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WHEN PUBLIC PRIVATE PARTNERSHIPS (PPPS) TURN SOUR: AUSTRALIAN EVIDENCE

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ABSTRACT

This study examines some of the challenges facing Public Private Partnerships (PPPs) in Australia. Specifically, we consider the characteristics of projects when the private and public sectors experience unexpected financial losses. We estimate that 35 out of 155 PPPs (ie. approximately 22.6%) report additional financial costs after the financial close date of the transaction. We find that projects that receive availability payments from government are just as likely to be problematic as projects that earn revenues from market based demand. PPPs exposed to market demand disclose significantly larger losses than PPPs that receive an availability charge revenue stream. When we examine PPPs based on their industry, we reveal that the problematic PPPs are dominated by projects in the transport sector (exposed to market demand based revenues). It is unclear whether there is commensurate excess returns to the private sector from successful PPP projects to offset the associated losses with the problematic PPPs in this study. The lack of disclosure and transparency in the financial reporting of PPPs remains a formidable barrier in answering this essential question and remains a significant obstacle to attract new equity investment in Australian PPPs in the future.

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When Public Private Partnerships (PPPs) Turn Sour: Australian Evidence

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Abstract

This study examines some of the challenges facing Public Private Partnerships (PPPs) in Australia. Specifically, we consider the characteristics of projects when the private and public sectors experience unexpected financial losses. We estimate that 35 out of 155 PPPs (ie. approximately 22.6%) report additional financial costs after the financial close date of the transaction. We find that projects that receive availability payments from government are just as likely to be problematic as projects that earn revenues from market based demand. PPPs exposed to market demand disclose significantly larger losses than PPPs that receive an availability charge revenue stream. When we examine PPPs based on their industry, we reveal that the problematic PPPs are dominated by projects in the transport sector (exposed to market demand based revenues). It is unclear whether there is commensurate excess returns to the private sector from successful PPP projects to offset the associated losses with the problematic PPPs in this study. The lack of disclosure and transparency in the financial reporting of PPPs remains a formidable barrier in answering this essential question and remains a significant obstacle to attract new equity investment in Australian PPPs in the future.

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I. INTRODUCTION

Over the past three decades, the Australian economy has experienced a political climate where federal and state governments desire tight fiscal budgetary positions over the medium to long-term (Maddock, 2013). To overcome this conservative fiscal climate, we have witnessed the development of the privately financed infrastructure market more commonly known as 'public-private partnerships (PPPs)' (Productivity Commission, 2014). These PPP transactions tend to be project finance structures between the government sector and private sector consortiums.[1] Typically, the public sector makes regular payments to the consortium over a long concession period (eg. 10 to 30 years), and in return, the consortium finances, constructs, operates and/or maintains the infrastructure asset. In some transactions, the revenue is not provided by government, but rather, is based on the market demand for the infrastructure asset. In general, Australian federal, state and local governments tend to be advocates of PPPs as these transactions deliver new infrastructure without affecting the creditworthiness of the Commonwealth, state or territory governments (Infrastructure Australia, 2013).

Whilst governments seek to develop PPPs with private finance, it is Australian and Canadian fund managers who are the largest investors in infrastructure and PPPs. The OECD (2016) reports that the pension funds with the largest asset allocations in unlisted infrastructure equity are Canadian funds. The OMERS Fund in Canada reports a 14.7% asset allocation in unlisted infrastructure equity which is the largest in the world. From an Australian perspective, the HESTA superannuation fund is ranked second in the world with a 9.2% asset allocation to unlisted infrastructure equity.[2]

Despite the high level of demand for infrastructure and PPP investments by superannuation funds, there is a chasm between the desires of government and the needs of long-term investors. One major point of difference is that governments require private sector financing of greenfield infrastructure projects; however, long-term investors (super funds, pension funds and sovereign wealth funds) prefer brownfield infrastructure which are less risky in

[1] Refer to Wynant (1980) for an introduction to project financing and Yescombe (2007) for an introduction to PPPs.

[2] Other Australian institutional investors with significant holdings include: AustralianSuper, the Future Fund and SunSuper.

nature and easier to value, due to greater certainty of future cash flows (Deloitte, 2013; Poole, Toohey and Harris, 2014). Furthermore, industry participants suggest that investor interest in greenfield projects is very limited due to the complexity and specialist skills required in greenfield transactions (AMP Capital, 2014; Ernst & Young, 2011; Infrastructure Australia, 2014). As a consequence, many infrastructure investors prefer brownfield investments over greenfield projects.

The objective of this study is to contribute new knowledge to the infrastructure and PPP debate by presenting empirical evidence aimed at reducing the complexity associated with infrastructure and PPP investment decisions. More specifically, this study focuses on the universe of Australian PPPs. In particular, this study concentrates on 'problematic PPPs', that is, infrastructure projects where financial losses have been disclosed to the public.

We examine Australian PPPs from 1986 through 2016 and show that while a large proportion of Australian PPPs operate in the Health and Transport sector; a significant proportion of problematic PPPs are transport related. We estimate that 22.6 percent of all PPP projects are 'problematic', that is, financial losses have been disclosed in the public domain. In other words, there is a one-in-four to one-in-five chance that an entity involved in a PPP project will experience unexpected financial losses.

Second, we show that PPPs with availability payments as their dominant revenue structure are just as likely to be problematic PPPs as projects that are exposed to market demand revenue streams.[3] The term 'availability payments' refers to an arrangement whereby government pays a cashflow to the PPP consortium based on a pre-determined formula. Some commentators argue that availability payments to PPPs are akin to a quasi risk-free rate of return from government. Our new finding is counter-intuitive as PPPs exposed to market based revenues demand should be riskier than projects that receive availability payments from government. This finding suggests that the risks associated with PPP projects not only lie with revenue streams, but are also dependent on the modelling of cost structures as well.

Third, we calculate the losses/costs in these problematic PPPs (in 2016 dollars) based on the additional financial costs disclosed to the public between the signing date of the PPP project

[3] The Productivity Commission (2014) describes availability payments as finance leases on the government's balance sheet.

agreement and the end of the concession period. We show that the public sector has absorbed approximately $3.3 billion (in 2016 dollars) in additional financial costs associated with problematic PPPs while the private sector has experienced additional financial costs of $12.8 billion. This evidence suggests that the private sector absorbs a greater proportion of risks and losses associated with problematic PPPs in comparison to the public sector.

Fourth, from a private sector (investor and corporate) perspective, we apportion the additional financial losses according to the PPPs and their dominant revenue structure. We find that the median loss in PPPs with availability payments are estimated at $30 million per project while PPPs exposed to market demand based revenue suffer a median financial loss of $188 million. The large proportion of these financial losses in PPPs with market based revenues originate from the Transport sector. These findings suggest that while the chances of investing in problematic PPPs are similar in terms of their dominant revenue structure (ie. availability charge revenues vs. market demand revenues), the financial losses associated with market demand based PPPs are magnitudes larger than the losses experienced in PPPs with availability payments.

The rest of the study is structured as follows. Section 2 provides a brief review of related literature. Section 3 describes the data used in our analysis. Section 4 summarises the methodology employed to calculate the additional financial losses/costs. Section 5 details the results and findings while Section 6 provides concluding remarks.

II. RELATED LITERATURE

The literature section of this paper is divided in two parts. First, we define the term 'PPP' and what it means in our study. We then proceed to provide a brief review of the academic literature on PPPs. Before we examine the academic literature, we must first define the meaning of 'PPP'.

Definition of PPP:

The term 'public-private partnership (PPP)' has been coined as a term to describe a variety of projects where there is both public sector and private sector involvement. The term 'PPP' is

so broad that it is difficult to develop a strict definition. In the past, PPPs have been defined by a number of governments and agencies in Australia and globally. From an international perspective, the U.S. government General Accounting Office (1999) defined PPPs as:

'A *contractual arrangement is formed between public and private sector partners. These arrangements typically involve a government agency contracting with a private partner to renovate, construct, operate maintain and/or manage a facility or system, in whole or in part, that provides a public service*'. [p. 13] GAO (1999).

In Australia in the early 2000s, Webb and Pulle (2002) defined PPPs as:

'*...partnerships between the public sector and the private sector for the purpose of designing, planning, financing, constructing and/or operating project which would be regarded traditionally as falling within the remit of the public sector. Infrastructural projects such as roads and bridges are prime examples.*' [p.2] Webb and Pulle (2002).

In subsequent years, Australia saw the establishment of the agency Infrastructure Australia and they defined PPPs as:

'*Public Private Partnership – arrangement where the Public Sector enters in a contract with the private sector to deliver public infrastructure based services where significant upfront capital investment in assets is required.*' [p. iv] Infrastructure Australia (2008).

In this decade, Australia's Productivity Commission (2014) completed an inquiry on public infrastructure and developed the following definition of PPPs:

'*The term public private partnership (PPP) is used broadly in the inquiry to cover procurement models involving some privately financed investments.*' [pp. 4-5] Productivity Commission (2014).

In recent years, the Australian Government (2015) has employed the following definition of PPPs:

'*A Public Private Partnership (PPP) is a proven infrastructure procurement method that in the appropriate circumstances can make the best use of the resources of both the public and private sectors.*' [p.3] Australian Government (2015).

It is clear from the various definitions that 'PPP' is a very broad term and it continues to this day to describe a general contractual relationship between the public and private sector entities. For this study, we employ both government publications (Auditor-General reports) and academic literature to define and classify projects that are 'PPPs' in this study.

We now proceed with a brief review of the related PPP studies and the starting point is the finance literature where researchers have examined the investment merits of infrastructure. Studies including Newell and Peng (2008) and Finkenzeller, Dechant and Schafers (2010) show that listed infrastructure assets deliver portfolio diversification benefits in an investment portfolio. Other papers such as Bianchi, Bornholt, Drew and Howard (2014) show that listed infrastructure returns in the U.S. exhibit similar return and risk characteristics as broad U.S. stock returns. Other researchers examine unlisted infrastructure and the investment merits of these assets in a portfolio. Newell, Peng and De Francesco (2011), Hartigan, Prasad and De Francesco (2011) and Bird, Liem and Thorp (2014) show that unlisted infrastructure investments exhibit low correlations with traditional asset classes. Despite the growth of empirical studies in listed and unlisted infrastructure, there are very few studies that examine Australian PPPs as a long-term investment.

There is a paucity of empirical evidence on Australian PPPs, and as a result, researchers in this field have developed various approaches to examine and assess these projects. Raisbeck, Duffield and Xu (2010) examine 22 PPPs and report evidence of cost and time benefits in procurement in comparison with traditional projects. From a different perspective, the studies by Bain (2009), Li and Hensher (2010) and the World Bank (2008) document unrealistic traffic forecasts as one of the main contributors of PPP failures. In fact, Li and Hensher (2010) estimate that road traffic volumes of Australian PPP projects are 45% lower, on average, than forecasts. Other studies including Brown (2005) take a policy approach to examine a number of Australian PPPs while Alonso-Conde, Brown and Rojo-Suarez (2007) develop a real-option framework to value the Melbourne CityLink. Other researchers develop a contracting and case study approach including English and Baxter (2010), Jagger (2014) and Regan (2014).

The unresolved issue in the literature is the investment performance of Australian PPPs and the inherent investment risks when problems arise in these types of projects. The reason for this deficiency of knowledge is the absence of disclosure and transparency in the financial performance of PPP projects. This lack of knowledge is critically important for long-term investors such as superannuation funds, pension funds, investment managers and sovereign wealth funds. In fact, one of the major impediments to new infrastructure investment is the chronic deficiency of data on the historical risk and returns of PPPs (Heathcote, 2016). Our study aims to fill this gap in the literature by examining the financial losses of problematic PPPs with data that is publicly available. More specifically, we examine the commonalities of problematic PPPs. Furthermore, we quantify the magnitude of financial losses in PPPs that is experienced by the private sector. We proceed to summarise the data employed in this study.

III. DATA

This study employs public documents, academic journal articles, websites and miscellaneous publications to collate the list of various PPPs in Australia from 1986 to 2016. The list of PPPs are sourced from various publications including Bannister (2012), Brown (2005), Duffield (2008), Elaurant and McDougall (2014), English (2006), English and Baxter (2010), Ernst and Young (2008), Jefferies (2006), Jefferies and McGeorge (2009), KPMG (2010), NSW Auditor-General (2014, 2011), Parliament of Victoria (2006), PricewaterhouseCoopers (2008), Queensland Audit Office (2014) and other documents.

Table 1
Public Private Partnerships (PPPs) by States and Territories

This table presents the number of PPPs in the sample sorted by their respective states and territories. The data sample is for the period 1986 to 2016.

State or Territory	Number of PPPs
New South Wales (NSW)	58
Victoria (VIC)	33
Queensland (QLD)	32
Western Australia (WA)	13
South Australia (SA)	8
Tasmania (TAS)	0
Northern Territory (NT)	2
Australian Capital Territory (ACT)	4
Commonwealth Government (CWLTH)	5
Total	155

Table 1 shows there are 155 PPPs in our full sample for the period 1986 to 2016. The state of New South Wales reports 58 PPPs which represents more than one-third of all projects in the sample. The states of Victoria and Queensland report 33 and 32 PPPs, respectively, which collectively, represent more than two-fifths of our sample. Overall, it is clear that most PPPs in Australia are concentrated along the continent's eastern seaboard states which reflects the geography of the most densely populated areas in Australia.

The original objective of this study was to report on the financial performance of the PPPs by collating the data on the special purpose vehicle (SPV), design and constructor (D&C) and the operations / management (O&M) firms. To operationalise this process, we downloaded the project summary documents and details of the various PPPs from state and territory government websites. When the various SPV, D&C and O&M firms were identified, we entered the Australian Securities and Investments Commission (ASIC) website and searched for the financial statements of these companies. Australian companies can lodge their financial statements with the Australian corporate regulator using the ASIC Form 388. On closer inspection, the data collection process reveals a number of interesting findings.

The first finding is many SPVs in our PPP sample are corporations which are non-reporting entities. As a result, they have no obligation to lodge any form of financial reporting, performance or disclosure to ASIC. As a consequence, the data collection process is hampered and we cannot accurately calculate the excess returns nor the financial performance of our sample of PPPs because there is no mandatory reporting regime for these entities. Put simply, for many PPPs, this information is not available in the public domain. As a result, we cannot develop a comprehensive analysis of the raw performance of PPP investments over the long-term.

The second finding from the data collection process is that many PPPs are structured as corporate trustees managing the underlying PPP assets and liabilities inside various investment trusts (either as separate or stapled entities). Again, there are no obligations for investment trusts who hold PPP assets to provide any form of public disclosure, transparency or financial reporting of the underlying PPP assets, liabilities and equity.

As a consequence of the limited level of financial disclosure, one of the limitations of this study is the generality of the findings. The data collection process in this study is limited to

the publicly available information disclosed by private sector corporations that are associated with PPPs, government publications and Auditor-General reports. As a result, the research methodology in this study is tailored to utilise the limited data available on the problematic PPPs identified.

IV. METHODS

Given the limited information that is publicly available, we structure the research methodology as follows. First, we evaluate the industry sectors of our sample of PPPs. It is important to understand whether Australian PPPs are concentrated in specific industries as this knowledge informs both the public sector (policymakers government, agencies, etc) and private sector (super funds etc) participants.

Second, we assess the number of 'problematic PPPs' which are those transactions where losses have been disclosed by the private sector entities or where governments have disclosed they have made additional payments/costs to PPPs before the end of the concession period. It is important to understand the absolute number of 'problematic PPPs' as this provides essential information to governments (who seek greenfield and brownfield infrastructure development) and to investors (ie. superannuation funds, investment managers, sovereign wealth funds) who seek to assess and evaluate the risk and return characteristics of PPP investments.

Definition of Problematic PPPs:

This study defines 'problematic PPPs' as transactions where there is public disclosure in one of the following three (3) conditions:

(i) firms who have reported financial losses when contracted with the PPP, and despite these difficulties, the entity continues to operate; or

(ii) firms with significant losses and have entered voluntary administration or receivership; or

(iii) PPPs where the public sector has made 'additional financial payments' to the SPV between the start of the project agreement and before the end of the concession period. The term 'additional financial payments refers to any cash outflow from government to one of the PPP entities (ie. to the SPV, D&C or O&M).

Definitions (i) and (ii) allow us to isolate and differentiate the companies that disclose financial losses. There are firms that absorb financial losses in a project and they continue to operate while there are firms where the losses are significant and have entered voluntary administration or receivership. Creating these two categories provides higher levels of information to understand whether the size of problematic PPPs can be adequately managed by private sector firms or whether these losses are so large that they result in private sector firms going out of business. This information is very useful to long-term investors interested in equity investment in PPPs and also to firms interested in being part of a PPP consortium in the future.

With definition (iii), we are interested in PPPs where the government sector decides to make additional financial payments to the project before the end of the concession period. When governments make additional payments to a PPP in the middle of a concession period, it signals that an unlikely or unexpected event has occurred in the project. There are generally four likely scenarios that 'force' governments to make additional financial payments to a PPP. First, due to poor service delivery of the PPP, a government may decide to take-over the service, and may need to make a once-only payment to the SPV to terminate the concession agreement. Generally, this once-only payment occurs when the government may be required to pay out the debtholders in the event of an early termination. Second, the government may see that the asset is not being maintained over the long-term and decides to place the asset back into government ownership before the end of the concession period, resulting in a negotiated payment between government and the SPV. The third reason for additional financial payments from government to the PPP is to shore up the financial position of the SPV to avoid voluntary administration or receivership. Usually, this is achieved via a government payment to the private sector SPV and in return the government becomes the majority or 100% equity owner of the SPV. In essence, under this type of transaction, the SPV effectively becomes a state owned enterprise and is effectively 'nationalised' by the

respective state government. The fourth reason is when there are modifications to the project and, as a result, government is obliged to make an additional payment to the SPV.

Measuring Additional Financial Costs:

With the above three definitions of 'problematic PPPs', we examine whether the additional financial costs/losses occur with the SPV, D&C or O&M entities. This information is essential in understanding the timing of these problems within the PPP lifecycle. Finally, we calculate these additional financial costs in 2016 dollars and segregate them by private and public sectors. We are interested in understanding whether the additional financial costs are absorbed by the private sector or by government. Whilst the Infrastructure Australia (2016) framework is employed to evaluate PPPs on an *ex-ante* basis, it is silent in terms of assessing its own decision making process *ex-post*. The estimates in our study is important in evaluating who bears the financial risks in PPPs *ex-post*, that is, when the transaction turns sour.

V. RESULTS

The results of this study are divided into a number of sections. First, we classify the PPPs into their various industry sectors and states. Second, we identify the number of PPPs that are problematic. For these troublesome PPPs, we classify them based on their dominant revenue structure. We then calculate the additional financial costs in these PPPs and whether these losses were experienced by the SPV, D&C or O&M firms. We then measure the additional financial costs borne by the private and public sectors. Finally, we estimate the median losses in these problematic PPPs and the source of these underperforming projects.

Table 2
PPPs (sorted by States and Industry Sectors)

This table reports the number of PPPs in this study sorted by state and broad industry sector. The sample period is 1986 to 2016. The column heading Trans. denotes the Transport industry sector.

State	Education	Defence	Energy	Health	Housing	Justice	Social	Trans.	Water	Total
NSW	2	--	6	11	2	3	3	21	10	58
VIC	1	--	--	7	--	7	5	6	7	33
QLD	4	--	--	12	1	--	3	11	1	32
WA	1	--	--	6	--	3	2	--	1	13
SA	1	--	--	2	--	1	1	1	2	8
NT	--	--	--	--	--	1	1	--	--	2
ACT	--	--	--	--	2	1	--	1	--	4
CWLTH	--	3	--	--	2	--	--	--	--	5
Total	9	3	6	38	7	16	15	40	21	155

PPPs and Industry Sectors:

Table 2 reports the 155 PPPs sorted by states and broad industry sectors. We employ our own definitions of industry sectors as there is no universally accepted methodology for defining and classifying the various types of PPP projects. Table 2 reports the highest number of PPPs are classified in the Transport related sector with 40 projects. This figure represents approximately 26 percent of the sample in this study. More than half of these Transport related PPPs are located in New South Wales. The second largest industry sector is Health with 38 PPPs and most of these projects are located in New South Wales and Queensland. Water related PPPs represents the third highest number in our data sample. There is a concentration of 78 PPPs in both Transport and Health related sectors, which represent just over half of all projects in the sample. Interestingly, a large proportion of Transport and Health related PPPs are located in New South Wales and Queensland. Whilst Victoria reports 33 PPPs in our sample, this state seems to exhibit a more diversified number of projects across many industry sectors.

Table 3
Problematic PPPs (sorted by States and Industry Sectors)

This table reports the number of problematic PPPs in this study sorted by state and broad industry sector. The term 'problematic PPPs' is defined as projects where there has been a public disclosure of additional financial losses/costs by the private and/or public sectors. These additional financial costs are disclosed between the start of the PPP agreement and before the end of the concession period. The sample period is 1986 to 2016. The column heading 'Trans.' denotes the Transport industry sector.

State	Education	Defence	Energy	Health	Housing	Justice	Social	Trans.	Water	Total
NSW	--	--	--	1	1	--	1	7	1	11
VIC	--	--	--	1	--	2	2	4	3	12
QLD	1	--	--	1	--	--	1	3	--	6
WA	--	--	--	--	--	1	1	--	--	2
SA	--	--	--	2	--	--	1	1	--	4
NT	--	--	--	--	--	--	--	--	--	--
ACT	--	--	--	--	--	--	--	--	--	--
CWLTH	--	--	--	--	--	--	--	--	--	--
Total	1	--	--	5	1	3	6	15	4	35

Problematic PPPs:

Table 3 reports the number of 'problematic PPPs' in our sample sorted by state and industry sectors. There are 35 problematic PPPs in our study, which equates to 22.6 percent of the full sample of 155 projects. This finding suggests that approximately one-in-four to one-in-five PPPs are problematic in some shape or form. A striking feature is that 15 out of the 35 problematic PPPs are projects in the Transport related industry sector while no other industry sector reports these high levels of problems. This result is unsurprising given that there are 40 Transport PPPs in our sample (previously reported in Table 2); however, 15 out of 40 Transport PPPs (38%) experience problems in their transaction. From an investor's perspective, the key finding is there is a significant probability of investing in a problematic PPP, especially when it is a Transport related project.

The state analysis in Table 3 shows that Victoria reports the highest number of problematic PPPs with 12 out of 33 projects (ie. 36%). New South Wales reports 11 out of 58 PPPs (19%) as problematic. Queensland reports 6 out of 32 PPP projects (19%) as problematic. South Australia reports 4 out of 8 PPP projects (ie. 50%) as problematic. In Western Australia, there are only 2 problematic PPPs out of 13 projects (ie. 15%). This evidence suggests that problematic PPPs are more likely to be located in the states of South Australia and Victoria.

Table 4
Problematic PPPs sorted by dominant revenue structure

This table presents the problematic PPPs in the data sample sorted by their dominant revenue structure (as either availability payments from government or they derive a large majority of revenue from market demand)

Industry	Dominant Revenue Structure	
Sector	Availability Charge	Market Demand
Defence	--	--
Energy	--	--
Education	1	--
Health	5	--
Housing	0	1
Justice	3	--
Social	--	6
Transport	1	14
Water	4	--
Total	14	21

Table 4 sorts the problematic PPPs based on their dominant revenue streams. The results reveal that 21 of the 35 problematic PPPs (ie. 60%) exhibit revenues derived from market demand while the remaining 14 PPPs are structured in projects where their revenue is predominantly from government based availability payments. A surprising finding is that 14 out of 35 PPPs (ie. 40%) are problematic even though they receive a 'risk-free' availability payment from their respective governments. Another striking feature is 14 out of 35 problematic PPPs (ie. 40 percent of these difficult projects) are 'transport' industry related. Nearly all transport related PPPs that are problematic are structured with predominantly market demand revenue streams. Overall, the key finding from an investor's perspective is that PPPs that receive 'risk-free' availability payment revenues are just as likely to be problematic as projects exposed to market driven revenue streams. This finding suggests that the risks associated with PPP projects not only lies with revenue streams, but is also dependent on accurately modelling future cost structures as well. Table 5 provides greater details on the 35 problematic PPPs in this study sorted by the predominant revenue structure.

Table 5
PPPs with Additional Financial Losses/Costs
(Sorted by Dominant Revenue Structure)

This table presents the list of thirty five (35) PPPs that have reported additional financial costs after the special purpose vehicle (SPV) agreement has been signed and executed. The first column reports the broad industry sector of the PPP. The second column is the PPP name. The third column is the location of the PPP based on state or territory. The fourth and fifth columns report an 'X' based on the PPP's dominant revenue structure. The projects in this table are sorted in alphabetical order based on industry sector.

Industry			Dominant Revenue Structure	
Sector	Name of PPP	State	Availability Charge	Market Demand
Education	Southbank Education Precinct	QLD	X	
Health	Robina Hospital	QLD	X	
Health	Mildura Hospital (La Trobe)	VIC	X	
Health	Port Macquarie Base Hospital	NSW	X	
Health	Royal Adelaide Hospital	SA	X	
Health	Modbury Hospital	SA	X	
Housing	Bonnyrigg Social Housing	NSW		X
Justice	Deer Park Prison (MWCC)	VIC	X	
Justice	Ararat (Hopkins) Prison	VIC	X	
Justice	Acacia Prison	WA	X	
Social	Melbourne Convention Centre	VIC		X
Social	Docklands Studios (Film & TV)	VIC		X
Social	Stadium Australia	NSW		X
Social	Perth Convention Centre	WA		X
Social	SA State Aquatic Centre	SA		X
Social	Townsville Ocean Terminal	QLD		X
Transport	Sydney Airport Lines	NSW		X
Transport	Brisbane Airtrain	QLD		X
Transport	Southern Cross Station	VIC		X
Transport	EastLink	VIC		X
Transport	Waratah Rolling Stock	NSW	X	
Transport	Chatswood Transport Interchange	NSW		X
Transport	Parramatta Transport Interchange	NSW		X
Transport	Lane Cove Tunnel (Connector Motorways)	NSW		X
Transport	CrossCity Tunnel	NSW		X
Transport	Airport M7 Link (Brisconnections)	QLD		X
Transport	Clem7 Tunnel (RiverCity Motorway)	QLD		X
Transport	Australasia Adelaide to Darwin Rail	SA		X
Transport	National Express (NEX)	VIC		X
Transport	EastWest Link Road	VIC		X
Transport	Sydney Light Rail Co, NGEA Transport	NSW		X
Water	Campaspe Water	VIC	X	
Water	Wonthaggi Desalination Plant	VIC	X	
Water	Rosehill Camelia Recycled Water	NSW	X	
Water	Wodonga Water	VIC	X	
	TOTAL		14	21

Table 6
Problematic PPPs (sorted by Project Company Composition)

This table reports the 35 problematic PPPs sorted by which entity within the project suffered the financial losses. The heading 'SPV' denotes financial losses incurred by the special purpose vehicle. The heading 'D&C' refers to financial losses experienced by the constructor. The heading 'O&M' denotes financial losses reported by the operations/maintenance entity. Please note that the total of 37 problematic events in this table do not equate to the 35 problematic PPPs as two transport related transactions report losses in more than one part of their project.

Industry Sector	SPV	D&C	O&M
Education	--	--	1
Defence	--	--	--
Energy	--	--	--
Health	--	1	4
Housing	--	1	--
Justice	--	1	2
Social	--	1	5
Transport	3	6	8
Water	--	1	3
Total = 37	3	11	23

Table 6 sorts the 35 problematic PPPs based on whether the financial losses are experienced within the SPV itself, the constructor (D&C) entity or the operations/maintenance (O&M) entity. Table 6 reports 3 financial events where PPPs became problematic in relation to the SPV and all of these events are transport related projects. There are 11 events in D&C entities which resulted in a problematic PPP. Again, 6 out of the 11 events in D&C entities occurred in transport related projects.

A surprising 23 events (out of a total of 37) were reported in O&M entities which resulted in problematic PPPs. This evidence challenges current thinking where many industry professionals view the construction phase as the riskiest period in a PPP project. The construction phase of the project is referred to as the period of maximum risk because PPPs may be exposed to construction cost overruns, zero revenue streams and potential political risk. This argument suggest that the O&M phase is less risky due to the SPV receiving revenues when the operations period commences. The evidence in Table 6 shows that 23 out of 37 problematic events are reported in O&M entities. This finding suggests that there are inherent risks facing investors and governments when PPPs shift from the construction period to the operations phase in these projects. Another interesting finding is that approximately one-third of O&M entities (i.e. 8 out of 23) that become problematic occur in the transport sector, closely followed by social, health and water sectors.

Table 7
Additional Financial Costs of Problematic PPPs
(Sorted by Project Company Composition)

This table reports the 35 problematic PPPs sorted by which part of the project suffered the additional financial losses/costs. The heading 'SPV' denotes additional financial losses were incurred in the special purpose vehicle. The heading 'D&C' refers to additional financial losses/costs suffered by the constructor. The heading 'O&M' denotes additional financial losses/costs experienced by the operations/maintenance firm. Please note that the total of 37 problematic events do not equate to the 35 problematic PPPs as some transactions report losses in more than one part of their project. These projects are highlighted by the superscript 'a'. The projects in this table are sorted in alphabetical order based on industry sector.

Industry Sector	Name of PPP	SPV	D&C	O&M
Education	Southbank Education Precinct			$46m
Health	Robina Hospital			$13m
Health	Mildura Hospital (La Trobe)			$1
Health	Port Macquarie Base Hospital			$36m
Health	Royal Adelaide Hospital		$161m	
Health	Modbury Hospital			$26m
Housing	Bonnyrigg Social Housing		$3m	
Justice	Deer Park Prison (MWCC)			$30m
Justice	Ararat (Hopkins) Prison		$27m	
Justice	Acacia Prison			$6m
Social	Melbourne Convention Centre			$36m
Social	Docklands Studios (Film & TV)			$60m
Social	Stadium Australia			$288m
Social	Perth Convention Centre			$25m
Social	SA State Aquatic Centre			$7m
Social	Townsville Ocean Terminal		$3m	
Transport	Sydney Airport Lines	$1,392m		
Transport	Brisbane Airtrain			$128m
Transport	Southern Cross Station		$347m	
Transport	EastLink			$710m
Transport	Waratah Rolling Stock		$659m	
Transport	Chatswood Transport Interchange		$4m	
Transport	Parramatta Transport Interchange		$59m	
Transport	Lane Cove Tunnel (Connector Motorways)[a]		$32m	$530m
Transport	CrossCity Tunnel			$1,264m
Transport	Airport M7 Link (Brisconnections) [a]		$458m	$3,057m
Transport	Clem7 Tunnel (RiverCity Motorway)			$2,609m
Transport	Australasia Adelaide to Darwin Rail			$980m
Transport	National Express (NEX)			$610m
Transport	EastWest Link Road	$1,110m		
Transport	Sydney Light Rail Co, NGEA Transport	$21m		
Water	Campaspe Water			n.a.
Water	Wonthaggi Desalination Plant		$1,369m	
Water	Rosehill Camelia Recycled Water			$0
Water	Wodonga Water			$72m
	Total of Additional Financial Costs (in 2016 dollars)	$2,523m	$3,122m	$10,533m
	Total (Frequency)	3	11	23

Table 7 presents a detailed list of the additional financial costs disclosed in the problematic projects sorted by their associated entities. The findings reveal that total financial losses in O&M entities of problematic PPPs are estimated at $10.5 billion which is magnitudes larger than the losses disclosed in the SPV or in D&C companies. Again, this evidence suggests that the O&M firm of a PPP not only reports the highest frequency of occurrences (see Table 6), but the financial losses are also concentrated in this part of the lifecycle of PPP projects (see Table 7).

Table 8
Additional Financial Costs to the Public Sector

This table presents the additional financial costs (in 2016 dollars) paid by the public sector in each of the respective PPP transactions. The amounts represent the unexpected government costs paid in the subsequent period after the signing of the SPV project agreement and the period before the end of the PPP's concession period. The column title 'Year' is the calendar year that the government payment was disclosed to the public. The column heading titled 'Cost ($)' is the additional financial cost reported at the time. The columns heading 'Cost in 2016 ($)' is the inflation-adjusted value of Cost ($) in order to express all amounts in 2016 dollars. The projects in this table are sorted in alphabetical order based on industry sector.

No.	Industry Sector	Name of PPP	State	Year	Cost ($)	Cost in 2016 ($)
1	Education	Southbank Education Precinct	QLD	2008	$11m	$13m
2	Health	Mildura Hospital (La Trobe)	VIC	2002	$1	$1
3	Health	Port Macquarie Base Hospital	NSW	2005	$35m	$36m
4	Health	Modbury Hospital	SA	2000	$17.5m	$26m
5	Health	Royal Adelaide Hospital	SA	n.a	n.a	n.a
6	Justice	Deer Park Prison (Metro Women's CC)	VIC	2000	$20m	$30m
7	Justice	Acacia Prison	WA	2006	$5m	$6m
8	Social	Stadium Australia	NSW	2016	$220m	$220m
9	Social	Docklands Studios (Film & TV)	VIC	2011	$55m	$60m
10	Social	SA State Aquatic Centre	SA	2013	n.a.	n.a.
11	Transport	Sydney Airport Line	NSW	2005	$800m	$1,197m
12	Transport	EastWest Link Road	VIC	2015	$1,100m	$1,110m
13	Transport	Sydney Light Rail Co, CGEA Trans. Metro Trans.	NSW	2012	$20m	$21m
14	Transport	National Express Group (NEX)	VIC	2002	$105m	$148m
15	Transport	Waratah Rolling Stock	NSW	2012	$175m	$188m
16	Transport	Southern Cross Station	VIC	2005	$135m	$166m
17	Transport	Lane Cove Tunnel	NSW	2006	$25m	$32m
18	Water	Wodonga Water	VIC	2013	$69m	$72m
					TOTAL	$3,325m

Table 8 presents the PPPs where additional financial costs are borne by the public sector in the period between the signing of the project agreement and before the end of the concession period. The results reveal that 18 out of 155 PPPs (11.6% of the sample) required the public sector to make additional financial payments before the end of the respective concession period. This figure is conservative due to the low levels of disclosure of financial losses by the public sector with some PPP projects. The results also show that the various state governments have outlaid an estimated $3,325 million (in 2016 dollars) of additional

financial costs in relation to unexpected PPP payments. Again, we believe this figure is conservative.[4]

Table 9 reports the PPPs where the private sector discloses financial losses. These firms are sorted based on entities that disclosed financial losses and continued to operate versus firms which entered voluntary administration or receivership. The total financial losses equate to $12,819 million (in 2016 dollars). This figure is approximately 3.8 times larger than the losses disclosed by the public sector (previously reported in Table 8). The private sector's four largest losses in Australian PPPs (in 2016 dollars) total $8,757 million, which are Airport M7 Link ($3,515m), Clem7 Tunnel ($2,609m), Wonthaggi Desalination Plant ($1,369m) and CrossCity Tunnel ($1,264m). All of these projects are transport related, except Wonthaggi. These four projects represent approximately more than 68 percent of the entire losses experienced by the private sector.

Column five of Table 9 classifies two types of financial costs. Those marked with 'L' represent financial costs absorbed by the private sector and the firms continued to operate. These firms experienced financial losses totalling $3,419 million (in 2016 dollars) and had the capacity to continue their operations. The second type of additional financial costs relate to failed entities who enter voluntary administration or receivership, and are marked as 'F' in the fifth column. The aggregate financial losses by firms entering voluntary administration or receivership total $9,400 million. A large majority of this total loss stems from the four largest problematic PPPs already mentioned.

[4] As previously stated in the methodology section, there are four main reasons why governments make unexpected payments to PPPs before the end of the concession period. The first reason is a government may decide to take-over a non-performing PPP (eg. due to poor service delivery in the O&M stage can force a government to terminate the project agreement), and therefore, a settlement payment is required (eg. Acacia Prison). The second reason is the government believes it is in the public interest to purchase the PPP asset before the end of the concession period (eg. Stadium Australia). The third reason why governments make additional financial payments to PPPs is to facilitate an equity injection into a failing project (eg. Waratah Rolling Stock project). The fourth and final reason (but rare) is when changes occur in the PPP requirements, and as a result, government is required to make an additional payment to the SPV or one of its entities (eg. Southern Cross Station).

Table 9
Additional Financial Costs to the Private Sector
(sorted by Firms with losses vs. Firms that failed)

This table presents the additional financial costs (in 2016 dollars) borne by the private sector in each PPP transaction in the subsequent period after the signing of the SPV project agreement and the period before the end of the PPP's concession period. The letter 'L' in the column titled 'L / F' represents financial costs disclosed with the respective PPP via the SPV, D&C or O&M entity. The letter 'F' in the column titled 'L / F' denotes an entity in the SPV that has entered into voluntary administration or receivership. The column title 'Year' is the calendar year that the financial loss was disclosed to the public. The column heading titled 'Cost ($)' is the additional financial cost reported at the time. The columns heading 'Cost in 2016 ($)' is the inflation-adjusted value of Cost ($) in order to express all amounts in 2016 dollars. There are 31 firms in this table (rather than 35) as 4 problem PPPs resulted in no costs to the private sector. The projects in this table are sorted in alphabetical order based on industry sector.

No.	Industry Sector	Name of PPP	State	L / F	Losses	Failures	Cost in 2016 ($)
1	Education	Southbank Education Precinct	QLD	L	$33m		$33m
2	Health	Robina Hospital (St. Vincents)	QLD	L	$13m		$13m
3	Health	Mildura Hospital (La Trobe)	VIC	L	n.a.		n.a.
4	Health	Port Macquarie Base Hospital	NSW	L	n.a.		n.a.
5	Health	Royal Adelaide Hospital	SA	L	$127m		$127m
6	Health	Modbury Hospital	SA	--			--
7	Housing	Bonnyrigg Social Housing Project	NSW	F		$3m	$3m
8	Justice	Deer Park Prison (Metro Women's CC)	VIC	L	n.a.		n.a.
9	Justice	Ararat (Hopkins) Prison	VIC	F		$27m	$27m
10	Justice	Acacia Prison	WA	--			--
11	Social	Melbourne Convention Centre	VIC	L	$36m		$36m
12	Social	Docklands Studios (Film & TV)	VIC	L	n.a.		n.a.
13	Social	Stadium Australia	NSW	L	$68m		$68m
14	Social	Perth Convention Centre	WA	L	$25m		$25m
15	Social	SA State Aquatic Centre	SA	F		$7m	$7m
16	Social	Townsville Ocean Terminal	QLD	F		$3m	$3m
17	Transport	Sydney Airport Lines	NSW	L	$195m		$195m
18	Transport	Brisbane Airtrain	QLD	L	$128m		$128m
19	Transport	Southern Cross Station	VIC	L	$181m		$181m
20	Transport	EastLink	VIC	L	$710m		$710m
21	Transport	Waratah Rolling Stock	NSW	L	$471m		$471m
22	Transport	Chatswood Transport Interchange	NSW	L	$4m		$4m
23	Transport	Parramatta Transport Interchange	NSW	L	$59m		$59m
24	Transport	Lane Cove Tunnel (Connector Motorways)	NSW	F		$530m	$530m
25	Transport	CrossCity Tunnel	NSW	F		$1,264m	$1,264m
26	Transport	Airport M7 Link (Brisconnections)	QLD	F		$3,515m	$3,515m
27	Transport	Clem7 Tunnel (RiverCity Motorway)	QLD	F		$2,609m	$2,609m
28	Transport	Australasia (Adelaide to Darwin) Rail	SA	F		$980m	$980m
29	Transport	National Express Group (NEX)	VIC	F		$462m	$462m
30	Transport	EastWest Link Road	VIC	--			--
31	Transport	Sydney Light Rail Co, NGEA Transport	NSW	--			--
32	Water	Campaspe Water	VIC	L	n.a.	n.a.	n.a.
33	Water	Wonthaggi Desalination Plant	VIC	L	$1,369m		$1,369m
34	Water	Rosehill Camelia Recycled Water	NSW	F		$0	$0
35	Water	Wodonga Water	VIC	F	n.a.	n.a.	n.a.
				TOTALS	$3,419m	$9,400m	$12,819m

The totals in Tables 8 and 9 reveal evidence that the private sector has disclosed higher additional financial costs than the public sector when PPPs become problematic. This evidence suggests that PPPs play an important role in transferring risks to the private sector when these projects turn sour. Despite this empirical evidence, we must moderate the strength of our findings due to the limitation that these figures are based purely on both private sector entities and public sector who have voluntarily disclosed financial losses in PPPs in the public domain. There are many PPP projects where there is no reporting regime, disclosure or any form of transparency. Therefore, we do not know whether PPP investors are being rewarded with excess profitability, or otherwise from successful PPP projects. Conversely, there may be specific PPP transactions that the public sector is unwilling to disclose their respective financial details.[5]

Table 10 reports the problematic PPPs and the additional financial costs borne by the private sector based on the project's dominant revenue structure. With a loss of $1,369 million, the Wonthaggi Desalination Plant is the largest loss to the private sector for a PPP with an availability payment revenue structure. Brisbane's Airport M7 Link (via Brisconnections) is the largest financial loss to private sector investors at $3,515 million for a PPP structured with predominantly market demand based revenue. Both Wonthaggi Desalination Plant and the Brisbane Airport M7 Link (via Brisconnections) are the extreme examples of financial losses borne by the private sector. Table 10 reports the median loss to the private sector for PPPs with availability payment revenues equates to $30 million while PPPs with market demand based revenues report a median loss of $188 million. When PPPs turn sour, the financial losses experienced in PPPs with market demand based revenue structures are approximately six times the size of the median loss sustained in PPPs that receive availability payment revenues. Overall, the total financial losses from problematic PPPs with an availability payment structure is $2,043 million while losses from PPPs with a market demand based revenue structure are $10,776 million. Overall, Table 10 clearly shows that the investments risks borne by the private sector can be isolated in Transport related PPPs that are structured with market based revenue streams. This evidence of significant financial losses in transport related PPPs lends support to the previous findings reported in Bain (2009), Li and Hensher (2010) and the World Bank (2008).

[5] By way of example in our data, the South Australian government provides very little detail in relation to the financial losses experienced in Royal Adelaide Hospital and SA State Aquatic Centre PPPs.

Table 10
Additional Financial Costs to the Private Sector
(Sorted by Dominant Revenue Structure)

This table presents the list of thirty five (35) PPPs that have reported additional financial costs after the special purpose vehicle (SPV) agreement has been signed and executed. The first column reports the broad industry sector of the PPP. The second column is the PPP name. The third column is the state or territory of the PPP. The fourth and fifth columns reports the additional financial costs in 2016 dollars to the private sector based on the PPP's dominant revenue structure. The projects in this table are sorted in alphabetical order based on industry sector.

Industry			Dominant Revenue Structure	
Sector	Name of PPP	State	Availability Charge	Market Demand
Education	Southbank Education Precinct	QLD	$33m	
Health	Robina Hospital	QLD	$13m	
Health	Mildura Hospital (La Trobe)	VIC	n.a.	
Health	Port Macquarie Base Hospital	NSW	n.a.	
Health	Royal Adelaide Hospital	SA	$127m	
Health	Modbury Hospital	SA	--	--
Housing	Bonnyrigg Social Housing	NSW	$3m	
Justice	Deer Park Prison (MWCC)	VIC	n.a.	
Justice	Ararat (Hopkins) Prison	VIC	$27m	
Justice	Acacia Prison	WA	--	--
Social	Melbourne Convention Centre	VIC		$36m
Social	Docklands Studios (Film & TV)	VIC		n.a.
Social	Stadium Australia	NSW		$68m
Social	Perth Convention Centre	WA		$25m
Social	SA State Aquatic Centre	SA		$7m
Social	Townsville Ocean Terminal	QLD		$3m
Transport	Sydney Airport Lines	NSW		$195m
Transport	Brisbane Airtrain	QLD		$128m
Transport	Southern Cross Station	VIC		$181m
Transport	EastLink	VIC		$710m
Transport	Waratah Rolling Stock	NSW	$471m	
Transport	Chatswood Transport Interchange	NSW		$4m
Transport	Parramatta Transport Interchange	NSW		$59m
Transport	Lane Cove Tunnel (Connector Motorways)	NSW		$530m
Transport	CrossCity Tunnel	NSW		$1,264m
Transport	Airport M7 Link (Brisconnections)	QLD		$3,515m
Transport	Clem7 Tunnel (RiverCity Motorway)	QLD		$2,609m
Transport	Australasia Adelaide to Darwin Rail	SA		$980m
Transport	National Express (NEX)	VIC		$462m
Transport	EastWest Link Road	VIC	--	--
Transport	Sydney Light Rail Co, NGEA Transport	NSW	--	--
Water	Campaspe Water	VIC	n.a.	
Water	Wonthaggi Desalination Plant	VIC	$1,369m	
Water	Rosehill Camelia Recycled Water	NSW	$0	
Water	Wodonga Water	VIC	n.a.	
		Total	$2,043m	$10,776m
		First Quartile	$11m	$51m
		Second Quartile	$30m	$188m
		Third Quartile	$213m	$778m

VI. CONCLUSION

This study has examined problematic PPPs in Australia and investigates who bears the risks in these projects when the transaction turns sour. We define 'problematic PPPs' as projects where there is disclosure of private sector financial losses, corporate failure or when the public sector makes an additional payment to the project during the concession period. Using this definition, our results reveal 35 out of 155 PPPs in our sample (ie. 22.6%) are considered problematic in nature. We categorise these problematic PPPs by their dominant revenue structure (availability charge revenues vs. market demand based revenues) and find that both groups are just as likely to be problematic projects. The evidence in this study clearly shows that transport-related PPPs are the primary source of problematic projects. Furthermore, the large proportion of financial losses come from market demand related transport PPPs. We estimate the median financial loss to the private sector of $30 million per project from PPPs with an availability payment revenue structure. Conversely, we calculate the median financial loss to the private sector of $188 million per project from PPPs with a market demand based revenue structure. The size of the financial losses from problematic PPPs with market demand based revenues are magnitudes larger than projects with availability payments.

With respect to the severe financial losses in transport related PPPs, the Australian Government (2011) recognises the over-estimation of market demand for transport related projects around the world. In the case of Australia, the evidence from our sample of PPPs reveals a similar story. The three largest failures in transport related PPPs occurred with the Cross-City Tunnel in Sydney, Brisbane's RiverCity Motorway (Clem7 tunnel) and Brisconnections (Airport M7 Link) in 2006, 2011 and 2013, respectively. Overly optimistic traffic demand forecasts were the main reason for these PPP failures. At the time of writing, the Infrastructure Australia (2017) Current Infrastructure Priority List reports 7 'high priority' and 11 'priority' projects, of which 17 out of 18 are transport related. The evidence presented in this study suggests that Australian governments and private sector investors must tread carefully in terms of the structure, finance and operations of transport related PPPs in the future.

It is important to disclose that due to the limited availability of data, this study does not perform a comprehensive cost-benefit analysis of Australian PPP infrastructure projects. Furthermore, the absence of a comprehensive dataset means we cannot calculate the raw

returns or the risk-adjusted returns across the full lifecycle of Australian PPP infrastructure projects. Given the limitations of the data, we propose the following policy recommendations in order to improve our understanding of the investment risks and returns of Australian PPPs in the future.

Recommendation 1: Stronger Disclosure / Transparency Regime for PPP Entities

First, it is clear that the appropriate PPP data to perform a comprehensive analysis is not available in the public domain. Our first recommendation is to strengthen the disclosure and transparency regime for all entities related to Australian PPP transactions. There are many private sector entities engaged in multi-billion dollar PPPs in Australia and yet they do not disclose their financial reports to the public. We offer two potential reasons for this outcome. First, many PPP transactions structure their assets and liabilities inside investment trusts, and as a result, there is no obligation to disclose the financial reporting of these trust structures. Second, some PPPs are structured inside Australian corporations which are classified as non-reporting entities, therefore, they also have no obligation to report their financial performance. Given the large size of PPP transactions and the long financial commitment by the taxpayer, Australian corporations, trustees and investment trusts associated with PPP transactions must be subjected to a stronger level of financial reporting disclosure and transparency. There is the old argument that PPP transactions are facilitated with 'commercial-in-confidence' provisions and a level of opaqueness is required to protect the trade secrets (such as the disclosure of profit margins) of the private sector entities in the consortium. The counter-argument is all publicly listed firms are obliged to report a minimum level of standardised financial disclosure to their respective stock exchange. Publicly traded firms disclose their financial performance and yet they continue to maintain their trade secrets and informational advantages inside their respective companies. The thousands of publicly listed companies around the world provide empirical evidence that entities can manage profitable businesses with high levels of standardised disclosure and transparency and yet maintain commercially sensitive information inside these entities. In the context of this study, Australian corporations, trustees and investment trusts who are associated with PPP transactions should be subjected to stronger levels of standardised disclosure and transparency.

Recommendation 2: Centralised Infrastructure Database in the Public Sector

Everyone is fully aware that poor data leads to poor decisions. In the case of PPPs, there is no central repository of PPP transactions. Given that the public sector (via federal, state, territory and local governments) are the entities making PPP payments over the long-term (with respect to availability payments), it is in the public interest that a central repository of data be developed. After a period of time, the database can be privatised at a later date, if required. An example of world's best practice in public sector data disclosure comes from HM Treasury (2010) and their 'Open Data Strategy'. The UK government's transparency is so comprehensive, they disclose a list of expected future availability payments on all of their PPP projects. Furthermore, this PPP data is available to the public at zero cost. In this emerging world of 'big data', it is clear that Australian governments have much to gain by studying the HM Treasury open data initiative.

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Appendix 1 – PPPs in the state of New South Wales (NSW)

Sector	Name	Problematic	Financial Loss	Corporate Failure	Govt. Payment
Education	New Schools Project 1				
Education	New Schools Project 2				
Energy	Colongra Gas Pipeline & Storage				
Energy	Burrendong Mini Hydro Power Station				
Energy	Copeton Mini Hydro Power Station				
Energy	Glenbawn Mini Hydro Power Station				
Energy	Pindari Mini Hydro Power Station				
Energy	Wyangala Mini Hydro Power Station				
Health	Royal North Shore Hospital Redevelopment				
Health	Bathurst, Orange & Associated Health Services				
Health	Newcastle Mater Hospital Redevelopment				
Health	Hawkesbury Hospital				
Health	St George Hospital Car Park				
Health	Randwick Hospital Car Park				
Health	Sydney Hospital Car Park				
Health	Port Macquarie Base Hospital	X	X		X
Health	Liverpool Hospital Car Park				
Health	Newcastle Community Health Centre				
Health	Northern Beaches Hospital				
Housing	Bonnyrigg Living Communities Project	X		X	
Housing	Sydney Olympic Village				
Justice	Long Bay Prison & Forensics Hospital				
Justice	Parramatta Police Headquarters				
Justice	Junee Correctional Centre				
Social	Sydney Convention Centre Precinct				
Social	Stadium Australia	X	X		X
Social	Sydney Superdome				
Transport	North West Rail Link				
Transport	Rolling Stock Maintenance Facility				
Transport	Waratah (Train) Rolling Stock	X	X		X
Transport	Sydney Harbour Tunnel				
Transport	M5 Motorway				
Transport	M2 Motorway				
Transport	Lane Cove Tunnel	X		X	X
Transport	Westlink M7 Motorway				
Transport	Cross City Tunnel	X		X	
Transport	Airport Line Stations	X	X		X
Transport	Eastern Distributor Motorway				
Transport	M2 Motorway Widening				
Transport	M5 Motorway Widening				
Transport	Chatswood Transport Interchange	X		X	
Transport	Parramatta Transport Interchange	X		X	
Transport	Sydney Light Rail				
Transport	Batemans Bay CBD Car Park				
Transport	NorthConnex				
Transport	WestConnex				
Water	Blue Mountains Sewage Transfer Tunnel				
Water	Macarthur Water Treatment Plant				
Water	Rosehill Camelia Recycled Water	X		X	
Water	Woronora Water Treatment Plant				
Water	Prospect Water Treatment Plant				
Water	Illawarra Water Treatment Plant				
Water	Cronulla Wastewater Treatment Plant				

Water	Eastern Creek Alternative Waste Tech.				
Water	Sydney (Kurnell) Desalination Plant				
Water	Western Sydney (Water) Recycling				

Appendix 2 – PPPs in the State of Victoria (VIC)

Sector	Name	Problematic	Financial Loss	Corporate Failure	Govt. Payment
Education	Partnerships VIC Schools Project				
Health	Bendigo Hospital				
Health	Biosciences Research Centre				
Health	Casey Community Hospital				
Health	Mildura Base Hospital (La Trobe)	X	X		X
Health	Royal Children's Hospital				
Health	Royal Women's Hospital				
Health	Victoria Comprehensive Cancer Centre				
Justice	Ararat (Hopkins) Correctional Centre	X		X	
Justice	Deer Park (Metro. Women's CC)	X	X		X
Justice	Fulham Prison				
Justice	Marngoneet Correctional Ctr (Lara)				
Justice	Metropolitan Remand Ctr (Ravenhall)				
Justice	Port Phillip Prison				
Justice	Victoria County Court				
Social	Docklands Studios (Film & TV)	X	X		X
Social	Emergency Alerting System				
Social	Melbourne Convention Centre	X	X		
Social	Royal Melbourne Showground				
Social	Metropolitan Mobile Radio				
Transport	Southern Cross Station	X	X		X
Transport	National Express Group (NEX)	X		X	X
Transport	CityLink-Tullamarine Widening Project				
Transport	EastLink (ConnectEast)	X	X		
Transport	EastWest Link Road	X			X
Transport	Peninsula Link				
Water	Ballarat North Water Reclamation				
Water	Barwon Water Biosolids Management				
Water	Campaspe Water (Echuca/Rochester)	X	X		
Water	Enviro Altona				
Water	Victorian (Wonthaggi) Desalination	X	X		
Water	Wodonga Wastewater Treatment Plant	X		X	X
Water	Yan Yean Water Treatment Plant				

Appendix 3 – PPPs in the State of Queensland (QLD)

Sector	Name	Problematic	Financial Loss	Corporate Failure	Govt. Payment
Education	Townsville Childcare Centre				
Education	Southbank Education Precinct	X	X		X
Education	Plenary Schools Pty Ltd				
Education	Aspire Schools Pty Ltd				
Health	Bramston Terrace Car Park				
Health	Butterfield Street Car Park				
Health	Gold Coast Private Hospital				
Health	Gold Coast University Hospital Car Park				
Health	Herston Quarter				
Health	Noosa Hospital				
Health	Princess Alexandra (PA) Hospital CarPark				
Health	Prince Charles Hospital Car Park				
Health	Prince Charles Hospital Early Education				
Health	Robina Hospital (St Vincents Hospital)	X	X		
Health	Sunshine Coast Public Uni Hospital				
Health	Townsville Hospital Support Facilities				
Housing	1 William Street				
Social	Brisbane RNA Showground				
Social	Townsville Ocean Terminal	X		X	
Social	Qld Government Wireless Network				
Transport	Airport M7 Link (Brisconnections)	X		X	
Transport	Brisbane Airtrain	X	X		
Transport	Legacy Way Tunnel				
Transport	Gateway Bridge				
Transport	Gateway Bridge Duplication				
Transport	Gold Coast Rapid (Light) Rail				
Transport	Gold Coast Rapid (Light) Rail Stage 2				
Transport	Logan Motorway				
Transport	QLD New Generation Rolling Stock				
Transport	Clem7 Tunnel (RiverCity Motorway)	X		X	
Transport	Toowoomba Second Range Crossing				
Water	Noosa Council Sewerage Treatment				

Appendix 4 – PPPs in the State of Western Australia (WA)

Sector	Name	Problematic	Financial Loss	Corporate Failure	Govt. Payment
Education	WA Schools				
Health	Fiona Stanley Hospital				
Health	Joondalup Hospital				
Health	Joondalup Expansion				
Health	Midland Health Campus				
Health	Peel Health Campus				
Health	QEII Medical Centre Car Park				
Justice	Acacia Prison	X			X
Justice	Eastern Goldfields Regional Prisons (EGRP)				
Justice	Perth CBD District Courts Complex				
Social	Perth Convention & Exhibition Centre	X	X		
Social	Perth Stadium				
Water	Mundaring Water Treatment Plant				

Appendix 5 – PPPs in the State of South Australia (SA)

Sector	Name	Problematic	Financial Loss	Corporate Failure	Govt. Payment
Education	Education Works				
Health	Modbury Hospital	X			X
Health	Royal Adelaide Hospital	X	n.a.	n.a	X
Justice	Regional Police and Court Project				
Social	SA State Aquatic Centre	X			X
Transport	AustralAsia (Adelaide-Darwin) Railway	X		X	
Water	Riverland Water Project (wastewater)				
Water	Victor Harbor Wastewater Plant				

Appendix 6 – PPPs in the Northern Territory (NT)

Sector	Name	Problematic	Financial Loss	Corporate Failure	Govt. Payment
Social	Darwin Waterfront Convention Precinct				
Justice	Darwin Correctional Precinct				

Appendix 7 – PPPs in the Australian Capital Territory (ACT)

Sector	Name	Problematic	Financial Loss	Corporate Failure	Govt. Payment
Education	ANU Accommodation				
Education	New ANU Accommodation				
Justice	ACT Law Courts Facility				
Transport	Capital Metro (Canberra Light Rail)				

Appendix 8 – PPPs with the Commonwealth Government (CWLTH)

Sector	Name	Problematic	Financial Loss	Corporate Failure	Govt. Payment
Defence	Custom Coastwatch Aerial Surveillance				
Defence	Defence HQ Joint Operations Command				
Defence	Mulwala Munitions Factory Redevelopment				
Defence	Single LEAP Phase 1				
Defence	Single LEAP Phase 2				