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Contractual relationships for better stewardship of privatised critical infrastructures

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Contractual relationships for better stewardship of privatised critical infrastructures

I. ABSTRACT

Governments increasingly rely on forms of privatisation to provide critical public infrastructure yet when those infrastructures fail to meet community expectations government bears the political and economic risks, being held accountable by the public as steward for those infrastructures. Reconfiguration of the contractual relationships may achieve better stewardship. Many of the forms of privatization rely on Agency theory prescriptions, conceptualizing organisations and individuals as motivated solely by self-interest. Stewardship theory (Van Slyke 2007) has developed as a complement to Agency theory offering the possibility of contractual relationships which maximize stewardship outcome. Stewardship theory asserts that pro-stewardship factors cause the agent/steward to act in the interests of the principal.

This research has interrogated the literature finding that of the pro-stewardship factors, sense of responsibility is pre-eminent and has a significant link to the agent acting as a steward. The research has explored how important it is that the steward feel sense of responsibility and the actions that sense of responsibility. Case studies of privatized core elements of urban water systems infrastructure were explored. Data has been gathered primarily from archival sources and individual interviews of government and private sector executives key to those systems.

This paper reports the findings as to the extent of stewardship, how important it is that the steward acts in the interests of the principal, even to the steward's detriment and the importance of the steward feeling a sense of responsibility. The actions which increase that sense of responsibility will be assembled to position the research to better proceed with the analysis of the data as to these actions.

II. INTRODUCTION

Governments are increasingly relying on the private sector to construct, maintain, operate and own public infrastructure. The privately operated, government owned Melbourne railway system has failed to run scheduled services[1]. The New South Wales government was forced to resume the responsibility for the Port Macquarie Base Hospital from the private operator (Funnell et. al. 2009) because service levels declined unacceptably. In 2009 the South Australian Government and United Water, its then contractor for City of Adelaide water services filed counter claims for "tens of millions of dollars" severely embarrassing the government when the South Australian Treasurer was chastised by the Supreme Court for public statements which were incorrect[2]. All these infrastructures were previously owned and operated by government. Are these troubled privatisations sending a message to governments that they must govern these privatisations better?

The public is now holding governments accountable for outcomes from public infrastructures that are privatized in the same way as they require government to ensure a satisfactory outcome from financial institutions or airlines. Privatisation had been seen as a masterstroke, recruiting private capital to resolve the widespread public funding shortfall, achieving efficiency, effectiveness and economy and transfer risk from the state to the private sector. For some privatisations the commercial risks have indeed been well managed but political and governance risks appear to have increased (Hodge & Carsten 2007) together with a corresponding increase in the average cost of service provision (Quiggan 2005). Thus the concept of an irrevocable transfer by government of operational and financial risk to the private sector has been shown as a fictitious impossibility (Funnell et al 2009. Governments

[1] *PPP's: plans, PR, procrastination* :The Age Jan 15, 2009

are at political risk as the public holds governments accountable as steward for the infrastructure against a range of public values such as affordability, sustainability and efficient use of public resources. In summary despite privatization the public holds governments accountable for the infrastructure and it would be prudent for governments to investigate whether better stewardship can be achieved through better contractual relationships.

Simply. Is there a better way to govern infrastructures?

Present typical forms of contractual arrangements for privatized public infrastructures may not be adequate because of the limitations of the ideology in vogue when they were formed. The present forms of contractual relationships reflect the largely economic-rationalist reforms of the 1980's and 1990's labeled New Public Management (NPM). Whilst the NPM reforms sought to bring efficiency, effectiveness and economy to service provision their focus on the self-interest of the individual organization (Denhardt & Denhardt 2007) has led to opportunism on the part of the private infrastructure owner or contractor to government resulting in public values such as affordability and sustainability not being satisfied. There has been extensive consideration given to the form of governance such as traditional contract, e.g. alliances and the relational contract, Public Private Partnerships (PPP's), build-own-operate-transfer (BOOT).

The reconfiguration of governance arrangements to move from the model of motivation by self-interest can be best advanced by the application of a theory which builds on the existing principles supporting principal/agent relationships and which provides a perspective as to how relationships can be changed to achieve a better stewardship outcome. Stewardship theory with its focus on the principal/agent relationship and a core assertion that emphasis upon factors such as trust, reputation, collective goals, shared values and relational

[2] *Law suits flowing both ways:* The Australian Sept 22, 2009; *Treasurer chastised at pre-trial hearing:* The Australian Dec 16, 2009

reciprocity (Davis et al 1997, Van Slyke 2007) will result in the agent acting in the interests of the principal (Donaldson & Davis 1991, Davis et al 1997 and Van Slyke 2007) offers a perspective as to how to reconfigure relationships to achieve improved stewardship.

To test the core Stewardship Theory assertion that relationships can be configured to maximise the stewardship outcome it is necessary to gather and analyse empirical evidence. To achieve general applicability of learnings from the proposed research it is necessary for there to be substantial privatisation of the infrastructures, for there to be no significant variable as to the specifications of the infrastructures and for there to be commonality between case studies as to the public values that attach to the infrastructures. The water industry (drinking water and sewerage) throughout the world is subject to a range of similar forms of privatisation, constructed of similar infrastructure and technology irrespective of its location and because the reticulation of drinking water and removal of waste water is fundamental to the functioning of all urban societies attracts a consistent set of public values. The relative constancy of these variables will assist in maximizing the validity of the results of analysis of the correlation between emphasizing a pro-stewardship factor and the stewardship outcome. If these aspects of Stewardship theory are further developed then it may be possible to build on the emerging hybrid mixes of organizations from the state, market and network modes (Keast et al 2006) and develop a new, better form of privatised water systems governance.

The specific research questions which this research pursues are:

RQ 1: *Will a steward act in the interests of the principal, even to the detriment of the steward?*

RQ 2: *How important is it that the steward feels a sense of responsibility to the principal for the steward to act in the interests of the principal, even to the detriment of the steward?*

RQ 3: *What actions are available to either the principal or steward to increase or support the steward's sense of responsibility?*

Those questions have been pursued by methodological tools consisting primarily of a literature review, an archival study and an informant interview study. The research has reached the stage of drawing together the findings from across the case studies. In the following sections this paper firstly examines the stewardship and Stewardship theory literature. Secondly the methodology and the case studies chosen are explained. Thirdly the findings are discussed. These findings encompass the extent of stewardship achieved and how important it is that the steward acts in the interests of the principal, even to the steward's detriment and then proceed to the importance of the steward feeling a sense of responsibility. Finally, the actions which increase that sense of responsibility will be assembled to position the research to better proceed with the analysis of the data as to these actions.

This paper will now proceed to make that account of the progress of this research.

III. STEWARDSHIP & STEWARDSHIP THEORY

This section of the paper first develops a definition of stewardship in the context of a government as steward of public infrastructures. Then the suitability of public values as a measure of stewardship will be explained. In turn Stewardship theory will be traversed to explain why its application is considered to be a means to achieve better stewardship of infrastructure. The principles underlying Stewardship theory will be examined and the core assertion that emphasising certain 'pro-stewardship' factors within a relationship will result in the agent acting in the interests of the principal (Van Slyke 2007) will be examined..

A. Stewardship

Stewardship has been conceptualised in various contexts, resulting in a range of meanings, and clouding the community's expectations of government as steward. Birnberg (1980) distinguished between the traditional custodial form, the asset utilisation form and the "open ended" form wherein the asset owner allows the steward extensive, "open ended" autonomy as to the disposal of, or acquisition of assets conditional upon achievements which are most often monetary being met. This form of stewardship with the possibility of the conversion of the asset does not accord with public expectations that the critical infrastructure remain available to meet the needs of the public. Even fully privatized water infrastructures are regulated to ensure that when water infrastructure is sold it remains as a water system meeting public expectations. In contrast the asset utilisation form of stewardship allows the steward more autonomy and commensurate judgment than does the base, custodial form, setting the steward's role in terms of objectives and targets which in a water system example might be improved performance as to volume, water quality, and environmental impact. It is this asset utilisation form with its intentional autonomy of the steward and requirement for ongoing improvement which is adopted throughout the thesis. For this thesis and to further the understanding of the concept of stewardship, a steward has been defined as follows:

- A steward is an agent, contractor or employee who engaged on the basis of having the responsibility to take the initiative to apply their skills and resources to both achieve the targets set by the principal and to actively advance the interests of the principal.

B. Stewardship of public values

Having defined the steward this research required a measure of the achievement or otherwise of stewardship and this paper will proceed to outline why public values is an

appropriate measure. Values of a community are translated into expectations of government in this case critical infrastructures. The values can be of a general nature e.g. democracy, efficiency, sustainability (Bozeman 2002, Van Gestel et al 2007), or specific to an element of the community e.g. networked infrastructures (DeBruijn & Dicke 2006, De Bruijn et. al. 2008, Van Gestel et al 2007, Van Gestel et al 2008). Van Gestel et al (2008) assembled a taxonomy of the public values at play throughout the stages of six networked infrastructure projects in the Netherlands. They found that the public continually trades-off public values. For that reason in this research the taxonomy of public values (Van Gestel et al 2008) was applied on a case by case basis and the key public values in play in that case were identified. An assessment of the data in respect of each key public value will be made and conclusions reached as to whether or not stewardship of that public value was achieved.

C. Stewardship theory

The concept of stewardship has been recognised and promoted by Stewardship theory which emerged in the 1980's as a complement to Agency theory. Agency theory had been recognised as inflexible and narrowly focused upon control of the agent, ignoring collective and pro-organisational behaviours of agents (Jensen & Meckling 1976). Stewardship theory emphasises collective behaviour in which a higher value is placed on goal convergence in contrast to the goal divergence conceptualisation of Agency theory (Van Slyke 2007). The agent acts as a steward of the principal's interests. This research focuses on two major aspects of Stewardship theory, the key tenet of it being possible that the steward will act in the interests of the principal, even to the detriment of the steward (Davis et. al. 1997a, Van Slyke 2007) and the tenet that if factors (pro-stewardship factors) such as trust and personal power, autonomy, shared culture and norms, and responsibility (Davis et al 1997, Van Slyke 2007) are emphasised then the agent will act as a steward.

Stewardship theory argues that the steward maximises their utility by acting in their organisations best interests motivated by intrinsic rewards such as opportunities for growth, achievement, affiliation and self-actualisation (Davis et. al. 1997a, Tosi, Brownlee, Silva & Katz 2003). Davis et. al. (1997a) had found that where Stewardship theory behaviours were in evidence managers defined themselves in terms of their membership of the organisation by accepting the organization's objectives and working towards the goals of the organisation. These findings bring focus to a key issue for Stewardship theory. The level of performance of the steward contemplated in Stewardship theory is not clear. Put another way, are Stewardship theorists referring to the Agency theory expectation of contractual compliance or are they conceptualising a higher level of performance where the steward acts in the interests of the principal, exceeding the contractual requirements, sometimes acting to the agent's immediate detriment. i.e. the meaning to be attributed to "...will not depart from the interests of his or her organisation …"(Davis et. al. 1997a). Davis et. al. (1997a) set the base for the conceptualization of the expectation of the steward, observing that the steward meets their trade-off between personal needs and organisational objectives by believing that by working towards organizational ends his or her personal needs are met (Davis et. al. 1979a). This requires that the steward have the perception that the utility gained by pro-organisational behaviour is higher than the utility that can be gained through individualistic, self-serving behaviour (Davis et. al. 1997a). Van Slyke (2007) says that the steward views the success of the organisation or contract as accomplishment and incentive for achieving goal alignment. Unfortunately the examples offered by Davis et. al. (1997a) and Van Slyke (2007) do not clarify the point whether Stewardship theory is asserting that the steward may act to his or her own detriment. The issue is highly important because if Stewardship theory were to be offering a perspective as to organisational arrangements which better achieve the Agency

theory objective of efficient contractual relationships then it would be reasonable to perceive of Stewardship theory as nothing more than an evolution or explanation of one aspect of Agency theory. However this research has identified (an considers appropriate to critical infrastructure) a form of stewardship that conceptualises a steward as being given autonomy and personal power and being required to exercise commensurate judgment and contribute both initiative and insight to achieve the objectives and goals of the master. The literature does not suggest that the steward has the option of determining a trade-off between personal interests and those of the master. Some encouragement is found by a closer consideration of the observation by (Davis et. al. 1997a, p. 25) that "…the steward's opportunity set is constrained by the perception that the utility gained by pro-organisational behaviour is higher than the utility that can be gained through individualistic, self-serving behaviour." If an individual or organisation has that internal perception then when faced with a "moment of truth" would not they act as a true steward and do whatever is appropriate in the interests of the principal. Similiarly Van Slyke (2007 p165) asserted that a steward "…makes decisions he/she perceives to be in the best interests of his/her principals." It would seem that Stewardship theorists are offering a conceptualisation that is asserted to provide a better outcome for the principal than does Agency theory but that they have stopped short of specifying what that outcome is in comparison with that assumed in Agency theory. This situation may have come about by the limited amount of empirical research which has tested this fundamental Stewardship theory tenet. It would seem that Stewardship theory would benefit from further empirical research to understand and confirm the operation of this tenet.

Pro-stewardship factors have been claimed by Stewardship theorists (Davis et. al. 1997a) to take the focus on structures from those which monitor and control to those which facilitate and empower through long-term relations (Davis et. al. 1997a). Thus these pro-stewardship

factors trust and personal power, autonomy, shared culture and norms and responsibility (Van Slyke 2007) offer the possibility of being a way to reconfigure the relationship between principal and agent to achieve stewardship. This causal link between the emphasis upon pro-stewardship factors and a better stewardship outcome is set out in the following Figure 1.

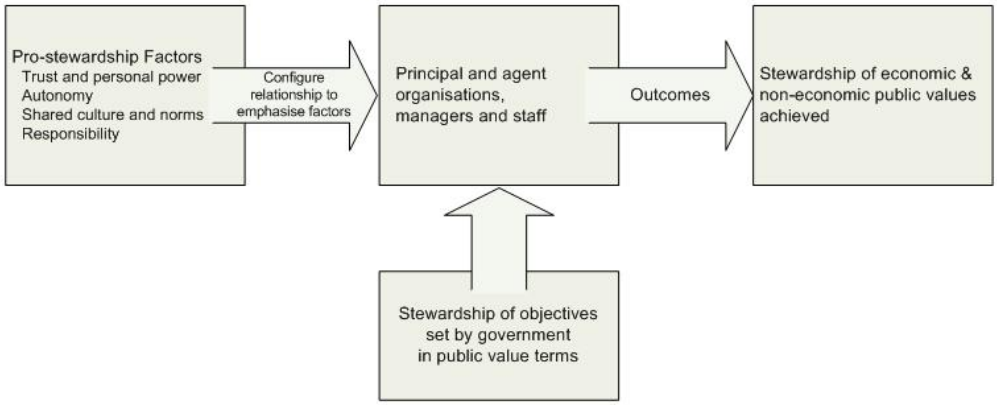

Figure 1: Pro-stewardship factors impact on stewardship

This research unpacked the literature surrounding each of the four factors, and sought to understand the relative importance of each to the agent acting as a steward. It was concluded that sense of responsibility on the part of the agent may possibly be the key factor which distinguishes an agent from a steward. If research could explore that possibility then that aspect of Stewardship theory would be further developed and industry and government would be better informed as to the factor to emphasise when configuring principal/agent relationships.

The literature in respect of sense of responsibility was found to be underdeveloped generally, and particularly so in respect of interventions either the principal or the steward can

take to maximise that sense of responsibility. Accordingly a further major focus of this research will be the actions available to maximize the steward's sense of responsibility.

In summary the thesis proceeded to carry out research into the three key issues:

1. whether the key Stewardship theory tenet that a steward will act in the interests of the principal, even to the detriment of the steward is valid;
2. whether the pro-stewardship factor sense of responsibility is important to the steward acting in the interests of the principal, even to the detriment of the steward; and
3. the interventions available to either the principal or steward to increase or support the steward's sense of responsibility.

The methodological tools and the case studies chosen are explained in the following section.

IV. METHODOLOGY & CASE STUDIES

A. Methodological design

Recognizing the formative stage of Stewardship theory and the need to gather and analyse data regarding the satisfaction of public values and the behaviours of organisations and individuals a methodological design comprised of an extensive literature review, an archival document study, an informant interview study, and the selection of case study water systems and the subsequent treatment and analysis of data was adopted. The methodology was constructed to seek out evidence in the following key areas:

- day to day stewardship behaviour and extraordinary stewardship events;
- sense of responsibility on the part of the steward and the perceptions of participants as to why that sense of responsibility was present;
- actions and interventions by the principal or steward to maximize or support sense of responsibility.

These three key areas were used consistently as a framework to structure the gathering of data in all phases of the research e.g. archival data study, informant study, the write up of the findings within each case study. That same framework will be further used to focus the discussion of the findings across the case studies set out in Section V, Discussion of findings.

This research design provides significant strengths in that the overlap of data gathered from each of the three studies and the progressively, increasingly structured nature of the data gathering methods controls for issues such as multiple realities (Sale et al 2001) of informants (and the need to capture those multiple realities (Brower, Abolafia & Carr (2000) and provided triangulation to test possibly self-serving data provided in corporate documents. Alternatively the design through the case studies and informant interviews was open to the lived experience of those involved in the provision of critical infrastructures. On balance the methodological design is considered to provide assurance as to the validity and appropriateness of data.

B. Case studies

To maximise the general applicability of research conclusions a critical infrastructure sector which demonstrated key criteria; firstly substantial privatisation, secondly no significant variable as to the nature of the infrastructures, and thirdly commonality as to the public values attach to the infrastructures was sought. The water systems industry (drinking water and sewerage) throughout the world is subject to a range of similar forms of privatisation, constructed of similar technology irrespective of its location and because reticulation of drinking water and removal of waste water is fundamental to the functioning of urban societies anywhere there is a strong likelihood of commonality of public values. It was concluded that privatised water systems was a sector which offers the potential to capture data which will be recognized as highly relevant to other areas of infrastructure and from which conclusions can be drawn because of the relative consistency of factors (other than the

stewardship factors being tested) between case studies. The overall body of Australian candidate case studies was examined. Four major urban water systems were determined as satisfying the key criteria outlined earlier in this paragraph, and were found to be willing to participate in the research study. Those case studies and their rich mix of contractual arrangements underpinning the relationships are described (in a de-identified manner) in **Table 1 Case study water systems**.

Table 1 Case study water systems	
Urban water system	**Contractual arrangements underpinning relationships**
The "pure alliance"	an alliance comprised of the government entity responsible for the distribution and retail services for drinking and waste water and a consortium of two companies which are subsidiaries of companies providing services worldwide pursuant to an alliance agreement to perform operations and maintenance and some capital works for 12 years.
The "joint venture"	a joint venture by way of 50% ownership of each of two companies (distribution & retail) by the government entity responsible for the distribution and retail services for drinking and waste water and other utility services and one international company for the distribution company and one ASX listed company for the retail company for the operation and maintenance and some capital works for water pursuant to a formal agreement for 20 years.
The "early alliances"	two identical alliance contracts between a government entity and an international contracting company for one half of a metropolitan area, and between the government entity and an international engineering and property services company for the other half of the metropolitan area, for the delivery of operations and maintenance services for the drinking and waste water services. The contracts were put to tender after 7 years and let and extended for a further total 10 years.

The "BOOT's"	two identical Build Own Operate Transfer contracts for 25 years to construct and operate drinking water filtration plants. In one contract a government entity has contracted with an international utilities company to construct and operate a filtration plant providing approx. 75% of the requirements of a large metropolitan area. The second contract is with an international utilities and transportation company to construct and operate two small filtration plants.

Each of these case studies is rich in secondary data and as they have in common a focus on operations and maintenance and allowed comparison across case studies. The "early alliances" case study offered two alliance contracts established in the mid 1990's for the same services to adjacent geographical areas with the added benefit of the government entity having publicly identified the shortcomings of the current arrangements and gone to market for a replacement, single alliance. This evolving model, when contrasted with the "pure alliance" model case study, was thought likely to offer clear insights into interventions which have a strong correlation with *sense of responsibility* and satisfaction of public values such as service quality and value for money. Similiarly the "BOOT" contracts with their element of ownership of the water filtration plants by each of the private companies was thought to be rich in opportunity to understand the impact of such contractual arrangements on sense of responsibility. In turn the "joint venture" case study with the ownership of such plants retained by the government entity offered a promising comparison with the "BOOT" case study. The conduct of operations and maintenance by way of a "joint venture" promised opportunities for comparison with both the "early alliances" case study where the government entity had commenced instigating an authentic alliance model and the established "pure alliance" case study.

All four candidate case study water systems are of a sufficiently large size to be in the *"utilities with 100,000 connected properties"* grouping utilized by the independent commission report. This similarity in size will remove variables based upon the size of the case study operations and will assist the researcher to focus on the dependent variables arising out of the contractual relationships of each case study.

V. DISCUSSION OF FINDINGS

The research has progressed through that methodology to the stage of drawing together the findings from across the case studies. In this section the findings as to the extent of stewardship achieved and how important it was that the steward acted in the interests of the principal, even to the steward's detriment will firstly be examined. The findings as to the importance of the steward feeling a sense of responsibility will then be examined. Finally, the actions which increase that sense of responsibility will be assembled to position the research to better proceed with the analysis of the data as to these actions.

A. Stewardship

This research will firstly determine whether stewardship has been achieved in each case study water system and will then explore the operation of the Stewardship theory tenet that there is a possibility of the steward acting to their own detriment but in the interests of the principal.

1) Achievement of stewardship

Stewardship of the privatised water systems was measured using public values found to be most emphasized in the water systems. These were: efficient use of public resources and quality of services (including the environmental impact of operations).

Measurement of efficient use of public resources was assisted by all aspects of the urban water industry in Australia being subject to complete regulation resulting in there being significant publicly available findings by independent entities such as Auditors-General and

independent regulators. An independent commission report compared the combined operating costs for water and sewerage per property for 11 like utilities revealing that for 2010 the "pure alliance" was the third lowest cost, the "joint venture" was second highest, the "early alliances" were second lowest and the overall system for the "BOOT's" was fifth lowest. The "joint venture" water system is located in a relatively low rainfall region and has established a capital program to increase capacity which it acknowledges in its submissions to the independent regulator will continue to translate into relatively higher costs of services. Reports of an Auditor-General in the case of the "pure alliance", and the World Bank in the case of the "early alliances" advised that those systems had by creating the alliances achieved significant savings over that which would have been achieved had the schedule of rates arrangements continued. No similar "before and after" comparison is available for the "joint venture" and "BOOT" water systems. However, having particular regard to the independent commission report data it is concluded that each case study water system has satisfied the efficient use of public resources public value.

The quality of services provided by all case study water systems has been measured by using the performance indicators reported the independent commission report. The Report adopts the number of complaints as an indicator of the level of customer service and customer satisfaction. Of the eight utilities compared the system which includes the "BOOT" filtration plants reported the lowest level of complaints, the "pure alliance" the second lowest, the "joint venture" the fourth lowest, and the "early alliances" the highest during 2010. The average duration of an unplanned interruption to the customer's water supply is considered to be a partial indicator of customer service, and also an indicator of how effectively the network is being operated and maintained. Of the nine utilities compared for 2010 the "pure alliance" had the lowest average duration, the "joint venture" the fourth lowest, the "early alliances"

the fourth highest, and the water system that includes the "BOOT" filtration plants the second highest duration. The percentage of calls answered by an operator within 30 seconds is considered to give an indication of the efficiency of the customer service centre. Of the eight utilities in the comparison "pure alliance" recorded the second highest at 95%, the water system which includes the "BOOT" filtration plants the third highest percentage, and the "early alliances" system at 72%. "Joint venture" is the only case study utility not reported in the independent commission comparison because that comparison relates to automated call centres and the "joint venture" call centre was "all human". Alternate data was found in the report of the independent regulator which revealed that in 2010 "joint venture" achieved an average waiting time for non-emergency calls of 33 seconds and 23 seconds for emergency calls.

To complement this statistical data, and to understand some of the less favourable performances revealed by the data reported in the independent commission report the archival document study and the informant interview study sought out any significant adverse mention as to service quality. This questioning revealed that both the "pure alliance" and the "joint venture" were held to have achieved a high quality of services. The relatively poor performance of "early alliances" in the categories of highest level of complaints and duration of unplanned interruptions was confirmed by two government entity informants who attributed this to the alliances focusing on the KPI's to achieve bonus payments rather than providing a sound quality of service. A contrary finding came from the World Bank report which concluded that the "early alliances" had achieved efficient use of public monies and much improved quality of services when compared with the arrangements in place before the alliances commenced. Notwithstanding that the water system which includes the "BOOT" water filtration plants having reported the second highest duration of unplanned interruption

of services the further enquiries revealed no significant issues as to the quality of services and indeed an overall high quality of services were found. It is concluded that against the measure of the quality off services public value each of the "pure alliance", "joint venture" and the water system which includes the "BOOT" water filtration plants have achieved a sound stewardship of the infrastructure. For the "early alliances" only a "pass conceded" is warranted.

Bringing together the performance against both measures it is concluded that the various privatised arrangements have achieved stewardship of the critical water system infrastructures.

2) ***Steward acting to own detriment***

A key focus of this research is a better understanding of the level of performance of the steward envisaged in Stewardship theory. Put another way, is it the Agency theory literal compliance with contractual terms or is it a higher level of performance where the steward exceeds the contractual requirements, sometimes acting to the agent's own detriment. Having established that stewardship had been achieved this research firstly sought out data in each case study which would go to the point of whether the private entity had ever acted to its won detriment but in the interests of the government entity. The following paragraphs will review the data and discuss whether action by the steward to its detriment is important to there being stewardship.

Examples of the private entities acting to their own detriment were not found. The "pure alliance" revealed a high quality of service and the government entity and private entity informants were insistent that there was no intent by any party that the steward act to their own detriment. The informants offered an alternate conceptualisation citing the requirement of the alliance agreement that all decisions must be unanimous and must be made in the interests of the alliance and not any one participant. Thus if a member of the "pure alliance"

believed that a particular action was necessary then the issue would be brought to the joint governance board and a decision made collectively, removing the possibility of a member (the steward) taking a decision, albeit one to their own detriment, independently. The government entity informants advised that there were no instances of the private participants acting to their own detriment but confirmed that private alliance members do put the interests of the "pure alliance" first over the interests of their own organisations. Government entity informants explained that rather than expect private participants to act to their own detriment the government entity would use the mechanisms in the agreement e.g. annual adjustment of performance targets and rewards and gain share/pain share on capital works to focus the private participants on activities which are in the best interests of the principal. Further the government entity informants explained that government entity acknowledges that private participants are commercial and won't exist if they don't make a profit. The "joint venture" revealed that the contractual relationships and decision-making mechanisms i.e. the 50% ownership by the principal, the funding arrangements and the governance board, limit the "joint venture" in its discretion to act to its own detriment. Indeed all informants did not see a place in the operation of the "joint venture" for such action to its own detriment yet the "joint venture" has demonstrated the ability to achieve stewardship of the system infrastructure. The "early alliances" did reveal a quite remarkable range of perspectives through the informant study. One government entity informant showed a clear understanding of the concept of a contractor acting to its own detriment recounting the response of the Mechanical and Electrical alliance (not the subject of the case study) to a death of an employee and the resulting requirement that each of the thousands of similar platforms be assessed, faults identified and made. The M&E Alliance took the attitude that there were no barriers and did the work on time. In contrast the "early alliances" saw the work as a lesser priority, "needing

a work order". However that government entity informant and a private participant informant said that for call outs, burst water mains the "early alliances" do better than the contract requirements, doing whatever needs to be done and resolving which entity pays the cost later. The "BOOT" water filtration plants presented no examples of the private entities ever acting to their own detriment, but to the benefit of the government entity but the reward and incentive arrangements do focus the private entities upon quality of water and efficiency in operation.

Drawing this data together it is concluded that in the commercial environments established in each of these privatised water case studies there was neither evidence of, nor requirement by the parties for, the steward acting to their own detriment. What was found in the "pure alliance" was the formal requirement that the parties, including the private participants, act in the interests of the alliance for which the principal, the government entity can annually adjust the objectives and attached rewards. In the "early alliances" which were found to be a form of traditional contract, the "joint venture" which is underpinned by a traditional contract between the "joint venture" and the government entity there was no evidence of the steward acting in the interests of the principal to the extent of only a literal interpretation of the contract. Similiarly with the "BOOT" water filtration plant case studies there was no evidenced of stewards limiting their actions to a literal interpretation of the contract.

It has been found that stewardship was achieved in each case study and these case studies inform us that it is not essential that the steward act to their own detriment for there to be stewardship. Further that stewardship has been accompanied by the steward acting in the interests of the principal to a level higher than the literal contractual requirements.

B. Sense of responsibility

The earlier examination of the literature concluded that that sense of responsibility on the part of the steward is likely to be the key factor which distinguishes a steward from an agent

and may be important to stewardship. The following paragraphs will assemble the data as to whether sense of responsibility on the part of the case study stewards was present and will discuss the strength of that link to stewardship.

Sense of responsibility on the part of the "pure alliance" private participants was evidenced unequivocally. Government entity informants and private participant informants were of the belief that the success of the "pure alliance" should be attributed to the sense of responsibility not only to the government entity but to the customer. The evidence was that sense of responsibility on the part of the alliance participants was inseparable from the stewardship of the water system. Private participant informants were of the view that they would have failed if the government entity did not succeed.

In the "joint venture" case study the archival data study revealed no evidence that there was not sense of responsibility. The informant study revealed that both government entity and "joint venture" informants considered sense of responsibility on the part of the "joint venture" to be absolute and near unchallengeable. The informants attributed that to dedicated long term water industry staff, 50% ownership by the government entity and the "joint venture" belonging to the close-knit local community. Advice was provided that staff of the "joint venture' do not distinguish between their organisation and the government entity.

For the "early alliance" private participant informants sense of responsibility had a strong resonance. An informant from the south area alliance private participant asserted that that alliance took more responsibility than the government entity itself attributing that to the government entity having outsourced the work for such a long time that it did not have the expertise to know if they were obtaining good service or a bad service. A second informant from the south alliance private participant entity felt that the south "early alliance" was responsible in spite of all the goading to be irresponsible from the government entity." In

contrast subsequent interviews with two informants from the north alliance private participant could not elicit any negative relationship with the government entity and a straightforward sense of responsibility to the government entity was conveyed by both informants. Unpacking of the perspectives of the south early alliance private participant informants as to sense of responsibility in the absence of a reciprocating spirit from the government entity one private participant informant revealed an immensely strong personal link to sense of responsibility for providing the community's water service (or to the water industry) as distinct from responsibility to the government entity which he attributed to his long term career in water.

For the two "BOOT" water filtration plants the archival document study revealed that the private participants in each contract had in all circumstances conducted themselves with a distinct sense of responsibility. This was confirmed and explained by the informants who asserted that the simplicity of the deliverable, the dependent relationship and the reputation of the private companies ensured that the stewards in each contract acted with a sense of responsibility to Water Corp. One private participant informant believed that there was a very strong inter-dependency, like a marriage, in that Water Corp. needed the product (drinking water) and Water Corp. was their (private filtration plant operator) single client resulting in the two parties having to resolve issues. That same private informant observed that water was essential to public health, so there is a very high level of responsibility in the industry and that in such a large business there is always a process of pre-qualification and so no one is going to take a gamble on somebody who is not. A second private participant informant characterized their filtration plant operation as an extension of Water Corp. whereby instead of having their own workforce there is a private service provider who has to make sure that the output meets the contract requirements of water quality.

In summary there was significant evidence that the south "early alliance" did not feel a sense of responsibility to the principal, the government entity. Indeed the concept of sense of responsibility to the water industry or to the concept of providing water services to the community was offered as the focus of the sense of responsibility on the part of the south "early alliance". This alternate, possibly competing factor that promotes a sense of responsibility is highly important and will be considered in the next section of this paper, C. Actions to maximize sense of responsibility. The north "early alliance" private participant informants evidenced sense of responsibility yet it is not possible to compare this evidence with that of their government entity counterparts as the evidence provided by the government entity was not separated into data which distinguish between the two alliances. In respect of the "pure alliance", "joint venture" and "early alliances" it is concluded that sense of responsibility on the part of the private company stewards was present. Further the concept of there being stewardship without sense of responsibility on the part of the steward was not contemplated within the paradigm shared across the government entity and private participant informants. Accordingly it is concluded that sense of responsibility is highly important to the achievement of stewardship.

C. Actions to maximise sense of responsibility

The intent of this third, key area of the research was to identify those interventions which the principal or the steward could make for the purpose of increasing or supporting the sense of responsibility on the part of the steward. However the informant interview study as well as identifying the anticipated intended, positive actions which might be taken revealed actions or omissions by the principal that the private participant informants contended were diminishing or straining the sense of responsibility on the part of the steward. Those actions or omissions have been included in a complementary, positive form in the following listing of

interventions or actions which has been assembled in the following five themes in which they naturally clustered:

1. Configuration of the contractual relationship
2. Ensuring suitable participants
3. The culture
4. Clear contractual outcomes
5. Incentives to private participants.

The purpose of developing these themes is to prepare for the discussion of the findings across case studies by distinguishing between actions that are common to several case studies and separate out those items which are pertinent to only a single case study. It is intended that the thesis would then proceed to focus only on the major actions contained within the themes. As the research has not progressed to the stage of interrogating and comparing the sense of responsibility actions data across the case studies a brief description of each action will be provided.

1) ***Configuration of the contractual relationship***

The contractual relationship emerged as a fundamental tool which the "pure alliance", "joint venture" and the "BOOTs" informants believed built sense of responsibility. There is a rich body of data regarding the actions and how they contribute to sense of responsibility yet the theme of configuration of the contractual relationship is indeed the overall theme for all of the actions suggesting the possibility of that theme being collapsed and the items reallocated to the remaining four themes.

2) ***Ensuring suitable participants***

a) Suitability of private participants

The informants from the four case studies and the archival data from the "early alliances" provided a substantial body of criteria as to suitability of private participants in privatizations

and their employees. The criteria ranged from reputation, capability for the technical aspects and capability to work in a long term highly collaborative relationship.

b) Suitability of government participants

The private informants in the "pure alliances" and the "early alliances" and the "BOOTs" suggested that the capability of the government entity and its staff as to interfacing with privatized operations has a direct relationship to their sense of responsibility as a steward. The criteria as to capability were government entity understanding the legitimacy of the decision to privatize, the government organization being structured to interface with the privatized operations and contract management capability and capacity to manage contracts.

3) ***The culture***

a) Principles to structure the relationship

In the "pure alliance", the "joint venture" and the single alliance which replaced the "early alliances" principles as to how the parties interrelated were established in a formal agreement. Examples are unanimous decisions, "best for alliance" test and "no blame".

b) Brand alignment

This refers to bringing clarity to the brand under which the privatised entity conducts its activities. The case studies presented examples of parties to the contract establishing a new brand, or trading as a variant of the principal's brand name or trading in the private entity's own name, all of which were found to have supported sense of responsibility on the part of the steward. In the two "early alliances" separate brand names were required for each with there being a contractual requirement to also display the principal's logo in a larger form. This was believed by the informants from the private participants to be consistent with conduct on the part of the principal's staff that asserted that they were "better than" the stewards' staff.

c) People initiatives

(1) Retaining capability to operate he water system

The matter of privatizations being configured in such a way that the government entity maintains the capability to operate the water system was offered by informants as an issue related to sense of responsibility in that the strategy in the "pure alliance" and the single alliance which replaced the "early alliances" was to configure the privatization such that staff who remained government entity staff were embedded in the privatized entity. The presence of such government entity staff was considered by the informants to contribute to the sense of responsibility of the steward, the privatized entity. This retaining the capability to operate the water system may not itself be an action that builds sense of responsibility. It is intended to revisit the data with the likely outcome of characterizing this matter as the action of including government entity staff in the privatized operations.

(2) Water industry sense of responsibility

Evidence that staff who have a long history of working in the water industry (and often the case study water system) contributed to the sense of responsibility of the privatized entity was provided in the "pure alliance", "joint venture and "early alliance" case studies. In the "pure alliance" and "joint venture" case studies this staff history of being in the water industry was characterized as contributing to the sense of responsibility to the principal. In the south "early alliance" one private participant informant advised that their sense of responsibility was to the water industry and to providing services to the customers rather than to the principal, the government entity. As this is a highly important matter it is intended that this sense of responsibility to the employee's profession be explored further by revisiting the data and the literature in respect of sense of responsibility engendered by professional association.

4) ***Clear contractual outcomes***

The "pure alliance" "joint venture" and "BOOTs" informants asserted that the highly specified outcomes, and the flexibility within their long term contracts to vary measures and targets by agreement resulted in the responsibilities continuing to remain clear and the steward and its staff feeling a sense of responsibility to the objectives and goals of the principal as reflected in those measures and targets.

5) ***Incentives to private participants***

a) Term of contract

The term of the contract was highly important to private informants. The terms of the contracts in the case studies were 12 years, 20 years, 7 years and 25 years. The private informants advised that these terms were very attractive when compared with private traditional construction contracts which were up to 3 years. The longer term of water industry operations and maintenance contracts allowed the private companies to establish their operations and then progressively achieve efficiencies in subsequent years leading to a significant profit. These longer term contracts were seen as a distinct asset by the company shareholders allowing the fixed costs of the company to be met on an ongoing basis. The contracts do have provision for extension and this was seen as an incentive for high quality performance.

b) Regular refocusing of financial incentives

The contractual provision that financial incentives could be adjusted regularly was attractive to the private participants. In the "pure alliance" the annual adjustment of KPI's and their targets provided the opportunity to give greater emphasis to activities where the private participants considered they could innovate and make significant profits. The "joint venture" has the ability to renegotiate the financial terms every 4 or 5 years dependent upon the price

regulator was seen to provide an incentive to act with a sense of responsibility to the principal.

c) Additional work from this government entity

In the "pure alliance", "joint venture" and the single alliance which has replaced the "early alliances" there is contractual provision for additional work such as capital works at the discretion of the principal. Both private participants in the "BOOTs" have other contractual arrangements for a considerable amount of work that has been conferred since the "BOOT" contracts commenced 19 years ago.

d) Work for third parties

The "pure alliance" was established on the basis that the government entity and the two private participants could provide services to third parties in the name of government entity. This work has increased to a significantly with the customers typically being smaller water utilities in Australasia. The civil engineering private participant considers this work to be highly beneficial to his company as it has expanded the usage of its propriety technology.

VI. DISCUSSION

This paper has been constructed as a report as to the possibilities offered by Stewardship theory to inform the configuration of the contractual relationships underpinning privatized critical infrastructures, and the progress to date on this current related research utilizing case studies drawn from the Australian urban water sector. The research has made tentative findings in respect of two of the three research questions.

It was concluded that each of the four case study privatizations had achieved stewardship of the critical infrastructure but there was no support for the stewardship theory tenet that a steward will act in the interests of the principal, even to the detriment of the steward. This

extreme conceptualization of the steward was adopted in this research to assist to resolve a key issue in Stewardship theory viz. Stewardship theorists assert that stewards provide a better outcome for the principal than does Agency theory but have stopped short of specifying what that outcome is in comparison with that assumed in Agency theory. This research found that in the commercial environments established in each privatized water case study there was neither evidence of, nor requirement by the parties for, the steward acting to their own detriment. The stewards were each found to have acted in the interests of the principal to a level higher than the literal contractual requirements. It is intended that the research revisit the data to tease out any nuances which may identify an approach to describe this acting in the interests of the principal, beyond mere literal contractual requirements.

Sense of responsibility to the principal was concluded to be highly important but not essential to the achievement of stewardship. The concept of there being stewardship without sense of responsibility on the part of the steward was not contemplated within the paradigm shared across the government entity and private participant informants for all case studies with the exception of the "early alliances" where one of the "early alliances" advised that their sense of responsibility was to the water industry and to providing services to the customers. This highly important matter manifested in three of the four case studies and was predominantly seen as an opportunity for the principal to harness as an intentional intervention that sense of responsibility to the benefit of the principal. It is intended that this sense of responsibility to the employee's profession be explored further by revisiting the data and the literature in respect of sense of responsibility engendered by professional association.

In respect of the actions available to increase or support the steward's sense of responsibility the research has progressed to the stage of the findings being assembled within each case study. This report was used as a device to develop those many actions into five

themes viz. configuration of the contractual relationship, ensuring suitable participants, the culture, clear contractual outcomes, and incentives to private participants. In developing those themes it was found that items which were related to the successful operation of the water service e.g. the government entity seeking to maintain capability to operate the water system had been included but may not indeed be an action which if taken impacts on sense of responsibility. A further opportunity for improvement which the cross-case study assembly of actions generated was whether the theme of configuration of the contractual relationship is indeed the overall theme for all of the actions suggesting the possibility of that theme being collapsed and the items reallocated to the remaining four themes. Those possibilities will be explored before the research proceeds to make the discussion of cross case findings.

The research has a strong possibility of enhancing Stewardship theory knowledge. The potential to inform those charged with the stewardship of critical public infrastructures as to how contractual relationships for privatized infrastructures can be configured to achieved better stewardship is concluded to be real. The thesis will be submitted in October 2012.

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