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DRAFT

# Estimating costs of electronic conveyancing services in NSW

**Draft Report** 

### Estimating costs of electronic conveyancing services in NSW

### Draft Report

### **Client: IPART**

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# Glossary

| AIC  | Australian Institute of Conveyancers   |
|------|--|
| API  | Application programming interface      |
| AWS  | Amazon Web Services                    |
| ASX  | Australian Securities Exchange         |
| COIN | Community of Interest Network          |
| eCT  | Electronic Certificate of Title        |
| EDR  | Electronic Duties Return               |
| ELN  | Electronic Lodgement Network           |
| ELNO | Electronic Lodgement Network Operator  |
| GUI  | Graphical User Interface               |
| LPI  | Land and Property Information          |
| LRS  | New South Wales Land Registry Services |
| LSS  | Lodgement Support Service              |
| NSW  | The State of New South Wales           |
| MFA  | Multi Factor Authentication            |
| MOR  | Model Operations Requirements          |
| OSR  | Office of State Revenue                |
| SRO  | State Registry Office                  |
| TAC  | Title Activity Check                   |

### Executive summary

IPART has been asked to review the pricing regulatory framework for electronic conveyancing services in NSW where electronic conveyancing ('eConveyancing') is a system of settlement of real property transactions via an Electronic Lodgement Network (ELN).

To assist with this review, IPART engaged AECOM to review, estimate and report on the costs that an efficient ELN Operator (ELNO), an efficient land registry and Revenue NSW would incur in providing specified services at the quantity and level demanded by the industry.

AECOM determined the capital and operating costs for a benchmark efficient new entrant and an established ELNO based on various market share scenarios.

In each case, it has been assumed that an ELNO would deliver services across several (assumed to be three) markets (States), with the established ELNO operating in all three jurisdictions throughout and the new entrant ELNO expanding into a new jurisdiction in each of the first three years.

This enables the ELNOs to recover costs from more than one jurisdiction, and for the purposes of this assessment, we have assumed the share by market as shown in Table 1.

### Table 1 Market Share by number of ELNOs and markets

| Market                               | Number of markets |           |           |  |  |
|--------------------------------------|-------------------|-----------|-----------|--|--|
|                                      | 1 2 3             |           |           |  |  |
| 1                                    | 100%              | 53%       | 37%       |  |  |
| 2                                    | -                 | 47%       | 33%       |  |  |
| 3                                    | -                 | -         | 30%       |  |  |
| Total number of transactions assumed | 700,000           | 1,324,684 | 1,900,633 |  |  |

The assumed growth of each ELNO across all markets during each year of operation is shown in Table 2, for low, medium and high market penetration scenarios.

### Table 2 ELNO Market share by years of operation

| ELNO                                    | Years of operation |     |     |     |     | Mean |
|---|--------------------|-----|-----|-----|-----|------|
|   | 1                  | 2   | 3   | 4   | 5   |      |
| New entrant ELNO – Low customer base    | 2%                 | 5%  | 10% | 15% | 20% | 10%  |
| New entrant ELNO - Medium customer base | 5%                 | 10% | 20% | 30% | 40% | 21%  |
| New entrant ELNO - High customer base   | 10%                | 20% | 35% | 50% | 65% | 36%  |
| Established ELNO – Low customer base    | 20%                | 20% | 20% | 20% | 20% | 20%  |
| Established ELNO – Medium customer base | 50%                | 50% | 50% | 50% | 50% | 50%  |
| Established ELNO – High customer base   | 80%                | 80% | 80% | 80% | 80% | 80%  |

Operating costs, the number of transactions and the resulting levelized transaction costs over a 5-year operating period for each ELNO are shown in Table 3 and Figure 1. The estimated capital cost of the new entrant is also shown in the table, and is represented on the chart by the size of the bubble.

It has been assumed that the capital investment made by the established ELNO has been fully depreciated at the start of the modelled period.

| Market share scenario                   | Capital<br>Investment<br>(',000) | Operating Costs<br>(FY2020-FY2024)<br>(',000 \$2019)) | Total Number of<br>Transactions<br>(FY2020-2024) | Levelised cost<br>per transaction<br>(FY2020-FY2024) |
|---|----------------------------------|---|--|--|
| New entrant ELNO – Low customer base    | 6,160.4                          | 114,963.4   | 935,519  | 122.89   |
| New entrant ELNO - Medium customer base | 6,160.4                          | 141,581.4   | 1,878,038  | 75.39  |
| New entrant ELNO - High customer base   | 6,160.4                          | 177,424.2   | 3,185,886  | 55.69  |
| Established ELNO – Low customer base    | -                                | 146,477.2   | 1,900,633  | 77.07  |
| Established ELNO – Medium customer base | -                                | 234,341.9   | 4,751,582  | 49.32  |
| Established ELNO – High customer base   | -                                | 320,404.3   | 7,602,532  | 42.14  |

### Table 3 Levelized transaction cost by ELNO



Figure 1 Levelized transaction costs for a new entrant and established ELNO by market share and capital investment

It would generally be assumed that the first mover into a market such as this would have a higher software development cost. The second and later entrants benefit from being able to enter a market where the requirements and protocols for communication are already established and known by all parties and would be expected to have a lower development cost as a result.

In practice, however, market share is the primary driver of the difference in levelized transaction cost between a benchmark efficient New Entrant ELNO and a benchmark efficient Established ELNO, not the scale of the capital investment needed (Figure 1).

The principal market participants other than ELNOs are the LRS and Revenue NSW. Our assessment is that the level of effort required for a benchmark LRS to develop a system suitable to support eConveyancing would require a capital expenditure of approximately **\$4.2 million** (in \$FY2019). This includes establishing a document management system which we estimate accounts for about 32% of the total development effort. A 5-year deprecation period would, in our view, be appropriate. The cost likely to be required by Revenue NSW to respond to LPI verification issues and cater for ELNO product releases and updates has also reviewed.

The prospect of two or more ELNOs in the market raises interoperability issues. We have addressed interoperability issues and costs for up to 4 possible ELNOs, where the new entrants may or may not be full-service (i.e. with back end financial settlement and lodgement infrastructure).

Five possible interoperability scenarios were considered, using market share assumptions over the period as indicated in Figure 2, which shows market growth to saturation after 3 years with the established ELNO maintain approximately 52% share of the national market. The *no-interoperability option* requires the lowest capital investment, but rapidly delivers a higher transaction cost to the industry. The *Infrastructure ELNO* requires the lowest investment and delivers the lowest levelized transaction cost when there are three or more ELNOs in the market. The costs of direct connections and an infrastructure ELNO are similar when there are only two ELNOs in the market.

A consequence of the fixed number of transactions available is that additional ELNOs would be likely to have a smaller number of transactions to work with, making their levelized costs very high in comparison to the established ELNOs, and increasing total industry cost



Figure 2 Levelized transaction cost for each interoperability model

# 1.0 The objectives of this report

IPART has been asked to review the pricing regulatory framework for electronic conveyancing services in NSW where electronic conveyancing ('eConveyancing') is a system of settlement of real property transactions via an Electronic Lodgement Network (ELN).

To assist with this review, IPART has engaged AECOM to review, estimate and report on the costs that an efficient ELN Operator (ELNO) and an efficient land registry in NSW would incur in providing specified services at the quantity and level demanded by the industry.

Specifically, IPART has been asked to review the state of the electronic conveyancing market in NSW, and recommend appropriate pricing regulatory frameworks which include:

- A maximum price or pricing methodology for the provision of services by an ELNO.
- A maximum price or pricing methodology for services provided to ELNOs by NSW Land Registry Services (NSW LRS).
- A maximum price or pricing methodology for services provided to ELNOs by Revenue NSW.
- In reaching the advice, IPART were to have regard to:
  - Protection of consumers from potential pricing abuses due to the current highly concentrated nature of the eConveyancing market.
  - The potential for additional ELNOs to enter the market.
  - The cost of providing the services concerned.
  - The extent to which Property Exchange Australia (PEXA) invested capital and developed intellectual property as the first ELNO.
  - The possibility of applying the NSW approach as a model for other jurisdictions.

This report has been prepared by AECOM in response to a specific scope of work defined by IPART to support its review.

### 1.1 Scope of work

AECOM was engaged to complete the following services:

- Estimation of efficient operating and capital expenditures that a benchmark efficient ELNO would incur in providing eConveyancing services for five years from 2018-19 to 2022-23.
- Estimation of efficient operating and capital expenditures which are likely to be incurred by the industry under three scenarios of interoperability.
- Estimation of efficient capital expenditure that a benchmark efficient land registry would incur in building a new system for ELNOs for five years from 2018-19 to 2022-23.
- Estimation the efficient costs incurred by Revenue NSW in supporting ELNO's in eConveyancing

AECOM has been asked to consider a benchmark efficient ELNO and an established ELNO under the independent market share scenarios in Table 4.

| Table 4 | Market Share scenarios for a New Entrant and Established ELNO |
|---------|---|
|         |   |

| ELNO                                    |     | Years of operation |     |     |     |  |  |
|---|-----|--------------------|-----|-----|-----|--|--|
|   | 1   | 2                  | 3   | 4   | 5   |  |  |
| New entrant ELNO – Low customer base    | 2%  | 5%                 | 10% | 15% | 20% |  |  |
| New entrant ELNO - Medium customer base | 5%  | 10%                | 20% | 30% | 40% |  |  |
| New entrant ELNO - High customer base   | 10% | 20%                | 35% | 50% | 65% |  |  |
| Established ELNO – Low customer base    | 20% | 20%                | 20% | 20% | 20% |  |  |
| Established ELNO – Medium customer base | 50% | 50%                | 50% | 50% | 50% |  |  |
| Established ELNO – High customer base   | 80% | 80%                | 80% | 80% | 80% |  |  |

### 1.2 eConveyancing

Conveyancing is the process through which title and other interests in real property are transferred from one person to another. It typically, includes the following phases:

- Preparation of contracts
- Exchange of contracts
- Property searches and enquiries
- Preparation and exchange of documents
- Duty verification and payment
- Financial settlement
- Document lodgement
- Document registration (when legal title is transferred).

eConveyancing is an electronic solution for some of the steps involved in this process and includes both the title and financial settlements. It allows lawyers, conveyancers and financial institutions to enter a secure, online workspace via an Electronic Lodgement Network (ELN) where they can exchange data and collaborate to prepare documents, settle funds and lodge documents with land registries.

From 1 July 2019, most types of property documents in NSW will be mandated to be electronic and will be completed through and Electronic Lodgement Network Operator (ELNO).

# D R A F T

# 2.0 Conveyancing activity in NSW

### 2.1 Traditional conveyancing processes

Traditional conveyancing processes are paper based, where the aim is to produce a paper title (with or without a mortgage) via signed and dated contracts and stamp duty documents.

Distribution of funds is conventionally completed via bank cheques to financial institutions, Revenue NSW (transfer duty), vendor equity accounts, conveyancers, lawyers and statutory bodies e.g. local councils, water authorities and strata bodies.

The traditional conveyancing process can be split into three key stages:

- 1. Purchasers and vendors sign and date two separate identical contracts and the deposit is paid to an agent. Contracts are subsequently swapped/handed over between parties, a process known as "exchange of contracts". Once exchange is completed, the property is listed as sold.
- 2. Mortgage documents signed and certified by incoming mortgagee.
- 3. Settlement or closure of sale is typically completed within 6 weeks of dated contract exchange. Within this stage settlement figures are agreed between settlement agents and transfer documents produced. Authorising the change of title with new names, current original title and notices to future address service for Council, Water and Strata are furnished.

The traditional conveyancing steps compared against the ELNO process is presented in the first three columns of the flowchart (Appendix A).

### 2.2 The eConveyancing process

The eConveyancing process commences following the exchange of contracts, after terms have been agreed between purchasers and vendors:

- Data from contracts such as addresses, title references, sale prices, vendors and purchasers' names and lawyers / conveyancers details are inserted into legal practice management systems. Title transfer documents can be signed digitally online.
- Application Programme Interface (API) integration enables the uploaded data to be transferred to the ELNO (or alternatively the data can be entered by the user into an ELNO's system), and invitations are dispatched to vendors and purchasers' conveyancers/lawyers.
- Upon acceptance of the ELNO invitation, vendors and purchasers' conveyancers/lawyers invite incoming and outgoing financial institutions into the online ELNO workspace using dropdown selection.
- Automated documents required to complete a conveyance are shared online, signed and completed collaboratively by conveyancers and lawyers on behalf of vendors and purchasers.

Action on behalf of clients within an ELNO demands a high level of assurance/compliance from eConveyancing. This is underpinned by the conveyancers and lawyers, and achieved through two key stages within eConveyancing:

- 1. Identity confirmation of the vendor/purchaser client is undertaken using reasonable steps such as passports, drivers' licenses, face to face verification, technology applications or third-party agents.
- 2. A 'Client Authorisation form' is required (in paper or electronic form) to consent to conveyancers/lawyers signing documents on behalf of their clients within the ELNO.

An outline of the eConveyancing process using an ELNO is presented in the two central (red shaded) columns of (reference Appendix A). The ELNO settlements procedure can be split into two stages:

- 1. Title Settlement transferring purchaser(s) name(s) to a new eCT and registering a mortgage if required (no paper title).
- 2. Financial Settlement where funds are electronically transferred from the incoming mortgagee (and/or a trust account) to the vendor, outgoing mortgagee, Revenue NSW, and other third parties.

### 2.3 The volume of conveyancing activity

Table 5 shows the volume of conveyancing activity in NSW for FY2019<sup>1</sup>. 80% of ELNO activity is processing transfers and refinancing of existing titles with a different financial institution. Both of which involve the discharge of existing mortgage and registration of a new mortgage.

| Number of Transactions, FY2018 |                    |   |         |         |         |  |  |  |
|--------------------------------|--------------------|---|---------|---------|---------|--|--|--|
| Category                       | Dealings<br>Lodged | Dealings<br>Lodged Transfers Mortgages Discharge<br>Mortgages |         | Other   |         |  |  |  |
| Jul                            | 79,018             | 18,061  | 22,920  | 23,411  | 14,626  |  |  |  |
| Aug                            | 82,358             | 18,461  | 22,887  | 25,121  | 15,889  |  |  |  |
| Sep                            | 69,954             | 15,098  | 19,522  | 21,472  | 13,862  |  |  |  |
| Oct                            | 75,330             | 16,083  | 21,232  | 23,661  | 14,354  |  |  |  |
| Nov                            | 74,690             | 16,174  | 20,947  | 23,038  | 14,531  |  |  |  |
| Dec                            | 74,347             | 17,605  | 21,012  | 22,801  | 12,929  |  |  |  |
| Jan                            | 58,627             | 12,510  | 17,071  | 18,448  | 10,598  |  |  |  |
| Feb                            | 57,322             | 10,886  | 15,358  | 17,400  | 13,678  |  |  |  |
| Mar                            | 62,555             | 12,366  | 17,065  | 18,755  | 14,369  |  |  |  |
| Apr                            | 63,933             | 13,962  | 18,075  | 18,811  | 13,085  |  |  |  |
| Мау                            | 72,567             | 15,506  | 20,281  | 21,465  | 15,315  |  |  |  |
| Jun                            | 66,105             | 14,633  | 18,378  | 19,314  | 13780   |  |  |  |
| Total                          | 836,806            | 181,345   | 234,748 | 253,697 | 167,016 |  |  |  |

Table 5 NSWLRS FY19 Activity Data

<sup>&</sup>lt;sup>1</sup> NSWLRS, https://www.nswlrs.com.au/Dealing-Statistics accessed 20th June 2019 and updated 16<sup>th</sup> August 2019

# D R A F T

### 2.4 ELNO stakeholders

The key ELNO stakeholders interact to produce a title and funds distribution at sale closure are shown in Figure 3.

Figure 3: ELNO Stakeholders



All individuals that practice conveyancing in NSW and representatives of financial institutions involved in property transactions must subscribe to at least one ELNO platform (after 1 July 2019 when it became mandatory to complete all mainstream transactions through an ELNO).

Subscribers are assumed to be from one of three professional groups:

- Licensed conveyancers
- Legal professionals
- Financial institutions.

It has been assumed that conveyancers would all be members of the Australian Institute of Conveyancers (AIC). AIC membership at 30<sup>th</sup> June 2018 was 951, and it is assumed that all are potential subscribers.

Table 6 shows the membership of the Law Society of NSW at 31<sup>st</sup> March 2019 broken down by firm type<sup>2</sup>, and indicates that there a total of 20,713 solicitors in private practice.

The number of subscribers from financial institutions is unknown.

There appear to be 8,244 lawyers in NSW that practice conveyancing, and when combined with membership of AIC, this suggests that there are 9,195 potential ELNO subscribers in NSW.

<sup>&</sup>lt;sup>2</sup> <u>https://www.lawsociety.com.au/sites/default/files/2019-05/201903%20Practising%20Solicitor%20Statistics%20-%20Mar%202019.pdf</u> accessed 31<sup>st</sup> May 2019

### Table 6 Number of conveyancers in NSW

| Type of subscriber                          | Number |
|---|--------|
|   |        |
| Sole practitioners                          | 4,315  |
| Law firm                                    | 6,171  |
| Legal Practice                              | 10,227 |
| Coporate lawyer                             | 6,197  |
| Government Legal Practitioner               | 3,524  |
| Community Legal centres or not practising   | 3,728  |
| TOTAL                                       | 34,162 |
| Subtotal that could practise conveyancing   | 20,713 |
| Proportion that practise conveyancing       | 39.8%  |
| Potential Subscribers (Lawyers)             | 8,244  |
|   |        |
| Conveyancers                                |        |
| As at 30th June 2018 Membershiop of AIC NSW | 951    |
| TOTAL Potential Subscriber pool             | 9,195  |

### 2.5 The benefits of eConveyancing for stakeholders

### 2.5.1 Conveyancing Practitioners

KPMG noted that using an ELNO between exchange of contracts and settlement could save a conveyancing practitioner between 3 and 5 hours of transaction time<sup>3</sup>.

There are other benefits. ELNOs also:

- Deliver more certainty to clients and practitioners that settlements will be completed as scheduled.
- Remove the effort of preparing paper settlement packs and sending via post, eliminating the risk
  of important documents going missing or arriving late.
- Reduce the stress and worry associated with conveyancing for both clients and practitioners.
- Enhance the client experience through the use of smart phone tracking applications (such as the 'PEXA key app') which enables practitioners, vendors and purchasers to track their settlement progress and tasks to complete.
- Perform a checking and verification role, where entered data is cross-checked to help eradicate errors. Any inconsistencies in data entries such as title references, names on certificates, street locations are quickly identified, and the user notified.
- Constant checks for title activity changes on a title throughout a settlement also assist in avoiding delays to settlement or claims against practitioner.
- Pre-register appropriately qualified and insured conveyancers/lawyers, which enhances consumer outcomes and protection, reduces client risk and the attractiveness of 'do it yourself' conveyancing services.

### 2.5.2 Incoming and outgoing banks

ELNOs enable incoming and outgoing banks to easily insert payout figures and amounts available for settlement through a 'collaborative electronic settlement table'. Practitioners book settlements online through the ELNO, reducing effort required to arrange settlement and avoiding lengthy co-ordination discussions.

<sup>&</sup>lt;sup>3</sup> Electronic Conveyancing, KPMG, February 2018

It is expected that ELNOs will, in the future, facilitate a fully computerised interaction with banks, where payouts and loan figures are automatically populated. Mortgage documents will also be signed electronically by the bank on behalf of clients, through authorisation from borrowers. Copies of mortgage documents can be shared digitally via secure email. Digitisation and automation of this process by banks will drive efficiencies and lead to cost savings for their mortgage operations.

### 2.5.3 NSWLRS

Land registry provide the following services

- Land Title Verification. A service to check existence of the title.
- Registry Information Supply (RIS) which provides brief title data
- Title Activity Check (TAC) which allows the ELNOs to 'ping' in as necessary through the process to confirm the title.
- Registry Information Resupply, which is an updated version of the RIS, and used if the TAC identifies a change or if the eConveyancing transaction has completed and is being validated.
- Document Lodgement Verification which ensures that documents are provided by ELNOs free from error.
- Document Lodgement Service which records and lodges the updated title documents.
- Subscriber account management.
- Significant time savings for post settlement new title registration are enabled via instantaneous notifications to councils and water authorities.
- Conversion of unencumbered titles to an Electronic Certificate of Title (eCT) is an excellent innovation to prevent fraud and forgery of NSWLRS titles.

### 2.5.4 Revenue NSW

Revenue NSW assess the transfer duty via Electronic Duties Return (EDR) and conveyancing software enables duty assessment figures to be lodged and verified within the ELNO. This is much more efficient than lodging and sending a document pack to a settlement agent to process.

### 2.5.5 Future sources of time and cost efficiencies

A number of innovations or future developments for eConveyancing have already been suggested, including:

- Moving the Client Authorisation forms (where clients authorise practitioners to sign documents on their behalf in the ELNO) to a digital online process rather than paper.
- Enabling clients to give authority to Banks to sign Mortgage Documents digitally (mortgage documents are still issued in paper to borrowers and wet signed by clients).
- Settling rare forms of title in NSW (functionality to settle company title and tenants-in-common apartments).
- Include functionality for strata bodies to notify changes on strata rolls rather than the current
  paper-based system. Which is through a posted section 22 certificate to strata managers for
  purchasers of apartments.
- It is expected that ELNOs will, in the future, facilitate a fully computerised interaction with banks, where payouts and loan figures are automatically populated. Mortgage documents will also be signed electronically by the bank on behalf of clients, through authorisation from borrowers. Copies of mortgage documents can be shared digitally via secure email. Digitisation and automation of this process by banks will drive efficiencies and lead to cost savings for their mortgage operations.

### 3.0 Approach and methodology

AECOM established the steps and interactions in the conveyancing process and presented this is as the flowchart in Appendix A.

AECOM's in-house software engineers identified the 'user-stories' within this flowchart, where a 'userstory' is defined an interaction with the ELNO to achieve a specific task, and assessed the effort required to develop the software necessary for each 'user story'. Market rates were applied to estimate the required capital investment, based on AECOM's experience of application development.

Data from the incumbent ELNOs has been reviewed to confirm the functions of an ELNO platform and verify AECOM's assumptions, but were not used directly in the modelling.

The model has been based on the following key assumptions:

### 3.1.1 ELNO market and stakeholders

**eConveyancing** A new entrant ELNO would be entering an immature mandated market, but one where the eConveyancing concept has been established by a small number of existing market participants (established ELNOs).

The protocols and rules for interactions are established and known by all stakeholders (i.e. there is no need to embark on potentially costly market education).

**Stakeholder interfaces** The entrant ELNO would need to develop interfaces with each stakeholder. The firstto-market ELNO has created intangible value by educating the industry and developing protocols and/or interfaces that benefit succeeding ELNOs but is likely to have made some investment in development directions that subsequently proved to be of little or no value. Our assessment of these external and internal intangible assets is discussed in Section 3.2.

A benchmark efficient new entrant ELNO would benefit from the external intangible benefits by learning from the experience of the first mover. The entrant ELNO would, however, still need to enter into discussions with each stakeholder, develop the necessary APIs for interaction with the stakeholder, and integrate them into their own platform.

For cost estimation purposes, we have assumed that the ELNO would need to interface with an entity such as the RBA, and that up to 12 financial institutions would also be fully integrated into the platform.

**ELNO growth strategy** The ELNO would establish a primary place of business in NSW and would look to operate in multiple jurisdictions through the development of local satellite offices. For the purposes of this assessment, it has been assumed that both the new entrant and established ELNOs would operate in three jurisdictions and that the new entrant ELNO would go live progressively at a rate of one additional jurisdiction per year after launch. For the established ELNO it is assumed that all jurisdictions would be live from the start of the modelled period.

This growth would be supported by a core team in the primary office with the local offices limited to marketing, user-onboarding and local administrative support. The expectation is that the marketing team would drive the growth of market share and each new-subscriber on-boarded. As each user would need to be on-boarded once, we have not grown the marketing and user support team size with market share. This means that a small and efficient team can be maintained.

**ELNO platform** A fundamental assumption is, as stated above, that the market exists and that there is no need to educate the market, and that protocols for interaction between parties are in existence.

Bespoke software would be developed to provide the service. The technologies and

tools to build such bespoke software tend to be relatively inexpensive or free. Microsoft, for example, offers a full end-to-end Continuous Development platform in its DevOps product in Australia for between \$70 and \$415 per user per month, depending upon optional features. This provides everything a development team would need to design, build, collaborate, test, control and release such bespoke software.<sup>4</sup>

We anticipate that a new market entrant would spend some effort researching the market to establish the requirements and shape the offering to market. This would be structured in the form of 'User Stories' that describe, in some detail, how each user would interact with the platform in terms of the actions and results.

Software would be developed to support each of these user functions.

Specifically, prerequisites to efficient development of a full ELNO we consider to be:

- A dedicated software development team with the following attributes;
  - The initial sole business aim is to become an operating ELNO cost effectively and efficiently
  - The technology and business experience to execute on that efficient approach
  - Suitable staffing in place to begin building immediately, i.e.
    - Software/Project Management
    - Product ownership
    - Business analysis
    - User Experience / User Interface designer
    - Software architecture with emphasis on financial system security
    - Application software coding (Software developers)
    - Quality Assurance / Test capability
    - A separate Software Development Operations (Dev Ops) capability
- Software is managed and built:
  - Using a typical software development method such as Agile Scrum or Kanban
  - Using suitable supporting project management tools such as Trello, Jira, Microsoft DevOps or physical wall boards
  - Using appropriate software development version management technology such as GitHub or SVN
- All third-party integrations (technology communication channels), such as financial institutions, Land Registry operations and Transfer Duty operations, and the RBA, would be with an interface developed by that third party which is:
  - Secure
  - Reliable
  - Well-defined
  - Capable of interacting with multiple registered ELNOs
  - Well suited to eConveyancing transactions.

<sup>&</sup>lt;sup>4</sup> <u>https://azure.microsoft.com/en-au/pricing/details/devops/server/</u>

The ELNO platform would be developed to provide the core service of an ELNO as defined by the process chart in Appendix A.

There would be opportunities for each ELNO to add value by adding functionality that differentiates it in the market, but as these functions are not required to deliver the core ELNO service we have not included an allowance for the development of additional features or functionality beyond that required for the core service.

We anticipate that this process would take up to 2 years to complete, based on the effort required to deliver the core service that an ELNO would require to establish a market share. We have assumed an ongoing team of product developers to maintain the platform required for the core service.

We have built up the software development effort required to establish the platform and arrived at a replacement cost to redesign and rebuild the software by applying a market rate for software developers together with an appropriate multiplier to allow for:

- Development management (project management)
- User experience (UX) design standardisation
- Software architecture
- Quality assurance throughout the development
- Security considerations throughout the process
- Business analysis to crystallise how the processes can work before they are built.

The software development team could be structured in various ways, and in Table 7 we show three possible configurations. A 'Lean' team would have lower initial cost but would produce a product that may require a relatively high level of development and maintenance effort. An 'Aggressive' team is the converse. We have assumed a 'typical' development team structure as the base case in the model.

 Table 7
 Software development team structure

| Software development team make composition |   |   |   |  |  |  |  |  |
|--|---|---|---|--|--|--|--|--|
| Lean Typical Aggressive                    |   |   |   |  |  |  |  |  |
| Project Manager                            | 1 | 1 | 1 |  |  |  |  |  |
| Analyst                                    | 1 | 1 | 2 |  |  |  |  |  |
| Architect                                  | 1 | 1 | 1 |  |  |  |  |  |
| UX   | 0 | 1 | 2 |  |  |  |  |  |
| App dev / UI                               | 1 | 2 | 3 |  |  |  |  |  |
| QA   | 1 | 2 | 3 |  |  |  |  |  |

The ELNO would also need to provide IT hardware such as PCs and local network equipment, and a reasonable bandwidth connection to the internet. For completeness, typical examples of required technologies are as follows;

- Intel i7 PC, 16Gb RAM, 512Gb+SSD per development team member
- 2x Monitors @1080p or above, 23" or above, plus suitable height adjustable stand(s) per development team member

- Cat6 / 6e (Gigabit speed) ethernet cabling
- Suitable 48+ port gigabit dedicated ethernet switch
- 2x local test environments;
  - Xeon application server, at least 32Gb RAM, 512Gb SSD
  - Xeon SQL Database server, as least 32Gb RAM, 512Gb SSD, 20Tb RAID HDD storage
- The production environment would be hosted on the cloud, such as Azure or AWS, so no hardware beyond local test environment is included above.

Our modelling indicates that the efficient capital expenditure to develop an ELNO platform, based on the assumptions presented here, would be about **\$5.55 million** in **\$FY2019.** The inclusion of hardware costs and capital costs during construction at an assumed pre-tax WACC rate of 6.0% give a total capital investment of **\$6.15 million** (**\$2019**).

Asset depreciation and interest charges Funding would be required throughout the platform development period to cover the development, staff and IT hardware and occupancy costs. It is assumed that this would be sourced from a combination of debt and equity. A WACC has been applied at quarterly intervals to calculate the cost of capital throughout this development stage.

On launch, it is assumed that the platform would be earning revenue and the development costs are then capitalised over a 5-year period, with interest on the carrying value, again calculated quarterly.

No return of or on equity has been included, other than that accounted for in the WACC. Similarly, no assessment of tax liability has been undertaken.

These parameters are summarised in Table 8.

| Parameter   | Value                     | Basis                         |
|---|---------------------------|-------------------------------|
| Platform development period                                     | 2 years                   | AECOM assessment.             |
| Depreciable asset life<br>(applied to software and IT hardware) | 5 years                   | AECOM assessment              |
| Frequency of debt capitalisation                                | Quarterly                 | AECOM assessment              |
| WACC (pre-tax real)   | 6.0% (ELNO)<br>4.9% (LRS) | IPART assessment <sup>5</sup> |

### Table 8 Funding assumptions

### 3.1.2 Operating costs

OrganisationThe staffing costs are one of the most significant cost items. We would expect a<br/>benchmark efficient ELNO to establish a minimal team initially, and to grow this team<br/>whilst the product is developed so that the full team is in place at product launch.

Additional team members would be recruited to establish a satellite office for each new jurisdiction.

We have assumed that the market share that an ELNO will achieve is correlated with the size of the sales team.

We have further assumed that on start-up, or where the market share is low, a larger sales team in proportion to the number of subscribers is required. As market share

<sup>&</sup>lt;sup>5</sup> As advised by IPART on the 27<sup>th</sup> June 2019

grows the size of the sales team increases, but with fewer FTEs per subscriber as a result of the increasing presence in the market.

We have recognised that a new entrant benchmark efficient ELNO would not need to replicate the same effort as the first entrant because the market would be established, but they would need to win subscribers across from the established ELNO.

Further, in our view, it's likely a new entrant ELNO would boost their sales effort slightly to win subscribers across from other platforms. At the same time, we expect that the efficiencies resulting from the use of ELNOs (compared to the paper-based system) would see the subscriber pool consolidate and reduce in number as some subscribers take on more transactions and others fall out of the market as a result. This would reduce the size of the sales team needed. We've therefore assumed that the sales team would in effect be constant size throughout.

This means that the new entrant ELNO will grow from FY20 to FY23 via an increase in market share and increasing reach into other jurisdictions, whereas the established ELNO is assumed to remain a constant size (Table 9).

| Case | Staff Function           | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|--------------------------|------|------|------|------|------|
| 1L   | Head Office              | 62   | 62   | 62   | 62   | 62   |
|      | Sales and Marketing Team | 19   | 23   | 28   | 30   | 32   |
|      | Satellite Offices        | 0    | 7    | 14   | 14   | 14   |
|      | Total                    | 81   | 92   | 104  | 106  | 108  |
| 1M   | Head Office              | 62   | 62   | 62   | 62   | 62   |
|      | Sales Team               | 20   | 25   | 29   | 33   | 38   |
|      | Satellite Offices        | 0    | 7    | 14   | 14   | 14   |
|      | Total                    | 82   | 94   | 105  | 109  | 114  |
| 1H   | Head Office              | 62   | 62   | 62   | 62   | 62   |
|      | Sales Team               | 25   | 29   | 34   | 37   | 43   |
|      | Satellite Offices        | 0    | 7    | 14   | 14   | 14   |
|      | Total                    | 87   | 98   | 110  | 113  | 119  |
| 2L   | Head Office              | 62   | 62   | 62   | 62   | 62   |
|      | Sales Team               | 29   | 29   | 29   | 29   | 32   |
|      | Satellite Offices        | 14   | 14   | 14   | 14   | 14   |
|      | Total                    | 105  | 105  | 105  | 105  | 108  |
| 2M   | Head Office              | 62   | 62   | 62   | 62   | 62   |
|      | Sales Team               | 37   | 37   | 37   | 37   | 40   |
|      | Satellite Offices        | 14   | 14   | 14   | 14   | 14   |
|      | Total                    | 113  | 113  | 113  | 113  | 116  |
| 2H   | Head Office              | 62   | 62   | 62   | 62   | 62   |
|      | Sales Team               | 42   | 42   | 42   | 42   | 45   |
|      | Satellite Offices        | 14   | 14   | 14   | 14   | 14   |
|      | Total                    | 118  | 118  | 118  | 118  | 121  |

Table 9 Assumed organisation size

Note: 1: New Entrant, 2: Established, L/M/H refers to market share

### **Software platform costs** The benchmark efficient ELNO would be cloud based, most likely through a proprietary web hosting service. These charges are driven by usage and how resilient and responsive the system needs to be as well as the type of data or files being sent through the system. We have sourced typical rates from the market.

Security provision is critical to an ELNO platform and our assessment includes the development of appropriate security provision within the platform. This includes the use of a proprietary firewall product and the services of a third-party Multi-Factor Authentication (MFA) provider. We have also allowed for an annual third part audit of the security systems as required by the MOR.

A provision of annual IT maintenance, which includes licences subscriptions including the client management databases, internet and phone services, anti-virus and security software has also been included.

Table 10 shows the assumed costs included for ongoing operation of the software platform.

| Provision                         | Annual Cost<br>(\$2019) | Basis   |
|-----------------------------------|-------------------------|---|
| Webhosting service                | 10,000                  | Based on market cost for an MVP in Sydney                         |
| Third party firewall<br>provision | 45,000                  | Market cost for a proprietary firewall (F5 or similar) at 100Mbps |
| Third party MFA                   | -                       | Included in the webhosting service                                |
| Professional security audit       | 100,000                 | AECOM assessment  |
| System maintenance                | 2,000,000               | AECOM assessment  |

### Table 10 Software platform operating costs

TransactionCost are incurred by the ELNO when interacting with third parties as part of a<br/>transaction.

Table 11 shows the fees that are assumed to be incurred on interaction with each third party. The need for third-party interaction varies by transaction type and is summarised in Table 12.

### Table 11 Stakeholder fees

| Third party   | Cost per<br>transaction<br>(\$2019) |
|---|-------------------------------------|
| Lodgement Support Services Fee<br>(LSS) levied by Land Registry | 7.00                                |
| Revenue Office Fees   | -                                   |
| Financial Settlement Costs                                      | 5.00                                |
| Title insurance   | 10.00                               |

| Transaction Type  | LSS fee<br>incurred | Financial<br>Settlement<br>Cost<br>incurred | Revenue<br>Office fee<br>incurred |
|---|---------------------|---|-----------------------------------|
| Discharge   |                     |   |                                   |
| All variants  | ✓                   | ✓   | ×                                 |
| Mortgage  |                     |   |                                   |
| Mortgage with Caveat Withdrawal                         | ✓                   | ×   | ×                                 |
| Mortgage Incoming Mortgagee                             | ✓                   | ✓   | ×                                 |
| Standalone Mortgage                                     | ✓                   | ✓   | ×                                 |
| Refinance   |                     |   |                                   |
| All variants  | ✓                   | ✓   | ×                                 |
| Transfer  |                     |   |                                   |
| All variants  | $\checkmark$        | ✓   | $\checkmark$                      |
| Caveat  |                     |   |                                   |
| Caveat  | $\checkmark$        | ×   | ×                                 |
| Withdrawal of Caveat                                    | ✓                   | ✓   | ×                                 |
| Settlement / Priority Notice                            |                     |   |                                   |
| Extend Priority Notice (all variants)                   | ✓                   | ×   | ×                                 |
| Other   |                     |   |                                   |
| Lease   | ✓                   | ×   | ×                                 |
| Transmission  | ✓                   | ×   | ×                                 |
| Transmission with Settlement                            | ✓                   | ✓   | ×                                 |
| Discharge and Mortgage Settlement<br>Incoming Mortgagee | ~                   | ✓   | ×                                 |
| Waived discharge fees                                   | ✓                   | ×   | ×                                 |

| Table 12 | Stakeholder interaction by transaction type |
|----------|---|
|----------|---|

It has been mandatory since 1 July 2019 to use eConveyancing for the following types of transaction:

- Transfer .
- Mortgages
- Discharges of mortgage
- Caveats
- Withdrawals of caveats
- Transmission applications

Data published by the Registrar General of  $\mathsf{NSW}^6$  and  $\mathsf{NSW}$  Land  $\mathsf{Registry}^7$  has been used to evaluate the proportion that each of the above transaction types presents. This is summarised in Table 13.

<sup>&</sup>lt;sup>6</sup> <u>https://www.registrargeneral.nsw.gov.au/eConveyancing/eConveyancing-Statistics</u>; accessed 27<sup>th</sup> June2019 <sup>7</sup> <u>https://www.nswlrs.com.au/Dealing-Statistics</u> accessed 27<sup>th</sup> June 2019

# D R A F T

| Transaction<br>type | Percentage<br>of all<br>transactions |
|---------------------|--------------------------------------|
| Discharge           | 36                                   |
| Mortgage            | 33                                   |
| Transfer            | 26                                   |
| Caveats (other)     | 5                                    |
| TOTAL               | 100                                  |

### Table 13 Proportion of transaction type FY2019

The data presented in Table 11, Table 12 and Table 13 has been used to assess the third-party costs that the ELNO would incur for a given number of transactions.

**Multiple titles** Multiple titles occur when there is more than one title to lodge in a transaction. A benchmark efficient ELNO would need to accommodate the settlement of multiple titles from a single workspace. Each title incurs a separate lodgement support services (LSS) fee from the land registry.

The fee charged by the ELNO would be expected to be larger than that for a single title transaction, but currently, the fee charged for multiple titles does not vary by the number of titles within a transaction.

For the purposes of this assessment the number of multiple title transactions has been considered immaterial and ignored.

Abandoned In practice, a number of transactions do not complete. Costs incurred by the ELNO in setting up the workspace, including costs levied by third parties (notably LRS for a RIS) for any initial interactions are not therefore directly recoverable. These costs need to be recovered through the revenue from successful transactions.

For this assessment, it has been assumed that 5% of transactions are abandoned on average each year.

Subscriber<br/>costsWe have assumed that a benchmark efficient ELNO would incur direct costs<br/>associated with each subscriber for onboarding, training and retention. This relates to<br/>provision of facilities for workshops, seminars, training, documentation etc.

An allowance of \$600 per subscriber per year has been included in the model.

In addition, each subscriber is required to have access to a digital signing key to enable them to complete documentation securely online. An annual allowance of \$500 per subscriber per year has been used in the model.

**Occupancy charges** The assumption is that a benchmark efficient ELNO would be located in Sydney, with an office in the CBD. An allowance has been included for rental of appropriate office space using gross floor rates typical of the current market with an assumed floor area of 10m<sup>2</sup> per person.

Additional occupancy charges have also been included at the same rate for each satellite office, based on staff numbers. For the new entrant ELNO this occupancy cost ramps up progressively with one new satellite office established each year. Occupancy costs include all satellite offices for the established ELNO throughout the modelled period.

# D R A F T

### 3.2 Approaches to valuing intangible assets and IP

The established ELNO's have identified the following intangible assets in their submissions:

- Software development intellectual property
- Licensing and standards
- Brand
- Goodwill

In general, there are three possible approaches to valuing intangible assets:

- The value of intangible assets is assessed by calculating the present value of estimated future cashflows for the organisation, expressing that as a return on equity, and deducting a portion that represents a suitable return on tangible (fixed) assets. The difference then represents a return on notional intangible asset value, and the value of the intangible assets that would earn that return can be derived.
- The software assets are valued at cost plus a suitable return on the investment. This approach is
  less useful because the cost of the intangible asset may be considerably different to the value
  placed on it by the market (a possible purchaser).
- A value could be derived by estimating the cost to a new entrant of developing its business to a similar level and removing any fixed (tangible) assets to derive a value of the intangible assets.

The first mover into a market is likely to experience a costlier development path than later entrants who are able to learn from mistakes made by the first mover and to benefit from protocols developed by the first mover. Valuing intangible assets at cost is therefore likely to overstate their value in relation to a new entrant.

An assessment of the intangible assets was completed by valuing the investment needed by a new entrant to achieve a similar level of functionality and market share, noting that this investment is likely to be lower than would otherwise be the case because of work done by the first mover in developing working relationships with external stakeholders.

The value of the software assets has been determined from the new replacement cost of a software platform to provide the core functional service level. This is described in detail in section 3.3.2.

The value of the effort put in and established ELNO to establish licences to operate and to establish standards for data transfer would reflect the cost of the effort to undertake these activities, on the assumption that the established ELNO is efficient in this task.

### 3.3 Efficient cost structure as modelled

### 3.3.1 Base case market share

A cost model has been built for both a new entrant efficient ELNO and an established benchmark efficient ELNO based on the assumptions described above.

We have assumed that the ELNO would operate in three jurisdictions, with the established ELNO operating in three jurisdictions from the outset and the new entrant developing into an additional jurisdiction each year.

The addition of a jurisdiction increases the number of transactions over which an ELNO can recover cost. The total number of transactions and the proportion between jurisdiction is shown in Table 14.

| Market                               | Number of markets |           |           |  |
|--------------------------------------|-------------------|-----------|-----------|--|
|                                      | 1                 | 2         | 3         |  |
| 1                                    | 100%              | 53%       | 37%       |  |
| 2                                    | -                 | 47%       | 33%       |  |
| 3                                    | -                 | -         | 30%       |  |
| Total number of transactions assumed | 700,000           | 1,324,684 | 1,900,633 |  |

### Table 14 Market Share by number of ELNOs and markets

The new entrant ELNOs market share of the potential market is also assumed to increase with years in the market (the market share for the established ELNO is assumed to be constant) as shown in Table 15.

Table 15 Market Share scenarios for a New Entrant and Established ELNO

| ELNO                                    | Years of operation |     |     |     |     |
|---|--------------------|-----|-----|-----|-----|
|   | 1                  | 2   | 3   | 4   | 5   |
| New entrant ELNO – Low customer base    | 2%                 | 5%  | 10% | 15% | 20% |
| New entrant ELNO - Medium customer base | 5%                 | 10% | 20% | 30% | 40% |
| New entrant ELNO - High customer base   | 10%                | 20% | 35% | 50% | 65% |
| Established ELNO – Low customer base    | 20%                | 20% | 20% | 20% | 20% |
| Established ELNO – Medium customer base | 50%                | 50% | 50% | 50% | 50% |
| Established ELNO – High customer base   | 80%                | 80% | 80% | 80% | 80% |

Applying these market share assumptions given the number of transactions for each ELNO in Table 16.

It has also been assumed that the percentage of market also applies to the number of subscribers to the ELNO, based on the number of potential subscribers in NSW in Table 6, and applying the market percentages in Table 14 to assess the potential number subscribers in other markets (effectively assuming the ratio of subscribes to transactions is equal in all markets). The market percentages have therefore been applied to the potential national subscriber pool in Section 2.4 with the resulting number of subscribers also shown in Table 17.

Table 16 Assumed number of transactions

| ELNO                                       | Years of operation |           |           |           |           | TOTAL     |
|--|--------------------|-----------|-----------|-----------|-----------|-----------|
|  | 1                  | 2         | 3         | 4         | 5         |           |
| New entrant ELNO –<br>Low customer base    | 14,000             | 66,234    | 190,063   | 285,095   | 380,127   | 935,519   |
| New entrant ELNO -<br>Medium customer base | 35,000             | 132,468   | 380,127   | 570,190   | 760,253   | 1,878,038 |
| New entrant ELNO -<br>High customer base   | 70,000             | 264,937   | 665,222   | 950,316   | 1,235,411 | 3,185,866 |
| Established ELNO – Low customer base       | 380,127            | 380,127   | 380,127   | 380,127   | 380,127   | 1,900,633 |
| Established ELNO –<br>Medium customer base | 950,316            | 950,316   | 950,316   | 950,316   | 950,316   | 4,751,582 |
| Established ELNO –<br>High customer base   | 1,520,506          | 1,520,506 | 1,520,506 | 1,520,506 | 1,520,506 | 7,602,532 |

| ELNO                                       | Years of operation |          |          |          |          |  |
|--|--------------------|----------|----------|----------|----------|--|
|  | 1 (FY20)           | 2 (FY21) | 3 (FY22) | 4 (FY23) | 5 (FY24) |  |
| New entrant ELNO –<br>Low customer base    | 184                | 870      | 1,740    | 2,610    | 3,480    |  |
| New entrant ELNO -<br>Medium customer base | 460                | 1,740    | 3,480    | 5,220    | 6,960    |  |
| New entrant ELNO -<br>High customer base   | 919                | 3,480    | 6,090    | 8,700    | 11,310   |  |
| Established ELNO – Low customer base       | 4,993              | 4,993    | 4,993    | 4,993    | 4,993    |  |
| Established ELNO –<br>Medium customer base | 12,483             | 12,483   | 12,483   | 12,483   | 12,483   |  |
| Established ELNO –<br>High customer base   | 19,972             | 19,972   | 19,972   | 19,972   | 19,972   |  |

### Table 17 Assumed number of subscribers

The income statement for a new entrant ELNO and a benchmark efficient established ELNO, assuming a medium customer base is shown in 3.3.4.

### 3.3.2 Differences between a new entrant and an established efficient ELNO

Table 18 presents the approach taken with the assets and costs of the established and new entrant ELNOs in the cost model.

| Item                    | Established ELNO   | New Entrant ELNO   |
|-------------------------|--|--|
| Income Statements       |  |  |
| Cost of sales           | Based on market share provided<br>by IPART (constant over the<br>modelled period) (see Table 16)   | Based on market share provided<br>by IPART (increasing over the<br>modelled period) (see Table 16)   |
| Salary Costs            | Assumed benchmark efficient<br>ELNO team structure in place at<br>launch.  | Assume team builds up pre-launch<br>and that product launches in one<br>jurisdiction initially.<br>Team size increases as ELNO<br>grows into one further jurisdiction<br>each year.                                  |
| Software platform costs | Assumed benchmark efficient<br>ELNO costs.   | Assumed benchmark efficient<br>ELNO costs.   |
| Subscriber costs        | Assumed benchmark efficient<br>ELNO costs based on market<br>share of subscriber pool. Market<br>share defined by IPART which is<br>constant (see Table 16). | Assumed benchmark efficient<br>ELNO costs based on market<br>share of subscriber pool. Market<br>share defined by IPART which is<br>increasing over the modelled<br>period (see Table 16).                           |
| Occupancy charges       | Based on efficient ELNO team size<br>and includes costs of all<br>jurisdictions at launch.   | Occupancy costs for primary<br>location incurred from the start of<br>platform development.<br>Occupancy costs for satellite<br>locations incurred progressively as<br>a new satellite office is added each<br>year. |

### 3.3.3 Inter-State issues and considerations

The base case in the model assumed that a benchmark efficient ELNO would operate in three jurisdictions, with the new entrant ELNO launching in NSW, then adding another jurisdiction in each of the following two years.

The sequencing of tasks and types of documents is likely to vary by jurisdiction and with each new jurisdiction there is a need to interface and develop platform interaction with the local land registry and revenue office.

We have included software development effort for the establishment of APIs with each registry and revenue office in each jurisdiction. It is therefore possible to identify the development cost of each jurisdiction. Identification of the operating costs for each jurisdiction is problematic because there is no clear cost driver that is jurisdiction specific.

In our view the issue is more appropriately expressed through cost recovery as the transaction fee is the only source of revenue and would therefore be evaluated as the proportion of revenue earned by jurisdiction. In practice, transaction numbers by jurisdiction may be an appropriate proxy.

### 3.3.4 ELNO fixed and variable costs

Income statements for both the established ELNO and the benchmark efficient new entrant ELNO are shown in Figure 4 and Figure 5.

A comparison of fixed and variable costs is shown in Figure 6, where fixed costs are defined as those that do not vary by the number of subscribers or by the number of transactions.

| New entrant ELNO - Medium customer base |                |        |        |        |        |         |
|---|----------------|--------|--------|--------|--------|---------|
| Income Statement ('000, real \$2019)    |                |        |        |        |        |         |
| Cost of Sales                           |                | FY2020 | FY2021 | FY2022 | FY2023 | FY2024  |
| Land Registry Fees                      | Variable       | 257    | 974    | 2,794  | 4,191  | 5,588   |
| Revenue Office Fees                     | Variable       | -      | -      | -      | -      | -       |
| Financial Settlement Costs              | Variable       | 167    | 631    | 1,810  | 2,716  | 3,621   |
| Insurances                              | Variable       | 90     | 341    | 978    | 1,466  | 1,955   |
| Gross Margin                            |                | 16,851 | 19,985 | 23,515 | 25,796 | 27,856  |
| Expenses                                | Fixed/Variable |        |        |        |        |         |
| Salary Costs                            | Fixed          | 11,566 | 13,086 | 14,496 | 14,937 | 15, 157 |
| Software Platform Related Costs         | Fixed          | 2,255  | 2,255  | 2,255  | 2,255  | 2,255   |
| Subscriber costs                        | Variable       | 506    | 1,914  | 3,828  | 5,742  | 7,656   |
| Occupancy charges                       | Fixed          | 950    | 1,230  | 1,510  | 1,510  | 1,510   |
| EBITDA                                  |                | 1,574  | 1,500  | 1,426  | 1,352  | 1,278   |
| Depreciation and interest expense       | Fixed/Variable |        |        |        |        |         |
| Depreciation                            | Fixed          | 1,232  | 1,232  | 1,232  | 1,232  | 1,232   |
| Interest charges                        | Fixed          | 342    | 268    | 194    | 120    | 46      |
| FBT                                     |                | -      | -      | -      | -      | -       |

Figure 4 Income statement for the new entrant ELNO

| Established ELNO – Medium customer base |                |        |        |        |        |        |
|---|----------------|--------|--------|--------|--------|--------|
| Income Statement ('000, real \$2019)    |                |        |        |        |        |        |
| Cost of Sales                           |                | FY2020 | FY2021 | FY2022 | FY2023 | FY2024 |
| Land Registry Fees                      | Variable       | 6,985  | 6,985  | 6,985  | 6,985  | 6,985  |
| Revenue Office Fees                     | Variable       | -      | -      | -      | -      | -      |
| Financial Settlement Costs              | Variable       | 4,526  | 4,526  | 4,526  | 4,526  | 4,526  |
| Insurances                              | Variable       | 2,444  | 2,444  | 2,444  | 2,444  | 2,444  |
| Gross Margin                            |                | 32,913 | 32,913 | 32,913 | 32,913 | 32,913 |
| Expenses                                | Fixed/Variable |        |        |        |        |        |
| Salary Costs                            | Fixed          | 15,377 | 15,377 | 15,377 | 15,377 | 15,377 |
| Software Platform Related Costs         | Fixed          | 2,255  | 2,255  | 2,255  | 2,255  | 2,255  |
| Subscriber costs                        | Variable       | 13,731 | 13,731 | 13,731 | 13,731 | 13,731 |
| Occupancy charges                       | Fixed          | 1,550  | 1,550  | 1,550  | 1,550  | 1,550  |
| EBITDA                                  |                | -      | -      | -      | -      | -      |
| Depreciation and interest expense       | Fixed/Variable |        |        |        |        |        |
| Depreciation                            | Fixed          | -      | -      | -      | -      | -      |
| Interest charges                        | Fixed          | -      | -      | -      | -      | -      |

EBT

### Figure 5 Income statement for the established ELNO



Figure 6 Fixed and variable costs for established and new entrant ELNOs

### 3.4 Impact of market share on eConveyancing cost structures

Three levels of market share have been modelled, for both the new entrant and established ELNOs as shown in Table 19.

| Case | Market share scenario                   | 2020      | 2021      | 2022      | 2023      | 2024      |
|------|---|-----------|-----------|-----------|-----------|-----------|
| 1L   | New entrant ELNO – Low customer base    | 2%        | 5%        | 10%       | 15%       | 20%       |
| 1M   | New entrant ELNO - Medium customer base | 5%        | 10%       | 20%       | 30%       | 40%       |
| 1H   | New entrant ELNO - High customer base   | 10%       | 20%       | 35%       | 50%       | 65%       |
| 2L   | Established ELNO – Low customer base    | 20%       | 20%       | 20%       | 20%       | 20%       |
| 2M   | Established ELNO – Medium customer base | 50%       | 50%       | 50%       | 50%       | 50%       |
| 2H   | Established ELNO – High customer base   | 80%       | 80%       | 80%       | 80%       | 80%       |
|      | Number of transactions                  | 2020      | 2021      | 2022      | 2023      | 2024      |
| 1L   | New entrant ELNO – Low customer base    | 14,000    | 66,234    | 19,063    | 285,095   | 380,127   |
| 1M   | New entrant ELNO - Medium customer base | 35,000    | 132,468   | 380,127   | 570,190   | 760,253   |
| 1H   | New entrant ELNO - High customer base   | 70,000    | 264,937   | 665,222   | 950,316   | 1,235,411 |
| 2L   | Established ELNO – Low customer base    | 380,127   | 380,127   | 380,127   | 380,127   | 380,127   |
| 2M   | Established ELNO – Medium customer base | 950,316   | 950,316   | 950,316   | 950,316   | 950,316   |
| 2H   | Established ELNO – High customer base   | 1,520,506 | 1,520,506 | 1,520,506 | 1,520,506 | 1,520,506 |
|      | Number of Subscribers                   | 2020      | 2021      | 2022      | 2023      | 2024      |
| 1L   | New entrant ELNO – Low customer base    | 184       | 870       | 1,740     | 2,610     | 3,480     |
| 1M   | New entrant ELNO - Medium customer base | 460       | 1,740     | 3,480     | 5,220     | 6,960     |
| 1H   | New entrant ELNO - High customer base   | 919       | 3,480     | 6,090     | 8,700     | 11,310    |
| 2L   | Established ELNO – Low customer base    | 4,993     | 4,993     | 4,993     | 4,993     | 4,993     |
| 2M   | Established ELNO – Medium customer base | 12,483    | 12,483    | 12,483    | 12,483    | 12,483    |
| 2H   | Established ELNO – High customer base   | 19,972    | 19,972    | 19,972    | 19,972    | 19,972    |

 Table 19
 Market share scenarios

The fixed and variable cost structures for the scenarios for a new entrant ELNO are shown in Figure 7 and for an established ELNO in Figure 8.



Figure 7 Fixed and variable costs for the benchmark efficient new entrant ELNO under varying market share scenarios



Figure 8 Fixed and variable costs for an established ELNO under varying market share scenarios

The gradual increase in costs for the new entrant ELNO is largely because of the increased variable costs due to entering new jurisdictions and increasing numbers of transactions.

As the ELNO can only recover costs through transaction charging, the costs for each market share scenario for both the new entrant an established ELNO have been represented as an average recovery per transaction in Figure 9 and Figure 10, and show the effect of enabling cost recovery from the number of transactions across several jurisdictions (based on Table 16). These show that for the new entrant ELNO, the progressive growth of market share has a significant impact on average transaction costs, despite the increasing cost base.

These results are presented as levelized transaction costs over the 2020-24 period for both the New Entrant and Established ELNO for each of the market share scenarios in Figure 11, where the bubble size represents the capital investment.

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Figure 9 Average transaction cost – new entrant ELNO (upper: all costs recovered from NSW only; lower: costs recovered from three jurisdictions)



Figure 10 Average transaction cost – Established ELNO (upper: all costs recovered from NSW only; lower: costs recovered from three jurisdictions)

The charts illustrate the significance of market share on cost recovery.



These results are presented as levelized transaction costs over 2020 to 2024 for both the New Entrant and Established ELNO for each of the market share scenarios in Figure 11 and Table 20<sup>8</sup>.

Figure 11 Levelized transaction cost by customer base for New Entrant and Established ELNOs Table 20 Levelized transaction cost by ELNO

| Market share scenario                   | Capital<br>Investment<br>(',000) | Operating Costs<br>(FY2020-FY2024)<br>(',000 \$2019)) | Total Number of<br>Transactions<br>(FY2020-2024) | Levelised cost<br>per transaction<br>(FY2020-FY2024) |
|---|----------------------------------|---|--|--|
| New entrant ELNO – Low customer base    | 6,160.4                          | 114,963.4   | 935,519  | 122.89   |
| New entrant ELNO - Medium customer base | 6,160.4                          | 141,581.4   | 1,878,038  | 75.39  |
| New entrant ELNO - High customer base   | 6,160.4                          | 177,424.2   | 3,185,886  | 55.69  |
| Established ELNO – Low customer base    | -                                | 146,477.2   | 1,900,633  | 77.07  |
| Established ELNO – Medium customer base | -                                | 234,341.9   | 4,751,582  | 49.32  |
| Established ELNO – High customer base   | -                                | 320,404.3   | 7,602,532  | 42.14  |

### 3.5 Sensitivity to key assumptions

The effect of the key assumptions on the levelized transaction cost for the new entrant benchmark efficient ELNO, is discussed as follows. In each case the parameter is varied by +/-30% so that the relative sensitivities can be seen. The tests undertaken are shown in Table 21.

### Case 1 Effort to integrate with third-parties

Our model is based on an assumed level of effort and therefore cost associated with the development of APIs in connections with third party interfaces.

<sup>&</sup>lt;sup>8</sup> The proportion of each transaction type used in the cost model was based on transaction volume data from July 2018 to May 2019 sourced from <a href="https://www.nswlrs.com.au/Dealing-Statistics">https://www.nswlrs.com.au/Dealing-Statistics</a> (accessed on the 20th June 2019). Transaction data from June 2019 is now available and when included in the model, results in an increase in the levelized costs shown in Figure 9, Figure 10 and Figure 11 of \$0.01.

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### Case 2 Number of financial institutions

The base case assumes that the new entrant ELNO would integrate with 12 financial institutions and varies this assumption from 8.4 to 15.6 institutions (in practise this would be an integer value).

### Case 3 Software development cost

The base case assumes that the new entrant ELNO would employ a 'typical' software team configuration (see Table 7).

This test explores the sensitivity to a team that results in lower costs or greater cost.

A lower initial capital expenditure is likely to result in a less robust product that may require additional ongoing support and maintenance costs. The model does not include an assessment of any additional maintenance costs.

The converse would be the case for a more costly team structure.

### Case 4 Marketing effort required

The base case recognises that the second mover the market would benefit from market education and establishment created by the first market entrant. An assessment of the marketing team required for the new entrant has been based on a reduction in the size of the team employed by the first. This is discussed in Section 3.1.2 where a factor of 33% was assumed.

### Case 5 Salary Cost

This explores the effect of varying the salary cost to simulate either a change in the direct salary cost, or more realistically, a different team size to that assumed in the base case.

### Case 6 Subscriber Costs

The model assumes a subscriber on-boarding cost of \$600.

There is a further digital certificate management cost at an assumed \$500 per subscriber per year.

| Case | Test                                 | Parameter                            | Units | -30%   | Base   | 30%    |
|------|--------------------------------------|--------------------------------------|-------|--------|--------|--------|
| 1    | Effort to integrate with 3rd Parties | Interfacing cost multiplier          | -     | 0.70   | 1.00   | 1.30   |
| 2    | Number of financial institutions     | Number fo financial institutions     | No.   | 8.40   | 12.00  | 15.60  |
| 3    | Software development cost            | Software team multiplier             | -     | 3.00   | 4.28   | 5.56   |
| 4    | Marketing effort required            | Market maturity factor               | -     | 0.23   | 0.33   | 0.43   |
| 5    | Salary Cost                          | Salary multiplier                    | -     | 0.70   | 1.00   | 1.30   |
| 6    | Subscriber Costs                     | Onboarding Cost                      | AUD   | 420.00 | 600.00 | 780.00 |
|      |                                      | Digital certificate management costs | AUD   | 350.00 | 500.00 | 650.00 |

### Table 21 ELNO Sensitivity test parameters

The results are shown in Figure 12 which illustrates that:

- 1. The results are most sensitive to *salary costs*, either through team structure of the amount of marketing effort required to attract subscribers.
- Generally, the sensitivity reduces with increased market share, because of the increased number of transactions. The sensitivity to subscriber costs increases with increasing market share as the number of subscribers increases.



Figure 12 ELNO Sensitivity test results

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### 3.6 Implications

The model analysis indicates a levelized transaction cost of between \$42.14 and \$77.07 for an established ELNO and of between \$55.69 and \$122.89 for a new entrant ELNO, the variation in each as a result of the assumed market share.

These costs are seen to be particularly sensitive to the following:

- The amount of effort needed to penetrate the market and the benefit that the first mover's efforts have yielded for the following market entrants.
- The size of the organisation in FTEs.

And to a lesser extent

• The software development team size.

## 4.0 The interoperability issue

The two ELNO's currently in the market are not interoperable and therefore it is not possible for data to be shared between them. This means that a transaction can only be completed by all parties using the same ELNO platform. This allows for some competition in the market but requires the solicitors, conveyancers and financial institutions to subscribe to both ELNOs to ensure that they can service their customers, increasing the total cost to the industry.

There are ongoing studies exploring mechanisms that could be implemented to facilitate interoperability between ELNOs and the impact that each could have on the competition and governance of the market. This review considers the capital and operating costs of benchmark efficient new entrant ELNO's under four potential interoperability scenarios.

### 4.1 Interoperability options

Each interoperability model is discussed in the following sections as follows:

- Direction bilateral connection model
- Central Hub ELNO model
- Information Hub model
- Infrastructure ELNO model

In all cases, it is assumed that there would be no additional effort or cost for subscribers as interoperable functionality means that each user could subscribe just to a single ELNO of their choice.

### 4.1.1 Direct bilateral connection ELNO model summary



Implication for<br/>ELNOEach ELNO would need to develop an active data transfer process with each<br/>primary actor, and with each other ELNO in the network.

The entry of a new ELNO would require that each existing ELNO develop an interface with it. This means that the number of interfaces increases with the square of the number of ELNOs. The question of which entity should bear the cost of developing these interfaces when a new entrant joins the market is beyond the scope of this study. The cost of entry would therefore be a function of the number of ELNO's already in the market.

### 4.1.2 Central Hub ELNO model summary

# Option Central Hub Premise A central hub is established which completes the interaction and lodgement with each primary actor and the interfacing between ELNOs. The ELNO provides front end functionality and interacts directly with subscribers and allows access from users in financial institutions. The ELNO does not integrate directly with primary actors, doing so through the central hub. Software END central Hub Arbitrature



**Implication for ELNO** Each ELNO would need to develop an active data transfer process with the central hub. It would not need to develop interfaces with each primary actor, nor with each other ELNO in the network.

|                                   | The entry of a new ELNO would not require any additional effort to integrate with the existing ELNOs, the cost of entry being independent of the number of ELNOs in the market.   |
|-----------------------------------|---|
| Implication for<br>primary actors | Each primary actor would need to interface with the central hub only, and not with each ELNO individually.  |
|                                   | Each primary actor would need to develop an API, but it would only need to be<br>open to interfacing with a single entity. In practice, the cost of developing an API for<br>a single entry is not anticipated to be significantly different to one designed for<br>interfacing with multiple entities. |

### 4.1.3 Information Hub ELNO model summary

| Information Hub  |
|--|
| The information hub provides a common means of communication and data exchange between ELNOs.  |
| In its simplest form, this would define the communication protocol and facilitate the transfer (and potentially storage) of data. The ELNO retains the direct interaction with subscribers and with the primary actors.  |
| ELNO Information Hub Architecture  |
| Web     Veb APIs     Object Relational Mapping<br>Adapter  |
| Revenue<br>Office<br>RBA<br>Viveo<br>Server /<br>Cloud<br>Financial Administrator  |
| Financial<br>Pre-Exchange<br>Solution<br>Web<br>Arbinacial GUI<br>Web APIs<br>Control<br>Web APIs<br>Control<br>Web APIs<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control<br>Control |
|  |

**Implication for ELNO** This is similar to the 'Direct communication' model but relieves the need for each ELNO to interact with each other ELNO, instead requiring each ELNO to develop a single interface with the information hub. The cost of entry would therefore be independent of the number of ELNO's already in the market.

| Implication for<br>primary actors | This is similar to the 'Direct Communication model' as each primary actor would<br>need to interface with each ELNO individually. Each primary actor would therefore<br>need to develop an API, which in practise would most likely be the same for all<br>ELNOs (the primary actors effectively dictating the protocol for interaction) but |
|-----------------------------------|--|
|                                   | would need to be open for interaction with multiple ELNOs.   |

### 4.1.4 Infrastructure ELNO model summary

| Option    | Infrastructure ELNO  |
|-----------|--|
| Premise   | An Infrastructure ELNO is established which is a fully functioning stand-alone ELNO. This ELNO establishes the interfaces with the primary actors and has its subscribers.   |
|           | Each additional ELNO provides a front end and manages its own pool of<br>subscribers, but all interaction with primary actors, including lodgement of<br>documents and completion of financial settlement is completed through the<br>Infrastructure ELNO. |
| Cathurana |  |



| Implication for<br>ELNO           | This is similar to the 'Central Hub' model, but where the 'hub' is a fully functioning ELNO and is identified as the Master ELNO.  |
|-----------------------------------|--|
|                                   | The Master ELNO is the single conduit for interaction with the primary actors and provides an open interface for interaction with all other ELNOs.   |
|                                   | Each new market ELNO would need to secure and maintain its own subscriber<br>base and would need to allow access from users in financial institutions but would<br>not need to interface with the primary actors. Instead, it would integrate with the<br>Master ELNO which would facilitate communication with the primary actors.        |
|                                   | The cost of entry would therefore be independent of the number of ELNO's already in the market.  |
| Implication for<br>primary actors | This is similar to the Central Hub Model as each primary actor would need to develop an API, but it would only need to be open to interfacing with a single entity. In practice, the cost of developing an API for a single entry is not anticipated to be significantly different to one designed for interfacing with multiple entities. |

### 4.2 Cost implications

### 4.2.1 Capital expenditure

An assessment of the relative capital investment required to develop each of the interoperability models, on a cost to the industry basis for an increasing number of market participants has been completed using the efficient new entrant ELNO model. The components required to construct each interoperability for a single ELNO and for multiple (n) ELNO's is shown in Table 22.

The essential differences between the models are the costs associated with the development and implementation of APIs to enable interactions with stakeholders (referred to as Primary Actors) and the means of communication and data sharing with other ELNOs. The cost build up identifies where an API for a Hub would need to be developed and the subsequent cost of each ELNO connecting in, which has been approximated as 75% of the effort of developing the API.

The evaluation presented here represents the software development cost from a starting point of known functionality across established relationships. In practice, additional intangible effort would be required to establish and build these relationships, so that the APIs could be developed. The quantification of this effort is not included in the comparison presented below.

This analysis is sensitive to the assumed effort required to develop the necessary integration with stakeholders and between ELNOs, but nevertheless, on the basis of these assumptions, it shows that all options require some capital investment.

The Information Hub represents minimal additional cost per ELNO, unlike the direct communication alternative where the cost of entry increases with the square of the number of market entrants. When there are three or more ELNOs in the market, the direct connection model becomes the most capital intensive.

The Infrastructure ELNO or Central Hub are the least capital intensive, because these offer a single point of contact with the primary actors. The benefit increases with the number of ELNOs. The information hub offers minimal reduction in capex over the direct connection model when there are less than four ELNOs in the market.

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|                                 |  |                                 | Number of platform components required by<br>interoperability model<br>[with n ELNOs in the market] |                      |                          |                              |
|---------------------------------|--|---------------------------------|---|----------------------|--------------------------|------------------------------|
| Model component                 | Software<br>Development<br>Cost (\$2019) | Primary Actor<br>API interfaces | Direct<br>Connection<br>Model   | Central Hub<br>Model | Information<br>Hub Model | Infrastructure<br>ELNO Model |
| Model component                 |  |                                 | n   | n                    | n                        | n                            |
| ELNO (with full business logic) | 5.55                                     | √                               | n   | 2                    | n                        | 2                            |
| ELNO (retail function only)     | 1.83                                     | ×                               | -   | n-2                  | -                        | n-2                          |
| Hub                             | 4.27                                     | ✓                               | -   | 1                    | -                        | -                            |
| API development                 | 0.27                                     | N/A                             | n(n-1)  | 1                    | 1                        | 1                            |
| ELNO Connection to Hub API      | 0.21                                     | N/A                             | -   | n                    | n                        | n-1                          |

 Table 22
 Platform development components by operability scenario



Figure 13 Total platform development capex by number of ELNO's in the market for various interoperability scenarios

### 4.2.2 Levelized operating cost

The levelized operating costs to each ELNO entering the market have also been developed using the same efficient new entrant model, but with the following further assumptions:

- The number of transactions is fixed at 700,000 in the first jurisdiction and all would be completed by ELNOs. Transaction costs (costs of sales) are independent of the number of ELNO's and are in effect shared across all ELNOs.
- 2. An ELNO would expand into three jurisdictions, adding one jurisdiction each year.
- 3. A new entrant ELNO would enter the market each year
- 4. The number of subscribers (which is a function of the Law Society and AIC membership) is independent of the number of ELNOs. Increasing the market participants gives subscribers more choice of which ELNO to use, but a fundamental basis of interoperability is that each subscriber need only sign up to a single ELNO.
- 5. The sales team is driven by the number of subscribers, so the cost of that component is also fixed relative to the number of subscribers but gets allocated to each ELNO in accordance with market share. It's likely though that as more ELNO's come into the market, each ELNO would boost their sales effort slightly to win subscribers across from other platforms. At the same time, we're assuming that the efficiencies resulting from the use of ELNOs (compared to the paper-based system) would see the subscriber pool consolidate and reduce in numbers as some subscribers take on more transactions and others fall out of the market as a result, which would reduce the size of the sales team needed. We've therefore assumed that the sales team would in effect increase in direct proportion to market size.
- 6. Each new ELNO would incur the incremental capex of entry (depending on the interoperability model) and would depreciate that over 5 years. For the hub models, the cost of establishing the hub is included in the cost of entry for the second ELNO.
- 7. Each new entrant ELNO would adjust the size of its sales and user support teams (in accordance with market share) but would otherwise have the same organisational and software maintenance costs as the benchmark efficient ELNO. This means that the levelized cost per transaction increases as market share reduces, but this increase is moderated by the corresponding reduction in team size (which we're assuming would be employed by the competing ELNO that had won market share). For the purposes of illustration, the assumed market share as new entrants enter the market is shown in Table 23.

| Table 23 | Assumed | l market s | share | with | increas | sing numl | ber of E | LNOs in th | e ma | arket |
|----------|---------|------------|-------|------|---------|-----------|----------|------------|------|-------|
|          |         |            |       |      | <u></u> |           |          |            |      |       |

|            | Market Share by number of ELNOs in the<br>market |       |       |       |  |  |
|------------|--|-------|-------|-------|--|--|
| ELNO<br>No | 1  | 2     | 3     | 4     |  |  |
| 1          | 100.0%   | 60.0% | 55.0% | 52.5% |  |  |
| 2          |  | 40.0% | 35.0% | 32.5% |  |  |
| 3          |  |       | 10.0% | 9.0%  |  |  |
| 4          |  |       |       | 6.0%  |  |  |

Which when combined with the market share data by number of jurisdictions (Table 14) give the share of the national market in Table 24.

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|                   | Market Share by number of ELNO's in the market |        |        |        |        |  |
|-------------------|--|--------|--------|--------|--------|--|
| ELNO No           | 1  | 2      | 3      |        | 5      |  |
| 1                 | 100.0%   | 113.5% | 149.3% | 142.5% | 142.5% |  |
| 2                 |  | 75.7%  | 95.0%  | 88.2%  | 88.2%  |  |
| 3                 |  |        | 27.2%  | 24.4%  | 24.4%  |  |
| 4                 |  |        |        | 16.3%  | 16.3%  |  |
| Total market size | 100.0%   | 189.2% | 271.5% | 271.5% | 271.5% |  |

| Table 24 | Market share by ELNOs and national market size |
|----------|--|
|----------|--|

8. The occupancy costs would reduce in proportion to the sales and support team size, are constant for each ELNO, set to that required for the largest market share they are assumed to achieve (i.e. ELNO 2 is sufficient for a team with a 60% market share)

Figure 14 shows the industry wide levelized cost for each interoperability model for the first 5 years of the market with a new entrant ELNO for each of the first three years. Similar charts for each interoperability model are shown in Figure 15.

This shows that as the number of ELNOs increase there is an overall increase in the levelized transaction cost with any of the interoperability models, and therefore cost to the industry. This is because it is assumed to be a mandated market with a fixed number of transactions, over which all ELNOs would need to recover their costs.

It is also evident that all interoperability models present an overall reduction in transaction cost when compared to the no-interoperability case. This is because if there were no interoperability, it is assumed that each subscriber would need to be onboarded by each ELNO and that each ELNO would need to maintain digital signing capability for each subscriber. For any interoperability model, it is assumed that a subscriber need only subscribe to a single ELNO.

It is also evident that there is no material difference between the interoperability models. Sensitivity testing has therefore been completed to identify situations that may lead to a material difference between the models. This is discussed in Section 4.3.



Figure 14 Levelized NSW Industry wide transaction cost for each interoperability model



Figure 15 Transaction cost per ELNO per year for each interoperability model

### 4.3 Sensitivity to key assumptions

Figure 16 shows that there is no material difference in modelled transaction cost levelized over a 5year period for between any of the interoperability models.



Figure 16 5-year levelized transaction cost for each interoperability model

Four sensitivity cases have been explored to establish when differences between models may become apparent.

### Case 1 Software development cost

As for the ELNO, the base case assumes that the new entrant ELNO would employ a 'typical' software team configuration (see Table 7).

This test explores the sensitivity to software cost by varying the development team multiplier and therefore likely to show a greater effect on those models with a higher capital investment.

### Case 2 Effort to integrate with ELNOs

Our model is based on an assumed level of effort and therefore cost associated with the development of APIs and connections between ELNOs and between hubs. This option will favour those within minimal connections

### Case 3 Hub Maintenance

It's assumed that the cost of maintaining the hub would be recovered from industry and so this model should have no effect on those solutions that do not include hubs.

### Case 4 Subscriber Costs

The model assumes a subscriber on-boarding cost of \$600.

There is a further digital certificate management cost at an assumed \$500 per subscriber per year.

This test is not likely to make much differentiation between the interoperability models, but it will change to non-interoperability case.

The parameters used in the testing are shown in Table 25 and the results plotted in Figure 17.

It is clear that the results are not particularly sensitive to hub maintenance costs.

The subscriber cost has the most impact, particularly when identifying the benefit over a noninteroperability scenario. Further analysis has indicated that because of large number of potential subscribers, the annual cost per subscriber would need to be less than about \$10 per year to make the no-interoperability model of similar levelized cost. The difference in sensitivity to this test between the interoperability models is because of the relative difference in capex cost, with those options with the lower capital investment showing the greater sensitivity.

The modelling shows low sensitivity to software development costs but it can be seen that those with the most intense software effort (direct connection model and the information hub models) are the most sensitive to this cost.

| Case | Test                      | Parameter  | Units | -30%   | Base   | 30%    |
|------|---------------------------|--|-------|--------|--------|--------|
| 1    | Software development cost | Software team multiplier                                   | -     | 3.00   | 4.28   | 5.56   |
| 2    | ELNO integration effort   | Effort multiplier  | -     | 0.70   | 1.00   | 1.30   |
|      |                           | Annual Maintenance costs as a<br>proportion of ELNO annual |       |        |        |        |
| 3    | Hub Maintenance           | maintenance  | -     | 0.21   | 0.30   | 0.39   |
| 4    | Subscriber Costs          | Onboarding Cost  | AUD   | 420.00 | 600.00 | 780.00 |
|      |                           | Digital certificate management costs                       | AUD   | 350.00 | 500.00 | 650.00 |

Table 25 Interoperability sensitivity test parameters







Figure 17 Interoperability models sensitivity tests

### 4.4 Findings

Figure 13 shows that the Infrastructure ELNO is the lowest cost model as soon as there are three ELNOs in the market.

The Central Hub model requires the most investment of capex to establish, but with four or more ELNOs in the market, it becomes a low-cost option, with only the infrastructure hub a lower cost.

Otherwise the no-interoperability option presents the lowest capital investment.

However, when operating costs are also considered, this modelling suggest that any of the interoperability models offer considerable cost savings to industry over the first 5-years, compared to no-interoperability. This is because all subscribers would need to be supported by all ELNOs (Figure 14). This clearly shows the benefit to the industry of interoperability, but this modelling suggests there is no material difference between any of the interoperability models over the first five years for the scenario modelled.

Figure 14 also shows the increasing cost the industry with each new entrant, and a marked increase in the levelized costs when a new entrant enters a saturated market and takes market share from the incumbents.

# 5.0 NSW Land Registry Services cost structures (for eConveyancing)

### 5.1 NSW Land Registry services costs related to conveyancing

The Land Registry Service:

'operates the NSW land titles registry for the State Government and the people of New South Wales. The land titles registry underpins the state's secure, efficient and guaranteed system of land ownership.<sup>9</sup>

To facilitate this role, LRS creates and maintains land titles information and sells land information products and services.

This data maintained by LRS is checked and then updated throughout the conveyancing process.

The activities that the LRS undertakes as part of the conveyancing process are shown in the process diagram in Appendix A and is summarised as follows:

- Land Title Verification. A service to check existence of the title.
- Registry Information Supply (RIS) which provides brief title data
- Title Activity Check (TAC) which allows the ELNOs to 'ping' in as necessary through the process to confirm the title.
- Registry Information Resupply, which is an updated version of the RIS, and used if the TAC identifies a change or if the eConveyancing transaction has completed and is being validated.
- Document Lodgement Verification which ensures that documents are provided by ELNOs free from error.
- Document Lodgement Service which records and lodges the updated title documents.
- Subscriber account management

### 5.2 The impact of eConveyancing on NSW Land Registry Services

In conventional conveyancing transactions, the title searches were requested manually by the purchasers' conveyancer and the physical lodgement of title transfer post settlement completed by the banks.

eConveyancing requires that these transactions progressively move to completion through a digital platform.

In addition, the use of and eConveyancing platform enables a title activity test (TAC) to be completed during the pre-settlement stage (i.e. between exchange of contracts and settlement) to check for change of title details which could indicate transaction risk.

The ELNO would complete this TAC daily, with the frequency increasing to hourly on the day of settlement.

Completion of initial title reconciliation, ongoing TACs and final lodgement through the ELNO platform will require a digital link between the LRS database and the ELNO platforms.

<sup>9</sup> https://www.nswlrs.com.au/About-Us accessed 2nd July 2019

# D R A F T

### 5.3 Strategies and cost impacts on NSW Land Registry Services

We have evaluated the likely effort and therefore capital expenditure that, in our view, a benchmark efficient LRS would incur to develop an interface that facilitates connection and interaction with multiple ELNOs.

An essential part of this task is establishing a document management system. This would require functionality to:

- Store documents and document metadata
- Apply and manage version control
- Indexing and retrieval of documents with appropriate document security.

A proprietary product could be used for this task, but our assessment is based on the construction of a bespoke system. This document management system would need to have an API and user interface to allow manual searching. The land registry would also require APIs to allow for the interaction with other state entities.

In addition, documents need to be formatted consistently across states to allow effective communication of data for cross-state transactions. As existing documents would have been developed by each state independently, they would have been in different formats and would require some effort to redesign for consistency.

As with the ELNO, it assumes that the protocols are established and known by all parties.

Our assessment, based on our understanding of current market rates, and assuming integration with five jurisdictions indicates this level of effort would require a capital expenditure of **\$4.2 million (\$2019)**. This includes establishing a document management system which we estimate accounts for about 32% of the total development effort.

A 5-year depreciation period would, in our view, be an appropriate depreciation period.

### 6.0 Revenue NSW cost structures

### 6.1 Revenue NSW services costs related to eConveyancing

Revenue NSW facilitate the payment of Transfer Duty that results from a property transaction. To support this process, Revenue NSW has implemented an Electronic Duties Return (EDR) and eDuties portal, both of which are integrated with eConveyancing.

When an eConveyancing workspace is set-up in an ELN by a subscriber, a Land and Property Information (LPI) document is created. If that LPI is liable to duty, the Office of State Revenue (OSR) are required to verify the details it contains, and confirm the amount of duty payable, all of which requires that the ELNO platform interacts with the Revenue NSW system.

Incomplete or inaccurate data results in a failed verification check from Revenue NSW. The issue is identified on the eConveyancing platform and must be resolved before the transaction can proceed.

### 6.2 The impact of eConveyancing on Revenue NSW

The scope of this assessment includes the costs incurred by Revenue NSW as a result of the implementation of eConveyancing for the tasks shown in Table 26. Our assessment follows.

| Task                              | Revenue NSW activities   |
|-----------------------------------|--|
| ELNO subscriber support           | Revenue NSW Staff respond to ELNO subscriber inquiries by phone or email to resolve data matching errors   |
| Testing for ELNO product releases | As ELNOs release new products, document types and updates to their platforms, the changes are tested with participants whose systems are integrated with the ELNO (such as Revenue NSW and NSW LRS). |
| Bespoke service changes.          | An ELNO may request that Revenue NSW makes changes to its systems to accommodate the ELNO's specific requirements.   |

Table 26 Revenue NSW costs included in this review

### 6.3 Cost impacts on Revenue NSW

### 6.3.1 ELNO subscriber support

Figure 18 shows the increasing number of submissions made to Revenue NSW since the launch of the first ELNO platform in 2015. This figure also shows that the proportion of submissions that successfully passed verification, and therefore do not require resolution by Revenue NSW, showed some initial variability but since 2016 has stabilised at about 87%.

Revenue NSW report that they respond to about 200-300 verification error enquiries per week (about 13,000 per year). This suggests they receive about 100,000 submissions in total per year. Revenue NSW data shows that they received about 72,000 transactions in 2018 and about 67,000 in the first half of 2019, i.e. pre-mandate, which would suggest about 135,000 transactions will have been received during 2019. The estimate of 100,000 submissions annually is therefore reasonable, but early data suggests 2019 could see an increase of about 30%.

Revenue NSW report that it requires six FTEs (one technical lead and 5 clerks) to resolve these verification issues, which amounts to about 11,000 hours of effort annually. This means that on average, Revenue NSW are likely to spend between 40-50 minutes effort resolving each verification issue (based on either 100,000 or 135,000 transactions annually). Details of the average time taken to resolve each type of error code has not been provided, but in our view, 40-50minutes is reasonable as a broad average.

On this basis, the requirement of six FTEs is therefore reasonable (and may in fact increase in the short-term post-mandate as submission volume increase but reduce thereafter as subscribers become more familiar.)



Figure 18 Reported submissions to Revenue NSW

### 6.3.2 Testing for ELNO product releases

Each ELNO would look to release periodic platform updates, which are likely to be in one the three categories in Table 27.

| Table 27 | ELNO | platform | software | releases |
|----------|------|----------|----------|----------|
|----------|------|----------|----------|----------|

| Release Type | Scope and basis   | Parties affected   |
|--------------|---|--|
| Maintenance  | Fixes bugs and security issues.<br>Does not add features or functionality.  | ELNO only. Other parties (including Revenue NSW) would typically be informed of changes, but no action would be required.                                      |
| Minor        | May add new features or functions, but<br>only effects changes to the ELNO (e.g.<br>adding a new document type to the<br>platform).   | Depending on the change, these may require the input of Revenue NSW and potentially other parties as they present a system-wide risk of change.                |
| Major        | Changes to the ELNO platform process,<br>or to the integration with third parties<br>that changes the interaction between<br>parties. | These require testing as a collective (i.e. jointly by<br>the ELNO with input from third parties), to make<br>sure that there are no system wide implications. |

The frequency of the different releases will vary by type and by ELNO. Maintenance releases would be issued as necessary and given the nature (with some relating to security updates) the frequency would be dictated by the quality of the software product and the response to external drivers.

The timing and frequency of minor and major releases is likely to vary between each ELNO because:

- ARNECC states what documents must be supported by the ELNOs which can mean that there is some functionality that the ELNO must include in their next release.
- Each ELNO must support the same document types (as required by ARNECC) but the scheduling
  of the on-boarding of each document type, and the strategy for growing into other states, is a
  business decision for each ELNO. The MOR requires that the ELNOs advise stakeholders of
  proposed changes but not all document types attract transfer duty, the timing of the support that
  Revenue NSW would need to provide to each ELNO will therefore vary.

Based on our experience of the industry we would expect the frequency of major and/or minor releases to vary from four times per year (quarterly) to every 2 years.

The process of testing for minor and major changes (where third-party testing is required) would typically take place in a 'sandbox' environment (i.e. a virtual space where the changes can be tested securely.)

The testing of updates would be expected to use the same sandbox environment that was developed when the ELNO was on-boarded pre-launch but would need to be updated to reflect current software status and verified before testing of updates. The process of testing is likely to require the following:

- 1. A review of the proposed changes would be completed by each party to understand any likely impacts to their systems, to the software environment or to the data. These reviews would be shared and discussed between all parties
- 2. The ELNO would develop a test plan which would be reviewed and agreed between all parties. Test cases would then be developed, reviewed and agreed between parties to enable the ELNO to demonstrate the impact on all appropriate scenarios.
- 3. Preparation of the sandbox ready for testing. This would require Revenue NSW to create a snapshot copy of their system current at the time of the update and deploy the entire system onto another environment for testing. Any previous data would need to be purged and replaced with dummy data and tested. A sandbox would probably need to be created for each release case, for each ELNO because it would need to replicate the actual system at the time of deployment. The time of deployment would differ for each ELNO and would not be within Revenue NSW's control. In each case, dummy data may also need to be regenerated
- 4. The testing would be undertaken by the ELNO and the results reviewed and verified by all parties. A testing register would be completed and signed off to formally record the acceptance of the changes
- 5. Following deployment of the release there would be a short period testing to confirm that the changes are working as intended. This would be necessarily short because the changes to the platform are live.

The testing programme would be led by the ELNO with other stakeholders providing support as necessary. The team provided by Revenue NSW would need a range of skills to enable effective testing and resolution of issues, noting too that it is possible the Revenue NSW are required to respond to releases from multiple ELNOs simultaneously, which needs to be completed without affording any ELNO an advantage.

We would expect the testing and verification process to require intense effort, given the associated financial risks, and would therefore anticipate the Revenue NSW review team would be constructed as shown in Table 28.

### Table 28 Revenue NSW software testing team

| Role                     | Number in the team |
|--------------------------|--------------------|
| Project Manager          | 1                  |
| Business Analyst         | 1                  |
| Software Developer       | 2                  |
| Dev Ops                  | 1                  |
| Quality Assurance Tester | 2                  |
| Total                    | 7                  |

We have assessed the number of software development sprints that would be required, on average, to complete these numbered tasks above and assessed the total team effort required per release as 0.62FTEs (see Table 29).

In this context, a release could be either a minor or a major release. In practice, a similar level of testing is likely to be required in either case because both could impact system-wide processes that would need to be checked.

### Table 29 Revenue NSW testing team effort – per release

| Task   | Sprints<br>required<br>(2 weeks effort) | Total Effort<br>(weeks) |  |
|--|---|-------------------------|--|
| Review propsoed changes and consider impact to systems               |   |                         |  |
| Agree and develop testing scenario                                   | 1.00                                    | 14.00                   |  |
| Establish sandbox.<br>Purge data.<br>Develop new test data and test. | 1.00                                    | 14.0                    |  |
| Revenue NSW monitor ELNO complete testing.                           |   |                         |  |
| Revenue NSW review and verify results                                | 1.00                                    | 14.00                   |  |
| Completion of testing register.                                      |   | 14.00                   |  |
| Sign-off of testing and agreement of production schedule.            |   |                         |  |
| Post deployment testing process.                                     | 0.03                                    | 0.35                    |  |
| Total effort per release (weeks)                                     | -                                       | 28.35                   |  |
| Annual FTE effort per release  |   | 0.62                    |  |

### 6.3.3 Bespoke service changes

The nature and frequency of any bespoke changes that Revenue NSW need to implement would be dictated by each ELNO's development strategy. The nature and effort required to design and implement each bespoke change would vary by the nature and extent of the change required.

Any change that has a risk of impact to the interaction between the systems (which such bespoke changes are likely to), would require testing across the systems. It would be most efficient for these tests to be completed as part of the testing for major and minor releases for the ELNO.

If Revenue NSW were required to change their system outside of the ELNOs major and minor release schedule, we would expect testing of the changes to require a similar effort and cost as discussed in 6.3.2 because the testing process would be similar.

### 6.4 Comparison with reported cost structures

### 6.4.1 ELNO subscriber support

Revenue NSW provide this service with six FTEs - five clerks and one technical lead. The median annual salary for Clerk Grades under the Award<sup>10</sup>, with a 2.5% increase for FY2020 is, \$50,667.

Assuming that the technical lead is a mid-grade administrative officer with more than one year's experience, the median salary from the Award (escalated to FY2020) is \$97,192.

Applying appropriate allowances for superannuation and WorkCover, gives an annual direct salary cost of \$386,100. Revenue NSW report an annual salary cost of \$608,000. This suggests a salary multiplier of 1.57, which in our experience aligns well with other similar public sector organisations.

### 6.4.2 Testing for ELNO product releases

An experienced team would be necessary to provide the depth of technical support to the ELNO through this process. We have therefore assumed that the team would consist of the equivalent of senior administrative grades (7-14), which based on Award rates<sup>11</sup> escalated by 2.5% to FY2020, and including allowances for superannuation and WorkCover, gives a median direct annual salary cost per FTE of \$129,922. Applying the direct cost multiplier assessed in 6.4.1, gives a total annual salary per FTE of \$204,586.

Applying this cost to the effort in Table 29, gives a total cost per release of \$126,087, as shown in Table 30.

| FTE Salary Costs (\$2019)          |         |
|------------------------------------|---------|
| Assumed Annual Salary <sup>1</sup> | 117,948 |
| Allowance for Superannuatiuon      | 11,205  |
| Allowance for Workcover            | 769     |
| Annual Salary Direct Cost          | 129,922 |
| Industry Multiplier                | 1.57    |
| Annual Salary total cost (per FTE) | 204,586 |
| FTE Effort required per release    | 0.62    |
| Total Salary Cost per release      | 126,087 |

### Table 30 Assessed costs per release

Note 1: Based on median salary for adminstrative grades 7-14

Revenue NSW has assessed that its cost per release is likely to be about \$125,000. Our assessment at Table 30 indicates costs of about \$126,087. There is therefore good agreement and we support the costs assessed by Revenue NSW.

Revenue NSW advise that they anticipate a total of four (two major and two minor) releases per ELNO per year and that cost would be incurred each time.

We agree that in practice, there is no difference in the testing effort required (and therefore costs) of a minor or major release and that two major and two minor releases annually is reasonable.

### 6.4.3 Bespoke service changes

Revenue NSW do not report any anticipated costs for this task, presumably because the nature, extent and timing of any bespoke changes would be in response to the ELNO development strategy and therefore not possible to determine in advance.

<sup>&</sup>lt;sup>10</sup> Crown Employees (Public Sector – Salaries 2018) Award, Treasury Circular TC18-09

<sup>&</sup>lt;sup>11</sup> Crown Employees (Public Sector – Salaries 2018) Award, Treasury Circular TC18-09

Revenue NSW has not commented on the cost of any system testing as a result of such bespoke changes.

### 6.5 Implications

The level of effort and cost that Revenue NSW has been employing to resolve verification issues with transactions from ELNOs appears reasonable and costs align with the Award rates and typical sector multipliers.

The proportion of pre-mandate submissions with verification errors has remained relatively constant in recent years and with transaction numbers likely to increase post-mandate, it is expected that there will be a short-term increase in the absolute number of verification issues that Revenue NSW experiences, which an appropriate increase in costs.

Testing of minor and major releases to an ELNO platform will require intense testing across software platforms to confirm that the system functions are retained across a range of agreed test scenarios. This would require Revenue NSW to understand the potential impacts of the ELNO releases, to agree the testing programme with the ELNO and to actively support the ELNO through the testing, by reviewing and agreeing to the test plan and the subsequent review and verification of the results. Revenue NSW has estimated a cost of about \$125,000 per ELNO for each major and each minor release. In our view, this cost is reasonable and reflective of the effort involved.

## 7.0 Summary of findings

### 7.1 Efficient costs of a benchmark efficient ELNO

The levelized costs for a benchmark efficient ELNO under the market share scenarios in Table 4 are shown in Figure 19, where the bubble size represents capital investment.

It is evident that the levelized transaction cost is very dependent on market share with an increase in market share of the new entrant ELNO from 10% to 36% leading to a 65% reduction in transaction cost.



Figure 19 Levelized Cost for Benchmark Efficient ELNOs

### Table 31 Levelized transaction cost by ELNO

| Market share scenario                   | Capital<br>Investment<br>(',000) | Operating Costs<br>(FY2020-FY2024)<br>(',000 \$2019)) | Total Number of<br>Transactions<br>(FY2020-2024) | Levelised cost<br>per transaction<br>(FY2020-FY2024) |
|---|----------------------------------|---|--|--|
| New entrant ELNO – Low customer base    | 6,160.4                          | 114,963.4   | 935,519  | 122.89   |
| New entrant ELNO - Medium customer base | 6,160.4                          | 141,581.4   | 1,878,038  | 75.39  |
| New entrant ELNO - High customer base   | 6,160.4                          | 177,424.2   | 3,185,886  | 55.69  |
| Established ELNO – Low customer base    | -                                | 146,477.2   | 1,900,633  | 77.07  |
| Established ELNO – Medium customer base | -                                | 234,341.9   | 4,751,582  | 49.32  |
| Established ELNO – High customer base   | _                                | 320,404.3   | 7,602,532  | 42.14  |

### 7.2 Sensitivities

The assessment of costs is particularly sensitive to the following:

• The results are most sensitive to salary costs, either through team structure of the amount of marketing effort required to attract subscribers. Varying the salary cost by +/-30% resulted in a variance in levelized transaction cost of between 4.25% to 5.51% depending on market share.

Varying the marketing effort by a similar amount resulted in changes to the levelized transaction cost of between 3.4% to 3.7%.

• Generally, the sensitivity to other factors reduces with increased market share, because of the increased number of transactions. The sensitivity to subscriber costs increases with increasing market share increases the number of subscribers and resulted in the changes to the levelized transaction cost of between 2.55% for the low customer base to 5.67% with a high customer base.

### 7.3 Efficient costs for NSW Land Registry

The efficient capital expenditure for the LRS is modelled as \$4.2 million (\$2019) assuming integration across five jurisdictions. This includes establishing a document management system which we estimate accounts for about 32% of the total development effort.

In our view, it is typical for software products to be depreciated over five-years.

### 7.4 Efficient costs for Revenue NSW

Revenue NSW data shows that about 13% of submission fail the transfer duty verification on initial submission and require some effort from Revenue NSW to work with the subscriber and the ELNO to resolve.

Revenue NSW has estimated and annual cost of \$608,000 for resolving these errors, which in our view is reasonable, and may in fact increase over the short term as the volume of submissions increases post-mandate.

Revenue NSW also actively support the testing of the ELNO platform releases, to make sure that any changes made to the ELNO platform are fully tested and issues resolved prior to release. We estimate that the cost to Revenue NSW of supporting each release is likely to be about \$126,000, which aligns well with the cost estimated by Revenue NSW.

### 7.5 Interoperability

In addition to the no-interoperability model, four other scenarios have been modelled.

With three ELNO's in the market, the Infrastructure ELNO requires the lowest investment. The Central Hub model requires the most investment to establish, but with four or more ELNOs in the market, it becomes a low-cost option, although not as low a cost as the Infrastructure ELNO.

Otherwise the no-interoperability option presents the lowest capital investment.

However, when operating costs are also considered, this modelling suggests that any of the interoperability models offer considerable cost savings to industry over the first 5-years when compared to a market with no interoperability, but this modelling suggests there is no material difference between any of the interoperability models over the first five years for the scenario modelled.

The increasing cost to industry with each new entrant is also evident, and a marked increase in the levelized costs when a new entrant enters a saturated market and takes market share from the incumbents.

### 8.0 Conclusions

The capital cost for a benchmark efficient ELNO is \$5.55 million.

A fundamental basis of the benchmark efficient new entrant ELNO is that development would start in an industry where the requirements and protocols for communication were established and known by all parties.

We estimate the benchmark efficient levelized transaction cost to range between \$42.14 and \$77.07 for an established ELNO and from \$55.69 to \$122.89 for a new entrant ELNO, depending on market share. In both cases it has been assumed that the ELNO would operate in three jurisdictions, with the new entrant trading in a new jurisdiction in each of the first three years.

Four interoperability scenarios were considered, and the assessment has shown that with two ELNOs in the market, direct bilateral connections is the most cost effective option. However, with three or more ELNO's in the market, the Infrastructure ELNO requires the lowest investment. The Central Hub model requires the most investment to establish, but with four or more ELNOs in the market, it becomes a low-cost option, although not as low a cost as the Infrastructure ELNO.

Otherwise the no-interoperability option presents the lowest capital investment, but substantial costs to the industry in terms of digital certificate provision and subscriber support.

As a consequence, when operating costs are also considered, this modelling suggests that any of the interoperability models offer considerable cost savings to industry over the first 5-years when compared to a market with no interoperability. It is important to note, however that this modelling suggests there is no material difference between any of the interoperability models over the first five years for the scenario modelled.

Our assessment, based on our understanding of current market rates and assuming integration with five jurisdictions, indicates this level of effort required for a benchmark LRS to develop a system suitable to support eConveyancing would require a capital expenditure of **\$4.2 million (\$2019)**. This includes the establishment of a document management system, which we estimate amounts to about 32% of this effort.

A 5-year deprecation period would, in our view, be an appropriate depreciation period.

The level of effort and cost that Revenue NSW has been employing to resolve verification issues with transactions submitted through ELNOs appears reasonable and costs align with the Award rates and typical sector multipliers.

Revenue NSW has estimated a cost of about \$125,000 per ELNO for each major and each minor release. In our view, this cost is reasonable and reflective of the effort involved.

# Appendix A

# Conveyancing Process Diagram

