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Voluntary Environmental Reporting Practices: A Further Study of 'Poor' Environmental Performers

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Abstract

We investigate the relationship between 'poor' environmental performance and voluntary environmental disclosures in annual reports of Australian listed companies. 'Poor' environmental performance is defined as those instances where companies have been subject to a successful Environmental Protection Agency (EPA) prosecution at any time between 1994 and 1998. This area of research is important as the Parliamentary Joint Statutory Committee for Corporations and Securities (PJSC) recently concluded that a voluntary system of environmental disclosure would encourage 'better' companies to achieve 'best practice' in this area. Effective 1 July 1998, s299(1)(f) of the *Corporations Law* required details of a company's performance in relation to environmental legislation to be included in the Directors' Report. Due to the ambiguity in how the provision is to be interpreted it was referred to the PJSC which recommended that s299(1)(f) be removed. However, it still remains effective. Consequently, this study investigates what disclosure is in fact made in the period leading up to the mandatory requirements. Results reveal that violating firms' annual reports are limited to copious amounts of positive environmental disclosures of a general nature, with virtually no disclosure about the actual EPA violations. We conclude therefore that it is unlikely that voluntary environmental reporting creates a situation of adequate and appropriate disclosure for poor environmental performers let alone encouraging 'better' firms to achieve 'best practice'.

Key Words: Environmental performance; environmental reporting; voluntary disclosure

JEL Classification: M14, M41.

1. Introduction

The aim of this paper is to investigate whether voluntary environmental reporting practices produce satisfactory information on environmental performance. As such we investigate the relationship between 'poor' environmental performance and the subsequent voluntary environmental disclosures in annual reports of Australian listed companies. Companies with 'poor' environmental performance are defined as those subject to an Environmental Protection Agency (EPA) prosecution. We investigate these companies over the period 1 July 1994 to 30 June 1998. A voluntary reporting setting occurs over this period, as regulation pertaining to environmental performance disclosure for Australia was only introduced in July 1998. Effective 1 July 1998, s299(1)(f) of the *Corporations Law* required details of a company's performance in relation to environmental legislation to be included in the Directors' Report if the company operations are 'subject to any particular and significant environmental regulation under a law of the Commonwealth or of a State or Territory.'

Due to the ambiguity in how the provision was to be interpreted it was referred to the Parliamentary Joint Committee on Corporations and Securities (PJSC), which recommended that s299(1)(f) be rescinded. In fact, on page 22 of its report the PJSC concludes that the voluntary system would encourage better companies to achieve 'best practice' in this area 'while the market will deal adversely with those companies that lag'. To date, this section has not been repealed. Therefore this study provides direct evidence on what disclosure is actually provided in a voluntary environment and allows us to comment on whether the voluntary disclosure is adequate. We examine if there has been any improvement in voluntary environmental disclosures by 'poor' environmental performers following on from the previous Australian study by Deegan and Rankin¹ that covered an earlier period from 1990 to 1993. One expects that adequate disclosure should include a reference to EPA prosecutions and their impact in the annual reports.

The research is important for two main reasons. First, in examining annual reports over the period 1990 to 1993, Deegan and Rankin² discover that 'poor' environmental performers provide more disclosure than other firms but that such disclosure is almost always of a positive, general nature and unrelated to any environmental prosecution or performance. Second, voluntary reporting may be preferable. Two arguments often put forward here are (i)

¹ C.Deegan and M. Rankin, 'Do Australian Companies Report Environmental News Objectively? An Analysis of Environmental Disclosures by Firms Prosecuted Successfully by the Environmental Protection Authority', (1996) 9 *Accounting, Auditing and Accountability Jnl* 50-67.

² Deegan and Rankin, above n 1.

that the quality of disclosure under a voluntary rather than a mandatory regime would be higher; and (ii) there was no evidence that voluntary reporting had been unsuccessful.

In 1998 as part of the review and update of the *Corporations Law* the government of Australia put forward the proposal for several amendments to the *Law* under the guise of the *Company Law Review Act*. This *Review Act*, after amendments, incorporated s299(1)(f) which requires disclosure of details relating to environmental performance in relation to environmental legislation to be included in the Directors' Report.³ Given the concerns about the practical application of the section, its drafting, the fact that the government was opposed to the mandatory requirement as well as due process, the s299(1)(f) provision was later referred by the Treasurer to the PJSC for re-consideration. The PJSC was given a mandate to review s299(1)(f) as to its suitability along with other matters in the *Corporations Law*. The PJSC began the inquiry on *Matters Arising from the Company Law Review Act* in 1998 through which a forum for consideration of and comment on the proposed legislation was made available. In their discussion of the PJSC inquiry, Frost and English⁴ report that one of the most common issues for objection to the s299(1)(f) provision was that voluntary rather than mandatory reporting would produce 'better' disclosure. A second less common objection was that there was no evidence to suggest that the voluntary reporting was unsuccessful. "Fundamentally, the argument appears to be based on the reasoning that current voluntary reporting practices are producing satisfactory information on environmental performance".⁵ Therefore this study is a vehicle to provide some evidence on this issue.

A recent U.S. study by Hughes, Anderson and Golden⁶ addressed the issue of the relationship between corporate environmental *performance* and corporate environmental *disclosure*. Results confirm differences in the extent to which different groups of environmental performers designated as 'good', 'mixed' and 'poor', disclose environmental information over the period 1992 to 1993. They found that the good, mixed and poor

³ Section 299(1)(f) was not included in the initial *Company Law Review Act* 1998 tabled in Parliament but was, in fact an amendment tabled by Senator Murray of the Australian Democrats Party and supported in principle by the opposition Australian Labor Party. At that time the Australian Democrats Party was a minor party but had the balance of power in the Senate.

⁴ G.R. Frost and L. English, 'The Introduction of Mandatory Environmental Reporting in Australia: An Analysis of the *Ex Post* Reaction by Industry and Government' (2002) AAANZ Conference, Perth.

⁵ See Frost and English, above n 4, at 16. The PJSC began the inquiry on *Matters Arising from the Company Law Review Act* in 1998 by requesting written submissions. Of the 89 submissions received, 46 commented on s299(1)(f), the majority (40) of which were identified by the PJSC as being opposed to the introduction of the provision (Frost and English, above n 4, at 9). The second stage of the inquiry included six public hearings, which began in early 1999.

⁶ S.A. Hughes, S., A. Anderson and S. Golden, 'Corporate Environmental Disclosures: Are They Useful in Determining Environmental Performance?' (2001) 20 *Jnl of Accounting and Public Policy* 217-240.

corporate performers' disclosures did not differ within the president's letter. Significant differences between the three performance groups in terms of disclosure occurred mainly within the notes and the management discussion and analysis section (MD&A). Overall, poor performers provide the greatest disclosure and the majority of these disclosures appear within the MD&A and notes rather than the president's letter. These results are comparable to those of Deegan and Rankin⁷ noted above.

The role of accountants with respect to both the measurement and disclosure of environmental performance is an important one and has been highlighted in recent studies. For example, Shields and Boer⁸ note in discussing the extent of the environmental commitments of U.S. firms that: "The figures.... suggest that environmental responsibility, whether voluntary or through regulation is a major new challenge for business. As the scorekeepers for business, it is logical that accountants would become involved in reporting on corporate environmental issues, particularly remedial liabilities; evaluating the incentive effects of the environmental movement on environmental management; and providing decision-makers with quantitative information on environmental performance" (p 43).⁹

Ilinitch, Soderstrom and Thomas¹⁰ further elaborate on the importance of the measurement of environmental performance. They note that in spite of the increased interest and focus on environmental activities the accounting profession has been slow to take on the role of defining, measuring, and controlling this broad corporate domain. Consequently, measures of environmental performance have developed without clear, generally accepted guidelines as to what constitutes 'good' and/or 'bad' environmental performance. Parker¹¹ is one study that has addressed the difficult issue of developing and implementing environmental costing systems in Australia. Parker discusses how, similar to other countries, environmental strategies and their related costs have received little formal attention from Australian accountants although some corporations are addressing these issues.

Our study confirms that environmental disclosures in annual reports of violating firms are general in nature, overwhelmingly positive and with almost no disclosure of the actual

⁷ Deegan and Rankin, above n 1.

⁸ D. Shields and G. Boer, 'Research in Environmental Accounting' (1997) 16 *Jnl of Accounting and Public Policy* 117-123.

⁹ Shields and Boer, above n 8, at 117 state: "As of 1991, one estimate of the cost to clean up sites identified as hazardous by the U.S. Environmental Protection Agency totalled \$752 billion...".

¹⁰ A.Y. Ilinitch, N.S. Soderstrom and T.E. Thomas, 'Measuring Corporate Environmental Performance' (1998) 17 *Jnl of Accounting and Public Policy* 383-408.

¹¹ L.D. Parker, 'Environmental Costing: A Path to Implementation' (2000) 10 *Australian Accounting Review* 43-51.

EPA violations. We conclude there has been no improvement in environmental disclosures leading up to the implementation of s299(1)(f) and it is unlikely that voluntary environmental reporting creates an environment of adequate and appropriate disclosure for firms with poor environmental performance. Overall, the role environmental information plays in the annual report is open to question. The remainder of the paper is organized as follows. Section 2 discusses prior empirical research and section 3 describes the institutional background. The research questions, data and the research design are described in section 4. The results and discussion are presented in section 5 and concluding remarks are provided in section 6.

2. Prior empirical research

2.1 Overview of environmental disclosures and U.S. evidence

Over the past decade there has been a steep increase in the quantity of environmental disclosures and the issuance of voluntary environmental reports that are independent of the annual report.¹² The increase in disclosures is consistent with some companies being more sensitive to environmental concerns. Possible reasons for that responsiveness are: increased regulation of corporations' interaction with the natural environment, as well as increased reporting requirements and pressures imposed by community and lobby groups.

However, only a minority of companies report environmental information in their annual reports and the disclosures are limited in nature, with inconsistent treatment of environmental matters across companies.¹³ The diversity of practices regarding the accounting treatment and disclosure of environmental information is consistent with the inherent complexities of the issues and the exercise of discretion by companies in providing such disclosures.¹⁴ However, differences in firms' reporting of environmental practices mean it is likely that the stakeholders of firms, including shareholders, employees and customers cannot, or find it difficult to, rely on such disclosures.

¹² See, for example, G.O. Gamble, K. Hsu, D. Kite and R. Radtke, 'Environmental Disclosures in Annual Reports and 10Ks: An Examination' (1995) 9 *Accounting Horizons* 34-54; E. Stanny, 'Effect of Regulation on Changes in Disclosure of and Reserved Amounts for Environmental Liabilities' (1998) 3 *Jnl of Financial Statement Analysis* 34-49; S.D. Beets and C.C. Souther, 'Corporate Environmental Reports: The Need for Standards and an Environmental Assurance Service' (1999) 13 *Accounting Horizons* 129-145; and N. Brown and C. Deegan, 'The Public Disclosure of Environmental Performance Information – a Dual Test of Media Agenda Setting Theory and Legitimacy Theory' (1998) 29 *Accounting and Business Research* 21-41.

¹³ See, for example, Gamble *et al.*, above n 12; and C. Deegan and M. Rankin, 1997, 'The Materiality of Environmental Information to Users of Annual Reports' (1997) 10 *Accounting, Auditing and Accountability Jnl* 562-583.

¹⁴ See, for example, B.B. Stanko and T.L. Zeller, 'Environmental Liability in Financial Reporting' (1995) 41 *Business and Economic Review* 19-23; and W.D. Walden and B.N. Schwartz, 'Environmental Disclosures and Public Policy Pressure' (1997) 16 *Jnl of Accounting and Public Policy* 125-154.

Australian companies are surprisingly behind other countries in environmental reporting trends and major differences exist between the content of their corporate environmental policies and their subsequent environmental reporting and disclosures in their annual reports.¹⁵ Of particular interest to this study is the finding by Tilt that while companies appear to be reporting on the environment internally, they place a low priority on providing environmental performance data to external parties.

2.2 Australian evidence

Early Australian studies on environmental disclosure grew from a broader literature set that examined the extent of and motivations for social responsibility disclosures. Initial studies by Trotman and Bradley¹⁶ and Guthrie and Parker¹⁷ indirectly examined environmental disclosures by documenting the more generic disclosure practices relating to social responsibility. Following on from these early studies, Deegan and Gordon¹⁸ examined specifically the environmental disclosure practices of Australian corporations in general. At the same time Deegan and Rankin¹⁹ adopted a narrower focus concentrating on these same environmental disclosure practices but only for companies that had been prosecuted by the EPA (Environmental Protection Authority) in Australia. This analysis of prosecuted companies is important as it provides a ready-made example of 'poor' or inadequate environmental performance as evidenced by an objective and legal standard. It is clear that one, the level of disclosure provided and two, the incentives for the disclosure may be different for companies that have a track record of breaching legal environmental standards. These companies have, or may be perceived to have less than adequate social and environmental responsibility in their business, by investors and the community alike. Finally, more recent research by Brown and Deegan²⁰ concluded that a positive connection between the provision of environmental information by Australian companies and the notions of

¹⁵ C.A. Tilt, 'The Content and Disclosure of Australian Corporate Environmental Policies' (2001) 14 *Accounting, Auditing and Accountability Jnl* 190-212.

¹⁶ K.T. Trotman and G.W. Bradley, 'Associations between Social Responsibility Disclosure and Characteristics of Companies' (1981) 6 *Accounting, Organizations and Society* 355-362.

¹⁷ J. Guthrie and L.D. Parker, 'Corporate Social Disclosure Practice: A Comparative International Analysis' (1990) 3 *Advances in Public Interest Accounting* 159-175.

¹⁸ C. Deegan and B. Gordon, 'A Study of Environmental Disclosure Practices of Australian Corporations' (1996) 26 *Accounting and Business Research* 187-199.

¹⁹ Deegan and Rankin, above n 1.

²⁰ Brown and Deegan, above n 12.

legitimacy and media-agenda setting theories is based on the fact that higher levels of media attention are associated with higher levels of disclosure.²¹

The first study in this area was by Trotman and Bradley²² who examined social responsibility disclosures of some 207 Australian companies for the 1978 financial year. Included within the definition of social responsibility was a category for environmental disclosure. Trotman and Bradley identified the link between the level of social disclosure and various factors or motivations thereof. The factors considered important were (i) the size of the firm, (ii) systematic risk, (iii) social constraints, and (iv) the management decision horizon. They found increases in both the systematic risk and size factors positively influenced the level of social disclosure provided. However, while Trotman and Bradley empirically tested the association of the social environmental disclosures to the various factors they unfortunately did not separate out the various types of social disclosure, preferring to concentrate on an aggregate approach. Accordingly, the level of and the effect of the factors specifically on *environmental disclosure* are difficult to ascertain.

Guthrie and Parker²³ examined corporate social disclosure in annual reports from a wider perspective comparing across a sample of U.S., U.K. and Australian companies for the 1993 year. They considered environmental, energy, human resources, products, community involvement and others within the broad definition of social disclosure. Not surprisingly, Australia had the lowest level of social disclosure compared to the U.S. and the U.K. For all three countries environmental information had the lowest priority and level of disclosure across the various categories. In addition no company provided any bad news or negative social disclosure, which suggests that companies were withholding negative information from the market. Guthrie and Parker did not test for potential explanations across the levels of disclosure, preferring to concentrate on simply reporting the level of disclosure itself. In all though, the environmental and/or corporate environmental disclosure of Australian companies is seen as relatively poor.

The first study to look specifically at environmental disclosures in Australia was Deegan and Gordon.²⁴ They documented the disclosure found in the 1991 Annual reports of

²¹ The development and link of the legitimacy and media-setting theories to the variables and findings is not without controversy however. It may be that the legitimacy and media-setting theories are subsets of/or related to one or more of the political cost, agency cost and/or information asymmetry based theories and are difficult to confirm exclusively or conclusively.

²² Trotman and Bradley, above n 16.

²³ Guthrie and Parker, above n 17.

²⁴ Deegan and Gordon, above n 18.

a random sample of a wide cross-section of 197 Australian companies. Their findings were both interesting and enlightening. First and foremost, the environmental disclosures were mostly of a positive nature with only 7 percent of companies providing negative disclosure. This confirmed similar findings in the U.S. by Gamble *et al.*²⁵ and the previously noted results of Guthrie and Parker.²⁶ Second, environmental disclosures improved significantly over the 1980-1991 period. This was again consistent with Trotman and Bradley²⁷ who document a corresponding increase over the period 1972-1977. Finally, those companies in politically sensitive industries provided the most positive disclosure.²⁸ Hence, environmental disclosure is potentially one method of alleviating political pressure and community concern. In short, Australian corporations are loath in general to provide disclosure on environmental issues and if they do they are only likely to report positive information. Thus while there are incentives such as litigation costs and reputation effects to release bad rather than just good news,²⁹ the incentives do not appear strong enough to induce disclosure of EPA prosecutions or other environmental information and their negative publicity. In contrast the documented increase in such disclosure over time reflects a growing awareness of corporate social responsibility.

2.3 Poor environmental performance

Research using measures of 'poor' environmental performance include Johnson, Magnan and Stinson,³⁰ Li, Richardson and Thornton,³¹ Daley and Schuler³² and the Australian study of Deegan and Rankin.³³ Annual reports have a low quantity of environmental disclosures that tend to be of a general nature. Similarly for Australia, in order

²⁵ Gamble *et al.*, above n 12.

²⁶ Guthrie and Parker, above n 17.

²⁷ Trotman and Bradley, above n 16.

²⁸ Deegan and Gordon, above n 18, conclude that the positive nature of the environmental disclosures is consistent with legitimacy theory. That said, they do not directly or empirically examine the factors or influences for the variation in disclosure across companies. The fact that companies provide largely positive information on environmental issues may be consistent with one or a number of alternate theories either of an economic nature or otherwise.

²⁹ D. Skinner, 'Why Firms Voluntarily Disclose Bad News' (1994) 32 *Jnl of Accounting Research* 38-60.

³⁰ M.F. Johnson, M. Magnan and C. Stinson, 'Nonfinancial Measures of Environmental Performance as Proxies for Environmental Risks and Uncertainties' (1996) *Working Paper*, University of Michigan, Ann Arbor, MI.

³¹ Y. Li, G.D. Richardson and D.B. Thornton, 'Corporate Disclosure of Environmental Liability Information: Theory and Evidence' (1997) 14 *Contemporary Accounting Research* 435-474.

³² M.J. Daley and D.A. Schuler, 'Do Firms benefit From Unethical Behavior? An Examination of Disclosures Related to Violation of Environmental Statutes' (1999) *Working paper*, Rice University, Houston, Texas.

³³ Deegan and Rankin, above n 1.

to overcome the 'good' news phenomenon associated with environmental disclosure, Deegan and Rankin (1996) narrowed the focus of their research to examine solely corporations that have a demonstrated 'poor' environmental performance. All Australian companies successfully prosecuted by the EPA (Environment Protection Authority) in the states of NSW and Victoria over the period 1990-1993 were examined. The environmental disclosure in the annual reports was then documented. The disclosure practices of prosecuted firms relative to a matched sample of non-prosecuted firms for the same years were then compared. Matching was done based on size and industry for the equivalent financial years. Second, the prosecuted firm's disclosure in the year of prosecution was further compared to the same firm in years when they were not prosecuted. Prosecuted firms were found to have more disclosure and the disclosure was of a positive nature compared to the matched non-prosecuted firms. In addition, there was an increase in the disclosure for the firms in the year in which they received a prosecution in contrast to those years where they did not. In the same vein as Deegan and Gordon³⁴ no empirical test of the factors that influence the level or the nature (positive or negative) was conducted. However, Deegan and Rankin³⁵ intimate that their results are broadly consistent with a legitimacy perspective, as there appears to be a need for prosecuted firms to provide enhanced positive environmental disclosures as a means of countering the negative news of the prosecution.

2.4 Legitimacy theory and media agenda setting theory

Most of the recent Australian research³⁶ following on from Deegan and Rankin³⁷ has emphasized the role of legitimacy theory in explaining the extent and nature of environmental and/or social information disclosures in annual reports. It is argued that how an organization reports and operates is influenced to a large degree by the social values of the community in which it exists. Therefore, adopting a legitimating perspective, companies use certain social disclosures to justify their existence.³⁸ That is, firms will disclose information to legitimize their ongoing operation within that particular society. This suggests that there is a 'social'

³⁴ Deegan and Gordon, above n 18.

³⁵ Deegan and Rankin, above n 1.

³⁶ See, for example, Deegan and Rankin, above n 13; Brown and Deegan, above n 12.

³⁷ Deegan and Rankin, above n 1.

³⁸ Deegan and Rankin, above n 13.

contract between the organization and those affected by its operation.³⁹ The organization is expected to comply with the terms of this 'contract' and these expressed or implied terms are not static. In the event of a 'breach' of these terms (through an inability to justify its ongoing operation) the 'contract' can be revoked. This may take many forms, from that of boycotting products to the elimination of the supply of labour, capital and supplies as well as increased levies, fines and laws imposed by governments through the lobbying of constituents. The changing nature of these terms affects the disclosure policies and practices of firms that operate within the community.

Deegan and Rankin⁴⁰ used a questionnaire to determine both the materiality of environmental issues to certain groups in society who use annual reports to gain information and whether environmental information is sought from annual reports. Their results indicate that both shareholders and individuals within organizations with a review or oversight function consider that environmental information is material to particular decisions they undertake. However, stockbrokers and analysts downplayed the materiality of environmental information. In addition, shareholders, accounting academics and review organizations seek environmental information from the annual report to assist in making various decisions. The annual report was perceived by the total group of respondents to be significantly more important than any other source of information concerning an organization's interaction with the environment.

Brown and Deegan⁴¹ examine the relationship between the print media coverage given to various industries' environmental effects and the levels of annual report environmental disclosures in Australia. Using media agenda-setting theory and legitimacy theory, companies from nine industries are reviewed. The results indicate that for the majority of industries in the sample, higher levels of media attention are significantly associated with higher levels of environmental disclosures in annual reports. The authors posit that organizations continually seek to ensure that they operate within the bounds of their respective societies.

As Neu, Warsame and Pedwell⁴² originally suggest and we put forward here the legitimacy, stakeholder and 'political economy' perspectives are not well defined and may

³⁹ Brown and Deegan, above n 12.

⁴⁰ Deegan and Rankin, above n 13.

⁴¹ Brown and Deegan, above n 12.

⁴² D.Neu, H. Warsame and K. Pedwell, 'Managing Public Impressions: Environmental Disclosures in Annual Reports' (1998) 23 *Accounting, Organizations and Society* 265-282.

overlap or are intertwined with other frameworks that have socio or political economy assumptions. The notion of impression management or image building arising from public pressure can potentially and comfortably fit within any of these frameworks.

2.5 Content analysis

Most of the studies⁴³ following on from their U.S. counterparts⁴⁴ use content analysis to describe the level of environmental disclosure. In addition the two Australian studies above categorize disclosures in corporate annual reports according to the nature of the disclosure, namely whether it is, 'positive' or 'negative'.⁴⁵ There are concerns with content analysis mainly concerning the reliability first as a technique in the experimental design and second the potential different units of measure (sentences, number of pages and/or words) used. The first aspect of concern relates mainly to the subjectivity of identifying the disclosure and determining whether it is positive or negative. Moreover, content analysis is restricted to the level or quantity rather than the quality of the disclosure. Regarding the second aspect, Milne and Adler⁴⁶ look at the reliability of sentence coding and find that this form of the content analysis is generally reliable and the best alternative as a unit of measure provided it is carried out in a systematic manner.⁴⁷ In fact, Deegan and Gordon⁴⁸ and Deegan and Rankin⁴⁹ find little difference in their results when using alternative measures. More on the nature of and appropriateness of content analysis is provided later.

2.6 Extension and merit of the current study.

This study extends and complements prior research on environmental disclosures by prosecuted firms in several ways. First, this study examines the extent and type of voluntary environmental disclosure given by poor environmental performance firms. Hence we are

⁴³ See, for example, Deegan and Gordon, above n 18; Deegan and Rankin, above n 13.

⁴⁴ See, for example, J. Wiseman, 'An Evaluation of Environmental Disclosures Made in Corporate Annual Reports' (1982) 7 *Accounting, Organizations and Society* 53-68; W. Blacconiere and D. Patten, 'Environmental disclosures, regulatory costs and changes in firm value' (1994) 18 *Jnl of Accounting and Economics* 357-377; Gamble *et al*, above n 12; W.D. Walden and B.N. Schwartz, 'Environmental Disclosures and Public Policy Pressure' (1997) 16 *Jnl of Accounting and Public Policy*, 125-154; and Hughes *et al*, above n 6.

⁴⁵ The authors define positive disclosures as information that presents the company as operating in harmony with the environment and negative disclosures as disclosures that present the company as operating to the detriment of the natural environment.

⁴⁶ M.J. Milne and R.W. Adler, 'Exploring the Reliability of Social and Environmental Disclosure Content Analysis' (1998) 12 *Accounting, Auditing and Accountability Journal* 237-256.

⁴⁷ Milne and Adler, above n 46, do note that for more detailed classifications, e.g., positive/negative items there is a learning effect of typically about 20 observations for the classifications to achieve a normal level of reliability.

⁴⁸ Deegan and Gordon, above n 18.

able to comment on whether such disclosure is adequate in identifying the EPA prosecution and any impact thereof. Second, this study aims to establish if there has been any improvement in voluntary environmental disclosures by 'poor' environmental performers since the Deegan and Rankin⁵⁰ Australian study of this issue for the years 1990–1993. This is important as submissions to the PJSC claim that voluntary reporting of environmental information is preferable and may have better quality of disclosure relative to mandatory requirements such as s299(1)(f). No evidence on the extent of and/or the 'quality' of environmental information is mentioned in the arguments submitted to the PJSC. Finally, using Australian data permits examination of environmental performance reporting in a purely voluntary disclosure regime, in contrast to the U.S. and Canada that have some mandatory disclosure requirements through stock exchange disclosure.⁵¹

3. Institutional background

The EPAs in Australia are state-run agencies with most legislation stemming from the various state parliaments. Each state has similar environmental protection legislation, which is backed by the Federal environmental legislation. As state-run authorities, each EPA has the power to prosecute or fine entities for breaches of the legislation pertaining to noise, water, air and any broader environmental protection issues that occur within their state or territory.⁵² The various state EPAs do not require any specific disclosures in companies' annual reports.

In Australia, until July 1998 no disclosure requirements relate specifically to a corporation's environmental performance or any environmental related expenditures or obligations, except for certain requirements that apply to reporting entities in the extractive industries.⁵³ In addition, no mandatory criteria govern the recognition of liabilities in

⁴⁹ Deegan and Rankin, above n 13.

⁵⁰ Deegan and Rankin, above n 1.

⁵¹ There are no accounting standards on environmental disclosure. SEC Regulation S-K items 101 and 103 require that the material effects of compliance with environmental laws on capital expenditures, earnings and a firm's competitive position, as well as any material information relating to pending administrative or judicial proceedings, be disclosed. SEC Staff Accounting Bulletin No. 92 additionally requires that any environmental problem of known potential significance be disclosed. The Ontario Securities Commission (OSC), in Policy Statement 5.10 requires companies to discuss environmental concerns in OSC filings. These requirements are similar to those required by the SEC in the U.S.

⁵² Any breaches that are deemed to be issues for Australia, for example, contamination of Australian waters, are processed through the Commonwealth Department of Environment and Heritage, under the *Environmental Protection Act 1974 (Commonwealth)*.

⁵³ Urgent Issues Group (*UIG*) *Abstract 4: Disclosure of Accounting Policies for Restoration Obligations in the Extractive Industries* was issued in August 1995, for reporting periods ending on or after 6 October 1995. Under *UIG Abstract 4*, reporting entities in the extractive industries shall disclose separately information about the amount of restoration

Australia, leaving judgment to the discretion of accountants and managers. The non-mandatory *Statement of Accounting Concepts SAC 4* states that a liability should be recognised if 'the amount of the liability can be reliably measured.' However, the nature of environmental liabilities suggests that they may not be reliably measured until incurred.

Disclosure requirements for contingent liabilities are contained in *AASB 1034* 'Information to be Disclosed in Financial Reports,' which applies to financial years ending on or after 30 June 1997.⁵⁴ *AASB 1034* replaced the old Schedule 5, which previously provided the disclosure requirements for financial statements. The disclosure requirements for contingent liabilities under Schedule 5 and *AASB 1034* are essentially identical. For cases brought against the firm by the EPA that are unresolved at balance date, if the likely outcome is in favour of the EPA, any material contingent liability should be disclosed in the notes to the financial statements. However, as the EPA fines of listed companies are small in absolute dollar terms they are unlikely to satisfy the criteria of materiality.

Prior to 1 July 1998, the Corporations Law required no specific, mandatory environmental disclosures. Effective 1 July 1998, s299(1)(f) of the Corporations Law requires details of a company's performance in relation to environmental legislation to be included in the Directors' Report if the company operations are 'subject to any particular and significant environmental regulation under a law of the Commonwealth or of a State.'⁵⁵

Overall, the disclosure of EPA violations in the annual reports is voluntary up until 1 July 1998.⁵⁶ Managers have discretion regarding what to disclose with respect to environmental matters for several reasons. First, there is a lack of specific accounting

obligations recognised as a liability in the financial reports, and the accounting methods adopted in determining the liability for restoration.

⁵⁴ *AASB1034* (clause 7.2) states that Contingent Liabilities include the following:

- (a) liabilities of the entity which have not been recognised because:
 - (i) of significant uncertainty as to whether a sacrifice of future economic benefits will be required; or
 - (ii) the amount of the liability cannot be measured reliably; and
- (b) items that are not recognised as liabilities because of significant uncertainty as to whether an obligation presently exists.

The following information must be disclosed in the notes to the financial statements in relation to contingent liabilities (clause 7.1(c)):

For each individual and category of contingent liability:

- (i) a brief description of its nature
- (ii) whenever possible, the maximum amount that may become payable, which has not been recognised as a liability.

⁵⁵ On 1 November 1998, the Australian Securities and Investments Commission (ASIC) released *Practice Note 68: New Financial Reporting and Procedural Requirements*, which include guidelines on the application of the environmental reporting provision of the Act. *Practice Note 68* states that a breach resulting in conviction for an environmental offence represents a company's failure to comply with a 'significant and particular' environmental law and therefore should be disclosed. In addition, the ASIC is critical of insufficient disclosure of environmental regulations/risks/issues, and insufficient disclosure of compliance with relevant environmental requirements.

⁵⁶ One exception is 'restoration costs' in the extractive industries.

guidelines, other than standards dealing with contingent liabilities and their disclosure.⁵⁷ Second, there is inherent uncertainty about the potential materiality of environmental liabilities due to their contingent nature. Finally, the size of the EPA fines imposed could mean that 'materiality' guidelines are not met.

4. Research questions and method

4.1 Research questions

The inherent uncertainty about the potential materiality of environmental liabilities and the lack of reporting requirements leave managers with discretion regarding what environmental disclosures to make. It is unclear *à priori* from a theoretical point of view what type of voluntary environmental disclosures the 'poor' environmental performance firms will make. It is further unclear whether it will be specific, general, and/or positive or negative.

The firm may provide additional positive disclosure to compensate for poor environmental performance. Alternatively, disclosure of 'bad' news, such as in the form of earnings forecasts, may be a vehicle through which managers can discharge their legal obligation and avoid lawsuits.⁵⁸ Similarly, disclosure of EPA prosecutions could benefit the firm.⁵⁹ However, in the absence of any legal incentive to voluntarily disclose EPA violations, managers could refrain from making any such disclosures due to concern about the negative publicity and/or political costs associated therewith. Previous research has found weak and inconsistent results for the association between environmental performance and environmental disclosures.⁶⁰

Most studies of environmental disclosures consider the annual report as the major forum for disclosure.⁶¹ Neu, *et al.*⁶² claim that narrative disclosures in annual reports are preferred to other forms of disclosure as their proximity to the audited financial statements

⁵⁷ The extent of environmental disclosures required by the *accounting standards* is similar in Australia to other countries. The only accounting standards relevant to environmental disclosures in the U.S., Canada and the International Accounting Standards Committee (IASC) are those covering contingent liabilities.

⁵⁸ Skinner, above n 29.

⁵⁹ M. Freedman and C. Wasley, 'The Association Between Environmental Performance And Environmental Disclosure in Annual Reports and 10Ks' (1990) 3 *Advances in Public Interest Accounting* 183-193.

⁶⁰ See, for example, Wiseman, above n 44; and Freedman and Wasley, above n 59.

⁶¹ See, for example, Wiseman, above n 44; Guthrie and Parker, above n 17; Deegan and Rankin, above n 1; and Tilt, above n 15.

⁶² Neu *et al.*, above n 43.

provide them with a measure of credibility not afforded to other forms or organizational communication. The auditor is required to read the whole of the annual report (AUS 212) to ascertain if any of the other information is inconsistent with the financial reports and that there is no material misstatement of fact. This provides a supplementary degree of credibility by the process of negative assurance.

Ceteris paribus, as the EPA annual reports disclose some aspects of a prosecuted firm's environmental performance, some environmental disclosures are expected in the annual report. However, it is not apparent whether firms are likely to specifically disclose the actual incurrence of an EPA prosecution. Hence, we have two separate research questions to examine.

Research Question 1: Do firms subject to an EPA prosecution make *specific* disclosures about the EPA violation?

Research Question 2: Do firms subject to an EPA prosecution disclose (positive) *general* environmental information?

The next item of interest is where environmental disclosures are located within the annual report, predominantly whether or not the disclosures are audited. Prior research such as Walden and Schwartz⁶³ reports that for the U.S. the disclosure of environmental information is made primarily in the non-financial, non-audited sections of the annual report.⁶⁴

Earlier studies to look at the location of environmental disclosures in the annual report were the Australian study of Guthrie and Parker⁶⁵ and the U.S. study of Hughes *et al.*⁶⁶ Guthrie and Parker report that format of social disclosure in corporate annual reports differs across countries with Australian reports mostly dispersing social disclosures through a variety of non-specific sections (64%) although a significant minority make disclosures in the Directors' Report. Hughes *et al.* report that there are differences in the extent to which

⁶³ Walden and Schwartz, above n 14.

⁶⁴ Here the financial section of the annual reports consists of the financial statements, supplementary schedules and footnotes all of which are audited. It also includes the MD&A section. The non-financial section is the remainder, which consists of the letter to shareholders plus any other portion.

⁶⁵ Guthrie and Parker, above n 17.

⁶⁶ Hughes *et al.*, above n 6.

different groups of environmental performers: good, mixed and poor, disclose environmental information. Overall, it is the poor performers that have the greatest extent of disclosure. The majority of these disclosures appear within the MD&A and notes rather than the president's letter.

Another consideration is whether or not the disclosures are audited. (i) The *Financial Statements*, (ii) the *Footnotes* and (iii) the *Directors' Statement* constitute the financial report (s295) and the audited section of the annual report.⁶⁷ The (iv) *Directors' Report*, (v) *Chairman's Review* and (vi) the *Review of Operations* make up the non-audited section of the annual report.⁶⁸ Audited information is viewed more credibly, because auditing is evidence of compliance with relevant laws and regulations. However, audited disclosures incur the cost of ensuring compliance with the laws and regulations and the penalties are more severe (litigation etc.) for an incorrect disclosure. It would be expected that in the absence of mandatory requirements companies would rather their environmental disclosures to be non-audited and will be willing to provide more environmental disclosures in those sections.

Research Question 3: Do firms subject to an EPA prosecution disclose more environmental information in the non-audited sections of the annual report?

Extending the argument above the '*Review of Operations*' is predicted as the area most likely to contain environmental disclosure as the Review of Operations has virtually unlimited size and a lack of rules covering the content. The Review of Operations is non-mandatory, namely not required by the *Corporations Law* (s298) and the disclosure therein is not stipulated in any way. Further, the managing director or chief executive officer (CEO)

⁶⁷ The *Corporations Law* s295 requires all companies to prepare a Directors' Statement that together with the financial statements and footnotes is considered part of the financial report to be audited (s301). The directors' declaration or statement requires a declaration: (a) that the financial statements, and the notes, comply with the accounting standards (s297); and (b) that the financial statements and notes give a true and fair view (s297); and (c) whether, in the directors' opinion, there are reasonable grounds to believe that the company, will be able to pay its debts as and when they become due and payable; and (d) whether, in the directors' opinion, the financial statement and notes are in accordance with this Act, including compliance with accounting standards; and true and fair view.

⁶⁸ AUS 212 requires any 'other information' in the annual report to be reviewed by the auditor to ascertain that the information contained therein is (i) materially consistent with the information provided in the audited financial report and (ii) there is no material misstatement of fact. Examples of 'other information' include the Directors' Report, financial summaries or highlights, employment data, planned capital expenditures, financial ratios, and/or a Review of Operations. Generally, the Review of Operations is any discussion in the annual report by the Managing Director or CEO reviewing the operations of the company during the period. The Review of Operations is the closest we come in Australia to a general narrative. It can be contrasted to the Directors' Report, which is mandatory (ss298-300A) and must cover specific and general matters mainly relating to operating activities and disclosure of financial interests. The Directors' Report is comparable to the MD&A in the U.S., as the SEC regulates the content of the MD&A. (See, for example, Hughes *et al.*, above n 6.)

normally prepares the Review of Operations where as the board of directors as representative of the owners must compile the Directors' Report. Hence the Review of Operations is more likely to focus on management and operational issues. For example, managers might use the 'Review of Operations' to release information that enhances the perception of the company as a 'good' corporate citizen.

Research Question 4: Do firms subject to an EPA prosecution disclose more environmental information in the 'Review of Operations' section?

4.2 EPA Prosecutions

All Australian listed companies that were successfully prosecuted by a State EPA between 1 July 1994 and 30 June 1998 were selected. Prosecuted companies were identified from the EPA's annual reports during the period. The EPA annual reports are publicly available; provide details of all entities successfully prosecuted for breach of environmental protection laws, the amount of the fines imposed and either the date of successful prosecution or the financial year to which the prosecution belongs.⁶⁹

Sample companies had to be listed on the Australian Stock Exchange (ASX) at the time of prosecution to ensure comparability and consistency in reporting and disclosure requirements.⁷⁰ Each prosecution in the EPA annual reports was examined to determine whether the company prosecuted was a listed company or the subsidiary of a listed parent company. Parent companies were identified by reference to Dun and Bradstreet's (1998) *Who Owns Whom: Australasia and the Far East 1993 to 1998*.⁷¹ Twenty-seven of the 38 prosecutions during this period were of subsidiaries of ASX listed companies. In those cases, the analysis is undertaken of the parent entity disclosures.

Appendix A contains the list of the sample companies, the prosecuted subsidiaries, if relevant, the amount of the fines, which State EPA prosecuted the company and the Act under which the company was prosecuted. The final sample consists of 29 instances of 'poor' environmental performance by 20 companies that were the subject of 38 prosecutions.

⁶⁹ The NSW EPA did not provide exact dates of prosecution, but provided only the financial amount of the prosecutions. In South Australia, Tasmania and the Northern Territory, and ACT there were no prosecutions imposed on listed companies.

⁷⁰ For example, Mobil Oil Australia Ltd. and Shell Australia Ltd. were eliminated, as they are not listed on the ASX. Australian International Carbon Ltd. was eliminated because it was prosecuted by the NSW EPA on January 1, 1995, but only listed on the ASX in August 1998. Similarly, a 1998 prosecution of Caltex Australia Ltd. was excluded as the relevant balance date, 31 December 1998, fell outside the test period.

⁷¹ Dun and Bradstreet, *Who Owns Whom: Australasia and the Far East, 1993 to 1998*, (1998) Dun & Bradstreet, London.

Of the 38 prosecutions, 11 prosecutions, relating to 9 annual reports, are for second or third offences in a subsequent financial year. Therefore, 29 annual reports are available for analysis covering the period 1 July 1994 until 30 June 1998.⁷² Lastly, the annual reports are examined for environmental disclosures, which include all issues relating to the company's interaction with the natural environment.

4.3 Content Analysis

Content analysis is used to convert the environmental disclosures contained in the annual reports into quantified variables that provide a systematic basis for comparing firms' environmental disclosures. Content analysis has been widely used in prior environmental accounting literature.⁷³ In this paper, semantical content analysis is used to classify signs according to their meanings and allow replicable and valid inferences to be made from data to their context.⁷⁴ An appropriate content analysis scheme involves a trade-off between the reliable simplicity of using a small number of coding categories and capturing the complexity of the information using a large number of coding categories.

The issue of analysing words, sentences or number of pages is discussed by Tilt⁷⁵ from earlier work by Hackston and Milne.⁷⁶ Number of pages as a measure of disclosure is often said to be problematic due to differences arising from font size, margins, graphics etc, while the number of words causes difficulties due to concise or verbose styles of writing. Milne and Adler⁷⁷ argue that most prior studies, while using words, paragraphs or pages to measure the environmental content of text, actually use sentences to code the content. That is, sentences are used to determine into which category the text is classified. Following from the above discussion, number of sentences was chosen as the most appropriate measure of disclosure in this study.

A sentence is counted as one disclosure regardless of the length of the sentence. Likewise, a disclosure in the footnotes of an amount is also counted as one disclosure.

⁷² Companies with prosecutions in more than one period are: Amcor, BHP, Boral, Brambles Industries, CSR, Metal Manufactures and Wesfarmers.

⁷³ See, for example, Wiseman, above n 44; Blaconiere and Patten, above n 44; Gamble *et al.*, above n 12; Walden and Schwartz, above n 44; and Hughes *et al.*, above n 6.

⁷⁴ K. Krippendorff, *Content Analysis: An Introduction*, (1980) Braton Press, New York.

⁷⁵ Tilt, above n 15.

⁷⁶ D. Hackston and M.J. Milne, 'Some Determinants of Social and Environmental Disclosures in New Zealand Companies' (1996) 9 *Accounting, Auditing and Accountability Jnl*, 77-108.

⁷⁷ Milne and Adler, above n 46.

Headings are not counted as a sentence disclosure. The above preserves the objectivity of the content analysis with no value judgements being made about disclosure quality. The sentence disclosures are coded into one of five sub-sections, each relating to different areas of the annual report. The five sections are the *Chairman's Review*, the *Review of Operations*, the *Directors' Report*, the *financial statements* and the *footnotes* to the financial statements. Each sentence is read and recorded in the appropriate category by placing a checkmark on a comprehensive worksheet. The total quantity of disclosure in each sub-section of the corporate annual report is the number of sentences in that sub-section that relate to environmental issues. The disclosure totals for each sub-section are added to yield the total number of environmental disclosures sentences for the full *annual report*.

An example of environmental disclosures in the *Review of Operations* from the Boral Limited 1997 Annual Report (p. 11) is:

Boral cares about the impact our operations and actions on employees, customers, the communities and environment in which we operate, ensuring that he/she meets both the spirit and the letter of the law and community expectations.

There are two major limitations to using content analysis. First, there is a necessary element of subjectivity involved in determining what constitutes a particular type of disclosure in each case⁷⁸ Second, content analysis assumes that the significance of a disclosure can be represented meaningfully by the quantity of disclosure.⁷⁹ The perspective in this paper is that sentence counts measures whether there is systematic variation in the level of disclosure rather than measuring disclosure quality.

The disclosure contained in the *Directors' Report*, *Chairman's Review* and *Review of Operations* encompasses the total quantity of *non-audited* environmental disclosures in the annual report. The non-audited disclosure not contained in the *Review of Operations* is referred to as the *non-review* section. Similarly the *Directors' Statement*, *financial statements* and *footnotes* disclosure all combined provide the total quantity of *audited* environmental disclosures. The total quantity of environmental information contained for the full *annual report* is the sum of the disclosure totals for each sub-section. The number of sentences that disclose information relating to the specific EPA prosecution is referred to as

⁷⁸ D. Zęghal and S.A. Ahmed, 'Comparison of Social Responsibility Information Disclosure Media used by Canadian Firms' (1990) 3 *Accounting, Auditing and Accountability Jnl* 38-53.

⁷⁹ J.B. MacArthur, 'An Analysis of the Content of Corporate Submissions on Proposed Accounting Standards in the United Kingdom' (1988) 18 *Accounting and Business Research* 213-226.

specific disclosure. Equivalently, environmental information of a general nature in the annual reports of the violating firms is referred to as *general* disclosure.

4.4 Classification of disclosure

We classify the environmental disclosures as positive, negative or uncertain/neutral based on a similar approach to that of Deegan and Rankin.⁸⁰ Positive/negative disclosures are defined as information where the company is presented as operating in harmony/not in harmony with the environment.⁸¹ In addition, uncertain (neutral or ambiguous) disclosures are defined as when environmental information is given but the impact on the environment is unclear. While some of the disclosures are not explicit we have classified them as being positive based on their implicit meaning. For example, the following were classified as positive:

Amcor is committed to managing its businesses around the world in an environmentally responsible manner at all times. (Amcor Limited 1996 Annual Report, p. 32)

BHP's management of the *Iron Baron* spill demonstrated the value of its emergency planning and its Oil Spill Response Group. (BHP Limited 1996 Annual Report, p. 7)

While somewhat ambiguous the second statement by BHP is classified as positive on the basis that BHP are claiming that management and response teams are very good at coping with environmental disasters. Our decision is reinforced upon reading the remainder of the paragraph as BHP goes on to comment that "the cleanup is complete" and "monitoring of the environment will continue and lessons learned from the incident will further refine the Company's emergency management systems" (p. 7). Classification as positive, negative or neutral in some cases is often difficult and somewhat subjective.⁸²

We further distinguish the environmental disclosure into several distinct categories. This is useful as it enables a consideration of the type(s) of information most often provided as part of the environmental disclosure. These categories employed are: (i) *Environmental Rules* where a company notes that it is subject to an environmental rule and/or policy, even if self imposed. (ii) *Activity/Operating Performance* statements reflect environmental activities that pertain to the potential impact on company operating performance. (iii) *Activity/Financial Performance* or statements about environmental activities and potential

⁸⁰ Deegan and Rankin, above n 1.

⁸¹ Deegan and Rankin, above n 1.

⁸² Deegan and Rankin, above n 1.

impact on company financial performance and/or position. (iv) *Liability/Expense Recognition* comments concern environmental aspects that already have some recognition of liability/expenses.⁸³ (v) *Accounting Policy* is where the firm comments on environmental issues with specific reference to the impact on accounting policy. (vi) *Other Disclosures* then refers to any miscellaneous environmental disclosure such as audits, pollution abatements, vision, strategic plan etc.

5. Results and discussion

5.1 Descriptive statistics - specific and general disclosure

Summary statistics for the various measures of annual report disclosure are presented in Table I. First, disclosure is categorized as either specific or general. General disclosures are then further decomposed into positive, negative or neutral. Readily apparent is the fact that there is virtually no specific disclosure. In fact only one company Boral Limited in only one instance in its 1997 Annual Report (p. 34) notes specifically it has breached environmental regulations:

Regrettably, during the year in Australia one \$5,000 fine was imposed for the release of turbid water, and three \$500-\$600 penalties were also incurred for waste discharge and administrative non-compliances.

Even then when making this disclosure Boral is attempting to put a positive 'spin' on it by in the previous sentence on the same page suggesting only in Australia has it breached regulations and nonetheless has complied with overseas requirements.

In line with Boral's commitment to comply with environmental legislation, regulations, standards and codes of practice, no fines or other penalties were incurred for environmental infringements in the USA, Europe, Asia or the Pacific.

Presumably the breach in Australia is viewed as only a minor indiscretion notwithstanding its primary listing on the ASX. From the comment Australia is seen as not part of the Pacific region? In the same Boral Limited 1997 Annual Report (p. 39) a second indiscretion (relating to health and safety rather than the environment) is noted.

⁸³ At first sight, category (iii) is somewhat similar to category (iv). However they are subtly diverse and so are kept separate. The basis for classifying category (iii) is where the firm discusses the impact of environmental matters in terms of *potential* impact on earnings, cash flows and/or capital expenditures. We note that these environmental matters may include the settlement of payments, fines, as well as expenditures to improve the environmental impact or reduce. In contrast, category (iv) identifies items where the discussion relates to an amount that is already *actually* recognized in the accounts namely that the firm must pay to an outside party on some future date.

Despite the Company's policies and actions, there have been a small number of prosecutions against subsidiary companies for breach of occupational health and safety and environmental legislation. The largest fine imposed on a Boral company during 1996/97 was \$75,000 relating to a discharge of LPG at Port Botany, NSW which occurred in 1991.

– Insert Table I about here –

On this evidence firms subject to an EPA prosecution simply do not make *specific* disclosures about EPA violation and by and large one would have to agree that this aspect disclosure is inadequate. Firms do not voluntarily disclose this item. Hence one is hard pressed to see this as encouraging better companies to achieve 'best practice' as the PJSC states. One would think that firms having poor environmental performance would at least disclose the breach in the annual report in order for this to be seen as adequate disclosure. To some degree this suggests that voluntary reporting is unsuccessful with only one environmental prosecution reported out of twenty-nine instances. This reinforces, as some of the advocates for s299(1)(f) argue, that if the information is to be disclosed then it needs to be made mandatory. Hence the case for s299(1)(f) seems reasonable provided one agrees (i) that this information requires disclosure, and (ii) that the purpose of the requirement is made clear and the statute can be worded appropriately. However, these are separate arguments. That said, what is obvious is disclosures of EPA breaches were not made before the introduction of s299(1)(f).

The second item is while firms with poor environmental performance do provide environmental disclosure it is (i) of a very general nature and (ii) is for the most part overwhelmingly positive in nature. From Table I 21.93 sentences of environmental disclosure are provided on average per each annual report. In itself, this level of disclosure is quite substantial. Of this 17.21 sentences on average relate to positive aspects, 2.72 are neutral and only 2 sentences on average reflect items with a negative environmental impact. Clearly, while not surprising, this concentration of positive disclosure reflects an attempt to encourage the shareholder and public belief that the firm is in harmony with and is conscious of the environment notwithstanding the EPA breaches.

An example of such positive disclosure and its attempt at reinforcement is again taken from the Boral Limited 1997 (p. 34) report:

The environmental performance of Boral's businesses has continued to improve across approximately 1,000 operating sites worldwide. Attention has initially been devoted to

compliance requirements. As these programs progress, the businesses will increase their emphasis on industry specific best practice and the implementation of environmental management systems.

This positive disclosure and the image of the company as a good social and environmentally conscious corporate citizen is manifest even in the face of environmental disaster. The BHP disclosure is a prime example. This is exemplified for both the *Iron Baron* oil spill off the coast of Tasmania in July 1995, and the environmental impact of the *Ok Tedi* copper mine in Papua New Guinea over the period 1994-1997. BHP notes itself that in the environment area, both issues in particular have caused public concern. However, in relation to *Iron Baron* oil spill the BHP Limited 1996 Annual Report (p. 37) notes:

BHP's management of the *Iron Baron* spill demonstrated the value of its emergency planning and its Oil Spill Response Group. The cleanup is complete. Monitoring of the environment will continue and lessons learned from the incident will further refine the Company's emergency management systems.

For the *Ok Tedi* situation the following is provided in the same 1996 annual report:⁸⁴

Resolution of the issues relating to the *Ok Tedi* copper mine in Papua New Guinea has been a high priority in 1996. We have made good progress through 1996 on issues associated with the release of tailings and overburden from the mine into the Fly River system. While the search for an environmental solution continues, *Ok Tedi Mining Limited (OTML)* has continued to develop fair and straightforward methods for compensating the *Ok Tedi* and Fly River people for the mine's impact. A compensation scheme negotiated with representatives of the national and provincial governments became law in December 1995.

Interestingly, over our sample time period a significant difference exists in relation to the amount of general disclosures for firms prosecuted in more than one year as compared with firms having only a single environmental prosecution. In Table I firms with multiple prosecutions over several years have a mean general environmental disclosure of 29.63 sentences as compared to a mean of 16.63 sentences for firms with a single prosecution. This difference in mean disclosure is statistically significant. For cases where there are multiple

⁸⁴ Similar disclosures are given in the Review of Operations for the BHP Annual Reports 1994 through to 1997. This disclosure can be contrasted markedly both in expression and nature with that given under the requirements of the contingent liabilities accounting standard for each of the years. For the 1996 BHP Annual Report the footnote disclosure for *Ok Tedi* is –

Legal proceedings were instituted in Victoria in May 1994 and December 1995, and writs were presented for issuance in Papua New Guinea in September 1994, against *Ok Tedi Mining Limited (OTML)* and BHP on behalf of plaintiffs claiming unspecified damages and other relief in respect of loss and damage allegedly caused by the discharge of tailings and other releases from the *Ok Tedi* mine into the *Ok Tedi* (river). In June 1996 all legal proceedings in Papua New Guinea and Victoria (including a writ issued in May 1996 against BHP, OTML and various officers and Directors) were discontinued. The company considers that the terms of settlement will not have a material adverse effect on its financial condition or results of operations.

prosecutions within the same year less disclosure is evident so it is the fact that the prosecutions are occurring across multiple years and the reinforcement of the negative publicity in a number of periods that drives the increased disclosure levels rather than the number of prosecutions *per se*. However, the extent of positive environmental disclosures is relatively higher when compared to total disclosure for those firms with a single environmental prosecution (87.2%) compared to firms with multiple prosecutions over multiple years (74.3%). This is notwithstanding the fact that the differences in the amount of positive, negative and neutral disclosure are all statistically significant across the various prosecution types as evident in Table I. The high absolute disclosure in all cases for the multiple environmental prosecutions firms drives this result. That said, as the balance of the non-positive disclosure is largely neutral none of the prosecuted companies show evidence of providing negative aspects of their environment performance despite their prosecution and their poor environmental performance track record. In short, firms subject to an EPA prosecution do disclose *general* environmental information but the disclosure remains almost exclusively of a positive nature.

These above results are reinforced when environmental disclosures are compared for initial reports - where the first prosecution occurs, in contrast with subsequent reports - where there was a repeat prosecution in later years.⁸⁵ Again, an average of 35.78 sentences of disclosure is provided in the subsequent annual reports significantly higher than the 15.70 in the annual reports relating to initial prosecutions.

The empirical results evidence that environmental disclosure is mainly about corporate image building and impression management. In this area the impression conveyed is one of a 'good' corporate citizen and environmentally friendly company. The image put forward is at odds with the reality of poor environmental performance as suggested by the EPA prosecution. In fact the greater the extent of 'poor' performance as indicated by multiple prosecutions over many years then (i) the level of environmental disclosure increases and (ii) for subsequent report years the extent of the positive nature of the disclosure is additionally increased. Similarly, even for initial prosecution periods the extent of the disclosure in the annual reports is greater for habitual EPA offenders when compared to those firms that have single environmental prosecutions over the sample period. Hence the evidence reveals that the attempt at impression management becomes more intense to counter

⁸⁵ Initial reports include the single environmental prosecutions (8), multiple environmental prosecutions within one year (5) as well as a portion of the multiple environmental prosecutions across more than one year (7).

the negative image of the EPA prosecutions put forward in the EPA annual list of offending companies and the negative publicity given in the media for such offences. Neu *et al.* (1998) provide a good overview of the idea and evidence of impression management in relation to Canadian environmental disclosures. They suggest that the impression management is directed to relevant publics who are interested in the environmental disclosure, the prime groups being the financial stakeholders and regulators with environmentalists as a secondary interest group.

5.2 Location of disclosure

Given the paucity of specific disclosures on the EPA prosecutions we concentrate the remaining discussion and analysis on general environmental disclosure. We see from Table II that the most extensive level of disclosures is in the Review of Operations. The Review of Operations has 16.14 out of a total mean disclosure of 21.93 sentences. Very little disclosure occurs in the Directors' and/or the Chairman's Reports with an average of 0.76 sentences and 0.48 sentences respectively. These three sections combine together to form the *non-audited* section with an average disclosure of 17.38 sentences. In contrast the *audited* section of the annual report with a mean disclosure of 4.55 sentences has a substantially less level of environmental disclosure. No disclosure occurs in the Directors' Statement.

– **Insert Table II about here** –

We now specifically test the differences between audit and non-audit and between the Review of Operations and the rest of the non-audit section of the annual report to see if they are significant. From Table III the mean/median difference between the two locations is substantial and is of the order of 12.83/7.00 sentences of environmental disclosure. In addition Table III confirms unequivocally a significant difference between the disclosure levels in the *non-audited* part (Directors' Report, Chairman's Report and Review of Operations) compared to the *audited* part (the financial statements and footnotes). The Wilcoxon matched-pairs rank sign test is significant at $p < 0.000$. Of the 29 matched differences, 25 are positive, 3 negative and the remainder are tied.

– **Insert Table III about here** –

The *non-review* section comprises the remainder of the non-audit locations namely the Directors' and the Chairman's Reports. In the same vein the environmental disclosure in the *Review of Operations* is substantially and significantly different from the *non-review*

section. The Wilcoxon matched-pairs rank sign test is yet again significant at $p < 0.000$. The mean/median differences in the level of environmental disclosure are 14.90/9.00 for this comparison. Clearly, from Tables II and III the bulk (74%) of the level of environmental disclosure is concentrated in the non-audited, non-statutory Review of Operations portion of the annual report. This fits in with the conjecture of impression management noted above as this location provides the most latitude possible to present extensive positive information to reinforce the firm's image.

Table IV compares the mean disclosure of the various categories for the annual report as a whole as well as for the different annual report locations. The most disclosure is found in the Review of Operations section and is related to discussing environmental activity and the potential impact on firm performance and/or operations. The *Activity/Operating Performance* section has a mean of 11.59 sentences or 53% of environmental disclosures out of a total mean 21.93 sentences disclosure for the full annual report. The *Environmental Rule* category has a mean of 3.69 sentences and *Liability/Expense Recognition* accounts for a further mean 2.69 sentences. Consequently some importance is placed on this form disclosure but nowhere near the magnitude or the level of the *Activity/Operating Performance* category. Naturally a significant majority of the environmental disclosure concerning liability/expense recognition is located in the financial statements and footnotes. The remainder of the disclosure - an average of 3.96 sentences - relates to the *Accounting Policy*, *Activity/Financial Performance* and/or the *Other Disclosure* categories. These items do not appear to be a major focus of disclosure.

Obvious differences thus exist in the type of environmental information that is provided. The typical environmental disclosure then is general in nature, located in the Review of Operations and the main aim is to promote the 'feel good' factor of the company at one with the environment. At the same time the disclosure most often focuses on the potential environmental impact on firm operating performance or operations. An extract from Boral Limited 1994 Annual Report (p. 25) provides a good example:

Boral recognises the need to protect the environment in order to allow sustained economic development for the long term benefit of the community. Caring for the environment is not just a social responsibility but an essential part of modern business practice. All Boral businesses are committed to effective environmental management and continually strive to minimise or eliminate any adverse impacts arising from the normal course of operations.

We now compare our results to previous studies and examine their implications as well as finally looking at some factors that may explain the level of voluntary environmental disclosure provided.

– **Insert Table IV about here** –

5.3 Discussion and Implications

Our results are partly similar to, and reinforce the results of, the earlier Australian study of 'poor' environmental performers by Deegan and Rankin.⁸⁶ That said, there are some notable differences that warrant discussion as well. The similarities with Deegan and Rankin are: extensive positive disclosures, limited negative disclosures and virtually no mention of the environmental fine. As well, both studies note that many companies use the Review of Operations section of the annual report to include a separate subsection of environmental matters. Moreover, Deegan and Rankin find that 12 out of 20 of prosecuted companies disclose some environmental information in the Directors' Report location. This is similar to, but slightly more than, our results where 11 firms out of 29 disclose in this location.

Differences exist when one focuses directly on the *amount* of environmental information rather than simply the number of companies. We find that the Review of Operations is clearly preferred and has on average 74% of the total environmental disclosure in the annual report. Our results confirm that environmental disclosures are more likely to be made in the non-audited non-statutory review of operations section of the annual report. Firms that have multiple environmental prosecutions over more than one year provide significantly more general environmental disclosure on average compared with firms that only have single or multiple prosecutions within the one year.

Several implications arise from the results so far. First, firms use environmental disclosure in a self-promoting manner disclosing almost solely positive or at the very least neutral items. The fact that those firms that have multiple prosecutions over numerous years give more positive and general environmental disclosure implies that firms use this disclosure as a form of impression management reinforcing their image as a good social and corporate citizen. This is done to counteract the negative impact that the prosecution. Second, this suggests a form of 'procrustean' disclosure where the information provided is stretched or squeezed to fit in with the view that managers think society wants to receive. The actual event narrative is then compiled to be consistent with this desired framework regardless of

⁸⁶ Deegan and Rankin, above n 1.

the actual facts (as with the BHP example). Stated simply, managers selectively disclose the bits they think are in accord with what society wants and/or put a positive slant on the bits that reflect poor or negative environmental acts (Boral and BHP examples).⁸⁷ Third, the problem with this image building approach especially by firms that have poor environmental performance is that it creates a credibility gap for environmental information. The information on the EPA prosecutions is publicly available and failure to provide any negative information is at odds with reality. As noted by Deegan and Rankin⁸⁸ this may impair the credibility of other (voluntary) information in the annual report. In order to counter this Beets and Souther⁸⁹ suggest that accounting firms should review and provide assurance services on environmental reports in an effort to increase the credibility of the disclosure. More to the point our view is that it may create a general reputation effect, which flows over to all companies that such information is only 'lip service'. Effectively this creates a 'lemons' problem in that investors and society are simply not able to distinguish between good and poor environmental firms on the basis of information in the annual reports it is unreliable.

Concerning the regulatory aspect our conclusion is that there is no adequate notification of EPA prosecutions in the annual reports. If this is considered desirable then it needs to be regulated. Furthermore, given present evidence, it is difficult to see how the disclosure under a voluntary regime would be better and it seems as if the voluntary disclosure has been unsuccessful in terms of the criteria of (i) providing adequate notification of negative environmental impact information and (ii) allowing the users of financial statements to adequately distinguish between good, moderate or poor environmental performance. In short, the submission comments to the PJSC as noted previously are viewed as a little misdirected to say the least.

The above discussion should not be taken to suggest that we are equivocally supporting blanket legislation for environmental reporting. Far from it, as noted in the PJSC submissions and the report conclusions there are many issues for and against the existing s299(1)(f) environmental legislation, not least being the fact that the existing legislation is poorly worded and incoherent as to what it requires in terms of disclosure. Associated with

⁸⁷ This is similar to the conclusion reached by Wiseman, above n 44, for the U.S. and Neu *et al.*, above n 42 for Canadian environmental disclosures.

⁸⁸ Deegan and Rankin, above n 1.

⁸⁹ Beets and Souther, above n 12.

this is that it is not clear what the benefits/costs of environmental disclosure are and/or whether it should even be contained in the annual report, the prime purpose of which is naturally to present material financial information and not be a vehicle for self-laudatory advertising. Frost and English (2002) discuss all these and the other arguments put forward in the PJSC submissions and summary.⁹⁰

5.4 Explanatory factors for the level of disclosure

As noted previously, inherent uncertainty about the materiality of environmental liabilities and the lack of formal reporting requirements leave managers with discretion regarding the nature and extent of environmental disclosure. Coupled with this, when parties external to the firm disseminate information about firm environmental performance (through EPA prosecutions) public awareness is increased of information, which was previously part of managers' private endowment. In these situations, there are obvious incentives for, and consequently increased environmental disclosures by the firm are expected.⁹¹ Many factors may induce voluntary reporting and we now conduct a brief exploratory analysis to see if the general level of environmental disclosure is influenced by some of the more obvious and identifiable factors. We examine several factors commonly noted in the literature. (i) The level of *negative signal or bad publicity* associated with the environmental infringement, (ii) the amount of *information asymmetry*, (iii) *proprietary costs* and finally, (iv) *firm size*.

Given the EPA prosecutions it is natural that these firms are under public scrutiny and firms are likely to provide positive general environmental news to counter the negative news of the prosecution.⁹² Presumably the greater the fine, the greater the level of environmental disclosure needed by the firm in an effort to compensate for the negative publicity, media interest and potential harm to firm reputation. The amount of the fine for the environmental infringement (*Fine*) may influence the level of disclosure as it represents the severity of the environmental breach, the prosecution and resulting sanction.

Economic analysis suggests that managers voluntarily disclose information when the benefits from disclosure outweigh the costs.⁹³ Specifically in the environmental information

⁹⁰ At the time of writing amendments to rescind s299(1)(f) of the *Corporations Law* have been put forward to be tabled in parliament a direct result of the recommendation of the PJSC that the section be removed. It seems Australia's flirt with mandatory environmental reporting requirements is nearly over at least for the moment.

⁹¹ Li *et al.*, above n 31.

⁹² Deegan and Rankin, above n 1.

⁹³ R. Verrecchia, 'Discretionary Disclosure' (1983) 8 *Journal of Accounting and Economics* 175-195.

area Li *et al.*⁹⁴ present evidence that managers reveal environmental information 'strategically', or to serve some ulterior purpose in addition to reducing any information asymmetry that exists between managers and current and potential investors and other users. The empirical proxy used here for *information asymmetry* is the extent of minority stakeholders. The extent of minority interest (*InfoAsy*) is measured as 100% minus the percentage of wholly owned subsidiaries.

Verrecchia⁹⁵ has shown that having substantial existing proprietary costs from competition accordingly discourages disclosure.⁹⁶ If the product market share of a few large firms in an industry is high, they dominate and this discourages a lack of product market competition in the industry. When product market share is limited or highly concentrated in a few firms there is low product market competition. So the lower the proprietary costs, as represented by low product market competition, then the more firms will voluntarily disclose information.⁹⁷ The measure used for *proprietary costs* is: 100% minus the industry concentration ratio percentage (*PropC*). The industry concentration ratio then is the percentage of sales revenue of the largest company in a given industry relative to total industry sales revenue. All sales revenues for companies and industries are as reported from the *Business Review Weekly: Top 1000*.

Empirical studies suggest that firm size is an important determinant of corporate policy choices. Lang and Lundholm⁹⁸ argue that the annual reports of larger companies are more likely to be scrutinised by financial analysts and have greater media attention than smaller entities. They are also more likely to be subject to regulatory scrutiny and political costs. Larger firms will disclose more environmental information in order to satisfy analyst demand, media attention and reduce political costs. The measure of *firm size* adopted is the

⁹⁴ Li *et al.*, above n 31.

⁹⁵ Verrecchia, above n 93.

⁹⁶ Here we concentrate on the competition aspect of proprietary costs. See Li *et al.*, above n 31 for a discussion of the many different proprietary costs relevant for different user groups with respect to environmental disclosure.

⁹⁷ Theoretical models of manager's disclosure decisions provide mixed directions between competition (proprietary costs) and disclosure. If managers through non-disclosure protect excess profits, then some models of voluntary disclosure predict a higher level of competition thus increasing disclosure (see for example, R. Hayes and R. Lundholm, 'Segment Reporting to the Capital Market in the Presence of a Competitor' (1996) 34 *Journal of Accounting Research* 261-279; and M.S. Harris, 'The Association between Competition and Managers' Business Segment Reporting Decisions' (1998) 36 *Journal of Accounting Research* 111-128). In other models firms provide more disclosure when there is less competition or rivalry, especially where there are existing competitors and they do not alter production levels in response to negative disclosures. (See, for example, Verrecchia, above n 93). The second situation is considered the most likely for environmental reporting but it is ultimately a contextual and empirical question.

⁹⁸ M. Lang and R. Lundholm, 'Cross-Sectional Determinants of Analyst Ratings of Corporate Disclosures' (1993) 31 *Journal of Accounting Research* 246-271.

natural logarithm of total firm value (*Size*). Firm value is the sum of market value of equity and the book value of total liabilities. The extent of general level of environmental disclosures (*GenEnv*) is measured by the total number of sentences of disclosure in the annual report.

Results of the association of the individual variables with *GenEnv* are given in Table V Panel A. The *GenEnv* variable is significantly negatively related to proprietary costs and positively related to firm size. The multivariate model in Table V Panel B confirms the univariate results and again that the level of general environmental disclosures is significantly negatively influenced by the extent of proprietary costs and significantly positively related to firm size. The variable *Fine* does not appear to be a good substitute for the resulting negative publicity or the seriousness of the prosecution. Contrary to our prediction *Fine* has a negative relationship with the level of disclosure (*GenEnv*) albeit not a significant one.

– **Insert Table V about here** –

Our finding of firms subject to lower proprietary costs providing more environmental disclosure is consistent with the work of *Li et al.*⁹⁹ although they do not measure proprietary costs explicitly preferring to impute them from the fact that the firms are prosecuted. More importantly the significance of the *Size* and *PropC* variables are in agreement with the impression management framework of *Neu et al.* as the relevant publics, i.e. the financial stakeholders and government, are likely to view environmental disclosure as more important for large firms and for firms in which there is low competition and hence greater abnormal profit. Environmental disclosure does have a multifaceted framework attempting to appease relevant users or publics.

6. Summary and conclusions

This paper examines the question of whether voluntary environmental reporting practices produce satisfactory information on environmental performance. As such we investigate the relationship between 'poor' environmental performance and the subsequent voluntary environmental disclosures in annual reports of Australian listed companies. 'Poor' environmental performance is defined as companies subject to an EPA prosecution between 1994 and 1998. Effective 1 July 1998, s299(1)(f) of the *Corporations Law* requires details of a company's performance in relation to environmental legislation to be included in the

⁹⁹ *Li et al.*, above n 31.

Directors' Report. Due to the ambiguity in how the provision is to be interpreted it was referred to the PJSC which recommended that s.299(1)(f) be deleted. As yet, this section has not been deleted.

Only one instance of specific disclosure relating to the EPA prosecution is found in this research. In their study of the 1990 – 1993 periods, Deegan and Rankin¹⁰⁰ report only two organizations made any reference to the EPA prosecution. This was out of 78 prosecutions by 20 companies. Consistent with Deegan and Rankin¹⁰¹ the vast majority of the disclosures on the environment related to general matter and for the most part are positive in nature. Very limited negative environment disclosure occurs. Broadly our results are similar to the Australian paper of Deegan and Rankin,¹⁰² Gamble *et al.*,¹⁰³ and the U.S. paper of Hughes *et al.*¹⁰⁴ Interestingly, companies that have been subject to multiple environmental prosecutions over the time period studied made significantly more environmental general and positive disclosures relative to companies that have a single environmental prosecution.

A significantly greater amount of environmental disclosure is found in the *non-audited* section of the annual report in contrast to the audited section of the annual report. Very little environmental disclosures are found in the Directors' or Chairman's Report. Most disclosure is located in the *Review of Operations* section and significantly more disclosure is provided in that section as compared to the other *non-audit* sections. The majority of environmental disclosure is concerned with the impact on firm operations and other items of environmental information disclosure are the minority.

An exploratory analysis of the factors that influence the general level of voluntary environmental disclosures, as provided by firms that have poor environmental performance, reveals that the level of voluntary environmental disclosures is negatively related to the extent of proprietary costs and positively related to firm size. Hence the smaller the magnitude of proprietary costs, as measured by the degree of product market competition in the industry, the greater the quantity of voluntary environmental disclosures.

¹⁰⁰ Deegan and Rankin, above n 1.

¹⁰¹ Deegan and Rankin, above n 13.

¹⁰² Deegan and Rankin, above n 1.

¹⁰³ Gamble *et al.*, above n 12.

¹⁰⁴ Hughes *et al.*, above n 6.

Overall, firms that have been prosecuted by the EPA have little disclosure either for the prosecution itself or concerning any environmental information with a negative impact. Hence, there has been no improvement in environmental disclosure following on from the previous evidence in Deegan and Rankin.¹⁰⁵ The credibility of environmental disclosure is generally low. This, of course, is with the proviso that one believes that this information is valuable. It follows that comments in the submission to the PJSC are demonstrated to be incorrect. Voluntary disclosure does not provide an adequate means of notification of the prosecutions. Further, there is evidence that the voluntary reporting does not in any way encourage poor performing firms to release information with a negative connotation.

Consistent with Neu *et al.*¹⁰⁶ our view is that environmental disclosure in its present form is simply a means of providing managers with the opportunity to send the 'right message' to financial stakeholders. Of particular importance is the fact that managers are engaging in impression management to convince the financial stakeholders, government and to a lesser extent the environmentalists that the firm is a 'good corporate citizen'. As such, managers engage in selective reporting of environmental information and facts, dictating which items they wish to release to the public while obfuscating and misrepresenting the negative environmental impact and performance of the firm.¹⁰⁷

Our results suggest further research is needed. One avenue is to examine whether the environmental disclosures of companies subject to an EPA prosecution increased after the 1 July 1998 following the introduction of mandatory environmental reporting through s299(1)(f). Another avenue is the association between environmental disclosures and economic performance of companies subject to an EPA prosecution. Of prime interest though would be research that examines the situations when, and reasons for, firms providing valuable information that relates to environmental performance rather than engaging in impression management techniques which alter user perceptions and/or simply change the focus of the users' attention.

¹⁰⁵ Deegan and Rankin, above n 1.

¹⁰⁶ Neu *et al.*, above n 42.

¹⁰⁷ See for example, Wiseman, above n 44.

TABLE I: Overall sample and summary statistics of environmental disclosure practices

	No. of Companies	No. of Annual Reports	No. of Prosecutions	Mean Specific Disclosure	Mean General Disclosure	Mean Positive Disclosure	Mean Negative Disclosures	Mean Neutral Disclosure
Panel A – Breakdown by Number of Prosecutions:								
Single Env Prosecutions	8	8	8	-	16.63	14.50	0.63	1.50
Multiple Env Prosecutions (within one year)	5	5	10	-	5.80	5.80	-	-
Multiple Env Prosecutions (across many years)	7	16	20	0.25	29.63	22.13	3.31	4.19
<i>Total</i>	<i>20</i>	<i>29</i>	<i>38</i>	<i>0.14</i>	<i>21.93</i>	<i>17.21</i>	<i>2.00</i>	<i>2.72</i>
<i>Tests of differences in disclosure between categories of number of prosecutions:</i>								
<i>K-W test (p-value)</i>					9.69 (0.008)	5.65 (0.059)	9.09 (0.011)	7.48 (0.024)
Panel B – Breakdown by Annual Report Category:								
Initial Report	20	20	27		15.70	13.10	1.25	1.35
Subsequent Report	-	9	11	0.44	35.78	26.33	3.67	5.78
<i>Total</i>	<i>20</i>	<i>29</i>	<i>38</i>	<i>0.14</i>	<i>21.93</i>	<i>17.21</i>	<i>2.00</i>	<i>2.72</i>
<i>Tests of differences in disclosure between annual report categories:</i>								
<i>K-W test (p-value)</i>					6.02 (0.014)	4.61 (0.032)	4.60 (0.032)	4.16 (0.041)

Notes to Table:

The prosecution types are defined as follows:

Single Environmental Prosecutions: only one EPA prosecution and within a single year.

Multiple Environmental Prosecutions within one year: multiple EPA prosecutions all within one year.

Multiple Environmental Prosecutions across many years: multiple EPA prosecutions over numerous years.

Initial Report: Annual report associated with initial prosecutions.

Subsequent Report: Annual report associated with subsequent prosecutions.

K-W test: Kruskal-Wallis test for differences between various category groups.

TABLE II: Summary descriptive statistics on the extent of environmental disclosure for various locations within the annual report

Location	Mean	Median	Std.Dev.	Max	IQR
Financial statements	1.14	1.00	1.25	3.00	2.00
Footnotes	3.41	2.00	4.41	16.00	6.00
<i>Audited</i>	<i>4.55</i>	<i>4.00</i>	<i>4.82</i>	<i>16.00</i>	<i>8.00</i>
Directors' report	0.76	0.00	1.57	6.00	0.50
Chairman's report	0.48	0.00	1.35	7.00	0.50
<i>Non-review</i>	<i>1.24</i>	<i>0.00</i>	<i>2.64</i>	<i>13.00</i>	<i>1.50</i>
Review of operations	16.14	9.00	18.88	76.00	20.50
<i>Non-audited</i>	<i>17.38</i>	<i>9.00</i>	<i>19.25</i>	<i>81.00</i>	<i>19.50</i>
<i>Total Disclosure</i>	<i>21.93</i>	<i>18.00</i>	<i>20.92</i>	<i>90.00</i>	<i>23.50</i>

Notes to table:

The locations are defined as follows:

Total disclosure:	Total environmental disclosures in the annual reports.
Non-audited:	Total environmental disclosures in the non-audited section.
Audited:	Total environmental disclosures in the audited section of the annual report.
Non-review:	Continuous variable measuring the environmental disclosures in the non-audit section excluding the 'Review of operations' section.
Review of operations:	Environmental disclosures in the 'Review of operations'.
Chairman's report:	Environmental disclosures in the Chairman's Report.
Directors' report:	Environmental disclosures in the Directors' Report.
Financial statements:	Environmental disclosures in the income statement, balance sheet and statement of cash flows.
Footnotes:	Environmental disclosures in the notes to the financial statements.

TABLE III: Comparison of differences in environmental disclosure across selective locations in the annual report

Location Disclosures	Mean Difference	Median Difference	Std.Dev. Difference	IQR Difference	No of +/- Ranks	Wilcoxon Test
<i>Non Audited–Audited</i>	12.83	7.00	18.71	14.00	(+) 25 (-) 3	3.57 (<0.000)
<i>Review–Non Review</i>	14.90	9.00	18.87	22.50	(+) 26 (-) 1	4.18 (<0.000)

Notes to Table:

Audited–Non-Audited: Differences between audited and non-audited section of the annual report.

Review–Non Review: Differences between review of operations and other sections (non-review of operations) in the non-audited location of the annual report.

No. of +/- Ranks: Number of positive (+) and negative (-) ranks out of a total of 29 that occur from matched differences between the locations. The remainder (out of 29) represents ties.

TABLE IV: Mean environmental disclosure categories across different annual report locations

Location	Environmental Rule	Activity/Operating Performance	Activity/Financial Performance	Liability/Expense Recognition	Accounting Policy	Other Disclosure	Total Mean Disclosure
Financial statements	-	-	-	1.14	-	-	1.14
Footnotes	0.62	0.45	0.34	0.93	1.07	-	3.41
<i>Audited</i>	<i>0.62</i>	<i>0.45</i>	<i>0.34</i>	<i>2.07</i>	<i>1.07</i>	-	<i>4.55</i>
Directors' report	0.14	0.38	0.03	0.04	-	0.07	0.76
Chairman's report	0.03	0.38	0.03	-	0.04	-	0.48
<i>Non-review</i>	<i>0.17</i>	<i>0.86</i>	<i>0.06</i>	<i>0.04</i>	<i>0.04</i>	<i>0.07</i>	<i>1.24</i>
	<i>2.90</i>	<i>11.59</i>	<i>0.59</i>	<i>0.58</i>	-	<i>0.48</i>	<i>16.14</i>
<i>Non-audited</i>	<i>3.07</i>	<i>12.45</i>	<i>0.65</i>	<i>0.62</i>	<i>0.04</i>	<i>0.55</i>	<i>17.38</i>
Total Disclosure	3.69	12.90	0.99	2.69	1.11	0.55	21.93

Notes to table:

Locations are defined as in Table III.

Category disclosure is as follows:

- Environmental Rules: Note that the company is subject to environmental rule and/or policy even if self imposed.
- Activity/Operating Performance: Statement about environmental activities and potential impact on company operating performance.
- Activity/Financial Performance: Statement about environmental activities and potential impact on company financial performance/position.
- Liability/Expense Recognition: Comment about existing environmental liability/expense recognition.
- Accounting Policy: Environmental issues and impact on accounting policy.
- Other Disclosure: Miscellaneous other environmental disclosure such as audits, pollution abatements, vision; strategic plan etc.
- Total Disclosure: Total mean environmental disclosures across all locations.

.TABLE V: Summary descriptive statistics for the independent variables and tests of association

Panel A – Variable statistics and univariate tests:

Variable	Expected Sign	Mean	Median	Std.Dev	IQR	ρ_s
<i>Fine</i> (\$000)	(+)	15.66	7.00	19.29	23.00	-0.014 (0.941)
<i>InfoAsy</i> (%)	(+)	14.10	14.20	10.69	10.61	+0.224 (0.243)
<i>PropC</i> (%):	(-)	56.53	51.47	19.47	31.53	-0.708 (<0.000)
<i>Size</i> (<i>ln</i>)	(+)	21.51	21.81	1.84	2.31	+0.662 (<0.000)

Panel B – Regression analysis:

Equation: $Ln(GenEnv)_i = 0.269 - 0.009 Fine_i + 1.487 InfoAsy_i - 2.76 PropC_i + 0.180 Size_i$

t-test:	0.11	-1.12	0.92	-2.74	1.77
p-value (one-tail):	(0.455)	(0.137)	(0.184)	(0.006)	(0.046)

Adjusted R^2 : 0.42 F-stat (p-value): 5.89 (0.002)

Notes to table:

ρ_s : Spearman rank correlation coefficient (p-value in parentheses) between variables and level of environmental disclosure (*GenEnv*).

Variables are defined as follows:

GenEnv (*ln*): Natural log of the number of sentences of general environmental disclosure.

Fine (\$000): Dollar value (000's) amount of fine imposed by EPA for each report period.

InfoAsy (%): 100 – % of wholly owned subsidiaries.

PropC (%): 100 – % of market share of the largest company in the industry.

Size (*ln*): Natural log of the sum of the market value of equity plus book value of liabilities.

Appendix A- List of Companies

Parent Entity	Company Fined	State	Fine	Fine Year	Act
Abigroup		NSW	\$ 25,000	1997	CWA
Amcor		VIC	\$ 5,000	1996	EP ACT/CWA
Amcor		VIC	\$ 6,000	1998*	EP ACT/CAA
AV Jennings Homes	Jennings Group	VIC	\$ 500	1997	LITTER
Broken Hill Proprietary Company (BHP)	Australian Iron and Steel	NSW	\$ 30,000	1994	CAA
BHP	BHP Pty Co	NSW	\$ 7,500	1994	CAA
BHP	BHP Pty Co	NSW	\$ 15,000	1994	CWA
BHP	BHP (AIS) Steel	NSW	\$ 25,000	1995*	PCA
BHP	Amcast Foundry	VIC	\$ 4,500	1995*	CWA
BHP	BHP Steel	NSW	\$ 25,000	1996*	CAA
BHP	BHP Steel	NSW	\$ 27,000	1997*	CWA
Boral	Hi-Quality Concrete	NSW	\$ 250	1994	CAA
Boral	Boral Victoria	VIC	\$ 5,000	1997*	EP ACT/CWA
Brambles Industries	Brambles Australia	VIC	\$ 1,500	1994	EP ACT
Brambles Industries	Movements International Movers	NSW	\$ 3,000	1997*	CAA
Burns Philip & Co	Terminals	VIC	\$ 8,000	1996	EP ACT/CAA
Caltex	Caltex Refining Co	NSW	\$ 10,000	1995	PCA
Caltex	Caltex Refining Co	NSW	\$ 5,000	1995	PCA
CSR		VIC	\$ 7,000	1995	CAA
CSR	Softwood Holdings	VIC	\$ 5,000	1998*	EP ACT
CSR	Readymix Group	NSW	\$ 250	1998*	CAA
George Weston Foods		NSW	\$ 5,000	1998	CWA
Goodman Fielder	Meadow Lea	VIC	\$ 2,500	1997	EP ACT/CWA
Goodman Fielder	Leiner Davis	QLD	\$ 50,000	1997	EP ACT
Incitec		NSW	\$ 1,500	1997	CAA
Joe White Maltings		NSW	\$ 1,000	1996	CWA
Joe White Maltings		NSW	\$ 1,000	1996	CWA
Kolback Group	Camide	NSW	\$ 1,000	1997	PCA
McConnell Dowell Corp	McConnell Dowell Constructions	NSW	\$ 10,000	1997	CWA
McConnell Dowell Corp	McConnell Dowell Constructions	NSW	\$ 10,000	1997	CWA
Metal Manufactures		NSW	\$ 25,000	1996	CWA
Metal Manufactures		NSW	\$ 30,000	1997*	CWA
Normandy Mining	Kalgoorlie Consolidated Gold Mine	WA	\$ 2,000	1998	EP ACT
Pacific Dunlop	Pacific Dunlop Tyres	VIC	\$ 1,500	1995	CWA
Pioneer International	Ampol	NSW	\$ 75,000	1995	EOPA
Pioneer International	Pioneer Road Services	NSW	\$ 10,000	1995	CWA
Wesfarmers	CSPB and Farmers	WA	\$ 10,000	1994	EP ACT
Wesfarmers		WA	\$ 14,000	1997*	EP ACT

Notes to appendix:

PCA = Pollution Control Act.

CAA = Clean Air Act.

CWA = Clean Water Act.

EOPA = Environmental Offences and Penalties Act.

EP ACT = Environment Protection Act.

Litter = Litter Act.

*Indicates annual report years that are excluded from the initial report group.