

PERCEPTIONS OF POTENTIAL USERS OF STANDARDISED WATER ACCOUNTING REPORTS: AN ACCOUNTABILITY APPROACH

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ABSTRACT

Purpose – This paper explores the perceptions of potential users about water accounting reports prepared under Standardised Water Accounting (SWA), and reflected in the second iteration of the Australian water accounting standard named *Exposure Draft of Australian Water Accounting Standard 1* (ED AWAS 1). Previous research (see Paper 1) found that practitioners felt that the perceptions of potential users of water accounting reports were not completely addressed in developing SWA. This research paper attempts to explore the perceptions of potential users of water accounting reports under SWA. Efficient and effective water management is an important element in alleviating water crises caused by the misuse of water resources.

Design/methodology/approach – The accountability framework is adopted by using Gray *et al.*'s (1996) accountability model extended to include elements pertinent to the public sector. This concept is explored in depth across three main ideas: clarity of relationship, transparency and power. A mixed method approach was utilised in which a questionnaire was administered to users with water-related interests in five different water-related seminars. The results yielded 36 usable responses. The qualitative phase comprised the analysis of 14 public submissions to the Water Accounting Standards Board (WASB) on ED AWAS 1 by potential report users. The submissions were coded in Nvivo and analysed according to the components of the integrated accountability model.

Findings – Results from the questionnaire indicate that approximately 83% of the respondents perceive that it is useful to adopt a standard system to prepare water accounting reports. Conversely, the majority of potential users of water accounting reports are unsure about the effectiveness of such reports in discharging the accountability of water managers (approximately 53% of respondents on all statements except the accountability statement and approximately 58% of respondents on just the accountability statement). After analysing public submissions to the WASB based on the elements of the integrated accountability model, it was found that there is resistance regarding the use of the Accountability Statement. Overall, it was found that accountability is unlikely to be fully realised with this iteration of the Standard (reflected in ED AWAS 1).

Research limitations/implications – The main limitation is the relatively low data volume. Whilst the questionnaire was administered at key water-related seminars, the response rate was low at approximately 21%. However, understanding the perceptions of attendees at those events is important because respondents are potential users of water accounting reports with a water-related interest. It was expected that public submissions would represent a comprehensive view from users on ED AWAS 1; however, the number of submissions was not significant. Of the 23 public submissions comprising the final sample, only 14 were used for the analysis because the other nine represent the views of potential report preparers. Due to low data volume, future research might usefully corroborate these findings.

Practical implications – The ambivalence about the Accountability Statement indicates this area needs to be addressed in a future iteration of the Standard. It might also be necessary to educate more potential users of SWA reports.

Originality/value – SWA is currently ongoing in Australia. ED AWAS 1 was issued in mid-2010 and the Australian Water Accounting Standard 1 in late 2012. The study has sought to overcome the limited research undertaken to date to explore the perceptions of potential users of water accounting reports under SWA.

Keywords – Water, water accounting, users, social and environmental accounting, Australia

1. Introduction

There is a worldwide water crisis due not only to declining water availability, but also to sub-optimal water management (World Water Council, 2000 p. xix-xxi; World Water Assessment Programme, 2003 p. 4; World Water Assessment Programme, 2006 p. 1; Global Markets Institute, 2008 p. 5; World Water Assessment Programme, 2009 p. xix). As a country with both significant water issues and relative wealth, Australia has been at the vanguard of innovative water management techniques (Slattery, 2008), also with water information, and more specifically with water accounting. We call Standardised Water Accounting (hereafter SWA) the effort to account for water using financial accounting methodologies and guidelines. The development of national water accounting techniques has been ongoing since the commencement of the National Water Initiative (NWC, 2012). The latest milestone has been the publication of the National Water Account in 2011. With respect to accounting frameworks and accounting standards, the Water Accounting Conceptual Framework was released in 2009 and the Australian Water Accounting Standard 1 (hereafter AWAS 1) in October 2012. SWA is a novel approach in that it applies many of the techniques of financial accounting in a physical accounting context using water flows represented as mega litres (Slattery *et al.*, 2012) and represents an example of the ‘new accountings’ mentioned by Bebbington and Gray (2001).

This study examines the perception of potential users of water accounting reports to the Exposure Draft of Australian Water Accounting Standard 1 (hereafter ED AWAS 1). At the time of gathering data for this paper, AWAS 1 had not been released. ED AWAS 1 is the second iteration of the standard development process. One of the findings of Paper 1 was that the majority of practitioners were unsure of the perceptions of users about SWA and also unsure of precise user needs that might be met through the provision of water accounts and therefore were unsure whether the benefits would exceed the costs. Further, while the adoption of financial accounting techniques was considered helpful in some aspects, report preparers differed as to the extent to which they believed SWA reports would facilitate the discharge of water managers’ accountability. Therefore, this study explores these issues and other minor ones by delivering a questionnaire to potential users of water accounting reports at five water-related events between late 2010 and early 2011. Additionally, public submissions to the Water Accounting Standards Board (hereafter WASB) on the ED AWAS 1 were analysed.

This study extends previous accounting research on users of financial accounting reports and users of Social and Environmental Accounting and Reporting (hereafter SEAR). Studies on users of financial reports are not new in accounting research (e.g. see Cooper and Sherer, 1984; Ansari and Euske, 1987; Weetman *et al.*, 1996; Harding and Mckinnon, 1997; Mellemvik, 1997; Stanton, 1997; Yap, 1997; Mirshekary and Saudagaran, 2005; Durocher *et al.*, 2007) and certainly not new in SEAR (e.g. see Dierkes and Antal, 1985; Freedman and Stagliano, 1991; Tilt, 1994; Deegan and Rankin, 1997; Deegan and Rankin, 1999; Al-Khater and Naser, 2003; O'Dwyer *et al.*, 2005; Tilt, 2007). This research extends those studies by exploring the perceptions of users about water accountings standards and reports. As SWA is an innovative approach to account for and report on water using financial accounting principles and methodologies, knowing the perceptions of potential users of General Purpose Water Accounting Reports (hereafter GPWAR) is compelling.¹

This paper explores SWA from an accountability point of view from the perspective of potential users (or stakeholders) of water accounting reports. The research paper is structured as follows: Section 2 explains briefly Standardised Water Accounting while Section 3 presents a review of the literature on users of accounting reports and stakeholders. The accountability framework is presented in Section 4 while Section 5 describes the research method applied. Section 6 discusses the results of the study and Section 7 presents the implications and conclusions of the study.

2. Standardised Water Accounting

This study deals with the introduction of SWA in Australia and the perspectives of potential users of water accounting reports prepared under SWA. SWA is not similar to what is commonly known as water accounting. In fact, SWA is considered as part of water accounting. The term *General Water Accounting* is applied to reflect all previous water accounting efforts that are not *Standardised Water Accounting*.²

¹ In this study, 'SWA reports' are reports prepared under SWA. In the ED AWAS 1 (and also in the recent AWAS 1), such reports are termed 'General Purpose Water Accounting Reports' (GPWAR). I use either 'SWA reports' and/or GPWAR to refer to reports prepared under SWA.

² For the purposes of this study, '*General Water Accounting*' is a term used to consider all efforts to prepare water accounts which do not follow financial accounting principles and methodologies. '*Standardised Water Accounting*' is a term that implies the application of financial accounting principles to account for water.

An innovation in Australian water accounting is the trial of SWA, which is water accounting that mimics financial accounting in methodology and presentation and is created in accordance with water accounting standards. According to SKM (2006), there is a clear contrast between a style of report that follows accounting procedures (called *Standardised Water Accounting*) and a table of statistics (part of what is called *General Water Accounting*). For SKM (2006 p. 127), SWA is advantageous because

‘separate tables of river flows and extraction volumes do not link information together meaningfully, and do not show where all the water has come from or gone to, and do not demonstrate the same accountability for the management of the resource’.

Godfrey (2008) suggests that SWA, as discussed here and currently under development in Australia, has the potential to fundamentally transform water policy.

To understand SWA, it is important to know the context under which SWA emerged. The beginning of national water reform in Australia is reflected in the agreement reached by the Council of Australian Governments (hereafter CoAG) in 1994 (Slattery *et al.*, 2012). Such agreement was reinforced by the Intergovernmental Agreement to the National Water Initiative (hereafter NWI) which was signed by the Commonwealth and State and Territories between 2004 and 2006 (NWC, 2012). According to Chalmers *et al.* (2012), one of the drivers for signing the NWI was the severe drought that affected Australia in the early 2000s. Eight areas of reform are outlined in the NWI which include the need for a consistent water resource accounting in order to have standard information that can be compared, aggregated and reconciled (Bureau of Meteorology, 2012d). According to Slattery *et al.* (2012), this process would allow achieving the objective of a nationally managed system of groundwater and surface resources for rural and urban use that maximises social, economic and environmental results.

In 2006 the National Water Accounting Development Project was endorsed by the Natural Resource Management Ministerial Council (hereafter NRMMC). The Project was funded under the Raising National Water Standards program (part of the Australian Government Water Fund) and managed by the National Water Commission which provided for \$5 million of Commonwealth funding matched by \$5 million of in-kind support from the States over a three year period. In February 2007, the NRMMC established the Water Accounting Development Committee (hereafter WADC) (Slattery, 2008). WADC was an independent expert group composed of water and accounting experts from industry, environmental

groups, academia and government rather than a body comprising representatives from jurisdictions (Bureau of Meteorology, 2012a). Then, in 2009 the WADC was superseded by a new body, the Water Accounting Standards Board which became the advisory board of the Bureau of Meteorology relative to water (hereafter BoM) (Godfrey, 2011). The main task of WASB is issuing standards in relation to water accounting called Australian Water Accounting Standards (Bureau of Meteorology, 2012a).

In the period from late 2007 to early 2009, the WADC undertook two major tasks: development of the Water Accounting Conceptual Framework (hereafter WACF), which comprises eight Statements of Water Accounting Concepts and was released in 2009, and piloting SWA in multiple locations around Australia. In this pilot study, the former WADC expected to identify, and if possible overcome, the challenges of implementing SWA. Six pilot sites were identified by the jurisdictions to engage with SWA and to prepare prototype water accounts. The WADC engaged James Hazelton and Edward Tello in early 2008 to assist with this pilot process and consequently visited five pilot sites. The WACF sets out the concepts that will underlie the preparation of future General Purpose Water Accounting Reports (Water Accounting Standards Board, 2009b). In late 2009, the WASB released the Preliminary Australian Water Accounting Standard (hereafter PAWAS), which was the preliminary version of the Australian Water Accounting Standard (first iteration of the standard). In 2010 the ED AWAS 1 was released by the WASB and received comments and feedback on it until June 2011 (Bureau of Meteorology, 2012b). In October 2012, the WASB released the AWAS 1 based on the feedback received from the ED AWAS 1. This Standard prescribes the preparation of GPWAR under SWA by setting the conditions for recognition, quantification, presentation and disclosure of the items in water reports (Water Accounting Standards Board, 2012a). Figure 3.1 provides a timeline of the development of water accounting.

[Insert Figure 3.1 here]

According to the Water Act 2007, one of the roles of the Bureau of Meteorology involves delivering comprehensive water information across Australia (Bureau of Meteorology, 2012d). Existing water information was either unavailable to users in a standard format or was problematic to access. The Bureau of Meteorology prepared and released the national water account for the years 2010 and 2011 following a standards-based approach to water resource reporting (following the ED AWAS 1) (Bureau of Meteorology, 2012c). The

national water account includes standard information about the management of water resources in Australia. In 2010 and 2011, water reports were produced for eight significant water management regions (Adelaide, Canberra, Melbourne, Murray-Darling Basin, Ord, Perth, South East Queensland and Sydney). The next section reviews the literature regarding stakeholders generally, and in particular users of accounting reports and users of SWA water reports.

3. Literature review

3.1. Stakeholders

In financial accounting, financial accounting reports are prepared for a wide range of stakeholders. Thus, it is convenient to analyse who the stakeholders of water report entities might be as these entities are in charge of managing water. Water Report Entities (hereafter WRE) that are meant to prepare GPWARs can be both public sector and private sector oriented. The majority in Australia belong to the public sector because, in Australia, the administration of water resources and their management remains public (Pigram, 2006).³ Budhwar and Boyne (2004) state that most research regarding the public and the private sector differentiates on the basis of ownership. Shareholders own private-sector companies whereas members of political communities at different levels of government own, fund and control public agencies (Budhwar and Boyne, 2004). The public sector and the private sector differ inherently in terms of funding, ownership and control; however, it appears that both sectors function similarly in terms of management (Lawry *et al.*, 2007).⁴ The private sector comprises small, medium and large-scale organisations, whereas the public sector in Australia comprises 'local government authorities and all government departments and

³ A water report entity is defined by the Water Accounting Standards Board (2012 p. 31) as 'a water entity in respect of which it is reasonable to expect the existence of users who depend on general purpose water accounting reports for information about water, or rights or other claims to water' whereas the water entity is 'an entity that: a) holds or transfers water, or b) holds or transfers rights or other direct or indirect claims to water, or c) has inflows and/or outflows of water'. The WASB defined the water entity in a broad way so as to be as inclusive as possible.

⁴ Lawry *et al.* (2007) mention that management has to establish organisational objectives, make plans and control performance regardless of the fact that it is public or private.

agencies created by, or reporting to, the Commonwealth, or state/territory parliaments' (Australian Bureau of Statistics, 2012a).

One of the reasons why public sector entities are different from private sector entities is the range of stakeholders associated with each sector. The organisational stakeholder concept has been explored in depth in accounting and management research. Traditionally, corporate success has been measured by the degree of satisfaction of one stakeholder, that being the shareholder (Clarkson, 1995). However, Clarkson (1988) argues that satisfying only the shareholder is self-defeating. Clarkson (1995) states that *fairness* and *balance* are necessary for the stakeholder system to work. The stakeholder framework proposed by Clarkson (1995) views the corporation as a system of primary stakeholder groups that need to fulfil their economic and social purpose in order to survive. It is clear from Clarkson's (1995) study that *stakeholder* and *shareholder* are not synonymous terms. Stakeholder is a broader and more inclusive term to the shareholder term. If water report entities belong to the public sector then the owner is the government, but since citizens fund the government via taxes, then the ultimate primary stakeholder would be the citizens (given the water report entities are public).

This study examines potential users of GPWARs, who are the stakeholders in relation to water accounting. Research in relation to stakeholders dates from 1932, when Harvard Law Professor Merrick Dodd quoted the views of General Electric executives who identified four major stakeholder groups (shareholders, employees, customers and the general public) (Preston and Sapienza, 1990). Preston (1990 p. 361, 362) traces the origin of the stakeholder concept by giving an account of how the concept has evolved since 1932. Freeman's (1984) seminal work laid the foundation on which stakeholder models and theories have been built. Freeman (1984) traces the stakeholder term back to 1963 in which an internal memorandum at the Stanford Research Institute introduced the term. In the 1963 memo, the term referred to stakeholders as the only group to whom management needs to be responsive.⁵ Dill's (1958) research is considered a benchmark because it formally introduces the *stakeholder concept* into the management literature. Dill (1958) considers stakeholders as environmental factors that restrict the structure of corporations and the behaviour of organisational members. These

⁵ Freeman (1984) states that stakeholder was originally defined as those groups whose support is important for the organisation's operations while Clarkson (1995 p. 106) defines stakeholders as 'persons or groups that have, or claim, ownership, rights, or interests in a corporation and its activities, past, present, or future'. Both definitions are inclusive and do not differentiate between primary or secondary stakeholders.

elements of the environment, known as stakeholders, are customers, suppliers, competitors and regulatory groups (Dill, 1958).

The difference between primary and secondary stakeholders is established by the extent to which their actions affect the operations of the organisation. Clarkson (1995) defines primary stakeholders as groups whose participation is important for the corporation to survive as a going concern, whereas secondary stakeholder groups are those who affect and are affected by the corporation, but are not engaged in transactions with companies and are not indispensable for a company's survival. It is important to mention that even though secondary stakeholders are not important for company survival, they have the power to mobilise public opinion against, or in favour of, corporations. In an organisational context, primary stakeholders typically comprise shareholders and investors, customers, employees, suppliers, governments and communities, whereas secondary stakeholders include the media and a wide range of special interest groups (Clarkson, 1995). The level of interaction between the corporation and its primary stakeholder grouping is high. The wide range of stakeholders is recognised, but it seems there is a hierarchy within the different groups regarding how they affect and are affected by corporations. In spite of its wide acceptance, Preston and Sapienza (1990) criticise the stakeholder concept and defend the proposition that corporations should look for the benefit of their shareholders only. The stakeholder concept is useful for enriching the understanding of the strategic tasks managers have to face.

The idea of the primary stakeholder can be connected to the idea of the 'absolute other'. According to Joannides (2012), accounts are owed to others and, in particular, to an 'absolute other' who acts as a principal and higher principal. This higher principal holds utmost authority over the organisation itself and its members (Joannides, 2012). The higher principal can have different faces depending on the type of organisation; for example, for listed companies, the higher principal is the shareholders; for public sector organisations, the higher principal is the taxpaying citizens and for not-for-profit organisations (such as charities), the higher principal is the donors. Little research has been carried out on corporate social disclosures regarding the perspectives of non-managerial stakeholders (O'Dwyer *et al.*, 2005). In fact, more studies have been undertaken on primary and economically powerful stakeholders than studies on secondary stakeholders.

Research in the higher principal is connected with the work of Joannides (2012). For public sector organisations, the higher principal is the taxpaying citizens (Joannides, 2012). Smith

(1995) argues that measures of performance in the public sector should be indicators of the outcomes for society of public sector activities. According to Smith (1995, p. 15), 'the closest analogy to the endorsement offered by a willingness to pay is – at best – the vote wielded by the electorate, and more general political action', but such analogy does not reflect a benchmark for public satisfaction. In the case of SWA, the activities of water report entities are seen by the way they manage water. Smith (1995) suggests looking at the preferences and perceptions of those who have a legitimate interest in the public sector. In general terms, this group includes taxpayers, staff, employers, the general public and government, but these stakeholders are difficult to identify and might not recognise themselves as such (Smith, 1995).

The question to answer is who the primary users of SWA reports are. Users of GPWAR can be considered as stakeholders of water report entities. There is no specific description about the identity of users of GPWAR and their needs. The Water Accounting Standards Board (2009b para. 19) identifies a broad range of categories of users of GPWARs which include water users (environmental, urban, agricultural, commercial and industrial), investors in water dependent enterprises, government representatives, water industry regulators, water managers, water industry consultants, academics, groups and associations with a water-related interest and interested citizens. Water users are part of the list, but not the only item on it. It can be argued that water users have a big stake in knowing how the resource was managed. If that is the case, they might be primary users of reports. According to the ABS (2012b p. 19), in Australia the major water user during the period 2009/2010 was the agriculture sector (irrigators and farmers), using 6,987,334 mega litres (ML) in total, whereas households came third with 1,867,621 ML. But assuming that water users would be the primary users of reports would leave out citizens or government representatives, for example. Care must be taken in evaluating who the primary users of SWA reports would be.

3.2. Users of Water Accounting Reports

Accounting research on users of reports is not new. There have been studies on users of financial reports (e.g. see Cooper and Sherer, 1984; Ansari and Euske, 1987; Weetman *et al.*, 1996; Harding and Mckinnon, 1997; Mellempvik, 1997; Stanton, 1997; Yap, 1997; Mirshekary and Saudagaran, 2005; Durocher *et al.*, 2007) as well as studies on users of SEAR (e.g. see Dierkes and Antal, 1985; Freedman and Stagliano, 1991; Tilt, 1994; Deegan and Rankin, 1997; Deegan and Rankin, 1999; Al-Khater and Naser, 2003; O'Dwyer *et al.*,

2005; Tilt, 2007). O'Dwyer *et al.* (2005) present a detailed review of user studies of sustainability reports. Prior survey research on users' perspectives on sustainability reporting has focused on the views of economic stakeholders in relation to specific corporations (O'Dwyer *et al.*, 2005). Whilst it appears that stakeholder concerns around issues of sustainability and corporate accountability are evident, secondary stakeholders seem to be more interested in sustainability reporting than primary stakeholders (Tilt, 2007)⁶.

Studies on users of financial accounting reports are diverse. For example, by examining the ways in which accounting is applied in dialogues on the subject of finance between Norwegian local government and its financial supporters, Mellemvik (1997) investigates the concept of accounting not only as an organised painting, but also as a collage. Mellemvik (1997) concludes that an accounting report comes to represent a collage as reports are read by different individuals and each user group has in mind different ways of understanding the information. Since each user group understands information differently, it may be that reports should be tailored to each user group. Cooper and Sherer (1984) discuss private versus public value approaches of reports by outlining an alternative framework for accounting research, namely, the Political Economy of Accounting. Cooper and Sherer (1984) mention that there have been studies that evaluated the use of published accounting reports by external users without including the shareholders.⁷ There are conflicting objectives between user groups which result in differences in the content and form of reports. The solution could be to publish a report tailored to each user group, but it would be costly. Hence, Cooper and Sherer (1984) mention that it would be necessary for general purpose accounting reports to be prepared in those cases. According to Cooper and Sherer (1984), the recognition of multiple users is insufficient for assessing the wide-economy value of accounting reports.

There has been a growing interest in investigating users of SEA reports over the last few decades. Deegan and Rankin (1999) explore whether the demand/supply imbalance of corporate environmental reporting is due to different perceptions between users and preparers of reports about environmental performance information. Views of users and preparers regarding issues related to corporate environmental performance reporting were found to differ (Deegan and Rankin, 1999). The different views between users and preparers of reports

⁶ Clarkson (1995) defines secondary stakeholders as those who influence/affect or are influenced/affected by companies, but are not necessarily engaged in transactions with them.

⁷ These external users included tax authorities, government, employees and researchers.

were also explored by Weetman *et al.* (1996) who reviewed submissions about the UK Operating Financial Review. Weetman *et al.* (1996) find imbalances between preparers and users in the submissions. Additionally, Weetman *et al.* (1996) note that in the submissions there was an absence of responses from users of financial statements.

The perceptions of users in the accounting-standard setting process are explored by Harding and McKinnon (1997) and Durocher *et al.* (2007). Harding and McKinnon (1997) explore whether accountants and users of financial reports hold congruent or incongruent opinions regarding the usefulness of accounting information, whereas Durocher *et al.* (2007) develop an explanatory theory to describe the participation of users of financial statements in the standard-setting process. Yap (1997) explores whether the claim by professional accounting bodies for more cash flow information is reflected in the perception of investors and creditors to publish cash flow data. Results support the need for cash flow information as they have become important sources of information for users. Through a survey, Al-Khater and Naser (2003) explore the perceptions of four user groups about corporate social responsibility information in Qatar. User groups agreed on the necessity of having corporate social responsibility disclosures. By surveying seven different user groups, Mirshekary and Saudagaran (2005) explore the perceptions of users of financial statements in Iran. The annual report was found to be a significant tool for making investment decisions.

Little research has been carried out regarding potential users of SWA reports (see National Water Commission, 2006; SKM, 2006; Water Accounting Standards Board, 2009a). The National Water Commission prepared a baseline assessment of Australian water resources, known as *Australian Water Resources 2005*, which sought to provide a picture of a series of water management and resource issues. This report addressed issues of water availability, river and wetland quality, and water use (National Water Commission, 2006). One of the studies within *Australian Water Resources 2005* encompasses the requirements of the potential users of a proposed Australian Water Resources Information System (hereafter AWRIS). The AWRIS is defined as an ongoing water resource information asset that includes a set of interoperable tools that accesses water data published through a distributed water data infrastructure (National Water Commission, 2006). Whilst the study was not on potential water-accounting-report users (under SWA), this study is a comprehensive study of potential users of AWRIS. Sinclair Knight Merz (2006) includes a section on user requirements in their Stocktake of Australia's Water Accounting Practice. Users of water accounting reports are the receivers of water accounting information and are located at the

end of the process (SKM, 2006). Similar to financial accounting, the purpose of SWA is to meet the information needs of users. One of the findings of Sinclair Knight Merz (2006) was that the needs of potential users of water information were not completely addressed. Sinclair Knight Merz (2006) state that detailed requirements of water information users were necessary in order to inform the scope and development of water accounting.

In order to determine which water related information would be beneficial for potential stakeholders, a user information requirements study was carried out by the former WADC (Chalmers *et al.*, 2012; Slattery *et al.*, 2012). Approved by WADC in October 2007, this User Information Requirements Study was conducted by Associate Professor Brad Potter and funded by the National Water Commission (at the request of the former WADC) (Water Accounting Standards Board, 2009a). Some of the findings regarding the information requirements of potential water information users were the need for: consistent water reporting according to accepted standards, a disciplined approach to recording, reporting and decision making, better information for accountability and performance, and better education and greater awareness of stakeholders (Water Accounting Standards Board, 2009a p. 6-22). In summary, the main finding of the study was that financial accounting can contribute to the development of the new water accounting system (Water Accounting Standards Board, 2009a). The Sinclair Knight Merz study described in the previous paragraph was not as comprehensive as the study funded by the National Water Commission in terms of exploring the information needs of potential users of water accounting reports. The question arises as to why a comprehensive study was not conducted on potential users of water accounting reports under SWA as there is significant scope for identifying the needs of users. This question is connected to one of the findings of Paper 1 which is about practitioners' calls for more studies on users' needs.

Consequently, the research question driving this paper is: to what extent do users perceive Standardised Water Accounting (SWA) reports, under the Exposure Draft of Australian Water Accounting Standard 1 (ED AWAS 1), as being useful for discharging the accountability of water managers? Gray *et al.*'s (1996) accountability model is discussed next.

4. Accountability Framework

In line with Paper 1, the accountability framework, which is prescriptive in nature, drives this study. Accountability is linked with the idea of being held to account, but Roberts (2009 p. 959) goes further by describing accountability as the ‘condition of becoming a subject who might be able to give an account’. Roberts’ (2009) description emphasizes that accountability means more than just giving an account. A general definition on accountability is provided by Gray *et al.* (1996 p. 38) who define accountability as the ‘duty to provide an account (by no means necessarily a financial account) or reckoning of those actions for which one is held responsible’. It can be deduced then that accountability implicates the provision of information from the accountor (agent) to the accountee (principal).

This study adopts Gray *et al.*’s (1996) accountability model to evaluate accountability in this particular context of water accounting. Gray *et al.*’s (1996) model is a simple and flexible. I engage in other literature on accountability (see Jones, 1977; Stewart, 1984; Roberts, 1991; Gray, 1992; Gray and Jenkins, 1993; Guthrie, 1993; Parker and Guthrie, 1993; Sinclair, 1995; Broadbent and Laughlin, 2003; Llewelyn, 2003; Bovens, 2005; Barton, 2006; Cooper and Owen, 2007; Kamuf, 2007; Brennan and Solomon, 2008; Messner, 2009; Roberts, 2009; Spence *et al.*, 2010; Zyglidopoulos and Fleming, 2011; Gibbon, 2012; Joannides, 2012; Lowe *et al.*, 2012; McKernan and McPhail, 2012; Shaoul *et al.*, 2012; Smyth, 2012) to extend Gray *et al.*’s (1996) model to include elements pertinent to the public sector. Their model is composed of three elements (Relationship, Information and Instructions, Reward and Power) and for each element I identify a critical component to operationalise the model. These three critical components are **Clarity of Relationship, Transparency and Power of Accountees**. Even though this model is similar to the one discussed in previous research (see Paper 1), it has been expanded based on the findings on that research.

4.2. Gray *et al.*’s (1996) Accountability Model

Gray *et al.*’s (1996) accountability model is based on a neo-pluralist conception of society and on participative democracy. The neo-pluralist conception of society assumes that power is distributed unevenly in society and that there are different sources of power and influence. Gray *et al.*’s (1996) model involves the responsibility to undertake certain actions and the responsibility to provide an account about those actions. The main elements of this model come from the *relationship* between the agent (known as the accountor) and the principal

(known as the accountee). Society ascribes a role to such relationship (Gray *et al.*, 1996p. 39) which provides accountees with a right to *information*. Accountees have a connection with accountors in the form of *instructions about actions, reward and power over resources*. (See Figure 3.2 in the Appendix for a depiction of Gray *et al.*'s (1996) model.)

[Insert Figure 3.2 here]

A critical component for each element of Gray *et al.*'s (1996) model is identified. These three critical components are **Clarity of Relationship, Transparency** and **Power of Accountees**. The first element is *clarity of relationship* and is based on the accountability relationship. Once the relationship accountor-accountee has been properly identified, then the information is analysed. The second element is *transparency*. The information provided has to be transparent enough so as to create visibility. The last element is *power of accountees*. Once information has been clearly transmitted, the effect is that accountees will be empowered with such information. Such empowerment will be reflected in the ability to make changes and influence the decision-making process. All these elements are analysed next.

4.2.1. Relationship

The essence of Gray *et al.*'s (1996) accountability model is relationship. According to Gray *et al.* (1996 p. 39), 'it is this relationship that ascribes responsibility and permits rights to information, and thereby determines the accountability'. Gray *et al.* (1996) provide an extensive description about relationship and related it to the social contract. They mention that contracts can be legal or non-legal in nature.

Gray *et al.* (1996) extend the traditional notion of relationship of the firm and the shareholder by including multiple stakeholders. In its traditional sense, the relationship in the private sector has been considered as a one-to-one relationship between the firm and the shareholder. In this sense, Cooper and Owen (2007) mention that a free market perspective will rule out stakeholders and society as principals as its philosophical basis is within neo-classical economic theory. Gray *et al.* (1996) include a range of multiple stakeholders as accountees extending the traditional perception of relationship. Cooper and Owen (2007) suggest that if accountability is to be accomplished, stakeholders need to be empowered so they can hold to account the agents. In terms of corporate accountability in this new scenario, the accountability relationship may exist within the firm (employees and officers) and/or outside the firm (shareholders, creditors, government, labour unions, consumers or general public).

Other scholars also consider relationship important (e.g. see Ijiri, 1983; Giddens, 1984; Sinclair, 1995; Funnell and Cooper, 1998; Bovens, 2005; Joannides, 2012; Shaoul *et al.*, 2012). Accounts are owed to others and, in particular, to an ‘absolute other’ who behaves as a principal and higher principal (Joannides, 2012). Maximum authority over the entity is held by the higher principal who has different faces according to the type of entity under consideration (Joannides, 2012).⁸ Nonetheless, as discussed in section 3.1, there exist not only primary, but also secondary stakeholders who affect and are affected by organisations. Shaoul *et al.* (2012) argue that the accountability relationship means that a person is expected to account for his/her activities and their consequences to a certain person. Bovens (2005) adds that the accountant-accountee relationship consists of three elements: the accountant must feel obliged to inform about his/her conduct by providing information, this information can be used by the accountee to question the accountant and, finally, the accountee may emit a judgment and impose a sanction, formally or informally.

From this perspective, other scholars have identified the clarity of relationship as being important, but they refer mainly to the private sector. In the public sector, however, there are multiple accountors (Bovens, 2005) who demand accountees to speak multiple languages (Messner, 2009). The problem of having multiple accountors in the public sector is due to there being multiple public officials in the chain of hierarchy. Bovens (2005) states that defining the relationship in public accountability is not an easy task because a series of principal-agent relations can be identified in modern representative democracy. Such delegation chain is as follows: Citizens (who are the main actors in a democracy) transfer their powers, through election, to political representatives (Bovens, 2005)⁹. According to Messner (2009), if different conflicting demands are raised by multiple stakeholders, then the accountable self should be able to speak in multiple languages so as to satisfy those demands. It would be unethical if such individual fails to meet all demands; however, it is also ethically

⁸ For listed companies, that ‘absolute other’ is the shareholders, whereas for not-for-profit organisations, they are the donors. In terms of public sector organisations, they are taxpaying citizens.

⁹ New Public Management brought a shift from only public to more private spheres (although in different degrees). Bovens (2005) suggests that the shift from the public service to the private service represents a change in public accountability as follows: (1) A decrease in the intensity and scope of political accountability (because private or privatized entities are not subject to direct political accountability and have fewer responsibilities to report to the public on their performance) and (2) The reinvention and/or creation of accountability relations for these new private entities delivering public services (this private form of public accountability is based on shareholders’ needs and not citizens’ needs even if the lives of citizens are affected).

questionable to expect that such individual should meet all demands. Therefore, the critical component derived from the *Relationship* element in Gray *et al.*'s (1996) accountability model is ***Clarity of Relationship*** which is based on the idea that accountability entails a relationship between the accountant and the accountee and such relationship has to be clear. The assessment of relationship is on the clarity of the relationship. In any relationship there is a certain degree of principal and agent relationship so there is a certain delegation of relationship, but such degree of delegation does not define the overall level of accountability. Therefore, for a *relationship* to be an *accountability relationship* the actors must be clearly identified as in some instances there are several accountabilities that exert influence on organisations.

In the case of the Australian water sector, there would be multiple agencies (accountors) and multiple principals (accountees). For example, multiple agencies include State Water Agencies, Federal Government (in the case of the Murray Darling Basin for instance) and local service providers. Under the Water Act 2007, the Bureau of Meteorology is in charge of issuing the National Water Account and not the state agencies. On the other hand, multiple accountees include, for example, irrigators, farmers, town-water users, academics, and so on. The Water Accounting Standards Board (2009) provides a wide range of categories of users of GPWAR which is all-inclusive.

4.2.2. Information

Gray *et al.* (1996) discuss information about actions and the way that accountability could be discharged through the provision of information. It is the relationship that permits rights to information and consequently the provision of information. Accountors provide information to accountees.

Hazelton (2010) and Stewart (1984) highlight the importance of information. Hazelton (2010) relates the provision of information with information rights. Information constitutes a human right and without information is difficult (or impossible) for other rights to be realised. Stewart (1984) considers information as the raw material in the preparation of an account and such information is used as a basis for judgement and action by the one who accounts (Stewart, 1984). Information is a source of power and this power is given by organisations through the provision of information (Stewart, 1984).

Gray *et al.* (1996) do not give an explanation of the quality of information, but give examples of different types of information provided. They state that this information might be useful; however, they do not give a framework with which to assess the usefulness of the information.

From this perspective other scholars have discussed the transparency of information (e.g. see Gray, 1992; Barton, 2006; Kamuf, 2007; Roberts, 2009; Zyglidopoulos and Fleming, 2011; Lowe *et al.*, 2012; McKernan and McPhail, 2012) and also the qualitative characteristics of financial reports (e.g. see Australian Accounting Standards Board, 2004). Roberts (2009) states that in its literal, physical sense, transparency is connected with the idea of light passing through something so that objects behind can be seen. Thus, transparency involves two ideas: it promises visibility and it promises a complete examination. According to Roberts (2009), such potential of transparency is reflected in the preparation of new forms of financial and non-financial disclosures by corporations to their broad range of stakeholders.¹⁰ Improving transparency is discussed by Lowe *et al.* (2012) as being one of the reasons why the US Securities and Exchange Commission trialled the digitisation of annual report information through ‘interactive data’. Such transparency was meant to benefit mainly retail investors. In terms of social and environmental accounting, Gray (1992) notes the potential of transparency to create a greater environmental responsibility, whereas Kamuf (2007) relates calculative accountability with transparency as calculative accountability involves making responsibilities and performances visible. One important feature that links transparency with calculative accountability is that calculative accountability has little room for the secret (McKernan and McPhail, 2012). Transparency in public sector accountability is important because by being well-informed of government activities, citizens can make judgements and informed decisions on the performance of governments (Barton, 2006).

The quality of reporting is important because not all information reported is of quality. For example, one way of determining the quality of information reported is by classifying the information provided as either positive or negative disclosures. Within social and environmental accounting disclosures, Deegan and Rankin (1996) evaluated the voluntary disclosure of environmental information in annual reports of 20 prosecuted companies.

¹⁰ Regarding organisational transparency, Roberts (2009) points out that accounting is seen as the technology that allows seeing behind or within a business entity as accounting is considered as a tool that produces a true and fair view of organisational activities.

Deegan and Rankin (1996) classified the disclosures as either positive or negative.¹¹ Not all information disclosed can be considered as quality information. One way of seeing whether or not reports are of quality is for reports to be prepared following certain qualitative characteristics. For example, the Australian Accounting Standards Board (2004 para. 24) states that ‘qualitative characteristics are the attributes that make the information provided in financial statements useful to users’. The four principal characteristics of financial statements are understandability, relevance, reliability and comparability.

The critical component derived from the *Information* element in Gray *et al.*’s (1996) Accountability Model is **transparency** which is based on the idea that information provided has to be transparent so as to create visibility. (See Figure 3.3 in the Appendix for a depiction of transparency.)

[Insert Figure 3.3 here]

I consider that reporting is a subset of transparency and such reporting has to be of quality. In terms of reporting, there are different forms of reporting such as raw data on webpages and the annual report. Using reporting as a proxy to assess transparency is based on the role that accounting plays which involves the preparation and publication of accounts. Even though it is argued that the main instrument that reflects transparency is reporting, there are other forms by which transparency can be reflected (e.g. an entity’s response to questions, media publications, corporations’ pronouncements, etc.). For example, a government agency such as the Bureau of Meteorology has various types of reporting (annual report, water levels, etc.) and each of them will have different qualities.

4.2.3. Instructions, Reward and Power

Gray *et al.* (1996) consider Instructions, Reward and Power as their last element of the model. This element goes from the accountee to the accountant. **As discussed in previous research (see Paper 1), Gray *et al.* (1996) do not provide much discussion on this element, but they acknowledge that one of the problems with accountability has to do with power.** This situation is described by Gray *et al.* (1996) as *ex gratia* disclosure. Finally, Gray *et al.* (1996)

¹¹ Positive disclosures are defined as information that portrays the company in accord with the environment whereas negative disclosures are disclosures that present the corporation as operating in detriment of the environment.

conclude that accountability can be due even if it cannot be enforced because a natural right to information flows from established responsibility.

Gray *et al.* (1996) do not provide a general definition of power, but Wickramansinghe (2006) mentions that power can be defined as control or influence in spite of resistance. According to Wickramansinghe (2006), in life, some people are more powerful than others so that these powerful people can influence the behaviour of others. Furthermore, Mitchell *et al.* (1997) state that power might be complicated to define, but not difficult to recognise as it can be seen by the ability of those who possess power to get the outcome they look for.¹²

It is assumed that power in terms of accountability consists of the ***Power of the accountees*** to create change. Such change is reflected in their power to influence the decision-making process. Stakeholder power is important due to the ability of stakeholders to create change. For instance, one way to see stakeholder power is when stakeholders exercise pressure on a company. Locke and Siteman (2002) discussed the case of Nike in the 1990s which is an example of how stakeholders can create changes in the way a company operates.

Gray *et al.*'s (1996) final element (Instructions, Reward and Power) needs to be expanded for two reasons. Firstly, for accountees to be empowered first requires information which enables the evaluation of an accountant's performance. In other words, there must be a mechanism to assess performance, but performance evaluation is only one element and not all about power. Accountancy and auditing of the public sector are connected with compliance, rectitude and control (Broadbent and Guthrie, 1992). For example, in order to assess whether a government agency (such as the Bureau of Meteorology) performed well, accountees can look at reports or check whether they saved money. There are different ways to assess performance in a government agency and the same applies to water. This situation can also be seen in the public sector after the introduction of neo-liberal reforms in the 1980s. Shaoul *et al.* (2012) posit that under that scenario accountability has shifted from a procedural-type accountability to a performance-type accountability. Public sector accountability underlies accounting and the operations of democratic governments (Barton, 2006); therefore, multiple stakeholders can be recognised in public sector accountability. Shaoul *et al.* (2012) state that public sector accountability has traditionally been characterised by having two features: a descending

¹² Moreover, Mitchell *et al.* (1997) state that power is transitory because it can be acquired and also it can be lost.

accountability to citizens (to whom the public sector is owed) and an ascending accountability through public sector hierarchies to Parliament.

Secondly, in the private sector it is easy to assess performance mainly through profit evaluation, but in the public sector this is difficult because there are multiple relationships (e.g. citizens with voting power, NGOs and their capacity to influence protests, so on). Citizens' power is reflected in the power of voting. It is not a short-term power, but a medium-to-long term power (Broadbent and Laughlin, 2003). The existence of multiple relationships is mentioned by Barton (2006 p. 260) when he states that 'where all the information, including cost information, is provided to parliament and the public, then parliamentary committees, opposition parties and the media can highlight areas of bad management and inefficiency and place pressure on the government to take appropriate remedial action'. Therefore, to evaluate accountability in the public sector a mechanism is needed by which performance can be assessed.

Power of Accountees could be exercised through a tool that permits its implementation. It is argued that this mechanism will enable the evaluation of accountors' performance. One of the findings from previous research (see Paper 1) was that, in terms of SWA, the Accountability Statement could be considered as a mechanism to assess performance. According to the Water Accounting Standards Board (2010 para. 50), the Accountability Statement is meant to assist users in assessing whether: (1) a GPWAR has been presented in accordance with Australian Water Accounting Standards, (2) externally imposed requirements have been complied with, and (3) best practices for managing water assets and liabilities have been used. The fact that the accountability statement includes disclosure of compliance with externally-imposed requirements could reflect a situation in which accountees will be informed and empowered to take action. Even though the Water Accounting Standards Board considered disclosure of compliance with externally-imposed requirements as part of the Accountability Statement in the second iteration of the standard, the Water Accounting Standards Board did not include it in its third iteration of the standard (known as AWAS 1). In terms of AWAS 1, the Water Accounting Standards Board (2012b para. 62) states that the Accountability Statement should only provide information that assist users to understand whether GPWARs have been prepared according to the standards.

Gray *et al.*'s (1996) model is operationalised through *Clarity of Relationship*, *Transparency* and *Power of Accountees* and these elements allow evaluating accountability. In this study, data is gathered by using a mixed method approach which will be explained next.

5. Research Method

This research paper adopts a mixed method research approach. Termed 'third methodology' (see Hall and Howard, 2008) or 'third paradigm' (see Denscombe, 2008), mixed method research has a long history in the social sciences, including management (Grafton *et al.*, 2011). However, little mixed method research has been undertaken in the accounting field (particularly management accounting) (Grafton *et al.*, 2011). Mixed method research seeks to link methods from different paradigms, its significance determined by the way the methods are combined. According to Creswell and Clark (2007), the mixed method involves collecting qualitative and quantitative data in one single study either sequentially or concurrently.

There are four basic designs in mixed methods: Triangulation, Embedded, Explanatory and Exploratory (Creswell and Clark, 2007). This paper follows the explanatory design, characterised by an initial quantitative phase followed by a qualitative phase. This design is characterised as sequential because it involves collecting data in an iterative manner (Creswell and Clark, 2007). Data collected in the first phase contributed to data collected in the second phase because it informed and set the scenario so as to understand the general perceptions of stakeholders towards SWA. Qualitative results serve to explore in depth the general findings identified in the quantitative phase. The first phase involved delivering a questionnaire (survey) to potential users of water reports. The whole population of potential users of water accounting reports was narrowed by delivering the questionnaire only to attendees of five key water-related events. Attendees of those events represent users with an interest in water issues. Therefore, the whole population of potential water users was substantially narrowed to include those who are interested in water accounting. The questionnaire was exploratory and investigated the perception of potential users of water reports towards water accounting.

The results of the survey allowed the researcher to develop an understanding of the perceptions of potential users of water reports towards Standardised Water Accounting. The second (qualitative) phase involved the analysis of secondary data in the form of submissions to the Water Accounting Standards Board (WASB) so as to explore in depth SWA as it is

reflected in the Exposure Draft of Australian Water Accounting Standard 1. In October 2010, the WASB published ED AWAS 1 and asked the public to provide comments by June 2011. By the end of 2011, the WASB had published 28 submissions on its website, but, after checking the identity of each respondent, all submissions were grouped by respondent. Hence, 23 submissions comprised the final sample. However, for the purposes of this study 14 submissions were evaluated because they were prepared by users of SWA reports and not practitioners.

5.1. Quantitative Phase

A questionnaire or survey technique was the method chosen for the initial phase. The questionnaire was carefully designed so the final list of questions was unambiguous, clear and easy to understand (Grix, 2010). An advantage of doing surveys instead of face-to-face interviews is that there will not be *interviewer effects* on the answers. *Interviewer effects* are the personal characteristics of the interviewer that might affect respondent answers (Grix, 2010).

A questionnaire or survey asks respondents about their opinions, beliefs, characteristics and past or present behaviour (Neuman, 2000).¹³ In this particular case, respondents are stakeholders or potential users of water accounting reports prepared under SWA. Self-administered questionnaires were delivered to participants at those events. The population is all potential users of water accounting reports, but the sample included only those users with a real water-related interest. Participants who attended those five water-related events have an interest in water and water accounting in particular.

There are advantages and disadvantages in choosing to gather data with self-administered questionnaires. According to Neuman (2000), some advantages of self-administered questionnaires include: (1) direct contact with respondents, (2) they are inexpensive and (3) they can be conducted by a single researcher. Conversely, some disadvantages include: (1) the possibility of having a low response rate, (2) the researcher's inability to control the conditions under which the questionnaire is completed, (3) incomplete questionnaires and (4) the researcher's inability to observe visually the respondents' reactions to questions, their physical characteristics or the setting (Neuman, 2000p. 272). The major advantage of

¹³ The questionnaire was constructed by following the principles of good question writing outlined by Neuman (2000 p. 251-255).

delivering self-administered questionnaires at these events was the possibility of surveying a large population of potential respondents; however, the response rate was not high.¹⁴

5.1.1. Questionnaire Design

Each question in the questionnaire follows a logical order and all the questions were set out in a user-friendly manner (Grix, 2010). The results of a previous research study which evaluated the perspectives of practitioners towards SWA (see Paper 1) provided the basis for the design of the questionnaire. The initial questionnaire comprised twelve questions (8 close ended and 4 open ended questions). After the first event, it was decided to make a slight change to the questionnaire because one question was not considered relevant. Such change included: (1) the addition of one closed ended question and (2) the removal of one open ended question. However, in order to keep consistency in the analysis of results, only similar questions from the old and the new questionnaire were considered. Most questions were closed ended with possible responses from either a five-point Likert scale or Yes/No/Undecided type of question. The questionnaire was delivered to potential users of water accounting reports in five different water-related seminars in Sydney and Melbourne from late 2010 to mid-2011.¹⁵

5.2. Qualitative Phase

After analysing the results of the survey, it was necessary to explore in depth the perceptions of potential users regarding SWA following the exploratory design of the mixed method. Thus, the qualitative phase involved the analysis of secondary data in the form of the submissions made to the WASB. Public submissions were on the Exposure Draft of Australian Water Accounting Standard 1 that the WASB released in 2010. This qualitative phase is characterised by the use of available (or secondary) data. By utilizing available data, bias can occur because the information cannot be relevant for the study and/or because available data will seldom be ideally suited to the purposes the researcher has in mind

¹⁴ Approximately 21% of attendees answered the questionnaire.

¹⁵ These seminars were as follows: 'Sustainability in the Key Professions: Accountancy' Summit held in Sydney (September 2010), Water Accounting Seminar Melbourne held by the WASB (November 2010), Water Accounting Seminar Sydney held by the WASB (November 2010), 'Australia's Urban Water Challenge: A Drought of Ideas' public discussion forum held by the Centre for Independent Studies in Sydney (April 2011) and The RMIT Accounting for Sustainability Conference in Melbourne (May 2011).

(Singleton and Straits, 2005). This research is on the SWA (reflected on the ED AWAS 1); therefore, data represented by the submissions is relevant.

The Water Accounting Standards Board published the Exposure Draft of the Australian Water Accounting Standard 1 (ED AWAS 1) in October 2010. The WASB received public submissions on issues regarding the ED AWAS 1 until June 2011 and published those submissions on its website in late 2011.¹⁶ The submissions followed a structure based on 54 questions asked by the WASB on ED AWAS 1. Additionally, the respondents were free to add additional *general comments*. In total, 28 submissions were downloaded from the WASB website and coded in Nvivo. However, the WASB posted some submissions from the same respondent (which is considered as repetition in terms of the identity of the respondent). Therefore, after the identity of each respondent was double-checked, the total number of respondents who sent a submission was 23. All those 23 submissions were reviewed four times to: (1) obtain a general understanding, (2) code by question, (3) review each question in depth so as to identify patterns related to the integrated accountability model and (4) code the question and general comments according to elements of the model. Finally, of the 23 submissions, only 14 were analysed in depth according to the critical components described in section 4 by which to operationalise Gray *et al.*'s (1996) accountability model because the other nine submissions were from respondents who are practitioners (State Water Authorities and private water providers) and therefore form part of the analysis of practitioners considered in Paper 1. The 14 submissions were from individuals/citizens, government entities and private independent bodies who are best characterised as report users.

6. Findings

6.1. Quantitative Phase

In total, 36 questionnaires were completed which represented approximately 21% of the total number of attendees of those events. Demographics of those 36 responses indicated that 18 (50%) were from qualified accountants, all respondents completed tertiary education and there were 26 males and 10 females.

The results of the questionnaire indicate that 83% of respondents agree with the idea of having national standards that govern the way water reports are prepared. One of the

¹⁶ See www.bom.gov.au/water/standards/wasb/awasfeedback.shtml

characteristics of SWA is the preparation of standard water reports that will facilitate comparability. Approximately 56% of respondents perceive the benefits of preparing water accounting reports under SWA will outweigh the costs.¹⁷ Finally, the majority of respondents are undecided on the contents of the reports as useful tools to discharge the accountability of water managers (approximately 53% approved all statements except the accountability statement and approximately 58% approved only the accountability statement).

The first question evaluated the perceived value of adopting national standards to prepare water accounting reports. 83% of the respondents agreed with the introduction of SWA. In supporting their choice, some respondents mentioned that they agree with the idea of having standardisation in the reporting process so as to enhance comparability. One respondent mentioned that reports are necessary to enable accountability of reporters whereas another respondent was not sure about the benefits of the standards for urban people.

'To allow comparability of info between reports, to enable audit of reports, accountability of reporters, support confidence of accounts' users' (Respondent 22: Master's degree, Non-qualified accountant).

'To provide consistent interpretation, to provide consistent forms of data provision, to streamline all water accounting processes' (Respondent 20: Master's degree, Non-qualified accountant).

Most respondents agree with the idea of having national standards that govern the way water reports are prepared.¹⁸ (See Table 3.1, question 1 in the Appendix for summary of results and statistical analysis.)

[Insert Table 3.1 here]

The second question explored the perception of respondents as to which stakeholder group would find water accounting reports under ED AWAS 1 useful (See Figure 3.4 in the Appendix for a summary of the results).¹⁹

¹⁷ This result includes those who consider that the benefits will exceed or strongly exceed the costs.

¹⁸ A Chi-square goodness of fit test was carried out to analyse whether people are likely to choose any of the alternatives provided (Categories were: 'Yes', 'No' or 'Undecided'). The Minitab16 software program was used. The Null hypothesis was of 'Equal proportions'. This means that it is believed that people are equally likely to choose 'yes', 'no' and 'undecided' (each one at 33.3%). If the expected value is greater than 5, an analysis of the 'p-value' can be carried out. The 'p-value' has to be less than 0.05 so as to have statistically significant results. The 'p-value' was lower than 0.05.

[Insert Figure 3.4 here]

Results were analysed using proportions and such results are associated with the discussion of water accounting report users and primary and secondary stakeholders in Section 3. Responses show that approximately 72% of respondents believe that reports would be more useful to water industry regulators; hence they should be considered as primary stakeholders, in their opinion. This result is surprising because it is expected that water users would be primary stakeholders of water accounting reports. Results show that most respondents believe that water industry regulators, government water managers and finally government representatives and their advisors would find water accounting reports ‘very useful’. Conversely, the majority of the respondents perceive that town-water users will be indifferent.

In terms of the components of the ED AWAS 1, the majority of respondents do not perceive that members of the community will find it useful (See Figure 3.5 in the Appendix for a summary of the results).²⁰²¹ The majority find the Statement of Physical Water Flows, the Statement of Water Assets and Water Liabilities and the Statement of Changes in Water Assets and Water Liabilities as ‘most useful’ for the community (50%, 47% and 34% respectively)²². Previous research (See Paper 1) finds that the accountability statement could be considered as a power enabling tool. The results show that 56% consider the accountability statement as ‘somewhat useful’.

[Insert Figure 3.5 here]

¹⁹ The users described in the question were taken from the broad range of categories of users according to the Water Accounting Conceptual Framework (Water Accounting Standards Board, 2009 para. 19).

²⁰ According to the second iteration of the standard, components of GPWAR according to the ED AWAS 1 include: Contextual Statement, Accountability Statement, Statement of Water Assets and Liabilities, Statement of Water Assets and Water Liabilities, Statement of Physical Water Flows, Note Disclosures and Assurance Statement.

²¹ A test by evaluating proportions was carried out.

²² According to the Water Accounting Standards Board (2010), the Statement of Physical Water Flows contain information about the nature and volumes of physical water flows in the entity during the reporting period whereas the Statement of Water Assets and Water Liabilities contain information about the nature and volumes of the water assets and water liabilities of the water report entity. Finally, the Statement of Changes in Water Assets and Water Liabilities contain information about the changes in the nature and volumes of the water report entity’s net water assets.

The third question explored respondent perceptions regarding the benefits and costs of preparing water accounting reports (see Figure 3.6 in the Appendix for a summary of the results). Approximately 56% believe that benefits will exceed costs. This result can be considered as supporting the implementation of SWA.

[Insert Figure 3.6 here]

As to whether or not the material contained in the General Purpose Water Accounting Reports excluding the Accountability Statement is perceived to be a useful tool to discharge the accountability of water managers, approximately 53% of the respondents were undecided (see Table 1, question 2 in the Appendix for a summary of the results and statistical analysis). The fact that more than half of the respondents were undecided could (based on some of the responses in the questionnaires) be due to the lack of information about the nature of the accountability statement.²³ In fact, the reasons stated by some were that they were not informed enough to make a judgement.

[Insert Table 3.1 here]

The perception of potential users regarding the accountability statement only as a useful tool in discharging the accountability of water managers is similar to the previous question because approximately 58% of respondents were undecided (see Table 3.1, question 3 in the Appendix for a summary of results and statistical analysis). The reason given as to why the majority of potential users feel undecided about the components required to discharge the accountability of water managers was the lack of both information and accounting knowledge. Recall that demographics include 18 respondents who were qualified accountants. Results of this question are also statistically significant.

[Insert Table 3.1 here]

The use of the double-entry system and accrual accounting to record physical water transactions can be considered part of the element of transparency because both will facilitate the preparation of accounts. Since both aspects were identified as issues in Paper 1, it was considered necessary to include two questions enquiring about them. The majority of respondents were in favour of their use (approximately 53% in favour of the double-entry

²³ A Chi-square goodness of fit test was carried out and the 'p-value' was found significant at 0.05.

system and approximately 56% in favour of accrual accounting) (see Table 1, question 4 and 5 in the Appendix for a summary of the results and statistical analysis).

The final question of the questionnaire was open-ended and enquired about which additional information they would like to see in addition to what is prescribed in the ED AWAS 1. Twelve respondents answered this question. Two respondents stated that they did not have enough knowledge to make any suggestion whereas the rest of respondents made suggestions about specific information they want to see in the accounts. These suggestions include: The expected implications of accounts (e.g. construction of new dams), information on optimisation of usage level, comparison on state-allocation practices and evapotranspiration, water recycling, monetary amount, water quality and comparison of water use with industry standards, more information on efficiency, total water resource which includes the flows of water not held in storage, water efficiency and self-reliance, and water accounting reports should focus more on accountability and sustainability. It has to be mentioned that the Australian Bureau of Statistics prepares water accounts including monetary values following the UN's System of Environmental and Economic Accounting for Water.²⁴

6.2. Qualitative Phase

Out of the final sample comprising 23 submissions in total, nine submissions were sent by practitioners (seven State Water Authorities and two private water providers). Therefore, fourteen submissions, representing the views of potential users of water accounting reports were analysed in depth. The WASB requested the general public to make comments on the ED AWAS 1 which was publicly released in October 2010. The WASB asked feedback on different parts of the standard by asking the public to comment on 54 questions. Each response was analysed in depth and then they were categorised according to the three elements of Gray *et al.*'s (1996) extended model as explained in Section 4. Additionally, some respondents included general comments on the ED AWAS 1 and such comments were also analysed and classified according to the elements of the model.

6.2.1. Clarity of Relationship

Submissions were analysed to identify comments related to Clarity of Relationship. Recall that the accountability relationship includes an accountor and an accountee. In terms of the

²⁴ For more information on the Australian Bureau of Statistics' water account:
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4610.02010-11?OpenDocument>.

accountor, it means analysing the identity of the water report preparer. One issue mentioned by the respondents is their struggle to differentiate between the water entity and the water report entity as sometimes they are not the same. The WASB (2010 p. 33) defines the 'water entity' in the ED AWAS 1 as 'a physical entity, an organisation or individual, that: a) holds or transfers *water*; b) holds or transfers rights or other direct or indirect claims to *water*; c) has inflows and/or outflows of *water*; or d) has responsibilities relating to the management of *water*' whereas the water report entity is the water entity under which it is expected the existence of users of water accounting reports who depend on GPWAR for information on water. The physical part of the water entity involves water and rights to water (WHAT) whereas the other part involves the organisations that are responsible for managing water and/or preparing water accounts (WHO). In some cases, they overlap, but in others they do not. For example, even though the Murray Darling Basin Authority is in charge of managing the Murray Darling Basin and consequently prepare whole-basin reports, there may be other entities with water management responsibilities such as bulk water suppliers. These organisations have environmental and social obligations, but they are not the designated water managers because the Murray Darling Basin Authority is. According to the definition provided by the WASB, a water report entity is about the WHAT and the WHO; however, the report preparer is only about the WHO. Confusion is initially generated by the way the water report entity is defined.

'the fundamental difficulty is the confusion in the definition of a water report entity between: (1) Water and rights to water (the WHAT) and (2) Organisations that are responsible for managing water and/or preparing water accounts (the WHO)' (submission 4 – Individual/citizen)

'A water report entity should correspond to existing management units eg catchments or aquifer extents because models and monitoring etc are carried out specific to these boundaries' (submission 5 – Individual/citizen)

'The definition fills a need, but the name is not intuitive. The water entity makes sense. The report that a water entity lodges also makes sense. Should not the report be called the water entity report? I think there is no need for water report entity as a term. It should be more simply referred to as water entity. And yes, the water entity can have reports written about it' (submission 28 – Individual/citizen)

The majority of respondents agree with the definition of water report entity proposed, but with reservations and suggestions as to improvement given the confusion between the WHO and the WHAT. Controversy surrounds the entity concept in accounting and this controversy seems to be even more significant in water accounting due to the complexities of the water

entity concept. Meyer (1973) examines the entity concept controversy by exploring eight conceptions of the accounting entity. Five of the eight conceptions can be viewed as a continuum from the most restrictive to the most open idea of 'ownership interest', whereas the 'remaining three conceptions refrain from setting up priorities among interests' (Meyer, 1973 p. 125). In his research, Meyer (1973 p. 126) concludes that 'different conceptions of the entity inevitably give rise to different solutions of accounting and reporting problems'. As it is seen, controversy and confusion about the entity concept exist in financial accounting and water accounting is not the exception. The difficulty in water accounting is about the delimitation of what a water entity (and hence a water report entity) includes.

Approximately 83% of respondents in the submissions stated that users' needs will be satisfied by the content of water accounting reports. Users of reports are the accountees in the accountability relationship. The results of this node (coding) should be linked with the results of the quantitative phase which explored which users would find water accounting reports more useful (recall Figure 3 in Section 6.a). As mentioned in the quantitative phase, approximately 72% of respondents perceive that water industry regulators would be more interested in water accounting reports; however, it is not easy to determine who the main users of GPWAR would be. Analysis emerging from the data suggests that it is difficult to state who the potential users are (accountees) and to describe their precise information needs. The majority of respondents agree with the idea that the information needs of users should drive the preparation of GPWARs. This fact confirms the importance of identifying users in the development of SWA. Respondents also mention that users' needs are not known because of the different user types. Cooper and Sherer (1984) mention that each user group in accounting has different information needs; hence the preparation of general purpose accounting reports is recommended in order to have a general report that suits the majority of information needs of users. The WASB assumes that ED AWAS 1 will satisfy the common information needs of users of water accounting reports (Water Accounting Standards Board, 2010). Another issue raised by respondents was about the role of the Bureau of Meteorology in the whole process of water accounting and reporting. The Bureau of Meteorology is in charge of collecting, holding, managing and disseminating Australia's information on water (Cwlth, 2012). Part of the confusion expressed by the respondents strives in the role of the Bureau of Meteorology in light of the set of relationships between accountant and accountees within a water-accounting-report context.

'Each water entity within the NSW water planning areas, has existing licences to take water and is obliged under those licences to order water and the take is to be measured and recorded by State Water or NSW Office of Water. That is well understood. It seems that the draft standard moves away from that set of relationships and seeks to interpose BOM between the licencing and operating body and its customers' (submission 7 – Individual/citizen).

6.2.2. Transparency

As mentioned in section 4, the quality of reporting is considered as a subset of transparency. Since all submissions were based on the ED AWAS 1, the majority of the comments are related to the seven components of ED AWAS 1. In line with the findings of the quantitative phase (see Section 6.1), some respondents suggested that extra information should be added in order to enhance the content of the reports. For example, adding extra information such as information about the inclusion of water market participants in GPWARs.

'Yes. The objectives are quite specific, for good reason. However in the interests of wider uptake of GPWA, it might be useful to add a softer objective of "Provide general information about water resources in the entity" ' (submission 26 – Individual/citizen)

There is not much disagreement on the purpose of the contextual statement. The majority of respondents agree on its importance, but some give suggestions for improvement.

'[we agree with the content of the Contextual Statement], but should be simpler and use illustrated examples where possible' (submission 1 – Government entity)

'Agree that reports need to be put in some sort of context. However it is unreasonable to expect a small, or even a large irrigation entity – a syndicate, co-operative, irrigation trust, irrigation company etc. – to provide this in the detail indicated in the Associated Model Reports. Contextual information is available at a broader level via State Departments, water resource plans etc. and it is reasonable for irrigation entities to just refer to those sources' (submission 15 – Industry association)

'(some additional information that could be included is the) other objectives of the entity. E.g. does it have a profit motive? Is it a public good? What is its reason for being?' (submission 28 – Individual/citizen)

With respect to the Statement of Water Assets and Liabilities, the Statement of Changes in Water Assets and Water Liabilities and the Statement of Physical Water Flows, all respondents agree in terms of their importance; however, a couple consider that instead of three statements there should be only two because of the low number (or even inexistence) of accruals (water carryover and/or inter valley owed between river basins). Water carried over to the next period is considered as an accrual; however, in reality the amount of water carried

over is not significant. Additionally, two respondents were hesitant about the use of the term and meaning of ‘water assets’ and ‘water liabilities’.

‘There will obviously be some need for clarity about who owns what water or rights. I did not notice that having been well enough explained in the Draft. That would be especially so where a licence has multiple holders, partners, or where a licence is a collection of separate rights, not truly a licenced right, but where the two sets are used as matching pairs’ (submission 7 – Individual/citizen)

‘[The Statement of Physical Water Flows] can readily be combined with a statement of flows including accruals. It would contain the whole of the statement of physical water flows, with the accrual items added at the end’ (submission 15 – Industry association)

‘Assets and Liabilities only present the current status of the entity. It may be useful to include a Statement of Water Rights that presents the entitlements to water in the entity as well. Obviously it could be argued that this could also become part of the notes. In some ways, this can be just as important in defining the status of a resource’ (submission 26 – Individual/citizen)

‘While the concept of an “inflows and outflows” statement that includes accruals (i.e. rights to water as well as physical water) is supported, we do not agree with either the title or the way [the Statement of Changes in Water Assets and Water Liabilities] this report is prepared in the examples given’ (submission 15 – Industry association)

One respondent was completely opposed to the use of the terms water assets, water liabilities and net water assets taken from financial accounting because the physical accounting of water cannot be mirrored perfectly by financial accounting as they are two different worlds:

‘These terms and the way in which they are treated in the associated model reports imply strongly that they have much the same meaning as assets and liabilities in financial accounting. That is not the case’ (submission 15 – Industry association).

Two statements that create controversy are the Accountability Statement and the Assurance Statement. One statement that creates confusion between potential users is the Accountability Statement because of its potential link with compliance (as stated in the ED AWAS 1). Four respondents out of fourteen indicated their support for the information disclosed in the accountability statement whilst one respondent was non-supportive, finding the statement ‘too burdensome to prepare’. While there were voices suggesting that the Assurance Statement should not be included as a component of water accounting reports (because it will be done by independent assurers), other voices suggest it should not be included because it will be very costly to prepare. **In the recently released Australian Water Accounting Standards 1 (AWAS 1), the assurance statement is not anymore considered as a component of the General Purpose Water Accounting Reports.**

6.2.3. Power of Accountees

Previous research (see Paper 1) recommended the Accountability Statement as a tool that will enable power because through this statement, users of water accounting reports will have the possibility of assessing the performance of managers in terms of compliance with water management plans (based on the second iteration of the standard known as ED AWAS 1). In terms of power, even though there were no specific comments reflecting the notion of power of accountees, some comments were found connected with the notion of power. (All submissions were analysed carefully so as to identify references to power.) Maybe it is too early to assess whether GPWAR will empower accountees.

One response was easily identifiable as an example of empowerment. In this response, power is linked with a reward or sanction, which in terms of public sector accountability is connected to upward accountability:

'The purpose of the reports is to provide information to users of that report...and so enters the real reason for the Commonwealth interest in all this data – that is to have another externally imposed accountability and punishment regime for individuals and managers and collective directorial and management bodies, at great expense to those bodies' (submission 7 – Individual/citizen)

Two submissions mentioned the power of accountees (about GPWAR prepared under ED AWAS 1) and related it to the power to make decisions, but it is not clear whether those decisions are about creating any change and influence the decision-making process. It is assumed users and decision makers are synonyms.

'Overall, we support the development of standards aimed at improving the consistency and comparability of information about water resources provided by water report entities. This should assist decision makers at all levels in both the public and private sectors' (submission 2 – Statutory agency of government)

Five respondents out of fourteen stated that they agree with the information included in the accountability statement and one disagreed with the components of the Accountability Statement. The other respondents did not comment on it. One respondent gave suggestions for improvement.

'Paragraph 50(c) requires the water report entity to provide information to assess whether "best practices for managing water assets and liabilities have been applied". Based on the guidance and explanation provided on this requirement, it appears there is no current best practice in managing water assets and water liabilities. For users of the general purpose water accounting reports the absence of "best practice" in this area may not be clear' (submission 16 – Professional body).

By agreeing with the contents of the Accountability Statement, then respondents accept indirectly the idea that water managers are accountable for their performance. This finding goes against to the perception of report preparers about the Accountability Statement who considered it difficult. The respondent who disagreed about the Accountability Statement stated that it was seen as burdensome:

'We do not understand the rationale behind these proposals. They appear very onerous and do not seem to have any parallel in financial accounting. We believe that: - It is reasonable to expect an irrigation entity to confirm that the numbers in its accounts are the best available and prepared in good faith, but it has little control over some of those numbers ... - It is not reasonable to expect a statement about compliance with all sorts of legislation. There are plenty of Government agencies (water departments, environmental agencies, occupational health and safety agencies, vehicle registration agencies etc.) that monitor compliance within their area of legislation - It is even less reasonable to expect a statement that the managers of an irrigation entity are using "best practice" in all their activities. How is "best practice" defined? There may be good cost reasons for not adopting the very latest technical solution in every case' (submission 15 – Industry association)

The results of the qualitative analysis of the submissions reinforced the results obtained during the quantitative phase. The majority of the comments were related with transparency as they focused mainly on the statements.

7. Summary and Conclusions

As a result of previous research (see Paper 1), it was considered necessary to explore the perceptions of potential users about SWA and in particular about the accountability of water management. A review of the literature about stakeholders discloses the possibility of having a wide range of multiple users of SWA reports similar to corporate accounting. Research about users of accounting reports is significant and even though it is not as significant as research about users of accounting reports, research on users of SEA reports has been growing in the last decades. However, there is little research on users of SWA reports. The research question driving this study is: To what extent do users perceive Standardised Water Accounting (SWA) reports, under the Exposure Draft of Australian Water Accounting Standard 1 (ED AWAS 1), as being useful for discharging the accountability of water managers? The accountability framework drives this study by adopting Gray *et al.*'s (1996) accountability model and extending it to include elements pertinent to the public sector. Gray *et al.*'s (1996) model was selected to evaluate accountability and transparency was the critical component selected to operationalise information. Such transparency can be reflected through

the quality of reporting. It was suggested that one way to assess the quality of reporting was that reports meet certain qualitative characteristics such as financial accounting reports do. The Australian Accounting Standards Board (2004) discusses the qualitative characteristics of financial statements. In the context of water accounting, conversely, SWA includes a Conceptual Framework called the Water Accounting Conceptual Framework. In SWAC 3 (Qualitative Characteristics of General Purpose Accounting Reports), the Water Accounting Standards Board (2009b SWAC 3 para. 16, 17) describes the qualitative characteristics of GPWAR. Hence, they represent a way to assess the usefulness of information. A mixed method approach is used and in order to gather data a sequential approach was designed. Grafton *et al.* (2011) note that the use of the mixed method has been increasing in management and accounting research. In the quantitative phase, a questionnaire was delivered to attendees at five major water-related events and their responses were analysed. In the qualitative phase, secondary data in the form of public submissions to the WASB on ED AWAS 1 were analysed.

General findings of the survey suggest that respondents perceive as useful the introduction of SWA. Approximately 56% of respondents consider that the benefits of preparing water accounting reports under SWA will exceed the costs. **In general terms, it was found after the analysis of public submissions that respondents are open to the introduction of SWA (reflected on the ED AWAS 1); nonetheless, they recommend revising specific parts of it.**

In terms of clarity of relationship, one question from the survey was about who the respondents perceive to be the main users of SWA reports. Approximately 72% of respondents believe that reports would be more useful to water industry regulators followed by government water managers and finally government representatives and their advisors, while the majority of respondents perceive that town-water users will be indifferent. **Findings from the analysis of submissions show that there is no full clarity yet in terms of the identities of the accountees (or users of reports). Determining the identity of users is important in order to identify their information needs which are the driver behind the preparation of water accounting reports.** In terms of the accountors, some level of controversy regarding the water entity concept was identified during the analysis of submissions, **more specifically about the potential dual nature of water report entities as WHO and WHAT which often overlap, but not always.** The main difficulty in water accounting is about the delimitation of the water report entity. The level of controversy about the entity concept is not unique to water accounting because, in relation to accounting research, Meyer (1973) investigates the entity

concept controversy by analysing eight conceptions of the accounting entity and by analysing the tensions between them.

In terms of transparency, two questions from the survey which are connected with the idea of quality of reporting concern the double-entry system and accrual accounting. The majority of respondents were in favour of using both of them (53% in favour of the double-entry system and 56% in favour of accrual accounting). In the analysis of submissions it is found that there is agreement on the importance of the water accounting statements; however, not all statements seem to be needed. In particular, there were voices against the Accountability Statement and the Assurance Statement. Furthermore, some respondents recommended merging the Statement of Water Assets and Water Liabilities with the Statement of Changes of Water Assets and Water Liabilities into one as there are not many accruals actually happening. **Identifying the information needs of users is important for the preparation of General Purpose Water Accounting Reports. Research on users of accounting reports has been ongoing, but one of the key aspects to remember is that each user group has different information needs whether in financial accounting or water accounting (see Cooper and Sherer, 1984).**

In terms of power, a question from the survey is about the Accountability Statement and the discharge of accountability. Respondents were undecided about its usefulness in discharging the accountability of water managers (58% of respondents perceive the Accountability Statement as 'not useful' or they are 'indifferent' about it). In the analysis of submissions, five out of fourteen respondents showed their agreement with the information included in the Accountability Statement whereas one respondent disagreed with information disclosed in the Accountability Statement. The other respondents did not comment on the statements and suggested improvements. **The majority of those who responded in favour of the contents of the Accountability Statement asked some modifications. However, there was less agreement in terms of the requirements to sign-off the statement.**

The results of this study have implications for policy makers during the inception phase of SWA. This is because knowing what potential users think of SWA is necessary to enable a more informed assessment as to whether information needs are satisfied and, if not, what changes are necessary. The results of this study reflect the importance of users' perceptions in line with other accounting studies on users (e.g. see Yap, 1997; Al-Khater and Naser, 2003).

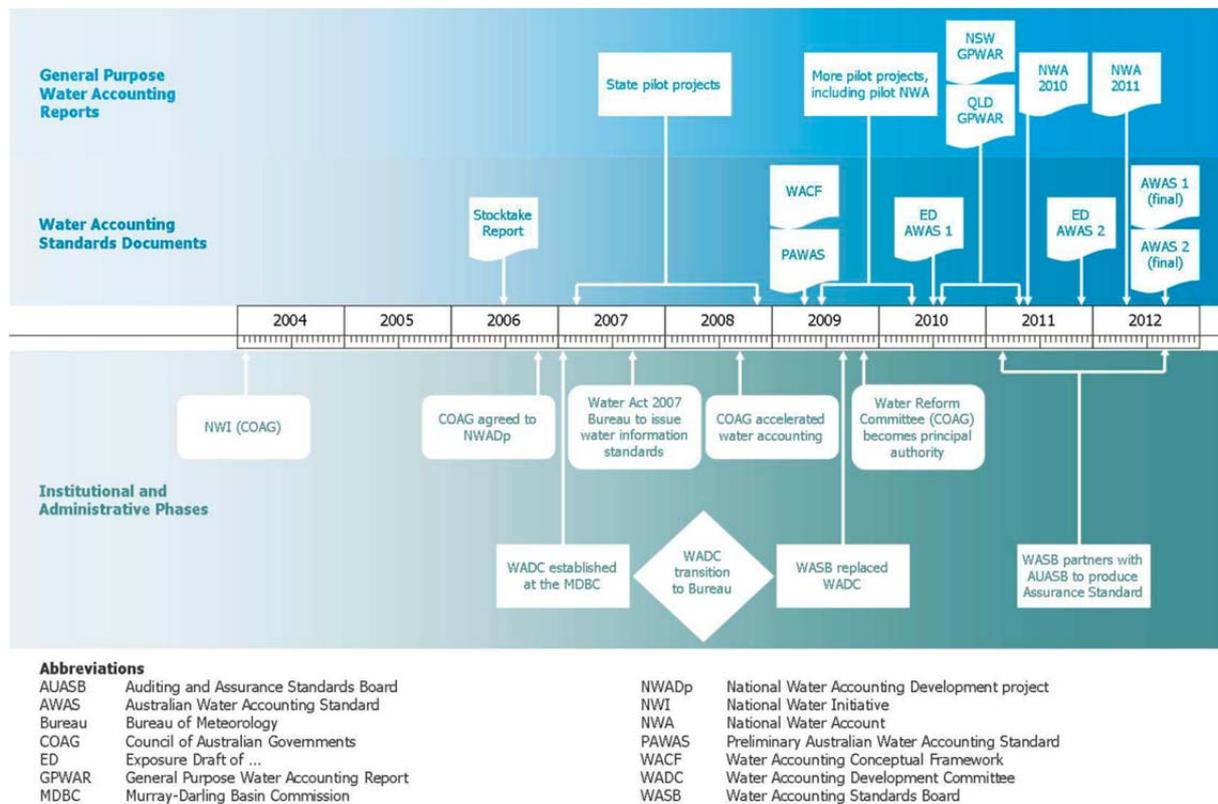
The result of these comments and suggestions is reflected somewhat in the recently released third iteration of the Standard (known as AWAS 1). This updated standard removes the assurance statement as part of the original seven components, reduces the objectives of the accountability statement to report solely on whether water accounting reports are prepared according to standards, simplifies the requirements to report when there are no accruals, and reduces the water entity to the WHAT and no longer to the WHO. The publication of AWAS 1 is relevant in a context in which there have been calls for more involvement of users in the standard-setting process (Harding and Mckinnon, 1997). The influence of users in standard-setting is investigated by Hardin and McKinnon (1997) by analysing one user group (accountants and investment analysts) through a survey. Even though, this study does not explore the perceptions of a particular user groups, it explores the perceptions of potential users who have water-related interests.

Overall, based on the results of the survey and the analysis of submissions, it was found that at this stage users do not believe that SWA, reflected in ED AWAS 1, and by implication AWAS 1, will discharge the accountability of water managers. Based on the perception of users, the study suggests that accountability of water managers is unlikely to be fully realised.

The main limitation of the study is the relatively low data volume of the survey, with a response rate of approximately 21%. Future research might target this limitation by delivering the questionnaire to specific user groups at different events.

8. Appendix

Figure 3.1. Timeline of Water Accounting Development



Source: Bureau of Meteorology, 2012 (www.bom.gov.au/water/standards/wasb/waterAccStory.shtml)

Figure 3.2. Gray et al. (1996) Accountability Model

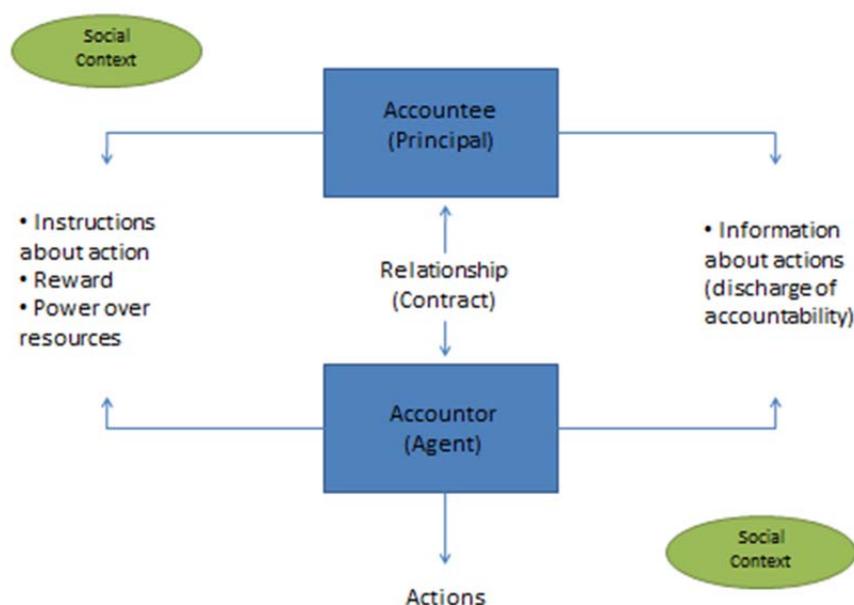


Figure 3.3. Transparency and the Quality of Reporting

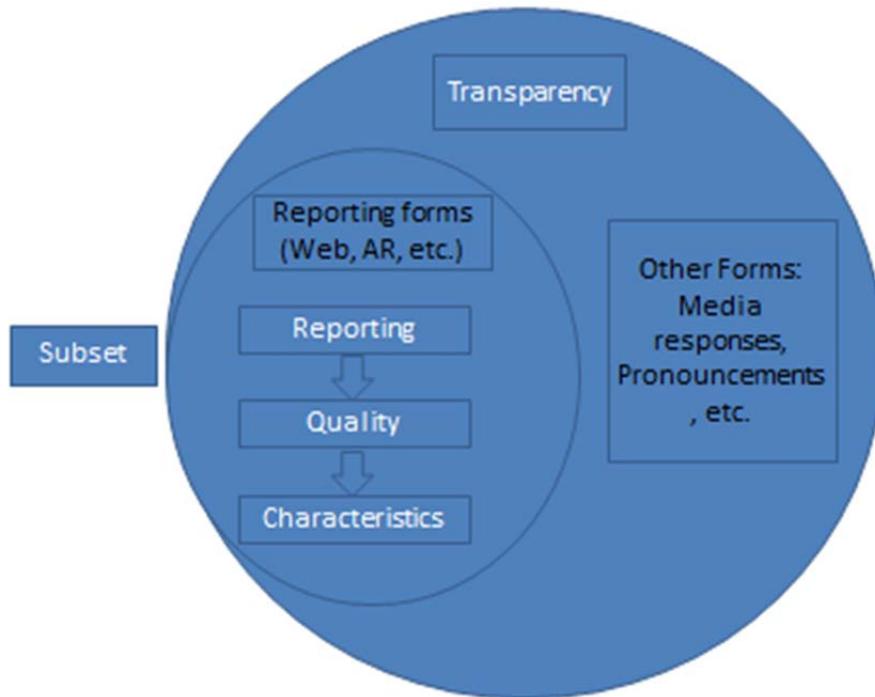


Table 3.1. Summary of Results and Statistical Analysis

Number	Question	Yes	No	Undecided
1	National standards governing the preparation of reports	30	1	5
	Chi-Square 41.1667			
	P-value 0			
2	GPWARs excluding Account. Statement & the discharge of Accountability	11	6	19
	Chi-Square 7.16667			
	P-value 0.028			
3	The accountability Statement and the discharge of Accountability	12	3	21
	Chi-Square 13.5			
	P-value 0.001			
4	Double-entry system for recording physical water transactions (ml)	19	6	10
	Chi-Square 7.6			
	P-value 0.022			
5	The use of accrual accounting into the preparation of reports	20	5	11
	Chi-Square 9.5			
	P-value 0.009			

Figure 3.4. Stakeholders' Perceptions Towards Water Reports

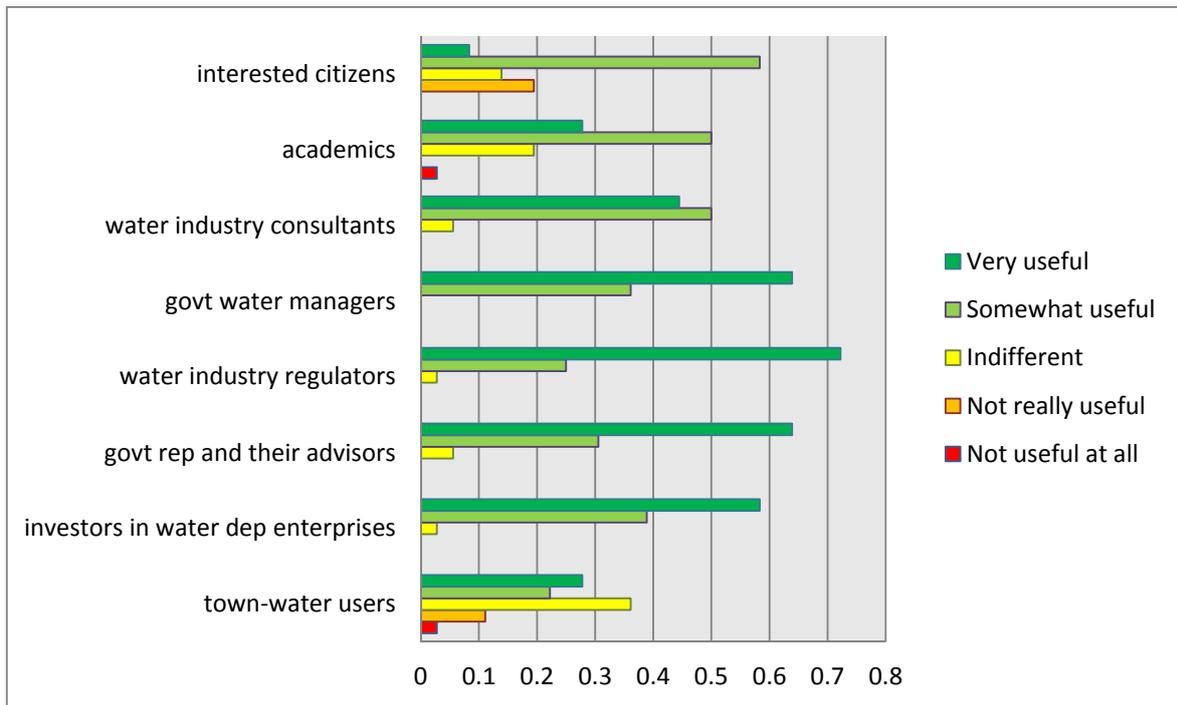


Figure 3.5. Perceptions towards components of water accounting reports under SWA

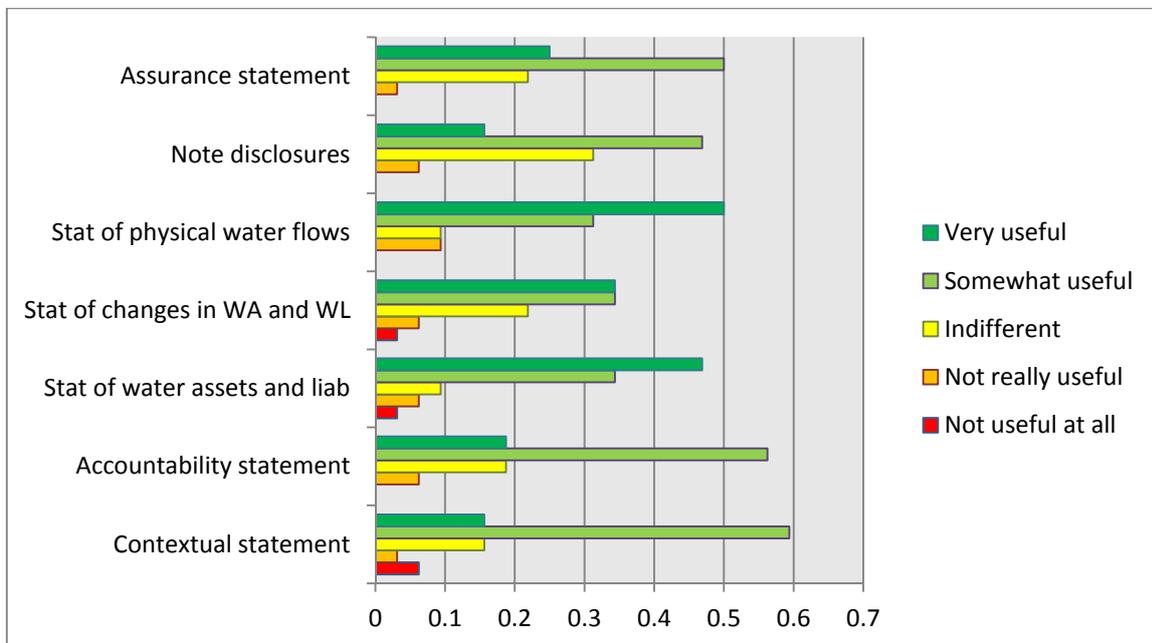
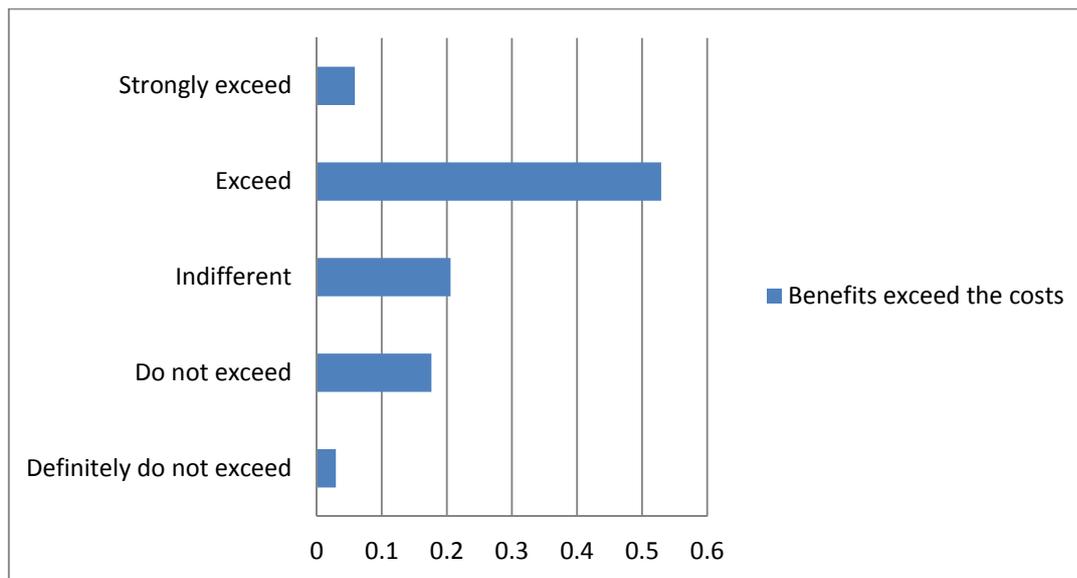


Figure 3.6. Benefits versus costs of preparing water accounting reports



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