The State of Sustainability Reporting in Australian Universities: Overall and Across Different Categories

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Abstract

Over the last decades, sustainability reporting (SR) has gained importance in line with the environmental movements advocating sustainable organisational development. Within this context, universities as one of the main stakeholders of higher education sector (HES) are expected to be at the forefront due to its foremost educational role. The recent literature indicates that the university sector has increasingly embraced sustainability in their curricula, research, operations and reporting. However, there is still little study done on the SR practice made by Australian universities, and therefore, the state of SR in Australian universities is still unclear.

The present study investigates the state of SR in Australian universities through examining the extent of sustainability disclosure in three major reporting media, namely stand-alone sustainability reports, annual reports and official websites. This is also the first study that compares and contrasts the state of SR in Australian universities based on several university categories, including university grouping (i.e., Group of Eight (Go8), Australian Technology Network (ATN), Innovative Research Universities (IRU), and Regional Universities Network (RUN)), year of establishment (i.e., Sandstone Universities and Young Universities under 50), and geographical location, striving for more insight.

Using the Graphical Assessment of Sustainability in Universities (2011) as a set of sustainability reporting guidelines and scoring index adopted from Djajadikerta and Trireksani (2012), this study applies a content analysis approach to analyse the extent of sustainability disclosure made by Australian universities. The Mann-Whitney test and descriptive statistics were employed for analysing the results.
This study finds that the extent of sustainability disclosure made by Australian universities is still overall low, indicating that the state of SR in Australian universities is still at infant stage. The results also reveal that there is no difference in the extent of sustainability disclosure among various university groups and between the older and younger Australian universities. However, significant differences are found in the state of SR among Australian universities at different geographical locations.

This study contributes to the limited SR research in the HES, particularly within the context of Australian universities. The research findings could assist Australian universities to understand the current state of SR for their future planning. Potentially, local governments and policymakers could also use the findings from this study for their future sustainability-related policy or strategy.
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1. Introduction

1.1 Sustainable Development

During the past few decades, the idea of sustainable development has grown as a result of numerous environmental movements in recognition of the negative impacts from industrial revolution on natural environmental, human and ecological health (Sustainable development 2018; Permaculture Research Institute 2018; Gilman 1996). This has led to increasing attention on how to transform human development to embrace sustainability in order to solve the global problems of environmental degradation and socio-economic issues related to poverty and inequity for a sustainable future (Williams 2011, 176; Permaculture Research Institute 2018).

Since sustainable development is regarded as a solution to these fundamental challenges of humanity, sustainable development has been acknowledged globally of its importance to date (Hopwood et al. 2005; as cited in Williams 2011; Permaculture Research Institute 2018; Gilman 1996).

Sustainable development does not have a universally agreed definition. The United Nations World Commission defines the most common definition on Environment and Development (WCED) in the Brundtland Report as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987). The sustainable development incorporates three components – environmental protection, economic development and social development, which are interconnected and can be mutually reinforced as three pillars of sustainability (UN 2005). With the increased awareness of sustainable development, corporate sector experiences growing expectations and pressures from society to incorporate sustainability into their business operations (Ong et al. 2016; Hinson et al. 2015). Many companies have disclosed sustainability-related
information to demonstrate their contribution to sustainability (Ong et al. 2016; Hinson et al. 2015; Djajadikerta and Trireksani 2012). This practice has attracted increased research interests on the disclosure of sustainability-related information made by different industry-specific contexts (Ong et al. 2016; Hinson et al. 2015; Djajadikerta and Trireksani 2012).

University sector has been recognised as playing a pivotal role in promoting sustainable development as universities educate society how to address the global sustainability challenges (Sassen and Azizi 2018; Brusca et al. 2018; An et al. 2017; Gamage and Sciulli 2017; Fonseca et al. 2011), and therefore, the increasing expectations from their stakeholders, such as academic staff, students, parents, government and local communities, request universities to be the forefront addressing these issues (Sassen and Azizi 2018; Brusca et al. 2018; An et al. 2017; Gamage and Sciulli 2017; Fonseca et al. 2011).

1.2 Sustainability Reporting (SR)

Increasing awareness of sustainable development has led to more significant concerns about whether an organisation’s everyday business operations are aligned with sustainability. The worldwide communities request organisations to show better transparency, accountability, and higher stakeholder engagement through undertaking sustainability reporting to disclose the impact of their daily activities on economic, social, and natural environments (Ceulemans et al. 2015; Daub 2007). The importance of SR has been emphasised by increasing criticism towards traditional financial reporting framework which is considered to be giving an incomplete account of business operations as it provides insufficient information of an organisation’s social and environmental activities (Farneti and Guthrie 2009). Sustainability reporting techniques are regarded as a potential method of progressing
sustainable development agenda (Brusca et al. 2018; Sassen and Azizi 2018; Ceulemans et al. 2015; Guthrie et al. 2010; as cited in Williams 2011).

A sustainability report is an organisational report used to communicate an organisation’s sustainable development of the local economy, society, and natural environment with its stakeholders. Sustainability reporting can also show an organisation’s values, goals, and commitments towards a more sustainable world. Sustainability reporting is sometimes used interchangeably with other terms, such as “triple bottom line reporting”, “corporate social responsibility (CSR) reporting”, and “integrated reporting” because SR involves disclosing information on multiple dimensions, likely to associate with an organisation’s economic performance, social performance and environmental impacts (Vaughter et al. 2016; as cited in Sassen and Azizi 2018, 101). Since sustainability reporting offers organisations the possibility to transparently communicate their business performance and impacts to various stakeholders, to engage with stakeholders and to address stakeholders’ concerns (Ceulemans et al. 2015; Joseph 2012), sustainability reporting has steadily increased in importance among business entities, academic and practitioners (Djajadikerta and Trireksani 2012).

In practice, sustainability reporting rate has been growing in private sector worldwide (Lipunga 2015; Campopiano and De Massis 2015; Faisal and Rusmin 2012). Between the year 2011 and 2013, the sustainability reporting rate of S&P 500 companies increased significantly from 20% to 72% (EY 2014). Between the year 2013 and 2017, global 4900 companies comprising the 49 different countries’ top 100 companies are found to have a consistent over 70 per cent reporting rate (KPMG 2017). In 2017, 95 per cent of the largest 250 companies worldwide issued a corporate responsibility report (KPMG 2017, 10). Sustainability reporting has
become a “mainstream business practice” (EY 2014, 4) and regarded as a norm, instead of an expectation (Hinson et al. 2015). Failure to catch up with this reporting trend could negatively impact a company’s image, reputation, and even capital raising ability (EY 2014, 4). Therefore, recent studies have regarded SR as a significant research topic worth investigating (Ong et al. 2016).

1.3 Backgrounds

Following the higher rate of sustainability reporting, more and more research examines the state of sustainability reporting practices focusing on various industry sectors, such as public sector (Otheman et al. 2017; Alcaraz-Quiles et al. 2015), non-governmental organisation and multinational corporation (Crespy and Miller 2011), or different national context, such as Ghana (Hinson et al. 2015), India, the USA (Tuli 2013), and Canada (Fonseca et al. 2012; Sassen and Azizi 2018). However, the number of research on public sector is found to be little when compared with for-profit organisations (Hahn and Kuhnen 2013; as cited in Ceulemans et al. 2015). An et al. (2017, 2) contend that it is not sensible to have little literature on public sector organisations as they account for approximately forty per cent of total economic operations. Not to say that public sector should share the same concerns towards sustainability simply for fairness (Ceulemans et al. 2015; Crespy and Miller 2011).

While the public sector connects with sustainability issues through shaping how people live (Adams et al. 2014; as cited in Otheman et al. 2017), the higher education sector shapes people’s mind towards sustainability through education. However, even less literature examines the perspective of university sector about SR issues than the public sector. Therefore, increasing studies call for more attention on university sector (Sassen and Azizi 2018; Gamage and Sciulli 2017; An et al. 2017; Hinson et al. 2015; Fonseca et al. 2011; Lozano 2011). Although the majority of
university sector belong to the public sector, universities are often regarded as an individual research focus in practice due to their main educational role (Ceulemans et al. 2015). Most of the existing SR studies on university context are of an exploratory nature (Fonseca et al. 2011).

University sector is considered significant in promoting sustainability because its daily operation is to educate future leaders. Research shows that “2% of the world population attend higher education but more than 80% of the decision-makers in industry, community, and in politics are graduates of universities” (Scott et al. 2012; as cited in Gamage and Sciulli 2017, 188). Universities could educate future leaders to “think and behave in a sustainable manner in a future career, and this would consequently promote the society as a whole to achieve the goal of sustainability” (An et al. 2017, 1). The significant position of education sector as a dominant driver of corporate sustainability has been recognised by the United Nations Global Compact, the most significant corporate sustainability initiative of the world (UN Global Compact 2018). In response to this recognition, the United Nations Global Compact launched the Principles for Responsible Management Education (PRME) during the UN Global Compact Leaders Summit in Geneva in 2007 (UN Global Compact 2018). The purposes of PRME are to create awareness on the campus, to assist universities achieving sustainable development goals, to nurture future responsible leaders and to help sustainability responsible business in recruiting suitable talent from the campus (UN Global Compact 2018). Currently, there are more than 650 higher education institutions across 85 countries participating in the PRME initiative (UN Global Compact 2018). These global higher education institutions committed to incorporate sustainability into teaching, academic activities, research and industry collaboration, and to regularly disclose the related progress to their stakeholders (PRME 2017). As a result, higher education sector is
expected to act like the forefront to powerfully promote and support sustainable development and related reporting practices (Sassen and Azizi 2018).

Further, universities are recognised as influential in economic prosperity and social well-being through supporting regional economies and providing national and local employment opportunities, research, and industry collaboration (University Australia 2014). The significant role of universities to promote and showcase sustainability reporting has shown a substantial need for more studies to examine the state of sustainability reporting practices by universities. In response to this need, increasing sustainability reporting studies focus on the universities’ practice (e.g., Fonseca et al. 2011; Hinson et al. 2015; An et al. 2017; Sassen and Azizi 2018) including the present study. The present study aims to acquire more insights into the state of SR in Australian universities by investigating the extent of sustainability disclosure made by Australian universities in three major reporting media, namely stand-alone sustainability reports, annual reports and official websites.

1.4 Research Questions

1.4.1 The State of SR in Australian Universities

Prior researchers have suggested that the state of sustainability reporting may be country-dependent (Farneti and Siboni 2011; Fonseca et al. 2011; Kabir and Akinnusi 2012; García-Sánchez et al. 2013a; Bhatia and Tuli 2014; Bhatia and Chander 2014) as organisations in different countries would “face an economic and cultural environment, moral judgment, political systems, and civil systems, specific to that country” (Djadjikerta and Trireksani 2012, 22). The present study chooses to examine the practices made by Australian universities for several reasons.
Firstly, only a few sustainability reporting studies in universities focused on the Australian context (Gamage and Sciulli 2017) with most of the attention placed on other western developed countries, such as the US and Canada (e.g., García-Sánchez et al. 2013b; Fonseca et al. 2011). Therefore, the present research examines the state of SR in Australian university in an attempt to narrow the gap in the literature.

Secondly, a clear relationship between a country’s economic growth and prosperity, and the strength of the university sector in that specific country is identified by prior literature (Elnasri and Fox 2014, Holland et al. 2013, and Veugelers and Del Rey 2014; as cited in Deloitte Access Economics 2015). Especially, universities in Australia are regarded to have significant influences on their local economy. Deloitte Access Economics (2015) estimated that around $140 billion in GDP, 8.5% of Australia’s GDP, was contributed by Australian universities in 2014; more than 120,000 full-time equivalent staff were employed, and Australian universities educated almost 1.3 million students in 2015. Moreover, Australian universities have the third highest number of international students in the world, only behind the UK and the US (Commonwealth of Australia 2015). Their operational activities not only have significant impacts on the local communities but also on the international society.

Thirdly, there is a lack of study to thoroughly examine sustainable development performance disclosed by Australian universities through all three major reporting media, namely stand-alone sustainability reports, annual reports, and websites. Prior studies have solely focused on one medium in the samples, and excluded other reporting media, for example, Gamage and Sciulli 2017 aiming only the stand-alone sustainability reports and Sanchez et al. 2015 focusing on the websites. This would be likely to result in the reduction of accuracy and completeness of findings. In an
attempt to enhance the SR measurement, the present study includes all three major reporting media in the samples.

Last but not least, the Australian education system has undergone far-reaching reform of incorporating sustainability criteria into curriculum, campus, and research, through initiating “a sustainable higher education system” (Department of Education and Training 2015). Australian government’s awareness of the higher education system’s role in sustainable development has positively influenced local universities’ willingness to take part in many sustainability initiatives. For instance, almost half of the Australian universities (19 universities) are the members of Green Building Council Australia (GBCA) striving for being a greener university through adopting green building practices (GBCA 2015). More than half of Australian universities (22 out of 39 Australian Universities) have taken part in the Principles for Responsible Management Education initiative (PRME) (PRME 2017). The 22 signatory universities of PRME are committed to regularly report the progress of their sustainable development with their stakeholders (PRME 2017). These indicate a possibility of significant sustainability-related information disclosed by Australian Universities. Due to the relevancy of sustainability reporting to Australian Universities, the present study strives to investigate and understand the first Research Question (RQ):

RQ1. What is the current state of SR in Australian universities?

1.4.2 University Categories and the State of SR

The second research question comes from the notion that based on various reasons, universities form varieties of groups, aiming to add value through grouping. Member universities within the same group tend to share the same quality, strength, focus,
goal, or value, and brand the group accordingly. The group formation is considered as a brand to differentiate them from other counterparts and to create competitive advantages within the competitive market (Ferrer and Morris 2013). The following are the university categories used in this study.

**University Grouping**

*i. Group of Eight (Go8)*

The Group of Eight universities is formed by eight research-intensive Australian universities aiming to brand themselves as elite universities in order to differentiate themselves from other universities regarding mission and quality, as well as to intensify the world’s investment in them as leading universities (Breithaupt and Caddick 2008).

*ii. Australian Technology Network (ATN)*

Australian Technology Network of universities is formed by five innovative and enterprising universities with strong industry linkage to provide real-life knowledge, training, and research (ATN 2018).

*iii. Innovative Research Universities (IRU)*

Innovative Research Universities consists of seven universities with shared commitments to advance global and local communities through the provision of excellent teaching, learning and research on the Australian campus (IRU 2018).

*iv. Regional University Network (RUN)*

Regional University Network is established by six regional universities with a shared goal to transform their regions positively (RUN 2018). Through grouping, the individual university could work collectively with other universities to achieve a
common goal.

**Geographical Location**

Universities within the same geographical location face the same economic, political, and cultural backgrounds with the same or similar factors to influence their decision-making or goal-prioritising towards sustainability-related issues.

**Year of Establishment**

Apart from network grouping and campus location, there is a category of universities based on age. Sandstone Universities (SU) is formed by older universities, in comparison to Young Universities under Fifty Years Old. The age-based classification has been recognised to have distinguishing features, including organisational commitment, stress, and satisfaction (Winefield et al. 2003, Tytherleigh et al. 2005; as cited in Ferrer and Morris 2013).

Overall, an analysis based on these university categorisations by their network formation, geographical location, and year of establishment is important in order to get more insights into the SR practices in Australian universities. Hence the second research question is as follows.

**RQ2. Are the states of SR at various categories of Australian universities different?**

**1.5 Objectives of the Study**

1. To investigate the current state of sustainability reporting performed by Australian universities in the stand-alone sustainability reports, annual reports, and on the official websites.
2. To compare and contrast the state of sustainability reporting performed by different Australian university categories in the stand-alone sustainability reports, annual reports, and on the official websites.

1.6 Significance of the Study

Due to currently limited SR literature in the Australian university context, the current study aims to narrow the gap in the literature through comprehensively and thoroughly examining the extent of sustainability disclosure performed by Australian universities through three major reporting media: stand-alone sustainability reports, annual reports, and official websites. This study is also the first to compare and contrast different Australian university categories concerning their state of SR in an attempt to strive for insights on the relationship between the state of SR and various university classifications, such as university grouping, year of establishment, and geographical location.

As classification represents categorising universities into different groups by specific shared characteristics, results finding could signify linkage between particular characteristics and specific sustainability disclosure practices. Besides, results found in single university’s practices may be an exception, and not necessarily being able to apply to other universities. Examining group-shared practices could provide potentially greater credibility.

The findings could assist Australian universities and university groups to benchmark their performance with other counterparts and provide potential directions for improvement through identifying the strength and weakness with their SR practices. Many universities’ daily house population is equivalent to a small town (Bice and Coates 2016). The study could assist local governments and policymakers in
implementing sustainability-related policy or project as university sector has a significant potency to be one of the targeted groups substantial to the policy or project implementation (Bice and Coates 2016). Through comprehensive understanding gathered from the study, local governments and policymakers can effectively utilise resource, policy or strategy to achieve sustainable development goals.

The next chapters are arranged as follows. Chapter 2 provides a review on the relevant literature related to the present research, including the relevant theoretical frameworks applied in the study, previous research related to SR practices, backgrounds of Australian university categories, and formation of hypotheses for the research. Chapter 3 provides the description of the research methods. This is followed by the discussion of the findings. Chapter 4 consists of conclusions, limitations, and recommendations for future research.
2. Literature Review

2.1 Theoretical Framework

Sustainability reporting has become a focused area of accounting research over the past decade (Aribi and Gao 2010). Due to the voluntary nature of SR, some researches focus on various theoretical perspectives to be applied in the study to explain the SR practices performed by organisations (Aribi and Gao 2010). Sassen and Azizi (2018) seek to rely on stakeholder theory, legitimacy theory, and critical perspectives on voluntary disclosure to explain the SR practices performed by Canadian universities through stand-alone sustainability reports. Hinson et al. (2015) contend that a combination of stakeholder and institutional theories is useful to explain the involvement of Ghanaian universities in the SR activities through annual reports and websites. Among these theories, no single theory is considered universally accepted or consistently supported by prior studies as all theories provide persuasive reasons to justify the adoption of sustainability disclosure (Deegan 2002; Kabir and Akinnusi 2012). Besides, SR practices are considered too complex to be explained thoroughly by a single theory (Gray et al. 1995b; as cited in Fernando and Lawrence 2014).

Among these theories, political economy theories, including institutional theory, stakeholder theory, and legitimacy theory, are regarded as having “more ability to provide insightful theoretical perspectives” on sustainability reporting practices than “purely economic theories do” (Fernando and Lawrence 2014, 152) with significant relationship between each other in relation to SR practices (Deegan 2009; as cited in Fernando and Lawrence 2014). The three relevant theories in understanding SR perspectives are discussed below.
2.1.1 Legitimacy Theory

Legitimacy theory indicates that organisations do not own any inherent right to exist (Deegan 2002; Faisal and Rusmin 2012). Organisations’ existence is to the extent that they are perceived “legitimate” by society (Deegan 2002; Faisal and Rusmin 2012). As a result, “organisations continually attempt to ensure that they are perceived as functioning within the bond and norms of the society in which they operate” (Deegan 2009, as cited in Fernando and Lawrence 2014, 152). The concept of “legitimacy” is related to the concept of “social contract” (Deegan 2002, 293). An organisation has to comply with the “social contract” through operating its business in a socially responsible manner, simply, consistent with the expectation of society, and then society will confer the right for the organisation to exist (Deegan 2002; Kabir and Akinnusi 2012). Where the operations are unacceptable or not legitimate, “society will effectively revoke the organisation’s contract to continue its operations” (Deegan 2002, 293).

The literature shows that organisations tend to disclose positive sustainability-related news rather than negative ones (Gray et al. 2010), which implies that various organisations have used SR as a strategy to communicate their legitimate performance and gain business advantages as being seen doing “the right thing” (Deegan 2002, 290). García-Sánchez et al. (2013b) found that best universities, based on the Shanghai Ranking, including both public and private universities, are highly interested in sustainability reporting to legitimise their images. An et al. (2017) suggest that the strong commitments of New Zealand universities towards SR improvement show that SR is a useful medium for university sector to obtain legitimacy and be regarded as a socially responsible organisation with a legitimate operation. Prior literature indicates that universities have been assigned the third
mission, which comprises “technology transfer and innovation, continuing education, and social engagement” (Secundo et al. 2016; as cited in Brusca et al. 2018, 349). Thus, universities have to utilise SR as a tool to fulfil the demand of their third mission (Brusca et al. 2018).

In applying legitimacy theory in the area of sustainability reporting, “vagueness” (Fernando and Lawrence 2014, 155) is found to be the major limitation as it does not “really tell[s] us very much about why organisations might choose not to disclose at all or to necessarily tell us why disclosure might be so selective” (Gray et al. 2010, 29). However, the limitation does not restrict the application of legitimacy theory in SR research (Fernando and Lawrence 2014). Legitimacy theory has been found to be “the most employed theoretical perspective” in the SR studies (Fernando and Lawrence 2014, 155).

2.1.2 Stakeholder Theory

Apart from legitimacy theory, stakeholder theory argues that organisations are responsible and accountable to their stakeholders, rather than just shareholders (Kabir and Akinnusi 2012). A stakeholder is “any group or individual who can affect or is affected by the achievement of the organisation’s objectives” (Freeman 1984, 46; as cited in Kabir and Akinnusi 2012). Following the perspective of stakeholder theory, organisations have to meet expectations of their various stakeholder groups, most of the times, conflicting expectations, through performing activities deemed relevant by the stakeholders, and disclosing that information to satisfy them (Fernando and Lawrence 2014). Sanchez et al. (2015) identify the primary stakeholders of Australian universities are teachers, students, researchers and other university employees. Australian universities seek to improve accountability and transparency of sustainability-related information by interacting with stakeholders
and addressing their concerns (Sanchez et al. 2015). Stakeholder theory contains two perspectives, Ethical (moral or normative) perspective and Managerial (positive) perspective. The prior perspective suggests that all stakeholders have the same right and organisations have responsibilities to treat all stakeholders’ expectations fairly and equally; the latter perspective asserts that the focus of organisations is to manage the expectations of salient and economically powerful stakeholders, instead of all the stakeholders (Fernando and Lawrence 2014).

Like legitimacy theory, stakeholder theory has been widely applied to SR studies in different context (Fernando and Lawrence 2014). Different from the ethical perspective of stakeholder theory, the managerial perspective of stakeholder theory is frequently tested by empirical studies (Deegan 2009, as cited in Fernando and Lawrence 2014). Funding providers as influential stakeholders can positively or negatively influence the operations of Australian universities (Sanchez et al. 2015). Fonseca et al. (2011) contend that stakeholder groups of sustainability offices and student customers are essential forces driven Canadian universities’ SR practices. The latest study shows that the primary interests of Canadian universities’ stand-alone sustainability reports are to address the concerns of their students and research stakeholder groups (Sassen and Azizi 2018). Student group as a customer of the higher education system is regarded by both studies as a salient stakeholder group influencing SR practice on the Canadian campus (Sassen and Azizi 2018; Fonseca et al. 2011).

2.1.3 Institutional Theory

Institutional theory explains the homogeneous characteristics and behaviours of organisations in the same field (Fernando and Lawrence 2014) because they operate “within a social framework of norms, values, and taken-for-granted assumptions
about what constitutes appropriate or acceptable economic behaviour” (Carpenter and Feroz 2001, 565; as cited in Fernando and Lawrence 2014, 162-163). According to institutional theory, organisations would choose to conform to the social norms, values and adhere to the socially acceptable behaviours and practices possibly due to “institutional pressure for change” and also because “they are rewarded for doing so through increased legitimacy, resources, and survival capabilities” (Scott 1987, 498; as cited in Fernando and Lawrence 2014, 163). Deegan (2009; as cited in Fernando and Lawrence 2014, 165) contends that engaging voluntarily in sustainable development and related reporting activities is considered as part of institutional practices.

Institutional theory identifies three types of isomorphic processes influencing organisations to conform to certain societal expectations existed in their field for the reason of survival (Fernando and Lawrence 2014). They are coercive isomorphic process, mimetic isomorphic process, and normative isomorphic process. The first coercive isomorphic process is the pressure from the expectations of organisations’ most critical and influential stakeholders, who have paramount importance to organisations as they possess the power to influence the organisations (Fernando and Lawrence 2014). The second mimetic isomorphic process refers to institutional practices copied from other organisations within the same sector in order to obtain competitive advantage resulted from uncertainty existed in the operating environment (Fernando and Lawrence 2014). The final normative isomorphic process refers to the adoption of specific institutional practices by organisations as a result of conforming to common values, or professional expectations existed in their professional field (Fernando and Lawrence 2014). All these three processes lead organisations to adopt similar practices in their professions regardless of actual benefits or usefulness (Fernando and Lawrence 2014).
In line with institutional theory, various reasons or pressures force organisations to perform socially accepted practices and procedures, “through coercion, through imitation, and through normative pressure” (Fernando and Lawrence 2014, 165). Organisations would change their behaviours, such as SR practices adoption, and hope through meeting the salient stakeholders’ expectations, through imitating other counterparts and through the adoption of common institutional practices, that they can gain or maintain legitimacy and continue to survive (Fernando and Lawrence 2014). Hinson et al. (2015) suggest that the SR activities of six Ghanaian public universities are in response to the coercive pressure from stakeholders as a result of growing societal recognition of accountability towards sustainability. Therefore, organisations will adopt SR practices when SR practices are considered as “normal” practices by society or influential stakeholders in the industry that triggers their desires to follow this normal practice (Deegan 2009; as cited in Fernando and Lawrence 2014, 165-166). Institutional theory is considered a well-established theoretical perspective to explain voluntary SR practices made by organisations (e.g., Rahaman et al. 2004, Bansal 2005, Campbell 2007, Amran and Siti-Nabiha 2009, Berrone and Gomez-Mejia 2009; as cited in Fernando and Lawrence 2014), but it is found not being applied much by prior SR literature (Gray et al. 2010).

2.1.4 Integrated Theoretical Perspective

Some researchers contend the phenomenon of sustainability reporting is too complex to be analysed through one single theory. Hinson et al. (2015) suggest that Ghanaian universities’ SR practices can be explained by both stakeholder theory and institutional theory that they tend to disclose sustainability news in the annual reports in response to the coercive demands of universities’ stakeholders. Based on stakeholder and legitimacy theories, An et al. (2017) and Gamage & Sciulli (2017)
point out that SR practices are helpful for university sector to engage with stakeholders, to show the society that they are legitimate as being the forefront of solving the global problems, and to be more competitive in fund-raising from donors, governments or other stakeholders.

The three theories are considered to offer “by far the more interesting and insightful theoretical perspectives” (Gray et al. 1995a, 52; as cited in Fernando and Lawrence 2014, 170) and widely applied in SR studies. However, most studies have applied these theories individually. Fernando and Lawrence (2014, 170) contend that a single theory application is inadequate to explain fully of SR practices; integrate these theories could achieve “fuller understanding of and deep insights into organisations’ CSR behaviour, an outcome which might not be achieved by a single theory alone”.

While the three theories: legitimacy theory, stakeholder theory, and institutional theory are interrelated and complementary to each other as they all concern the connection between organisations and the society within their business operations, an integrated theoretical perspective of these theories could provide a better explanation of SR practices (Fernando and Lawrence 2014). Berrone and Gomez-Mejia have highlighted their interconnection through a statement that “the main thesis of institutional theory is that organizations enhance or protect their legitimacy by conforming to the expectations of institutions and stakeholders” (cited in Fernando and Lawrence 2014, 167).

Considering the fact that SR is not compulsory for Australian university sector, the societal expectation of universities to be at the forefront of SR practices and the existence of influential stakeholders, the present study follows the integrated theoretical perspective suggested by Fernando and Lawrence (2014) in order to provide a greater understanding of their sustainability practices.
2.2 Proposition Development

2.2.1 Australian University and Proposition One

Recent report by Corporate Register (Corporate Register 2018) revealed only 1.7% of CSR reports were prepared by global universities in 2016. University sector is lagged behind, while other sectors, such as banks, electricity, gas, water & multi-utilities, and industrial transportation, are the leading CSR report producers (Corporate Register 2012). There is a consistent view supported by the prior literature. Fonseca et al. (2011) point out that the low number of indicators reported by Canadian universities showed the current limited reporting scope by university sector. An et al. (2017) investigated the SR practices commenced by New Zealand universities and found that neither any reporting guidelines were followed, nor financial data were disclosed. Gamage and Sciulli (2017) argue that only eight Australian universities prepared stand-alone sustainability reports in 2013 showing a low reporting rate of twenty per cent. Both Lozano (2011) and Ralph & Stubbs (2014; as cited in Brusca et al. 2018) contend that the early stage of university sector concerning SR is shown in the little number of reporting organisations as well as the limited content being reported.

Utilising content analysis method to investigate university sector’s stand-alone sustainability reports is the primary methodology used by prior studies. For examples, Fonseca et al. (2011), Lozano (2011), Gamage and Sciulli (2017), An et al. (2017), and Sassen and Azizi (2018). Although targeted universities are different regarding nationality and inspected year, most of the time only universities that prepared stand-alone sustainability reports were included in the research samples. Sustainability-related information disclosed through other media, such as annual reports, integrated reports, and websites, were excluded. However, there is a risk of
gathering incomplete information if only stand-alone sustainability reports are investigated.

Apart from stand-alone reports, annual reports and websites are highly possible to be used by university sector to disclose sustainability-related information. Hinson et al. (2015) measured the state of SR in the higher education sector through sampling the largest six Ghanaian universities. Only sustainability-related information disclosed in annual reports and specific websites were examined by Hinson et al. (2015) as none of the investigated universities prepared stand-alone sustainability reports.

Notably, there is a global trend to disclose sustainability-related data in annual financial reports by for-profit sector (KPMG 2017). A recent survey indicates that the integrated reporting rate of the world’s top 250 companies has increased from 44% in 2011 to 78% in 2017 (KPMG 2017). Among all the countries, Australia is found to produce the highest number of annual reports that integrated financial and non-financial information in 2011 (KPMG 2013). Combining sustainability-related data into annual reports are recognised to provide many advantages. For example, annual reports provide a readily available information source and are regarded as “the most important source of externally feasible information” (Meyer 2007; as cited in Gitahi et al. 2018, 330). Disclosing both financial and non-financial sustainability-related information in annual reports (Weygandt et al. 2003; as cited in Gitahi et al. 2018) aims to provide a higher basis for reader’s decision-making.

On the other hand, increasing reporters are found to use websites as their primary channel for communicating sustainability-related information with their stakeholders (Santos et al. 2016; as cited in Amoako et al. 2017) as websites offer numerous benefits that other reporting media may not be able to provide. Web-based SR enhances the accessibility of sustainability-related information since the information
is reachable at any time and any place as long as there is internet connection available (ACCA and Corporate Register 2001). The interested readers can enjoy an unrestricted number of downloads (ACCA and Corporate Register 2001) and share sustainability-related content through email or social media sites, such as Facebook, to their friends. Therefore, circulation and visibility of sustainability-related information are enhanced (RY and GRI 2011). Besides, the sustainability-related data provided is more current and relevant since there is no time restriction on data updating (ACCA and Corporate Register 2001). SR becomes more fun and engaging as “websites are flexible, versatile and fast in disseminating an unlimited amount of information” (Santos et al. 2016; as cited in Amoako et al. 2017, 187). Through the application of cutting-edge web technologies (ACCA and Corporate Register 2001), the reporting format is flexible that many functions, such as hyperlinks, sounds, videos, individual access for stakeholders, and multiple languages provision, can be included allowing more possibilities of SR design to cater for the needs of different targeted readers (RY and GRI 2011; Schaltegger et al. 2006; ACCA and Corporate Register 2001).

Moreover, the online feedback system can be integrated into the reporting function making interactive communication with stakeholders easier; therefore, achieving a higher response rate (ACCA and Corporate Register 2001). Furthermore, disclosing sustainability-related information on the website is a more cost-effective way because of the broader coverage than hard copies (Djadikerta and Trireksani 2012; Schaltegger et al. 2006) and no longer limited by the printed pages (Schaltegger et al. 2006). It is also potentially more environmentally friendly as it “avoids wastage from company printing excess hardcopies” (ACCA and Corporate Register 2001, 11).
A recent study by Gamage and Sciulli (2017) applied content analysis on Australian universities that prepared a GRI aligned stand-alone sustainability report in 2013. Only five samples are found by Gamage and Sciulli (2017) due to the exclusion of other reporting channels. The limited sample size may cause the research findings unable to represent the real state of SR in Australian universities. In an attempt to improve the representation of the research findings to population, this study includes sustainability-related information disclosed by Australian university in the stand-alone sustainability reports, as well as in the annual reports and on the websites. By measuring sustainability-related data from the three major reporting sources, this study potentially provides a more complete and accurate measurement of the current state of SR in Australian universities. Therefore this study propose to answer the following proposition.

**P1: The extent of sustainability disclosure made by Australian universities in the stand-alone sustainability reports, annual reports, and on the official websites is overall low.**

### 2.2.2 Elite Australian University Grouping and Proposition Two

Currently, there are four significant groupings formed by Australian Universities, including Group of Eight (Go8), Australian Technology Network (ATN), Innovative Research Universities (IRU), and Regional Universities Network (RUN) (AEN 2018). Many objectives can explain the formation of university groupings, such as increase of lobbying power, marketing strategies, attraction of more funding, differentiation from other counterparts and practical benefits of collaboration (Breithaupt and Caddick 2008). Due to the relevancy of these university groupings to the present study, a brief introduction is provided next.
The Group of Eight (Go8) is a coalition of eight leading Australian universities (Group of Eight 2018). The Group of Eight universities, including University of Melbourne (UniMelb), Australian National University (ANU), University of Sydney (USYD), University of Queensland (UQ), University of Western Australia (UWA), University of Adelaide (UA), Monash University (Monash) and University of New South Wales (UNSW), are considered a group of elite universities, just like the Ivy League in the United States, and the Russell Group in the United Kingdom (Breithaupt and Caddick 2008). They often ranked higher than other Australian universities on the Academic Ranking of World Universities, which is recognised as a superior indicator of global university performance (Li et al. 2011; as cited in Ferrer and Morris 2013). The eight elite universities are found having a higher publication rate, three times more than other non-elite counterparts (Ferrer and Morris 2013). Due to the focus on research, the Go8 is found to receive more research funding as well as higher donor funding and business support than other universities (Ferrer and Morris 2013). The greater resources have positioned the Go8 in a leading position among all the Australian universities (Ferrer and Morris 2013). De Lange (2013; as cited in Ceulemans et al. 2015) contends that elite higher education sector tends to be proactively accepted to new practices and often have greater sustainable development level in response to its stakeholders’ expectations. An organisation with better sustainable development performance tend to provide a more comprehensive report in order to achieve competitive advantages through SR (García-Sánchez et al. 2013b). As a result, the present study assumes that:

P2: The Go8 universities provide a relatively greater extent of sustainability disclosure in the stand-alone sustainability reports, annual reports and on the official websites when compared with other Australian universities groupings.
2.2.3 Committed Australian University Grouping and Proposition Three

The Australian Technology Network of Universities (ATN) consists of five universities claimed to be the “five most innovative and enterprising universities” aiming to achieve “innovative industry research training, delivering a real-world solution with real-world impact” (ATN 2018). They advertise themselves to be the world’s leading network of young universities as all five universities ranked in the top 100 universities by the Times Higher Education Young Universities Rankings 2018 (Young University Rankings 2018). The five universities include Queensland University of Technology (QUT), University of Technology Sydney (UTS), RMIT University (RMIT), University of South Australia (UniSA) and Curtin University (Curtin).

In 2009, the five ATN universities individually and collectively committed to “reduce Scope 1 and 2 carbon emissions by 10% of 2007 levels by 2012/13 and 25% by 2020/21” and report accordingly (UniSA 2018; UTS 2017). However, higher commitment to sustainability may not lead to higher sustainability reporting levels as examined by De Grosbois (2012). De Grosbois (2012) evaluated sustainability disclosure practices among the top 150 companies within hospitality industry worldwide and found that very little of them report actual CSR performance achieved although a significant number of companies show commitment to CSR goals. A challenge arises from this situation that stakeholders cannot trust companies’ commitment to CSR goals disclosed on the internet as that may be just one of their marketing strategies (De Grosbois 2012). In the university context, however, the application is still unknown. In an attempt to investigate the SR practices of the committed university grouping, ATN, the present study adopts the findings of De Grosbois (2012), namely:
P3: The ATN universities provide a similar extent of sustainability disclosure concerning environmental dimension in the stand-alone sustainability reports, annual reports and on the official websites when compared with other Australian university groupings.

2.2.4 Other Australian University Categories

In line with the objective of the study, the proposition two and three were tested through comparing and contrasting the Go8 and the ATN with other Australian university groupings regarding sustainable development performance disclosed through their stand-alone sustainability reports, annual reports, and websites.

The Innovative Research Universities (IRU) is a network of seven universities committed to providing excellent quality of teaching and research in Australia (IRU 2018). The Regional Universities Network (RUN) “is a network of six universities with headquarters in regional Australia and a shared commitment to playing a transformative role in their regions” (RUN 2018). The SR practices made by the Go8 and the ATN are compared individually with the other three university groupings by the present study.

2.2.5 Geographical Influence and Proposition Four

Australia consists of six states: Victoria, New South Wales, Queensland, South Australia, Tasmania and Western Australia. Each state has its state government and state constitution. Among all the local governments, the Victorian state government positions itself as a leader in tackling global warming issues through being the first state government to legislate for net zero emission target by 2050 (1 Million Women 2018).
Take2 Pledge program was launched by Sustainability Victoria, a statutory authority established under the Sustainability Victoria Act 2005 with a board appointed by Minister for Environment and Climate Change, aiming to promote and support collective efforts of Victorian individuals, government, business and all other interested sectors in achieving environmental sustainability with objective of net zero emissions by 2050 (Sustainability Victoria 2017). Take2 Pledge represents the commitment of the Victorian state government to the environmental sustainability specifically greenhouse gas reduction. Through the program, Victorian individuals and institutions are encouraged to pledge to “working together, we pledge to play our part and take action on climate change for Victoria, our country and our planet” (Sustainability Victoria 2017).

It is found that 93 per cent of Victorian agreed everyone should take action towards climate change (1 Million Women 2018). Schools have been identified to be significant users of energy through lighting, computers, and air-conditioning, as well as having an essential position in educating students to take actions towards global problems (Sustainability Victoria 2017). In line with the political economy theories, the Victorian universities are expected to pledge, take actions and demonstrate their accountability and transparently report target achieved for the new “common” phenomenon created by the Victorian government and pledged Victorians. Therefore, the Victorian universities have more motivations to conform to sustainability reporting than universities located in other states of Australia. For the purpose of the study, it is expected that the Victorian universities under this specific backgrounds would perform greater environmental protection and related reporting than other state universities, namely:
P4: The Victorian universities provide a greater extent of sustainability disclosure concerning environmental dimension in the stand-alone sustainability reports, annual reports and on the official websites when compared with universities located in other states of Australia.

2.2.6 Year of Establishment and Proposition Five

Categorising universities based on year of establishment has been recognised by prior literature as having a substantial difference on numerous dimensions (Winefield et al. 2003, Tytherleigh et al. 2005; as cited in Ferrer and Morris 2013). This study has examined two groups of age-based categories of Australian universities, which are Sandstone Universities and Young Universities under 50. The Sandstone Universities (SU) is the group of the oldest Australian Universities with five universities overlapping with the Go8. The name “sandstone” comes from the material used for the building of their first campus, showing the great age of these universities (UniPage 2018). In comparison, the Young University under 50 is the group of 24 Australian universities under the age of 50 years old based on the young universities ranking in the Times Higher Education ranking since 2016 (THE 2018).

An et al. (2017) examine the extent and trend of sustainability reporting of the second oldest university in New Zealand, University of Canterbury, from a longitudinal perspective and contend that its report was environmentally focused with a generally upward reporting trend as evident by the increased total number of reported metrics from 2011 to 2015. This implies that older universities may have a higher degree of SR level. However, it is still unclear whether this may apply to Australian context.
The effort of Australian universities working towards a greener campus has been highlighted by The Australian newspaper, one of the biggest-selling national newspaper in Australia (Diaz 2014). The Australian newspaper listed the top 10 green universities in Australia (Diaz 2014). Among the top 10 green universities, two belong to Sandstone Universities, including University of Adelaide (UA) and University of Melbourne (UniMelb) (Diaz 2014).

In the case of the University of Melbourne, a recent study by Baer and Gallois (2018) showed that the university had shown commitments to environmental sustainability through embarking a variety of sustainable-related activities and programs. However, there had been some evidence that the university also engaged in some practices that are not sustainable, such as investment in fossil fuels. Therefore, there had been some confusion whether its commitments were genuine.

Considering that there has been no substantive indication of the differences of the sustainability disclosure practices between Sandstone Universities and Young Universities under 50, the present study makes an assumption, namely:

**P5: The Sandstone Universities provides a similar extent of sustainability disclosure concerning environmental dimension in the stand-alone sustainability reports, annual reports and on the official websites when compared with Young Universities under 50.**

The complete list of universities in different categories is presented in Appendix II.
3. Research Design and Method

3.1 Sustainability Reporting Guideline for University Sector

With more significant attention to sustainability reporting, how to measure sustainable development accurately and effectively has become another research focus. In response to this focus, various sustainability guidelines, frameworks, and assessment tools were developed and applied worldwide (Fonseca et al. 2011), including (but not limited to) the Global Reporting Initiative (GRI) Guideline, Carbon Disclosure Project, United Nations Global Compact Principles, ISO14000 and ISO26000 series, Dow Jones Sustainability Index, Account Ability’s AA1000 series, and the International Integrated Reporting Council’s Integrated Reporting Framework (Martinov-Bennie and Hecimovic 2010; as cited in Gamage and Sciulli 2017). They vary in scope and focus. Some have more comprehensive indicators to assess sustainability practices, while others contain indicators which focus on specific sectors or specific sustainability dimensions (Gamage and Sciulli 2017). Selecting and applying the most suitable sustainability reporting indicators is significant to a reporting organisation (Ceulemans et al. 2015). The selection requires consideration of different variables, such as specific context, expected outcome, and major stakeholders aimed at (Ceulemans et al. 2015).

Lozano et al. (2011; as cited in Gamage and Sciuli 2017, 189) contend that “most of these guidelines and tools have been developed for use by corporations and are not particularly suitable to use in the context of the higher education sector”. The higher education sector is suggested to adopt reporting tools modified or tailor-made for them (Gamage and Sciuli 2017). Sustainability reporting tools for education sector include (but not limited to) Sustainability Assessment Questionnaire (SAQ), Auditing Instrument for Sustainability in Higher Education (AISHE), Nation
Wildlife Federation’s State of the Campus Environment, Graphical Assessment of Sustainability in Universities (GASU), Sustainability Tracking, Assessment and Rating Systems (STARS), Campus Sustainability Assessment Framework (CSAF), Alternative University Appraisal Model, College Sustainability Report Card, The Green Plan Framework, Learning in Future Environments (LiFE) Index UK and Australasia, Greening Universities Toolkit, and Sustainable Campus Assessment System (Gamage and Sciuli 2017). For higher education sector, Graphical Assessment of Sustainability in University (GASU) provides a comprehensive list of indicators to measure four aspects of performance, which are economic, social, environmental and educational dimensions (Ceulemans et al. 2015). Indicators of economic, social and environmental dimensions are adopted from GRI guidelines with modification on educational dimension. This is because GRI guidelines appear to be one of the best available tools to assess and report sustainable development performance (Kabir and Akinnusi, 2012; Lozano, 2006) as it contains a broad list of indicators towards the major aspects of sustainability practices with global recognition and acceptance (Ceulemans et al. 2015; Fonseca et al. 2011; Lozano 2011). However, the GRI guidelines do not include a “sector-specific supplement that speaks to aspects unique to universities (e.g., teaching and research)” (Sassen and Azizi 2018, 103). By adding educationally related indicators, GASU could better measure the state of SR in university sector. As a result, the GASU indicators are adopted in the present study.

3.2 Content and Statistical Analysis

The research was undertaken using content analysis to analyse the state of SR made by universities in Australia. Content analysis is a rigorous and well-established approach to systematically analyse reporting content related to sustainability (Lodhia
et al. 2012, 636; as cited in Gamage and Sciulli). Content analysis can be a qualitative, quantitative or mixed mode of research framework (White and Marsh 2006). Gaur and Kumar (2018) applied content analysis in conducting a review of the literature related to content analysis studies in the international business (IB) context. Gaur and Kumar (2018, 281) suggest that the prior literature “strongly reflect this trend of applying content analysis to both quantitative and qualitative research”. Content analysis is also a flexible research method that a wide range of analytical techniques can be adapted to generate research findings and to put them into context (White and Marsh 2006, 22). Gaur and Kumar (2018, 287) critically assessed the methodological rigor of applying content analysis and argue that content analysis enables researchers to “study topics for which it would be difficult to obtain and access quantitative data”.

The use of content analysis and related scoring method by the present study is to covert the qualitative information found in the sustainability reports, annual reports and on the official websites into quantitative data for further examination concerning the research questions. The present study adopted descriptive statistics, such as extent index and mean scores, and the Mann-Whitney test to investigate evidence to determine the hypotheses proposed by the present study.

The Mann-Whitney test was employed by the present study to test the propositions except proposition one. Vermeulen et al. (2015, 1012) content that the Mann-Whitney test is “frequently used to evaluate treatment effects in randomized experiments with skewed outcome distributions or small sample size”, which suites the present study as the sample size (n) tested is small, ranged from 5 to 39. Fernando et al. (2015) suggest the Mann-Whitney test to be used for hypotheses testing to identifying whether the average SR level of investigated variables is
identical for each respondent category. The validity of hypotheses two, three, four, and five were tested with a 95 per cent confidence level (or 0.05 level of significance) applied. The 95 per cent confidence level is a generally accepted arbitrarily acceptable standard in the research field of social science (Mashat et al. 2005). If the level of significance of these tests as calculated by the present study is equal to or less than 0.05, it indicates that the SR level between the two tested university categories has a significant difference. This study is of explorative nature as the lack of prior studies in this type of research, especially in the Australia context.

3.3 Sample Choice

The present study focused on the Australian universities, which disclosed information related to their sustainable development performance through stand-alone sustainability reports, annual reports or websites. The present study employed not only stand-alone sustainability reports but also annual reports and websites, which is how the present study is different from the prior literature. Most prior researchers limit their research on the stand-alone sustainable reports prepared by worldwide universities (Sassen and Azizi 2018; Gamage and Sciulli 2017; Lozano 2011). Gamage and Sciulli’s (2017) literature also focused on Australian setting; however, they limited their investigation on only five Australian universities’ stand-alone sustainability reports that aligned with GRI reporting guidelines. Other media, such as annual reports and websites, also have the potential to convey significant sustainability messages by universities (Hinson et al. 2015; Lozano 2011). If research includes all the reporting media in the sample, the results findings could provide a fuller picture of the sustainability reporting practices.
The study aims to examine all Australian universities, both public and private universities. The data collection was processed prior to December 2017 by systematically searching the popular search engine, Google.com, to locate the official websites of sampled universities and to search for the terms including “sustainability”, “sustainability report”, “sustainable development”, “annual report”, “corporate social responsibility”, and “CSR” with the name of a sampled university in front. For example, “University of Western Australia sustainability report” and permutation of terms were used in the searching. In case of such links were unreachable through the Google search engine, internal search engines of every Australian universities’ official websites were also used. In total, there were 39 universities in Australia consisted of 37 public universities and 2 private universities (Universities Australia 2018). All 39 sampled universities’ annual reports were included, as well as all 10 stand-alone sustainability reports found through performing the search procedures. For information disclosed on the websites, only those that can be clearly identified as dedicated to SR were included. Not all the website information was examined, only the universities’ official websites that had a specific section that can be clearly classified to be used for sustainability reporting were examined. While searching the official websites, Macquarie University was found to publish a sustainability report video in 2016, and the video link was available on its official websites. As the sustainability report video fits into the purpose of the present research, the sustainability report video is included in the research sample.

3.4 Scoring Method

The secondary data found in the processes as mentioned earlier were analysed through content analysis to determine the extent of sustainability disclosure by
universities in Australia. Content analysis is a well-established method in the sustainability literature (Sassen and Azizi 2018; Gamage and Sciulli 2017) and has been used commonly in sustainability reporting research (Aribi and Gao 2010) to analyse the content of a written medium through systematic procedures (Wolfe 1991; as cited in Djajadikerta and Trireksani 2012). Through content analysis, qualitative information can be converted into quantitative scores for numerical analysis and comparison.

The present study went beyond a tick-box framework and adopted a more sophisticated scoring system. The scoring approach has been widely used in other sustainability reporting studies (e.g., Tuli 2013; Legendre and Coderre 2013; Bhatia and Tuli 2014; Bhatia and Chander 2014; Campopiano and De Massis 2015; Boiral and Henri 2015; Lipunga 2015). The present study established a set of scoring guidelines for performing systematically evaluation and ensuring the objectivity and reliability. As only one scorer conducted the scoring, intrarater reliability was emphasised; that is, the present study has ensured the evaluation of the given data could collect the same results at different times (Mackey and Gass 2005). The scoring process of the present study had been performed twice with the second time performed two months later. Since the results were found to have high similarity, the consistency of the scoring was ensured.

For scoring purposes, sustainability data was categorised into theme-based indicators and scored based on three different dimensions of evidence, timeframe, and specificity. The method is adopted from Djajadikerta and Trireksani (2012), which is based on the previous work of Ingram and Frazier (1980), Wiseman (1982), Freedman and Wasley (1990), Walden and Schwartz (1997), and Cross and Djajadikerta (2004) (as cited in Djajadikerta and Trireksani 2012), in an attempt to
further enhance the construct validity of the research.

Table A describes the details of the scoring system adopted by the present study. A score of zero was given when there is no evidence of sustainability reporting for a particular indicator. If disclosure data was present for an indicator, the score was determined based on the scoring system in Table A. The highest score of each indicator for Evidence dimension was three; for Timeframe dimension was two; for Specificity dimension was one. The total score for each indicator, ranged from 0 to 6, showed the level of sustainability reporting with 6 representing the highest level.

**Table A. Scoring system**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Item</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence</td>
<td>Monetary/Quantitative</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Non-monetary/Qualitative</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Declarative</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No evidence</td>
<td>0</td>
</tr>
<tr>
<td>Timeframe</td>
<td>Future</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Past</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No time frame</td>
<td>0</td>
</tr>
<tr>
<td>Specificity</td>
<td>Specific</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>General</td>
<td>0</td>
</tr>
</tbody>
</table>

*Reference: Djajadikerta and Trireksani 2012, p.27*

### 3.5 Indicators

For analysing the contents of information produced by the sampled universities, the GRI modified indicators for universities, that is, the Graphical Assessment of Sustainability in Universities (GASU) as developed by Lozano (2006), was adopted by the present study. The GASU is based on the GRI guidelines with additional educational indications to make up the fact that the GRI guidelines lack sector-specific supplements for higher education. Since Lozano et al. (2013) have updated...
the GASU indicators to align with GRI G3, the updated version was used. The content was analysed through a catalogue of 108 indicators under 19 themes and 4 dimensions as listed in Table B. The complete list of indicators is presented in Appendix I.

**Table B. Graphical assessment of sustainability in universities**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic</strong></td>
<td>Economic performance</td>
</tr>
<tr>
<td></td>
<td>Market presence</td>
</tr>
<tr>
<td></td>
<td>Indirect economic impacts</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td>Materials</td>
</tr>
<tr>
<td></td>
<td>Energy</td>
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<tr>
<td></td>
<td>Water</td>
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<tr>
<td></td>
<td>Biodiversity</td>
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<tr>
<td></td>
<td>Emissions, effluents, and waste</td>
</tr>
<tr>
<td></td>
<td>Products and services</td>
</tr>
<tr>
<td></td>
<td>Compliance</td>
</tr>
<tr>
<td></td>
<td>Transport</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>Labour practices and decent work</td>
</tr>
<tr>
<td></td>
<td>Human rights</td>
</tr>
<tr>
<td></td>
<td>Society</td>
</tr>
<tr>
<td></td>
<td>Product responsibility</td>
</tr>
<tr>
<td><strong>Educational</strong></td>
<td>Curriculum</td>
</tr>
<tr>
<td></td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>Service</td>
</tr>
</tbody>
</table>

**Reference:** Lozano et al. 2013
4. Findings and Analysis

4.1 The Extent of Sustainability Disclosure Made by Australian Universities in the Stand-Alone Sustainability Reports, Annual Reports and on the Official Websites

In total, there are 39 universities in Australia consisted of 37 public universities and 2 private universities (Universities Australia 2018) examined by the present study. Descriptive statistics for the SR made by all 39 Australian universities based on four dimensions are presented in Table C. The descriptive statistics indicate that the current level of SR performed by Australian universities is low supported by an overall extent index of only 0.23. None of the Australian universities reached an average score of more than 3 out of a maximum of 6 scores. 87% of Australian universities received an average score of less than 2. These provide a reasonable basis to support P1, that is, the extent of sustainability disclosure made by Australian universities in the stand-alone sustainability reports, annual reports, and on the official websites is overall low. The findings are consistent with the study by Gamage and Sciulli (2017) concerning GRI aligned stand-alone sustainability reports produced by Australian universities, and the study by Sanchez et al. (2015) concerning websites disclosure made by Australian universities. Hence, there is a solid ground to confirm that the SR practices performed by Australian universities is

Table C. Australian universities SR: descriptive statistics (n=39)

| Dimension    | Score range | Mean  | SD    | Extent index  
|--------------|-------------|-------|-------|---------------
| Economic     | 12~42       | 17.56 | 5.54  | 0.33          
| Environmental| 0~114       | 54.33 | 28.10 | 0.30          
| Social       | 6~94        | 40.62 | 21.64 | 0.17          
| Educational  | 0~54        | 36.54 | 24.49 | 0.21          
| Overall      | 30~295      | 149.05| 62.08 | 0.23          

Notes: *Extent index = mean/maximum possible score
still at its early stage and lagged behind when compared with corporate sector.

4.1.1 Discussion of Sustainability Disclosure on Four Dimensions

Indicators related to economic performance are the most commonly addressed by Australian universities with an extent index of 0.33. The result is not surprising as universities’ annual reports, which were the primary channels for reporting economic performance (Hinson et al. 2015) and were compulsory to prepare by every university under Australian statutory requirements, were included in the present study. However, not all economic indicators were addressed. For example, economic issues related to market presence, such as entry-level wages, local suppliers, and local hiring issues, have very little information. This may be because financial information contained in the annual reports is not always related to sustainability issues.

The second highest and the lowest categories are environmental performance and social performance respectively. This finding is consistent with Lozano’s (2011) argument that developed countries tend to be more concerned with environmental issues than social issues. However, it may be merely because environmental performance is considered easier to measure; while social performance is less “matured”, making it harder to analyse (Lozano 2011).

When reporting on environmental dimension, the research found a tendency of focusing on issues related to green energy, greenhouse gas reduction, waste recycling, water saving, and green transportation with relatively lower attention on issues associated with biodiversity. Findings are consistent with prior studies in that social performance is the least addressed sustainability reporting categories by university sector (Sassen and Azizi 2018; Hinson et al. 2015; Fonseca et al. 2011;
Lozano 2011), especially on human right issues (Fonseca et al. 2011). Among all the social issues, Australian universities tended to provide more information on employment, occupational health and safety, diversity, and students related issues. While students are considered one of the universities’ significant stakeholders, GASU is lacking in guidelines on social performance indicators related to student issues, such as student diversity, work creation, and alumni relations, making SR measurement unable to show the efforts of universities completely.

Even though educational aspect is one of the primary functions for university sector, this aspect is second last addressed with an extent index of only 0.21, slightly higher than the least addressed social dimension with an extent index of 0.17. The present study found that universities seem to focus more on environmental performance rather than an educational one. Prior researchers, Ceulemans et al. (2015), have similar conclusions after reviewing recent sustainability reporting literature about global higher education sector. Prior literature suggests the possible reason may be because the GRI or other SR guidelines the universities used, do not have supplement for the education sector to measure educational related sustainable development performance (Lozano 2011), causing educational indicators less standardised for universities to follow. Among those educational issues, the most comprehensively addressed is the research aspect. This may be because research funding is one of the significant sources of universities’ finance that universities tend to prioritise the disclosure in an attempt to enhance research reputation and attract more financial assistance.

4.1.2 Reporting Media Used

Table D indicates the details of reporting media used by Australian universities for sustainability disclosure. All investigated universities of the present study disclosed
some information related to their economic performance in the annual reports, with only six universities as found by the present study provided numerical evidence and explicit claims of addressing SR. Only one Australian university did not employ websites as a mean of SR, with sixteen universities reported mainly declarative information without indicating to be used for disclosure of sustainability-related information. The present study found that stand-alone sustainability reports had the lowest adoption rate by Australian universities to disclose their sustainable development performance in 2016, which may be because stand-alone sustainability reports require more effort and resource to prepare than other reporting media.

**Table D. Reporting media used by Australian universities in 2016 (n=39)**

<table>
<thead>
<tr>
<th>Reporting details</th>
<th>Reporting medium used</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual report</td>
<td>Website</td>
</tr>
<tr>
<td>Explicitly claimed to address SR with numerical evidence disclosed</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Not explicitly claimed to address SR but some information provided related to SR, mainly declarative</td>
<td>33</td>
<td>16</td>
</tr>
<tr>
<td>Total no. of reporting universities</td>
<td>39</td>
<td>38</td>
</tr>
</tbody>
</table>

Table E and F show the details of stand-alone sustainability reports produced in 2016 by Australian universities. Pages of the sustainability reports range from 6 to 60. However, the number of pages does not represent the comprehensiveness of its content. For instance, the sustainability report made by Western Sydney University has only 12 pages, but the reporting level as measured by the present study is the third highest, higher than some sustainability reports with more pages.
<table>
<thead>
<tr>
<th>University</th>
<th>Report Title</th>
<th>No. of pages</th>
<th>Standard</th>
<th>Coordination</th>
<th>External assurance</th>
<th>Year of First Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Technology Sydney (UTS)</td>
<td>Sustainability Report 2016 (Inaugural report)</td>
<td>33</td>
<td>N/A</td>
<td>UTS Sustainability Team</td>
<td>No</td>
<td>Previously was disclosed in Annual Report since 2010</td>
</tr>
<tr>
<td>Western Sydney University (WSU)</td>
<td>Thoughtfully Acting Differently - Sustainability Report 2016</td>
<td>12</td>
<td>N/A</td>
<td>Office of Sustainability</td>
<td>No</td>
<td>2015</td>
</tr>
<tr>
<td>University of New South Wales (UNSW)</td>
<td>Sustainability Report 2016</td>
<td>60</td>
<td>GRI (G3); Account Ability- AA1000</td>
<td>Sustainability Office</td>
<td>No</td>
<td>2013</td>
</tr>
<tr>
<td>Charles Sturt University (CSU)</td>
<td>Sustainability Scorecard 2016</td>
<td>37</td>
<td>LiFE</td>
<td>CSU Green</td>
<td>No</td>
<td>2007</td>
</tr>
<tr>
<td>University of Queensland (UQ)</td>
<td>2016 Sustainability Report Card (Inaugural report card)</td>
<td>6</td>
<td>N/A</td>
<td>Sustainability Office</td>
<td>No</td>
<td>The previous report was Environmental Sustainability Report (from 2009 to 2012)</td>
</tr>
<tr>
<td>University of Melbourne (UniMelb)</td>
<td>Sustainability Report 2016</td>
<td>48</td>
<td>GRI</td>
<td>Sustainability Office</td>
<td>No</td>
<td>2015</td>
</tr>
<tr>
<td>RMIT University (RMIT)</td>
<td>Sustainability Annual Report 2016</td>
<td>52</td>
<td>GRI</td>
<td>RMIT Sustainability Committee</td>
<td>No</td>
<td>2015</td>
</tr>
<tr>
<td>Federation University Australia (FedUni)</td>
<td>2016 Sustainability Report</td>
<td>7</td>
<td>N/A</td>
<td>Sustainability Officer</td>
<td>No</td>
<td>2006</td>
</tr>
<tr>
<td>Deakin University (Deakin)</td>
<td>Sustainability Progress Report 2016</td>
<td>19</td>
<td>GRI (G4); UNSDG</td>
<td>Manager Organisational Sustainability</td>
<td>No</td>
<td>2013 (Skip 2014)</td>
</tr>
</tbody>
</table>
The report received the highest reporting scores is the one prepared by the University of New South Wales (UNSW). UNSW prepared a stand-alone sustainability report in 2016 reporting information on all four dimensions; with the highest mean scores of 53% on environmental performance, the mean scores of 51% on educational performance, the mean scores of 42% on social performance, and the lowest mean scores of 33% on economic performance. UNSW is not a single case of better sustainability-related information reporter disclosing through stand-alone sustainability report; the average mean score of Australian universities that prepared stand-alone reports in 2016 is 32%, which is higher than the average mean score of 26% received by all Australian universities. This is consistent with the argument made by Gamage and Sciulli (2017) that stand-alone sustainability reports usually provide a higher level of sustainability reporting than that of other media as the preparers of stand-alone reports tend to be more determined towards their sustainable development goals. For example, the University of New South Wales stated in the sustainability report that:

*This report is a celebration of our sustainability achievements, but it is not about ‘greenwashing’. It is a genuine attempt to record where we have been and where we are now so we can transparently and clearly demonstrate our improvements*
The quantity of stand-alone sustainability reports produced by Australian universities is low, as examined by the present study. Prior research by Gamage and Sciulli (2017) found that only eight Australian Universities produced a stand-alone sustainability report in 2013. Gamage and Sciulli (2017) expected more Australian universities would publish a stand-alone sustainability report after 2013 since there were four inaugural reports in 2013. However, the present study found that only two more universities prepared stand-alone sustainability reports in 2016; an increase that appeared to be lower than the level expected by the optimism expressed by Gamage and Sciulli (2017), from the four inaugural stand-alone sustainability reports in 2013. The majority of Australian universities chose either not to disclose or disclose in other reporting media.

The little increment may be due to the facts that some universities had prepared stand-alone sustainability reports prior to 2016, but discounted afterwards, such as Macquarie University and La Trobe University. Focusing only on stand-alone sustainability reports provides a narrower scope of research findings because it tends to exclude substantial sustainability data disclosed on other potential reporting media, as well as end up with little sample size due to limited stand-alone report producers causing the results may not represent the whole population.

Macquarie University (MQ) had published stand-alone sustainability reports since 2008 but discontinued in 2015. In the year 2016, Macquarie University produced a sustainability report video and uploaded on YouTube, a popular video sharing website. The sustainability report video lasts 5 minutes 31 seconds, which acts more like summary instead of a report. It summarises the main achievements that MQ is proud of in 2016 and leads watchers to find out more details on their websites and
Another case is La Trobe University (La Trobe), which published stand-alone sustainability report prior to 2014. La Trobe is one of the pioneering Australian universities in reporting sustainable campus development. Its 2010 stand-alone sustainability report was awarded for the best first-time report by Corporate Register Reporting Awards (Corporate Register 2018). The 2013 sustainability report of La Trobe has been accredited by Gamage and Sciuli (2017) to be the leading reporter under economic, environmental, labour practices and decent work, curriculum, and service aspects. However, La Trobe University decided not to continue disclosing sustainability-related data in a stand-alone report. Instead, information was disclosed on the official websites since 2014 (La Trobe University 2016). This implied that universities recognised the benefits of using websites as their reporting medium and resulted in the increasing rate of sustainability reporting through websites. On the contrary, the University of Technology Sydney (UTS) provided its inaugural stand-alone sustainability report in 2016, but 2016 was not the first year UTS performed SR. Prior to 2016, UTS integrated their sustainability-related news in the annual report since 2010.

4.1.3 Reporting Guidelines Choice

Four Australian universities are found to prepare GRI guidelines aligned sustainability reports. One of the universities, the RMIT University (RMIT) explained the reason in the sustainability report that:

\[ In \text{ preparing this report, RMIT has considered the GRI Reporting Principles to ensure a high-quality sustainability report is achieved } \] (RMIT University 2017, 2).
One university, Charles Sturt University, prepared its sustainability report aligned with the Learning in Future Environments (LiFE) Index, which is a “comprehensive performance management and improvement system designed to support universities, TAFEs, and polytechnics to demonstrate their response to environmental and social sustainability” (ACTS INC 2017a). The LiFE Index was developed jointly by the UK, Australia, and New Zealand education sectors, and launched in 2013 (ACTS INC 2017a). Currently, twenty-seven Australian universities were the institutional members (ACTS INC 2017b). Macquarie University, one of the LiFE institutional members, claimed explicitly on its official website that its sustainability-related data disclosed were aligned with the LiFE Index. The rest of the universities reports did not follow or indicate any specific reporting standard or principle followed.

4.1.4 Other Findings

Prior literature suggests that sustainability office not only contributes to promoting a greener campus but also to improving the level of sustainability reporting (Fonseca et al. 2011). The findings of the present study is consistent with the view of Fonseca et al. (2011) that the majority of SR practices are co-ordinated by sustainability office or similar position on the campus. The coordination of sustainability office has been recognised to be an important bottom-up force driven the incipient SR practices on the campus (Fonseca et al. 2011). Senior management is also regarded to be crucial to sustainable development and sustainability reporting (Gamage and Sciulli 2017). Six out of ten stand-alone sustainability reports contain introductory message or statement from the university’s Vice Chancellor, which is a positive sign as contended by Gamage and Sciulli (2017, 199) that experts emphasise “the sustainability message must come from senior management” (Economist Intelligence Unit 2010, 10; Gamage and Sciulli 2017). This has indicated that an up-down force
to encourage sustainability reporting practices on the campus would facilitate sustainability practices. Charles Sturt University (CSU) had a remarkable year in 2016 as Australia’s first certified carbon neutral university. However, it was not coincident. The statements from the Vice-Chancellor’s of Charles Sturt University showed his enthusiasm and commitment to sustainability in the sustainability report:

*I frequently say that CSU’s approach to sustainability is one of the things that attracted me to the role of Vice-Chancellor and it has been important to me to support this work since I have been here. We have achieved so many great things in 2016 that it might seem hard to know what to pick first. But really, what I am most proud of is that our university as Australia’s first certified carbon neutral university on 28 July 2016.*

*We made a plan to become carbon neutral in 2007. It has been a long road, marked by a series of significant efforts to reach the requirements of the Australian Government’s Carbon Neutral Program, certifying CSU as ‘carbon neutral’ against the National Carbon Offset Standard. At a time when we have seen such a struggle to have sensible discussions about energy policy at the national level, I feel it is really important that universities take a lead (CSU 2017, 4).*

Publicity of sustainability report on the websites is an important sign of the administration department’s involvement in sustainability disclosure practices (Fonseca et al. 2011). Most of the sustainability reports observed in the present study can be easily found on the universities’ official web pages related to sustainability projects which are similar to corporate sector, except for RMIT University and Griffith University. From the internal search engine of Griffith University’s website, the specific report about 2016’s sustainable development performance cannot be found. While on the RMIT’s website, the download link of the sustainability report
required a login, which may infer that the major purpose of the report was used to communicate with internal stakeholders instead of external stakeholders. However, through the popular search engine, Google.com, the RMIT’s sustainability report can be downloaded. Unable to download from the RMIT’s internal website may be of a technical problem instead of blocking external users. This issue is significant as according to Fonseca et al. (2011, 29), reduced publicity of sustainability report may convey a message that “the administration is not necessarily enthusiastic about their sustainability disclosures”.

Only four out of thirty-nine Australian universities explicitly claimed that they disclosed their sustainable development practices in the annual reports. Monash University (Monash) devoted 27 pages in the 2016 annual report to specifically addressed three dimensions of the sustainable development performance, with the heading of “social performance”, “environmental performance”, and “financial performance”. This 27 is more than the amount of pages of some stand-alone sustainability reports, making it as though a stand-alone sustainability report is contained inside the annual report. Monash achieved the nine highest overall reporting scores as measured by the present study. Its disclosure through annual report may be a response to the coercive pressures of stakeholders as contended by Hinson et al. (2015). However, there is no clear indication why Monash University does not prepare a stand-alone sustainability report instead. On the other hand, as discussed above, this fact strengthen the importance of this study which includes other reporting media in measuring the extent of SR in Australian universities.

At the introduction page of Environmental Performance in its Annual Report, Monash University claimed the following:
Monash University’s vision is to strive to achieve excellence in research and education, built through deep and extensive engagement with the world, to serve the good of our communities and environment. To achieve its goals, the University must be financially, socially and environmentally sustainable and must reflect its values in the way it operates, acting ethically, fairly, transparently and with generosity of spirit. The University’s practice must also support these goals as our campuses aim to become exemplars of environmental practice (Monash University 2017, 35).

It supports the view that the annual report could convey significant sustainable performance information.

4.2 The Extent of Sustainability Disclosure Made by Australian Universities Groupings in the Stand-Alone Sustainability Reports, Annual Reports and on the Official Websites

Table G compares the sustainability reporting results between the Group of Eight universities and the non-Group of Eight universities in Australia. The Mann-Whitney test was conducted to analyse the data. At $\alpha<0.05$, none of the dimensions is found to have a significant difference. Consequently, there is not enough evidence to support P2, that is, the Go8 universities provide a relatively greater extent of sustainability disclosure in the stand-alone sustainability reports, annual reports and on the official websites when compared with other Australian universities groupings. The findings of the present study indicate that elite universities did not perform better than their counterparts in terms of SR, which contradict the theoretical suggestion by prior literature that elite universities tend to have better SR level as a result of achieving competitive advantage of legitimacy through disclosure of their better sustainable development performance than their counterparts (García-Sánchez et al. 2013b).
This implies that although the elite and non-elite universities have different stakeholder groups (De Lange 2013; as cited in Ceuleman et al. 2015), the difference of their stakeholder influence is not significant. It may be because the Go8 consist of eight Australian universities located in different parts of Australia in which the local influence allows them having a lower level of SR as one of the propositions (P4) of the present study in an attempt to investigate the extent of geographical influence on the SR practices.

Table G. Sustainability reporting by Go8 & Non-Go8: descriptive statistics

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Group of Eight (n=8)</th>
<th>Non-Group of Eight (n=31)</th>
<th>Mann-Whitney test (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Economic</td>
<td>12–23</td>
<td>17.88</td>
<td>2.95</td>
</tr>
<tr>
<td>Environmental</td>
<td>35–95</td>
<td>63.75</td>
<td>20.78</td>
</tr>
<tr>
<td>Social</td>
<td>23–94</td>
<td>53.63</td>
<td>23.27</td>
</tr>
<tr>
<td>Educational</td>
<td>0–88</td>
<td>38.25</td>
<td>31.67</td>
</tr>
<tr>
<td>Overall</td>
<td>92–295</td>
<td>173.50</td>
<td>60.15</td>
</tr>
</tbody>
</table>

Notes: \(a\) Extent index=mean/maximum possible score; *significant at \(\alpha<0.05\)

Table H indicates that UWA is the only university of Go8 located in Western Australia. Although as one of the elite university group member, UWA’s SR level is lower than a lot of non-elite universities. UWA scores the lowest among the Go8 universities in 2016 with mean scores less than half of the mean scores of University of New South Wales (UNSW). UNSW is the highest sustainability reporter in 2016. A few low performers of the Australian elite universities have lowered the average SR level of the Go8. This implied that the geographical location of a university may be a more decisive factor influencing SR activity than the character of a university as being elite.
Table I compares the means of four different Australian university groupings, including ATN, Go8, IRU and RUN, concerning their environmental performance as measured by the present study. The Mann-Whitney test was used for the comparison of the ATN with the other three groupings and the non-ATN universities. At $\alpha<0.05$, one grouping, the Go8, is found to have significant difference with the ATN. However, the significant difference vanished since no significant differences are found between the ATN and all other non-ATN universities. These have provided a reasonable level to support P3, that is, the ATN universities provide a similar extent of sustainability disclosure concerning environmental dimension in the stand-alone sustainability reports, annual reports and on the official websites when compared with other Australian university groupings. The results finding is consistent with the view of De Grosbois (2012) who suggests that university sector and companies in the hospitality industry have consistent tendency towards SR practices that high commitment towards sustainable development does not necessarily lead to greater sustainability reporting level as information related to sustainable development goals is mainly marketing strategies to enhance their images and reputations.
Table I. SR environmental dimension scores by different Australian university groupings

<table>
<thead>
<tr>
<th>Grouping classification</th>
<th>Range</th>
<th>Mean</th>
<th>SD</th>
<th>Extent index $^a$</th>
<th>Mann-Whitney test ($p$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Technology Network (n=5)</td>
<td>0~66</td>
<td>29.60</td>
<td>27.18</td>
<td>0.16</td>
<td>-</td>
</tr>
<tr>
<td>Group of Eight (n=8)</td>
<td>35~95</td>
<td>63.75</td>
<td>20.78</td>
<td>0.35</td>
<td>0.0477*</td>
</tr>
<tr>
<td>Innovative Research Universities (n=7)</td>
<td>0~96</td>
<td>46.00</td>
<td>38.50</td>
<td>0.26</td>
<td>0.4654</td>
</tr>
<tr>
<td>Regional Universities Network (n=6)</td>
<td>24~90</td>
<td>60.00</td>
<td>24.00</td>
<td>0.33</td>
<td>0.12114</td>
</tr>
<tr>
<td>Non-ATN universities (n=34)</td>
<td>0~114</td>
<td>57.97</td>
<td>26.71</td>
<td>0.32</td>
<td>0.08364</td>
</tr>
</tbody>
</table>

Notes: $^a$Extent index = mean/maximum possible score; *significant at $\alpha<0.05$

4.3 The Extent of Sustainability Disclosure Made by Australian Universities in the Stand-Alone Sustainability Reports, Annual Reports and on the Official Websites by States in Australia

Table J indicates the means between Australian universities located in the state of Victoria and those located outside the state of Victoria. Table K shows the descriptive statistics between universities in different states or territories of Australia. At $\alpha<0.05$, it is found that there was a significant difference between Victorian and non-Victorian universities regarding environmental performance. The mean and extent index of Victorian universities are higher than non-Victorian universities in other state or territory. These descriptive statistics provide a reasonable level to support P4, that is, the Victorian universities provide a greater extent of sustainability disclosure concerning environmental dimension when compared with universities located in other states of Australia. The results finding is consistent with the political economy theories, namely legitimacy theory, stakeholder theory and institutional theory, that when SR is regarded as a standard
practice by the salient stakeholders of universities, universities are motivated to provide more comprehensive sustainability-related information in order to be seen as legitimate by the society.

Table J. SR environmental dimension scores in and outside the state of Victoria

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Victorian universities (n=8)</th>
<th>Non-Victorian universities (n=31)</th>
<th>Mann-Whitney test (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Environmental</td>
<td>42~60</td>
<td>72.13</td>
<td>16.2</td>
</tr>
</tbody>
</table>

Notes: <sup>a</sup>Extent index=mean/maximum possible score; *significant at α<0.05

Table K. Australian universities by States in Australia: descriptive statistics

<table>
<thead>
<tr>
<th>State / territory</th>
<th>N</th>
<th>Range</th>
<th>Mean</th>
<th>SD</th>
<th>Extent index&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIC</td>
<td>8</td>
<td>42~60</td>
<td>72.13</td>
<td>16.2</td>
<td>0.40</td>
</tr>
<tr>
<td>NSW</td>
<td>11</td>
<td>24~114</td>
<td>58.64</td>
<td>27.92</td>
<td>0.33</td>
</tr>
<tr>
<td>QLD</td>
<td>8</td>
<td>10~90</td>
<td>53.13</td>
<td>28.64</td>
<td>0.30</td>
</tr>
<tr>
<td>SA</td>
<td>3</td>
<td>0~39</td>
<td>24.00</td>
<td>21.00</td>
<td>0.13</td>
</tr>
<tr>
<td>WA</td>
<td>5</td>
<td>13~96</td>
<td>41.80</td>
<td>32.14</td>
<td>0.23</td>
</tr>
<tr>
<td>ACT</td>
<td>2</td>
<td>59~60</td>
<td>59.50</td>
<td>0.71</td>
<td>0.33</td>
</tr>
<tr>
<td>NT&amp;TAS&lt;sup&gt;γ&lt;/sup&gt;</td>
<td>2</td>
<td>0~72</td>
<td>36.00</td>
<td>50.91</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Notes: <sup>a</sup>Extent index=mean/maximum possible score; <sup>γ</sup>NT and TAS were combined since there was only one university in each state/territory.

It is clear that the awareness of environmental protection is deep-rooted in Victoria. The Victorian local government is the first state government to legislate the Environmental Protection Act in Australia (Sealey and Shepherd 2018). The Victorian government initiates the Take2 pledge to encourage every single Victorian individual, institution or organisation to shoulder the responsibility of and take actions in the reduction of greenhouse gas. It is implied that if Victorian universities
refuse to perform the standard practices of reporting on their approaches towards environmental protection, those universities will be regarded as illegitimate by the Victorians who pledge to Take2 campaign and lose their competitive advantage as a result. Therefore, it is not surprising that nearly every Victorian university explicitly address SR either in the stand-alone sustainability reports or annual reports. Only one Victorian university, Swinburne University of Technology (Swinburne), provided relatively less sustainable development information on the websites and received the lowest mean scores on the environmental dimension among all the Victorian universities. The mean scores of individual Victorian universities concerning their SR on environmental dimension are listed in Table L.

Table L. Sustainability reporting level of Australian Universities in Victoria

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean Score (%)</th>
<th>Swinburne</th>
<th>VU</th>
<th>Deakin</th>
<th>FedUni</th>
<th>La Trobe</th>
<th>RMIB</th>
<th>Monash UniMelb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental</td>
<td></td>
<td>23</td>
<td>33</td>
<td>43</td>
<td>43</td>
<td>53</td>
<td>37</td>
<td>42</td>
</tr>
</tbody>
</table>

Note: Mean score (%) = Average scores/maximum possible score

The present study found that all Victorian universities disclosed some sustainability-related information on the websites. Among the total of eight Victorian universities, half of the Victorian (four) universities produced a stand-alone sustainability report in 2016. Also, half of the Victorian universities provided numerical evidence of their sustainable development performance in the annual reports, with only one university reported its sustainability activities in both stand-alone sustainability report and annual report. Victoria consists of the highest number of universities (four out of eight universities; 50 per cent) employing annual reports as a medium to explicitly address SR than any other states or territories of Australia. New South Wales has the second highest number of universities (three out of eleven universities; 27 per cent)
using annual report as a mean of SR, and zero universities claimed to address SR in their annual reports in other states and territories. It is implied that universities in Victoria are in the leading position concerning disclosing environmental performance.

4.4 The Extent of Sustainability Disclosure Made by Australian Universities in the Stand-Alone Sustainability Reports, Annual Reports and on the Official Websites by Year of Establishment

Table M shows the descriptive statistics between Sandstone Universities and Young Universities under 50. Although the mean and extent index of Sandstone Universities are higher than Young Universities under 50, the difference vanished in the results of Mann-Whitney test. At α<0.05, it is found that there was no significant difference between Sandstone Universities and Young Universities under 50 with regards to environmental performance. Therefore, there is evidence to support P5, that is, the Sandstone Universities provides a similar extent of sustainability disclosure concerning environmental dimension in the stand-alone sustainability reports, annual reports and on the official websites when compared with Young Universities under 50.

<p>| Table M. SR environmental dimension scores of Australian university by year of establishment |
|-----------------------------------------------|-----------------------------------------------|</p>
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Range Mean SD Extent index a Range Mean SD Extent index a Mann-Whitney test (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental</td>
<td>35<del>82 58.67 19.08 0.33 0</del>96 48.88 29.31 0.27 0.465</td>
</tr>
</tbody>
</table>

Notes: "Extent index=mean/maximum possible score; *significant at α<0.05"
5. Conclusion

The study serves its exploratory purpose to examine the extent of sustainability disclosure by Australian universities disclosed in the annual reports, stand-alone sustainability reports and on the official websites. The study applied content analysis approach to quantify the sampled qualitative data for further analysis and comparison. The Mann-Whitney test and descriptive statistics were employed to test hypotheses.

The overall disclosed sustainable development performance of Australian universities was examined, the various university categories based on their potential determinants of the extent of sustainability disclosure were tested in the study. Universities were categorised based on university groupings, years of establishment and geographical locations. Shared characteristics are found within the same grouping of universities. The shared characteristics have the potential to influence SR level. Through comparing and contrasting within the university categories, the present study aims at gaining greater insights from investigating the relationship between shared characteristics and the extent of sustainability disclosure made by university sector in Australia.

5.1 Results and Implications

The results of this study are consistent with that reported by Gamage and Sciulli (2017) and Sanchez et al. (2015) confirming that the current state of SR in Australian universities is low. The low level of SR implies that there is a need to increase recognition of benefits resulted from performing SR (Djajadikerta and Triebanksi 2012) and university sector should enhance their knowledge on how to assess and report sustainable development performance (Fonseca et al. 2011) in order to
improve the current reporting level of Australian universities.

Through comparing and contrasting university groupings, the elite university group Go8 is found to have no significant difference in the extent of sustainability disclosure when compared with the non-Go8 universities. This finding contradicts the theoretical suggestion by De Lange (2013; as cited in Ceulemans et al. 2015), regarding the influence of different stakeholder groups between elite and non-elite universities, which suggests that elite universities often performed higher level of sustainable development performance. Findings of this present study indicate similarity of stakeholder influence on elite and non-elite universities towards SR practices.

The group of universities committed to greenhouse gas reduction (ATN) was not proofed to perform significantly different regarding reporting on the environmental development when compared with their counterparts. This is consistent with prior study suggested by De Grosbois (2012) and implied that SR is utilised as a marketing strategy to enhance images and reputations.

The study also found that Victorian universities performed higher reporting level on the environmental dimension when compared with universities located outside of Victoria. This implies that geographical location can have significant impact on the extent of sustainability disclosure. Also, universities sector is more responsive to the expectation of its salient stakeholders (local government and Victorians) to conform to the common institutional practice (environmental development) in order to gain legitimacy in the Victorian society.

Further, age-based classification of Australian universities is found to have little influence on SR practices. As examined by the present study, the contrast of
Sandstone Universities and Young Universities under 50 categories did not influence a significant difference on the extent of environmental performance disclosure.

Among the four dimensions used in the analysis, the economic dimension has the highest level of disclosure, this is affected by the inclusion of annual reports in the study. The findings contradict other prior research that excluded annual reports in their study and found very little economic performance being reported. The reporting levels concerning environmental and social dimensions as measured by the present study are found to have similar results as contended by Lozano (2011) that university sector reports more on environmental than social dimensions.

Findings of the present study in relation to educational dimension indicates that Australian university sectors reported little or none educational performance despite education is their major operations. This situation implies the influence of lacking a widely accepted reporting guidelines for higher education sector. Universities do not have clear guidance of what kind of educational information to measure and to disclose since the current existing widely accepted sustainability reporting guidelines, the GRI guidelines, only provide indicators for economic, social and environmental dimensions.

5.2 Limitation and Future Research

Same as other studies, the present study has some limitations required to consider. First, the small and disparate sample size of university categories was adopted by the present study; size ranged from 5 to 39. As a result, the Mann-Whitney test was chosen to test the hypotheses in the present study.

Second, the present study has limited comparability with other studies since it is a unique study to examine three types of reporting media produced by university
sector through the application of GASU guidelines. Therefore, future study is suggested to undertake similar research design focusing on different national context (e.g., developing countries) or characteristics (e.g., university size; city or rural university) with the same scoring methods. More insights could be gained from comparing and contrasting the research findings of various contexts. Through better understand of SR practices of different context, specific SR indicators can be developed for specific cultural or political backgrounds existed in various countries striving for a better measurement of sustainable development disclosed.

Third, the present study has its inherent limitations of focusing on the quantitative investigation of data gathered from content analysis. Future research is suggested to adopt a mixed or multiple research methods, so that the error or bias of solely using one method will be minimised, such as integrated interview and content analysis in one research design. This may result in achieving more insights on the sustainability reporting issues, and more accurate measurement of sustainable development reported.

Lastly, it is worthwhile to find out why some Australian universities had discontinued using stand-alone reports as their primary reporting media during 2013 and 2016 as found by the present study. Giving the low adoption rate of stand-alone sustainability reports, it is worthwhile to understand the reasons behind the reporting media choice for more insights.
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Appendices:

Appendix I: List of 108 Performance Indicators of GASU 2011

**Economic Dimension**

**Economic Performance Indicators**

*Aspect: Economic Performance*

EC1 Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments

EC2 Financial implications and other risks and opportunities for the organisation's activities due to climate change

EC3 Coverage of the organisation's defined benefit plan obligations

EC4 Significant financial assistance received from government

*Aspect: Market Presence*

EC5 Range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation

EC6 Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation

EC7 Procedures for local hiring and proportion of senior management hired from the local community at locations of significant operation

*Aspect: Indirect Economic Impacts*

EC8 Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement

EC9 Understanding and describing significant indirect economic impacts, including the extent of impacts

**Environmental Dimension**

**Environmental Performance Indicators**

*Aspect: Material*

EN1 Materials used by weight or volume

EN2 Percentage of materials used that are recycled input materials

*Aspect: Energy*

EN3 Direct energy consumption by primary energy source

EN4 Indirect energy consumption by primary energy source

EN5 Energy saved due to conservation and efficiency improvement

EN6 Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives

EN7 Initiatives to reduce indirect energy consumption and reductions achieved
**Aspect: Water**

EN8 Total water withdrawal by source
EN9 Water sources significantly affected by withdrawal of water
EN10 Percentage and total volume of water recycled and reused

**Aspect: Biodiversity**

EN11 Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas
EN12 Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas
EN13 Habitats protected or restored
EN14 Strategies, current actions, and future plans for managing impacts on biodiversity
EN15 Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk

**Aspect: Emissions, Effluents, and Waste**

EN16 Total direct and indirect greenhouse gas emissions by weight
EN17 Other relevant indirect greenhouse gas emissions by weight
EN18 Initiatives to reduce greenhouse gas emissions and reductions achieved
EN19 Emissions of ozone-depleting substances by weight
EN20 NOx, SOx, and other significant air emissions by type and weight
EN21 Total water discharge by quality and destination
EN22 Total weight of waste by type and disposal method
EN23 Total number and volume of significant spills
EN24 Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally
EN25 Identity, size, protected status, and biodiversity value of waste bodies and related habitats significantly affected by the reporting organisation’s discharges of water and runoff

**Aspect: Products and services**

EN26 Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation
EN27 Percentage of products sold and their packaging materials that are reclaimed by category

**Aspect: Compliance**

EN28 Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations

**Aspect: Transport**

EN29 Significant environmental impacts of transporting products and other goods and materials used for the organisation's operations, and transporting members of the workforce
**Aspect: Overall**
EN30  Total environmental protection expenditures and investment by type

**Social Dimension**

**Labour Practices and Decent Work Performance Indicators**

**Aspect: Employment**

LA1  Total workforce by employment type, employment contract, and region

LA2  Total number and rate of employee turnover by age group, gender, and region

LA3  Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations

**Aspect: Labour/Management Relations**

LA4  Percentage of employees covered by collective bargaining agreements

LA5  Minimum notice period(s) regarding operational changes, including whether it is specified in collective agreements

**Aspect: Occupational Health and Safety**

LA6  Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programme

LA7  Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region

LA8  Education, training, counselling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases

LA9  Health and safety topics covered in formal agreements with trade unions

**Aspect: Training and Education**

LA10  Average hours of training per year per employee by employee category

LA11  Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings

LA12  Percentage of employees receiving regular performance and career development reviews

**Aspect: Diversity and Equal Opportunity**

LA13  Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity

LA14  Ratio of basic salary of men to women by employee category

**Human Rights Performance Indicators**

**Aspect: Investment and Procurement Practices**

HR1  Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening
HR2 Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken

HR3 Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained

**Aspect: Non-discrimination**

HR4 Total number of incidents of discrimination and actions taken

**Aspect: Freedom of Association and Collective Bargaining**

HR5 Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights

**Aspect: Child Labour**

HR6 Operations identified as having significant risk for incidents of child labour, and measures taken to contribute to the elimination of child labour

**Aspect: Forced and Compulsory Labour**

HR7 Operations identified as having significant risk for incidents of forced or compulsory labour, and measures to contribute to the elimination of forced or compulsory labour

**Aspect: Security Practices**

HR8 Percentage of security personnel trained in the organisation's policies or procedures concerning aspects of human rights that are relevant to operations

**Aspect: Indigenous Rights**

HR9 Total number of incidents of violations involving rights of indigenous people and actions taken

**Society Performance Indicators**

**Aspect: Community**

SO1 Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting

**Aspect: Bribery and Corruption**

SO2 Percentage and total number of business units and analysed for risks related to corruption

SO3 Percentage of employees trained in organisation's anti-corruption policies and procedures

SO4 Actions taken in response to incidents of corruption

**Aspect: Public Policy**

SO5 Public policy positions and participation in public policy development and lobbying

SO6 Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country
**Aspect: Anti-competitive Behaviour**

SO7  Total number of legal actions for anti-competitive behaviour, anti-trust, and monopoly practices and their outcomes

**Aspect: Compliance**

SO8  Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations

**Product Responsibility Performance Indicators**

**Aspect: Customer Health and Safety**

PR1  Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures

PR2  Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes

**Aspect: Product and Service Labelling**

PR3  Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements

PR4  Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labelling, by type of outcomes

PR5  Practices related to customer satisfaction, including results of surveys measuring customer satisfaction

**Aspect: Marketing Communications**

PR6  Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship

PR7  Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes

**Aspect: Customer Privacy**

PR8  Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data

**Aspect: Compliance**

PR9  Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services

**Educational Dimension**

**Curriculum Performance Indicators**

**Aspect: SD incorporation in Curricula**

CU1  Number and percentage relative to total of degrees taught each year related to sustainability concepts

CU2  Number of degree courses whose content has SD themes
CU3 Number of students enrolled in sustainability-related degrees
CU6 List with degrees' titles and content
CU7 List with degrees' titles and SD theme contained

**Aspect: SD Capacity Building**
CU4 Specific course focuses on Educating the Educators in SD
CU8 Course structure, goals and duration

**Aspect: SD Monitoring in Curricula**
CU5 Management procedures for monitoring SD themes incorporation into Curricula
CU9 Management structure, incorporation follow up procedures, continuous improvement methods, etc.

**Aspect: Administrative Support**
CU10 Administrative support
CU11 Number and percentage of departments and colleges including sustainability curriculum

**Research Performance Indicators**

**Aspect: Research in General**
RE1 Research in the area of sustainability
RE2 Percentage of graduate students doing research in sustainability
RE3 Percentage of faculty that does research in sustainability issues
RE4 Institutional support and management procedures for multidisciplinary and interdisciplinary research in sustainability
RE5 Number of research projects that are multidisciplinary and interdisciplinary in the area of sustainability
RE6 List issues addressed: Renewable energies, ecological economics, urban planning, etc.
RE7 List of knowledge field involved
RE8 List of faculty members and Department or Centre they belong to
RE9 Type of support provided: budget allocation, office and personnel especially dedicated, etc.

**Aspect: Grants**
RE10 Total revenues from grants and contracts specifying sustainability-related research

**Aspect: Publications and Products**
RE11 Published research focusing on sustainability-related issues

**Aspect: Programmes and Centres**
RE12 Departments and centres with their functions on campus providing sustainability-related research or services

**Service Performance Indicators**

**Aspect: Community Activity and Service**
SE1 Student, faculty, and staff contributions to community development and service
SE2 Partnerships for sustainability with educational, business, and government entities at the local level

SE3 Quantity and composition of student groups focusing on one aspect of sustainability

**Aspect: Service Learning**

SE4 Existence and strength of service learning programs

SE5 Total faculty, staff, students, involved in service learning projects

**Aspect: Declarations**

SE6 SD declarations, initiatives, and charters signed (e.g. Talloires, Kyoto, Barcelona, etc.)

Reference: UG 2017; Lozano et al. 2013
## Appendix II: List of Universities in Different Categories

<table>
<thead>
<tr>
<th>University Category</th>
<th>Name of University</th>
<th>Abbrev.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group of Eight (Go8)</strong></td>
<td>1 Australian National University</td>
<td>ANU</td>
</tr>
<tr>
<td></td>
<td>2 Monash University</td>
<td>Monash</td>
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<tr>
<td></td>
<td>3 University of Adelaide</td>
<td>UA</td>
</tr>
<tr>
<td></td>
<td>4 University of Melbourne</td>
<td>UniMelb</td>
</tr>
<tr>
<td></td>
<td>5 University of New South Wales</td>
<td>UNSW</td>
</tr>
<tr>
<td></td>
<td>6 University of Queensland</td>
<td>UQ</td>
</tr>
<tr>
<td></td>
<td>7 University of Sydney</td>
<td>USYD</td>
</tr>
<tr>
<td></td>
<td>8 University of Western Australia</td>
<td>UWA</td>
</tr>
<tr>
<td><strong>Australian Technology Network (ATN)</strong></td>
<td>1 Curtin University</td>
<td>Curtin</td>
</tr>
<tr>
<td></td>
<td>2 Queensland University of Technology</td>
<td>QUT</td>
</tr>
<tr>
<td></td>
<td>3 RMIT University</td>
<td>RMIB</td>
</tr>
<tr>
<td></td>
<td>4 University of South Australia</td>
<td>UniSA</td>
</tr>
<tr>
<td></td>
<td>5 University of Technology Sydney</td>
<td>UTS</td>
</tr>
<tr>
<td><strong>Innovative Research Universities (IRU)</strong></td>
<td>1 Charles Darwin University</td>
<td>CDU</td>
</tr>
<tr>
<td></td>
<td>2 James Cook University</td>
<td>JCU</td>
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<tr>
<td></td>
<td>3 Griffith University</td>
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<td></td>
<td>4 La Trobe University</td>
<td>La Trobe</td>
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<td></td>
<td>5 Flinders University</td>
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<td></td>
<td>6 Murdoch University</td>
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<tr>
<td></td>
<td>7 Western Sydney University</td>
<td>WSU</td>
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<tr>
<td><strong>Regional University Network (RUN)</strong></td>
<td>1 Central Queensland University</td>
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<td>2 Southern Cross University</td>
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<td></td>
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<td></td>
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<td>Australian Catholic University</td>
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<td>RMIT University</td>
<td>RMIT</td>
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<tr>
<td>21</td>
<td>Charles Darwin University</td>
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<td>University of Southern Queensland</td>
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