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AN EVALUATION OF ENVIRONMENTAL DISCLOSURES PRODUCED IN AUSTRALIAN LOCAL GOVERNMENT ANNUAL REPORTS

by

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A Thesis Submitted in Partial Fulfilment of the
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USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

ABSTRACT

This thesis is an evaluation of the environmental disclosures published in Australian local governments' annual reports. The study is aimed in identifying disclosures of environmental information by Australian local governments and providing explanations for the variations in the quantity and quality of information disclosed.

Various social responsibility theories were used in this study. The theories employed in this study were institutional factors, stakeholder theory, social and political theories. Institutional factors included issues such as local government characteristics and pressures exerted from various government and non-government organizations to implement and disclose environmental measures.

A content analysis methodology was used in this study. A modified indexing system adopted from Wisman (1982) was implemented in the course of the research. The study of 100 local governments' annual reports selected across Australia were used in the data analysis. The local governments' 1998-1999 annual reports included in the sample were randomly selected from a list of urban local governments made available in the university database.

Statistical tests were used to test the hypotheses developed in this thesis. The results indicated that legislation had the most influence on the level of environmental information being disclosed by local governments, followed by the size and lastly, the type of the entity. This indicates that state regulations have a major impact on environmental initiatives and disclosures to be exercised.

DECLARATION

"I certify that this thesis does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in any institution of higher education and that, to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where due reference is made in the text or contain any defamatory material".

... ...

Signature

Date: 5th December 2001

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CHAPTER 1

Introduction

Motivation for the Study

Australian local governments have undertaken the roles of disclosing environmental information in their annual reports. Such actions are perceived as effective accounting measures as the provision of this information has allowed accountants "to expose, enhance and develop social relationships" (Gray, 1992, p. 423). This is very important in the context of environmental disclosures made by the public sector, as the relationship between accountor and accountee is much broader than the traditional agency relationship held by the private sector (Benston, 1982). To explain the presence of environmental disclosures in local government annual reports, institutional factors and local government characteristics are employed to demonstrate the complicated network of interrelationships between government and non-government groups.

The repetitious theme that derives from the emerging trend of these environmental disclosures is that environmental issues have posed a challenge to the financing and accounting activities of local governments while also presenting a significant concern for the well being of the communities. Given the increased societal concern that arises, local governments must assure its stakeholders such as various government agencies and the communities that they have executed their duties in improving the environment. To moderate these rising environmental concerns, federal and state governments have encouraged local governments to implement new environmental measures in curbing pollution towards the environment (Environs Australia, 2001). These measures include recycling programs and diversion of solid wastes from landfills.

In order to account for the environmental activities executed, local governments disclose such information in their annual reports. This is initiated because local governments are

accountable for preserving the public's intrinsic rights on the way public sector responsibilities are being fulfilled and they need to reassure the public that local governments are environmentally responsible entities. To effectively disseminate environmental information, one of the least costly but most effective means of communication for local governments in conveying information to the public will be through environmental disclosures in the annual report.

Prior studies (eg. Cowen, Ferreri, & Parker, 1987; Roberts, 1992; Trotman, 1981) on environmental disclosures have focused on the private sector. It has been emphasized repeatedly that the private sector conforms to environmental disclosure practices as an approach to revamp their aims in generating profits by building investor confidence (Cowen et al., 1987). However, knowledge from such studies has led to the probing of associations between environmental disclosures and public entities such as local governments (Taylor & Rosair, 2000). Given that local governments are established to provide services to the communities with no profit making aims, its basis for environmental disclosures will be different from that of private organizations. It therefore leads to the argument that environmental disclosures by local governments are more of a responsibility-driven proposition as compared to the demand driven beliefs held by private organizations as there is little demand for public sector financial information by the communities (Jones & Pendlebury, 1996).

Little has been discussed on the possible associations that explain the emerging practice of disclosing environmental information in annual reports made by public entities such as local governments and other government agencies. Many studies have failed to recognize the importance of environmental responsibilities held by public entities and their direct association with the communities living under their jurisdiction.

Given the limited research work conducted on the relationships between environmental disclosures and public sector entities, this study is motivated by the need to explain the presence of local governments' environmental disclosures. This study is initiated to investigate and compare the presence of environmental disclosures made by Australian

local governments in their annual reports through the application of a Wiseman (1982) modified disclosure index. Outcomes from this research will identify the level of environmental information disclosed by Australian local governments and allow explanations to be formulated for the variations in the quantity and quality of environmental information disclosed against local government characteristics.

Chapter Outline and Organization

The thesis is organised in the following format. Chapter 2 provides an overview of recent environmental disclosure issues that are discussed with supplementing underlying theories to support such trends.

Chapter 3 discusses the concepts of institutional factors and local government characteristics. This is followed by theoretical discussion of the concepts and the formulation of hypotheses.

Chapter 4 presents the research method applied in this study. The sample selection and measurement system are explained and justified.

Chapter 5 presents and discusses the results of the data analysis. The results of descriptive statistics, correlation matrix and regressions are used to test the hypotheses presented in Chapter 3.

Chapter 6 concludes the thesis with a summary of the findings and the implications of the results. Proposed improvements, limitations and further areas to be researched are also discussed.

CHAPTER 2

Literature Review

Introduction

Many studies have been initiated to relate environmental disclosures in annual reports (eg. Elkington, 1994; Gray, 1992; Gray, Owen, & Adams, 1996). Studies conducted often provided associations between the level of environmental disclosures and private organizations' characteristics (eg. Cowen et al., 1987; Trotman, 1981). Although it has been found that environmental information is disclosed on an increasing trend (Deegan & Gordon, 1996), little research work has been conducted towards local governments' environmental disclosures in relation to their characteristics such as size, location and type of local government. Literature that exists focuses more on the private sector that holds its priority as maximizing market competitiveness through environmental reporting (Grant, 2001), rather than to improve the quality of living of the community (Australian Bureau of Statistics, 2000a). The purpose of this study is to investigate the possible linkage between environmental disclosures and local governments.

Many Australian local governments have published some form of environmental disclosures into their annual reports that are available to the public. Public environmental reporting can be defined as "public disclosure of information about an organization's environmental performance, including its impacts on the environment, its performance in managing those impacts and its contribution to ecologically sustainable development (Natural Heritage Trust, 2000, p.4)". Information produced often serves various purposes for interested parties including resource providers, recipients of public goods and services, legislative oversight or review bodies and management or policy advisers (Taylor & Rosair, 2000). For example, environmental protection agencies are interested in various waste and pollution figures expressed in physical units and generally have no direct interest in the costs of pollution abatement or waste reduction measures. On the other hand,

government agencies may regard costs of environmental activities as a priority for budget preparations or utilize such information as a form of performance indicator.

It has been argued that there is little demand for disclosures to be made by local governments by citizens, as many do not feel the need to comprehend such information (Jones & Pendlebury, 1996). However, mounting concerns over environmental damage and increasing needs of stakeholders to integrate environmental information for decision making processes have forced local governments in obligating themselves to instigate some form of environmental practices and reporting (Natural Heritage Trust, 2000).

Hence to allow increased accountability for local governments' actions towards the environment, institutional factors are deemed to be the driving force for the emerging trend of disclosing environmental information in local governments' annual reports.

Institutional factors

Local governments are under constant pressures exerted by government and international bodies to encourage environmental protection measures to be implemented and disclose such information (Natural Heritage Trust, 2000; Parliament of Victoria, 2001). As public entities with direct associations with the communities, they are bound by duties to create a healthy and safe living environment for the people. Funds sourced from rates revenue and government grants must be spent efficiently and effectively towards environmental activities such as recycling programs and the establishment of proper waste disposal facilities.

Given rising societal concern for the environment and mounting pressures from various entities, Australian local governments have taken various initiatives aimed to improve the environment. An example would be the recent adoption of by "Cities for Climate Protection Program" by the City of Melbourne where it aims to reduce greenhouse gases within its municipality, account for such activities and disclose such information readily to

the public (Malouf, 2001). Another example would be the "Single Bin Recycling Program" (City of Stirling, 2001) initiated by the City of Stirling in Perth where all types of rubbish are disposed into one single rubbish bin instead of opting for the use of multiple bins in separating different types of disposal materials. Such an innovation has allowed less pollution being generated by rubbish collection vehicles and a reduction in the production of plastic rubbish bins. Both examples have led to reassurances of community concern towards environmental issues.

Other emerging incidents have also contributed to an increasing trend of environmental reporting. The outburst of environmental reporting can be attributed to the environmental programs carried out by the local governments. In recent years, many local governments have undertaken environmental protection measures to improve the quality of living for its residents in the area. They are encouraged by the Federal Government to reduce the amount of waste ended in landfill by as much as 50% as a lot of household wastes ended up into landfill without any process of recycling. Costs of recycling and revenues from the sale of recycled products are generated in the process that induces some form of accounting system to be presented to account for such items. This calls for some form of environmental reporting to be utilized, as there are needs for performance to be assessed and to account for such environmental activities.

Recently, the Australian Bureau of Statistics (ABS) has decided to conduct a survey with the aim to unveil more in the area of environmental reporting. This is to encourage efficient spending by local governments towards the area of environmental protection given its enormous annual expenditure of AUS$2.1 billion dollars (Australian Bureau of Statistics, 2000b).

In doing so, the ABS recommends local governments of Australia to undertake the United Nations System of Integrated Environmental and Economic Accounting (SEEA) in completing the survey as it integrates environmental and economic accounting to replace conventional accounting practice (Uno & Bartelmus, 1998). Such a system is ideal, as it will avoid criticisms such as "lack of attention paid in the current generation of industry

codes to the financial implications of environmental management," (Elkington, 1994) when an organization just depends on a single benchmark for environmental performance management and reporting such as the ISO 14000 series (Dzinkowski, 1998).

The survey initiated by the ABS has allowed government agencies to monitor environmental activities and disclosures that are practiced by Australian local governments. The enforcement of SEEA reporting for the purpose of the survey has minimized the process of compiling environmental receipt and expenditure information as all data is formulated on a common basis. The application of the system has given local governments an opportunity to use the information for environmental management and allow benchmarking of performance against other local governments (Miley & Read, 2000). In return, it allows local governments to formulate better plans to facilitate efficient government spending towards the environment. To enhance this environmental reporting framework and the influence of institutional factors, some local governments have sought a more comprehensive environmental reporting framework such as the State of the Environment reporting system.

Initiatives by the state of New South Wales to publish environmental information contribute to institutional factors too. An example is the application of the State of the Environment (SoE) reporting system that was first proposed in the 1970s by the Organization for Economic Cooperation and Development (OECD) (Parliament of Victoria, 2001). The reporting system is primarily designed to account for all environmental activities achieved during a designated time frame, usually on an annual basis. Specifically, the primary aims of SoE are to inform the community and local governments about various environmental conditions, assess and track changes in the environment and alert the community and local governments to human actions that have negative impacts on the environment (Environs Australia, 2001).

It is argued that SoE reporting played an important role in improving the information base on which natural resource management and environment protection decisions were made. It provides a brief summary on the condition of the environment that could be used for

comparability with previous reports and also provided an insight to the government and the community about the condition of the environment.

A SoE framework comprises a number of components. It utilises a reporting model known as the Pressure-State (Condition)-Response Model where various environmental issues are tested; for example, water quality and solid waste disposals. According to Environs Australia (2001), a traditional SoE is incapable of assessing and monitoring environmental trends. However, it can benchmark, inform and facilitate communication but it does not put in place a particular mechanism for tracking environmental trends. Local governments will have to employ the use of various indicators (eg. the level of recycling for a population of 10,000 people) to provide a primary mechanism for the tracking of trends.

The adoption of the SoE model allows benchmarks to be formed and performance evaluations to be made possible. It also assists in the formulation of new strategies to deal with the possible emerge of negative trends. The adoption of such innovations have forced other local governments to take up similar projects in aiding the environment, as the exclusion from such activities would undermine the sound position they may currently possess. The enforcement of the SoE model ensures local governments practise environmental management in their municipalities and disclose such information readily to the public that was demonstrated by local governments residing in New South Wales. Given that the reporting of the SoE model is compulsory in the state (New South Wales Consolidated Acts, 1993), all New South Wales local governments are held responsible in exercising environmental protection plans and reporting such actions.

It is apparent that state regulations have a huge influence in enforcing environmental disclosures to be made by local governments. An example is the obligated SoE report by all local governments in New South Wales which has seen the State of Victoria in favour for the recommencement of the report back into Victoria as it will compel local governments to take up some form of environmental protection measures and disclose it (Parliament of Victoria, 2001).

At the end of the day, the implementation of the SoE reporting system is an interpretative communication framework for various socio-environmental issues to be related upon. Its invaluable consequences will allow local governments to make strategic decisions, set priorities and develop realistic future aims to maintain and improve the well being of the community and the environment.

The characteristics of local governments are also deemed to be important factors to explain the increasing trend of disclosing environmental information to the public in annual reports. Prior studies (Cowen et al., 1987; Trotman, 1981) on organizations' characteristics and environmental disclosures have indicated that organizations' characteristics have potential influences on the quality and quantity of the environmental information disclosed to the public.

It has been argued that organization characteristics such as the size of the entity will attract more attention from the public and is therefore under greater pressures to demonstrate responsibilities to environmental issues (Cowen et al., 1987). Also, larger organizations tend to have a higher level of economic viability in preparing environmental reports as the costs of the action tend to be compensated against the magnified exposure of the entity's image.

Location of the entity plays an important role towards environmental disclosures too. Environmental reporting jurisdiction in different regions is likely to influence the amount of environmental information being disclosed to the public. Also, the ease of access to technology such as the internet in urbanised areas are more likely to simplify the process of preparing and disclosing environmental information.

It is also presumed that the nature of the organization has an impact on environmental disclosures. Given that local governments in Australia are classified into different types (eg. metropolitan, regional and fringe), metropolitan local governments are expected to exhibit greater concern over environmental issues as the community living in the municipality tend to be higher educated and therefore more aware of the harmful effects of

improper environmental management practices. Given this, metropolitan local governments are expected to execute adequate environmental practices that will reassure its higher educated community and the greater environmental concern posed by them.

Hence, the type, size and location of the particular council can play vital roles in deciding the amount and form of environmental protection measures to be implemented and disclosed.

Social responsibility theories

Three categories of theories are identified to explain the trends of increasing environmental disclosures. Social responsibility theories are categorised into decision usefulness, economic and social and political theories (Deegan, 2000). All three categories of theories are utilised for different types of organizations in justifying their decision to disclose environmental information in their annual reports

Decision usefulness theory allows users of accounting information to rely on environmental disclosures from organizations to make investment decisions with the aim of profit generating purposes. It has been perceived that environmental information disclosed would build up investor confidence and creates new investment entries into the organizations. The focus of this theory tends to be restricted to users with financial interests in the entity while neglecting to cater for users with non-financial interests (Deegan, 2000). This theory is therefore inappropriate for local governments, as users do not usually employ local governments' environmental disclosures as a tool to make useful investment decisions. But the application of this theory is justifiable where it allows local governments to enhance accountability towards environmental practices and in return, allow performance measures and environmental improvements to be formulated.

Economic theory is driven by the underlying theme of agency theory where there will be conflicts between owners and managers as both parties uphold different beliefs in the way

an organization should operate. Owners believe maximising the value of the company while managers want immediate profit outcomes to claim bonuses and demonstrate their potentials in the organization. To resolve such conflicts, there has always been a demand for information to be disclosed in order to maintain or reduce costs of capital and build up investor confidence (Deegan, 2000). There is an agency relationship between local governments and its ratepayers where ratepayers are the 'principals' and the councillors are the 'agents'. The agency relationship is weak because ratepayers who are the financial backbones of local governments are perceived to have little demand for information disclosed in annual reports (Zimmerman, 1978). This is justified where the cost of deciphering information by ratepayers in annual reports are higher than the value of the information, whereas users who have a higher interest in such information often have the value of the information perceived outweighing the cost of being informed (Mignot & Dolley, 2000).

Social and political theories are driven by both Legitimacy Theory and Stakeholder Theory (Gray et al., 1996). Legitimacy Theory asserts that organizations are to operate within its boundaries to be 'legally' accepted by outside parties. It is therefore dependant upon a 'social contract' between the society it operates in and the organization under scrutiny (Deegan, 2000). It is therefore perceived that local governments have recognized the annual report and its visual enhancements can be utilized as tools to magnify the "truth claims" (Graves, Flesher, & Jordan, 1996, p.57). That leads to the view that local governments are concerned with their environmental self-image and will employ their annual reports to assure information users the claims of it being a good and responsible environmental entity.

According to Deegan (2000), stakeholder theory comprises of both an ethical and managerial branch. The ethical branch argues that stakeholders have intrinsic rights, for example residing in an environmentally friendly area and the right to information. Also, it is deemed that such rights are not to be violated. Within the context of the right to information, the accountability model formulated by Gray, Owen and Adams (1996), disclosures of information is ascribed to be responsibility driven rather than demand

driven. This is emphasized where there is little demand by rate payers in requesting information in annual reports as the cost of being informed of such information is often higher than the value of the information perceived (Mignot & Dolley, 2000). The managerial branch of stakeholder theory considers expectations of stakeholders' groups and attends to the most crucial group as its priority given its influence towards the organization. Both aspects of stakeholder theory can therefore be employed as the basis for local governments to disclose environmental related information as they maybe compelled to do so as it is their responsibility to let the communities aware of their environmental activities.

Hence, many organizations are recommended to apply a conglomerating framework of conventional and environmental accounting policies in accounting for environmental related activities, as one cannot do without the other in disclosing relevant and reliable information (Gray & Bebbington, 1994). To date, there is no accounting regulation put in place by the Australian Accounting Standards Board (2000) as there are too many unresolved conceptual issues surrounding such an initiative. Such issues include the methodologies to value the benefits and costs of environmental practices and also, the doubts that sustainable developments may actually lead to the conversion of monetary or financial terms (Miley & Read, 2000). Therefore, to ensure reliable and relevant information to be produced from the application of a conglomerating framework, it is suggested that the adoption of environmental accounting shall be consistent with current financial accounting practice while recommending minor modifications to the existing system to accommodate such changes (Miley & Read, 2000).

The process of legislating environmental reporting for the adoption by local governments is a difficult process and is well recognized given the various complications in valuing environmental factors (Alfieri & Bartelmus, 1995). This can be further supplemented by some organizations' dismay in disclosing environmental information through proposed legislation set by the government as they have argued that "Often when you try to regulate this area, it tends to be inefficient and not the best way to go about it (EquityCafe, 2001)." However, this should not stop accountants from continuing their quest for environmental

reporting as information needs posed by the community, green groups and the government can only be satisfied through such an application.

Conclusions

The literature review has underlined the various environmental disclosures concepts that are available in the accounting profession. The review indicates that institutional factors and organization characteristics have influences over environmental disclosures. Specifically, organization characteristics in the context of local governments come in the form of the type, size and location of the local governments. These characteristics have been identified as important factors that influence environmental information that is published in local government annual reports.

To further emphasize these concepts, various social responsibility theories are utilised too. It has been recognised that local governments are responsibility driven rather than demand driven in disclosing environmental information in their annual reports. This is because of a weak agency relationship between ratepayers and councillors and also, intrinsic rights of ratepayers for such information despite the lack of demand for it. This is critical as it differentiates the basis on which public entities disclose such information.

Institutional factors and the characteristics of local government are therefore employed as the main underlying theory to support the disclosure of environmental information in annual reports by local governments. However, the inclusion of other theories to support such an idea have not been ignored as they too hold some contributions in defining the practice of disclosing environmental information by local governments.

CHAPTER 3

Theoretical Development and Hypotheses Formulation

Introduction

This chapter provides the theoretical framework to support the hypotheses tested in this thesis. The theoretical framework will be based on the knowledge acquired from concepts of institutional factors and local government characteristics. Given the basis of such concepts, hypotheses are formed and tested to achieve two main objectives that are to explain the variation in environmental disclosures by local governments and the variables that affect the level of environmental information disclosed.

The hypotheses are formulated to test for the factors that emphasize the extent of environmental disclosures that are published in local government annual reports. Specifically, the factors are tested against local government characteristics such as the type, size and location of the local government.

Concept of Institutional Factors

As a public entity that provides services to its community, local governments adopt measures and practices that act in the best interests of the people. Given growing societal concerns about the environment, local governments have been put under pressure by various government and international agencies in adopting environmental protection measures. This is because local governments are responsible in carrying out environmental protection plans to provide the best living conditions to the community and disclose such information readily to the public. It has therefore been perceived that the actions implemented by local governments are more responsibility driven as compared to demand driven (Gray et al., 1996). This is emphasized by Mignot and Dolley (2000)

where there is little demand by rate payers in requesting information in public entities annual reports as the cost of being informed is often higher than the value of the information perceived. Environmental implementations and disclosures are implemented to complement the communities' intrinsic rights to the knowledge of such information and the choice to live in a safe environment (Deegan, 2000). To demonstrate their achievements towards environmental protection, local governments have sought environmental disclosures in their annual reports as an inexpensive and effective tool to publicize their achievements.

In line with the view of being responsible public entities, local governments are also under constant pressure exerted by various organizations. State governments are interested to know if annual expenditure towards the environment is spent efficiently while green groups wish to know if enough has been done towards environmental protection. Given this scenario, Taylor and Rosair (2000) have argued that public entities such as local governments are influenced by governmental pressures (eg. Environmental protection agencies and State Government) that directly participate in the decision processes and not by the eventual users (eg. the community) of the services provided by the entity. This is because such parties have a higher demand for environmental information as compared to the community where the value of the information is often higher than the cost of assessing it (Mignot & Dolley, 2000).

There are about 700 local governments established in Australia (Industry Commission, 1997). Different environmental reporting legislation and public awareness of environmental issues in each of the six states and one territory of Australia are likely to influence the propensity for local governments to report environmental practices and disclosures. For example, New South Wales has obligated all local governments in its jurisdiction to produce the State of Environment report as part of the annual report (Parliament of Victoria, 2001). The State of Environment (SoE) report provides information on the present status of the entity's commitment towards environmental issues such as air, water and waste pollution. Specifically, the SoE report allows the community and local governments to be aware of environment conditions, assess and track the changes

in the environment and inform of any harmful impact if human intervention is not conducted (Environs Australia, 2001). The SoE report therefore serves as framework for environmental issues to be reported and allow local governments to make strategic plans to improve the environment. The legislation can be found in the New South Wales Legislation under Local Government Act 1993 Sect. 428 (New South Wales Consolidated Acts, 1993), where municipalities are expected to produce the SoE report on an annual basis in various environmental areas including, air, water and waste.

This has demonstrated that legislation could influence environmental disclosures and enforcing local governments in implementing environmental practices. As such, communities living in New South Wales will be more aware of environmental issues as they are used to exposures of such information as compared to people living in other jurisdictions.

Based on the argument, the following hypothesis is tested:

H1: There is a positive association between environmental disclosure and state regulation requiring local government environmental disclosure

Local Government Characteristics

Local government characteristics are deemed to play an important role in the disclosures of environmental information. The characteristics derived in the form of size, type and location of the local governments.

Size of Local Government.

The size of the local government determines the amount of funding it receives from ratepayers and grants from both the state and Commonwealth government. Larger local governments will receive more rate revenues from its ratepayers given the number of people living in its jurisdiction as compared to smaller local governments. Applying a concept previously identified by Dierkes and Coppock (1978), it has been noted that larger organizations tend to receive more attention from the general public and will thus be under constant pressures to exhibit social responsibility towards the environment. It therefore obligates larger local governments to commit themselves more into the area of environmental protection.

It is also recognized that there is a relationship between the size of the local government and the costs of providing environmental disclosures. The economies of scale for larger entities to produce environmental reports will be more viable as compared to smaller entities. Costs of such activities are easier to be compensated from the rate revenues collected from a larger population size as compared to a smaller population size.

Based on this argument, the following hypothesis is tested:

H2:   There is a positive association between the size of the local government and environmental disclosure.

Type of Local Government.

The type of local governments is classified into two main forms: urban and rural. Each form is further broken down into sub-classifications of local governments depending on their population density. Classifications of local governments first began in September 1994 when it was implemented to enhance comparability of information between similar

classified local governments (National Office of Local Government, 2000). This study concentrates on the urban aspect of Australian local governments as population density in urbanised areas would be greater than its rural counterparts, which would better reflect the outcomes of this research. Urban local governments are further classified into metropolitan, regional or fringe category.

It is proposed that metropolitan local governments are more likely to provide environmental disclosures as compared to the other types of local governments. The justification is that communities living under the jurisdictions of metropolitan local governments are assumed to be higher educated and therefore more aware of the environmental issues that surround their living conditions. Also, given the frequent exposure from various communications sources such as radio talk shows, magazines, newspapers and the ease of access to the internet with regards to environmental issues, has allowed them to access such information easily as compared to other types of local governments that may not have ease of access to the internet given its location. However, one should not ignore less populated jurisdictions such as regional and fringe local governments as communities living in such areas tend to have a larger deciding power when it comes to environmental issues. It is assumed that communities in such areas are more likely to be affected by improper environmental management practices as compared to people living in metropolitan areas.

Classifications of urban Australian local governments are presented in Table 1. The table will demonstrate the population density for each type of urban local government.

Based on this argument, the following speculative hypothesis is tested:

H3:   There is a positive association between the type of local government and environmental disclosure.

Table 1

Classifications of Urban Australian Local Governments

Step 1	Step 2	Step 3	Identifiers	Category
URBAN (U)	Capital City (CC)			UCC
Population more than 20 000	**Metropolitan Developed (D)** Part of an urban centre of more than 1 000 000 or population density more than 600/sq km	Small (S) Medium (M) Large (L) Very Large (V)	up to 30 000 30 001–70 000 70 001– 120 000 more than 120 000	UDS UDM UDL UDV
OR				
Population density more than 30 persons per sq km	**Regional Towns/City (R)** Part of an urban centre with population less than 1 000 000 and predominantly urban in nature	Small (S) Medium (M) Large (L) Very Large (V)	up to 30 000 30 001–70 000 70 001– 120 000 more than 120 000	URS URM URL URV
OR				
90 per cent or more of LGA population is urban	**Fringe (F)** A developing LGA on the margin of a developed or regional urban centre	Small (S) Medium (M) Large (L) Very Large (V)	up to 30 000 30 001–70 000 70 001– 120 000 more than 120 000	UFS UFM UFL UFV

Note. From National Office of Local Government. (2000). *Local Government National Report*. Commonwealth Department of Transport and Regional Services. Available:http://www.dotrs.gov.au/nolg/publications/national_report/99_00/index.htm [2001, 6th Nov].

Conclusions

The concepts of institutional factors and local government characteristics are utilized as the basis to which the hypotheses in this research are formulated.

Institutional factors that argue local governments are subjected to government pressures and driven by the idea of being responsible entities through the disclosures of environmental information have led to the formulation of hypothesis one that states positive association between environmental disclosure and state regulation is expected.

Local government characteristics such as the type, size and location of the local governments have resulted in the formulation of hypothesis two that states a positive association between the size of the local government and environmental disclosure is expected. Hypothesis three that states a positive association between the type of local government and environmental disclosure is expected. It recognised that local government characteristics have influencing roles towards environmental information disclosed in local government annual reports.

CHAPTER 4

Research Method

Introduction

This chapter presents the research method used in this study. The process of data collection and adoption of an indexing system are discussed. The criteria for the sample selection are discussed. This is followed by a discussion on the analysis process.

Data collection and Indexing System

This research is designed to carry out two main tasks in achieving the objectives of this research. Firstly, the research is to objectively identify and measure the level of environmental information disclosed in local governments' annual reports. Secondly, a systematic numerical basis will be utilised for the disclosure analysis process where index scores are assigned to variables identified in the data. Variations of the scores will then allow explanations to be formed through linkage against institutional factors and local government characteristics such as the location, type and size of the local government.

The purpose of this research is to conduct an environmental disclosure analysis on a sample of 100 local governments' annual reports across six Australian states and one territory through an indexing system. Annual reports are chosen for the basis of this study because such documents are readily available and they are the primary means for local governments in communicating accountability information with its stakeholders (Davis, Weller, & Lewis, 1989).

An indexing procedure similar to Wiseman (1982) is utilised. Wiseman (1982) developed the disclosure index to identify environmental disclosures made in corporate annual reports

and to evaluate the contents of the annual report environmental disclosures. The Wiseman indexing system has been modified by omitting some of the items of information used in the index, as the original index is partially suitable for the usage in the context of local governments.

Items of information to be included in the indexing system were selected from the index previously used by Wiseman (1982) and through a review of various environmental reporting literature (Cowen et al., 1987; Estes, 1976; Trotman, 1981). Some amendments were made from the items of information derived from the Wiseman index. As presented in Table 2, there are 18 items of information on the original Wiseman index while there are only 15 items of information on the modified Wiseman index that is presented in Table 3. The items omitted from the original disclosure index are items 8, 9, 12, 15 and 16. The listed items are considered not suitable for the context of local government disclosures, as environmental disclosures by local governments do not usually cover air and water information, compliance status of facilities and awards of conservation.

To provide a more comprehensive rating sheet, two new items of information are introduced. They include performance evaluation of waste management activities and a list of environmental objectives, which are evident in Table 3. Such items will provide another perspective towards environmental disclosures by local governments as they demonstrate whether local governments have matched their performance against their listed objectives towards environmental protection.

A list of four essential categories and 15 items of information were then selected for inclusion in the index. The 15 items were classified into four categories: economic factors, litigation factors, pollution abatement factors and other environmentally related information and is presented in Table 3.

Table 2

Wiseman Index for Environmental Disclosure

Economic Factors

1. Past and current expenditures for waste management equipment and facilities
2. Past and current operating costs for waste management equipment and facilities
3. Future estimates of expenditures for waste management control equipment and facilities
4. Future estimates of operating costs for waste management control equipment and facilities
5. Financing for waste management control equipment or facilities

Litigation

6. Present litigation
7. Potential litigation

Pollution abatement

8. Air emission information
9. Water discharge information
10. Solid waste disposal information
11. Control, installations, facilities or processes described
12. Compliance status of facilities

Other environmentally related information

13. Discussion of regulations or requirements
14. Environmental policies or company concern for the environment
15. Conservation of natural resources
16. Awards for environmental protection
17. Recycling
18. Departments or offices for environmental control

From Wiseman, J. (1982). An Evaluation of Environmental Disclosures Made In Corporate Annual Reports. *Accounting Organizations and Society, 7*(1), p. 56.

Table 3

Categories and items of information included in the index

Economic Factors

1. Past and current expenditures for waste management equipment and facilities
2. Past and current operating costs for waste management equipment and facilities
3. Future estimates of expenditures for waste management control equipment and facilities
4. Future estimates of operating costs for waste management control equipment and facilities
5. Financing for waste management control equipment or facilities

Litigation

6. Present litigation
7. Potential litigation

Pollution abatement

8. Recycling information
9. Solid waste disposal information
10. Control, installations, facilities or processes described

Other environmentally related information

11. Discussion of regulations or requirements
12. Environmental policies or council concern for the environment
13. Departments or offices for environmental control
14. Performance evaluation of waste management activities
15. List of environmental objectives

Category 1 is economic factors that relate to the financial perspective of conducting environmentally related activities. These include past and current expenses and financing sources for such activities. Category 2 is litigation factors that dealt with past and current environmentally related litigation issues held by the local government. Category 3 is pollution abatement factors that included recycling, solid waste disposal and processes

information. Lastly, category 4 dealt with all other items of information related to environmental activities such as performance evaluation and listing of environmental objectives. This research also seeks to uncover the number of voluntary environmental audits conducted in the sample size to draw a conclusion on local governments' initiative towards the validity of their information.

Rating of the disclosures was based on the presence or absence of the item and the degree of detail of each of the information items. All information items were assigned with a score from 0 to 3. This is presented in Table 4.

Table 4

Basis for the Allocation of Index Scores

Score	Criteria for Assignment of Score
0	Not present
1	Mentioned in general terms
2	Present and described in non-quantitative terms
3	Present and described in quantitative terms

A score of 3 was assigned to an item if it was present in the disclosure and was described in quantitative terms. This was the highest score an item could be assigned, as quantitative measures were the desired form of disclosure (Council on Economic Priorities, 1975). A score of 2 would represent an item being present in the disclosure but specific information had been described in non-quantitative terms. A score of 1 was assigned if the item was described in brief and a score of 0 is given if the item was not present in the disclosure.

Sample

There are approximately 700 local governments in all the seven regions of Australia with a mix combination of types and sizes of local governments (Industry Commission, 1997). The sample for this study was developed from the selection of 100 urban local governments' 1998-1999 annual reports across the six states and one territory of Australia out of the 258 annual reports available in the Edith Cowan University School of Accounting Local Government database. The six states were New South Wales, Victoria, Western Australia, Tasmania, Queensland and South Australia while the single territory is Northern Territory. Metropolitan local governments were chosen given the density of the living population in these major capital cities, which would reflect perceptions of the majority. Metropolitan communities were also presumed to be more educated and knowledgeable and therefore, perceived to be more conscious towards environmental issues as compared to its rural counterparts.

The annual reports were selected from a random number table to obtain a random sample. A random selection was conducted on the 258 urban local governments available in Edith Cowan University School of Accounting Local Government database. All the local governments in the database were first separated into different localities where the entities reside into the seven regions. Each region was then randomly selected for the required number of local governments needed for each region through the application of equation (1). The following formula would demonstrate the number of annual reports to be selected in each state:

Number of urban local government in State X x 100   (1)

Total number of all urban local governments

This is to enable fair distribution of the sample in accordance to the number of local governments available in each region. The stratification of the selected sample was also conducted where urban local governments for each region were then classified into three

main categories, which include Metropolitan, Fringe and Regional local governments, depending on the physical location and population density of the local government. This was formulated to determine if the type of local government did have an influence on the environmental information disclosed by the entities in their annual reports.

The 100 annual reports were not divided equally amongst the six states and one territory of Australia as each location held different proportions of the population in Australia. Hence, a population percentage method was employed in dividing the 100 annual reports amongst the seven states. The more local governments there were in one state, the higher the population in that state for a higher allocation of samples to be conducted.

The application of equation (1) had resulted in the following number of annual reports being selected in each state. See Table 5.

Table 5

Number of Sample for Each Region

State	No. in Sample
NSW	32
WA	16
QLD	13
SA	11
TAS	4
VIC	22
NT	2
TOTAL	100

The size of the local government had been sourced directly from the population size of the local government from the 1996 census available through the Australian Bureau of Statistics website (Australian Bureau of Statistics, 1997). This was initiated to gain accurate information with regards to the size of the local government as the census provided a common basis on which population size was derived. Index scores would be

utilised to justify any variations that derived from local government characteristics such as type, size and location of the local governments.

In conclusion, the employment of Wiseman (1982) index system had allowed a framework to be set up for this study. The application of the index would produce results that enable explanations to be formed for the variations in environmental information that was disclosed by local governments. The variations could then be used in linking to the location, type and size of the local governments sampled. Results obtained from the study would then be grouped and analysed for conclusions to be formed.

CHAPTER 5

Results

Introduction

This chapter presents the results of the statistical analysis conducted on local governments and environmental disclosures. Descriptive statistics, t-tests, correlations and regressions are utilised. The results on the test of the three hypotheses are also presented in this chapter.

The primary data that is utilised this research is the index scores. Index scores are assigned to all local governments selected for this research and it is the dependent variable to which size, type and location of the local governments are judged against in testing the hypotheses stated.

Hypothesis one states that there is a positive association between environmental disclosure and state regulation that require local government environmental disclosure. Hypothesis two states that there is a positive association between the type of local government and environmental disclosure; while hypothesis three states that there is a positive association between size of local government and environmental disclosure.

Application of tests

Rating sheets for all the local governments in the sample were tabulated to allow easy access to the data and application of statistical tests. Descriptive tests and regression analysis are utilised on the data collected to identify trends and correlations between the data in justify the hypotheses prescribed. According to Mason and Lind (1996), descriptive tests are usually conducted to create frequency distribution amongst the data.

Frequency distribution refers to the grouping of data into non-overlapping categories showing the number of observations in each category. Its purpose is to present the data into some meaningful form for perceptions to be formulated. Regression analysis is usually conducted to find the degree of association between the variables involved in the study. It allows the prediction on the value of one factor by matching against another factor (Mason & Lind, 1996).

Through the application of descriptive and regression analyses, averages for each item of disclosures were compiled for each of the seven locations of Australia. Index scores were computed for each state/territory for use in the statistical analysis and demonstrate the variations across the different states of Australia. A regression model was then conducted to demonstrate the significance of the index score between the state, type and size of the local government.

Descriptive Statistics

Descriptive statistics is a method often used by researchers to organize the data collected into some meaningful way and summarize such findings (Mason & Lind, 1996). It is used in this research to demonstrate information from the data collected and relate it to test the hypotheses.

Mean, median and standard deviation are derived for each of the six states and one territory in Australia. The results are presented in Table 6. The results show that New South Wales outperforms all the other regions by achieving an average disclosure score of 27.28 out of a maximum score of 45 and is the only state that achieved higher than the average score of all local governments. The average index score achieved by all the 100 local governments is 17.87 out of the possible maximum achievable score of 45. The lowest score ranges from 10.5 achieved by Northern Territory to the second highest score of 17.62 achieved by Queensland. It has been noted that the second highest score amongst the seven regions did not even exceed the average set by all regions. This suggests that the present level of

disclosures by Australian local governments is still a long way from full disclosures of environmental information. Average score for each region is presented in Table 6.

Table 6

Average Score for Each Region

STATE	NSW	WA	NT	QLD	SA	TAS	VIC	All Regions
Mean	27.28	13.19	10.5	17.62	13.36	15	11.18	17.87
Median	29	14	10.5	18	13	16.5	11	16.5
Std. Dev	8.47	5.22	3.54	7.1	6.79	6.27	5.84	9.58

The outstanding accomplishment by New South Wales can be justified by the state legislation in the area of environmental disclosures by local governments. According to the New South Wales Local Government Act 1993 Section 428 (New South Wales Consolidated Acts, 1993), it required all NSW local governments to prepare a report as to the state of the environment in the jurisdiction of the local government in areas such as waste, water and air pollution. This has acted in favour of Hypothesis one that states a positive association between environmental disclosure and state regulation that demands local government environmental disclosure.

From the research conducted on the 100 Australian local governments annual reports, 36% of the local governments are classified as metropolitan local governments, 21% as fringe local governments and 43% as regional local governments. The composition on the type of local governments is achieved through the stratification and selection of the sample from a number random table as discussed in the research method. The figures represent a fair dispersion on the type of local governments selected. Table 7 presents the composition of the type of local governments each of the six states and one territory in Australia.

Table 7

Type of Local Government in each State

STATE	NSW	WA	NT	QLD	SA	TAS	VIC	TOTAL
LGT								
Metropolitan	13	9	0	1	6	0	7	36
Fringe	5	3	1	4	3	0	5	21
Regional	14	4	1	8	2	4	10	43
TOTAL	**32**	**16**	**2**	**13**	**11**	**4**	**22**	**100**

Based on the classifications of the local governments into metropolitan, fringe and regional types, mean and standard deviations are derived for each type of local government. The results have portrayed that metropolitan local governments have outperformed amongst the types of local governments by achieving a mean index score of 19.89. This has favoured hypothesis three that states a positive association between the type of local government and environmental disclosure. Table 8 presents the mean and standard deviation for each local government type.

Table 8

Descriptive Statistics of Index Scores for Each Local Government Type

LGT	No. Of LG	Mean	Standard Deviation
Metropolitan	36	19.89	8.83
Fringe	21	15.57	7.97
Regional	43	17.37	10.61

The average population size for each local government is 69,914 and the standard deviation is 93,379. Based on the results, population density is concentrated in the states of New South Wales, Victoria and Queensland as their average size is around the 70,000-

population mark. In line with hypothesis two that states a positive association between environmental disclosure and the size of the local government, it is predicted that local governments with larger population size are more likely to induce themselves into disclosing environmental information in their annual reports. The average population size for each region is presented in Table 9.

Table 9

Average Population of Local Government for Each Region

STATE	NSW	WA	NT	QLD	SA	TAS	VIC	All Regions
Mean	72,904	38,317	12,135	149,090	47,794	32,548	64,868	69,914
Median	51,124	26,481	12,135	100,101	38,585	31,723	49,918	43,411
Std. Dev	54,309	39,276	11,708	218,801	38,434	14,799	45,070	91,179

T-tests

T-tests are conducted to assess the statistical significance of the difference between two sample means for a single dependent variable (Hair, Anderson, Tatham, & Black, 1995). Dummy variables have been put in place for the state and type of local governments that act as replacement predictor variables. **D-STATE** comprises of all New South Wales local governments as it has the only state that implemented compulsory obligation to disclose environmental information and so, it will better reflect the relationship between score and the state of the local government. **D-LOCAL GOVERNMENT TYPE (D-LGT)** comprises of all metropolitan local governments as this type of local governments has achieved a higher mean of environmental disclosures amongst the three types of local governments. In this study, the **D-LGT** and **D-STATE** of the local governments have been put through the process of t testing as both factors are separated amongst the data to test the hypotheses.

The t-test on local government state has separated New South Wales local governments from all other regions. **D-STATE** 1 represents all New South Wales local governments and **D-STATE** 0 represents all other local governments not residing in New South Wales. Results have shown a mean of 27.281 for d-state 1 and a mean of 13.441 for d-state 0. The results have also indicated significance from the testing. Table 10 presents the t-test results on local government state.

Table 10

T Test on Local Government State

	DSTATE	N	Mean	Significance
SCORE	1	32	27.281	0.000
	0	68	13.441	0.000

The t-test on local government type has separated metropolitan local governments from all other types. **D-LGT** 1 represents all metropolitan local governments and **D-LGT** 0 represents all other local government types. Results have shown a mean of 19.889 for **D-LGT** 1 and a mean of 16.734 for **D-LGT** 0. The results have indicated weak significance from the testing. Table 11 presents the t-test results on local government type.

Table 11

T Test on Local Government Type

	DLGT	N	Mean	Significance
SCORE	1	36	19.889	0.114
	0	64	16.734	0.104

Correlations

Correlation analysis is utilised to measure the strength of the relationship between two variables (Mason & Lind, 1996). Score is used as the variable to which size, dummy-state and dummy-local government type is correlated against to demonstrate the relationship between the variables. Table 12 presents the Person Correlation Matrix amongst the local government variables.

Table 12

Pearson Correlation Matrix for Local Government Variables

		SCORE	SIZE	DSTATE	DLGT
SCORE	Pearson Correlation	1.000			
	Sig. (1-tailed)	.			
SIZE	Pearson Correlation	0.248	1.000		
	Sig. (1-tailed)	0.006	.		
DSTATE	Pearson Correlation	0.678	0.022	1.000	
	Sig. (1-tailed)	0.000	0.414	.	
DLGT	Pearson Correlation	0.159	0.200	0.066	1.000
	Sig. (1-tailed)	0.057	0.023	0.257	.

The results from the correlation analysis support hypothesis one that states a positive association between environmental disclosure and state regulation where there is a strong correlation between score and dstate (correlation = 0.678, $p < 0.01$). Hypothesis two that states a positive association between the type of local government and environmental disclosure has indicated a positive correlation and it is marginally significant between score and local government type (correlation = 0.159, $p > 0.05$). Hypothesis three that states a positive association between size of local government and environmental disclosure has been proven as there is a fairly strong correlation between score and size of the local government (correlation = 0.248, $p < 0.01$).

Both the state and size of the local governments have proven to be significant variables in this exercise as they have fulfilled the significance level at both 0.01 and 0.05 levels through the application of 1-tailed testing. Results have also shown that the correlation between score and local government type portrays a weaker relationship (correlation = 0.159, P>0.05) between the two variables.

Hence, results have indicated positive associations between environmental disclosures and the state and size of the local governments that fall in line with hypothesis one and three.

Regression

Regression is employed to test the hypotheses as its allows predictions for the changes of the dependent variable which is index score in this instance in response to changes in the independent variables which are the **SIZE, DSTATE** and **DLGT**. For the purpose of this exercise, the statistical method of least square is used. To carry out regression analysis, a ordinary least square regression model is established and is shown as follows:

$$\text{Disclosure Score} = \alpha + \beta \ \textbf{Size} + \beta \ \textbf{Dstate} + \beta \ \textbf{DLGT} + e \qquad (2)$$

Where Size	= Population Size of Local Government
Dstate	= Local Governments in New South Wales
DLGT	= Metropolitan Local Governments
e	= Error Term

From the establishment of the regression model, a model summary is formulated. The adjusted R Square for the model stands at 0.503 that allows about 50% of the variations in the index scores to be accounted for against the Size, State and LGT of the local governments. Further research is needed to explain the other 50% for the variations in the

data. Univariate analysis of variance (ANOVA) is used as part of the regression analysis where it determines on the basis of one dependent measure whether the sample is derived from populations with equal means (Hair et al., 1995). Through ANOVA, the level of significance stands at 0 that represents the sample for index score is derived from a population with equal means. Table 13 presents the model summary and ANOVA Testing of score against size, dstate and dLGT. The constant variables in the model are dLGT, dstate and Size while Score if the dependent variable in the study.

Table 13

Model Summary and ANOVA Testing of Score against Size, State and Type

Adjusted R Square	F	Sig.
0.503	34.425	0.000

Variables such as the size, state and type of the local governments are regressed against the index score. Hypothesis one states that there is a positive association between environmental disclosure and state regulation that require local government environmental disclosure. To test the hypothesis, all the three variables were regressed on index score by using the model presented in equation (2). The results presented in Table 14 indicate a positive and significant relationship (coefficient value $= 0.668$, $p<0.001$) between index score and state of local government, thereby supporting hypothesis one.

Hypothesis two states that there is a positive association between the type of local government and environmental disclosure. From the regressing results presented in Table 14, it indicates a weak and insignificant relationship (coefficient value $= 0.071$, $p>0.005$) between local government type and index score, this therefore does not support hypothesis two.

Hypothesis three states that there is a positive association between the size of local government and environmental disclosure. There is an indication of a positive and

significant relationship (coefficient value = 0.219, p<0.005) between local government size and index score that therefore supports hypothesis H3.

Table 14

Regressing Results of Score Against Size, State and Type

	Coefficient Value	t-value	Significance
Constant		11.064	0.000
DSTATE	0.668	9.409	0.000
DLGT	0.071	0.980	0.330
SIZE	0.219	3.031	0.003
Adjusted R square = 0.503 F= 34.425 Signifi. 0.000			

To measure multiple variable collinearity, the tolerance value and the variance inflation factor (VIF) are used to demonstrate the degree to which each independent variable is explained by other dependent variables. In simple terms, each independent variable becomes a dependent variable where regression is conducted against all other independent variables (Hair et al., 1995). The results presented in Table 15 indicate inconsequential collinearity as no VIF value has exceeded the normal threshold of 10.00 and the tolerance values indicate that collinearity does not explain more than 10 percent of any of the three predictor variable's variance.

Table 15

Collinearity Statistics of Score against other Variables

(Constant)	Tolerance	VIF
SIZE	0.960	1.042
DSTATE	0.996	1.004
DLGT	0.956	1.046

Test for Normality

The normal probability plot of the residuals is a common test for normality. It compares the cumulative distribution of actual data values with the cumulative distribution of a normal distribution (Hair et al., 1995). Appendix A presents the normal probability plots of the regression model employed in the study. The plots show that the residuals of the model are fairly normal distributed, as the line that represents the actual data distribution approximates to a straight diagonal line.

Appendix B presents the histogram of the regression model employed in this study. The histogram demonstrates a fairly normal distributed curve for the histogram that coincides with the normal probability plots of the model.

Thus, the normality assumptions employed in the regression model is not violated. Therefore, the outcomes derived from the test of normality create confidence towards the validity of the statistical tests utilised in this study.

Conclusions

The employment of statistical tests such as descriptive statistics, t-tests, correlations and regressions have acted in favour of the hypotheses formulated in this study.

Outcomes generated from the above mentioned statistical tests have supported hypothesis one for its prediction of a positive association between environmental disclosure and state regulation that require local government environmental disclosure. Statistical results indicate a strong and significant relationship for this hypothesis.

As for hypothesis two that states a positive association between the type of local government and environmental disclosure. Outcomes have demonstrated a weak relationship and a marginal significance amongst the variables. Results therefore do not support this hypothesis.

Hypothesis three states that there is a positive association between the size of local government and environmental disclosure. There are indications of strong and significant relationships amongst the size and environmental disclosure. Hence, results have supported this hypothesis too.

In conclusion, the statistical tests employed in this study have acted in favour of hypothesis one and three where strong and significant relationships are demonstrated. Hypothesis two is not supported as results have indicated a weak and marginally significant relationship between type of local government and environmental disclosure.

CHAPTER 6

Conclusions

Introduction

This study examined the disclosures of environmental information made by Australian local governments in their annual reports. This study focused on the quantity and quality of the environmental information disclosed. Wiseman's (1982) disclosure indexing system is adopted to classify and measure local governments' environmental disclosures.

The motivation for the study derived from the need to explain the level of environmental information being disclosed by local governments and to account for this emerging phenomenon. Literature review and prior studies on environmental disclosures have provided strong arguments on private organizations and their desires to publish environmental information as a refurbishment towards their profits generating aims, but these studies have ignored the involvement of public entities towards environmental disclosures (Cowen et al., 1987; Roberts, 1992; Trotman, 1981). Other studies have examined the relationships between corporate characteristics and environmental disclosures but these studies did not test for the relationships between public entities characteristics and environmental disclosures (Cowen et al., 1987; Trotman, 1981). Given the need to address the relationships between local government characteristics and disclosures of environmental information, this study is conducted to relate local government size, type and state with environmental disclosures in local government annual reports.

Local government characteristics such as the size, type and state of the entity were hypothesised as factors that would affect the assignment of the disclosure index score derived from the application of a modified Wiseman (1982) disclosure index. Three hypotheses were generated. A content analysis research methodology was employed to

test the hypotheses. The selected sample of 100 1998-1999 Australian local government annual reports was examined. The data collected were then analysed through various statistical techniques to allow conclusive explanations to be formulated.

Findings of the Study

The results suggest that both the state and size of the local government are significant towards the quantity and quality of environmental information disclosed in annual reports. Analysis of the data has also demonstrated a weak significance between the type of local government and environmental disclosure. The results of this study are consistent with the notion of institutional factors and local government characteristics such as state and size. Environmental information disclosed by local governments is found to be acted in response to state legislations and local governments' commitment towards environmental management.

Contributions of the Study

This study contributes to the accounting literature in a number of ways. Firstly, it has improved the understanding towards the presence of environmental disclosures by local governments in their annual reports. The results provide evidence that location of the local government plays an important role to which the quantity and quality of environmental information is disclosed. Support was also found for the proposition that size of the local government was an influencing factor for environmental disclosures. Specifically, the results indicate that local governments operating in the state of New South Wales tend to disclose more and better quality environmental disclosures amongst the six states and one territory. This outcome is attributed to the state legislation that governs compulsory disclosure of environmental information in the annual report (New South Wales Consolidated Acts, 1993). Results also indicate that larger scale local governments tend to disclose more environmental disclosures as compared to smaller local governments. It

therefore indicate that both the size and location of the local governments are influencing factors that determine the quantity and quality of the environmental information disclosed in local governments annual reports.

Secondly, the study has extended prior research work in the area of environmental disclosure and its association with organizations' characteristics. The results relating to environmental disclosures and local government characteristics are similar with some of the underlying theories formulated in prior studies on corporate entities (Trotman, 1981; Wiseman, 1982). Specifically, the results indicate that local governments operating on a large scale tend to disclose environmental information as the economic scale of such actions are more economically viable. In addition, larger local governments tend to be targeted as benchmarking entities to enforce innovative proposals such as environmental disclosures. Constant pressures are often exerted on larger local governments to exhibit environmental responsibility towards its jurisdictions. Such propositions were documented in prior studies (Cowen et al., 1987) that promote associations between environmental disclosures and organizations' characteristics.

In summary, the study indicates the important of the size and state of the local governments as influencing variables that affect the quality and quantity of environmental disclosures published in annual reports. The results also provide evidence to support the view that state legislation has played a vital role in enforcing environmental issues to be resolved and disclosed such information.

Limitations and Suggestions for Further Research

As there are limitations in other research studies, this study is no exception as well. Firstly, the employment of the Wiseman (1982) indexing system in this study may not deemed to be suitable for the context of public entities such as local governments. This is because the Wiseman (1982) index is formulated for the basis of analysing private organizations' environmental disclosures in environmentally sensitive industries. Given the lack of prior studies on public organizations and environmental disclosures, the Wiseman (1982) indexing system is modified to suit the research process on local governments and environmental disclosures published in annual reports. The implementation of the modified indexing system has worked well in this study but further research can extend the research methodology by adopting a more comprehensive indexing system that targets government agencies that do not bear profit-making aims.

A second limitation is the problem of generalising the results of the study. Since the sample was drawn randomly from an incomplete set of data sourced from the Edith Cowan University Local Government Database, the accuracy of deciphering conclusive outcomes from the data maybe affected. It is therefore proposed that further research should incorporate a more comprehensive database of the 700 local governments in Australia,

Thirdly, the data collected is not current. The local government annual reports available in the database were produced for the financial year of 1998-1999. Given that state legislations and environmental practices may change over time, further research on local governments and environmental disclosures should seek out the most current information available. Also, the local government size information was derived from the 1996 Australian census, population density across all Australian regions are likely to change during the five-year period. Due to the unavailability of the 2001 Australian Census information, further research should employ the most updated local government size figures when it is available.

Finally, the assignment of disclosure scores was measured by a self-rating process in accordance with the rating system prescribed. Objectivity in rating the local governments maybe affect and thus, it is recommended that further research might wish to incorporate more researchers in analysing the data. Two or more researchers shall be responsible in assigning index scores sample. This will facilitate a objective study to be formulated as both researchers must reach a consensus towards the assigning of the score before a final judgement is given. In doing so, this will reduce subjective assignment of disclosure scores to various local governments and gain a better perspective through the inclusion of monetary values in the scoring system.

Despite the limitations as described above, this study has provided useful knowledge towards the presence of environmental disclosures published in local governments' annual reports. It has also provided further research extensions to the research studies conducted in the area of organizations' characteristics (Cowen et al., 1987; Roberts, 1992; Trotman, 1981) and environmental disclosures by offering an insight into public organizations and environmental disclosures. More importantly, this study has improved our understanding of local governments and their commitments towards environmental disclosures. Such understanding has deciphered amongst the data analysis that the region where the local government resides and the size of the local government played important roles in influencing the quantity and quality of environmental information being disclosed in local governments' annual reports. This therefore leads to relevant and useful information for government agencies in their course of enforcing local governments to execute environmental protection programs and disclosing such information.

References

Alfieri, A., & Bartelmus, P. (1995, March 15th - 17th). *Unresolved Issues in Valuation.* Paper presented at the Second Meeting of the London Group on Natural Resource and Environmental Accounting, Washington, DC.

Australian Bureau of Statistics. (1997). *1996 Australian Census.* Australian Bureau of Statistics. Available http://www.abs.gov.au [2001, 3rd October].

Australian Bureau of Statistics. (2000a). *Environmental Expenditure, Local Government, Australia.* Canberra: Australian Bureau of Statistics.

Australian Bureau of Statistics. (2000b). *Local Government spends $2.1 billion on environmental protection.* Canberra: Australian Bureau of Statistics.

Australian Society of Certified Practising Accountants. (2000). *Accounting Handbook 2000.* Australia: Prentice Hall Pty Ltd.

Benston, G. J. (1982). Accounting and corporate accountability. *Accounting, Organizations and Society, 7*(2), 87-105.

City of Stirling. (2001). *Single Bin Recycling Program.* City of Stirling. Available: http://www.stirling.wa.gov.au [2001, 29th October].

Council on Economic Priorities. (1975). *The CEP Report*. New York.

Cowen, S., Ferreri, L. B., & Parker, L. D. (1987). The impact of corporate characteristics on social responsibility disclosure: A typology and frequency-based analysis. *Accounting Organizations and Society, 12*(2).

Davis, G., Weller, P., & Lewis, C. (1989). *Corporate Management in Australian Government*. Brisbane: Centre for Australian Public Sector Management.

Deegan, C. (2000). *Financial Accounting Theory*. Sydney: McGraw-Hill Book Company Australia Pty Ltd.

Deegan, C., & Gordon, B. (1996). A Study of the Environmental Disclosure Practices of Australian Corporations. *Accounting and Business Research, 26*(3), 187-199.

Dierkes, M., & Coppock, R. (1978). Corporate Social Accounting Reporting for the Physical Environment: A Critical Review and Implementation Proposal. *Accounting Organizations and Society*, 21-24.

Dzinkowski, R. (1998). *International Management Accounting Study; Environmental Management in Organizations; The Role of Management Accounting*. Financial and Management Accounting Committee of the International Federation of Accountants. Available: www.enviroglobe.com/cost/articles/cost-art22.htm [2001, March 16th].

Elkington, J. (1994). *Company Environmental Reporting : A Measure of the Progress of Business and Industry Towards Sustainable Development*. Paris, France: United Nations Environment Programme, Industry and Environment Office.

Environs Australia. (2001). *Knowing is not enough, you must also act*. Environs Australia. Available: http://www.environs.org.au/ [2001, November 10th].

EquityCafe. (2001). *Westpac rejects environmental disclosure call*. Australian Broadcasting Corporation. Available: http://www.equitycafe.com.au/news/HTML/2001-08/ABC-2001-08-06-003.html [2001, Aug 6].

Estes, P. (1976). Standards for Corporate Social Reporting. *Management Accounting*, 19-22.

Grant, A. (2001). Take Stock. *CPA Australia, 71*(2), 32.

Graves, O. F., Flesher, D. L., & Jordan, R. E. (1996). Pictures and the bottom line: the television epistemology of U.S. annual reports. *Accounting Organizations and Society, 21*(1), 57-88.

Gray, R. (1992). Accounting and environmentalism: an exploration of the challenge of gently accounting for accountability, transparency and sustainability. *Accounting, Organizations and Society, 47*(5), 399-425.

Gray, R., Owen, D., & Adams, C. (1996). *Accounting and Accountability: Changes and Challenges in Corporate Social and Environmental Reporting*. London: Prentice Hall.

Gray, R. H., & Bebbington, J. (1994). *Sustainable Development and Accounting: Incentives and Disincentives for the Adoption of Sustainability by Transitional Corporations*. Scotland: University of Dundee.

Hair, J. F. J., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995). *Multivariate Data Analysis With Readings* (4th ed.). New Jersey: Prentice-Hall, Inc.

Industry Commission. (1997). *Performance Measures for Councils: Improving Local Government Performance Indicators*. Melbourne: AGPS.

Jones, R., & Pendlebury, M. (1996). *Public Sector Accounting 4th Edition*. London: Pitman.

Malouf, M. (2001). Counting Greenhouse Gases. *Australian CPA,* 50-51.

Mason, R. D., & Lind, D. A. (1996). *Statistical Techniques in Business and Economics* (9th ed.). USA: Irwin Book Team.

Mignot, H., & Dolley, C. (2000). Are AAS 29 Financial Statements Useful? *Accounting Research Journal, 13*(1), 51-61.

Miley, F., & Read, A. (2000). Environmental reporting: Thinking local. *Australian CPA, 70*(3), 40-42.

National Office of Local Government. (2000). *Local Government National Report.* Commonwealth Department of Transport and Regional Services. Available: http://www.dotrs.gov.au/nolg/publications/national_report/99_00/index.htm [2001, 6th Nov].

Natural Heritage Trust. (2000). A Framework for Public Environmental Reporting: An Australian Appoach.: Environment Australia.

New South Wales Consolidated Acts. (1993). *Local Government Act 1993 - Sect 428.* Austlii. Available: http://www.austlii.edu.au/au/legis/nsw/consol_act/lga1993182/s428.html [2001, 28th October].

Parliament of Victoria. (2001). *Parliament of Victoria Executive Summary.* Available: http://www.parliament.vic.gov.au/paec/rep3.htm [2001, Aug 25].

Roberts, R. W. (1992). Determinants of Corporate Social Responsibility Disclosure: An Application of Stakeholder Theory. *Accounting Organizations and Society, 17*(6), 595-612.

Taylor, D., & Rosair, M. (2000). The effects of participating parties, the public and size on government departments' accountability disclosures in annual reports. *Accounting, Accountability and Performance, 6*(1).

Trotman, K. T. (1981). Associations between social responsibility disclosure and characteristics of companies. *Accounting Organizations and Society, 6*(4), 355-362.

Uno, K., & Bartelmus, P. (1998). *Environmental Accounting in Theory and Practice.* London: Kluwer Academic Publishers.
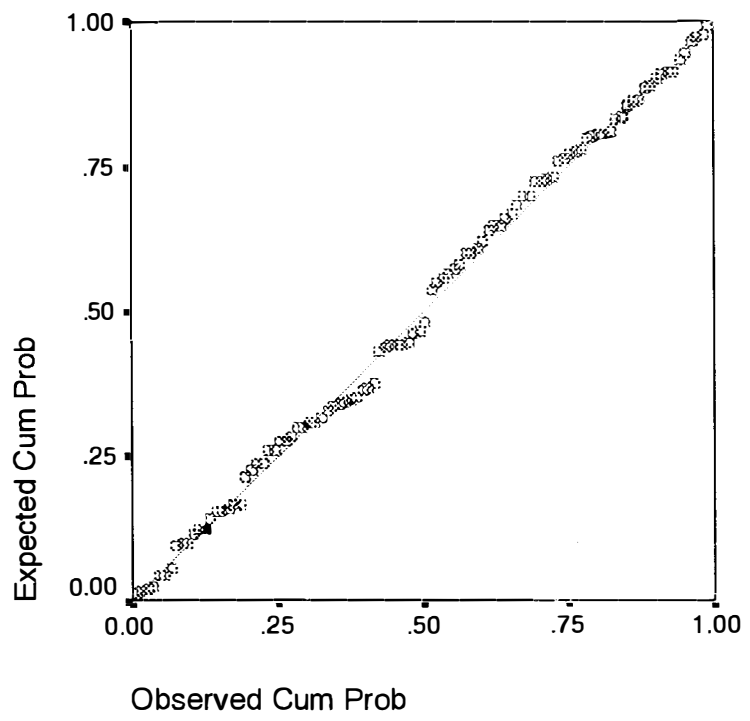
Wiseman, J. (1982). An Evaluation of Environmental Disclosures Made In Corporate Annual Reports. *Accounting Organizations and Society, 7*(1), 53-63.

Zimmerman, J. (1978). The Municipality Accounting Maze: An Analysis of Political Incentives. *Journal of Accounting Research.*

Appendix A

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: SCORE

Histogram

Dependent Variable: SCORE

Regression Standardized Residual

Std. Dev = .98
Mean = 0.00
N = 100.00