



PEXA DIGITAL PROPERTY REPORT

ECONOMIC IMPACT OF E-CONVEYANCING

A report prepared by



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Executive summary

The settlement process for the transfer of property is currently a complex process that relies on paper records and parties being physically present at transactions.

PEXA is a platform for e-conveyancing, which will connect all participants to a transaction in real property and allow them to settle those transactions electronically, rather than requiring physical presence. As well as removing the need for attendance, PEXA will allow for better information sharing and removes the need for each conveyancing participant to enter the same data in each of their individual systems. It is expected that this will create both process and time efficiencies, as well as increase the transparency of the settlement process potentially reducing the anxiety that settlement often invokes in consumers.

This report explores the impact on consumers, industry and government of the rollout of the e-conveyancing platform PEXA across Australia.

Consumer dissatisfaction with current settlement arrangements

Information was gathered from consumers regarding their experience of the current settlement process. The crux of the findings is illustrated in the figure to the right.

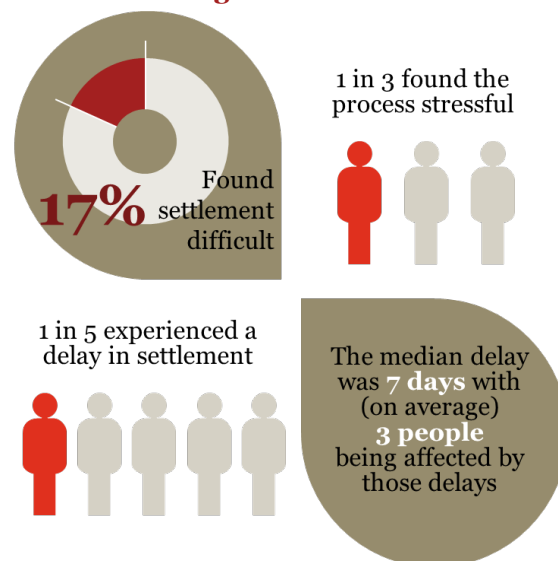
One in three consumers found property exchange stressful. This figure increases to nearly one in two – 44 per cent – when settlement was delayed. In addition, nearly one in five found the process difficult.

Where the settlement of a property is delayed (one in five settlements) the median delay was 7 days and affected (on average) three people for each delay.

This delay had financial and emotional repercussions with respondents indicating that:

- stress was felt in half of all delayed settlements
- one in four had travelled to another location in anticipation of completing settlement
- one in four suffered from financial implications or issues as a result of the delay
- nearly one in five had delivery problems
- one in five had to source accommodation.

Figure 1 Consumers suffer stress and delays in current settlement arrangements

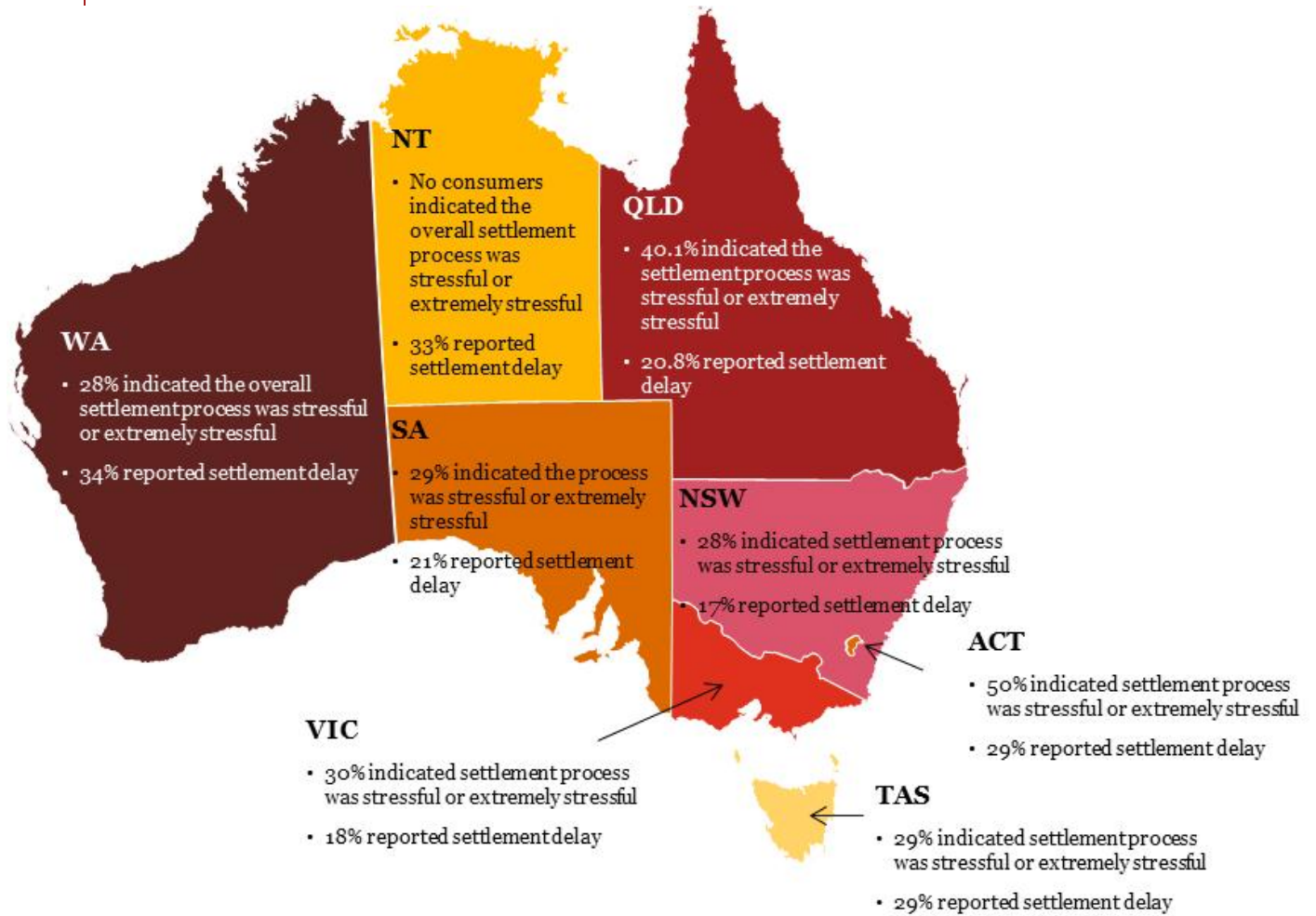


Exacerbating the issue of delayed settlements, 14 per cent of the postponed settlements resulted in *additional* property settlement delays where the vendor subsequently had to delay another property settlement until funds were received creating a knock on effect. Thus the cycle continued with multiple property settlements hindered over and above the initial settlement delay.

When provided with the opportunity to comment on their experience and asked what they found most problematic, consumers responded with the following remarks:



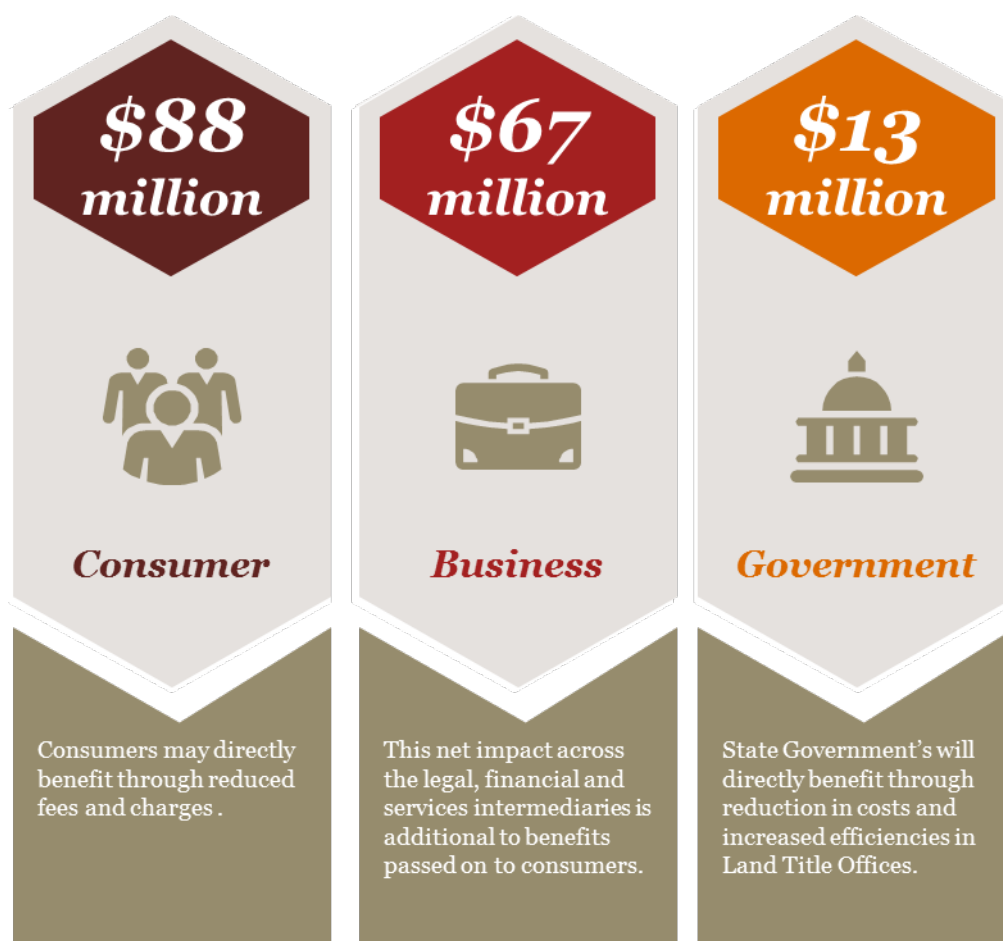
The level of overall stress experienced by consumers and the proportion of settlements delayed were further broken down by jurisdiction and are shown below. The results indicate that those purchasing or selling a property in the ACT found the overall settlement process the most stressful whilst those in WA reported the highest number of delays.



Direct benefits from PEXA

Analysis of the direct costs and benefits of PEXA, based on an update of the 2010 Market Analysis and PEXA Ltd's 2014 Business Plan, resulted in the net benefits displayed in the diagram below (in 2013-14 terms).

Figure 2 Implementation of PEXA will directly benefit consumers, business and government



Consumers may benefit from cost savings and efficiencies passed on from business (lawyers, conveyancers and financial institutions). At the level presented above, a total consumer benefit of \$88 million represents a benefit of approximately \$75 per consumer transaction. If these transactions are spread evenly across all nine million households this would be benefit of approximately \$10 per household.

Additionally key opinion leaders have identified direct benefits from PEXA to consumers in the areas of transparency (and associated reduction in stress) and modernisation. A leading figure within a state based government land agency, said, 'it's about moving into the modern age where people feel it's more transparent and they feel safer'.

The net benefit to business includes costs and benefits to the legal sector (costs of \$48 million and benefits of \$67 million), the financial institutions sector (costs of \$43 million and benefits of \$92 million) and the net impact on the business service intermediaries.

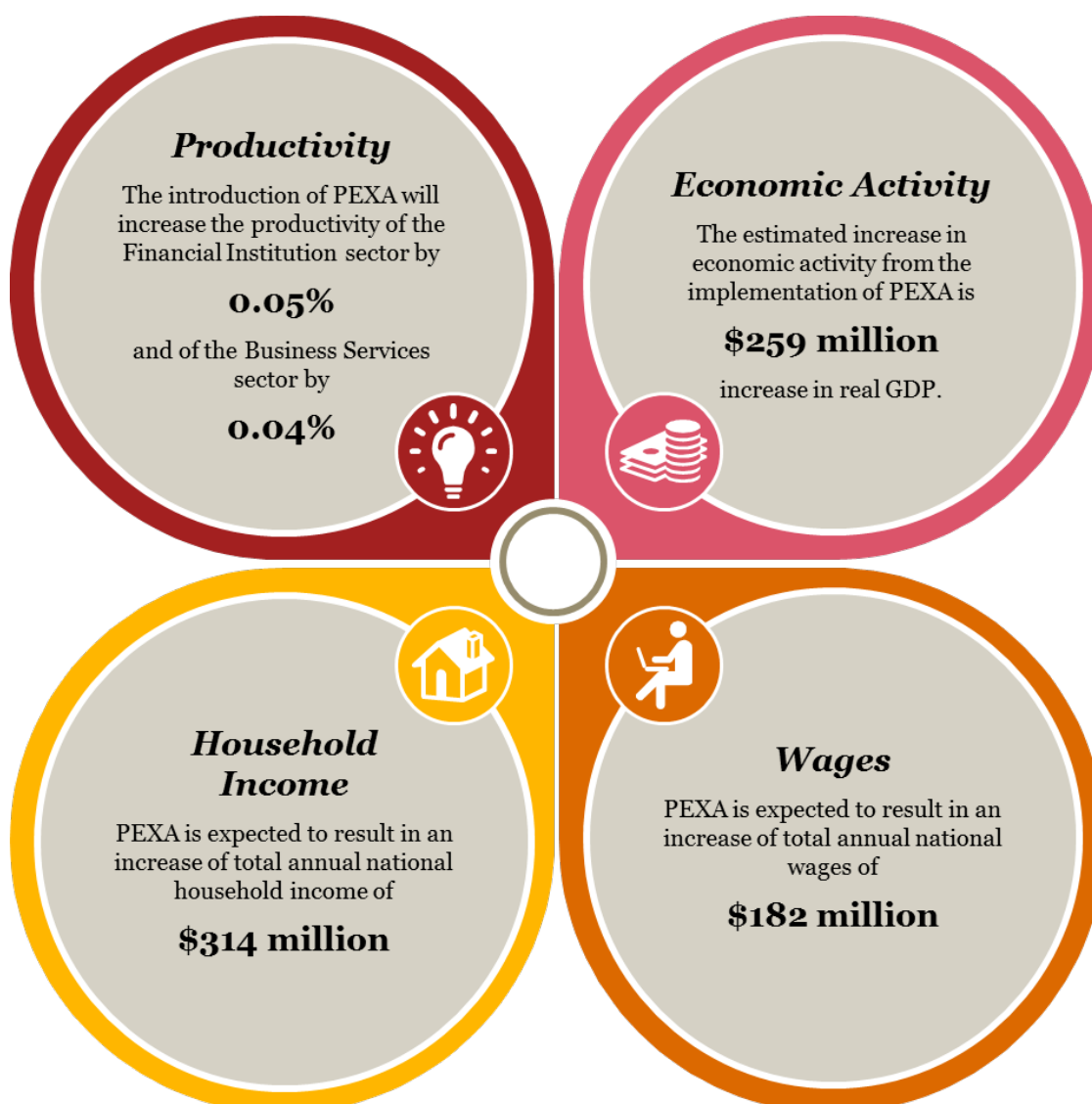
In turn, Government also benefits through efficiencies and cost savings in operations of Land Title Offices and State Revenue Offices.

The total economic impact of PEXA

Given the ubiquity of land, the introduction of a new national e-conveyancing system – PEXA – will benefit the nation as a whole (including the direct benefits discussed above but also more broadly). The streamlining and automation of certain property settlement activities delivers benefits to the financial and business sectors, but also exerts a strong ‘pull’ across all sectors, increasing total activity in the economy as a whole. Some of the benefits expected to be realised by the Australian community from the instigation of PEXA are highlighted in the following figures.

Although the benefits are expected to accrue fully when PEXA is at its optimal operating level in 2017/18, these benefits are presented in current terms (2014 dollars) for ease of understanding.

Figure 3 PEXA’s annual contribution to the economy at full operation



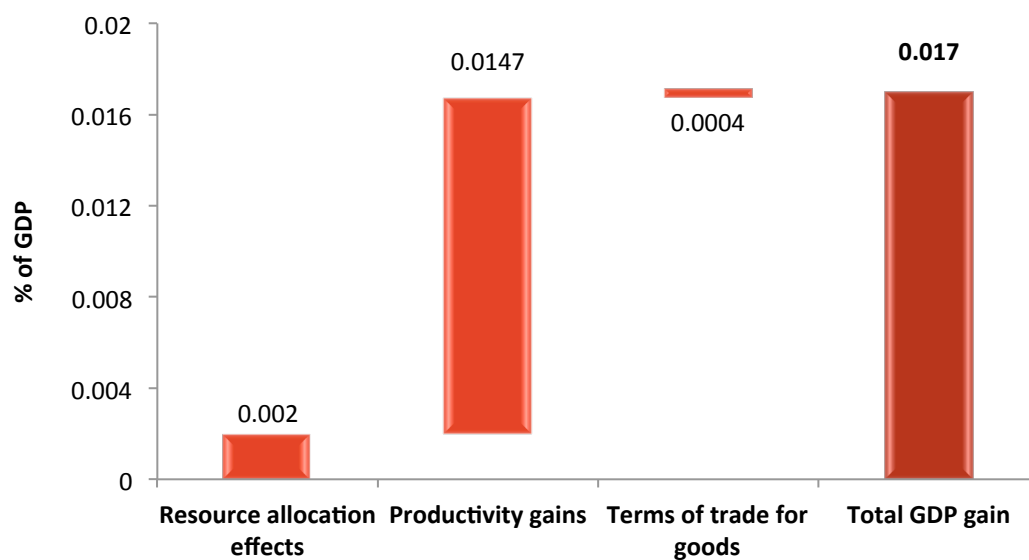
Impact on major economic indicators

		Impact
Estimated real GDP increase	<i>Based on 2013 GDP</i>	\$259 million
Productivity in Financial Institutions	<i>% change</i>	0.049
Productivity in Business Services	<i>% change</i>	0.0406
Real GDP growth	<i>% change</i>	0.017
Household income	<i>% change</i>	0.023
Wage of labour	<i>% change</i>	0.024
Rental rate on capital	<i>% change</i>	0.0186
Price index of consumption (inflation)	<i>% change</i>	0.0031
Per capita utility of private households	<i>% change</i>	0.0195
Per capita utility of government	<i>% change</i>	0.0119

Source: PwC analysis

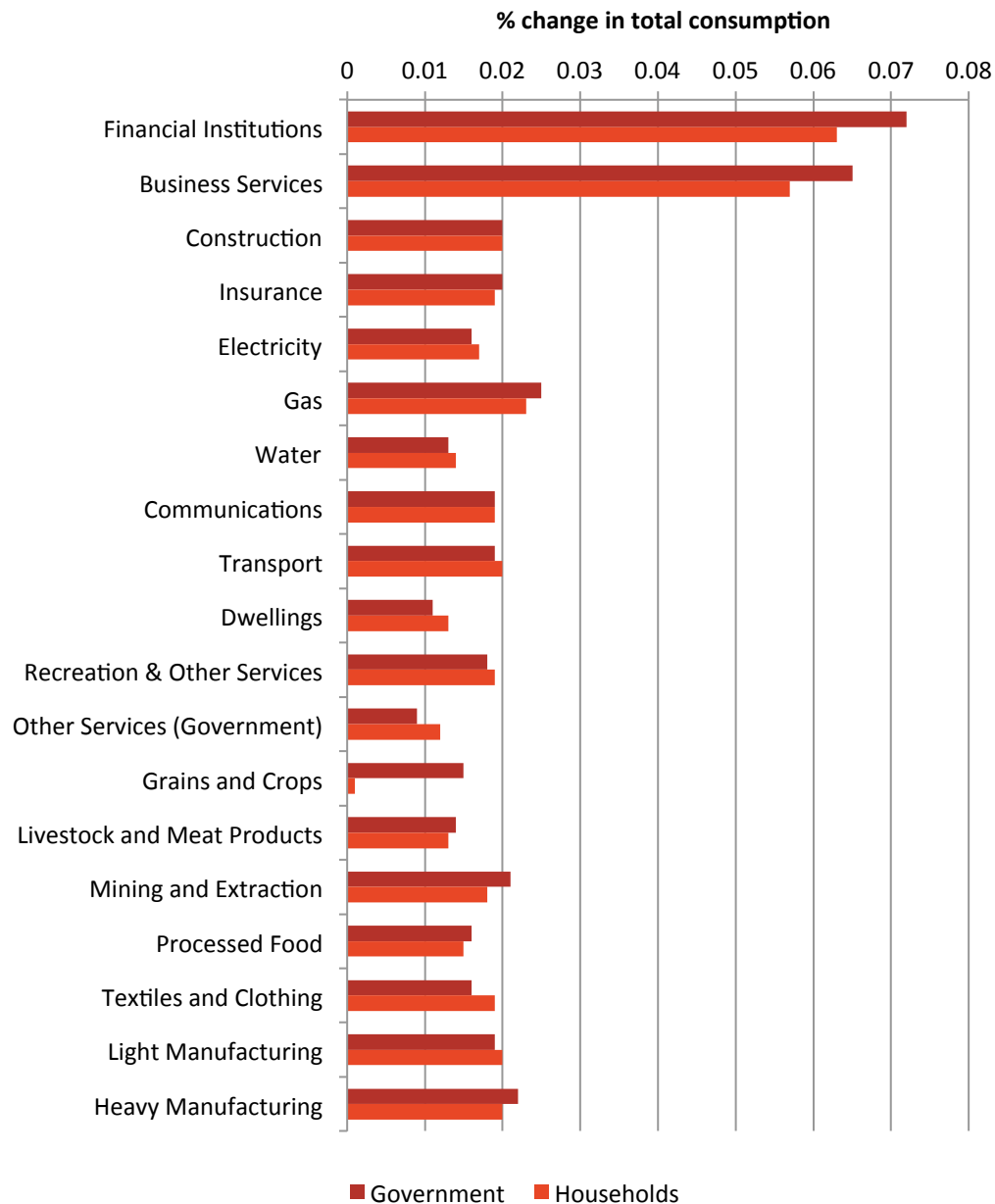
Overall economic effect on Australia

The overall real GDP increase is estimated to be 0.017 per cent. It was found that the expected increase in productivity is the largest contributor to the overall economic gains, whilst resource allocation (movement of resources to more productive sectors) also plays a vital, yet smaller, role.



Impact on consumption

Overall, the analysis suggested that the implementation of PEXA proves beneficial to society in its entirety as both private households and the government would enjoy more goods and services in different sectors. That is, due to the productivity gains associated with PEXA in the Financial Institutions and Business Services sectors, the saved economic resources (such as labour and capital) would be utilised across other economic and industry sectors. The increase in available inputs elsewhere in the economy leads to changed production and pricing levels resulting in greater consumption. This is shown in the below figure whereby both households and government consume more output from all sectors.



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1 *Introduction*

PricewaterhouseCoopers (PwC) has been engaged by Edelman Australia (Edelman) on behalf of Property Exchange Australia Ltd (PEXA Ltd) to compile a research report aimed at analysing the economic benefits of e-conveyancing. Specifically, this report explores the impact on consumers, industry and government of the rollout of the e-conveyancing platform PEXA through comprehensively analysing the potential impacts of embracing digitisation of the property market.

This report will support the national rollout of PEXA due to the development of key headlines and useable content through rigorously analysing available data and using robust economic models to determine the impact of PEXA on the Australian community.

1.1 *The approach*

To conduct this analysis, a partnership approach was utilised between PEXA Ltd, Edelman and PwC. This ensured all parties had involvement and the analysis was robust, leveraging all pertinent information and resulting in accurate modelling outputs. In completing the analysis, the following key stages were undertaken.

1. Data gathering

This stage involved multiple parties and multiple collection processes.

Consumer behavioural responses were collected through a consumer based survey developed and distributed by Catalyst Research. The main objective of the survey was to capture the emotional aspects of the settlement process and determine the level of stress or anxiety (if any) felt by consumers when completing settlement of a property. Responses were also sought regarding consumer sentiment around faster settlements, higher transparency in the settlement process, and decreased risk of missing settlement dates/settlement failure.

Consultations were also undertaken with 10 key opinion leaders (KOLs) from a range of industries and leading bodies by Edelman. These interviews sought to identify industry leading views of the PEXA system, broader community sentiment, and valuable insights to the status of PEXA's value proposition/offer and its overall awareness and positioning in the market.

In parallel with the above activities, PwC conducted desktop research to identify any recent analysis of e-conveyancing from around the globe as well as gather publicly available information from the Australian Bureau of Statistics (ABS), State land registry bodies, and other relevant industry reports.

2. Direct impact analysis

This stage drew on the data obtained from stage 1 to identify the realm of costs and benefits that were expected to be received by consumers, industry participants (largely solicitors, conveyancers and financial institutions) and government due to the implementation of PEXA. These were analysed through a cost-benefit analysis (CBA) approach to identify the net impact for each stakeholder considering not only monetary impacts, but also efficiency and other non-monetary aspects of the PEXA platform and its intangible benefits.

The quantitative information used for the analysis stemmed from both the 2010 Market Analysis that was conducted in the initial business development stage of PEXA by PwC and PEXA Ltd's 2014 Business Plan with supporting data from the ABS. The qualitative

information was obtained through the consumer survey conducted by Catalyst and the KOL interviews conducted by Edelman.

3. Total economic analysis

The direct impacts of PEXA identified in stage 2 have wider impacts on consumers, business and government. That is, the roll out of PEXA may also have an impact on the overall general economy. This broader economic wide impact was captured and analysed using the advanced economic modelling technique of computable general equilibrium (CGE) modelling. CGE modelling allows a demonstration - in a quantifiable way – of how the direct impacts flow through the economy and generate changes in key macroeconomic variables such as gross domestic product (GDP), employment, industry output and consumption.

To determine the impacts caused by the implementation of PEXA a scenario approach was adopted whereby a pre and post PEXA implementation situation was analysed. These two scenarios are outlined below.

Scenario 1: Baseline or status quo scenario

This scenario represented the business as usual case; that is, what would be expected to happen without any changes to the large scale uptake of PEXA and the Australian economy. The baseline was designed to replicate the current Australian economy, industries and property market and provide a base to estimate the impact of PEXA adoption by stakeholder groups.

Scenario 2: PEXA market penetration scenario

In this scenario, it was assumed that PEXA had been adopted and utilised as expected and had reached an optimal operating level.¹ Potential efficiency gains and/or benefits estimated in the direct impact assessment (Stage 2) were used as inputs to the economy-wide model to estimate the potential total impact of PEXA on stakeholder groups and the economy. This scenario analysed the economy-wide impacts of PEXA on consumers, business, government and thus the economy as a whole.

4. Consultation and reporting

Upon the completion of all modelling, PwC - in collaboration with Edelman - compiled this report of which discusses all core outputs.

1.2 Report structure

This report is structured in a manner that clearly delineates the direct from the indirect – or broader economic - impacts whilst providing a coherent and logical flow. The report is structured as outlined below.

- **Section 2: Context**

This section provides the context of the PEXA platform through a discussion of general background information such as current property market statistics and the current settlement process before moving to an exploration of what PEXA has to offer to key stakeholders in the settlement process. It concludes by providing a literature review of other e-conveyancing developments occurring around the globe.

¹ Expectations are as outlined in the PwC Market Analysis Report (2010) and PEXA Business Plan (2014).

- **Section 3: The pillars of impact**

This section explores the expected direct impacts that will be felt by key stakeholders in the settlement process. To ensure the full breadth of impact is analysed, this section uses both a qualitative and quantitative lens to identify the potential realm of costs and benefits that are expected to be received by consumers, industry participants (largely solicitors, conveyancers and financial institutions) and government.

The information was analysed through a cost-benefit style analysis (CBA) to identify the net impact for each stakeholder considering not only monetary impacts, but also efficiency and other non-monetary aspects of the PEXA platform and its intangible benefits. The resulting direct monetary impacts identified were then used as the basis for the shocks to the economy for the economic impact analysis.

- **Section 4: The economic impact**

This section draws on the net impacts outlined in section 3 (both costs and benefits) as inputs into PwC's CGE modelling. Namely, the impacts have been drawn on to form 'shocks' to the economy of the instigation and adoption of PEXA. This form of modelling captures the totality of impacts once the economy reaches its steady state and thus allows us to estimate economy-wide impacts of PEXA on the Australian property market and the economy in general. The key outcomes regarding macroeconomic impacts, labour changes, and consumption effects are explored.

2 Context

There are many aspects that should be contemplated when considering the impact of PEXA. These include the size of the real property market, the number of participants, the types and number of associated services, and the financial significance of any property transaction. These facets are now explored to set the scene for the analysis that follows.

2.1 The property market

The property market covers all the land in Australia, and as such is extremely broad. Land is traditionally split between residential, commercial, industrial and primary production. However, there are smaller categories that do not neatly fit into these areas, such as land for community services (education, private hospitals and religious buildings), infrastructure and utilities (power distribution, post offices, telecommunications and water and sewage), national parks, and sports and cultural centres.

By the sheer size of Australia, it is known that value of all land is considerable. Unfortunately there are no available estimates of the total value for all types of land across the whole country.² However, there are estimates of subsets of this total value, which give an indication of the enormity of the monetary value that sits in land. These are displayed in Figure 4 and explained further below.

Figure 4: Available estimates of total land value



In 2012 a government valuation indicated that the total value of land of all types in South Australia was \$202 billion for site value of just the land, or \$344 billion in total capital value.³ Compared to the gross state product (GSP) of that year, site value of land was worth 2.2 times the size of the state economy and capital value was 3.7 times the GSP of \$93 billion.⁴ Similarly, in 2010, the total land stock of New South Wales was valued at \$1.2 trillion.⁵ This was 2.7 times the size of NSW GSP for the same year, which was \$442 billion.⁶ While these two state based estimates show the scale of the value of land, they

² PwC confirmed directly with the ABS that neither the count, nor the value, of all properties is available from the ABS. The ABS do not collect this data and are not aware of any other sources that do. Further, PwC also spoke with the Property Council of Australia of which confirmed they do not have a total value figure for all real property nor do they know of a central source for this figure.

³ South Australian Government (2014) *Valuation Statistics*, available at <http://www.sa.gov.au/topics/housing-property-and-land/buying-and-selling/financial-considerations/property-valuations>.

⁴ ABS (2013) *ABS Catalogue number 5220.0 – Australian National Accounts: State Accounts, 2012-13*.

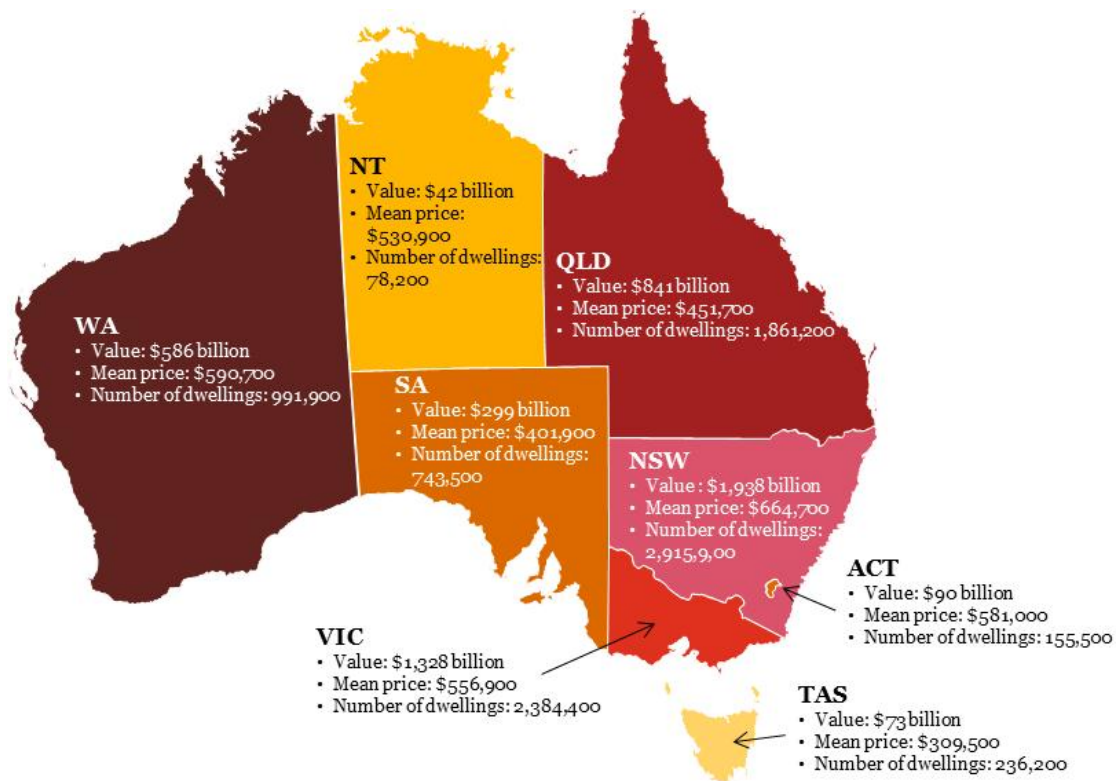
⁵ NSW Land and Property Management Authority (2010) *Annual Report 2010*, page 17.

⁶ ABS (2013) *ABS Catalogue number 5220.0 – Australian National Accounts: State Accounts, 2012-13*.

cannot be extrapolated out to the entire country due to the vastly different make up of land types and land surface area in different jurisdictions.

On a national scale, there is an estimate available for the total value of residential property, which was \$5.7 trillion as at May 2015.⁷ The total value of Australian residential property is an impressive number given how significantly it dwarfs the size of Australia's annual gross domestic product (GDP), which was \$1.58 trillion at December 2015.⁸

Figure 5: Australia's residential market – value of dwelling stock as at June 2014^{9,10}



Additionally, a 2012 estimate by the Asia Pacific Real Estate Association valued the Australian national stock of commercial property at \$1.15 trillion (US dollars in 2011 terms).¹¹

Estimates are not available for other types of land likely because they are much harder to value. This could be due to the fact they have much lower turnover and not being sold frequently means that the market is too thin to use to assess a reasonable price. Some types of land, such as cultural sites or national parks may have no market at all to use to gain a market assessment of value.

⁷ CoreLogic & RP Data (2015) *Property capital markets report, 2015*.

⁸ ABS (2014) *ABS Catalogue number 5206.0 – Australian National Accounts*, December 2014.

⁹ ABS (2014) *ABS Catalogue number 6416.0 – Residential Property Price Indexes*, Eight Capital Cities, June 2014.

¹⁰ CoreLogic & RP Data (2014) *Property capital markets report, 2014 – Issue 01*.

¹¹ Asia Pacific Real Estate Association (2012) *Asia Pacific's significance to the Global Real Estate Market*, page 6.

What is generally of more interest to market analysts and investors is the annual ‘flow’ (i.e. property that changed ownership in a single year) rather than the ‘stock’ of property (i.e. total value). The flow of property markets gives more of an indication of past and possible future trends in value. Additionally, the flow in the property market is the value that PEXA will have an impact on; i.e. the transactions that are occurring.

However, even in the flow of the property market, analysis often focuses on the higher end of the market to the detriment of giving a complete view.¹² One data source that does give a complete view of all transactions for a year is the Victorian Department of Transport, Planning and Local Infrastructure. Table 1 shows that in both number of sales and value of sales, the residential market does dominate. This either indicates that residential land has a high proportion of total value, has a higher turnover rate, or a combination of the two.

Table 1: Victorian land transactions (2013)

	Number of sales		Mean value	Value of sales	
	Number	% of total	(\$)	(\$)	% of total
Commercial	2,754	1.91%	2,109,682	5,810,064,647	7.54%
Community Services	71	0.05%	2,710,426	192,440,278	0.25%
Extractive Industry	2	0.00%	367,500	735,000	0.00%
Industrial	2,437	1.69%	1,086,727	2,648,354,431	3.44%
Infrastructure & Utilities	146	0.10%	107,676	15,720,760	0.02%
National Parks	6	0.00%	300,712	1,804,270	0.00%
Primary Production	2,858	1.98%	565,796	1,617,045,254	2.10%
Residential	135,775	94.24%	491,732	66,764,922,376	86.61%
Sport & Cultural	17	0.01%	2,175,691	36,986,753	0.05%
Total	144,066	100%	535,089	77,088,073,769	100%

Source: Victorian Department of Transport, Planning and Local Infrastructure, *A Guide to Property Value Statistics*

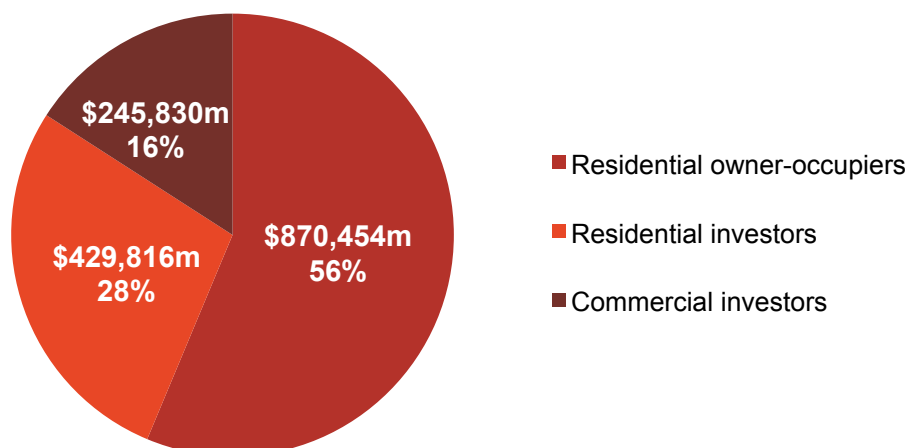
2.1.1 Financial commitments and property worth

Also relevant when considering the value of PEXA is noting the sheer volume of money that will be passing hands through the PEXA platform. As at March 2014, there was approximately \$1.39 trillion in housing loans outstanding to households.¹³ This is a growth of 5.96 per cent when compared to March 2013 figures. Further, in totality there was nearly \$1.55 trillion in outstanding mortgages as at June 2014 with this figure including both residential and commercial mortgage holders (Figure 6).¹⁴

¹² For example, Colliers gives in depth reports of the market split in to office, retail, industrial and agricultural, but their analysis only focuses on ‘major transactions’, i.e. those above \$1 million, \$10 million, or \$100 million depending on the market.

¹³ ABS (2014) *ABS Catalogue number 5609.0 – Housing Finance*, Australia, June 2014.

¹⁴ IBISWorld (2014) *Mortgages in Australia*. IBISWorld Industry Report X0010.

Figure 6: Mortgage market segmentation (2013/14)

In 2013/14, there were over 620,000 owner occupied housing financing commitments made (417,000 when excluding refinancing transactions). These new commitments had a value of nearly \$196 billion meaning financial institutions and consumers exchanged nearly \$200 billion in financing commitments (\$140 billion if refinancing arrangements are excluded) alone in 2013/14.¹⁵

Alternatively, when looking across Australia the mean price of a residential dwelling was approximately \$555,000 in June 2014.¹⁶ Through using this average value of residential property, it can be noted that even when just considering owner occupied residential property, around \$230 billion will pass through PEXA electronically.¹⁷

Financing commitments for the purchase of dwellings represent a large proportion of the total borrowing market in Australia. The Reserve Bank of Australia estimates that over 60 per cent of all borrowings are for the purposes of housing, with only approximately 33 per cent of borrowing for business purposes and 6 per cent for personal loans.¹⁸

Within these commitments for the financing of housing, investors accounted for 37.3 per cent of total borrowings during 2013 and owner occupier purchasers (excluding first home buyers) accounted for 36.8 per cent. Refinancing of loans by owner occupiers accounted for 17.6 per cent of all lending over the year and first home buyers borrowed just 8.2 per cent of all housing finance which had been committed.¹⁹

2.2 The settlement process

Settlement of a real property transaction can be an involved process. There can be four parties to the transaction, the buyer and seller (each represented by a conveyancer) and an

¹⁵ ABS (2014) *ABS Catalogue number 5609.0 – Housing Finance*, Australia, June 2014.

¹⁶ ABS (2014) *ABS Catalogue number 6416.0 – Residential Property Price Indexes*, Eight Capital Cities, June 2014.

¹⁷ This figure draws on the mean value of a property in Australia and the 417,000 commitments made in 2013/14.

¹⁸ CoreLogic & RP Data (2014) *Property capital markets report, 2014 – Issue 01*, page 3.

¹⁹ CoreLogic & RP Data (2014) *Property capital markets report, 2014 – Issue 01*, page 3.

incoming and outgoing lender of funds. These four parties need to interact together over the following broad steps.

- The parties receive instructions once the buyer and seller have agreed to the purchase transaction, as facilitated by a real estate agent.
- Checks and title searches are run to ensure the ownership (including any mortgages, caveats or leases) is as it has been purported.
- Mortgages, loan contracts and other necessary documents are drawn up and bank cheques are prepared as requested.
- Physical settlement occurs at which the bank cheques are exchanged for the all the documents required to register the buyer as the owner of the property (subject to the mortgage).
- These registration documents are lodged with the land title office in the relevant jurisdiction.²⁰

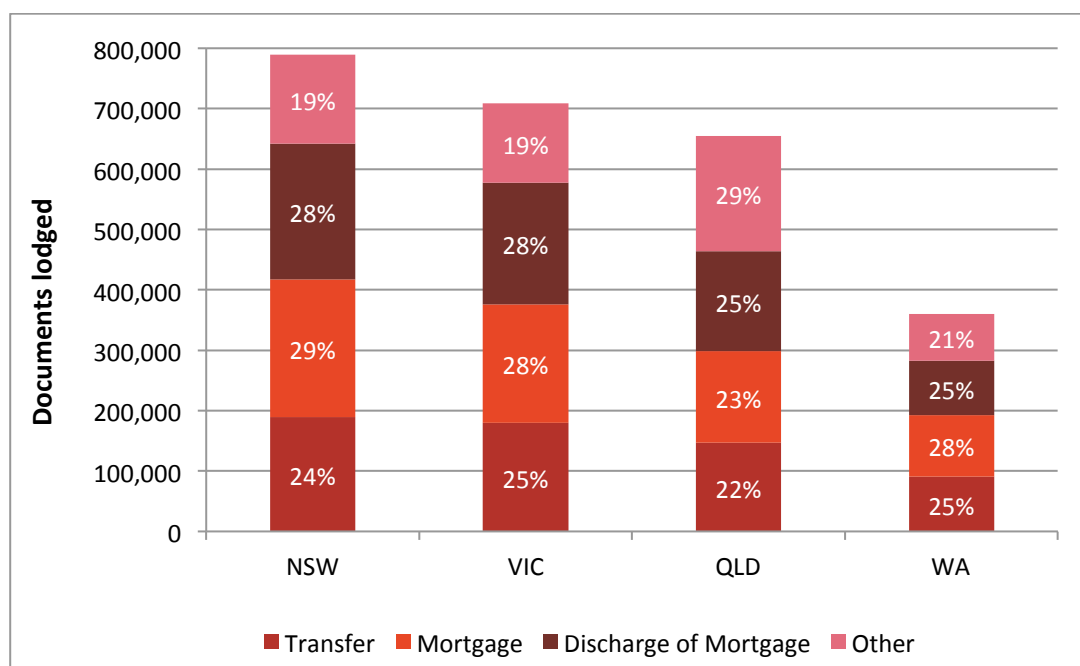
Land title offices (LTOs) operate in each state and territory and serve as a depository for all information about the ownership of land. A title record is maintained for each parcel of land and this record is altered whenever boundaries change or there is a 'dealing' in land (i.e. the ownership changes through sale, inheritance, completion of a mortgage etc.). For the title record to be altered for a dealing in land, a document must be lodged with the LTO by the appropriate party.

There are three main kinds of documents that are lodged with LTOs to alter a land title; transfers (change in ownership by sale or other means), mortgages (evidence that property is being held as security) and discharges of mortgages (lodgement of proof that mortgage is repaid and property is no longer held as a security). Together, these three types of transactions make up approximately 80 per cent of all interactions with LTOs (with caveats, withdrawal of caveats, leases and other documents making up the remainder).

Data from the land title offices varies across jurisdictions and was not available everywhere. However, the best data is from New South Wales (NSW), Victoria (VIC), Queensland (QLD) and Western Australia (WA). These four states together represent 91 per cent of all transactions and hence give a good representation of the national market.²¹ Figure 7, below, shows the documents lodged with the LTOs in those states in 2013. Together, these four states had 2.5 million transactions in 2013. Of these, 608,064 were transfers, 676,968 were mortgages and 680,918 were discharges of mortgages.

²⁰ David Clark for MSA National (2013) *Electronic Conveyancing – at serious risk of actually happening*, available at <http://www.msanational.com.au/latest-news/20-electronic-conveyancing-at-serious-risk-of-actually-happening>.

²¹ PEXA Business Plan, page 5

Figure 7: Lodgements with Land Title Offices (2013)

Sources: NSW Land & Property Information, Victorian Land Registration Services, Landgate WA, Queensland Government data

2.3 The value of PEXA

PEXA is a platform for e-conveyancing, which will connect all participants to a transaction in real property and allow them to settle those transactions electronically, rather than requiring physical presence. As well as removing the need for attendance, PEXA will allow for better information sharing and removes the need for each conveyancing participant to enter the same data in each of their individual systems. It is expected that this will create both process and time efficiencies, as well as increase the transparency of the settlement process potentially reducing the anxiety that settlement often invokes in consumers.

Transactions that will be able to occur electronically through PEXA ('in-scope' transactions) are approximately 76 per cent of all land title transactions each year.²² These in-scope transactions include transfers, mortgages and discharge of mortgages (seen in Figure 7 to make up the bulk of transactions), as well as caveats and withdrawal of caveats. In just the four biggest states this represents a significant amount of transactions and thus indicates that PEXA will have far ranging implications right across Australia.

Transactions that are currently not included in the PEXA platform such as leases, change of name, notice of death and transmission applications will be considered for inclusion in the future. It is not expected that the percentage of transactions that are in-scope will change (subject to any major structural changes in the market), although as the total amount of transactions increases the number of in-scope PEXA transactions will also increase.²³

²² PEXA Business Plan, page 11.

²³ PEXA Business Plan, page 11. Growth is expected at a CAGR of 1.6% per annum.

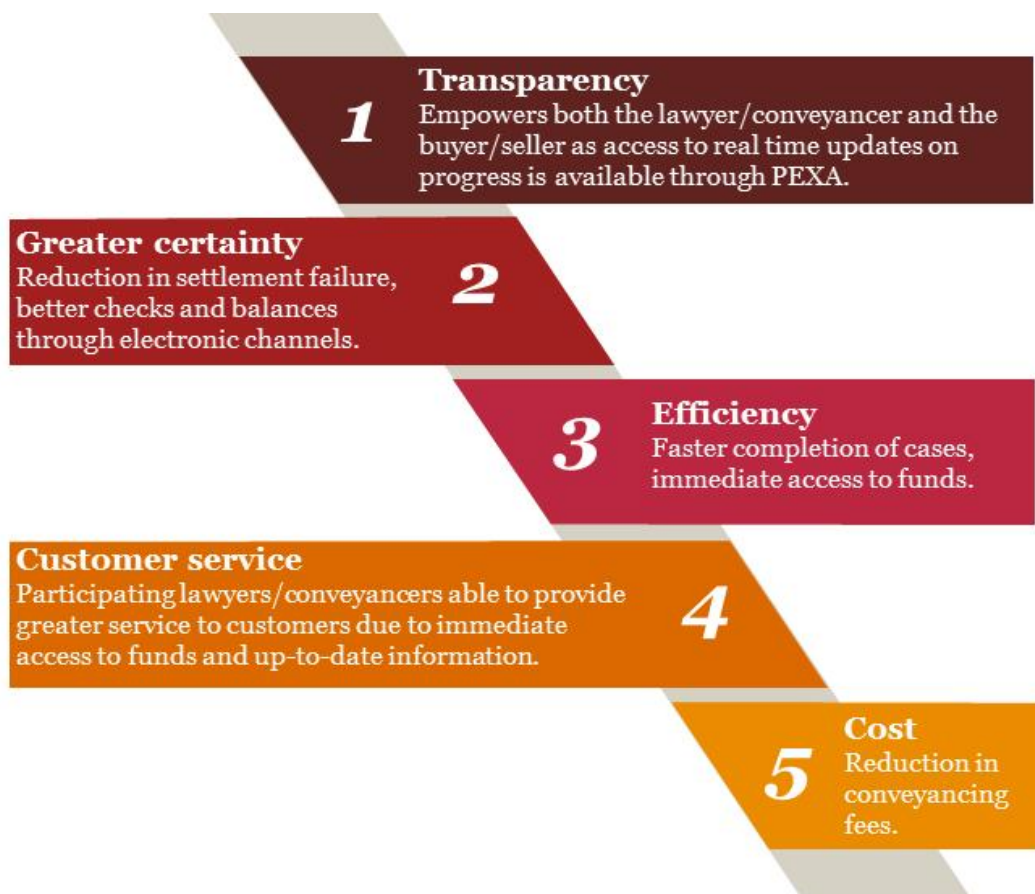
Internal PEXA estimates place the cost to the community of the current manual process for these transactions to be \$2.4 billion per annum.²⁴

While establishing the PEXA platform will require investment, it is expected to become a key piece of national infrastructure and deliver expected gross annual savings to the real property conveyancing industry of between \$220 and \$248 million.²⁵ These savings, or benefits to certain key players, are what will be modelled in this economic analysis to determine how this will flow through the economy and what sectors will see the greatest ‘touch’.

These savings are expected to arise, or are as a result of, PEXA delivering five core benefits (illustrated in Figure 8). It is important to note that whilst some are quantitative in nature with monetary impact, other benefits such as increased transparency and the reduction in information asymmetry, provides an intangible benefit that cannot be quantitatively modelled. These benefits however, are critical to the PEXA system as they will drive consumer uptake and intangibly benefit consumers undergoing the settlement process.

Table 2 (below) shows how each stakeholder group will feel each of these benefits and hence what would be driving them towards adopting PEXA.

Figure 8: The five core benefits of PEXA



²⁴ PEXA 2014 Business Plan, page 2.

²⁵ PEXA 2014 Business Plan, page 2.

Table 2: Adoption drivers

Stakeholder Group	Primary reasons to convert to PEXA
<i>Purchaser/vendor</i>	<ul style="list-style-type: none"> • Increase in transparency of process • Time savings
<i>Banks</i>	<ul style="list-style-type: none"> • Cost savings – improved efficiency of staff • Improved customer service • Opportunity to identify fraud earlier in the mortgage process • Removal of the largest demand driver for bank cheques
<i>Lawyers/conveyancers</i>	<ul style="list-style-type: none"> • Reduces time and cost of settlement • Time savings can be used to increase productivity • Greater client satisfaction
<i>Land Title Office</i>	<ul style="list-style-type: none"> • Current workforce would struggle to meet demand if transaction volumes increase • Time/cost savings in examining instruments
<i>Office of State Revenue</i>	<ul style="list-style-type: none"> • Electronic platform to calculate and pay stamp duty
<i>Intermediaries</i>	<ul style="list-style-type: none"> • Possibility to create new products to connect to PEXA

Source: PEXA (2014) 'The benefits of PEXA.' Available at: <http://www.pexa.com.au/TheBenefits>

2.3.1 Benefit break down

Previous research projects - namely the 2010 Market Analysis conducted by PwC - have focussed at length on quantifying the value creation that arises from PEXA and have found there to be approximately \$240 million per annum in direct benefits.²⁶ As such, this report does not seek to validate or re-examine this figure and those related to it, but rather takes them as given to use as inputs – or shocks – into the economic modelling.

The \$240 million is an aggregate annual benefit that accrues to users as a result of moving from a system of paper production and exchange, to one of complete digital integration. It accrues through four primary areas. The breakdown of this figure - and thus the inputs used for the economic modelling – is shown in Table 3.

Table 3: Direct benefits accruing to core stakeholder groups (in 2009/10 terms)

Benefits Area		Banks	Solicitors/ convey.	LTOs*	Consumers	Total
Settlement booking	\$m	6.25	14.68	n/a	n/a	20.94
Instrument preparation	\$m	33.95	26.60	n/a	7.60	68.14
Electronic settlement	\$m	36.84	18.10	n/a	68.76	123.69
Electronic lodgement	\$m	6.09	0.36	12.00	2.81	21.26
Total	\$m	83.12	59.74	12.00	79.16	234.03

*LTOs is the abbreviation for Land Title Offices

²⁶ This figure assumes an optimal operating level has been reached and is using 2009/10 price figures.

Overall, the calculations used to arrive at the above figures assume 100 per cent of in-scope transactions use the PEXA platform and an optimal operating level has been reached. Further, all figures in Table 3 are in 2009/10 dollars. The direct benefits were determined using critical pieces of information and/or assumptions obtained from in-depth conversations with banks, LTOs and solicitors. The basis of these calculations - or the area of benefit that they concern - is outlined below.

Settlement booking – PEXA will contain a national electronic diary of settlement times that will reduce the amount of time spent on the telephone by both banks and solicitors/conveyancers co-ordinating settlement bookings saving time and thus driving efficiency and labour productivity.

Instrument preparation – A core benefit is that fact that PEXA will provide a common workplace that all parties applicable to a transaction will have access to. This would reduce errors (such as misspelling of names and addresses) and enable the more efficient completion of certain settlement processes such as adjustments calculations, settlement balancing, cheque directions, transaction linking, invoicing and fee collection, and - critically – instrument preparation itself. It will also enable the efficient sharing of information between the stakeholders for registry activities, title checks and transaction documentation.

Electronic settlement – the electronic exchange of documents and funds will eliminate the need for solicitors/conveyancers and/or banks (or their respective representatives) to physically attend settlement, produce bank cheques and retrieve Duplicate Certificate of Titles from storage. This reduces the time needed for these players to spend on these activities thus substantially improving the productivity of these participants through the increase in technological efficiency.

Electronic lodgement – the use of digital signatures (and thus the elimination of the need for wet signatures) will enable the documentation to be electronically lodged with LTOs. This eliminates the need to physically travel to LTOs to lodge the instrument saving both time and money. LTOs will also be able to view the instruments electronically improving the productivity of labour in LTOs and minimising training costs that are currently performed due to the laborious process of manually checking documents.

A discussion of how these figures impact on the stakeholder groups and fold into the economic analysis is contained in Section 3.

2.4 Literature review

E-conveyancing is not only being pursued in Australia but around the world. In many countries it has been a long process, with small, incremental changes occurring to the law to move towards e-conveyancing. The following discussion outlines the progress that has occurred in other countries.

Canada

The electronic land registration system in Ontario, Canada, was developed in the 1990s as a public private partnership. It is one of the most developed and adopted systems, with 92 per cent of all registrations being conducted electronically by 2008 at a level of 2 million

transactions a year.²⁷ By 2011, 99.9 per cent of all properties were recorded in the electronic form.²⁸

New Zealand

New Zealand moved to a system of e-conveyancing through a series of legislative changes. In 2002 amendments were made to the *Land Transfers Act* and the *Land Transfer Regulations*, then in 2003 the introduction of the *Land Information New Zealand (Fees and Charges) Regulations 2003*. The titles register is maintained by Land Information New Zealand and access to the register for land professions is facilitated through Landonline. Access to Landonline can only be made under a licence that must be purchased by a firm.²⁹

From 2009, all lodgements of title transactions in New Zealand were mandated to be made electronically, with very limited exceptions.³⁰ In the 2012/13 financial year, over 611,000 land title documents were lodged with Land Information NZ and with only approximately 2 per cent being paper lodgement.³¹ The New Zealand system has been recognised as ‘world leading’ with the World Bank ranking New Zealand as second in the world in the ‘registering property’ category in their ‘doing business’ survey. Compared to an OECD average of 5 procedures and 24.1 days to register property, New Zealand has only 2 procedures and an average of one day. Registering property is also considered to be cheaper in New Zealand, at 0.1 per cent of the property value, compared to 4.4 per cent for the OECD.³²

In 2011, Land Registry NZ along with other stakeholders, published *Conveyancing 2020* outlining the future priorities for conveyancing in New Zealand. *Conveyancing 2020* puts forward six guiding principles for the future, including end-to-end e-conveyancing and land development, and seamless land information. Each principle has its proposed initiative to be developed by 2020.³³

UK

In England and Wales changes to the *Land Registration Act* occurred in 2002 to facilitate the process toward e-conveyancing. In 2007, the Land Registry ran two rounds of public consultation in May and November to examine the introduction of a second round of legislation to implement e-conveyancing. The first consultation document considered the rules of how access to the e-conveyancing network should be governed.³⁴ The second examined how to enable electronic legal charges in the system.³⁵ These documents set out

²⁷ GhostDigest (2011) *Comparative study of e-conveyancing*, available at <http://www.ghostdigest.co.za/articles/comparative-study-of-e-conveyancing-2/53921>.

²⁸ Teranet (2014) *Land Registration System in Ontario*, available at <http://www.teranet.ca/land-registration-system-ontario?popup=1>.

²⁹ Sharon Christensen (2004) *Electronic Land Dealings in Canada, New Zealand and the United Kingdom: Lessons for Australia*, Murdoch University Electronic Journal of Law, Vol 11, No 4.

³⁰ Landonline (2014) *An introduction to Landonline*, available at <http://www.landonline.govt.nz/about-landonline/introduction>

³¹ Land Information New Zealand (2013) *Quarterly Statistics July 2012–June 2013*, available <http://www.linz.govt.nz/survey-titles/stats-projects-notice/quarterly-stats/july2012-june2013>.

³² World Bank (2014) *Ease of Doing Business in New Zealand*, available at <http://www.doingbusiness.org/data/exploreeconomies/new-zealand#registering-property>.

³³ Land Information New Zealand (2011) *Conveyancing 2020: The Future – Strategic Initiatives*, available at <http://www.linz.govt.nz/sites/default/files/docs/titles-and-records/final-report-201112.pdf>.

³⁴ Land Registry (2007) *E-conveyancing consultation – first paper of second round*, available at <http://webarchive.nationalarchives.gov.uk/2011030175426/http://consultations.landregistry.gov.uk/gf2.ti/f/25026/690341.1/pdf/-/Secondary%20Legis%20doc.pdf>

³⁵ Land Registry (2007) *E-conveyancing consultation – second paper of second round*, available at <http://webarchive.nationalarchives.gov.uk/2011030175426/http://consultations.landregistry.gov.uk/gf2.ti/f/52226/1146565.1/pdf/-/econ%20consultation%20FINAL.pdf>

the four areas of benefits that would flow from a system of e-conveyancing (though some will overlap):

- Financial benefits including efficiencies in the cost of service delivery, reduced cost for the transfer of money by using electronic means, reduced cost for the consumer (whether they paid a conveyancer or chose to do it themselves) and less money wasted on surveys, searches and aborted purchases.
- Process benefits including choice and convenience, time and effort, quality of process (through more reliable information and reduced risk of error or fraud) and ability to view status of live applications.
- Consumer benefits including satisfaction and decrease in complaints.
- People benefits including decrease worry and frustration in the process of house buying and selling through greater transparency of the process.³⁶

A pilot in England and Wales was conducted by the Land Registry in 2007 but the full system did not progress further.³⁷ In 2014, a system was introduced to allow documents from professionals to be sent electronically to the land registry rather than through the post, although this falls short of a full electronic settlement.³⁸

Scotland introduced a bill in 2011 to, amongst other objectives to improve their system for land registration, to allow for electronic conveyancing and registration by altering current requirements of writing. Previous to this, a limited form of electronic conveyancing and registration was available by allowing solicitors to convey Land Registered properties (approximately 55 per cent of properties) electronically and to use electronic signatures to submit deeds of registration. The bill proposed creation and authentication of land deed being able to be done electronically.³⁹ The benefits of this were asserted to be; increased speed of processing, scope for automation and therefore efficiency within conveyancing firms, compliance with international policy on developing electronic commerce and making Scotland an attractive place to do business.

This slow progress means that there have not been very many recent movements in the area of e-conveyancing. It also means that no country has implemented e-conveyancing for long enough to be able to effectively assess the benefits so far.

Ireland

One place where there has been recent movement is in Ireland. During recent implementation debates in parliament there, many benefits were identified. They included the following benefits to consumers:

- reducing time taken to complete the conveyancing transaction, of up to five days
- reduced costs, due to the quicker system

³⁶ Land Registry (2007) *E-conveyancing consultation – first paper of second round*, available at <http://webarchive.nationalarchives.gov.uk/20111030175426/http://consultations.landregistry.gov.uk/gf2.ti/f/25026/690341.1/pdf/-/Secondary%20Legis%20doc.pdf>

³⁷ Haim Sandberg (2009) *E-Land Conveyancing and Registration – Vision and Risks*, available at https://www.fig.net/pub/fig2009/papers/tso3b/tso3b_sandberg_3178.pdf.

³⁸ Land Registry (2014), *electronic Document Registration Service*, available at <https://www.gov.uk/electronic-document-registration-service>.

³⁹ Registers of Scotland (2011) *Final Business and Regulatory Impact Assessment – Land Registration etc (Scotland) Bill*, available at http://www.ros.gov.uk/consultation/lrbillconsultation/final_bria_nov11.pdf.

- reduced ability for fraud due to in-built security checks and reduced risk due to secure transfer of funds
- reduced errors and delays due to all stakeholders being on the one platform
- greater transaction traceability, which can increase transparency of the process for consumers and increase confidence in the process.⁴⁰

It was also identified that in Ireland there is a high level of competition in legal services, particularly conveyancing. Because of this high degree of competition on price, if conveyancing practitioners were to see reduced costs, they would **likely pass them on to consumers immediately**, to gain an advantage over their competitors.⁴¹ It was considered likely that these practitioners would have reduced costs under an e-conveyancing system, particularly in the elimination of law searcher's fees and commissioner for oaths' fees which can cost €200-300 (approximately \$280 - \$410 Australian dollars) per transaction.⁴²

World Bank

As discussed above in the context of the New Zealand system, the World Bank ranks the ease of registering property in their annual *Ease of Doing Business* report (although it should be noted that this is from the perspective of a small or medium business, not an individual). The World Bank consider that 'providing an efficient, transparent and affordable system to register new titles and transfer existing ones is an important first step towards guaranteeing secure access to land and improving access to credit'.⁴³ Countries that rank high on the registering property index tend to have simple procedures, effective administrative time limits, fixed registration fees, low transfer taxes and online registries. While New Zealand, with its established e-conveyancing system ranks 2nd of 189 economies, Australia ranked only 40th in 2014, though this was above the OECD average of 58. In time to register, Australia performed much better than the OECD at 4.5 days, compared to 24.1, but it is in cost that weakens, with registering property costing 5 per cent of the property value (compared to 0.1 per cent in New Zealand and 4.4 per cent for the OECD).⁴⁴

⁴⁰ Joint Committee on Justice, Defence and Equality (June 2014) *The Benefits of e-Conveyancing Discussion*, available at <http://oireachtasdebates.oireachtas.ie/debates%20authoring/debateswebpack.nsf/committeetakes/JUJ2014062500012#>

⁴¹ Ibid.

⁴² Ibid.

⁴³ World Bank (2014) *Doing Business 2014*, available at <http://www.doingbusiness.org/~media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB14-Full-Report.pdf>.

⁴⁴ World Bank (2014) *Ease of Doing Business in Australia*, available at <http://www.doingbusiness.org/data/exploreeconomies/australia#registering-property>.

3 *The pillars of impact*

This section explores the expected direct impacts that will be felt by key stakeholders in the settlement process. To ensure the full breadth of impact was analysed, the following sections used both a qualitative and quantitative lens to identify the potential realm of costs and benefits expected to be received by consumers, industry participants (largely solicitors, conveyancers and financial institutions) and government.

The quantitative information that follows largely stems from both the 2010 Market Analysis that was conducted in the initial business development stage of PEXA by PwC and PEXA Ltd's 2014 Business Plan, along with supporting data from the ABS and other robust information sources. The qualitative information has been obtained through the consumer survey conducted by Catalyst Research and the KOL interviews conducted by Edelman.

The information was analysed through a cost-benefit analysis (CBA) approach to identify the net impact for each stakeholder considering not only monetary impacts, but also efficiency and other non-monetary aspects of the PEXA platform and its intangible benefits.

3.1 *Consumers*

Consumers are the crux of PEXA. The critical need for PEXA would not arise without them. Their property buying patterns will drive PEXA's use and they will be one of the core stakeholders whom would benefit most; especially when considering the intangible benefits of transparency, and reduced information asymmetry and costs. As such, this section delves into the direct impact that PEXA will have on consumers through examining the consumer survey, KOL themes, and expected direct impacts.

3.1.1 *Consumer survey*

The consumer survey conducted by Catalyst Research examined two main types of costs currently incurred by people going through the settlement process. These were the emotional consequences of the stress involved in the process, as well as the tangible or monetary consequences involved in time and delays of the process. The Catalyst Research survey also assessed which benefits from PEXA consumers most align with.

Intangible costs of the current settlement process

The current settlement process has intangible costs for consumers due to the stress and difficulties involved. Although it is difficult to put a value on these costs, research has shown that stress can have adverse effects on health,⁴⁵ and can flow through to personal costs of 'impaired physical and mental functioning, more work days lost, increased impairment at work, and a high use of health care services'.⁴⁶ All of these consequences of stress can impact a person's finances, and has been shown to cause distress to individuals and their families.⁴⁷

Stress can also flow through to business productivity. Employee stress has been shown to add to the cost of doing business due to absenteeism, errors of judgement and action, conflict and

⁴⁵ Aneshensel, C. (1992) *Social Stress: Theory and Research*, School of Public Health, University of California: Los Angeles.

⁴⁶ Kalia, M. (2002) *Assessing the economic impact of stress – the modern day hidden epidemic*. *Metabolism*, Vol 51, no. 6.

⁴⁷ Crompton, S. (2011) *What's stressing the stressed?* Statistics Canada, Canadian Social Trends, Statistics Canada Catalogue no. 11.

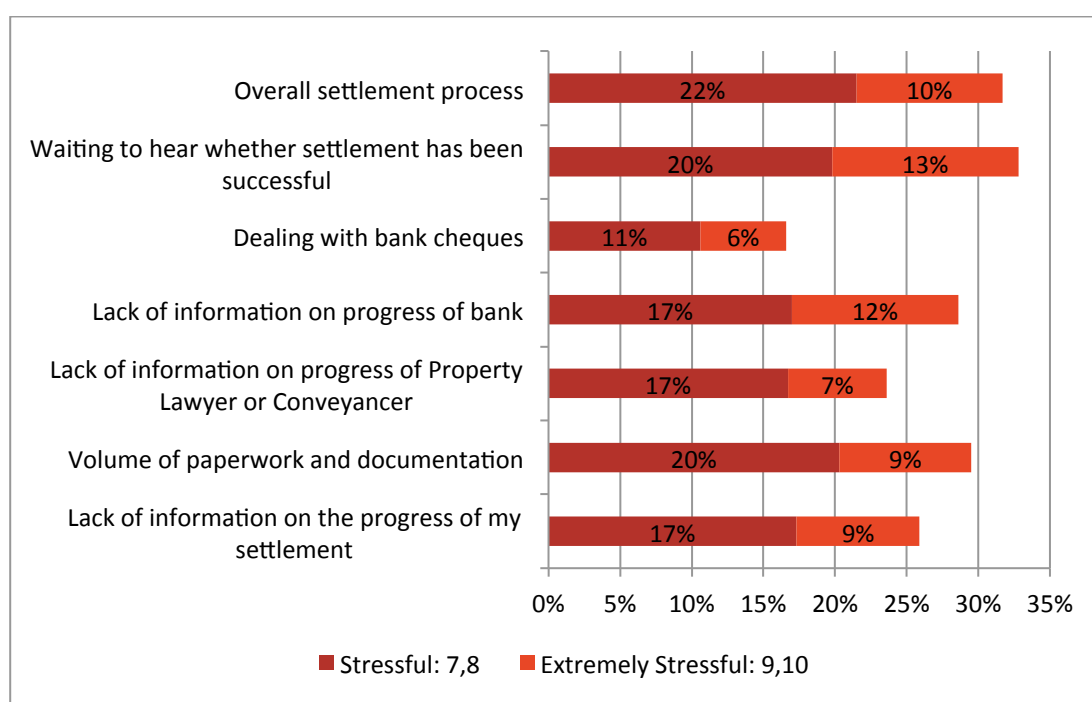
interpersonal problems, violence, customer service problems, resistance to change, feelings of ‘no time to do it right’, and loss of intellectual capital.⁴⁸ Even if stress was not work related, highly stressed individuals have been shown to bring their stress to work, which can not only affect their performance, but also that of their colleagues.⁴⁹ Individual productivity can also influence their contribution to the economy.

With these serious consequences of stress, serious costs could be flowing from consumers finding the settlement process stressful and thus was a core area of examination of the survey. By and large, the survey showed that a considerable proportion of property purchasers and vendors did indeed find the activity stressful. The results indicate that:

- Overall, 32 per cent of respondents reported finding the whole settlement process stressful or very stressful (7 or above on a scale of 0-10). That is approximately **1 in 3 transactions being considered stressful**.
- 17 per cent of respondents found the conveyancing process difficult. This dramatically increases to 57 per cent if considering only the respondents who experienced delays.

Survey respondents were asked on a scale of 0-10 how stressful they found a variety of settlement activities. Figure 9 shows that the least respondents found dealing with bank cheques stressful (7 or 8 on the scale) or extremely stressful (9 or 10) and the most respondents found it stressful or extremely stressful waiting to hear whether settlement had been successful on the day of expected settlement.

Figure 9: Stress associated with settlement activities



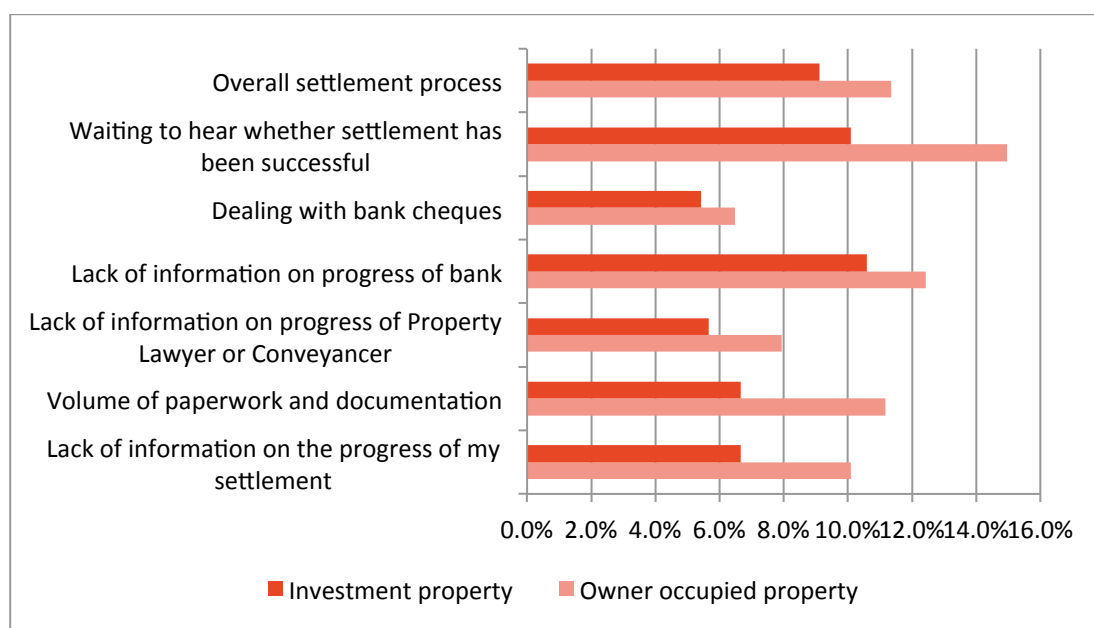
Source: Catalyst Research consumer survey and PwC analysis.

⁴⁸ Kalia, M. (2002) *Assessing the economic impact of stress – the modern day hidden epidemic*. Metabolism, Vol 51, no. 6.

⁴⁹ Park, J. (2007) *Work stress and job performance. Perspectives on Labour and Income*. Statistics Canada Catalogue no 75. Vol. 8, no. 12.

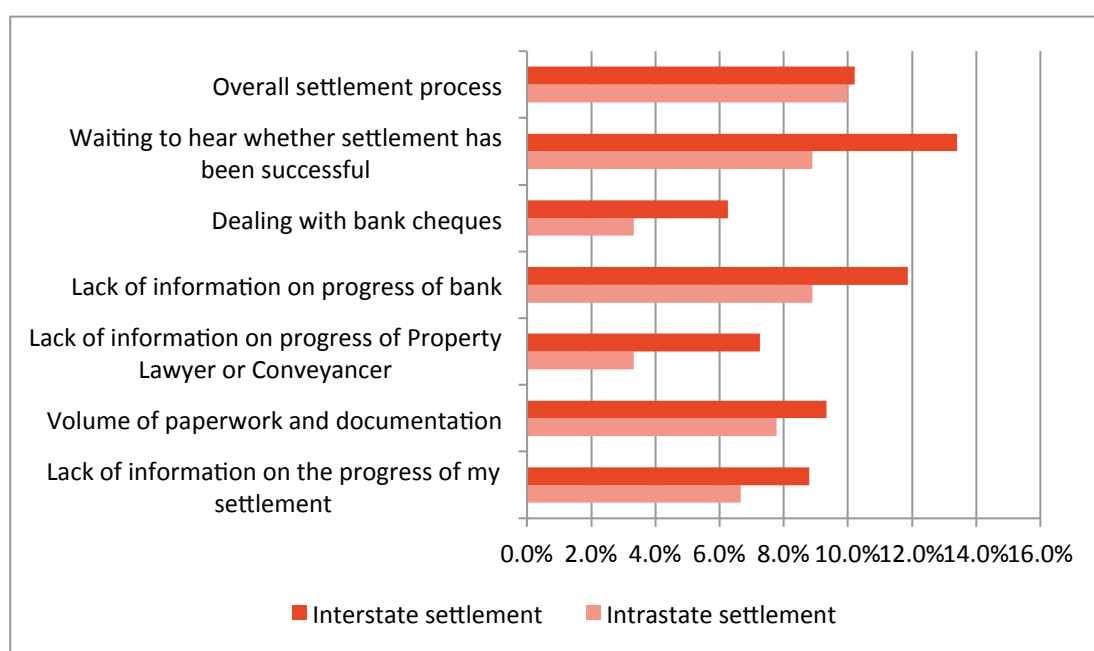
The process was also shown to be more stressful if the consumer was dealing with a settlement of a property they intended to live in (owner occupied property) as well as if they were dealing with a settlement on an interstate property. This is shown respectively in Figure 10 and Figure 11. Figure 10 illustrates that the number of owner occupiers who found actions extremely stressful were always greater when compared to consumers dealing with investment properties. Similarly, Figure 11 shows more consumers found various actions on interstate properties extremely stressful when compared to their intrastate counterparts.

Figure 10: Respondents who found the action extremely stressful (9-10), owner occupiers compared to investment properties



Source: Catalyst Research consumer survey and PwC analysis.

Figure 11: Respondents who found the action extremely stressful (9-10), interstate properties compared to intrastate properties



Source: Catalyst Research consumer survey and PwC analysis.

All of the above issues associated with the settlement process will be (at least partially) alleviated with the implementation and use of PEXA.

Part of the stress of the process can be its complexity. When asked on a scale of 0-10 how well they understood each document they were signing, the average response was 6.5. For those respondents who also indicated that they found the process difficult, the average response was only 5.9. Only 55 per cent of respondents had a high level of understanding of the documents (7 or above on the scale).

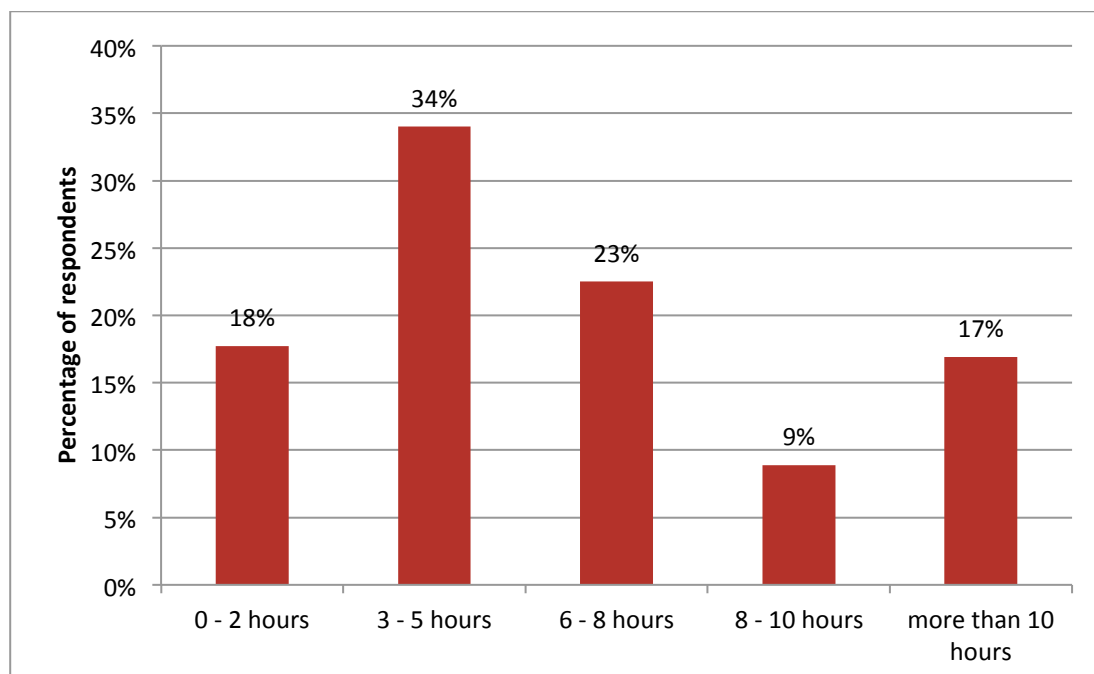
Another element of the process that can lead to personal frustration and stress is the relationship with the Property Lawyer or Conveyancer. However, for most respondents to the survey this was not much of a concern with two thirds reporting satisfaction with their Lawyer or Conveyancer (7 or above on the scale) and only 22 per cent responding with a 5 or less on a scale of 0-10 in satisfaction.

Tangible costs of the current settlement process

While the current settlement process can have a large emotional impact on the individual through the stress of the process, it also has the potential to cause tangible economic consequences. This can be through the amount of time an individual needs to spend on settlement activities (and the opportunity cost of that time), or through the expense of complications involved with delays.

On average, across the 1,000 settlements surveyed, the respondents spent a minimum of 5.6 hours on settlement activities, with the most common response being 3-5 hours. Figure 12 shows the approximate time that respondents spent on settlement activities. It can be seen that a not insignificant percentage (17 per cent) responded that they spent more than 10 hours.

Figure 12: Approximate time spent on settlement activities by the individual and their family



Source: Catalyst Research consumer survey and PwC analysis.

With regard to delays, of the 1,000 respondents to the survey, 210 respondents (21 per cent) did not settle on the expected day. Of these 210, 6 experienced settlement earlier than expected, while the remainder (20 per cent of all respondents) experienced some delay in settlement.

Of the people that experienced delays, the median delay was 7 days and an average 2.9 people were affected by those delays. The longest delay experienced was a full year (365 days).

Effective delay can be viewed as the number of days delayed and people affected by that delay. For example, a delay of 10 days that affected four people is an effective delay of 40 days. The total effective delay across all 1,000 settlements surveyed was 17,954 person days. This is an average of 18 days of affected person days per settlement, or 88 days per delayed settlement.

Of the respondents that experienced delays, the following consequences resulted:

- 4 per cent of respondents experienced a delay that resulted in accommodation complications, for example having to organise an alternate place to stay. This represents 19 per cent of all respondents that experienced delays. The total effective delay for these respondents was 9,855 days (i.e. total number of nights of delay for each person affected). If a respondent needed accommodation, their delay was an average of 26 days.
- 4 per cent of respondents experienced a delay that resulted in delivery problems, such as complications in the transport of furniture. This was 20 per cent (40 respondents) of all people experiencing delays. The average delay that resulted in delivery problems was 22 days.
- 5 per cent of respondents experienced a delay that resulted in finance problems, including an unplanned need for a bridging loan. This represents 23 per cent (46 respondents) of all people experiencing a delay. The average delay that resulted in finance problems was 26 days.
- 6 per cent of respondents experienced a delay that resulted in a need to get reimbursed for out of pocket expenses, which was 27 per cent (56 respondents) of all people experiencing delays.
- 3 per cent of respondents experienced a delay that resulted in the need to delay settlement on another property, which was 14 per cent (29 respondents) of all respondents experiencing delays.
- 5 per cent of respondents experienced a delay that resulted in hassles with re-connecting or re-scheduling services such as power or telecommunications. This represents 25 per cent (52 respondents) of all people experiencing delays.
- 6 per cent of respondents experienced a delay that resulted in the need to travel to another location of the day of settlement to sign documents. This was 56 respondents, or 27 per cent of all people experiencing delays.
- 11 per cent of all respondents experienced delays that resulted in stress in their personal life including disruption to work or schooling. This was 108 respondents or over half of all people experiencing delays.

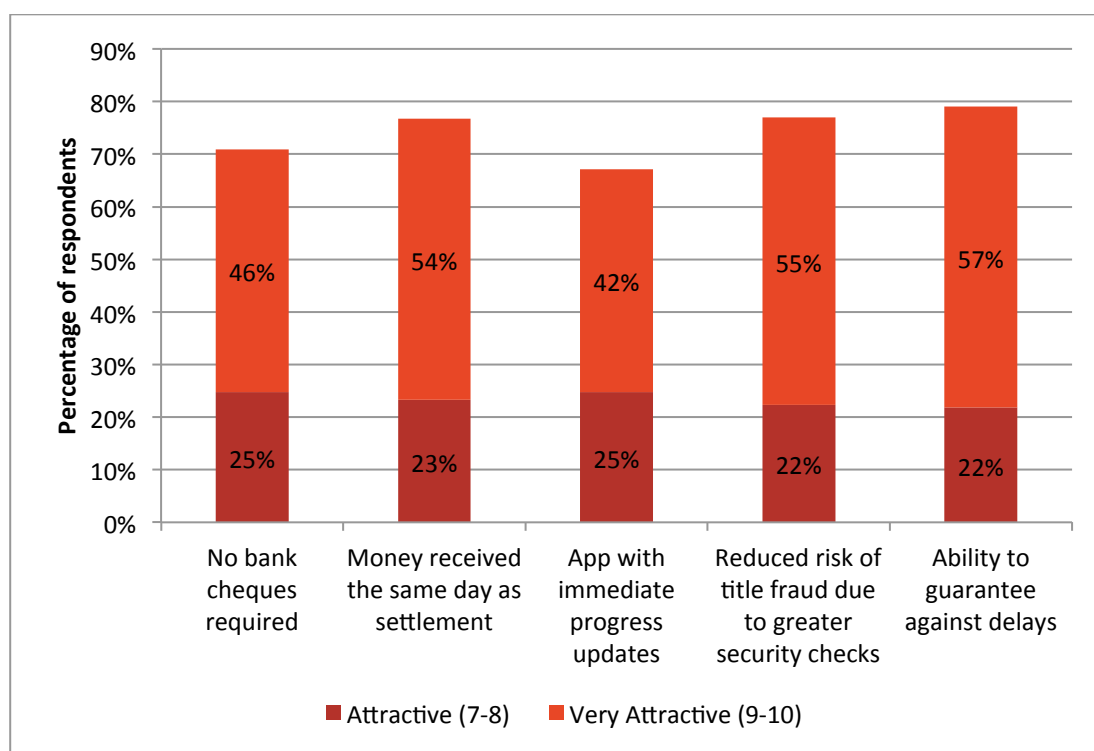
Of the respondents that experienced delays, 71 per cent (145 respondents) had at least one of the above consequences resulting from that delay. However, most of them experienced more than one of these consequences. In fact, of the respondents that had delayed settlements over half experienced two or more of the complications that could result in additional costs and 12 per cent experienced five or more of the above consequences.

Potential PEXA benefits

The consumer survey asked respondents to rate the attractiveness of various potential PEXA benefits. Figure 13 shows that all features had a high level of attractiveness to respondents, with the 'ability to guarantee against delays' being the most attractive. This indicates that

respondents would benefit from a mechanism that assists in ensuring, or increases the probability of, the property sale going through the day it is scheduled to.

Figure 13: Attractiveness of potential PEXA features



Source: Catalyst Research consumer survey and PwC analysis.

If this analysis of the attractiveness of potential features is focussed only on those respondents that reported the highest potential costs (i.e. those that were particularly stressed or found the process difficult), the value that PEXA could bring becomes even more apparent.

For respondents who reported finding the process difficult, all the features have over 80 per cent of respondents regarding them as attractive (7 or above), with reduced risk of fraud and ability to guarantee against delays both being indicated as attractive from 90 per cent of respondents.

For respondents who reported a high level of stress (7 or above on the overall stress scale), all features were reported as attractive (7 or above) by over 80 per cent of respondents. Ability to guarantee against delays was reported as attractive from 91 per cent of these respondents.

The above results indicate that consumers would certainly benefit from the PEXA platform. Further, it leads us to conclude that should the platform be available, consumers would most likely request its use when undertaking a property settlement.

Lastly, it appears that there is certainly a need to do more regarding the transparency of the entire settlement process. PEXA will assist in the reduction of information asymmetries currently present in the process thus driving increased transparency and helping consumers determine the true value of conveyancing. This will only stand to improve consumer awareness and choice and empower consumers to determine what fees seem reasonable.

3.1.2 *Key opinion leaders*

A number of themes relevant to consumers emerged from interviews with key opinion leaders (KOLs).

Transparency

In line with the final paragraph of the preceding section, a review of interview transcripts focusing on consumer-related comments highlights frequent reference to ‘transparency’ as a key benefit.

‘Transparency’ is sometimes a catch-all term notably covering the confusion consumers often feel faced with the complexities of the legal process and paper work associated with conveyancing. In this context PEXA is seen as providing a certainty which has previously been regarded as lacking and which will also act to reduce stress for consumers.

Grant Harrod, CEO LJ Hooker, said, ‘I think a world which created greater transparency would be a good thing, particularly for the consumer – so for both the buyer and the seller’. Ian Gilbert, Policy Director Australian Bankers’ Association, noted, ‘that’s good for consumers because they will have greater certainty the settlement will go ahead once you get to the end of the process’. A senior Land Registry official said, ‘it’s about moving into the modern age where people feel it’s more transparent and they feel safer’.

Concerning stress to consumers, Lynne Carter, Westpac Director of eConveyancing Program, Home Ownership Service, noted, ‘this is an opportunity to improve the experience because we recognise the key moment of truth that settlement is. We are fully committed to implementing and adopting and progressing this change because we believe our customers will ultimately see benefits through a much more stress free process’.

Modernisation

‘Bringing conveyancing into the 21st century’ was a theme regularly cited by KOLs. This was typically in the context of already high levels of comfort across society with ATMs, EFTPOS, online banking, Amazon, PayPal and other forms of online commerce. A leading consumer media executive said, ‘I think most people are probably shocked at how non-digital the process is. It feels like a 19th century process’. Lindsay Tanner, former Commonwealth Finance Minister who played a key role in advancing reforms for the national coordination of conveyancing, said, ‘these days you do everything online. Whether it’s car insurance, food, this or that, but there is one thing you actually can’t do online and that is make the biggest transaction of your life. That’s nuts! Basically, it’s trying to make a colonial horse and buggy structure work in the 21st century’.

Cost reduction

Reduction of costs to consumers was not as strongly emphasised by KOLs as was initially expected. This is mainly due to a lack of clarity at this stage around the extent of costs which may be removed due to conveyancing steps being digitised by PEXA and what PEXA will charge. However, Lindsay Tanner did note that, ‘every bit of cost that can be taken out because it’s unnecessary does benefit ordinary people buying homes and reduces the frictional costs associated with buying and selling property’.

While cost reduction was not as prominent as expected, ‘efficiency’ was clearly seen as a major benefit of PEXA and cited by all KOLs. In this light there is clearly an expectation that ongoing efficiency improvements in conveyancing, facilitated by PEXA, will lead to cost reductions which will ultimately be passed on to consumers as end-users. A leading consumer media executive said, ‘the actual greatest benefit will be driving down costs because you know it looks like an inefficient system and paying costs for somebody to attend settlement and other costs around that, so if this can drive down costs it will be the greatest benefit to consumers’. He added, ‘some of the inefficiencies have purposely been defended along the value chain. This digital exchange will help strip away justifications for some costs previously charged’.

Former Victorian premier and former Chairman of the Council of Australian Governments' (COAG) Reform Council, John Brumby said, 'the reality is these steps can now be done more quickly, much more efficiently and much more cost effectively'. Grant Harrod said, 'from our perspective as real estate agents, we are very supportive of an exchange that will make the process more efficient and deliver a better outcome for consumers'. Lynne Carter said, 'it's the speed. It's the efficiency. Having the confidence that settlement will go through without any issues or limitations because of how digitised and streamlined the process is'.

Future financing and innovation in the sector

A number of KOLs highlighted the role PEXA could have in opening up future opportunities for innovation in buying and selling property which would ultimately benefit consumers. Typically these centred on improved options in financing and especially refinancing. Steven Münchenberg, CEO Australian Bankers' Association, said, 'a benefit to the consumer we expect flowing on from the ease of e-conveyancing, is the ease of customers to move and refinance their mortgages as well. We expect it will be easier for people to change provider. This new facility helps empower consumers'. Also looking to the future, a leading consumer media executive noted, 'this will drive greater innovation across the property industry and then flow on as benefits for consumers'.

3.1.3 Direct impact

The market analysis results indicated that consumers will receive direct monetary benefits of around \$79 million (in 2009/10 terms) through a reduction in fees charged by their facilitating bank/conveyancer. This reduction in fees is due to the reduction in disbursement costs *passed through by solicitors and conveyancers*. The breakdown of this figure is shown in Table 4 along with figures that have been adjusted for inflation for use in the economic analysis.

The main area where cost savings are expected to be passed through to consumers was regarding electronic settlement accounting for 87 per cent of the total benefit. This arises through a reduction in cheque creation costs (currently 5 cheques are required per transfer and 1 additional cheque per discharge); the elimination in the need for solicitors/conveyancers to physically attend settlement (or their representative); and the elimination of the need to manually stamp instruments.

Table 4: Consumer benefit breakdown (\$ million)

Benefits Area	2009/10	2013/14	2017/18
Settlement booking	0	0	0
Instrument preparation	7.60	8.42	9.23
Electronic lodgement	2.81	3.11	3.41
Electronic settlement	68.76	76.19	83.55
Total	79.16	87.72	96.19

Note: totals may not add to sub-components due to rounding.

Given the number of transactions used in the benefit determination calculations, this equates to around \$75 per transaction. Using the equivalent figure (i.e. same period of 2009/10) for the average household expenditure, this would mean a **reduction in household expenditure by approximately 0.12 per cent per annum**.

Economic analysis input

We note however, that for the purposes of the economic modelling, this consumer benefit was incorporated into the benefits seen by the legal sector. That is, the model when determining general equilibrium will pass through these benefits to households due to competitive pressures in the market. Thus the assumption of solicitors/conveyancers passing

through fee reductions was not explicitly assumed in determining the shocks created by PEXA as it is implicit in the model.

The resulting impact expected to be seen by consumers (such as change to household consumption and wages) can be found in Section 4.

3.2 *Financial institutions*

For this analysis, the financial services industry is largely seen to be the following types of financial institutions (FIs): major banks; non-major banks, and non-banking financial institutions. In 2013/14 there were approximately 119 enterprises dealing with mortgages in Australia employing nearly 80,000 workers, generating revenue of nearly \$74 billion and creating nearly \$20 billion in value added.⁵⁰ Further, there was nearly \$1.55 trillion in outstanding housing loans indicating the magnitude of interest these institutions have in the property market.⁵¹

3.2.1 *Key opinion leaders*

Transformative change

Concerning financial institutions, interviews with KOLs show many see e-conveyancing as being transformative. Indeed, they see PEXA as acting as a prompt to some banks and other FIs to modernise and to keep pace in terms of their online/digital offer.

‘So there is a transformational change here. In the way you identify your property; how you will find your property; how you will investigate the property; how you will get a bank loan; and finally how you will conclude the transaction and get the money in your bank’, said a senior Land Registry official.

‘The origins of this process are all about transforming the way governments and business work’, noted John Brumby. ‘It will transform and reduce the regulatory burden, the amount of time with lawyers, conveyancers and the like: really modernising the system’, he said.

This transformation was seen as hinging on the shift to online, digital (electronic) exchange. ‘The degree of change in the banking system has been enormous and happened far more quickly than anyone imagined. Once the technology genie is out of the bottle and you’ve harnessed it, it changes processes. I think we will see that with PEXA, electronic conveyancing and other transactions that will go with it’, John Brumby added.

‘I think it will revolutionise the way we settle home lending’, Lynne Carter observed.

‘For banks the *jewel in the crown* in this process is the electronic settlement, the financial settlement part. No other jurisdiction that I’m aware of has done it. Australia’s the first. I think I’m right in saying that. It is expected that by mid to late 2016 there will be a standard national form of mortgage in use, which will complement the national approach to electronic mortgage transactions’, Ian Gilbert said. He added, ‘the four major banks have been working actively since last year on phase one of the e-conveyancing project. It is now possible for other banks, financiers and practitioners to participate in the national system. The shift to electronic continues’.

⁵⁰ Value added refers to the market value of goods and services produced by the industry minus the cost of goods and services used in production. Industry value added is also described as the industry’s contribution to GDP.

⁵¹ IBISWorld Industry Report (2014) *Mortgages in Australia*. IBISWorld X0010.

3.2.2 Direct impact

Previous analysis estimated that approximately 84 per cent of all in-scope transactions involve a FI of some sort. This demonstrates the magnitude of impact is likely to be large on FIs. Not only are they involved in the instigation of a mortgage over a property, but also in the discharge of that mortgage, as well as caveats.

From a monetary perspective, analysis indicates that FIs are expected to benefit from the implementation of PEXA with a cumulative reduction in costs of around \$83 million (in 2009/10 terms). This benefit would be through a reduction in reliance on intermediaries (those who carry out tasks such as title checks) and an increase in efficiency of their workforce (i.e. less labour is required to deliver the same output). However, FIs would also see annual system costs, a reduction in margin from cheque production, and fees for using the PEXA platform. The breakdown of these figures is shown in Table 5 along with figures that have been adjusted for inflation for use in the economic analysis.

The table shows that the predominant source of the cost savings occurs in the areas of instrument preparation (more efficient and productive workforce) and electronic settlement (reduction in operating expenditure due to reduced reliance on intermediaries).

Table 5: FI benefit breakdown (\$ million)

Benefits Area	2009/10	2013/14	2017/18
Settlement booking	6.25	6.93	7.60
Instrument preparation	33.95	37.62	41.25
Electronic lodgement	6.09	6.75	7.40
Electronic settlement	36.84	40.82	44.76
Total benefits	83.12	92.11	101.00
System maintenance	-3	-3.32	-3.65
Lost margin	-10	-11.08	-12.15
PEXA fees*	-25.98	-28.87	-31.79
Total costs	-38.98	-43.28	-47.61
Net impact	44.14	48.83	53.56

* The expected PEXA fees have been obtained from the PEXA 2014 Business Plan (page 67). The fees collected from FIs in financial year 2017 has been used given this is when we expect an optimal operating level to be reached. This figure has then been deflated to arrive at the equivalent cost for prior years.

Using the respective periods industry value added results we can determine indicatively what this cost reduction will mean for the FI industry. That is, the increase in efficiency and reduction in operating expenditure will result in a reduced cost of inputs for the sector (i.e. FIs will be able to produce the same output for a reduced level of input). This results in an expected increase (on average) in **industry value add of 0.24 per cent per annum**.

Intangible benefits

FIs are also expected to receive other intangible benefits from the use of an e-conveyancing system. The predominant two areas include customer related benefits and compliance support. The customer related benefits include being able to increase transparency over the process and status of completion (such as creating mobile applications to provide up to date information to mortgagees), and the potential to reduce the time to settlement and lower fees. Regarding compliance, there is the potential for FIs to see a reduction in mortgage fraud given the system requirements and the reduction in information asymmetries.

These benefits however, are expected to be somewhat offset by the upfront costs to link to PEXA (i.e. interface costs) and the expected redundancy costs associated with the reduction in labour needed to carry out settlement activities.

3.3 The legal sector

A core stakeholder in the PEXA cycle is the practitioner. Here, practitioners are taken to be solicitors and conveyancers who are key players and instrumentally involved in the settlement process. Not only are they pivotal in the success of a settlement, but the size of the industry is also significant meaning there are numerous individual practitioners who will be impacted through the implementation of PEXA.

The sector is comprised of a range of large to small players whereby in 2013/14 there were 18,550 legal services enterprises with nearly 99,000 employees.⁵² We note that only a portion of these businesses and employees are involved in the conveyancing process and thus would be users of the PEXA platform. PEXA Ltd estimate that around 4,800 firms would be users of PEXA thus indicating a usage of around 10,000 individual employees/practitioners. Further, it is important to consider all direct impacts on the sector within the context of its contribution to the economy. In 2013/14, the legal services sector generated revenue of nearly \$21 billion and created \$13.5 billion in value added.^{53 54}

3.3.1 Key opinion leaders

As noted above, the implementation of PEXA is seen by KOLs as impacting the ‘core’ and ‘pivotal’ legal sector significantly more than other relevant sectors.

Enormous efficiency

A Law Society representative, noted how ‘cumbersome’ conveyancing has been given the number of parties involved. ‘This is a good micro-economic refinement. It’s going to help property commerce run way more smoothly and efficiently’, he said. ‘Anything which can streamline and bundle the ability to drive efficiency in communicating with lawyers, banks and agents clearly benefits the consumer’.

This executive also highlighted the regular delays incurred by property lawyers who ‘for years have bleated about spending hours on the phone waiting for pay out figures then having to change the figure because the day after you took that call, something changed. There is enormous efficiency and benefit for both consumers and the law profession in those efficiencies’.

‘Time is money’.

The challenge of change

In some respects the PEXA solution to conveyancing is seen as being a challenge to how things have been done in the legal profession for generations. In this light, opinions of lawyers have sometimes been stereotypically cast as overly conservative and disinclined to innovate. At the same time, KOLs also acknowledged the key role the legal sector can play in promoting the use of PEXA. A leading consumer media executive noted, ‘I think one of the

⁵² IBISWorld Industry Report (2014) *Legal Services in Australia*. IBISWorld M69311.

⁵³ Value added refers to the market value of goods and services produced by the industry minus the cost of goods and services used in production. Industry value added is also described as the industry’s contribution to GDP.

⁵⁴ IBISWorld Industry Report (2014) *Legal Services in Australia*. IBISWorld M69311.

keys to consumer confidence in the rollout of PEXA will be the role of professionals, probably local lawyers and conveyancers, who advise them through the process’.

A consumer media representative noted, ‘the property sector has been laggard. This is because there are parties involved where it hasn’t served their interests to head down the digital path’.

Concerning this resistance to change, John Brumby countered by stressing, ‘the reality is these things can be done much more quickly and effectively online so the resources the legal sector has been investing in these steps can be re-deployed to higher value-adding areas in the business’.

Improving conveyancing law’s image

The potential for property lawyers/conveyancers to improve their profession’s image via e-conveyancing was noted by a key representative of a Law Society, ‘in terms of things like fraud, and other risks that are out there, there are significant positives for the profession that we need to carefully market’.

3.3.2 Direct impact

Practitioners are expected to also significantly benefit from PEXA with analysis indicating they would cumulatively see a fall in costs of around \$60 million (in 2009/10 terms) through a reduction in reliance on intermediaries (those who carry out tasks such as attendance at settlement) and an increase in efficiency of their workforce (i.e. less labour is required to deliver the same output). However, whilst no longer paying intermediaries for certain tasks, they would be required to pay a fee for accessing PEXA. The breakdown of these figures is shown in Table 6 along with figures that have been adjusted for inflation for use in the economic analysis.

The table shows that the key source of cost savings stems from a reduction in instrument preparation costs. This arises due to reduced duplication of work and rework for employees, reduced need to physically meet with other participants, and reduced calls to confirm settlement and other information. This all leads to an increase in labour efficiency in the sector and thus the productivity of practitioners.

Table 6: Legal sector benefit breakdown (\$ million)

Benefits Area	2009/10	2013/14	2017/18
Settlement booking	14.68	16.27	17.87
Instrument preparation	26.60	29.48	32.38
Electronic lodgement	0.36	0.40	0.44
Electronic settlement	18.10	20.05	22.03
Total benefits	59.74	66.20	72.71
PEXA fees*	43.03	47.81	52.64
Total costs	43.03	47.81	52.64
Net impact	16.71	18.39	20.08

* The expected PEXA fees have been obtained from the PEXA 2014 Business Plan (page 67). The fees collected from Practitioner’s in financial year 2017 has been used given this is when we expect an optimal operating level to be reached. This figure has then been deflated to arrive at the equivalent cost for prior years.

Using the respective periods industry value added results we can determine indicatively what this cost reduction will mean for the legal services industry. That is, the increase in efficiency and reduction in operating expenditure will result in a reduced cost of inputs for the sector

(i.e. similar as to FIs). This results in an expected increase (on average) in **industry value add of 0.14 per cent per annum**.

Economic analysis input

As noted in the consumer discussion, for the purpose of the economic modelling the consumer benefit was incorporated into the benefits seen by the legal sector as the consumer benefit arises through the assumption that the legal sector will pass through savings. That is, when determining general equilibrium the model passed through these benefits to households due to competitive pressures in the market. Thus the assumption of practitioners passing through fee reductions was not explicitly applied in the modelling as it is implicit in the model. As such, if we include the assumed passed on benefit back to practitioners we obtained the results as illustrated in Table 7.

Table 7: Legal sector benefit breakdown (without passing on reduction in fees to consumers) (\$ million)

Benefits Area	2009/10	2013/14	2017/18
Benefits not passed on	59.74	66.20	72.71
Benefits passed on	79.16	87.72	96.19
Total benefits	138.90	153.92	169.07
Total costs	43.03	47.81	52.64
Net impact (prior to reducing consumer fees)	95.88	106.11	116.43

Note: totals may not add to sub-components due to rounding.

Using these figures (i.e. the net impact to practitioners prior to passing on any cost reductions to consumers) the expected increase (on average) in the industry value added increases to **0.78 per cent per annum**. This figure however, would not be able to be used in conjunction with the consumer derived benefit as stated in Section 3.1.3 as this would double count this benefit.

Further details surrounding the resulting economic impact expected to be seen by practitioners and the wider economy can be found in Section 4.

3.4 The real estate services sector

Whilst real estate agents will not directly interact with the PEXA platform, or be in receipt of any direct cost savings, agents may still benefit through greater stability and speed in the payment of their commissions. Currently, a vendor and an agent will agree on a commission of which may be a fixed fee or a percentage of the selling price. The agent will then receive their commission upon settlement of the property where the commission will be paid from the proceeds of the property sale (generally from the initial deposit paid into the agent's trust account at the time of exchange).

This means however, that the dispersion of fees – such as real estate agent commissions – will be delayed when settlement itself is delayed. That is, the deposit will be retained within the trust account until such time as the issue is resolved and the property settles meaning that agents are also negatively affected by settlement failure. Settlement delays are expected to be reduced under PEXA with the facilitation of automatic dispersion of all fees. Consequently, agents (or the respective agent's employer) will see a reduction in the delay of commission payments of which will occur almost instantaneously upon settlement under PEXA.

This automation of payment of real estate agent's commissions will see agent's receiving the bulk of their revenue much quicker than is the case in some situations. Further, the

magnitude of these commissions is significant. For example, in 2002/03 real estate agents received just over \$5 billion in income from property sales commissions,⁵⁵ equating to 73.3 per cent of their income base.⁵⁶ If we apply this proportion to the 2013/14 income base of real estate services in Australia, we obtain a total income figure from property sales commissions of over \$7.6 billion.

This improvement in the realisation of real estate agent's commissions will not result in an increase in economic benefit per se as the increased efficiency in delivering - or paying - commissions is simply a transfer from one economic agent to another (i.e. it simply gets paid from one individual to another faster). However, it may lead to reduced revenue or payment volatility (and thus better revenue management and forecasting for agents) as well as improving the agent's position due to the time value of money.⁵⁷

Given this benefit is simply a transfer from one market participant to another and is not an economic improvement (for example an increase in productivity or output), it has not been considered in the economic analysis.

3.4.1 Key opinion leaders

While real estate services was not a prominent focus in comments by KOLs, there were a number of references to the role real estate agents play, or could play, given the close relationship developed with vendors and buyers.

Avoiding preventable errors

Craig Bradley, Executive Manager Agency Practice of Real Estate Institute of WA, said, 'unfortunately many settlements - too many really - usually have some delay. And when they go wrong it's often because of documentation'.

'By having this system it will certainly make the process more efficient. With PEXA we will have a better understanding of when settlement is going to be, and therefore be less delays within the settlement process'.

Agents of change

The strong suggestion was real estate agents could play a key role in encouraging consumers to choose a PEXA-facilitated property exchange.

In this light, Grant Harrod from LJ Hooker also underlined the role real estate agents often played as 'confidants' for customers whose settlement had been disrupted. As such they were intimate with the stress caused to clients from unexpected delays; they were well placed to observe the inefficiencies and frustrations in current paper-based conveyancing.

'Our income is linked to the duration of time required for settlement', Grant Harrod noted. 'Historically the settlement process has been protracted and prone to delays. When you create an electronic exchange, where you eliminate all the manual events, you're going to create a more efficient quicker process for all parties'.

'From our perspective getting paid quicker is a big attraction', Grant Harrod said.

⁵⁵ This figure includes commissions from the sale of land, residential property and non-residential property such as commercial.

⁵⁶ ABS (2014) *ABS Catalogue number 8663.0 – Real Estate Services*, Australia, April 2004.

⁵⁷ That is, an agent would prefer to receive \$1 today rather than in a month's time due to being able to invest or utilise that dollar whereby it would then be worth more than that \$1.

3.5 Business service intermediaries

A number of FIs and practitioners currently outsource a proportion of their property conveyancing processes/activities that may be deemed too labour intensive or not a competitive advantage for the FI or practitioner to conduct themselves. The processes that may involve intermediary activity - and thus revenue – include:

- settlement booking and attendance
- title checks
- electronic lodgement
- cheque and document production
- stamping.

After the implementation of PEXA, however, many of these activities will no longer be required or be required in a reduced volume. By creating efficiencies, streamlining activities, reducing duplicative processes and reducing the need for manual checks and data entry, the need for intermediaries diminishes.

This reduction in the need for intermediaries is a benefit for FIs and practitioners who draw on their services (as outlined in Sections 3.2 and 3.3 whereby FIs and practitioners see a reduction in their operating expenditure). Conversely, this is a loss for intermediaries and thus the predominant impact seen by this cluster of organisations is negative.

3.5.1 Technology providers

The current business activities of settlement intermediaries will be negatively impacted by the implementation of e-conveyancing (as discussed above). This includes current settlement technology – software - providers. However, as with all new and disruptive technological innovations or developments, PEXA will create the opportunity for these businesses to change their market offerings to adapt to the new conveyancing environment. This may lead to more opportunities for these providers to cater to a new need arising in their consumer base.

For example, PEXA Ltd has already developed partnerships with four of Australia's information brokerage and conveyancing software providers (deemed PEXA Sponsors). These Sponsors will be responsible for developing or amending software to allow systems to 'talk' to each other and will offer pathways for FIs and practitioners to become a user of PEXA.⁵⁸ Specifically, the core objective for Sponsors will be to provide practitioners with the ability to integrate current operational software with PEXA to reduce the cost of this technology disruption as well as to deliver training and help-desk support.

There is also the potential for PEXA processing centre to arise of which would solely complete in-scope property transactions through the PEXA platform. These organisations or centres would consolidate the multiple conveyancing services now practiced by many practitioners/intermediaries thus enabling them to take advantage of economies of scale. This advantage is further increased through settlement activities being able to be undertaken cross jurisdiction through the PEXA platform. This all leads to new or realigned entities

⁵⁸ Sponsors are in the process of collaborating with both PEXA Ltd, FIs and practitioners to ensure the PEXA platform can integrate with existing conveyancing services.

being able to offer and deliver low cost and reliable conveyancing services to the broader community.

3.5.2 Key opinion leaders

A number of the KOLs commented on the impact PEXA would have on business services, especially those which traditionally supported the conveyancing process.

Disruptive (digital) opportunities

Much of comments in this area pointed to expectations of change, modernisation and rationalisation in various services resulting from the revolutionary and ‘disruptive’ changes to conveyancing from PEXA. John Brumby pointed to the disruptive impact PEXA will have on ‘the many layers of cost which have been built into the current system over time’.

There was also considerable optimism for opportunities developing from PEXA’s presence in the market. Notably, given the scale of the digital platform at the heart of PEXA’s property exchange, IT services were singled out as being stimulated and benefiting from PEXA.

Considering IT, Ian Gilbert talked of business opportunities to operate a conveyancing practice across a number of states for PEXA members who were appropriately certified. In essence, such a business could operate from a desk top anywhere. Lynne Carter spoke of an app, which she called a ‘workspace’, which participants in a PEXA exchange could jointly access to ‘agree on the date and time of the settlement and if one of those parties is unable to agree then the other parties have immediate visibility. Because it’s so transparent, it’s a system that everyone will use’.

A government agency representative commented on the impact of PEXA on the land registry process, ‘We get hundreds of thousands of parcels of paper to do with land transactions and growing; that’s unsustainable. There’ll be a host of changes in titles offices across Australia. This is just the beginning. We will have virtually instantaneous registration of a transaction whereas currently there is exchange of pieces of paper, bank cheques and the like. Currently title change does not occur for some weeks or months. That will change. It will be instantaneous. Push the button and away it goes!’

3.5.3 Direct impact

Intermediaries are expected to see a negative impact from the introduction of PEXA as the need for their services by FIs and practitioners will reduce and thus so will their revenue base. Market analysis concluded that the intermediary industry will lose approximately \$124 million per year in revenue (in 2009/10 terms). The breakdown of this figure and the areas of activity where they may no longer be required are shown in Table 8 along with figures that have been adjusted for inflation.

The table shows that the two key areas of revenue reduction are in relation to title checks and settlement attendance. These areas pose such a great reduction given interviews highlighted that FIs currently outsource up to 100 per cent of both title checks and settlement attendance whilst practitioners outsource up to 75 per cent of settlement attendance and 100 per cent of title checks. Whilst this leads to a lower cost of doing business for FIs and practitioners, it amounts to a falling revenue base for intermediaries.

Table 8: Intermediary industry cost breakdown (\$ million)

Cost Area	2009/10	2013/14	2017/18
Settlement booking	-3.0	-3.32	-3.65
Title checks	-41.0	-45.43	-49.90
Electronic lodgement	-3.0	-3.32	-3.65
Cheque production	-3.0	-3.32	-3.65
Settlement attendance	-62.0	-68.70	-75.46
Document production	-6.0	-6.65	-7.30
Stamping	-6.0	-6.65	-7.30
Net impact	-124.0	-137.40	-150.93

Note: totals may not add to sub-components due to rounding.

Economic analysis input

To conduct the economic analysis, it was imperative that only net impacts were modelled to ensure no double counting occurred. This was important when considering the modelling of the intermediaries'. As such, the reduction in intermediary revenue was allocated to FIs and practitioners based on the assumptions that fed into the calculation. That is, the reduction in revenue of \$124 million was apportioned to whether it stemmed from FIs or practitioners. From the assumptions, it was determined that:

- FI savings were the cause of 49.8 per cent of the reduction in revenue.
- Practitioner savings were the cause of 50.2 per cent of the reduction in revenue.

These savings on the part of the FIs and practitioners was already included in the benefits - or savings - noted in Sections 3.2.2 and 3.3.2 respectively.

3.6 PEXA Ltd

It was important to also factor in the creation and ongoing operation of PEXA Ltd when exploring the impact of the PEXA platform as this organisation will collect revenue, return profits to shareholders, and employ labour. Not only will PEXA Ltd own and develop the underpinning software of the platform, it will also provide valuable services to business and members such as legal, finance and compliance functions. The operations of this new entity will therefore also bring with it economic impact.

3.6.1 Direct impact

PEXA Ltd's financial plan outlines the likely projected revenue and costs for the entity for the financial years 2014 through to 2020. Given the analysis sought to determine the impact of PEXA once it had reached an optimal operating level, the base year of operations for the analysis was chosen to be 2017/18. To ensure consistency when conducting the economic modelling, the analysis focused on direct impact generated by the core operation of the PEXA

platform; that is, revenue collected from FIs and practitioners.⁵⁹ The figures used in the analysis are shown in Table 9 along with figures that have been adjusted for inflation.

Table 9: PEXA Ltd operations breakdown (\$ million)

	2009/10	2013/14	2017/18
Financial institutions	25.98	28.87	31.79
Practitioners	43.03	47.81	52.64
Total	69.01	76.68	84.42

Note: totals may not add to sub-components due to rounding.

The figures show that once an optimal operating level has been reached (noting there will be some fluctuations on a year to year basis), operations direct impact is expected to be one third due to FIs and two thirds due to practitioners (on average).

3.7 Government

State Governments are expected to receive a small benefit from the implementation of the PEXA platform. The agencies that are expected to see tangible benefits from the implementation of PEXA include LTOs and State Revenue Offices (discussed below).

Further, there is potential for other government departments to benefit from future releases or developments of the PEXA platform. For example, it is possible that future technological developments of the platform could see payments to local councils (such as land tax) being calculated and paid via PEXA. This would potentially benefit local councils/state governments due to reduced cheque handling and greater efficiency through all payments occurring in one central electronic location.

3.7.1 Land Title Offices

Each state and territory has a Land Title Office (LTO). These eight LTOs are accountable for accepting the lodgement of instruments and subsequent registration of interests in the course of a real property transaction. PEXA will create value for LTOs by providing data linkages to replace the current manual keying processes, thereby assisting the LTOs through improving the efficiency of their work programs as well as reducing the risk of human error in manually keying data.⁶⁰ This electronic examination of instruments is expected to arise in a national saving of approximately \$12 million.

In addition to the increase in efficiency of the LTO, PEXA may also impact LTOs through the reduction in training costs. Current processes mean the training and up-skilling of new employees in LTOs can be quite laborious given their manual nature and specificity. Having an electronic checking process will substantially reduce the lengthy training needed for new LTO employees.

⁵⁹ Revenue generated from activities such as R&D and information and data services have not been included given this is a transfer or payment of fee from other sectors of which have not been considered in this analysis.

⁶⁰ The ACT LTO however, has indicated it will not be participating in PEXA at present as the majority of dealings completed in the ACT are leasehold in nature and currently not in scope for the initial releases. Leases may be included in a future release of PEXA.

There is however, the potential for LTO revenue to reduce given the streamlining of processes and reduction in duplication of activities such as title checks and DCT replacement.

3.7.2 State Revenue Offices

The collection of stamp duty from property transactions is a major source of revenue and accounts for 17 per cent of total state government taxes (which represents 3 per cent of all local, state and federal taxation, the seventh largest source of taxation revenue at any level of government).⁶¹ For the 2012/13 financial year, property transactions resulted in \$12.8 billion of stamp duty on conveyances being collected by each state's respective State Revenue Office (SRO). Given the significance of these transactions, each SRO clearly has the imperative to ensure that duty is properly calculated and collected before a title is transferred.

PEXA will provide value to the SROs by increasing the efficiency of their processes through streamlining work activities; minimising the variability in processes through automating duty calculations and payments; and automating the process as part of a Transfer Settlement.

3.7.3 Key opinion leaders

Most KOLs cited government, state governments especially, as being major beneficiaries from the property industry, mainly through stamp duties and other imposts. There was little, if any, comment that governments would incur any significant loss in revenue due to the operation of PEXA.

Regulatory reform: national benefits

Former politicians, John Brumby and Lindsay Tanner, who were both significantly involved in the development of nationally coordinated property exchange as an output of COAG, both commented on the breadth and depth of efficiencies which e-conveyancing would deliver for the national economy.

'This was a great opportunity to centrally improve something that's beneficial nationally', Lindsay Tanner said. 'I think it will have one of those subtle, but substantial impacts on the wider economy'. 'The national reform agenda saw two major gains, first in human capital and second through regulation reform. PEXA is a successful model of regulatory reform. E-conveyancing benefits the economy as a whole', John Brumby noted.

Lindsay Tanner also drew attention to the less obvious impact e-conveyancing could have on the national labour market. 'While stamp duty charges remain a big obstacle in moving for a new job, nonetheless e-conveyancing could help play a small role in reducing the overall obstacle to labour mobility while opening up further opportunities down the track for change and improvement'.

A Land Registry official highlighted the benefits of improved access to information which this digital shift will facilitate. 'It has great potential for positive flow-on impact. We will be able to get instantaneous information on the national property market to pass on to the Reserve Bank rather than waiting weeks or months. We can get that straight away. That means the levers of policy can link to current signals from the market. There are huge opportunities for more streamlining of process through this. Perhaps, eventually, this might lead to a federal titles office: maybe'.

⁶¹ Based on financial year 2012-13; ABS Catalogue 5506.0 *Taxation Revenue, Australia, 2012-13*.

3.7.4 Direct impact

State Governments are expected to see a small reduction in costs due to the improved efficiency of their LTOs. Namely, the electronic, rather than the manual, examination of settlement instruments was expected to improve the productivity of the LTO employees resulting in the reduction of labour costs of around \$12 million (in 2009/10 terms; see Table 10).

Table 10: State Government benefit breakdown (\$ million)

Cost Area	2009/10	2013/14	2017/18
Electronic lodgement	12.00	13.30	14.61
Net impact	12.00	13.30	14.61

Economic analysis input

Due to the mechanics of CGE modelling, the economic analysis did not explicitly ‘shock’ the government with the above identified impacts. Due to the nature of government (i.e. that it serves to provide public goods and operates (generally) in a non-competitive environment) government cannot be shocked like the private sector within the CGE model. Government is a lot more rigid in its structure and processes and generally has an inflexible output requirement in the short term.

For example, should technology enable government to become more productive, it would not necessarily lead to an increase in output, reduction in labour, or other such consequences that would potentially occur in the private world. Rather, government generally provides a certain amount of goods and services to the community or demands a certain level of goods and services from private providers irrespective of a change to its labour productivity or access to different forms of technology (this is generally speaking).

Whilst the modelling did not explicitly shock the government, the government experienced flow on impacts from the implementation of PEXA through changes in wage levels, industry output and general productivity of the nation. These are discussed in Section 4.

4 The economic impact

The impacts (both costs and benefits) identified under the 7 pillars in Section 3 were used as inputs into PwC's CGE modelling. Namely, the impacts were drawn on to form 'shocks' to the economy of the instigation and adoption of PEXA. This form of modelling enables the totality of impacts to be captured once the economy reaches a steady state. That is, it analysed both direct and indirect impacts to all players and industries within the Australian economy. This allowed PwC to estimate economy-wide impacts of PEXA on the Australian property market and the economy in general.

4.1 Summary of results

Australia was found to benefit greatly from the e-conveyancing platform, PEXA. The streamlining and automation of certain property settlement activities not only delivers benefits to the financial and business sectors, but also exerts a strong 'pull' on the economy as a whole, thereby generating considerable real GDP increases. Some of the benefits expected to be realised by the Australian community from the instigation of PEXA are highlighted below and outlined in Table 11.

- The expected total annual net direct impact of approximately \$154 million translates into a total flow on impact of a \$259 million increase in Australia's GDP (in 2013/14 terms).
- The estimated economic gain from the implementation of PEXA is 0.017 per cent of real GDP.
- The introduction of PEXA will increase the productivity of the FI sector by 0.05 per cent and that of the Business Services sector by 0.04 per cent.
- PEXA is expected to result in an increase in household income by 0.02 per cent.
- Wages are expected to increase by 0.024 per cent due to PEXA.

Table 11: Impact on major economic indicators

		Impact
Estimated real GDP gain	<i>Based on 2013 GDP</i>	\$259 million
Productivity in Financial Institutions	<i>% change</i>	0.049
Productivity in Business Services	<i>% change</i>	0.0406
Real GDP growth	<i>% change</i>	0.017
Household income	<i>% change</i>	0.023
Wage of labour	<i>% change</i>	0.024

Source: PwC analysis

4.2 Core methodology

The computable general equilibrium (CGE) model employed in this analysis was the RunGTAP (Global Trade Analysis Project) model developed by Purdue University. The GTAP

model is a multi-region, multi-sector model, with perfect competition and constant returns to scale.

The latest GTAP database, that is the GTAP 8 database, was also employed. It contains information on 57 sectors, and 129 countries and regions. Data acquired from the GTAP 8 database was first aggregated by using the GTAPAgg program. The regions were aggregated into 2 regions; namely Australia and the rest of the world (ROW). The data for the factors of production were aggregated into 4 groups namely being land, labour, capital and natural resources. Finally, the sectors were aggregated into 19 sectors for this analysis. The aggregations of sectors are shown in Table A1 in Appendix A.

The new e-conveyancing solution – PEXA – was expected to have a multitude of both tangible and intangible benefits. The core advantages were deemed to be:



The above factors are expected to drive down the price of services. The lowering of price would in turn increase demand and total output. With the assumption of perfect competition, the benefits, which are generated by cost reduction, cannot be retained by the firms but would be returned to the consumers upon equilibrium of the economy being reached. This assumption is valid given the highly competitive environment in Australia. Namely, firms would pass the benefit of cost reduction on to clients as if a firm was reluctant to lower its price while other competing firms do so, that firm would lose its business. Therefore, it is expected that consumers within Australia will benefit greatly from the cost reduction in settlement activities arising from PEXA.

The shocks were calculated by taking the costs and benefits derived in Section 3 into consideration. These shocks were then used as inputs into the CGE model to run policy simulations so as to provide a comprehensive evaluation of the impacts of e-conveyancing (PEXA) on Australia.

4.3 Inputs

4.3.1 Data sources

The modelling has drawn on the material outlined below.

- The PwC Market Analysis (2010) and the PEXA Business Plan (2014) of which contains the indicative cost and benefit figures of the PEXA platform.
- The RunGTAP model and the GTAPAgg program developed by Purdue University.
- Expected forecasts of consumer price index (CPI) and real gross domestic product (GDP) growth data provided by the Australian Treasury.

- Forecasted data of real GDP growth for the world from 2014-2015 compiled from the online library of the Organisation for Economic Cooperation and Development (OECD).
- Population growth data provided by the Department of Economic and Social Affairs of the United Nations.
- Exchange rate data compiled from the World Bank.
- Forecasted data of real GDP growth, capital stock and labour force compiled from the French Research Center in International Economics.

4.3.2 Shock derivation

The net impacts (as outlined in Table 12) were used as inputs into determining the economic shocks.

Table 12: Net impacts used in determining shocks (\$ million)

Stakeholder group	2009/10	2013/14	2017/18
Financial Institutions Sector			
Financial Institutions	44.14	48.83	53.56
Business Services Sector			
Legal Sector	95.88	106.11	116.43
Intermediaries	-124.0	-137.40	-150.93
PEXA operations	69.01	76.68	84.42

Note: Due to the treatment of consumers and government within the CGE modelling, consumers and government are not explicitly shocked. Rather, they are implicitly shocked through the assumptions in built in the modelling program whereby costs reductions and enhanced productivity flows through to consumers due to competitive markets and the linkages between the private sector, consumers and government.

The percentage change in price in a sector was computed as the estimated reduction in cost divided by the output of that sector (please refer to Appendix A for the assumptions and equations regarding the specific calculations of the shocks). To determine the value of output of the two sectors under investigation (FIs and Business Services), figures were deflated into real values in constant prices at the price level of the year of the base data. A price shock was then determined based on the direct impacts found and the output of the relevant sectors. These shocks were then used as inputs for the RunGTAP model. The shocks applied to the economy are shown in Table 13 and the calculations that were used can be found in sections A3 and A4 of Appendix A.

Table 13: Shock inputs

Shock to price level in different sectors	Price shock
Financial Institutions	-0.0494
Business Services	-0.0420

Source: PwC analysis

4.4 Results

The RunGTAP model used the equivalent variation approach to compute overall economic effects on society. In considering the economic impacts of a policy, it is important not to

focus only on the sectors which have undergone productivity changes. CGE modelling is specially designed for this purpose. The CGE model includes not only the behaviour of all producers and consumers in an economy, but also the linkages between them. Therefore, it can reveal the impacts on society in greater detail, and thus provide a more accurate estimation of total economic impact.

The overall economic impacts of the new e-conveyancing system PEXA were found to be very significant and are shown in Table 14. Based on the simulation results, the overall economic gain was estimated to be 0.017 per cent of GDP. Using the GDP of Australia in 2013 as a reference, the estimated increase was \$259 million (measured at 2013 prices).

By employing a decomposition technique, the economic gain was decomposed into several components so as to reveal the significance of each component. It was found that the increase in productivity was the largest contributor, whilst resource allocation also played a vital, yet smaller, role. The terms of trade had the least impact, but nonetheless produced an increase of 0.0004 per cent of GDP. The results suggest that PEXA will exert a significant and positive impact on the economy when it comes into full effect (i.e. reaches an optimal operating level). The system not only can improve the productivity in some sectors, but it will also bring considerable benefits to Australia's economy through linkage effects.

Table 14: Overall economic effect on Australia

	% of GDP
Resource allocation effects	0.002
Productivity gains	0.015
Terms of trade for goods	0.0004
Total	0.017
Estimated GDP increase (based on 2013 GDP)	\$259 million

Source: PwC analysis

4.4.1 Consumers

The new e-conveyancing system was found to bring many long-term economic benefits to Australian society. Several important economy-wide indicators were compiled and are shown in Table 15. It can be observed that real GDP is expected to increase with the improvement in productivity. Rental rate on capital and wage also increased and therefore, household income rose as well. Per capita utility of private household also registered an increase. An increase in economic activity however, leads to inflation but we note that the price index of private consumption showed that the effect of inflation was very small. Overall, the benefits generated by PEXA far outweigh the costs.

A decomposition analysis was performed to compute the contribution percentage so as to evaluate the significance of each sector. The Business Services Sector contributed about 80 per cent of the change – or growth - in most of the items. This was as expected given this sector includes PEXA Ltd, legal practitioners, conveyancers, real estate firms, and the intermediaries. Therefore, it can be concluded that the major drivers of the benefits were the new e-conveyancing services provided by PEXA, and the productivity gains generated collectively by the legal practitioners, conveyancers, real estate firms, and the intermediaries.

Table 15: Major economic indicators for households

	% change	Sector contributions (%)	
		Financial Institutions	Business Services
Real GDP growth	0.0167	20.5	79.5
Household income	0.0226	12.9	87.1
Rental rate on capital	0.0186	13.6	86.4
Wage of labour	0.0236	12.9	87.1
Per capita utility of private household	0.0195	24.2	75.8
Price index of private consumption	0.0031	-57.3	157.3

Source: PwC analysis

These major economic indicators would be felt by consumers in the following ways (calculated on a current basis in 2013/14 dollars, although benefits will accrue at full PEXA operation levels in 2017/18).

- In 2013/14, total national household income was \$1.4 trillion, so the expected increase from PEXA is \$314 million.⁶² Over a total of nine million households, this means that an average household will benefit from an annual increase in income of \$35 due to the introduction of PEXA.⁶³ Across the entire population (including non-workers, children etc.) this is an average of an increase in annual income of \$13 per person. To an average household \$35 represents approximately one weeks' domestic power bill.⁶⁴
- The total national compensation of employees in 2013/14 was \$759 billion, so the increase indicated in the above results represents \$182 million.⁶⁵ For an average worker on an annual income of \$58,400, this is \$14 increase in their wage.⁶⁶
- Additional non-wages contributions to household income (coming from increases in value of capital holdings, insurance and government social benefits and other transfers) would be \$182 million from the introduction of PEXA. Assuming these benefits are spread equally amongst the whole population, this would be an additional \$6 in the pocket of an average worker. Hence, the overall additionally annual income to an average worker would be \$20.

The lowering of the price of goods and services provided by the Financial Institutions and the Business Services Sectors would also prove attractive to consumers, thereby increasing expected demand.⁶⁷ The changes in consumption of private households are shown in Figure 14 as well as Table B1. It is apparent from Table B1 that the consumption level in other

⁶² ABS (2014) *ABS Catalogue number 5206.0 - Australian National Accounts: National Income, Expenditure and Product*, table 14 – Household Income Account.

⁶³ ABS (2010) *ABS Catalogue number 3236.0 - Household and Family Projections*.

⁶⁴ ABS (2011) *ABS Catalogue number 6530.0 - Household Expenditure Survey, Australia*.

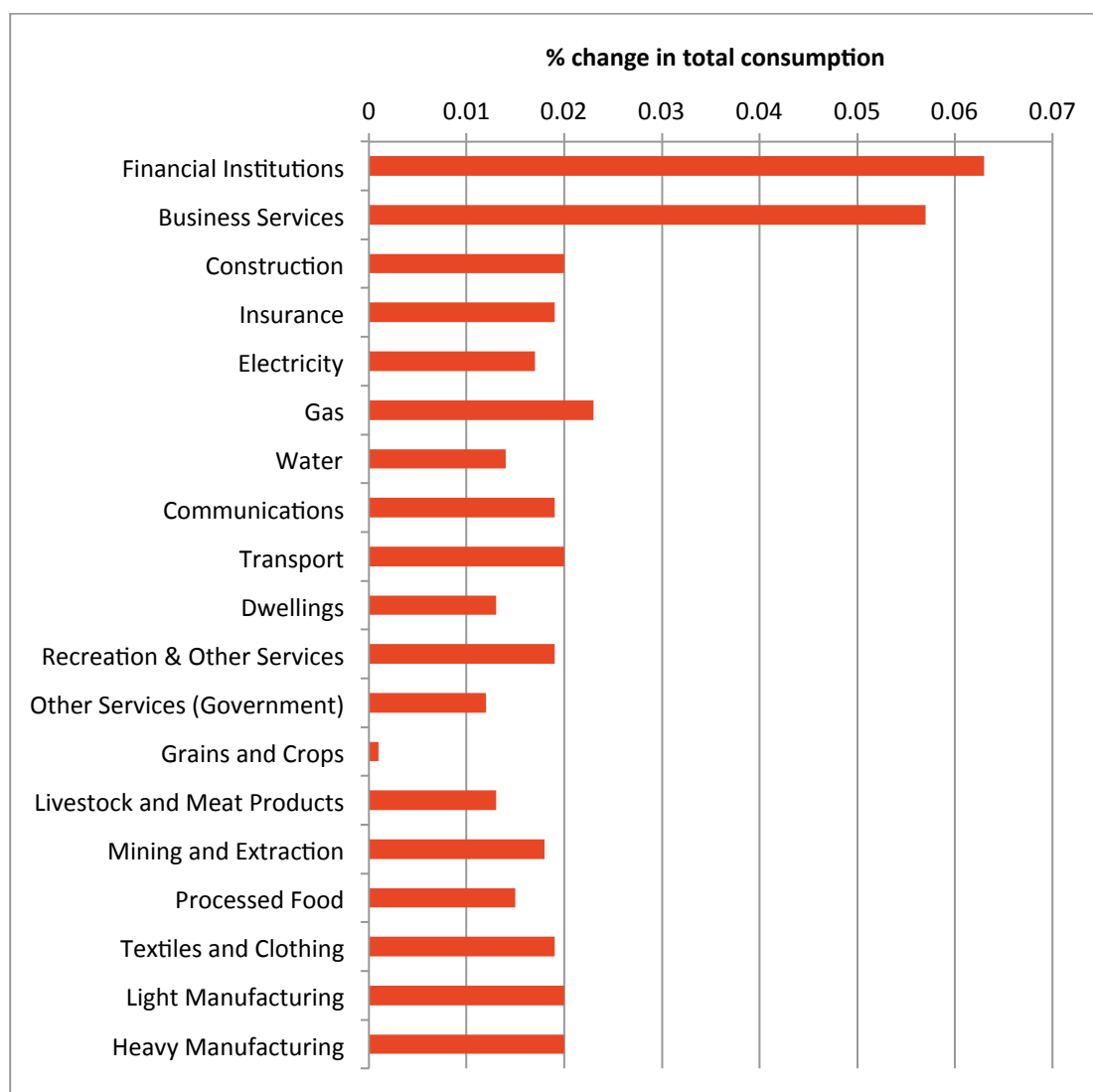
⁶⁵ ABS (2014) *ABS Catalogue number 5206.0 - Australian National Accounts: National Income, Expenditure and Product*, table 14 – Household Income Account.

⁶⁶ ABS (2014) *ABS Catalogue number 6302.0 - Average Weekly Earnings, Australia*.

⁶⁷ For example, rather than attempting to conduct conveyancing activities themselves, the reduction in fees and greater transparency may now see consumers turning to the legal sector to provide this service.

sectors also increased. This is because as household income increased along with wage and rental rate of capital, the combined effect of an income increase and reduction of price created an incentive for consumers to increase spending on different commodities.

Figure 14: Change in consumer consumption of goods



4.4.2 Industry

With the implementation of PEXA, it can be expected that productivity in the Financial Institutions and the Business Services Sectors would both improve. The productivity growth in the two sectors can be observed in Table 16. The RunGTAP model reported that the increase in productivity in the Financial Institutions sector was about 0.05 per cent, while the increase in productivity in the Business Services Sector was around 0.04 per cent.

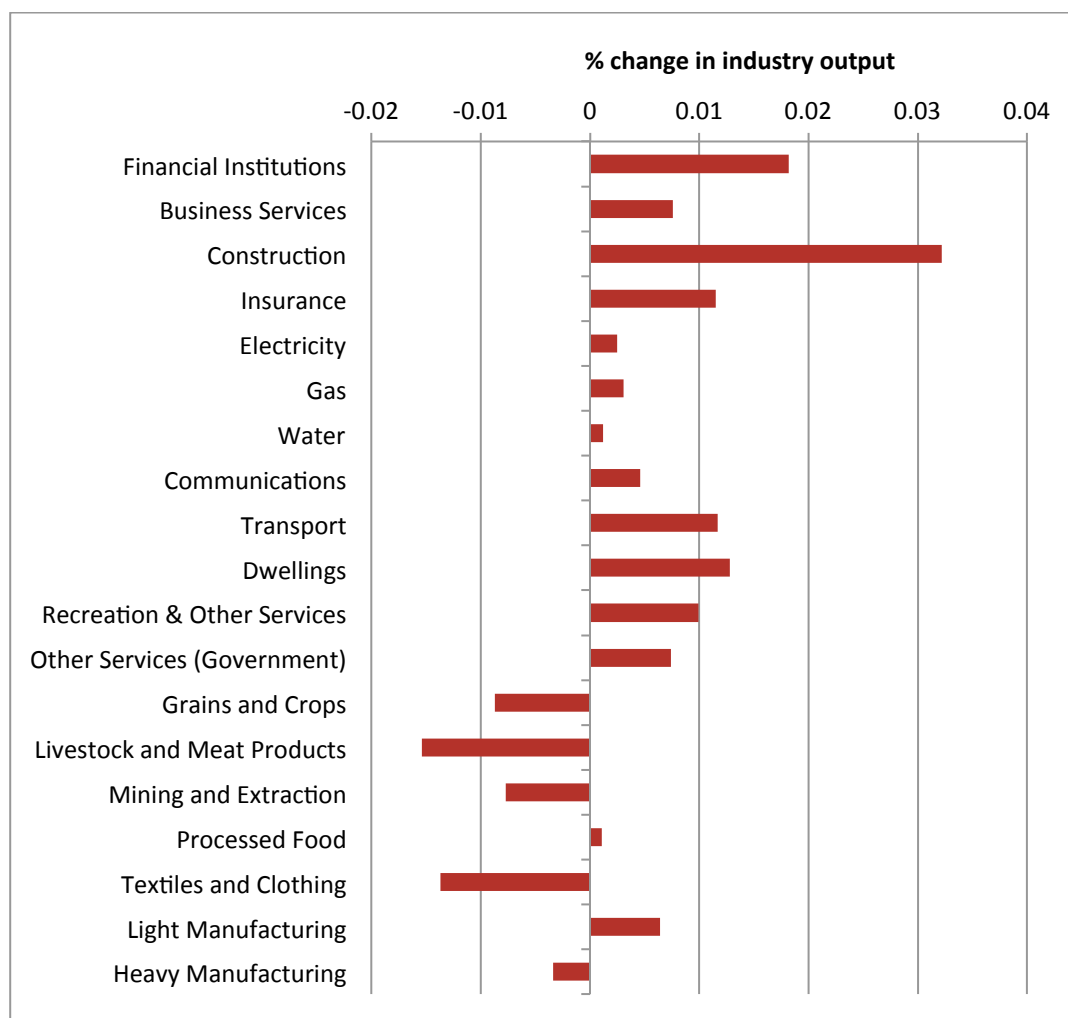
Table 16: Percentage change in productivity

Sector	% change
Financial Institutions	0.0489
Business Services	0.0396

Source: PwC analysis

The impacts of e-conveyancing on different sectors are shown in Figure 15 (as well as in further detail in Table B2). It can be observed that the productivity improvement not only increased the value of output and sales in the Financial Institutions and the Business Services Sectors, but also exerted a strong ‘pull’ on the economy as a whole. In fact, most of the sectors registered an increase in sales. The growth in domestic sales of the construction sector - which was 0.03 per cent - was even higher than that of the Financial Institutions and the Business Services Sectors. Only a few sectors registered a negative growth in the values of output and sales, but the percentage changes were small and the impacts were not significant.

Figure 15: Impact on output of all industry sectors



With an increase in productivity and a lowering of price, the banks and the firms would become more competitive in the global market. Therefore, exports of the two sectors also increased. Australians would reduce spending on imports and buy more domestic goods due to the lower price of domestic goods and services. The impact on international trade is presented in Table 17. It shows that the exports of both the Financial Institutions and the Business Services Sectors increased, whilst imports of these goods and services decreased.

Table 17: Impacts on international trade

	% Increase in export sales (from Australia to ROW)	% Change in aggregate imports
Financial Institutions	0.186	-0.076
Business Services	0.158	-0.080

Source: PwC analysis

4.4.3 Government

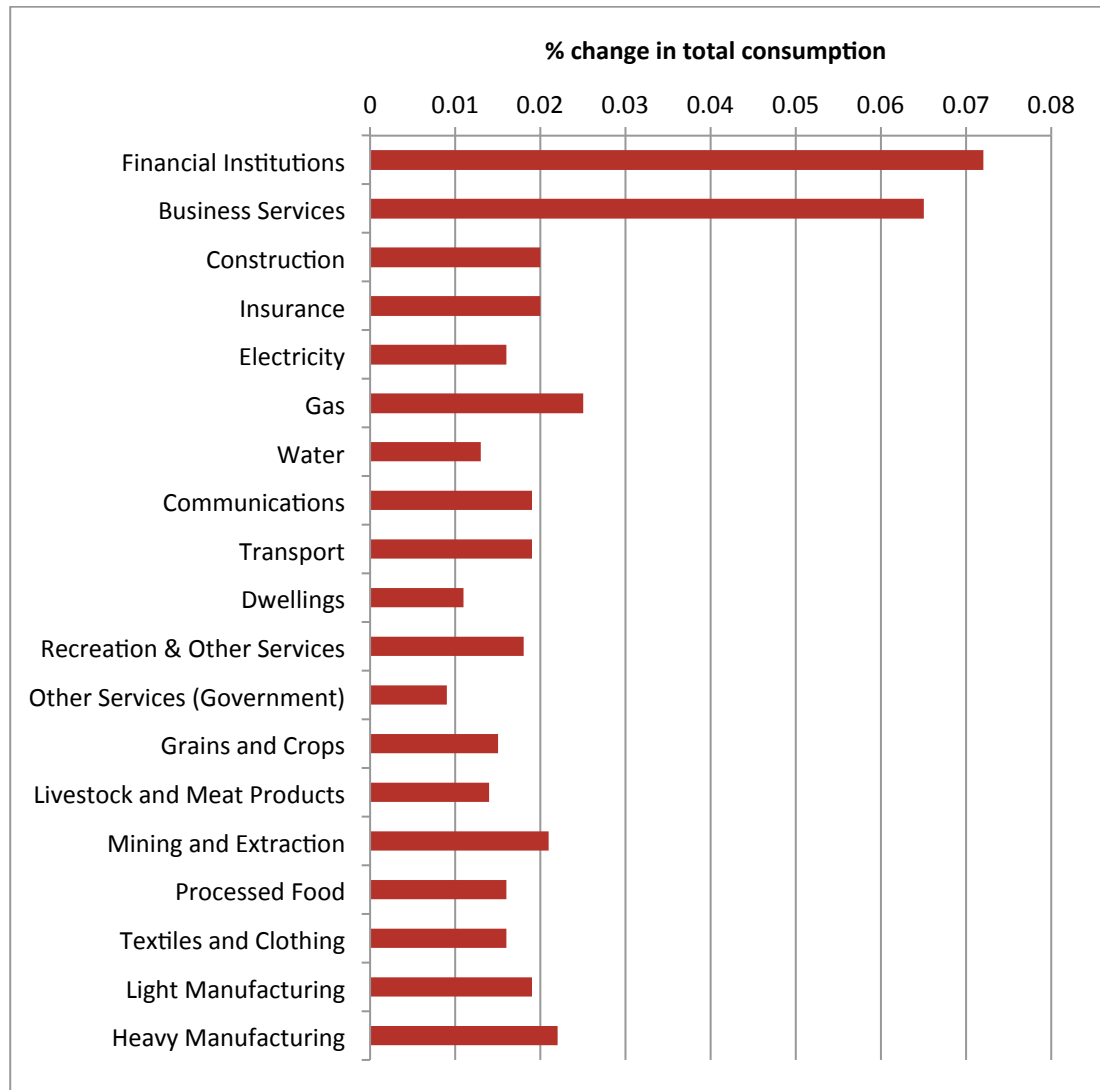
Table 18 shows the per capita utility of government, while the changes in consumption of the government are shown in Figure 16 as well as Table B3. Both tables show that the utility and consumption of government rose indicating that the implementation of PEXA was beneficial to the government. Compared with private households, the percentage increase in government consumption was higher than households, implying that the government was more susceptible to price change.

Table 18: Major economic indicators for government

	% change	Sector contributions (%)	
		Financial Institutions	Business Services
Per capita utility of government	0.0119	15.0	85.0

Source: PwC analysis

Figure 16: Change in government consumption of goods



Overall, the analysis suggests that the implementation of PEXA proves beneficial to society in its entirety as both private households and the government can now enjoy more goods and services in different sectors.

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Appendix A CGE methodology

A. 1 Sector aggregation

The GTAP 8 database was aggregated so as to facilitate the analysis of PEXA. Sectors 1 and 2 are the sectors we have shocked to determine the impact of PEXA. Sector 1 includes banks and firms with other auxiliary activities, but does not include insurance firms. Sector 2 includes firms providing business services, such as real estate services, legal services and other business activities. Therefore, legal practitioners, conveyancers, the intermediaries, and PEXA Ltd are included in this sector.

Table A1: Aggregation of sectors

	Sector
1	Financial Institutions
2	Business Services
3	Construction
4	Insurance
5	Electricity
6	Gas
7	Water
8	Communications
9	Transport
10	Dwellings
11	Recreation & Other Services
12	Other Services (Government)
13	Grains and Crops
14	Livestock and Meat Products
15	Mining and Extraction
16	Processed Food
17	Textiles and Clothing
18	Light Manufacturing
19	Heavy Manufacturing

A. 2 Detailed methodology

The total cost of a sector includes factor costs, costs of intermediate goods and services, and taxes. Factor costs includes wages, capital rents, and payments for land and natural resources. As services are non-tradeable goods, people tend to use domestic services and firms tend to provide services to local people. Consequently, the model assumes PEXA exerts impact mostly on local people, and the people have a preference for domestic services over imported ones. In this case, the domestic firms would also focus mainly on local markets and would produce most of the services demanded by local private households and government. This implies that the price level of the services is determined largely by local production, and the value of output of each sector is the price times the quantity of goods and services sold.

$$(1) \quad O = P \times Q$$

where O is the value of output, P is price, and Q is quantity of goods and services sold.

With the assumption of perfect competition, total cost is equal to the value of output.

$$(2) \quad C = P \times Q$$

where C is the total cost.

By differentiating equation (2),

$$(3) \quad c = p + q$$

where the lower case variables represent percentage change, c is the percentage change in total cost, p is the percentage change in price, and q is the percentage change in quantity.

With the assumption that the benefit of cost reduction will be passed on to the consumers through a reduction in price we find that q is zero, and

$$(4) \quad c = p$$

This means that the percentage decline in cost will lead to a fall in the price of goods and services.

The change in cost in the Financial Institutions Sector can be calculated by:

$$(5) \quad \begin{aligned} \text{Change in cost in the Financial Institutions Sector} = & \\ & + \text{cost of implementing PEXA} \\ & + \text{fee paid to PEXA} \\ & - \text{cost reduction due to the improvement in productivity} \\ & - \text{cost reduction due to the reduction in payment to the intermediaries} \end{aligned}$$

The decline in price for the services provided by the Financial Institutions Sector is thus:

$$(6) \quad \begin{aligned} \text{Percentage change in price of the Financial Institutions Sector} \\ = \frac{\text{Change in cost in the Financial Institutions Sector}}{\text{Output}} \end{aligned}$$

The Business Services Sector however, is more complicated because it includes legal practitioners, conveyancers, PEXA Ltd and intermediaries. So it is necessary to consider the revenue of PEXA and the revenue loss of the intermediaries. Since total output is equal to total cost in a perfectly competitive sector, we obtain:

$$(7) \quad C_{L\&C} = O_{L\&C}$$

where $C_{L\&C}$ is the total cost of the firms of the legal practitioners and conveyancers, and $O_{L\&C}$ is the value of output of the firms of the legal practitioners and conveyancers.

Total value of output in the Business Services Sector is the sum of all values of output of those firms within this sector, therefore:

(8) *Total value of output in the Business Services Sector*

$$= O_L\&C + O_PEXA + O_INTM + O_OTHER$$

$$= C_L\&C + O_PEXA + O_INTM + O_OTHER$$

where O_PEXA is the value of output of PEXA, O_INTM is the value of output of the intermediaries, and O_OTHER is the value of output of the other firms in the Business Services Sector.

By equation (7), the value of firm output of legal practitioners and conveyancers can be replaced by the total cost of these firms. There is no change in the output of other firms in the Business Services Sector. Therefore, the change in the total value of output in the Business Services Sector depends on the cost reduction of the legal practitioner and conveyancing firms, and the change in the value of output of PEXA Ltd and the intermediaries. Thus the change in the value of output in the Business Services Sector can be calculated by:

(9) *Change in the value of output in the Business Services Sector =*

+ new cost of implementing PEXA by legal practitioners and conveyancers

+ fee paid to PEXA by the legal practitioners and conveyancers

- cost reduction due to the improvement in productivity of the legal practitioners and conveyancers

- cost reduction due to the reduction in payment from the legal practitioners and conveyancers to the intermediaries

+ fee paid to PEXA by the financial institutions

- cost reduction due to the reduction in payment from the financial institutions to the intermediaries

The last two items are included for the Business Services Sector because they represent the changes in the value of output of PEXA and the intermediaries. As the total value of output is the same as total cost, the percentage change in the price of the Business Services Sector is:

(10) *Percentage change in the price of the Business Services Sector*

$$= \frac{\text{Change in value of output in the Business Services Sector}}{\text{Output}}$$

The percentage changes in the price of the services provided by the Financial Institutions and the Business Services Sectors are then used as shocks to evaluate the impacts of the implementation of the new e-conveyancing system on society.

A. 3 Value of output based on the GTAP database

To conduct the modelling using the GTAP 8 database, all values were deflated to the price levels of 2007 as this is the base year of the GTAP 8 database. That is, all figures must be in relation to the same year when computing the price shocks to ensure comparability and accuracy. According to the latest GTAP 8 database, the values of output of the Financial Institutions and the Business Services Sectors in 2007 are shown in Table A5.

Table A2: Value of output in the Financial Institution and Business Services sectors (2007 calendar year)

Sector	Sector output (US\$million)
Financial Institutions	65,807
Business Services	230,766

Source: GTAP 8 Database

Similarly, the shocks to the price level in the Financial Institutions and Business Services Sectors were calculated as shown in Table A3.

Table A3: Calculation of the shocks to the price level of the Financial Institution and Business Services Sectors

Financial Institutions Sector	A \$Mil	US \$Mil
Cost reduction in this sector because of increase in productivity (a)	-20.07	-15.75
Cost reduction because of less payment to the intermediaries (b)	-58.15	-45.66
Cost increase in this sector because of implementing new change (c)	12.23	9.60
Cost paid to PEXA (d)	24.62	19.33
Total cost reduction in sector (e) = (a) +(b) +(c) +(d)	-41.37	-32.48
Output of sector (f)		65807
Change in cost and output (g) = (e)		-32.48
Shock to the price level in this sector (%) (h) = (e)/(f)		-0.0494
Business Services Sector	A \$Mil	US \$Mil
Cost reduction in this sector because of increase in productivity (i)	-72.18	-56.67
Cost reduction because of less payment to the intermediaries (j)	-58.54	-45.96
Cost increase in this sector because of implementing new change (k)	0	0
Cost paid to PEXA (l)	40.77	32.00
Total cost reduction in sector (m) = (i) + (j) +(k) + (l)	-89.95	-70.62
Output of sector (n)		230766
Change in cost and output (o) = (m) + (b) + (d)		-96.96
Shock to the price level in this sector (%) (p) = (o)/(n)		-0.0420

Source: PwC analysis.

Note 1: Change in cost and output for the Financial Institutions Sector was calculated by using equation (5), while shock to price level in the Financial Institutions Sector was calculated by using equation (6). The change in cost and output for the Business Services Sector was calculated by using equation (9), whereas the shock to the price level in the Business Services Sector was calculated by using equation (10).

Note 2: The data in (a), (b), (c), (i), (j), and (k) were originally in 2009/10 values. They were deflated by the CPI index compiled from the World Bank, and then converted from A\$ to US\$ by using 2007 exchange rate also obtained from the World Bank. The values in (d) and (l) were originally in 2017 values, and they were converted from A\$ to US\$ by using the same exchange rate as other data, and deflated by CPI index compiled from the World Bank.

Appendix B Model output

Table B1: Change in private household consumption on different commodities

	% Change in private household total consumption	% Change in private household consumption for domestic goods	% Change in private household consumption for imports
Financial Institutions	0.063	0.065	-0.028
Business Services	0.057	0.059	-0.020
Construction	0.020	0.020	0.025
Insurance	0.019	0.019	0.027
Electricity	0.017	0.017	0.037
Gas	0.023	0.032	0.020
Water	0.014	0.014	0.043
Communications	0.019	0.019	0.026
Transport	0.020	0.019	0.027
Dwellings	0.013	0.013	0.013
Recreation & Other Services	0.019	0.018	0.027
Other Services (Government)	0.012	0.011	0.037
Grains and Crops	0.001	-0.001	0.019
Livestock and Meat Products	0.013	0.012	0.039
Mining and Extraction	0.018	0.018	0.025
Processed Food	0.015	0.013	0.028
Textiles and Clothing	0.019	0.002	0.031
Light Manufacturing	0.020	0.014	0.029
Heavy Manufacturing	0.020	0.015	0.028

Source: PwC analysis

Table B2: Changes in output and domestic sales

	% Change in industry output	% Change in domestic sales
Financial Institutions	0.0182	0.0147
Business Services	0.0076	0.0036
Construction	0.0322	0.0322
Insurance	0.0115	0.0130
Electricity	0.0025	0.0025
Gas	0.0031	0.0013
Water	0.0012	0.0021
Communications	0.0046	0.0051
Transport	0.0117	0.0132
Dwellings	0.0128	0.0128
Recreation & Other Services	0.0099	0.0119
Other Services (Government)	0.0074	0.0086
Grains and Crops	-0.0087	-0.0031
Livestock and Meat Products	-0.0154	-0.0009
Mining and Extraction	-0.0077	-0.0017
Processed Food	0.0011	0.0083
Textiles and Clothing	-0.0137	-0.0067
Light Manufacturing	0.0064	0.0106
Heavy Manufacturing	-0.0034	0.0069

Source: PwC analysis

Table B3: Change in government's consumption of different commodities

	% Change in government total consumption	% Change in government consumption for domestic goods	% Change in government consumption for imports
Financial Institutions	0.072	0.072	-0.021
Business Services	0.065	0.065	-0.014
Construction	0.020	0.020	0.025
Insurance	0.020	0.018	0.025
Electricity	0.016	0.016	0.036
Gas	0.025	0.032	0.020
Water	0.013	0.013	0.042
Communications	0.019	0.019	0.027
Transport	0.019	0.019	0.026
Dwellings	0.011	0.011	0.011
Recreation & Other Services	0.018	0.018	0.027
Other Services (Government)	0.009	0.009	0.035
Grains and Crops	0.015	0.015	0.035
Livestock and Meat Products	0.014	0.014	0.042
Mining and Extraction	0.021	0.021	0.028
Processed Food	0.016	0.015	0.031
Textiles and Clothing	0.016	0.013	0.042
Light Manufacturing	0.019	0.018	0.033
Heavy Manufacturing	0.022	0.013	0.026

Source: PwC analysis

