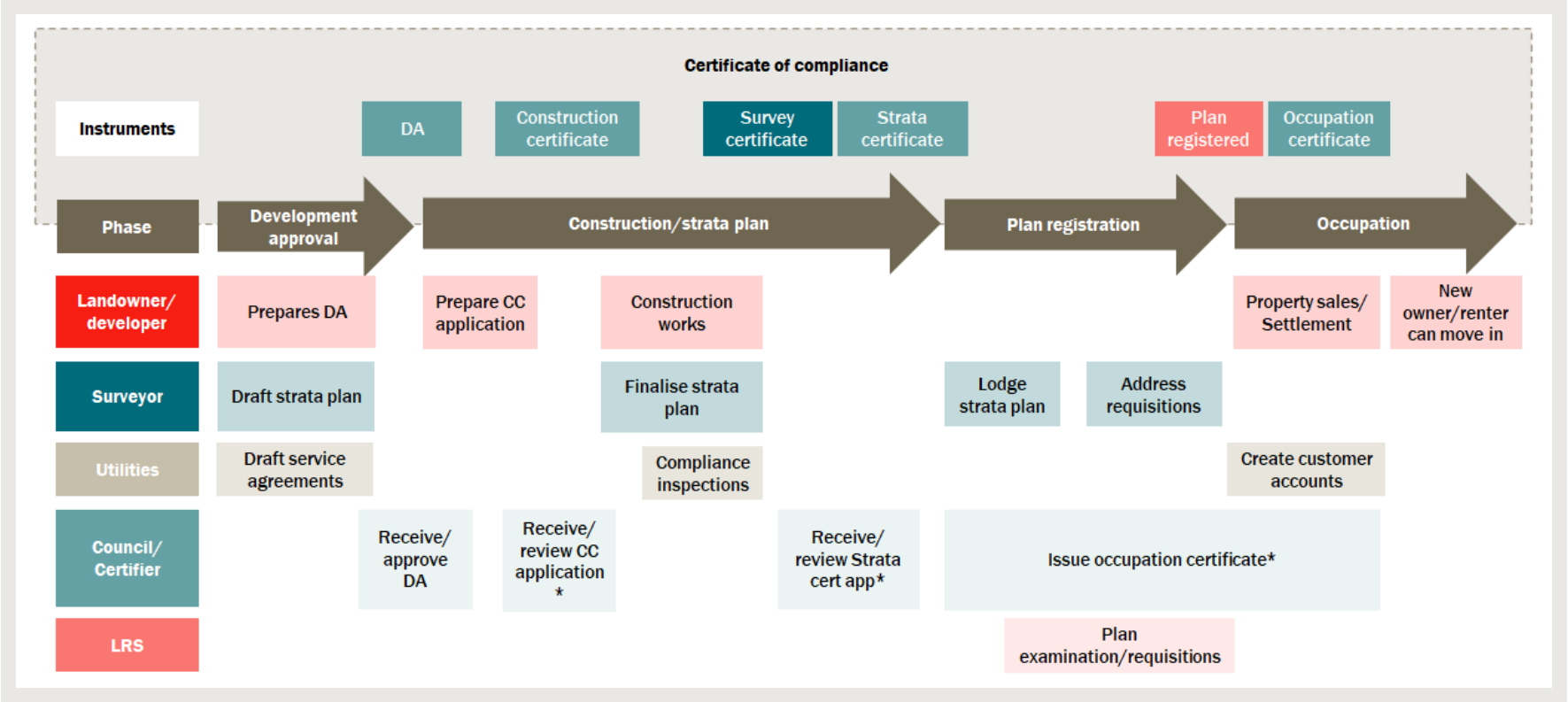
Strata Certificate

A Strata Certificate finalises the strata subdivision of a building and certifies that all requirements of the strata subdivision process have been completed. A Strata Certificate cannot be issued until the survey certificate has been signed.

A Strata Certificate also enables the strata plan, which is produced by a Registered Surveyor, to be lodged with NSW LRS for registration. A Strata Certificate is issued under the *Strata Schemes Development Act 2015*.

A registered certifier can issue Strata Certificates for a strata plan, strata plan of subdivision, or a notice of conversion.

2.2 Current strata subdivision process



Source: CIE.

Lodgment with NSW Land Registry Services

The surveyor or alternate lodging party will lodge the plan with NSW LRS, as per the same lodgment requirements of the subdivision plan. NSW LRS will examine the plan, issue any requisitions and finalise the plan for registration.

Relevant NSW LRS service standards for strata plans are as follows:[20]

- 90 per cent of new candidate strata plans examined within 10 business days
- 100 per cent of new candidate strata plans examined within 15 business days.[21]

Upon registration of a freehold strata plan under the *Strata Schemes Development Act 2015* the following occurs:

- the prior title is cancelled
- the plan and administration sheets are processed to be placed on public record, including the affixing of the Registrar General's Seal and the date
- the owner's corporation comes into existence
- all common property vests in the owner's corporation and a folio of the register is issued for the common property, as per *section 24 Strata Schemes Development Act 2015*
- a folio of the register is created for each lot in the plan which will issue in the name of the registered proprietor of the prior title
- the initial period commences.

Although a developer can enter into pre-sale contracts, settlement cannot occur until the strata plan has been registered and the Occupation Certificate (OC) has been issued.

Occupation Certificate

Before a multi-dwelling development can be occupied, an Occupation Certificate (OC) will need to be issued by the Principal Certifier (either the council or a private certifier). An OC is a certificate issued under Part 6 *section 6.4c of the EP&A Act* which authorises the occupation and use of a new building or part of a building. For staged works, a Part OC may be issued which allows occupation of the completed part of the building.

Depending on the particular OC sought, the Principal Certifier must be satisfied the development meets various regulatory standards. These generally include that:

- a development consent is in force
- the design and construction of the building is not inconsistent with the development consent
- any pre-conditions set out in the consent or requirements of planning agreements have been satisfied

---

20 NSW LRS annual service level report to Customers, https://www.nswlrs.com.au/getattachment/d4399d53-e56d-48df-93db-0ac758e20ee1/NSW%20LRS%20service%20level%20report%20FY21, accessed 17 March 2022.

21 Around 90 per cent of strata plans lodged are candidate plans.

- a CC has been issued
- the building is suitable for occupation (in accordance with its Building Code of Australia classification).

Issuing the OC for the whole of the development is the last step in the formal DA and construction process (though there could be ongoing 'operational' conditions such as maintaining appropriate noise levels or landscape maintenance).

Issues with current arrangements

The current process for approving, lodging and registering surveyor plans remains a paper-based system. Although around 90 per cent of plans are lodged via ePlan (an electronic plan lodgment and validation system), this essentially involves scanning and uploading paper documents in PDF format.

Issues with the current arrangements include:

- Process inefficiencies — there are various inefficiencies associated with a paper-based process, including the following.
  - There are some approval processes that occur linearly; that is, the next part of the process cannot commence, until a previous process has been completed (or a certificate issued). In general, this type of linear process can take longer than a concurrent process.
  - Plans are often created in a digital format and then converted to a PDF when lodged with NSW LRS. In general, digital data is of more use to subsequent users of the plan, so subsequent users will often need to re-digitise the plan.
- High requisition rates — NSW LRS reports that in 2021, around 61 per cent of plans were requisitioned. Requisitions delay plan registration.
- Plan errors — despite a rigorous plan examination process, some plans are registered containing errors. Plans with errors undermines the integrity of the land titles system and can result in the following outcomes:
  - costs associated with rectifying these errors through plan amendments; or
  - legal disputes over property boundaries (including the costs associated with resolving these disputes).
- Useability of paper-based plans — survey plans can be difficult to interpret. Conveyancers and lawyers report that plans need to be attached to conveyancing contracts. As some plans can run to hundreds of pages, this increases the cost of reviewing contracts.

These issues can lead to the following outcomes.

- Delays in plan registration — under current processes, can delay plan registration.
  - The available data suggests that the median time from plan creation to registration is:[22]

22 Based on data from a large sample of plans where relevant dates have been recorded by DCS Spatial Services.

    - ~5 months for deposited plans (based on the median from a sample of plans lodged over the 2019 to 2022 period); and
    - ~3-4 months for strata plans.
  - Delays in plan registration add to costs for developers.
- Additional costs — the above issues can unnecessarily increase costs for various parties. Additional costs as a result of the issues identified above include:
  - Costs associated with digitising paper-based plans, including:
    - Surveyors that subsequently use plans
    - DCS Spatial Services to maintain the DCDB or when an approval authority has requested a plan to be digitised
  - Costs associated with resolving requisitions, incurred by surveyors and NSW LRS (which may be at least partly passed on through fees)
  - Costs associated with plan amendments, including costs incurred by surveyors, Spatial technicians and NSW LRS.
  - Costs associated with reviewing contracts.

Process inefficiencies

Most surveyors create plans in a digital format. The plan is converted to a PDF when lodged with NSW LRS.

In general, digital data is more useful for subsequent users of the plan. There are several circumstances where registered paper-based plans are redigitised, including the following:

- The DCDB maintenance team within the DCS Spatial Services redigitises plans to update and maintain the currency of the DCDB.
- The DCDB development team within the DCS Spatial Services redigitises plans to upgrade and improve the spatial accuracy of the DCDB.
- Past and new survey plans are being digitised as part of the Survey Plan Digitisation Project (SPDP). This project has reduced redigisation of plans by the maintenance and development teams workflows within the DCS Spatial Services.
- Surveyors may need to digitise existing plans when creating new survey plans.

DCDB maintenance and development

The DCDB maintenance and development teams key activities are updating the DCDB, including when new plans are registered, as well as positional upgrades and other improvements to cadastral data.

When the DCDB is updated for newly registered plans (note this is only one component of the DCDB), digital data can be ingested directly into the DCDB. However, when digital data is not available, the plan must be entered manually. Manual updates take considerably longer to process than ingested plans and therefore impose higher costs. DCS Spatial Services estimates that:

- digital data takes around 1-3 minutes to ingest

- a survey plan can take anywhere between 10 minutes and 2 hours (120 minutes) to manually plot up, depending on the size of the plan. Plans with more lots take more time due to plotting the associated bearings and distances.

Over the year to February 2022, 1619 plans were manually entered into the DCDB (table 2.3).

2.3 Number of plans processed per year by the DCDB maintenance team

	Plans
	No. per year
Digital data ingested	4 691
Manual update	1 619
Plans not requiring updates to the DCDB	3 528
Total plans processed	**9 838**

Note: Not all plans require updates into the DCDB (e.g. most easements and subsequent strata plans are not added to the DCDB).
Source: DCS Spatial Services.

The potential cost savings from better availability of digital data are estimated at around $103 per plan (table 2.4) based on the following.

- Time savings are estimated around 63 minutes per plan based on the mid-point of the ranges estimated by DCS Spatial Services:
  - manual ingestion is estimated to take 2 minutes per plan (based on the mid-point of 1-3 minutes)
  - a manual update is estimated to take 65 minutes (based on the midpoint of 10-120 minutes)
- DCS Spatial Services staff time is valued at $1.63 per minute as follows.
  - The staff performing these tasks are a mix of Grade 3/4, Grade 5/6 and Grade 7/8 under the Lands Award. We use the maximum salary of a Grade 5/6 — $96 540 per annum — as an approximate average and apply a 75 per cent mark-up for on-costs and overheads.
  - This divided by an estimated 1725 working hours per year (based on: 230 working days per year and 7.5 working hours per day).

2.4 DCDB update for newly registered plans — cost saving from digital data

	Minutes	Cost per minute	Cost per plan
	No.	$	$
Ingested plans (time to ingest data only)	2	1.63	3
Manual plans (data entry only)	65	1.63	106
Saving from digital data			**103**

Source: DCS Spatial Services, CIE.

This implies that the lack of digital data for some plans imposes an additional cost on DCS Spatial Services of around **$166 492** per year ($103 per plan x 1619 manual plan updates).

On-demand plan digitisation

DCS Spatial Services' Survey Plan Digitisation Project is digitising NSW Deposited Plans into LandXML format. There are approximately 800 000 plans being converted from TIFF/PDF into LandXML and each deposited plan image has on average 700 data fields to be captured. The digitisation process is undertaken externally and all files are quality assured by DCS Spatial Services.

Over the year to February 2022, the total cost of the on-demand plan digitisation service provided by DCS Spatial Services was **$291 989**.

Digitisation by surveyors

Surveyors also report frequently needing to digitise existing plans when creating a new plan. Surveyors report this can take several hours, depending on the complexity of the plan.

Assuming an average of 2 hours, this implies an additional cost of around $500 (based on surveyor charge out rate of $250 per hour).

Timeframes

Registered plans record the dates that various processes have been completed. DCS Spatial Services has recorded these dates for a sample of plans over several years.

Subdivision plans

The part of the subdivision process where the approval timeframes could potentially be affected by the move to digital plans is the period between the issue of the survey certificate (by the registered surveyor) and the registration of the subdivision plan.

For the sample of plans where the relevant information is available (table 2.5):

- the average time taken for this process was around 8 months
- the median time take was around 5 months.

2.5 Timeframes between key milestones

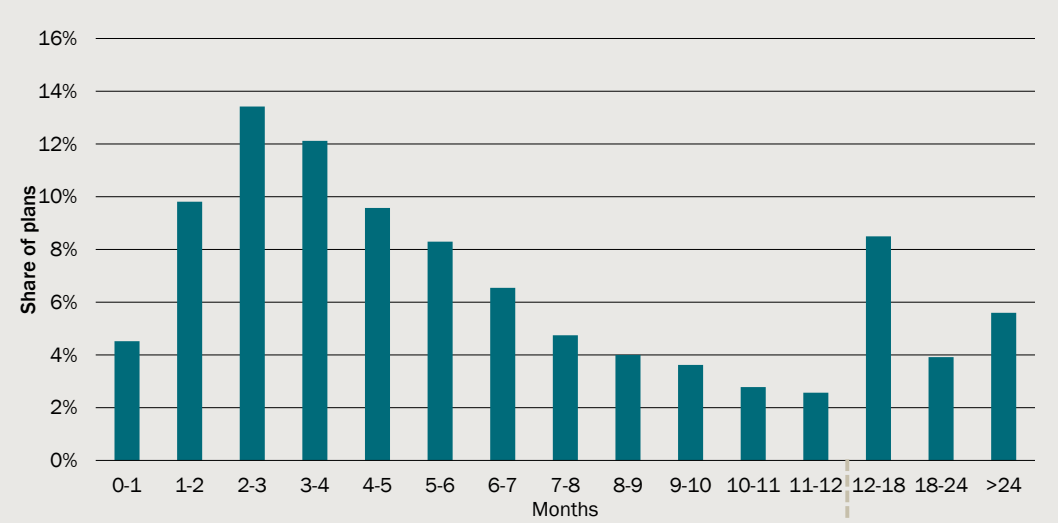
	Mean months	Median months
	No.	No.
Survey certificate to subdivision certificate	5.1	2.7
Subdivision certificate to lodgment with NSW LRS	2.3	0.9
Lodgment to registration	1.0	0.7
Total: Survey certificate to registration[a]	**8.1**	**5.1**

[a] The sum of each component does not add to the total because the samples for each component (and the total) can vary due to an incomplete dataset (i.e. not all relevant dates are available for all plans).

Source: CIE based on data provided by DCS Spatial Services.

The difference between the mean and the median is due to a significant number of plans in the tail of the distribution where this process takes more than 18 months (see the frequency distribution shown in chart 2.6).

2.6 Survey certificate to registration — frequency distribution 2019-2022



Data source: DCS Spatial Services.

Survey certificate to subdivision certificate

The timeframe between the survey certificate and the subdivision certificate is the longest part of the process. After the survey certificate has been signed:

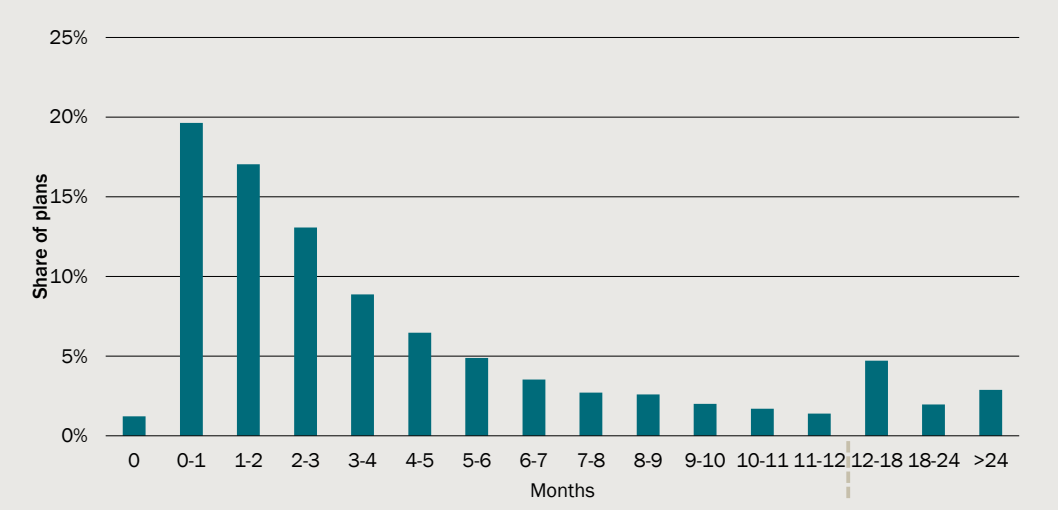
1 relevant approvals/certificates must be gathered from infrastructure service providers to certify that the relevant works have been completed to the required standard

2 the council (or in some cases a private certifier) can then issue a subdivision certificate once satisfied that the conditions of consent in the subdivision works certificate are met.

Chart 2.7 shows the distribution of timeframes between the signing of the survey certificate to the issue of the subdivision certificate for a sample of plans registered between 2019 and 2022, where relevant dates were provided. Across all subdivision plans in the sample:

- the **mean** time to complete this phase was around **5.1 months** (157 days)
- the **median** time was around **2.7 months** (82 days).

2.7 Survey certificate to subdivision certificate — frequency distribution 2019-2022



Data source: DCS Spatial Services.

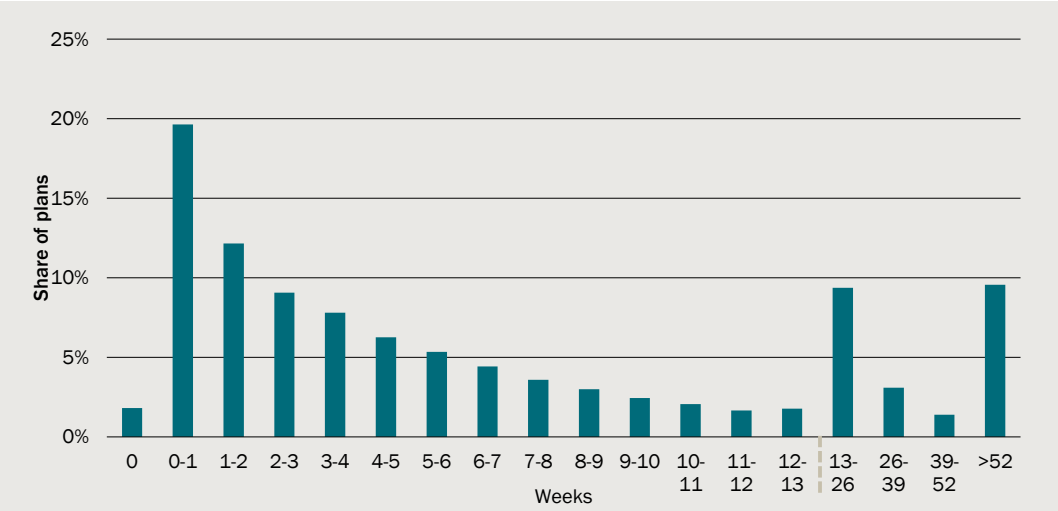
Subdivision certificate to lodgment with NSW LRS

Once the subdivision certificate is issued by the certifying authority, the plan has satisfied the relevant consent conditions and can be lodged with NSW LRS. Approval is required from registered interest holders of the land, such as the owner and mortgagee, prior to lodgment at NSW LRS.

Chart 2.8 shows the distribution of days between the subdivision certificate signature and lodgment with NSW LRS for the sample plans registered between 2019 and 2022.

- Across the sample of subdivision plans:
  - the **mean** time between the issue of the subdivision certificate and lodgment with NSW LRS was **10 weeks** (70 days)
  - the **median** time was nearly **4 weeks** (27 days).
- A significant proportion of plans are lodged within a few weeks of the subdivision certificate being issued: around 35 per cent are lodged within 3 weeks. In general, the subdivision plans that create more new lots tend to be lodged earlier, reflecting the high holding costs associated with new greenfield sites.
- On the other hand, around 25 per cent of plans are not lodged until more than 3 months after the subdivision certificate has been issued. These tend to be subdivision plans that create a smaller number of lots that may be less time-critical.

2.8 Subdivision certificate to lodgment with NSW LRS — frequency distribution 2019-2022



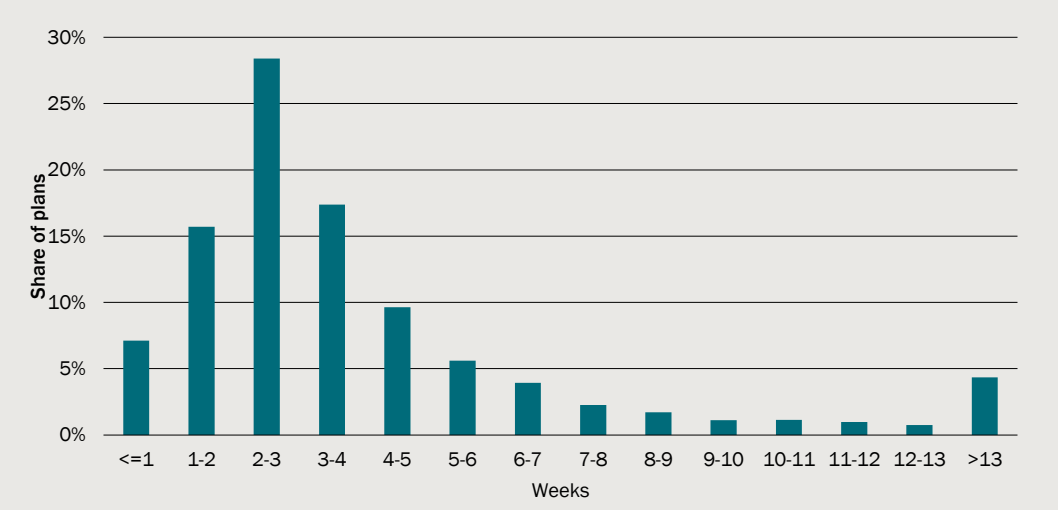
Data source: Department of Customer Service NSW.

Lodgment with NSW LRS to registration

The surveyor lodges the plan with NSW LRS, who review the plan in preparation for registration. In this process, if any errors are detected by NSW LRS, they will issue a requisition to the surveyor and/or lodging party. The surveyor is responsible for addressing the issue and submitting the revised plan so that NSW LRS can finalise the plan for registration. Chart 2.9 shows the distribution of days between lodgment with NSW LRS and registration for plans registered between 2019 and 2022.

- Across the sample:
  - the **mean** number of days from lodgment to registration was **32**
  - the **median** was **21** days.
- Around 78 per cent of plans are registered within 5 weeks.

2.9 Lodgment to registration — frequency distribution 2019-2022



Data source: Department of Customer Service NSW.

Strata plans

Similar to the subdivision plan process, the strata plan process starts with the preparation of a survey and concludes with the registration of the plan by NSW LRS. Across the sample of strata plans registered between 2021 and 2022 (table 2.10):

- the average time from the issue of the survey certificate to registration was around **6.7 months**
- the median time from the issue of the survey certificate to registration was around **4 months**.

2.10 Timeframes between key milestones — strata plans

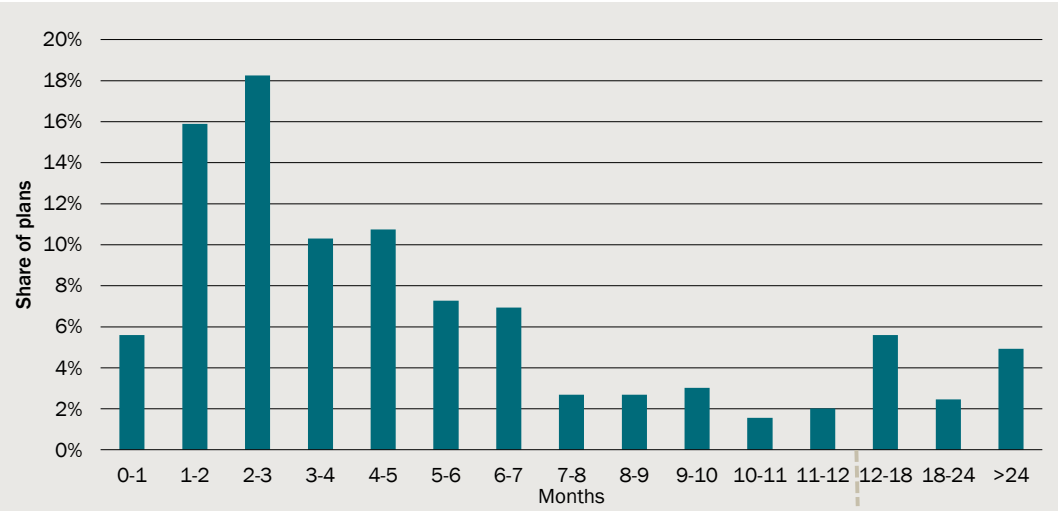
	Mean	Median
	Months	Months
Survey certificate to strata certificate	3.6	1.7
Strata certificate to lodgment with NSW LRS	1.9	0.7
Lodgment to registration	1.1	0.7
Total: Survey certificate to registration[a]	**6.7**	**4.0**

[a] The sum of each component does not add to the total because the samples for each component (and the total) can vary due to an incomplete dataset (i.e. not all relevant dates are available for all plans).

Source: CIE based on data provided by DCS Spatial Services.

The frequency distribution is shown in chart 2.11. The mean is significantly higher than the median because for a significant proportion of strata plans (around 13 per cent), the process takes more than 12 months.

2.11 Survey certificate to registration — frequency distribution



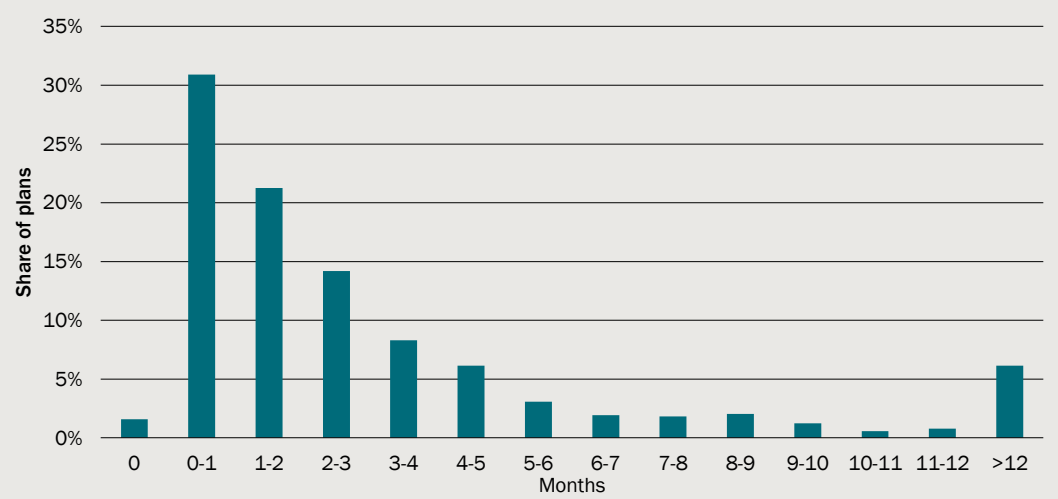
Data source: CIE based on data provided by DCS Spatial Services.

Survey certificate to strata certificate

Chart 2.12 shows the distribution of the time period (in months) between the signing of the survey certificate and the date the strata certificate was issued. The structure or building must have been completed before a surveyor can sign the survey certificate.

- Across the sample:
  - the **mean** number of months between the date the survey certificate was signed and the strata certificate was issued was around **3.6**.
  - the **median** was **1.7** months.
- For around 68 per cent of strata plans, the strata certificate is issued within 3 months of the survey certificate.

2.12 Survey certificate to strata certificate — frequency distribution 2021-2022



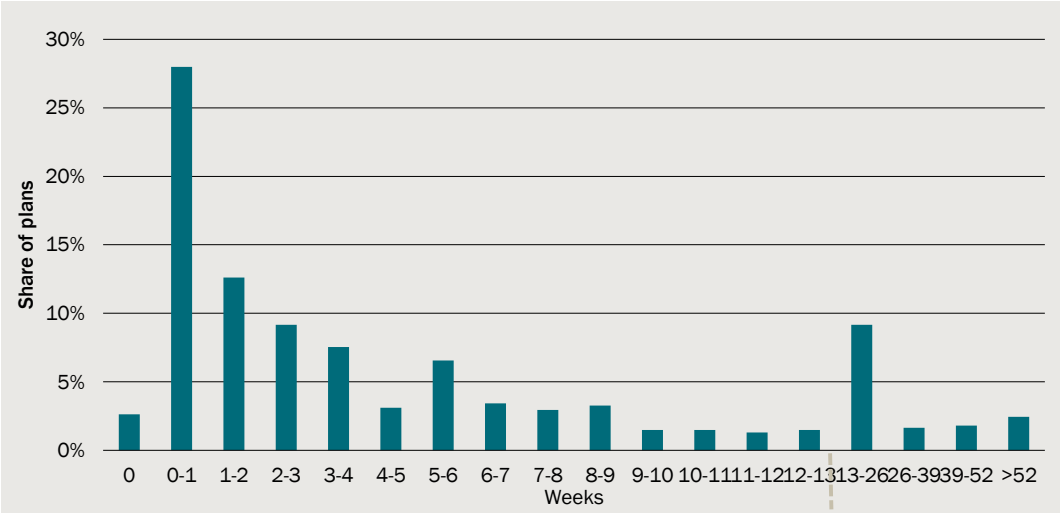
Data source: DCS Spatial Services.

Strata certificate to lodgment with NSW LRS

Upon completion of building construction, the strata certificate is signed, which means the building complies with the relevant development consents and the strata plan can be lodged with NSW LRS. The activities within this phase are the collection of consents from signatories, such as the owner and mortgagee, and lodgment of the plan with NSW LRS for review. Chart 2.13 shows the number of weeks between the signing of the strata certificate and lodgment with NSW LRS for plans registered in 2021 to 2022.

- Across the sample:
  - The **mean** number of weeks between the strata certificate and lodgment with NSW LRS was around **4.6**.
  - The **median** number of weeks was around **3**.
- Around 60 per cent of strata plans are lodged within 4 weeks of the strata certificate.

2.13 Strata certificate to lodgment with NSW LRS — frequency distribution 2021-2022



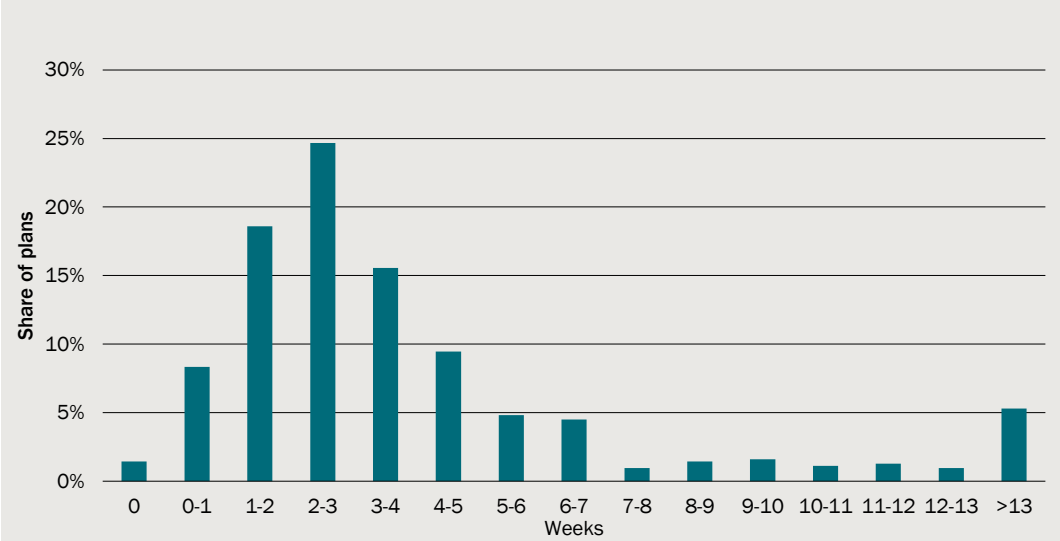
Data source: Department of Customer Service NSW.

Lodgment with NSW LRS to registration

Once NSW LRS receive the lodged plan, they will review it for accuracy and completeness as per the subdivision plans. Requisitions will be issued for any plans with an error which will be rectified by the lodging surveyor and/or lodging party. Upon finalisation and registration of the plan, the owner of the building can initiate the process for requesting an occupation certificate and settle the lots with the new owners. Chart 2.14 shows the number of days to complete this phase.

- Across the sample:
  - the **mean** period between lodgment and registration was around **4.6 weeks**.
  - the **median** period was around **3 weeks**.
- Around 78 per cent of plans were registered within 5 weeks of lodgment.

2.14 Lodgment with NSW LRS to registration — frequency distribution 2021-2022



Data source: Department of Customer Service NSW.

The cost of delays

The timeframes outlined above incorporate a range of activities and regulatory processes. Surveyors and developers report that regulatory processes frequently delay various activities, including land development works, land transactions and in some cases, people moving into new homes.

The cost of regulatory delays can be significant, although not all plans are associated with new development. The type of plans where regulatory delays are most likely to delay new construction or other activity are:

- subdivision plans
- strata plans.

The estimated daily cost of delaying registration of these plans is summarised in table 2.15 and explained in further detail below.

2.15 Estimated delay costs

	Cost per lot	Cost per plan
	$ per day	$ per day
Subdivision plan	95	593
Strata plan	66	1 194

Source: CIE estimates.

The cost of delays registering subdivision plans

We estimate that on average, the cost of delaying a subdivision plan is around $593 per day. This estimate assumes that delays in registering subdivision plans increase holding costs for undeveloped lots and is based on the following assumptions.

- Delay costs for subdivision plans are estimated at around **$95 per lot per day** based on the following assumptions.
  - The Urban Development Institute of Australia reported the median price of a greenfield lot in Sydney was $495 000 (as at the end of 2020).[23] Note that this estimate is conservative as land prices increased significantly during 2021.
  - The cost of holding land is effectively the additional interest repayment on borrowed funds. We assume a real annual interest rate of 7 per cent, consistent with the recommended discount rate in the NSW Guide to Cost Benefit Analysis. Given the risks associated with property development, consultation suggests this is likely to be a conservative estimate of the cost of capital for developers.
- On average, there were 6.2 lots per subdivision plan over the period from 2015 to 2020, implying a total cost of **$593 per day** on average for each plan delayed.

Cost of delays registering strata plans

The cost of delays registering strata plans are estimated at around $1194 per day. Delays in registering strata plans do not delay construction, but could ultimately delay final settlement with new purchasers and people from moving into dwellings within a strata scheme.

- Rents are a measure of the housing services provided by strata units. Based on data from the Rent and Sales Report from the Department of Communities and Justice, the median rent for an apartment in NSW is $460 per week (around $66 per day).[24]
- On average, there were 18.2 lots per strata plan over the period from 2015 to 2020.

Requisitions

Requisitions are a significant contributor to delays in the plan registration process (i.e. the period from plan lodgment to plan registration), as well as adding to costs.

We estimate that the costs associated with requisitions are around $36.6 million per year, with most of these costs relating to plan registration delays (table 2.16). The details underpinning these estimates are provided below.

2.16 Estimated annual costs from requisitions

	NSW LRS Costs	Surveyor costs	Plan registration delays	Total
	$ million	$ million	$ million	$ million
Subdivision plans	0.29	1.80	18.16	20.25

[23] Urban Development Institute of Australia, UDIA State of the Land 2021, National Residential Greenfield and Apartment Market Study, p. 8.

[24] Department of Communities and Justice website, https://www.facs.nsw.gov.au/resources/statistics/rent-and-sales/dashboard, accessed 26 July 2021.

	NSW LRS Costs	Surveyor costs	Plan registration delays	Total
	$ million	$ million	$ million	$ million
Other deposited plans	0.32	1.98	0.00	2.29
Strata plans	0.10	1.45	12.52	14.07
Total	**0.71**	**5.23**	**30.68**	**36.61**

Source: CIE estimates.

Number of requisitions

NSW LRS reports that in 2021, 6931 plans were requisitioned, 61 per cent of all plans examined.

- For deposited plans, requisitions can be grouped into the following main types:
  - Control (SCIMS data)
  - Survey (marks, definitions, stratum, old system)
  - Plan check (heading, typographic, dimensions, plan drawing standards, easements names).
- For strata plans, the main types of requisitions are:
  - Plan check (UE, Plan drawing, by-laws, service for notices, typographical errors, locality, adjoining information, easements)
  - Strata definition (boundary locations, location and floor plans, survey required, areas, north points)
  - Stratum statements.

The number of requisitions in 2021 by these main types are shown in table 2.17. In total there were around 27 700 separate requisitions, around 4 for each requisitioned plan.

2.17 Number of requisitions — 2021

	Requisitions	Share
	No.	Per cent
Deposited plans		
Control	2 995	14.6
Survey	6 775	33.2
Plan check	10 662	52.2
Deposited plans - total	**20 432**	**100.0**
Strata plans		
Plan check	2 919	40.2
Strata definition	2 643	36.4
Strata statements	1 699	23.4
Strata plans - total	**7 261**	**100.0**
Total	**27 693**	

Source: Data provided by NSW LRS.

NSW LRS costs

According to NSW LRS's fee schedule, NSW LRS can charge a plan requisition fee of $98.55 (ex GST) (although NSW LRS does not necessarily impose this fee in all cases). NSW LRS broadly agreed that this is a reasonable indicator of the additional administration costs they incur as a result of a plan being requisitioned.

This cost is applied to the number of plans requisitioned per year.

Surveyor costs

In addition to the costs incurred by NSW LRS (and in many cases passed onto users through fees), surveyors incur additional costs associated with addressing requisitions.

- Surveyor time is valued based on their charge-out rate. Based on a Consulting Surveyors National survey, the average charge-out rate for a registered surveyor is around $250 per hour.[25]
- Surveyors reported that many requisitions (presumably 'plan check' requisitions) can be addressed easily. We assume each 'plan check' requisition would take half an hour for the surveyor to address. This implies an average cost of $125 for these types of requisitions (assuming an hourly rate of $250 per hour — see above).
- Other types of requisitions can take much longer, particularly when additional survey work is required. That said, where significant additional work is required that cannot be attributed to the requisition *per se* (i.e. it should have been done prior to lodgment). We assume that the additional time that can be attributed to the requisition is one hour, implying $250 per requisition.
- We also assume that these costs apply to each error, rather than each plan requisitioned (on average each plan requisitioned includes 4 errors).

Based on these assumptions, surveyor costs associated with requisitions are estimated at around $5.23 million per year (table 2.18).

2.18 Estimated requisition costs — surveyors

	Number of requisitions	Surveyor time	Surveyor cost	Annual cost
	No.	Hours	$	$ million
Deposited plans				
Control	2 995	1.0	250	0.75
Survey	6 775	1.0	250	1.69
Plan check	10 662	0.5	125	1.33
Deposited plans - total	**20 432**			**3.77**
Strata plans				
Plan check	2 919	0.5	125	0.36
Strata definition	2 643	1.0	250	0.66

[25] Consulting Surveyors National, 2021 Hourly Rate Survey Report, pp. 8-9.

	Number of requisitions	Surveyor time	Surveyor cost	Annual cost
	No.	Hours	$	$ million
Strata statements	1 699	1.0	250	0.42
Strata plans - total	**7 261**			**1.44**
Total	**27 693**			**5.21**

Source: NSW LRS, CIE estimates.

Delays due to requisitions

Requisition response times vary depending on factors such as the individual surveyor and the type of requisition. For example, some requisitions may require additional field work from the surveyor or a consent that had not been expected, and these types of requisitions would generally take longer to relodge.

- NSW LRS estimates that requisitions typically delay registration by approximately 1-2 weeks.
- The available data suggests this estimate could be on the conservative side.
- NSW LRS key performance indicators (KPIs) imply:
  - a weighted average timeframe of **12.5 business days** from lodgment to registration, referral or requisition for deposited plans (based on 85 per cent of new candidate plans registered within 12 business days and 15 per cent of plans registered within 15 business days).
  - a weighted average timeframe of **10.5 business days** from lodgment to registration, referral or requisition for strata plans (based on 90 per cent of new candidate plans registered within 10 business days and 10 per cent of plans registered within 15 business days).
- As NSW LRS reports that it consistently meets its key performance indicators (KPIs) in relation to plan examination,[26] the difference in actual timeframes presumably reflects the impact of requisitions.

Comparing the KPIs with actual average timeframes from lodgment to registration implies that on average, each plan is delayed by 2-3 weeks, presumably due to requisitions (see table 2.19). However, not all plans are requisitioned. Adjusting for the fact that around 60 per cent of plans are requisitioned, this information suggests that the average delay for each requisitioned plan could be around 4 weeks.

[26] See for example: https://www.nswlrs.com.au/getattachment/d4399d53-e56d-48df-93db-0ac758e20ee1/NSW%20LRS%20service%20level%20report%20FY21, accessed 17 March 2022.

2.19 Implied delay due to requisitions

	KPI - weighted average	Actual average	Implied average delay	Implied average delay for requisitioned plans
	Days	Days	Days	Days
Deposited plan	12.5	25.2	12.7	20.9
Strata plan	10.5	22.8	12.3	20.2

Note: Estimates relate to business days.

Source: CIE estimates.

Nevertheless, the average estimated above could be heavily influenced by outliers and/or not all of the delays could be attributed to requisitions. We therefore use the midpoint of the range estimated by NSW LRS: **10.5 calendar days**.

- Based on an average cost of delaying a subdivision plan of around $593 per day (see above), this implies:
  - that the delay costs per requisitioned plan would range between $4148 and $8295 per plan
  - using the midpoint of this range (10.5 calendar days), the cost would be $6221 per plan (table 2.20).
- Based on an average cost of delaying a strata plan of around $1194 per day (see above), this implies that the delay costs per requisitioned plan would range between:
  - $8361 and $16 722 per requisitioned strata plan
  - using the midpoint of this range (10.5 calendar days), the cost would be $12 541 per plan (table 2.20).

2.20 Estimated cost per plan

	Delay[a]	Cost per day[b]	Cost per plan
	Days	$	$
Subdivision plan	10.5	593	6 221
Strata plan	10.5	1 194	12 541

[a] NSW LRS estimated that each plan requisitioned delays registration by 1-2 weeks (10.5 days is the mid-point of this range). [b] See table 2.15 above.

Source: CIE estimates.

This suggests that the costs associated with delays registering subdivision and strata plans due to requisitions could be around $30.7 million per year (table 2.21). This estimate:

- is based on the average number of plans registered over the period from 2015 to 2020
- assumes 61 per cent of plans are requisitioned (based on NSW LRS data for 2021 — see above)
- does not include any delay costs associated with other types of deposited plans.

2.21 Estimated cost of delays due to requisitions

	Plans per year	Estimated requisitioned[a]	Cost per plan	Total cost per year
	No.	No.	$ per plan	$ million
Subdivision plans	4 778	2 919	6 221	18.16
Strata plans	1 634	999	12 541	12.52
Total	**6 412**	**3 918**		**30.68**

[a] Assumes 61 per cent of plans are requisitioned.

Source: CIE estimates.

Plans registered with errors

Despite the examination process when a plan is lodged with NSW LRS, some plans are registered containing errors. These potential errors include:

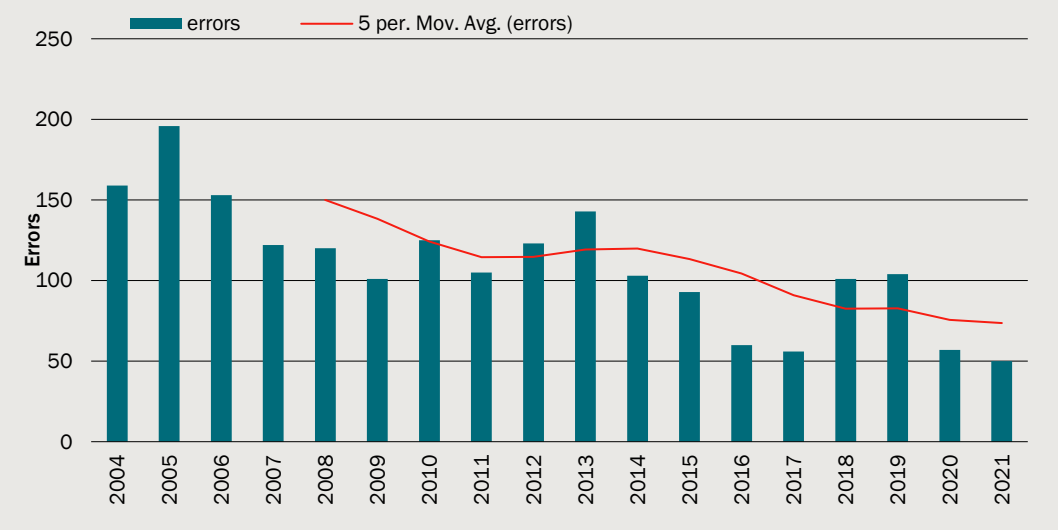
- existing boundaries not being correctly defined.
- mathematical errors, such as misclosure, dimensions around the subject land or connections to the surrounding cadastre and State Survey Control are either missing or incorrect, the survey is not satisfactorily connected to State Survey Control, incorrect or insufficient easement information has been provided and areas of the subject lots have been calculated incorrectly.
- subject land has not been marked or is marked incorrectly.

Some errors — particularly errors relating to the geometric boundaries not closing (incorrect or missing bearing/distance) — are identified by DCS Spatial Services when updating the DCDB. These errors are also identified when the LandXML digital file fails to import.

As a result, DCS Spatial Services will proceed with a manual capture of the plan image to ensure the DCDB is updated as soon as possible while the surveyors amend the error in the plan. However, errors may also be present on the plan image, requiring detailed investigation. DCS Spatial Services estimate that daily they spend 2 to 3 hours investigating and fixing plan errors.

Errors on plan images are referred to the Cadastral Management Unit to rectify. Chart 2.22 shows the annual number of referred CAD errors for deposited plans due to a geometry failure. There has been a downward trend since 2005, decreasing from approximately 200 errors to 50 errors over the time period. DCS Spatial Services estimates that it takes approximated 1.5 to 2 hours to investigate each error.

2.22 CAD/DP errors due to geometry failure per year



Data source: NSW Department of Customer Services Spatial Services.

Errors that cannot be easily addressed are referred back to NSW LRS and we understand that the original surveyor would be contacted to lodge an amendment of the registered plan. This would result in additional time cost for the surveyor identifying the error and for the original surveyor to rectify the plan and lodge an amendment.

Some errors may prevent the DCDB being updated until the plan is amended. This delay in updating the DCDB can result in DCS Spatial Services not meeting the timelines specified in their Service Level Agreement (SLA).

Plan amendment costs

NSW LRS reported 700 plan amendments during 2021, including both newly registered and historical plans. The data reported above suggests that around 50 of these errors were identified by DCS Spatial Services, implying that the remaining plan amendments were identified by other practitioners.

ORG has previously prepared several case studies on the costs associated with amendments to plans when identified by DCS Spatial Services before the registered plan is entered into the DCDB (see table 2.23 for a summary of the types of errors in these amended plans).

2.23 Plan amendments — case studies

Case study	Errors
Case study 1	▪ Missing splay corner dimensions ▪ Incorrect SSM numbers
Case study 2	▪ Missing dimensions ▪ Incorrect areas
Case study 3	▪ Missing dimensions

Source: ORG.

Across the 3 case studies, the average time taken to amend each plan was 9 hours across the various practitioners (spatial technician, registered surveyor and NSW LRS amendment officer), with an average cost of $2206 (see table 2.24 for a summary of the case studies).

2.24 Estimated costs of plan amendments — case studies

Practitioner		Case study 1	Case study 2	Case study 3
	Cost per hour	Time	Time	Time
	$ per hour	Hours	Hours	Hours
Spatial Technician	98	0.5	0.5	1.0
Registered Surveyor	250	1.0	1.0	1.0
Amendment Officer (NSW LRS)	259	5.5	8.0	2.5
Registered Surveyor	250	1.0	1.0	1.0
Amendment Officer (NSW LRS)	259	1.0	1.0	1.0
Total		9.0	11.5	6.5
Cost ($)		**2 233**	**2 881**	**1 505**
Time to resolve (days)		**21**	**28**	**87**

Source: ORG.

This information implies an annual cost of around $1.54 million per year (based on the average cost across the case studies — $2206 per plan — for each of the 700 amended plans).

As plan amendments occur after the plan has been registered (and therefore has legal effect), registration of the plan is not delayed. However, the amendment process can potentially delay subsequent development approvals (DAs or CDCs), such as approvals to construct houses on a new subdivision.

Development approvals can only be submitted after the settlement period, which is generally 6 weeks. So even for pre-sales (where the settlement period could commence as soon as the plan is registered), a plan amendment would need to take more than 6 weeks (42 days) to resolve to delay subsequent development approvals (assuming it was identified straight away).

Across the 3 case studies, the average time to resolve an amendment was 45 days, with only one taking longer than 42 days (see case study 3 in table 2.24). This suggests that plan amendments could delay some subsequent development approvals, but only for presales where plan amendments take an unusually long time. As this is uncertain, these costs (and subsequent benefits from reducing plan amendments) have not been quantified.

In addition, reducing the number of plan amendments reduces any legal disputes over property boundaries, as well as the associated inconvenience and stress on property owners. However, these benefits have not been quantified.

Other costs from plan errors

Where plans containing errors are registered, this can reduce the integrity of the title register and detrimentally affect the State cadastre, which reduces confidence in using that cadastre and creates confusion for users.

In some cases, plan errors can lead to disputes over property boundaries and may result in a claim against the Torrens Assurance Fund (TAF) or against professional indemnity insurance held by surveyors (i.e. when a property holder loses part of their land due to an error in a survey plan).

Claim payments against surveyors' professional indemnity insurance is one (albeit imperfect) indicator of these additional costs from plan errors. APRA reports data on claims against professional indemnity insurance for various occupations (including surveying occupations) and by state (although they do not report cross tabulated- data). Nevertheless, applying the NSW share of total professional indemnity insurance claims to claims for surveying occupations across all of Australia provides an estimate of NSW surveyor professional indemnity claims (alternatively applying the surveying occupations share at the national level to total professional indemnity insurance claims in NSW provides a similar estimate).[27]

This implies that on average over the past 10 years, professional indemnity claims for surveyors in NSW were around $4.3 million per year. However, this is likely to be an upper bound estimate as not all of the claim payments for surveying occupations would relate to plan errors.

In addition, disputes over property boundaries can be a substantial inconvenience and a stressful experience for owners.

Other costs due to inaccurate cadastral information

Inaccuracies on survey plans, and subsequently in the DCDB, can also increase costs for some stakeholders. As an example of these costs, Sydney Water has provided estimates of the additional costs they incur as a result of cadastral inaccuracies.

Sydney Water GIS data capture team

Sydney Water estimates that the GIS data capture team spends around 1000 hours per year addressing cadastral errors and missing information on survey plans (table 2.25).

27 APRA 2022, *Gross claim payments (calendar year) by calendar year and jurisdiction of claim;* and APRA 2022, *Gross claim payments (calendar year) by occupation and calendar year*.

2.25 Cadastral errors and missing information detected by Sydney Water GIS capture team

Error impact description	Time required to rectify	Annual time
		Hours per year
Reported on Sydney Water's online "tap in" self-service customer services portal	3 hours/week	156
Work as Constructed plan capture	2 hours/week	104
Plan changes from PPN/proposed subdivision to registered plan	4 hours/week	208
Data purification such as amending lot changes and boundary adjustments due to survey plan issues	10 hours/week	520
Poor survey plan versioning and lack of documented changes	1 hour/month	12
Reported on Dial Before You Dig plots	1 hour/quarter	4
Total		**1 004**

Source: Sydney Water.

In addition, 0.5 FTEs are allocated to plan categorisation, including: obtaining registered survey plan information from NSW LRS, procuring survey plans from an information broker and to sight and manually enter the details into Sydney Water's information system. There are approximately 6000 survey plans per year that are sighted and manually entered, which required approximately half of that time (0.25 FTEs).

Sydney Water Customer Services team

Table 2.26 shows errors detected by the Sydney Water Customer Services team. The hours incurred for incorrect lots registered and transposed lot numbers from proposed DP to DP is a conservative estimation as once meters are issued based on the proposed DP details, a field inspection may be required which delays the workflow by a week or more.

2.26 Survey plan errors and discrepancies detected by Sydney Water Customer Services team

Error impact description	Time required to rectify	Annual time
		Hours per year
Incorrect lots registered and transposed lot numbers from proposed DP to DP	15 hours/month	180
Change of plan registrations for DP and SP	6 hours/month	72
Proposed SP registered as DP	3 hours/month	36
Proposed DP registered as SP	5 hours/month	60
Total		**348**

Source: Sydney Water.

The case for government action

Technological change has allowed many manual processes — including regulatory processes — to be digitised. Examples of government processes that have been digitised include:

- NSW Planning portal
- eConveyancing.

Manual paper-based systems are becoming increasingly obsolete. As noted in the NSW Government's Digital Strategy:

- digital processes are generally faster, more convenient and more efficient than traditional paper-based and face to face ones.[28]
- customers who access online services are consistently more satisfied than those who have used other channels.[29]

[28] NSW Government, digital nsw, Designing our Digital Future, p. 7.

[29] NSW Government, digital nsw, Designing our Digital Future, p. 5.

3 Objectives and options

Objectives of reform

The key objectives of the proposed reforms are to:

- make it easier to prepare plans and associated documents and reduce the associated costs
- improve the quality of plans
- reduce time between subdivision works and construction of new homes
- improve customer service.

Options

NSW Government guidance material (including the *Guide to Better Regulation* and *Guide to Cost-Benefit Analysis*) require consideration of multiple options, including maintaining the status quo; the status quo is usually used as a base case against which the other options are assessed.

In this section we discuss the components of the proposed reforms, how the reforms are packaged into options, assessed as part of the CBA, and the timeframes for reform implementation assumed in the CBA.

Components of the reform proposal

There are three components to the reform package, with each progressively building on the previous component.

A. Move to an online plan creation to registration process.

- This component would see the plans and forms on NSW LRS Connect becoming the single source of truth, for surveyor certified plans. It would also involve establishing a link between NSW Planning Portal and NSW LRS Connect.
- Any changes to plans and associated documents could be monitored on NSW LRS Connect and would help improve document management and enable concurrent consent gathering.

B. Require digital data to be included as part of plan lodgments

- This component would require digital survey plan data to be provided as part of plan lodgment. The survey plan image, as distinct from the data, would remain the legal point of truth.

- This component seeks to encourage adoption of 'data first, then drafting' approach by surveyors. This means that plan data will be checked as early as possible in the process, instead of immediately before or after lodgment.

C. Digital data considered the legal point of truth

- Under this component, automatically rendered diagrams based on the digital survey plan data will be the legal point of truth (currently the surveyor drafted plan is the legal point of truth).
- This requires visualisation of digital survey plans in multiple forms (e.g. rendering of lot diagrams), which will include the seal affixed on or recorded against the digital survey plan by NSW LRS upon registration.
- Where a Lot Diagram cannot be rendered to an acceptable standard to enable plan examination, the surveyor drafted plan will be the legal point of truth.

These three components are discussed in further detail below.

Component A: Online plan creation to registration process

This component primarily consists of NSW LRS Connect (that is the plans and forms on the platform) becoming the single source of truth, for surveyor certified plans. This will help improve information management practices through the creation and consent gathering phases of the plan.

It is proposed that:[30]

- surveyors will create an online workspace for each plan, using NSW LRS Connect, that can be progressively updated alongside their field work and calculations.
- pre-allocated plan numbers (PPNs) will be a pre-requisite for creating a plan workspace.[31]. PPNs are unique identifiers currently issued on request to surveyors for proposed land developments before plans are ready for lodgment. They provide advanced notice of proposed subdivisions and future lot identifiers.
- requiring PPNs is intended to improve coordination across the surveying industry where multiple land surveys are being conducted in the same area – this is expected to reduce instances and disputes associated with misaligned boundaries across different lodged and/or registered plans.
- administration sheets, section 88B instruments and signature sheets will be generated with pre-populated data and identifying information (such as PPNs, unique workspace code or timestamp) to ensure version control from within the online plan workspace.
- this is expected to facilitate faster document creation and reduce potential requisitions due to data entry errors.[32]

---

30 Office of Registrar General 2021, *Discussion paper – Transitioning from paper to digital survey plans*, p. 14-22.

31 Except for subsequent community plans where the plan number already exists.

32 Current approaches involve significant and time-consuming manual data entry, and information is often duplicated across multiple documents.

- surveyors will then be able to share these templates with contributing parties, like lawyers and conveyancers who draft the terms of the section 88B instrument. Ultimately, contributing partiers may be able to provide content directly into the workspace.
- surveyors will be able to share plan documents from the workspace with relevant parties (including contributing, reviewing and consenting parties) and will retain visibility over the status of the plan even if another party is ultimately assigned the responsibility for lodging the plan:
- consent-gathering would be a hybrid of offline and online and NSW LRS Connect would provide a framework for them to be gathered concurrently (changes to plans and associated documents will be monitored to enable this). This is expected to streamline consent gathering and speed up the plan registration process.
- a single signature sheet will be issued for each consenting party and will be embedded with the unique code identifying the version of the plan being endorsed. This will allow consent to be provided with one signature for multiple instruments.[33]
- Depending on user preference, consenting parties will be able to sign electronically or via wet-ink signatures. The surveyor or alternate lodging party will still be responsible for gathering and uploading consents
- a link would be established between NSW Planning Portal and NSW LRS Connect. This enables applications made through the NSW Planning Portal to automatically source the surveyor certified plans, associated documents and relevant signature sheets from the NSW LRS plan workspace, by pairing a PPN with an NSW Planning Portal application number.
- all plans will be required to be lodged online via the NSW LRS Connect. Over 90 per cent of survey plans are currently lodged online via ePlan by a surveyor. The remaining plans are lodged in paper over the counter at NSW LRS. Paper lodgments are often incomplete and take longer to register than ePlan lodgments.[34]

The key outcomes for this reform component are

- establishes a single point of truth
- improved industry coordination of 'in process' survey activity
- plan documents pre-populated with data to improve reduce errors/requisitions
- more efficient consent gathering
- ensure legal responsibilities assumed by lodging parties are appropriate and understood
- link established between NSW Planning Portal and NSW LRS Connect
- more efficient examination and registration process
- enforces existing regulatory requirements for who can prepare a survey plan

---

33 Consenting parties may need to provide several signatures where they are required to provide their consent in more than one capacity (e.g. local council endorsing a subdivision and also consenting as an interest holder).

34 On average these take two weeks longer, implying higher requisition rates for paper lodgments.

This reform would be implemented using mandates and restrictions outlined in table 3.1, and shows how each proposed change is linked to the reform outcomes.

3.1 Proposed mandates and restrictions for Component A

Ref no.	Type	Description	Link to reform outcome
1	Pre-requisite	All plans will require a PPN to be generated prior to a plan workspace being created	▪ improved industry coordination of 'in process' survey activity
2	Existing restriction	Only Registered Surveyors can create a plan workspace	▪ establishes a single point of truth ▪ enforces existing regulatory requirements for who can prepare a survey plan
4	Mandate	All administration sheet and section 88B instrument templates must be created using the NSW LRS Connect form builder.	▪ establishes a single point of truth ▪ plan documents pre-populated with data to improve reduce errors/requisitions
5	Mandate	Registered Surveyors must certify survey certificate online	▪ establishes a single point of truth ▪ more efficient consent gathering
6	Mandate	All subdivision and strata certificate applications made through the NSW Planning Portal must access plan and associated documents directly from NSW LRS Connect plan workspace	▪ establishes a single point of truth ▪ link established between NSW Planning Portal and NSW LRS Connect ▪ more efficient consent gathering
7	Mandate	All plans must be lodged online via NSW LRS Connect. It will no longer be possible to lodge plans in paper over the counter.	▪ establishes a single point of truth ▪ more efficient examination and registration process

[a] This does not preclude surveying companies or Government agencies from lodging plans on behalf of surveyors associated with that company, in line with current ePlan processes.

Note: The reference number align to the reference numbers in Office of Registrar General 2021, *Discussion paper – Transitioning from paper to digital survey plans*, Sheet 1 and Table 1.

Source: Office of Registrar General 2021, *Discussion paper – Transitioning from paper to digital survey plans*, p. 11-12.

Component B: Mandatory lodgment of digital data

This component builds on component A and would require digital survey plan data to be submitted as part of a plan lodgment. This would progressively be mandated based on plan type or other plan characteristics.

A key principle of this reform is 'data first, then drafting'. In practice this means plan data will be checked as early as possible in the process instead of immediately before or after lodgment. This change will lead to fewer errors on plans, lower requisition rates and reduce delays associated with plan revisions.

- Once a surveyor has finalised survey calculations, they will need to upload and validate their digital survey plan data within NSW LRS Connect. The online validation will operate similarly to the validation service currently provided to surveyors through ePlan but is expected to run a greater number of compliance checks with clearer error and warning messages.
- Once the digital survey plan has been successfully validated, surveyors may export their data in either CAD or LandXML formats ready for drafting. Data exported in

CAD format will include pre-populated textual annotations, symbols and line styles. This will reduce the effort required to prepare surveyor drafted plans and minimise instances of manual data entry errors, a common source of requisitions. Surveyors will continue to finalise the presentation of their drafted deposited and strata plan images using offline software packages that best meet their overall needs.

This reform is dependent on industry support for CAD layering standard and effectiveness of NSW LRS translator.

This reform would be implemented using the mandates outlined in table 3.2.

3.2 Proposed mandates and restrictions for Component B

Ref no.	Type	Description	Link to reform outcome
3	Mandate	Digital survey plans will be progressively mandated based on plan type or other plan. Where a digital survey plan is required, it must pass validation checks prior to a plan image being uploaded to the plan workspace	▪ enforces the underlying 'data first, then drafting 'principle of the reform

Note: The reference number align to the reference numbers in Office of Registrar General 2021, *Discussion paper – Transitioning from paper to digital survey plans*, Sheet 1 and Table 1.

Source: Office of Registrar General 2021, *Discussion paper – Transitioning from paper to digital survey plans*, p. 11-12.

Component C: Digital data considered the legal point of truth

Component C is the culmination of the proposed reform package and would see plan images automatically rendered from the digital survey data become the legal point of truth. Under current legislation, NSW LRS effects registration of plans on behalf of the Registrar General by affixing a seal (or record of it) on the surveyor drafted plan, once satisfied that plan is in registrable form. This means that the surveyor drafted plan is the legal point of truth for plan data. This reform proposes to change this so that the plan images generated from the digital survey plan data will be the legal point of truth for plan information, and in effect that the digital survey plan data can also be relied on as equivalent to the legal point of truth.

This requires visualisation of digital survey plans in multiple forms (e.g. rendering of Lot Diagrams), which will include the seal affixed on or recorded against the visualisation by NSW LRS upon registration.[35] Given different users have different needs when consulting survey plans, digital survey plan lot diagrams would be tailored for specific needs.[36] A less complicated lot diagram would be appropriate for most users purpose, such as purchasers and legal practitioners for use in sale contracts. Under this reform, a surveyor drafted plan with the full range of information required would be prepared by the surveyor to ensure an accurate cadastre, allowing future surveyors to reinstate boundaries, and providing key information about the relationship of physical structures to boundaries.

---

35 For further details, see: Office of the Registrar-General, *Transitioning from paper to digital survey plans: Discussion paper*, August 2021, pp. 27-28.

36 Survey information, such as reference marks and connection, are not necessary for many users.

In cases where the requirements for digital plan examination cannot be met (such as where a Lot Diagram cannot be rendered to an acceptable standard), NSW LRS will need to use an alternate examination stream and the surveyor drafted plan will be the legal point of truth.

This component of the overall reform package is expected to be most dependent on legislative change. The precise changes which would be required haven't yet been identified.

CBA options

As each reform component progressively builds on each other, the specific options under consideration are set out in table 3.3.

3.3 Options under consideration

Reform part	Option 1	Option 2	Option 3
Component A	✓	✓	✓
Component B		✓	✓
Component C			✓

Source: CIE.

Implementation timeline assumptions

Where the proposed options are implemented, this is expected to occur gradually over time. This recognises the time required to develop new systems and processes against each reform, including providing stakeholders enough time to adjust to new arrangements. It also reflects the sequential nature of the reform components (i.e., Component A needs to be implemented before Component B, and Component B before C).

The approximate proposed timeframes for introducing the proposed changes are as follows (note reform components may consist of several changes):

- Late 2022:
  - **Pre-requisite (component A)**: All plans will require a PPN to be generated prior to a plan workspace being created.
  - **Existing restriction (component A)**: Only Registered Surveyors can create a plan workspace.
  - **Mandate (component A)**: All plans must be lodged online via NSW LRS Connect.
  - Note this will only apply to a plan with a survey certificate furnished within NSW LRS Connect, and would need to allow over the counter plan lodgments for a transition period.

- Late 2023:
  - **Mandate (component A)**: All administration sheet and section 88B instrument templates must be created using the NSW LRS Connect form builder.
  - **Mandate (component A)**: Registered Surveyors must certify survey certificate online.
  - **Mandate (component B)**: Digital survey plans will be progressively mandated based on plan type or other plan characteristics. Where a digital survey plan is required, it must pass validation checks prior to a plan image being loaded to the plan workspace.
  - Note this is the earliest possible date to mandate digital data.
- 2024+
  - **Note (component A)**: Signature sheets have the effect of endorsing all relevant plan documents.
  - **Mandate (component A)**: All subdivision (and strata) certificate applications must access plan and associated documents directly from NSW LRS Connect plan workspace.
  - **Component C**: Digital data considered the legal point of truth.

Based on this we have adopted the following time frames for each part of the reform:

- Component A: Implemented from 2024
- Component B: Implemented from July 2024
- Component C: Implemented from July 2025.

4 Impacts of the proposed options

Summary of impacts

A summary of the potential impacts of each component of the reforms on various stakeholder groups is set out in table 4.1.

Note the impacts measured in the CBA will be cumulative, such that when measuring the impact of Component B these will be added to the impacts of Component A, which is required to deliver Component B (see table 3.3 above).

Further details of the potential impacts on stakeholders are discussed below.

4.1 Potential impacts of reform options

Stakeholder group	Component A: Online plan creation to registration process	Component B: Require digital data in plan lodgments	Component C: Digital data the single legal point of truth
NSW LRS	▪ Cost of developing IT solution to support online plan creation to registration process ▪ Additional ongoing system maintenance costs ▪ Cost savings associated with digital lodgment – Compared with digital lodgments under current system – Compared with manual lodgment – Cost savings associated with plan examination – Less re-work associated with fewer requisitions	▪ Cost of developing IT solution to support lodgment of digital data ▪ Additional system maintenance costs ▪ Additional cost associated with checking digital data aligns with image ▪ Additional cost savings from fewer requisitions (prior to registration) and plan amendments (after registration) ▪ Possible longer-term benefits (high quality digital data)	▪ Cost of developing IT solution to support lodgment of digital data (develop tool to convert digital data to plan image) ▪ Additional system maintenance costs ▪ Additional cost savings from fewer requisitions (prior to registration) and plan amendments (after registration) ▪ Additional cost savings associated with examinations
Department of Planning and Environment (DPE)	▪ Cost of integrating NSW LRS IT system with NSW Planning Portal ▪ Additional ongoing system maintenance costs		Additional cost of developing system to present visualisations
DCS Spatial Services		▪ Mandatory lodgment of digital plan data will mean the plan will not need to be externally digitised by the SPDP service provider. This will reduce costs for DCS Spatial Services.	▪ Can rely on data can automate updates ▪ Costs associated with moving to automatic update system

Stakeholder group	Component A: Online plan creation to registration process	Component B: Require digital data in plan lodgments	Component C: Digital data the single legal point of truth
		▪ Reduced costs associated with re-work from plan amendments	
Surveyors	▪ Cost associated with process changes: – Cost of reviewing and developing new business processes – Staff training ▪ Change in cost associated with online system (compared to current approaches) ▪ Reduced costs associated with requisitions/amendments	▪ Additional time/effort spent developing plans using the data first then drafting approach ▪ Time saving from drafting using CAD export tool (part rendering, for existing users of digital data) ▪ Reduced costs associated with fewer requisitions/amendments ▪ Longer term cost savings from better quality plans (when they use plans) ▪ Saving for surveyors not having to digitise plans themselves	▪ Costs associated with developing new processes (including training etc.) if don't use digital data natively ▪ Cost of dealing with two information sources (plan and data) – Change in quality ▪ Longer term cost savings from better quality plans (when they use plans) ▪ Saving for surveyors not having to digitise plans themselves (more significant for Component C) ▪ Reputation of profession (qualitative) (lower PI insurance costs)
Councils	▪ Additional costs in implementing new systems to digitise approval process ▪ Reduced costs associated with digitising approval process ▪ Less re-work from requisitions (likely to be minor)	▪ Less re-work from requisitions (likely to be minor)	▪ Less re-work associated with requisitions (likely to be minor) ▪ Potentially tailored visualisation, which reduces examination costs (e.g. minimum lot size)
Referral agencies	▪ Reduced costs associated with digitising approval process ▪ Less re-work associated with requisitions	▪ Less re-work associated with requisitions	▪ Less re-work associated with requisitions ▪ Potentially tailored visualisation, which reduces examination costs (e.g. minimum lot size)
Conveyancers/ lawyers	▪ Less re-work associated with requisitions ▪ Change in the process for the creation of S.88B instruments through NSW LRS Connect		▪ Less re-work associated with requisitions ▪ Easier to explain to client (simpler visualisation) ▪ Potential for reduced contract review costs
End users (property owners/developers)	▪ Reduced holding costs through reducing delays in plan registration:	▪ Reduced delays from plan errors (through data entry) leading to:	▪ Easier to understand (may be qualitative) ▪ May be reduced delays from:

Stakeholder group	Component A: Online plan creation to registration process	Component B: Require digital data in plan lodgments	Component C: Digital data the single legal point of truth
	– Faster approvals (concurrent rather than linear) – Fewer requisitions/amendments ▪ Changes in costs up the supply chain likely to be passed through to end users.	– Lower costs associated with rectifying errors (when are these errors discovered?) – Lower costs associated with fewer disputes	– Examinations more streamlined – Referral/approval process more streamlined
Users of cadastre information (mainly surveyors)		▪ Fewer errors (faster subsequent processes)	▪ More accurate cadastre? – Less time for future users (surveyors, Sydney Water) (same as for surveyors) – Provide services to customers faster (possibly around 2 weeks) Subsequent processes may also be faster.

Source: CIE.

Impacts of Component A

Component A involves transitioning to an online process from plan creation to registration via the NSW LRS Connect system. The main impacts of Component A include:

- system related costs (including the costs associated with developing NSW LRS Connect and costs associated with establishing a link with the NSW Planning Portal)
- costs incurred by surveyors in transitioning to NSW LRS Connect
- reduced delays associated with concurrent approvals
- reduced requisitions
- benefits associated with mandatory online lodgment
- benefits associated with mandatory electronic signatures.

System-related costs

Systems related costs are costs which are incurred by NSW LRS and the Department of Planning and Environment (DPE) to implement the proposed reform. For Component A of the reform, these costs include:

- capital costs associated with building NSW LRS Connect (incurred by NSW LRS). NSW NSW LRS did not provide capital costs, noting that the project is ongoing and the total costs have not been determined. To some extent these costs will be sunk or included in the base case, as they have either been incurred, or committed to by

NSW LRS – in the absence of cost information it is difficult to conclude to what extent these costs are sunk.

- capital costs associated with establishing a link between NSW LRS Connect and the NSW Planning Portal. This is expected to result in additional costs for both NSW LRS and DPE. DPE estimates their costs could be around **$1.4 million**.
- system maintenance costs for NSW LRS Connect and the link between NSW LRS Connect and the NSW Planning Portal.

NSW LRS did not provide maintenance costs, noting these are currently unknown. Again, some of these costs may be incurred in the base case, given commitments by NSW LRS to deliver and maintain NSW LRS Connect.

NSW DPE has not provided maintenance cost information. This will exclusively be related to the maintaining the connection between NSW LRS Connect and the Planning Portal.

Costs associated with transitioning to NSW LRS Connect

Surveyors will incur some costs associated with transitioning to NSW LRS Connect. During consultations, surveyors suggested these costs could be incurred through:

- Training costs — surveyors will incur time costs associated with learning how to use NSW LRS Connect; and/or
- Lower productivity — surveyors may take extra time to create and lodge plans through NSW LRS Connect for a period of time as they became familiar with the new system.

The one-off costs to surveyors of transitioning to NSW LRS Connect are estimated at around **$2.92 million** based on the following assumptions.

- We assume that **778** surveyors will need to transition to NSW LRS Connect based on the number of surveyors that lodged a plan in either 2020 or 2021 (or both).
  - Although there were 935 registered surveyors as at 30 June 2021 (including 17 registered as both Land and Mining surveyors),[37] not all registered land surveyors actively lodge plans.
  - Over the period from 2015 to 2021, there were an average of 713 different surveyors lodging plans each year. However, not every surveyor lodges a plan every year, implying that some surveyors that did not lodge a plan in 2021, and may still need to familiarise themselves with NSW LRS Connect.
  - We assume that new surveyors would need to learn how to lodge plans anyway, so there would be no additional costs associated with learning to use NSW LRS Connect.
- The costs for each surveyor that transitions to NSW LRS Connect are estimated at around **$3750** based on the following.
  - Surveyors that have already trialled NSW LRS Connect suggested that these costs are likely to be relatively modest, in the order of 1-2 days, including designated

[37] Board of Surveying and Spatial Information, *BOSSI Statistical Review 2020-21*, July 2021, p. 3.

training and lost productivity. For the purposes of the CBA, we assume each surveyor incurs a cost equivalent to **2 full days** associated with transitioning to NSW LRS Connect.

- As above, we value surveyor's time based on their charge-out rate. Based on a national survey of consulting surveyors, the average charge-out rate for a registered surveyor is around **$250 per hour**.[38]
- Assuming 7.5 working hours per day, this implies surveyors' time is valued at **$1875 per day**.

Note that some of these costs of transitioning to NSW LRS Connect have already been incurred. As at May 2022, **329** surveyors (around 42 per cent of all surveyors that we assume will need to transition to NSW LRS Connect) have already created NSW LRS Connect accounts and create more than 650 plan workspaces.

In principle,

Impact of concurrent processes on timeframes

The NSW LRS Connect system could potentially reduce approval timeframes throughout the development process. To the extent that these approvals increase the total timeframes, this could reduce delays and therefore costs for developers/landowners.

A key advantage of the new NSW LRS Connect system is that it facilitates early submission of plans to approval authorities. NSW LRS Connect provides a digital environment where: the version of the document approved is recorded; and any changes or other approvals are tracked and where relevant notified. This could potentially give approval authorities (particularly councils) confidence to commence the approval process (such as undertaking any necessary inspections) or possibly provide 'in-principle' approval (subject to other relevant consents/approvals).

Opportunities to speed up processes

Some opportunities to speed up processes through in-principle approvals include the following.

- Councils would be able to undertake their assessment prior to final approvals/certificates being issued from infrastructure service providers, although only issue their final approval once the relevant infrastructure service provider approvals/certificates had been issued and supplied. In principle, this would allow approval processes to occur concurrently. The potential impact would therefore be to effectively eliminate the approval time for the party that typically takes the shortest time (based on discussions during consultations, this would normally be the council).
- An associated regulatory reform under consideration is to allow surveyors to sign a 'consent certificate' to allow the consent gathering process to commence prior to all marks being placed as part of the survey. The plan would need to be updated with information and the survey certificate furnished prior to lodgment with NSW LRS.

---

[38] Consulting Surveyors National, 2021 Hourly Rate Survey Report, pp. 8-9.

Comments from the stakeholder consultation process included the following.

- Surveyors and developers generally saw the potential for earlier submission of plans as a significant advantage.
- The view among the two councils consulted as part of the CBA process was mixed and given the small number of councils consulted, it is not clear to what extent these views were representative of the view of councils more broadly.
  - One council was generally supportive of earlier provision of plans and concurrent approvals.
  - The other council consulted had several concerns relating to concurrent approvals, including the following:
    - Receiving plans early (i.e. prior to approvals from infrastructure service providers) could potentially affect council performance reporting (or performance targets) in relation to approval times.
    - A concurrent approval process could increase costs for councils. In particular, where changes are made to a plan to meet the requirements of infrastructure service providers, councils may need to re-approve the plan, with no mechanism to recover these additional costs.

Nevertheless, we assume that the overall approval processes could be reduced by around 10 business days, this implies a cost reduction of $5925 for each delayed subdivision plan (based on a cost of $593 for each day a subdivision plan is delayed).

Delayed plans

Regulatory approvals do not necessarily delay the lodgment of a plan with NSW LRS (and therefore registration) in all cases, as not every subdivision plan is 'time critical'. For some plans there is a considerable delay between the issue of the subdivision certificate and lodgment with NSW LRS (see chart 2.8 above).

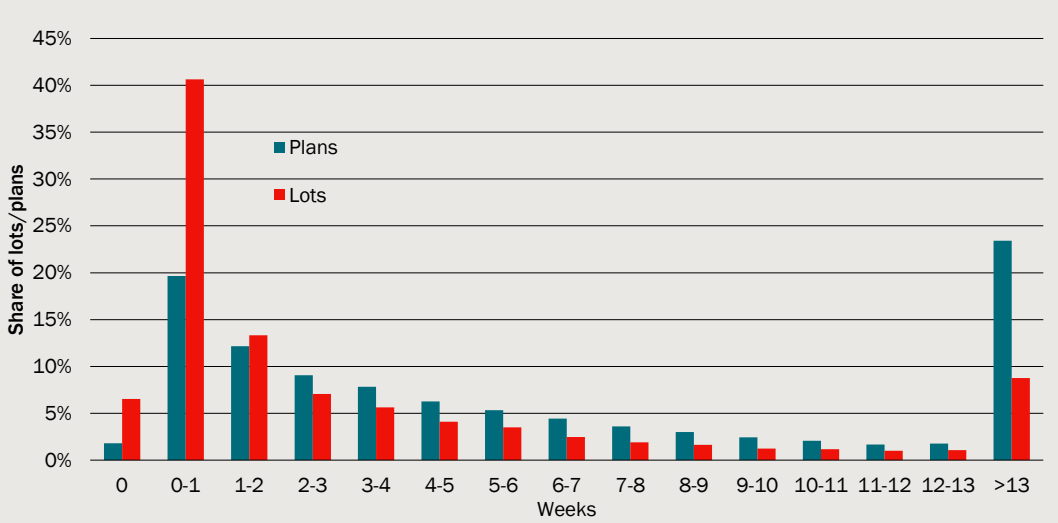
It is plausible that gathering signatures from banks and all landowners (in some cases there may be multiple landowners) could potentially take some time, as significant delays between the subdivision certificate and lodgment with NSW LRS is unlikely to be entirely a result of a regulatory process. This suggests that where lodgment of the plan is not time critical, speeding up regulatory processes may not always lead to earlier registration.

However, as noted above:

- Plans with a large number of lots tend to be lodged with NSW LRS relatively quickly after the subdivision certificate has been issued
- On the other hand, plans where there is a significant delay between the subdivision certificate and lodgment with NSW LRS tend to be plans with a small number of lots.

As a result, a higher proportion of new lots a registered within a few weeks, compared with the proportion of plans (chart 4.2). In particular, although only around 20 per cent of plans are lodged within 1 week of the subdivision certificate, these plans contain almost half (~48 per cent) of all new lots created by subdivision plans.

4.2 Subdivision certificate to lodgment — frequency distribution 2019-2022



Data source: CIE based on data provided by the Department of Customer Service.

Although, it is not possible to identify a specific threshold for plans that are considered time critical, for the purposes of the CBA, we assume that:

- any plan lodged with NSW LRS within **4 weeks** of the subdivision certificate is time critical, implying that speeding up earlier processes would lead to earlier lodgment
- speeding up earlier processes would not lead to earlier lodgment of any plan lodged more than **4 weeks** after the subdivision certificate has been issued.

This implies that moving to the NSW LRS Connect system could potentially lead to earlier lodgment for around **73 per cent** of new lots created by new subdivision plans every year. As around 29 818 new lots are created by subdivision plans every year (based on the average over the period from 2015), this implies that around **21 767 new lots** could potentially be delivered earlier as a result of the proposed reforms.

Uptake of concurrent processes

Achieving the potential gains above would require surveyors and/or councils to make use of the additional flexibility provided by the proposed new system, so that process can occur concurrently. However, as noted above, not all councils (or surveyors) will support concurrent approval processes. This implies that:

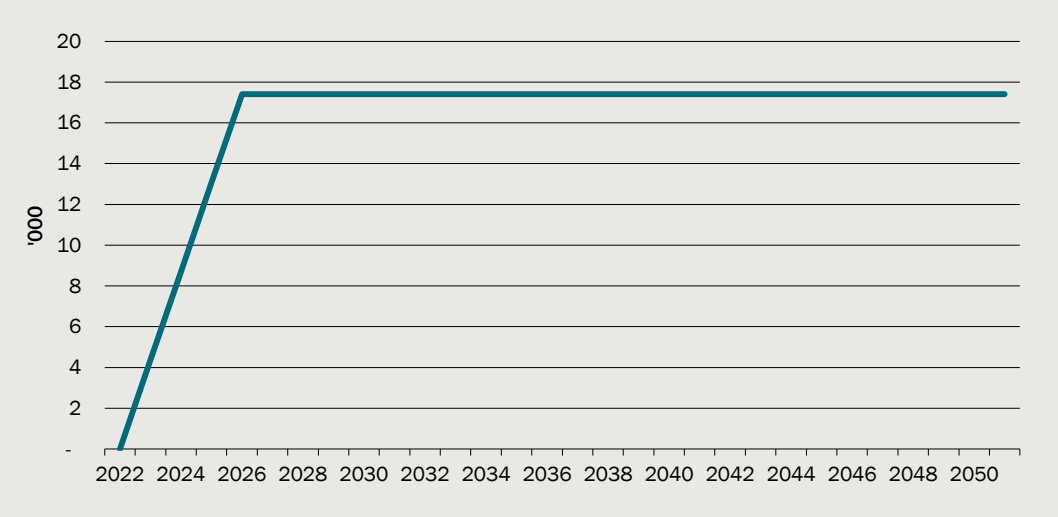
- uptake may be increased gradually over time as various stakeholders become familiar/comfortable with the new system
- full uptake is unlikely to be achieved in the foreseeable future.

Reflecting this, the CBA estimates assume:

- uptake of 20 per cent of new lots in the first year following implementation
- uptake gradually increasing to a maximum of 80 per cent of new lots after 4 years.

Based on these assumptions, the number of new lots that would be registered 10 days earlier is shown in chart 4.3.

4.3 Reduced delays — estimated number of lots



Data source: CIE estimates.

Impact on requisitions

NSW LRS Connect will mainly reduce some types of 'Plan check' requisitions, including the following errors:

- Plan heading
- Sheet Numbering
- Land Details information (Locality, LGA, Parish & County)
- Title information
- Incorrect Forms used
- Survey Certificate Incomplete
- Easement wording not matching the s.88B.

NSW LRS estimates that NSW LRS Connect will reduce these types of requisitions by around 70-80 per cent once electronic lodgment and use of Digital Forms have been fully mandated.

- NSW LRS reports there have been 160 plans lodged using the Digital Forms already available in NSW LRS Connect. These plans have had a 2 per cent Requisition rate.
- This compares to an approximate requisition rate for these types of administrative and S.88b errors of Manual Forms (Admin & s.88B) of roughly 10 per cent.

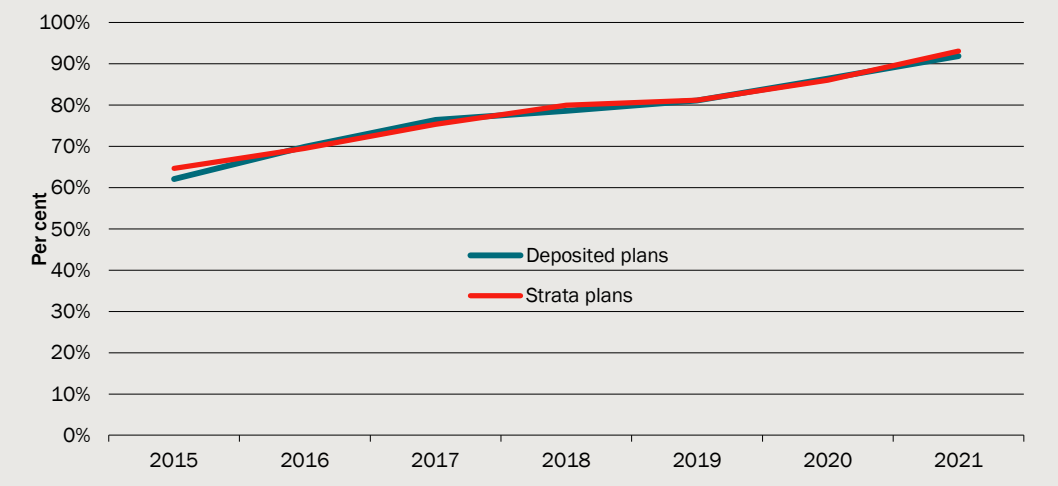
The total cost of requisitions were previously estimated at around $34.31 million per year (see above). A 7.5 per cent reduction in requisitions would therefore equate to an annual benefit of around $2.57 million per year.

Mandatory online lodgment of all plans

Although NSW LRS currently offers online lodgment of plans via ePlan, this is not mandatory. Nevertheless, the proportion of plans lodged via ePlan has increased

significantly over recent years, reaching around 92-93 per cent for both deposited plans and strata plans in 2021 (chart 4.4). Under the proposed reforms, the remaining plans that are still lodged manually would need to be lodged online (via NSW LRS Connect rather than ePlan).

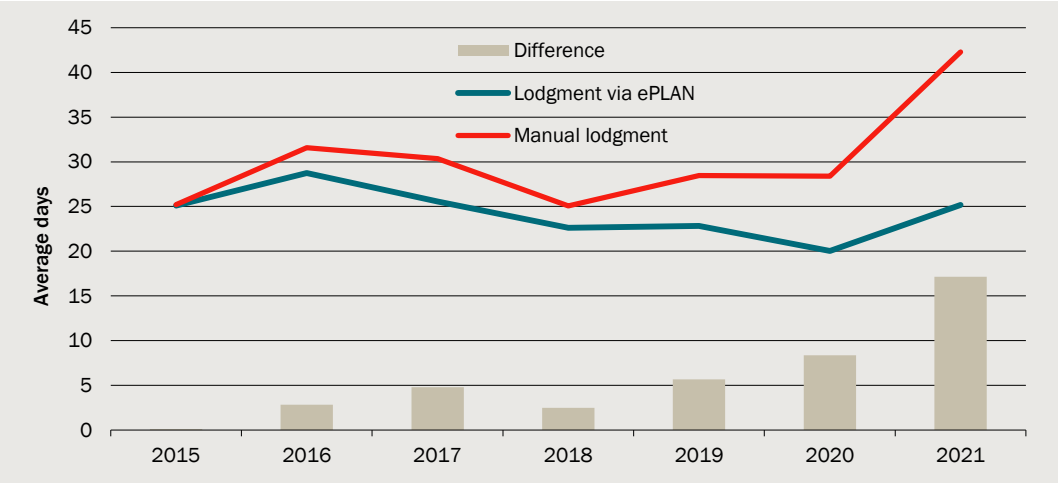
4.4 Plans lodged through ePlan



Data source: NSW LRS data.

Plans lodged via ePlan are registered significantly faster than those lodged manually. For deposited plans, the time between lodgment and registration has tended to increase over time (chart 4.5). This was mostly due to a declining trend for plans lodged via ePlan. However, timeframes for plans lodged through both methods increased in 2021.

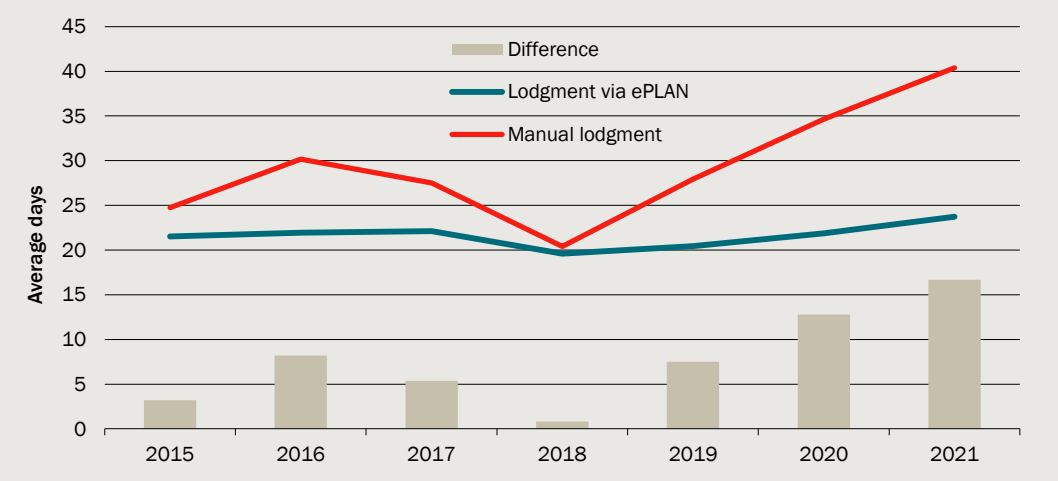
4.5 Average time from lodgment to registration — deposited plans



Data source: CIE based on NSW LRS data.

The difference in the average timeframes from lodgment to registration for strata plans lodged via ePlan and manual lodgment has also increased over time (chart 4.6). However, this has largely been due to an upward trend in the average time for strata plans lodged manually (particularly in 2020 and 2021).

4.6 Average time from lodgment to registration — strata plans



Data source: CIE based on NSW LRS data.

Shorter average timeframes for plans lodged via ePlan could imply that online lodgment results in fewer requisitions and/or requisitions are easier and faster to resolve.

An alternative explanation could be that the widening gap reflects a 'composition effect', rather than the impact of online lodgment *per se*; as the proportion of plans lodged via ePlan has increased, those that continue to be lodged manually may be those that are more prone to requisitions. Furthermore, the increases in timeframes (and the widening gap between plans lodged via ePlan and those lodged manually) could partly reflect COVID-related factors, such as: disruptions to normal work practices; and lodgment difficulties due to lockdowns (which would particularly affect manual lodgments).

For the purposes of the CBA, we assume the following.

- Under the base case, around 5 per cent of plans would continue to be lodged manually.
- The potential time savings from online lodgment *per se* (i.e. not including any other benefits of NSW LRS Connect) would reflect the average over the period from 2015 to 2019 (i.e. excluding any COVID related effects). This implies a time saving of:
  - 3.2 days for deposited plans (implying a benefit of $1896 per subdivision plan based on $593 per day — see above)
  - 5.0 days for strata plans (implying a benefit of $5972 per strata plan based on $1194 per day — see above).

Under these assumptions, the benefits from mandatory online lodgment are estimated at around $0.94 million per year (table 4.7).

4.7 Estimated benefits from mandatory online lodgment

	Total plans per year	Estimated plans lodged manually	Benefit per plan	Total annual benefit
	No.	No.	$ per plan	$ million
Subdivision plans	4 778	239	1 896	0.45
Other deposited plans	5 249	262	0	0.00
Strata plans	1 634	82	5 972	0.49
Total	**11 661**	**583**		**0.94**

Source: CIE estimates.

Electronic signatures

To register a deposited plan or a strata plan, relevant documents must be signed by multiple parties (including a surveyor, the land owner(s), the relevant local council, and the mortgagee, if any). Until recently, a single document needed to be signed by all relevant parties (and some signatures witnessed).

These signing requirements were temporarily relaxed to allow electronic signatures and witnessing via audio-visual link (AVL) in response to the COVID-19 pandemic. These temporary arrangements were reviewed as part of a broader Better Regulation Statement (BRS) on greater use of digital technology in regulatory processes (prepared by CIE for NSW Treasury). Following this review, many of these arrangements were recently made permanent.

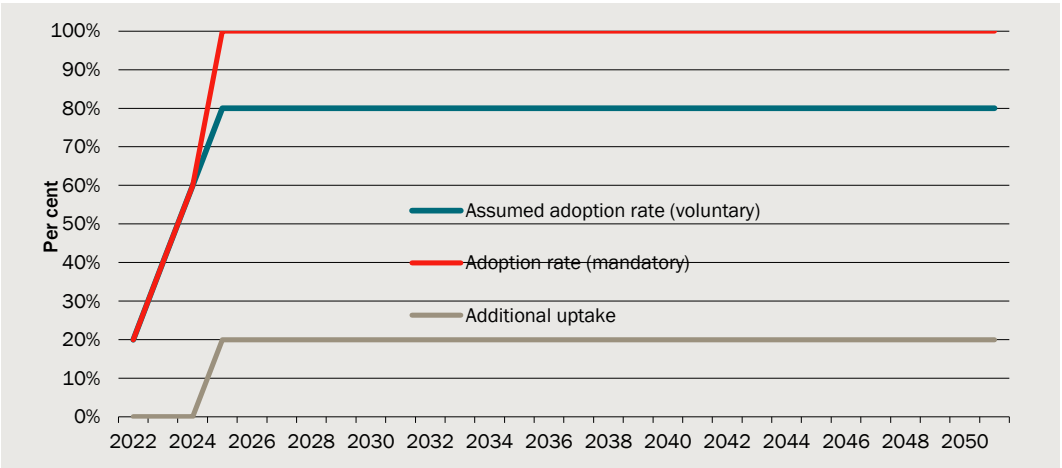
These recent changes gave signatories the option of using electronic signatures. However, under the proposed reforms, electronic signatures to execute a plan would be effectively mandated from around 2024 for:

- surveyors (via NSW LRS Connect)
- certifying authorities (via the NSW Planning Portal).

This would mean that uptake of electronic signatures would be greater (and faster) than assumed in the previous BRS.

Chart 4.8 shows the assumed uptake of electronic signing in the previous BRS, uptake under the mandatory requirement and the additional uptake as a result of mandating electronic signatures.

4.8 Assumed adoption profile — mandatory electronic signatures



Data source: CIE.

In the previous BRS, the estimated impacts of greater use of electronic signatures included:

- reduced costs associated with electronic signing (compared to in person signing and witnessing)
- reduced delays (these benefits largely arose because electronic signing would allow councils to digitise the plan approval process based on evidence provided by Penrith City Council)
- some additional costs associated with process changes (to realise the benefits of reducing delays)
- costs associated with a digital signature subscription.

The key assumptions used in the BRS are shown in box 4.9.

4.9 Key assumptions from the BRS

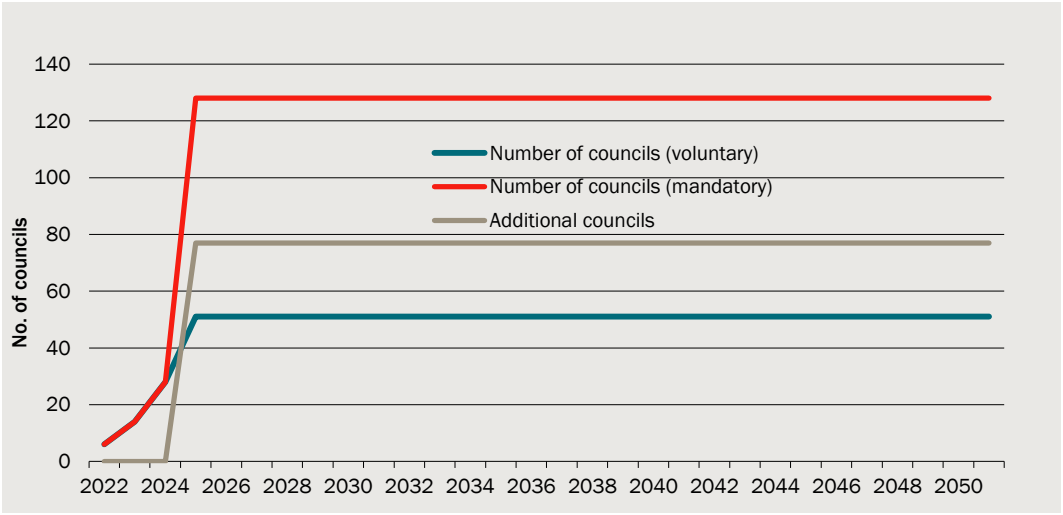
Key assumptions used to estimate the costs and benefits of allowing electronic signatures and witnessing via AVL in the BRS are as follows.

- Digitising the plan approval process reduces council approval times by 6.9 days, based on data provided by Penrith City Council.
- Cost savings from electronic signing are based on:
  - a cost saving of $261 per signatory
  - 4 signatories per plan.
- The councils that approve the most plans are assumed to adopt electronic signing first (implying the minimum number of councils to achieve the assume uptake rate for plans).
- Each council that adopts electronic signing incurs an upfront cost of $33 868 to change the processes (based on information provided by Penrith City Council).
- The cost of a digital signature subscriptions were based on:
  - $500 per subscriber

– 2 subscribers per council.

The number of councils that adopt electronic signing assumed in the BRS (i.e. the minimum number to achieve the adoption rate shown in chart 4.8 above), under mandatory electronic signing (i.e. all of them) and the number of additional councils that adopt electronic signing as a result of the mandatory requirement are shown in chart 4.10.

4.10 Number of councils that adopt electronic signing of plans



Data source: CIE.

Other potential impacts

An additional advantage of NSW LRS Connect is that all relevant dates will be recorded. This information could potentially be used to:

- identify bottlenecks (i.e. provide additional information on where delays are occurring)
- keep approval authorities accountable for their performance.

Better information to identify problems and monitor performance has the potential to reduce timeframes. As set out above, reducing delays has the potential to deliver significant benefits to landowners/developers.

However, approaches to using the data that would become available through NSW LRS Connect to speed up the process that culminates in the registration of new plans have not yet been developed. As such, these potential benefits have not been included in the CBA.

Impacts of Component B

Component B would involve mandatory lodgment of digital data, although the visual image (in PDF format) would remain the legal point of truth. The main impacts from Component B are expected to include:

- system related costs (including development of new systems/tools), mostly incurred by NSW LRS
- additional costs for surveyors to convert to the proposed CAD layering standard (or adopt existing LandXML software)
- additional plan examination costs
- reduced requisitions (and associated costs)
- reduced plan amendments
- reduced costs associated with digitising paper-based plans
- reduced costs for water authorities (and possibly some other infrastructure service providers).

System-related costs

System related costs for Component B of the reform, include:

- capital costs associated with enabling the submission of digital data through NSW LRS Connect (incurred by NSW LRS). NSW LRS did not provide capital costs, noting that costs have not been determined.
- system maintenance costs for NSW LRS Connect related to enabling the submission of digital data. NSW LRS did not provide maintenance costs, noting these have not been determined.

Surveyor costs to convert to proposed layering standard

The proposed requirements under Component B would be expected to involve additional time from surveyors, with these costs likely to be passed onto clients. We estimate that in total these additional costs could be around $19.6 million in present value terms over 30 years, using a discount rate of 7 per cent (table 4.11).

4.11 Estimated impact on surveyor costs

	Additional time	Additional cost per plan[a]	Total annual cost	Net present value[b]
	Minutes	$ per plan	$ million	$ million
Short-term impact[c]	132	551	3.21[c]	2.80
Longer-term impact[d]	33	138	1.61[d]	16.81
Total				**19.61**

[a] Estimated based on surveyor charge-out rate of $250 per hour. [b] Net present value calculated over 30 years from 2022, using a discount rate of 7 per cent.. [c] The short-term impacts are assumed to apply from July to December 2024, implying they would apply to around 5830 plans (50% of 11 660). [d] Longer-term impacts are assumed to apply from 2025 onwards and would therefore apply to around 11 660 plans per year.

Source: ORG, CIE estimates.

To test the extent to which the proposed requirements could involve additional time from surveyors, ORG invited surveyors to submit some example plans. The surveyor CAD data from the submitted plans were then converted into the proposed layering standard.

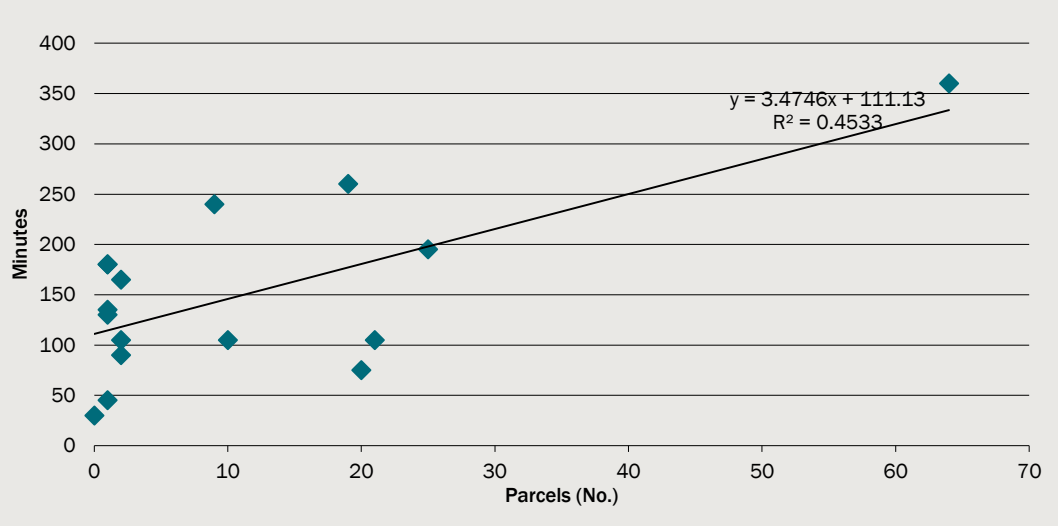
Across the 16 plans received:

- conversion times ranged between 30 minutes and 360 minutes (i.e. 6 hours)
- the average conversion time was 150 minutes (i.e. 2½ hours).

Some of the plan details (including: number of parcels, number of lines/arcs and number of objects) were also recorded. In general, more complex plans (i.e. plans with more parcels/lines/objects) took longer to convert.

The relationship between the number of parcels and conversion time is shown in chart 4.12 (note there is a closer relationship between the number of objects or the number of lines/arcs and the conversion time; however, there is no systematic information across all plans).

4.12 Relationship between number of parcels and conversion time



Data source: Office of the Registrar-General, CIE.

Across all plans registered over the period from 2015 to 2020, there was an average of 6.1 lots per plan. Based on the relationship above, this implies an additional 132 minutes (2 hours and 12 minutes) per plan on average.

This is likely to be a reasonable indicator of the short-term impact for projects already in train. This implies an additional cost of $551 per plan (based on an hourly rate of $250 per hour — see above). The short-term impacts are assumed to apply from July to December 2024.

However, in the longer term, surveyors are expected to use the layering standard as part of their calculation process. ORG expect that this will reduce the additional time required by around **75 per cent**. This implies an additional cost of $138 per plan in the longer term. These longer-terms impacts are assumed to apply from 2025 onwards.

Impact on plan examination costs

The impact of Component B on plan examination costs will depend on what is required of NSW LRS, which is yet to be resolved.

- If the lodged digital data is effectively used to enhance quality assurance prior to plan lodgment and supplement manual plan examination (similar to the hybrid capture on-demand process), the increase in plan examination costs would be expected to be negligible.
- On the other hand, if NSW LRS is expected to verify that digital data aligns with the PDF, there would be a significant increase in examination costs. NSW LRS noted that generally, when the LandXML file is verified against the PDF, it is the PDF which is incorrect as the digital data is validated prior to lodgment. This means that whilst the PDF is the source of truth, NSW LRS would need to take significant time and effort to ensure the PDF and LandXML match before undertaking digital examination.

NSW LRS was unable to provide a quantitative estimate of the additional plan examination costs associated with the provision of digital data (where the digital data is not the point of legal truth).

Plan lodgment/examination fees are one indicator of the current examination costs (although fees are currently based on the number of lots and easements which, according to NSW LRS, do not always correlate with the cost of examination). Relevant NSW LRS fees are shown in table 4.13. For most plans, lodgment/examination fees are effectively $283 per lot (although higher fees apply to community land plans, on average these plans contain less than 2 per cent of all lots in the plans registered each year).

4.13 NSW LRS lodgment/examination fees

	Fee (ex GST)	Fee (including GST)
	$	$
Deposited plan or strata plan		
Lodgment for examination	283	311
For each lot after the first	283	311
Community land plan		
Lodgment for examination	606	667
For each lot after the first	606	667

Note: Pre-examination fees are not shown.

Source: NSW LRS website, https://nswlrs.com.au/getattachment/a89e170e-f069-4862-b6b8-dcf12462e19a/2021-2022%20NSW%20LRS%20Fees%20Update, accessed 9 March 2022.

Based on these fees (ex GST), this implies plan examination costs are currently around $20 million per year on average (table 4.14). If ensuring alignment between the LandXML file and the PDF increased plan examination costs by around 50 per cent, this would imply additional costs of around $10 million per year.

4.14 Estimated increase in plan examination costs

	Number of lots per year	Cost per lot[a]	Current plan examination costs	Indicative increase in plan examination costs
	No.	$ per lot	$ million	$ million
Subdivision plans	29 818	283	8.43	4.22
Other deposited plans	11 116	283	3.14	1.57
Strata plans	29 700	283	8.40	4.20
Total	**70 634**		**19.97**	**9.99**

[a] Although community land plans incur a higher fee, lots in these plans make up less than 2 per cent of all lots in plans registered each year on average.

Source: NSW LRS website, https://nswlrs.com.au/getattachment/a89e170e-f069-4862-b6b8-dcf12462e19a/2021-2022%20NSW%20LRS%20Fees%20Update, accessed 9 March 2022; Data from NSW LRS; CIE estimates.

Impact on requisitions

The mandatory submission of digital data may reduce a range of different types of errors and requisitions (see table 4.15).

4.15 Types of requisitions affected by Component B

General types	Specific types
Control	▪ SCIMS errors ▪ Permanent Mark errors
Survey	▪ Miscloses ▪ Area issues ▪ Incorrect or missing marking of corners
Plan check	▪ Lot Numbers not matching ▪ Unit Entitlement issues

Source: NSW LRS.

NSW LRS estimates that the provision of digital data would significantly reduce these types of requisitions, in many cases by around 80 per cent. As there are tolerances allowable for items such as miscloses and areas, it is unlikely to eliminate these issues completely.

Although there is likely to be a significant reduction in these errors, while the PDF remains the source of truth there is still the potential for these requisitions or errors to exist in the plan image, particularly where surveyors do not follow proper procedure of 'data first, then drafting'.

As the prevalence of each detailed type of requisitions is not available, the overall impact on requisitions is not clear. The indicative assumptions used in the CBA are shown in table 4.16.

4.16 Estimated impact of Component B on requisitions

	Potential impact on requisitions	Share of total requisitions	Estimated impact
	Per cent	Per cent	Percentage point
Deposited plans			
Control	90.0	14.6	13.2
Survey	25.0	33.2	8.3
Plan check (lot numbers only)	5.0	52.2	2.6
Total		**100.0**	**24.1**
Strata plans			
Plan check	5.0	40.2	2.0
Strata definition	5.0	36.4	1.8
Strata statements	0.0	23.4	0.0
Total		**100.0**	**3.8**

Source: CIE based on discussions with stakeholders.

Impact on plan amendments

It is plausible that a significant proportion of the 700 annual plan amendments could be avoided under Component B.

- At a minimum, most of the errors identified by DCS Spatial Services that lead to a subsequent plan amendment would be expected to be either avoided or identified by NSW LRS prior to registration.
  - Based on 2021 data, this would reduce the number of plan amendments by around 50 per year.
  - At a cost of around $2206 (based on the average of 3 case studies), this would be a cost saving of around $110 306 per year.
- Data provided by DCS also suggests that around 3.5 per cent of plans are amended in the first year following registration.
  - If the errors that require these plans to be amended could be avoided through the mandatory provision of digital data, this would equate to around 408 avoided plan amendments per year.
  - The costs saving would therefore be around $900 340 per year (based on a cost of $2206 per plan).

The errors in the remaining plans could take some time to be identified. So even if the proposed reforms significantly reduce the number of plans that are registered containing errors, this could take some time before plan amendment costs start to fall.

Reduced plan digitisation costs

The mandatory provision of digital data would reduce the costs associated with digitising paper-based plans in several contexts.

Impact on DCS Spatial Services

Savings on costs associated with digitising paper-based plans for DCS Spatial Services could be around $458 500 per year (table 4.17).

4.17 Reduced plan digitisation costs — DCS Spatial Services

	Plans per year	Cost saving per plan	Annual cost saving
	No.	$ per plan	$'000
DCDB Maintenance	1 619	102.84	166.5
On-demand plan capture	18 800	15.53	292.0
Total			**458.5**

Source: CIE estimates based on information provided by DCS Spatial Services.

Costs associated with manual entry of plans into the DCDB were previously estimated at around $166 492 per year (see above) based on:

- 1619 plan manually entered (over the year to February 2022)
- an additional cost of around $103 per plan for manual entry (relative to ingestion of digital data).

These costs could be avoided if digital data were available for all plans.

In addition, DCS Spatial Services captured around 18 800 plans over the year to February 2022 at a total cost of $291 989.

Impact on surveyors

As noted above, surveyors frequently need to digitise plans when creating new plans. Surveyors reported that this typically takes around 2 hours.

If digital data were available, these costs could mostly be avoided. However, if the digital data was not the legal point of truth, the surveyor would need to check the data, which could take around 15-20 minutes. The cost saving could therefore be around $438 per plan (based on an hourly rate of $250) (table 4.18).

4.18 Reduced plan digitisation costs — surveyors

	Hours	Cost
	No.	$ per plan
Base case	2.00	500
Component B	0.25	63
Cost saving from digital data		**438**

Source: CIE estimates based on discussions with surveyors.

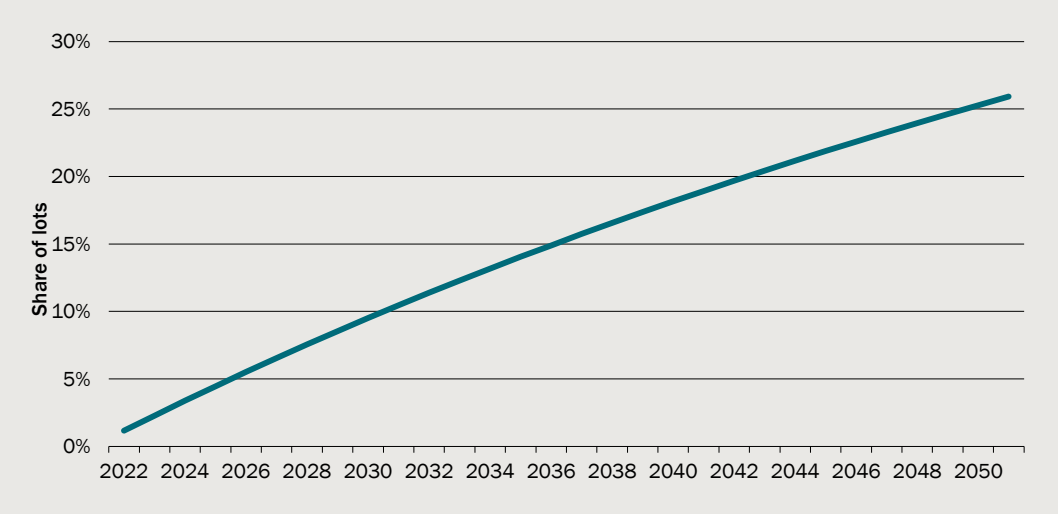
However, digital data would be available only for new plans (or back-captured plans). The provision of digital data would not be retrospectively applied to existing plans. As such, digital data would initially be available for only a small proportion of plans, but this would increase over time.

As a (crude) indicator of the proportion of plans covered:

- There are currently around 2.68 million lots
- Around 30 908 lots per year are included in newly registered deposited plans per year (around 1.2 per cent of total lots).

Based on these assumptions, the share of lots with digital data available over time is shown in table 4.19.

4.19 Estimated share of lots with digital data available



Data source: CIE estimates.

Note that this estimate could potentially double-count some benefits, as we have estimated the cost savings associated with back-capturing plans elsewhere. However, these benefits are relatively modest, compared with some other items and would not therefore affect the overall outcomes.

Impact on Sydney water

The proposed reforms under Component B would have impacts for both the GIS data capture team and the customer service team of Sydney Water. We estimate savings for Sydney Water could be around $110 000 per year (table 4.20).

- The additional time spent by Sydney Water associated with cadastral and survey plan errors were estimated at around 1352 per year (see tables 2.25 and 2.26 above). We assume that the time taken to rectify these issues will reduce to zero once the reforms are implemented.
- To value the impact of this reduction in time spent by Sydney Water employees addressing cadastral and survey plan errors, we derive an hourly wage rate for the average Sydney Water employee of **$81.19** (including on-costs), based on the following.
- Average annual employee-related expenses are estimated at $140 054 per full-time equivalent (FTE) based on the following information from Sydney Water's 2020-21 Annual Report:

- total employee-related expenses of $360.1 million [39]
- 2571 FTEs[40]

- We assume that on average, each FTE works 1725 hours per year, based on:
  - 230 working days per year
  - 7.5 hours per day.

4.20 Cost savings for Sydney Water

Sydney Water team	Time per to rectify errors	Cost saving per year[a]
	Hours per year	$'000
GIS data capture team	1 004	81 516
Customer service team	348	28 254
Total	**1 352**	**109 770**

[a] Based an average cost of $81.19 per hour.

Source: Sydney Water, CIE.

Sydney Water also estimated that the availability of digital survey plan metadata could potentially reduce the time required to sight and manually enter details of approximately 6000 plans by around 0.25 FTEs per year. However, the proposed reforms will not achieve that outcome.

Impact on surveyor time

A tool that part renders an image directly from digital data would also be expected to reduce the time spent by surveyors in producing a visual image.

As the tool has not yet been developed, the time savings cannot yet be formally tested. However, one surveying company based in North-West Sydney has developed an in-house data first, then drafting approach. Once the digital data is created, a minimum of **2 hours** per plan is reportedly saved, compared with manual drafting.

It is possible that a generic tool developed by NSW LRS will not be able to achieve the same extent of time savings. As a conservative estimate, we assume a time saving of **30 minutes** per plan.

This implies a cost saving of around **$729 000** per year based on:

- the average charge-out rate for a draftsperson of $127 per hour (based on a national survey of consulting surveyors),[41] implying a cost saving of $63.50 per plan
- an average of 11 660 plans per year.

---

39 Sydney Water 2021, Annual report, https://www.sydneywater.com.au/content/dam/sydneywater/documents/annual-report-2020-21.pdf, p. 134.

40 Sydney Water 2021, Annual report, https://www.sydneywater.com.au/content/dam/sydneywater/documents/annual-report-2020-21.pdf, p. 65.

41 Consulting Surveyors National, 2021 Hourly Rate Survey Report, p. 8.

Impacts of Component C

Component C would involve digital data (or an image rendered directly from digital data) becoming the point of legal truth. The main impacts of Component C are expected to include:

- system related costs (including development and maintenance of a new tool to convert digital data to a visual representation) incurred by NSW LRS
- reduced plan examination costs (compared with Component B)
- reduced requisitions (and associated costs)
- reduced plan digitisation costs.

System-related costs

System related costs for Component C of the reform, include:

- capital costs associated with developing a tool to convert digital data to a visual representation. (incurred by NSW LRS). NSW LRS did not provide capital costs, noting this is an ongoing project and final costs have not been determined.
- system maintenance costs for NSW LRS Connect related to enabling the submission of digital data. NSW LRS did not provide maintenance costs, noting these have not been determined.

Impact on plan examination costs

NSW LRS envisages that the digital data (or an image directly rendered from digital data) becoming the point of legal truth would reduce the extra costs associated with checking both the PDF and Digital Plan file from Component B (as long as the expectation would be that only the digital data is examined).

As the additional plan examination costs were estimated at around $10 million per year (see above), there would be a corresponding cost reduction (i.e. benefit) from making the digital data the legal point of truth.

According to NSW LRS, current digital examination processes do not significantly reduce plan examination costs. That said, there is potentially some scope to make significant savings through developing a new digital examination tool.

However, until a new digital examination tool is scoped, developed, and successfully rolled out, significant savings will remain unrealised. NSW LRS also estimates that the cost of such a tool would also be significant. As these benefits (and costs) are not currently known, they have not been quantified.

Impact on contract review costs

Component C of the proposed reforms would see plan images automatically rendered from digital survey plan data recognised as the legal source of truth. This is expected to result in a number of impacts on plan users.

Simpler Lot Diagrams, which are used in property contracts, could potentially result in time savings for conveyancers and legal practitioners. During consultations, conveyancers suggested that simpler Lot Diagrams could reduce the time taken for users to understand survey plans and for conveyancers or legal practitioners to explain relevant elements to clients and to review contracts. These time savings would be realised when properties defined by survey plans that are lodged after the implementation of Component C of the reform (i.e. the digital survey plan data is the legal point of truth), are sold.

Conveyancers suggested that the time savings could potentially be in the order of **15 minutes** per contract review if the reforms led to a situation where plans running too many pages no longer needed to attach to a conveyancing contract.

However, under the proposed reforms, conveyancing contracts will include both a lot diagram rendered from the survey plan data and the surveyor drafted plan. As pointed out by the Law Society of NSW, there will no reduction in the material to review. As such, it is unlikely there will be any time savings and the time taken to review a contract could marginally increase while practitioners become familiar with lot diagrams.

These potential benefits have not therefore been included in the CBA. Nevertheless, changes to these arrangements could be considered in the future. We have therefore measured these potential benefits and included them as a separate scenario (see scenario testing in chapter 5). Our approach to measuring these benefits is as follows:

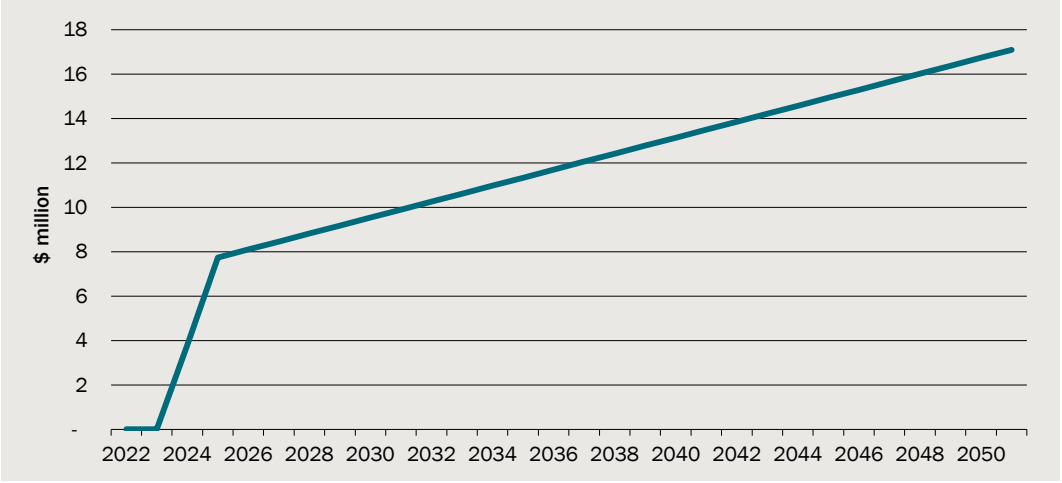
- The number of lots for which the digital plan is the legal point of truth is based on the estimated number of lots created by subdivision and strata plans registered after June 2024.
- The estimated number of contracts which are reviewed and executed by conveyancers and legal practitioners each year is based on the following assumptions:
  - lodging a survey plan results in a transaction for each lot (i.e. the first time it is sold)
  - in addition to this, each year 5 per cent of the stock of properties with digital survey plans as the legal point of truth are sold. This is based on the turnover rate for residential properties in NSW.[42] This assumes that the turnover rate is constant over the tenure of a property (i.e. the turnover rate is the same for properties held for 1 year and those held for 10 years).
- The cost saving is estimated at **$125** per contract based on the following.
  - The estimated time saving each time a contract is reviewed due to simplified lot diagrams is uncertain, as the specifications of lot diagrams have not been determined and this could vary depending on the complexity of the plan and the title. For example, the time saving may be considerable, as some contracts may have hundreds of pages (for example properties within a large strata development or large subdivision). Based on consultations, we have assumed a time saving of 15 minutes each time a contract is reviewed. This reflects the professional time of the conveyancer or legal practitioner to understand and explain the plan.

42 ABS 2021, *Residential Property Price Indexes: Eight Capital Cities*, September 2021.

- Each transaction results in conveyancers or legal practitioner considering plans twice; once to review the contract, and a second time during settlement. Note this may be a conservative assumption as more than one party may review a contract.
- The conveyancer's (or legal practitioner's) time is value at **$250 per hour** based on feedback from the Australian Institute of Conveyancers.

Under these assumptions, the benefits are estimated to be significant and to increase over time as the stock of lots where the digital plan is the legal point of truth increases (chart 4.21). The productivity improvement is a cost saving for contract review and execution. The costs saving may either be retained by the conveyancer or legal practitioner or passed onto customers, depending on the extent of competition for these services (where there is strong competition for conveyancing services, we would expect more of the cost saving to be passed onto consumers compared to if there was weaker competition).

4.21 Potential benefits from simpler plans



Data source: CIE estimates.

Impact on requisitions

According to NSW LRS, if digital data were to become the source of legal truth and a new digital plan examination tool is developed, some types of requisitions could be reduced (see table 4.22). This includes several of the same types of requisitions/errors that could be reduced under Component B, as well as some additional types of requisitions/errors (highlighted in bold).

4.22 Types of requisitions affected by Component C

Type of error	Specific error type
Control	▪ SCIMS errors ▪ Permanent Mark errors
Survey	▪ Miscloses ▪ Area issues ▪ Incorrect or missing marking of corners

Type of error	Specific error type
	▪ **RM's not matching between plans** ▪ **Bearings/Distance not matching between plans** ▪ **Some boundary overlaps and hiatuses**
Plan Check	▪ Lot Numbers not matching ▪ Unit Entitlement issues ▪ **Registration Charting to part** ▪ **Titling errors associated with charting of parts** ▪ **Existing Easement errors**

Source: NSW LRS.

The extent to which Component C would reduce these requisitions is not known. For the purposes of the CBA, we have made relatively conservative estimates as shown in table 4.23.

4.23 Estimated impact of Component C on requisitions

	Potential impact on requisitions	Share of total requisitions	Estimated impact
	Per cent	Per cent	Percentage point
Deposited plans			
Control	5.0	14.6	0.7
Survey	5.0	33.2	1.7
Plan check	5.0	52.2	2.6
Total		**100.0**	**5.0**
Strata plans			
Plan check	5.0	40.2	2.0
Strata definition	5.0	36.4	1.8
Strata statements	0.0	23.4	0.0
Total		**100.0**	**3.8**

Source: CIE based on discussions with stakeholders.

Applying these impacts to the total annual requisition costs (see above) gives an annual benefit of $1.7 million (table 4.24).

4.24 Estimated reduction in requisition costs — Component C

	Impact on requisition costs	Annual requisition costs	Annual impact
	Per cent	$ million	$ million
Subdivision plans	5.0	20.2	1.0
Other deposited plans	5.0	2.3	0.1
Strata plans	3.8	14.1	0.5
Total		**36.6**	**1.7**

Source: CIE estimates.

Reduced surveyor digitisation costs

As discussed above, the availability of digital data will reduce the time spent by surveyors digitising plans. However, under Component B where the digital data is not considered equivalent to the point of legal truth, surveyors would still need to check the digital data to be satisfied with its accuracy. This was estimated to take 15-20 minutes.

Where the digital data is considered equivalent to the legal point of truth, surveyors could have full confidence in the data and could therefore avoid these checking costs. This is an estimated saving of around $63 per plan (table 4.25).

4.25 Reduced plan digitisation costs — surveyors

	Hours	Cost per plan
	No.	$ per plan
Component B	0.25	63
Component C	0.00	0
Incremental cost saving for Component C		**63**

Source: CIE based on discussions with stakeholders.

5 Cost-benefit analysis

Summary of estimated impacts

Based on the information available to date, the preliminary estimates suggest that Option 3 (which includes Components A, B and C) delivers the highest net benefit and is therefore the preferred option (table 5.1). Although these estimates exclude the costs associated with developing and maintaining the new IT systems, it is unlikely that these costs would be high enough to change these broad conclusions.

The different scenarios presented in table 5.1 refer to the assumptions made about plan examination costs under Component B. Although this assumption is potentially important, it does not affect the broad conclusion that Option 3 is the preferred option.

5.1 Estimated impact by option

	Option 1	Option 2	Option 3
	$ million	$ million	$ million
Scenario 1			
Benefits	299.48	394.73	412.35
Costs	- 4.13	- 132.68	- 23.74
Net impact	**295.36**	**262.05**	**388.62**
Scenario 2			
Benefits	299.48	394.73	412.35
Costs	- 4.13	- 23.74	- 23.74
Net impact	**295.36**	**370.99**	**388.62**

Note: Costs and benefits estimated over 30 years, using a discount rate of 7 per cent.

CBA parameters

CBA involves discounting future costs and benefits to a comparable present value. Key CBA parameters are as follows.

- Time period — the impacts of the proposed reforms are assessed over 30 years. As this is a significant package of reforms that will be staggered over several years, it is reasonable to assess the costs and benefits of a relatively long period (similar to infrastructure projects). That said, IT systems typically have a much shorter life than other types of infrastructure. However, the CBA is assessing the impacts of moving to a fully online system (and associated reforms), rather than the costs and benefits of NSW LRS Connect per se. Any future upgrades to NSW LRS Connect beyond the

envisaged reforms should be treated as an incremental improvement on NSW LRS Connect. Alternative time periods will be considered as part of sensitivity testing.

- Discount rate — consistent with the NSW Government Guide to Cost Benefit Analysis, the central discount rate used in the CBA is 7 per cent. Alternative discount rates of 3 per cent and 10 per cent will be tested in sensitivity analysis.

Estimated impacts

The estimated incremental impacts of each of the reform components are shown in table 5.2.

- Most of the benefits can be attributed to Component A. Even though the system development costs have not been included, these costs are likely to have been already incurred for Component A and can therefore be treated as sunk.
- The net impact of Component B depends on what is expected of NSW LRS in relation to plan examination. The indicative estimates suggest that if the requirement to lodge digital data increases plan examination costs significantly, the costs associated with Component B could outweigh the benefits (see below for further details).
- Where an image rendered directly from digital data is the point of legal truth (Component C), the impact on plan examination costs based on available information are likely to be negligible.

5.2 Estimated impact of each reform component

	Component A	Component B	Component C
	$ million	$ million	$ million
Scenario 1			
Benefits	299.48	95.25	126.56
Costs	- 4.13	- 128.55	0.00
Net impact	**295.36**	**- 33.30**	**126.56**
Scenario 2			
Benefits	299.48	95.25	17.62
Costs	- 4.13	- 19.61	0.00
Net impact	**295.36**	**75.63**	**17.62**

Note: Costs and benefits estimated over 30 years, using a discount rate of 7 per cent.
Source: CIE estimates/

Impacts of Component A

Component A is estimated to deliver a significant net benefit (table 5.3). In general, the largest benefits arise from reducing regulatory delays, particularly through: allowing processes to occur concurrently; reduced requisitions; and mandatory electronic signatures.

5.3 Estimated impacts of Component A

	Estimated impact
	$ million
Costs	
System development costs — NSW LRS	
System development costs — DPE	- 1.40
System maintenance costs	
Transition costs - surveyors	- 2.73
Total costs	**- 4.13**
Benefits	
Requisitions — reduced NSW LRS costs	0.60
Requisitions — reduced surveyor costs	4.45
Requisitions — reduced delays	26.11
Concurrent approvals	166.79
Mandatory online lodgment	10.67
Mandatory electronic signatures	90.88
Total benefits	**299.48**
Net impact	**295.36**

Note: Costs and benefits estimated over 30 years, using a discount rate of 7 per cent.
Source: CIE estimates.

Impacts of Component B

The preliminary estimates suggest that the impact of mandating that digital data be lodged with plans (without making the point of legal truth) depends on the extent to which any additional requirements will be placed on NSW LRS in relation to plan examination (see table 5.4).

- If NSW LRS are required to verify that the digital data file aligns with the PDF image (shown as Scenario 1 in table 5.4), there could be a significant increase in plan examination costs. These plan examination costs could significantly outweigh the benefits.
- If the digital data lodged with a plan is used to support NSW LRS's plan examination process only, the additional costs could be negligible. Under this scenario (referred to Scenario 2 in table 5.4), the incremental benefits of Component B would outweigh the costs.

The main benefits from Component B is likely to be associated with a reduction in requisitions and plan amendments. Although there are also a range of other benefits, these are generally estimated to be relatively modest.

5.4 Estimated impacts of Component B

	Estimated impact — Scenario 1	Estimated impact — Scenario 2
	$ million	$ million
Costs		
System development costs		
System maintenance costs		
Plan examination costs	- 108.94	0.00
Surveyor conversion costs	- 19.61	- 19.61
Total costs	**- 128.55**	**- 19.61**
Benefits		
Requisitions — reduced NSW LRS costs	1.63	1.63
Requisitions — reduced surveyor costs	10.53	10.53
Requisitions — reduced delays	52.95	52.95
Plan amendments — reduced error identification costs	0.29	0.29
Plan amendments — reduced surveyor costs	2.23	2.23
Plan amendments — reduced NSW LRS costs	7.30	7.30
Plan drafting - reduced surveyor costs	8.08	8.08
Reduced digitisation costs - surveyors	6.05	6.05
Reduced digitisation costs - DCS Spatial Services	5.00	5.00
Reduced costs for Sydney Water	1.20	1.20
Total benefits	**95.25**	**95.25**
Net impact	**- 33.30**	**75.63**

Note: Costs and benefits estimated over 30 years, using a discount rate of 7 per cent.

Source: CIE estimates.

Impacts of Component C

The incremental impact of Component C depends on whether any additional plan examination requirements are placed on NSW LRS under Component B.

- Any additional requirements placed on NSW LRS under Component B would not be required under Component C. Under that scenario, one of the main incremental impacts of Component C is to reduce plan examination costs (scenario 1).
- However, if no additional requirements are placed on NSW LRS under Component B, there would be no incremental impact on plan examination costs from choosing to make an image directly rendered from the digital data the point of legal truth (scenario 2).

Aside from any impact on plan examination costs, the additional benefits from Component C based on available information are generally relatively modest and mainly comprise a further (modest) reduction in requisitions (table 5.5). However, there may be opportunities to achieve additional benefits, which may become clearer once Components A and B have been implemented. It may therefore be worth revisiting the costs and benefits of Component C at that time.

5.5 Estimated impacts of Component C

	Estimated impact — Scenario 1	Estimated impact — Scenario 2
	$ million	$ million
Costs		
System development costs		
System maintenance costs		
Total costs		
Benefits		
Plan examination costs	108.94	0.00
Requisitions — reduced NSW LRS costs	0.34	0.34
Requisitions — reduced surveyor costs	2.46	2.46
Requisitions — reduced delays	13.96	13.96
Reduced digitisation costs - surveyors	0.86	0.86
Total benefits	**126.56**	**17.62**
Net impact	**126.56**	**17.62**

Note: Costs and benefits estimated over 30 years, using a discount rate of 7 per cent.
Source: CIE estimates.

Distribution of impacts

The net impacts of the proposed reforms across various stakeholder groups are shown in table 5.6. These estimates are based on the scenario where there would be minimal impact on plan examination costs under Component B (Scenario 2 above).

Costs and benefits are allocated across stakeholder groups based on the direct impact of the proposed reforms. In practice, many costs and benefits are likely to be passed on through fee changes.

- This analysis suggests that all stakeholder groups are expected to benefit from the proposed reforms, based on the impacts that were able to be quantified. It is not clear that there would be a net benefit to NSW LRS if the system development and maintenance costs were included. That said, these costs were factored into the lease price, so these costs have effectively already been incurred by the NSW Government.
- Most of the benefits of the proposed reforms (around 87 per cent) go to landowners/developers. This reflects the high cost of delays and therefore the significant benefits associated with any time savings. In practice, many of the costs and benefits incurred by other parties (including surveyors and NSW LRS) are also likely to be passed onto landowners/developers.
- The estimated benefit to councils reflects the potential benefits from mandatory electronic signatures. These benefits are achieved by those councils that are assumed not voluntarily take up the option of using electronic signatures, which is already available. Note that council systems would need to be improved to realise these benefits. This could occur through either: a council review of their own processes (as

assumed in the CBA); or mandated changes via the NSW Planning Portal, in which case most of the costs would be incurred by DPE.

- There is also a modest benefit to surveyors (see further analysis below).

5.6 Net impact by stakeholder group

	Surveyors	NSW LRS	NSW Government	Councils	Developers	Sydney Water	Total
	$ million	$ million	$ million	$ million	$ million	$ million	$ million
Component A	1.72	0.60	- 1.40	21.78	272.66	0.00	295.36
Component B	7.26	8.93	5.29	0.00	52.95	1.20	75.63
Component C	3.32	0.34	0.00	0.00	13.96	0.00	17.62
Total	**12.30**	**9.87**	**3.89**	**21.78**	**339.58**	**1.20**	**388.62**
Share of total (%)	**3**	**3**	**1**	**6**	**87**	**0**	**100**

Note: Costs and benefits are estimated in net present value terms over 30 years, using a discount rate of 7 per cent.
Source: CIE estimates.

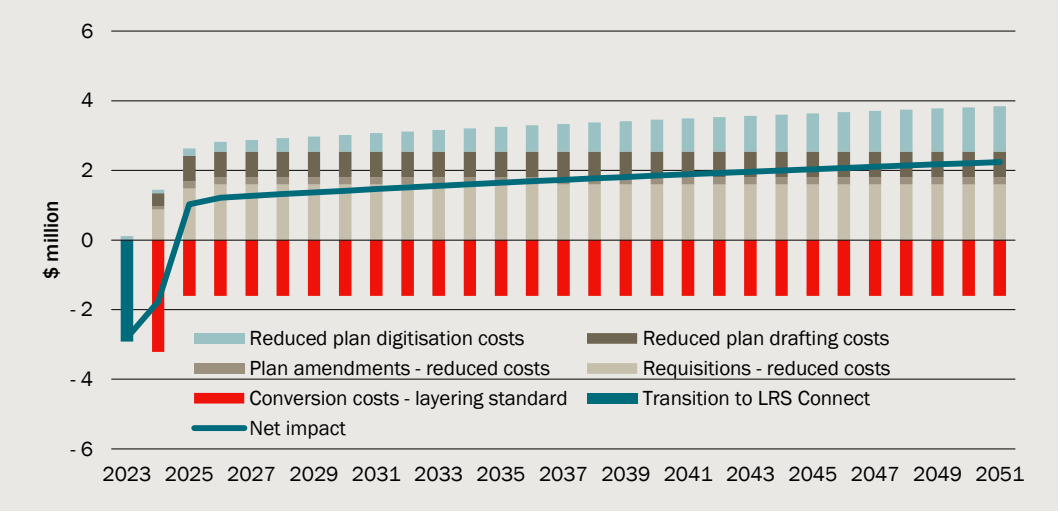
Impact on surveyors

As a key stakeholder in the reform process, there is significant interest in the net impact on surveyors. As above, this represents costs and benefits imposed directly on surveyors by these reforms. Assuming the market for surveying services is competitive, we would expect many of these costs and benefits to be passed onto clients (i.e. landowners and developers).

The impact on surveyors over time is shown in chart 5.7.

- Surveyors initially incur a cost associated with learning and familiarising themselves with NSW LRS Connect. As at May 2022, 329 surveyors (around 42 per cent of all surveyors that would need to transition to NSW LRS Connect) have already created NSW LRS Connect accounts and created more than 650 plan workspaces. These surveyors would have incurred some or all of these transition costs already.
- Once the system is fully implemented, surveyors also bear costs associated with converting plans to the new CAD layering standard. However, these costs reduce over time as surveyors start to use the new standard in their normal business practices.
- By 2025, the benefits of the reforms for surveyors — including reduced costs associated with requisitions, reduced plan drafting costs and reduced digitisation costs — start to outweigh the cost.

5.7 Estimated impact on surveyors — time series



Data source: CIE estimates.

Table 5.8 shows the net impact on surveyors (in net present value terms) over different time periods (using a discount rate of 7 per cent).

- Over a 5-year timeframe, the benefits to surveyors are not sufficient to outweigh the upfront costs (in present value terms, using a discount rate of 7 per cent).
- Over a 10-year timeframe, there is a small net benefit to surveyors (the break-even point is around 8 years).
  - Where surveyors are able to pass some of the additional costs incurred in the first couple of years onto clients (i.e. landowners/developers), their break-even point would occur sooner.
  - Landowners/developers are the main beneficiaries of the proposed reforms and bearing some of additional costs incurred by surveyors (through higher surveying fees) in the first couple of years after implementation would have a relatively modest impact on their overall benefits (see chart 5.9 for a comparison of the net impacts of the proposed reforms on landowners/developers and surveyors).
- Over longer timeframes, there is a net benefit for surveyors, which increases over time.

5.8 Estimated impacts on surveyors over different time periods — net present value

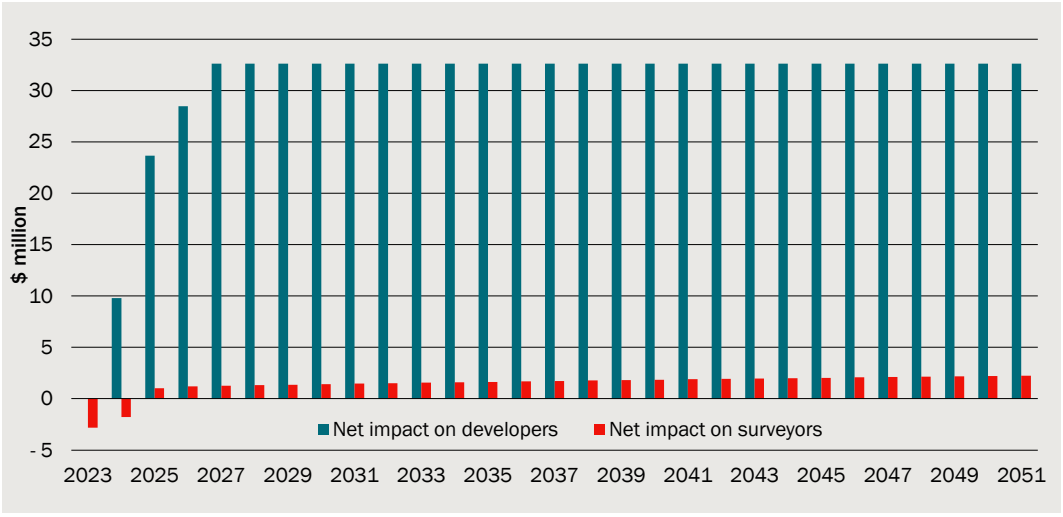
	5 years	10 years	15 years	20 yeas	25 years	30 years
	$ million	$ million	$ million	$ million	$ million	$ million
Component A						
Transition to LRS Connect	-2.73	- 2.73	- 2.73	- 2.73	- 2.73	- 2.73
Reduced requisitions	0.96	2.19	3.06	3.68	4.13	4.45
Net impact - Component A	**- 1.77**	**- 0.54**	**0.33**	**0.96**	**1.40**	**1.72**
Component B						
Conversion costs - layering standard	- 5.34	- 10.36	- 13.94	- 16.49	- 18.32	- 19.61
Requisitions - reduced costs	1.95	4.96	7.12	8.65	9.75	10.53

	5 years	10 years	15 years	20 yeas	25 years	30 years
	$ million	$ million	$ million	$ million	$ million	$ million
Plan amendments - reduced costs	0.41	1.05	1.50	1.83	2.06	2.23
Reduced plan drafting costs	1.49	3.81	5.46	6.64	7.48	8.08
Reduced plan digitisation costs	0.50	1.65	2.93	4.13	5.18	6.05
Net impact - Component B	**- 0.99**	**1.11**	**3.07**	**4.75**	**6.15**	**7.26**
Component C						
Reduced requisitions	0.29	1.05	1.60	1.98	2.26	2.46
Reduced plan digitisation costs	0.07	0.23	0.42	0.59	0.74	0.86
Net impact - Component C	**0.36**	**1.28**	**2.01**	**2.57**	**3.00**	**3.32**
Net impact - All Components	**- 2.40**	**1.86**	**5.41**	**8.28**	**10.55**	**12.30**
Note: Net impact on developers	49.60	151.63	224.37	276.23	313.21	339.58

Note: Net present value calculations use a discount rate of 7 per cent.

Source: CIE estimates.

5.9 Comparison of estimated net impact on surveyors with developers



Data source: CIE estimates.

Scenario and sensitivity analysis

The sensitivity of the CBA results to various assumptions/parameters are tested below, along with an alternative scenario, where the need for conveyancers and legal practitioners to explain complex surveyor drafted plans to their clients could be avoided.

Sensitivity analysis

Although the CBA has been prepared based on the best information available, there is some uncertainty around several significant assumptions.

- It is therefore important to test the sensitivity of the results to alternative assumptions with a plausible range. Key uncertainties include the following:

- Reduced delays through concurrent processes — key assumptions include:
  - Concurrent processes reduce delays by 10 days — as this assumption cannot be tested, it is important to test alternative assumptions.
  - Applies to plans lodged within 4 weeks of the subdivision certificate — as not all plans are 'time critical', we assumed that these time savings would only apply to new lots created by plans lodged within 4 weeks of the subdivision certificate.
- Reduced delays through mandatory electronic signatures — the assumptions used are consistent with those used in a previous BRS that allowed voluntary uptake.
  - The CBA assumed a time saving of 6.9 days, based on the time saving achieved by Penrith Council from digitising the councils internal process.
  - As making electronic signatures mandatory would only affect those councils that would not choose to take up electronic signatures voluntarily, it is plausible that these councils would not choose to review and improve existing processes to any significant extent.
- The future cost of using the proposed layering standard — the impact of the proposed layering standard were tested on a sample of plans submitted by surveyors.
  - A key assumption was that measured costs would decrease by 75 per cent for future plans (after the first year) as surveyors would develop the plan using the new layering standard.
  - We also test alternative assumptions where future costs: are reduced by 50 per cent; and do not decrease at all.
- The impact of Components B and C on requisitions.
- Consistent with the NSW Government Guide to Cost Benefit Analysis, we also test alternative CBA parameters, including alternative:
  - time periods
  - discount rates.

The alternative assumptions tested are summarised in table 5.10

5.10 Summary of alternative assumptions used in sensitivity testing

Input assumption/parameter	Central case	Alternatives tested
Reduced delay through concurrent processes	▪ Concurrent processes reduce delays by 10 days ▪ Applies to plans lodged within 4 weeks of subdivision certificate (~73% of lots)	▪ Concurrent approvals reduce delays by: – 5 days – No improvement in timeframes ▪ Applies to plans lodged within: – 2 weeks of subdivision certificate (61%) – 1 week of subdivision certificate (47%)
Reduced delays through mandatory electronic signatures	Council approval times are reduced by 6.9 days.	Approval times for affected councils remain the same.
The future cost of using the proposed layering standard	Measured costs fall by 75 per cent after the first year.	Measured costs:

Input assumption/parameter	Central case	Alternatives tested
		▪ Fall by 50 per cent after the first year ▪ Remain as measured.
Impact on requisitions	In total, requisition are reduced by: ▪ 36.6% for deposited plans ▪ 15.2% for strata plans	▪ Low scenario where: – Requisitions of deposited plans are reduced by 20% – Requisitions for strata plans are reduced by 5% ▪ High scenario where: – Requisitions of deposited plans are reduced by 50% – Requisitions of strata plans are reduced by 25%
Time period	30 years	Alternative time periods tested are: ▪ 10 years ▪ 20 years
Discount rate	7%	Alternative discount rates tested (as required by NSW Government Guide to Cost-Benefit Analysis) are: ▪ 3% ▪ 10%

Source: CIE.

The net impact of Option 3 (where Components A, B and C are all implemented) is shown in table 5.11.

- Under all scenarios tested, the proposed reforms are estimated to deliver a significant net benefit to the community.
- Although the estimates are relatively sensitive to several of the assumption (mostly those involving reduced delays), the CBA is not critically dependent on any one of the assumptions.
- This suggests that findings are relatively robust.

5.11 Net impact under alternative assumptions

Variable	Central case assumption	Assumption tested	Net impact
			$ million
Central case			388.62
Reduced delay through concurrent processes	10 days	5 days	305.22
Reduced delay through concurrent processes	10 days	0 days	221.83
Application to plans	Lodged within 4 weeks (73%)	Lodged within 2 weeks (61%)	361.20
Application to plans	Lodged within 4 weeks (73%)	Lodged within 1 week (47%)	329.21

Variable	Central case assumption	Assumption tested	Net impact
			$ million
Reduced delays through mandatory electronic signatures	6.9 days	No change	319.52
Proposed layering standard	Future costs fall by 75%	Cost fall by 50%	371.81
Proposed layering standard	Future costs fall by 75%	Future costs do not change	338.19
Impact on requisitions		Low scenario	332.33
Impact on requisitions		High scenario	436.61
Time period	30 years	10 years	167.99
Time period	30 years	20 years	313.76
Discount rate	7%	3%	378.34
Discount rate	7%	10%	370.03

Source: CIE estimates.

Scenario analysis

As identified above, the tangible benefits associated with Component C are generally relatively modest and mainly comprise a further modest reduction in requisitions (abstracting from any impacts on plan examination costs). However, there may be opportunities for further reform in the future.

In particular, there may be a future opportunity to only attach Lot Diagrams rendered directly from survey plan data to conveyancing contracts and avoid the need for surveyor drafted plans that can run too many pages.

The potential benefits under that scenario are estimated at around $137.3 million in present value terms (see chapter 5 for details of the methodology). Under this scenario, the benefits of making a visual image rendered directly from the digital plan data the point of legal truth (i.e. Component C) would be significant (see table 5.12).

5.12 Estimated impacts of proposed reforms — reduced conveyancer time

	Estimated impacts - central case	Estimated impacts - including reduced conveyancer time
	$ million	$ million
Component A	295.36	295.36
Component B	75.63	75.63
Component C	17.62	144.55
Total	**388.62**	**515.54**

Note: Costs and benefits estimated in present value terms over 30 years, using a 7 per cent discount rate.

Source: CIE estimates.

This analysis suggests that although the quantifiable costs of Component C appear to be relatively modest, this step could open up future opportunities for reform that could deliver significant future benefits.

THE CENTRE FOR INTERNATIONAL ECONOMICS
www.TheCIE.com.au