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**Engaging sustainability good practice within the curriculum  
design and property portfolio in the Australian higher  
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## Engaging sustainability good practice within the curriculum design and property portfolio in the Australian higher education sector

### Structured Abstract:

#### Purpose

The aim of this research is to evaluate the extent which university's strategic plans affect the level of incorporation of sustainability within the curriculum design and property portfolio.

#### Design/methodology/approach

This research adopted a case study approach. The case study institution was Deakin University in Australia. This paper used a qualitative research method. Desk-top study included the review of the University's Strategic Plan, policy agenda on sustainability and the documents on sustainability courses and units. Semi-structured interviews were held with academics who have course development and management responsibility within the university, colleagues who have a sustainability-focused role on estate management and colleagues whose roles are to manage sustainability initiatives at institution level. All interviews were recorded and transcribed. Content analysis was used to analyse the interview data.

#### Findings

Despite the University having a clear strategic aims and initiatives on the incorporation of sustainability within curriculum design and property portfolio, there is disconnection between policy development and policy implementation. As a result, the incorporation of sustainability varies largely between curricula within the institution. The incorporation of sustainability within the property portfolio is clear and effective. However, within the curriculum it is polarised. The level of incorporation depends on the nature of the course or unit and is largely driven by the initiatives of the individual academic.

Good practice identified in the incorporation of sustainability within the curriculum is to use a problem-based approach supported by real life projects to enhance the students' authentic learning experience. The good practice for successfully incorporating sustainability into the property portfolio is to have clear vision of what it has planned to achieve and to ensure there is a balance between sustainability and value for money.

#### Originality/value

This is pioneering research to investigate the incorporation of sustainability into higher education in a more comprehensive way. This paper considered the impact of strategic planning on the incorporation of sustainability within a higher education, on both curriculum design and property portfolio management.

#### Keywords:

Education Sustainable Development, Curriculum, Higher Education Sector, Property Portfolio, Australia

#### Article Classification:

Research paper

### 1. Introduction

There is a large body of research discussing sustainability in the higher education sector albeit the main focus is on curriculum design and development alone (Chhokar, 2010; Fenner, 2005; Muijen, 2004; Shephard, 2008). There is also extensive literature providing evidence on how

1 organisation's strategic plans can positively impact sustainable development, but they are  
2 predominantly focused on other sectors, such as Manufacturing and Retail (Erol *et al.*, 2009;  
3 Garetti and Taisch, 2012; Gunasekaran and Spalanzani, 2012; Jones *et al.*, 2005). However, there  
4 is a paucity of research on how strategic planning can influence the incorporation of sustainability  
5 within the curriculum and property portfolio, such as development, refurbishment, maintenance  
6 and management, in the higher education sector. Real estate is one of the key assets for large  
7 organisations such as universities. Built environment also has a major impact on sustainability.  
8 UNEP SBCI (2009) stated that 'buildings are responsible for more than 40 percent of global  
9 energy use and one third of the global greenhouse gas emissions, both in developed and  
10 developing countries' (p.6). Also, because buildings have a relatively long lifespan, immediate  
11 action taken to encourage a sustainable built environment will help to reduce greenhouse gas  
12 emissions over the longer term (*ibid.*).  
13

14 The aim of this research is to evaluate the extent to which universities' strategic planning affects  
15 the level of incorporation of sustainability within the curriculum design and property portfolio. This  
16 paper aims to address the following research questions:  
17

- 18 • What are the practical implementations for incorporating sustainability within the curriculum  
19 design?
- 20 • What are the practical implementations for incorporating sustainability in the property  
21 portfolio within the higher education sector?
- 22 • What are the good practices for engaging sustainability good practice within the curriculum  
23 design and property portfolio within the higher education sector?
- 24 • What are the areas of improvement for incorporating sustainability within the curriculum  
25 design and property portfolio in the higher education sector?  
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## 30 2. Literature Review

### 31 2.1 Sustainability literacy

32 The starting point for sustainability literacy is an appreciation of the current mode of production  
33 and way of life which is inherently unsustainable with far reaching immediate and long term  
34 implications on economy and society (Orr, 2004). Stribbe (2009) argued that human beings need  
35 to survive and thrive in challenging conditions and they require the skills and attributes to  
36 demonstrate ecological intelligence and technological appraisal whilst appreciating that there is no  
37 single way to enhance literacy levels. Two levels of learning are required to raise literacy levels.  
38 The first relates to a need for a holistic, multi-disciplinary appreciation of the core principles and  
39 implications of sustainability on decision making (Dawe *et al.*, 2005). The second level focuses on  
40 exploring the importance of experiential learning and a real life understanding for its implications  
41 (Kolb, 1984). The following paragraphs will evaluate to what extent the current learning  
42 environment for sustainable construction are supported by these two levels.  
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48 Dixon *et al.* (2008)'s research findings highlighted that the Royal Institution of Chartered Surveyors  
49 (RICS) members have a low level of awareness and understanding of sustainable construction, a  
50 trend shared by other built environment professionals over the last decade (see CIOB, 2013; Dale,  
51 2007 and RIBA, 2014). Built environment professional organisations have sought to promote  
52 sustainable construction within their professional competency framework over the last decade  
53 through developing associated CPD programmes for their members (Murray and Cotgrave, 2007).  
54 They also established it as an integrated requirement for their accredited degree courses aimed at  
55 developing new graduates to be sustainability literate (*ibid.*). Despite efforts on incorporating  
56 sustainability literacy as part of formal education, Gleeson and Thomson (2012) have challenged  
57 its actual use on enhancing built environment professionals' capacity on sustainability literacy.  
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1 Gleeson and Thompson (2007) pointed out that promoting sustainable construction is as much  
2 about changing the mind-set and culture of its professionals as it is about developing skills to  
3 implement the technologies and new techniques.

4 There is also concern existing for construction professionals who have not been engaged in formal  
5 education in the last decade (or even at all) and have limited access to sustainability related  
6 training or professional CPD and the impact on their ability to achieve the necessary sustainability  
7 literacy. Learning within the built environment is primarily rooted in experiential learning (Kolb,  
8 1984) focused on learning by doing through informal pathways to education associated with  
9 apprenticeships and other types of on-job training (Mathur *et al.*, 2008). A question remains as to  
10 whether these often individually driven learning pathways effectively foster sustainability literacy.  
11

12  
13 The existing literature, such as Dixon *et al.* (2008), Gleeson and Thompson (2007) and Murray  
14 and Cotgrave (2007), highlighted that there is a combination of low level of sustainability literacy in  
15 the built environment sector and the challenges faced on developing the sector's professionals'  
16 sustainability literacy. Therefore, it is important to gain understanding on how to enhance the  
17 sustainability literacy of the professionals in the built environment sector, such as those who  
18 manage property portfolios for large organisations.  
19

## 22 **2.2 Sustainability and curriculum development**

23  
24 Fenner *et al.* (2005) examined the concept of embedding sustainable development into the  
25 teaching activities in the Department of Engineering at the University of Cambridge in the UK. The  
26 paper has discussed the reflections on the paradigms and pedagogy of teaching sustainable  
27 development issues to engineers and also highlighted the barriers to progress which have been  
28 encountered. The research finding of this paper is that the key for successful incorporation of a  
29 sustainable solution within the curriculum is that it is needed to be activated within the whole  
30 curriculum not taught as another specialism.  
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32  
33 Murray and Cotgrave (2007) adopted a case study approach which focuses on the sustainability  
34 curriculum development in the University of Portsmouth and evaluated whether sustainability has  
35 become the operating paradigm for construction education in the UK. Murray and Cotgrave (2007)  
36 examined the viewpoints of the construction-related professions by analysing the accreditation  
37 policies of key professional bodies, such as the Royal Institution of Chartered Surveyors (RICS),  
38 Royal Institute of British Architects (RIBA), Royal Town Planning Institute (RTPI), Chartered  
39 Institute of Building (CIOB) and Chartered Institution of Building Services Engineers (CIBSE) and  
40 also conducted a survey with public sector-based UK building professionals to gather their views  
41 on incorporation of sustainability within the built environment sector. Murray and Cotgrave (2007)  
42 also conducted a survey of UK universities delivering construction degrees to explore the  
43 environmental content of construction courses. The research findings of this study showed that the  
44 sustainability agenda and construction are intricately linked in the built environment courses in the  
45 University of Plymouth. The reason for this success is because there are strong policy drivers for  
46 embedding sustainability into the curriculum despite the fact that the response from construction  
47 educators was patchy. Overall, this case study demonstrated that integrating sustainability issues  
48 within construction courses can be achieved if support from different stakeholders was received.  
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50  
51 Shephard (2008) discussed the use of educational theories of the effective domain, such as  
52 values, attitudes and behaviours and relevant experience in other educational areas which could  
53 benefit the implementation of sustainability in higher education. The findings of this research are  
54 based on an analysis of literature reviews of relevant educational endeavours in affective learning.  
55 The finding of this research has emphasised the importance for the pursuance of achieving  
56 affective outcomes rather than simply focusing on enhancing the development of cognitive  
57 knowledge and understanding.  
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1 Chhokar's (2010) research focused on investigating sustainable innovative curriculum  
2 development in India's education sector. This research has compared different educational  
3 approaches in different higher education institutions in India, taking into account their educational  
4 philosophy, academic programmes, policy statements and education projects, to highlight  
5 important developments, challenges and the prospects for future progress in connection with  
6 education for sustainable development. The research finding showed that there is a high level of  
7 incorporation of sustainable development in India's education policy. One of the reasons to explain  
8 the high level of incorporation is due to the fact that India is the only country where the Highest  
9 Court has mandated that environmental education is required to be incorporated at all levels of  
10 formal education, which includes offering a compulsory course at undergraduate level. However,  
11 there are still challenges existing for the effective embedding of sustainability within education as  
12 there is a lack of inter-disciplinary competence among staff and students and implications from  
13 limited resources. Chhokar (2010) concluded that 'many efforts to develop learning opportunities  
14 in this field have emerged primarily from academic and student interests and priorities rather than  
15 from formal policy initiatives' (p.141).  
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19 The findings of previous research on curriculum concluded that one of the key factors for  
20 successful incorporation of sustainability within the curriculum is to ensure it is incorporated within  
21 the whole curriculum, and not included as an additional specialism. Sustainability affects people's  
22 life in many ways, therefore, a suitable approach to teach sustainability is to encourage students to  
23 view sustainability as a day-to-day issue not only as a technical subject. Finally, it is also important  
24 to have staff and student's interest on the subject as it is the most effective mechanism for  
25 engagement.  
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### 29 **2.3 Sustainability and campus development**

30  
31 Education for sustainable development is a contentious concept that has been present in many  
32 official agendas in higher education institutions for the last several decades. However, the  
33 research focusing on sustainability of campus buildings has not progressed as fast as expected  
34 (Velazquez *et al.*, 2005). Despite some research on sustainability of campus buildings, the focus  
35 has been in South-east Asian countries and has mostly been in relation to new buildings rather  
36 than sustainable refurbishment and management of existing properties (Niu *et al.*, 2010; Su and  
37 Chang, 2010).  
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39

40 Su and Chang's (2010) research provides the rationale and context for recent national policy and  
41 funded initiatives, Taiwan Sustainable Campus Programme (TSCP), to support sustainability  
42 developments within higher education in Taiwan. This Programme addressed the sustainable  
43 development of the campus in both the practical and educational aspects. It is important to point  
44 out that this sustainability initiative was launched after a major natural disaster, the 921  
45 earthquake in 1999. Therefore this programme has a strong focus on ensuring the reconstruction  
46 of the campus and enhancing its physical sustainability against the prospect of future natural  
47 disasters.  
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50 Niu *et al.* (2010) studied the Green Campus Plan implemented in Tsinghua University. Tsinghua  
51 University's idea for a 'green campus' is more comprehensive than Su and Chang's (2010) and  
52 the Green Campus Plan covered areas of education and facilities management. In other words, it  
53 considered education with green curricula, research with green science and technology, and green  
54 operations to influence student activities. Despite Niu *et al.* (2010) having more comprehensive  
55 ideas for sustainability, their focus on 'building' is still in regards of new buildings only and there is  
56 no consideration for sustainable property refurbishment and maintenance.  
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## 2.4 Challenges on successfully implementing sustainability

The first challenge for a successful implementation of sustainability is the lack of rigorous regulations and policy within an organization (Down, 2006; Littledyke *et al.*, 2013; Velazquez *et al.*, 2005; Wright, 2010). Velazquez *et al.* (2005) discussed the importance of policy leading the aims, objectives and procedures in fulfilling the goals. They also highlighted the need for more rigorous regulations for fostering education for sustainable development and they emphasize the need to have more enforcement of those regulations in order to effectively promote sustainability. Wright (2007) reinforced Velazquez *et al.*'s (2005) view and concluded that it will be difficult if not impossible to achieve success with regard to effective sustainability education policy enforcement and implementation if there is a lack of university's management backing sustainability initiatives.

The second challenge is the lack of support from stakeholders and their resistance to change (Down, 2006; Littledyke *et al.*, 2013; Velazquez *et al.*, 2005; Wright, 2010). Down (2006) stated that in order to implement any change in a curriculum it requires the direct or indirect co-operation of a number of key stakeholders from the relevant educational institutions, particularly academic staff and students. He further stated that the challenges faced in attempting to mainstream sustainable development education in curriculum development were directly related to the lecturers' concept, knowledge of and attitude to the subject, students' expectations and syllabus constraints. Students signing up for a course have expectations of particular content within a specific syllabus. In other words, a set of stated learning outcomes must be addressed in the course curriculum. If the lecturers attempt to re-orient that course to engage with sustainability issues, the students may perceive it as deviating from the focus of the course and have objections to this arrangement (Down, 2006). Velazquez *et al.* (2005) also highlighted the impact of resistance from administrative staff with regard to the implementation of sustainability development by stating 'obtaining the support from university top management {on sustainable education development} should not be difficult. However, opposition from decision-making and administrative inertia are obstacles that come in the way of instituting solid programmes' (p.386).

The other challenge for enhancing sustainability in higher education is financial constraint (Velazquez *et al.*, 2005; Wright, 2010). The implementation of new initiatives, such as green campus, requires a substantial amount of resources upfront. Despite the potential savings to the operational cost of the building over its life cycle, the requirement for initial investment can still be a hindrance to its conception and subsequent successful implementation.

## 2.5 Incorporation of sustainability within the higher education sector in different countries

Sustainability has become an increasingly important issue for universities worldwide (Beringer *et al.*, 2008). Some of the initiatives are directed by government's legislative framework (Axelsson *et al.*, 2008). From 1 February 2006 onwards, all universities in Sweden have been assigned an additional task by a new amendment to the Act on Higher Education in the opening paragraph (Act on Amendment of the Higher Education Ordinance, 2014: p.1096):

Institutions of higher education shall promote sustainable development in their activities meaning that present and future generations will be assured a healthy and good environment, economic and social welfare and justice.

This means that research and education at universities directed towards education sustainable development has become one of Swedish society's prioritised fields on education and research (Axelsson *et al.*, 2008).

1 The sustainability in higher education (SHE) research is still a relatively new and emergent area of  
2 inquiry in Canada. Researchers in this area have called for more documentation of university  
3 sustainability initiatives (Wright, 2007). Also, the SHE research in Canada has a more exploratory  
4 focus, for example, in-depth research and evaluation of SHE through the development of  
5 comprehensive case studies (Corcoran *et al.*, 2004), problem-based research into the role which  
6 higher education can play in developing a sustainable society (Ubuntu Declaration on Education,  
7 2002) and interdisciplinary sustainability research with real world application (Clugston and Caldor,  
8 1999; Social Sciences and Humanities Research Council of Canada, 2002).

9  
10 Wright and Horst (2013) examined the views of senior university staff in Canada on sustainability  
11 in higher education. The findings of their research demonstrated that despite senior staff having  
12 given thought to their own understanding of sustainable development, fewer of them had thought  
13 about the term sustainable university. The majority of participants in this research would have liked  
14 to see their institutions enhance their incorporation of sustainability in the areas of education,  
15 research and daily operations.

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18 The Australian Government has also committed to ensuring that the priority of education for  
19 sustainability across Australia is being met. One of the actions for achieving this purpose was to  
20 establish the Australian Research Institute for Environment and Sustainability (ARIES) in 2003 and  
21 it has continued to do research to influence and inform Australian government policymakers on  
22 sustainability in education since then.

23  
24  
25 The use of policy, both at national and institutional levels, to influence and enhance the use of  
26 sustainability in the higher education sector is a common theme in different countries worldwide.  
27 The previous studies also acknowledged the importance of considering sustainability in education,  
28 research, estate management and daily operation within the higher education sector.

### 31 **3. Research Methods**

32  
33 This research adopted a case study approach as this research aimed to explore the 'how and why'  
34 of incorporating sustainability in a higher education context (Gray, 2004) and also investigated  
35 'contemporary phenomenon within its real life context' (Yin, 1994). Case study is a popular  
36 research method for sustainability research. Niu *et al.*'s (2010) research focused on Tsinghua  
37 University in China, Fenner *et al.*'s (2005) research focused on Cambridge University in the UK,  
38 Murray and Cotgrave's (2007) focused on University of Plymouth in the UK and Muijen (2004)  
39 focused on Vrije Universiteit of Amsterdam in the Netherlands. The reason for the preference of  
40 using case study for sustainability in higher education (SHE) research is because institutional  
41 policy and structure has a major impact on SHE implementation. The use of the case study  
42 approach enables research to take these aspects into consideration and be able to identify a more  
43 comprehensive picture and draw up more robust research findings.

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45  
46 Validity and reliability were addressed in the research design and data collection. This research  
47 used multiple sources of evidence, including the University's Strategic Plan, policy documents on  
48 sustainability, specifications of sustainability courses/ units and interviews with stakeholders who  
49 have different responsibilities on sustainability within the university, with the aims to ensure  
50 constructive validity. The stakeholders who were interviewed in this research include the  
51 University's Sustainability Team and Facilities Manager who has a specific responsibility for  
52 sustainability and academic colleagues who have a responsibility on curriculum development and  
53 enhancement. Previous research which investigated the university's implementation of  
54 sustainability in higher education also used interviews as the primary data collection method  
55 (Wright, 2010; Wright and Horst, 2013). The advantage of using interviews as a data collection  
56 strategy for case study research is that the interviewees can provide important contextual  
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1 information about the case study organisation, as well as providing comments on the specific  
2 interview questions.

3 Furthermore, because data was collected from different stakeholders and also referenced to the  
4 relevant sustainability policy documents, it is expected inter-observer reliability is ensured.  
5 Triangulation of the interviews, desk-top analysis of documents and policy observations served as  
6 a verification procedure to confirm the credibility of the study results.  
7

8  
9 The purpose of the discussion with property colleagues is to identify the University's current  
10 priorities and future plans for sustainable property development, refurbishment, maintenance and  
11 management. The discussion with the academic colleagues aims to identify the good practice on  
12 incorporating sustainability within the curriculum.  
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### 14 15 **3.1 Case study institution– Deakin University in Australia**

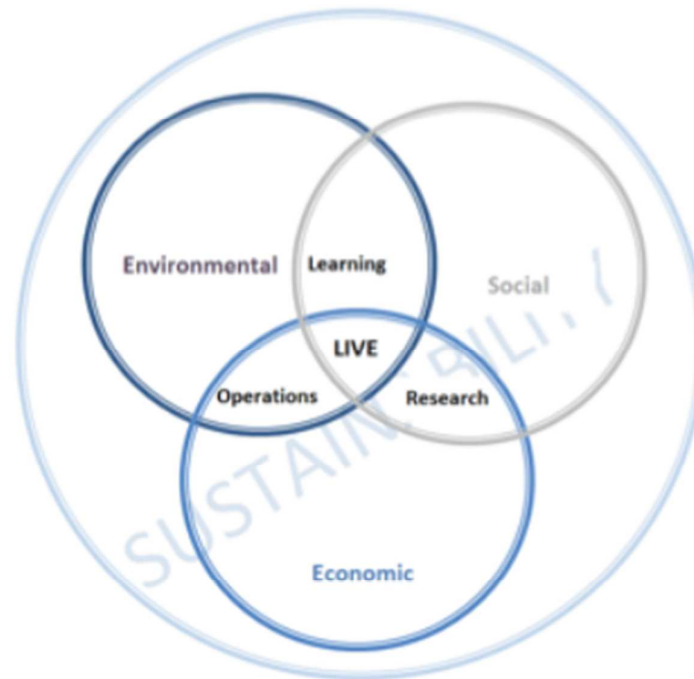
16  
17 Sustainability is overtly recognised in Deakin University's Strategic Plan, LIVE (Learning, Ideas,  
18 Values and Experience) Strategy (Deakin University, 2015). Sustainability 2020 is Deakin's  
19 updated sustainability strategy. Sustainability 2020 advances Deakin's sustainability initiatives in  
20 line with the University's Strategic Plan LIVE the Future. Sustainability 2020 extends the definition  
21 and practice of sustainability in Deakin to include the triple bottom line considerations of economic,  
22 environmental and social measures. The interrelationships of the sustainability components  
23 support the LIVE Agenda. In recognition of Deakin's on-going commitment to sustainability,  
24 Deakin's sustainability goals are outlined as follows:  
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- 27 • Operations: To employ sustainability principles in all University's decisions related to the  
28 use of facilities and spaces
- 29 • Learning: To incorporate sustainability principles into the curriculum to create global citizens
- 30 • Research: To ensure that research is undertaken in a sustainable manner, and establish  
31 research areas that contribute to sustainability globally  
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34  
35 These components are incorporated and mutually influence the Deakin community. The Venn  
36 diagram stated in Figure 1 has provided further information on the interrelationship between LIVE  
37 strategy and triple bottom line sustainability measures.  
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**Figure 1 Deakin University's LIVE strategy and its interrelationship with triple bottom line sustainability measures and sustainable goals**



**Source: Deakin University (2015)**

It is very clear in the University's Strategic Plan that the institution has the intention to consider sustainability within the operation of the organisation, courses curricula and research. 'Sustainability' within the context of this paper can be seen as: (1) the incorporation of core sustainability drivers into the curriculum, and (2) incorporating and promoting within the operation of the organisation, which is to focus on the development, refurbishment, management and maintenance of the property portfolio. Incorporation of sustainability within research was not considered in this paper. This is because conducting research on sustainability or incorporating sustainability within research projects is more likely to happen at an individual level. Therefore, the author has decided not to include the evaluation of incorporation of sustainability within research as this paper adopts a case study approach with an institutional focus.

### **3.2 Data collection and analysis**

This research adopted a qualitative approach, and used a purposeful sampling method to identify the respondents who were best suited to provide detailed information on the subject matter (Savelyeva and McKenna, 2011). The interviewees included academics who have course development and management responsibility within the University, colleagues who have a sustainability-focused role in estate management and also colleagues whose role is managing sustainability initiatives at institution level. The nine interviewed colleagues include:

1. Colleague who has a role on Teaching and Learning at institutional level
2. Associate Dean for Teaching and Learning
3. Associate Head for Teaching and Learning
4. Head of School
5. Course Director for a cross-Faculty course

6. Unit chair and teaching staff for cross-institutional sustainability unit
7. Course leader for a course which has Major in sustainability
8. Institutional Sustainability Team
9. Facilities manager who has specific responsibility on sustainability

The interview 6 and interview 8 are group interviews and two interviewees were involved on each occasion. Interview 6 was conducted with the unit chair and the lecturer of the cross-institutional sustainability unit and interview 8 was conducted with the Sustainability Manager and Sustainability Officer.

The interview discussion consisted of four areas. The questions to the academics and the property services colleagues are basically the same, the only difference is that the questions for academics are focused on curriculum design while for property services colleagues are focused on property development, refurbishment, maintenance and management. The interview questions are listed in Table 1.

**Table 1 Interview questions**

<b>Interview with academics who have an academic management role, i.e. Interviews 1 to 7</b>	<b>Interview with property services colleagues who have a sustainability role, i.e. Interviews 8 and 9</b>
<b>Background information about interviewees</b>	
<ul style="list-style-type: none"> <li>• What is your current role and responsibilities?</li> <li>• What is your role in curriculum design?</li> <li>• What is your role in incorporating sustainability into the curriculum?</li> </ul>	<ul style="list-style-type: none"> <li>• What is your current role and responsibilities?</li> <li>• What is your role in implementing the sustainability aspects as mentioned in the University's LIVE strategy?</li> <li>• What is your role on the implementation of sustainability development in the property portfolio, including property development, refurbishment, maintenance and management?</li> </ul>
<b>Deakin University's practice on incorporating sustainability into the <i>curriculum (or property portfolio)</i></b>	
<ul style="list-style-type: none"> <li>• What is Deakin's strategic driver for incorporating sustainability into the curriculum?</li> <li>• How does Deakin incorporate sustainability into the curriculum?</li> <li>• How is sustainability incorporated in different years of study? For example, incorporate sustainability according to the level of study or incorporate it as a whole within the course?</li> <li>• How does Deakin incorporate sustainability in the design of a range of</li> </ul>	<ul style="list-style-type: none"> <li>• What is Deakin University's strategic driver for incorporating sustainability in the property portfolio, including development, refurbishment, maintenance and management?</li> <li>• What is the University's focus on ensuring it has a sustainable property portfolio? Is it more on the development or more on the maintenance aspects?</li> <li>• How does Deakin University consider the</li> </ul>

<p>teaching and learning activities?</p> <ul style="list-style-type: none"> <li>Do you think if there is any gap between the preaching and practicing of incorporating sustainability in the curriculum? In other words, do you think the University has fulfilled the potential of implementing its sustainability agenda?</li> </ul>	<p>incorporation of sustainability in its property development, refurbishment, maintenance and management?</p> <ul style="list-style-type: none"> <li>How does the sustainability concept incorporate within the University's property portfolio? For example, through the University's own staff or bringing in consultants?</li> <li>Do you think there is any gap between the preaching and practicing of incorporating sustainability in the property portfolio in the University? In other words, do you think the University has fulfilled the potential of implementing a sustainability agenda?</li> </ul>
<p><b>Interviewees' views on incorporating sustainability within the <i>curriculum (or property portfolio)</i></b></p>	
<ul style="list-style-type: none"> <li>In your opinion, why do you think it is important to incorporate sustainability into the curriculum?</li> <li>What do you think is the best strategy for incorporating sustainability into the curriculum?</li> <li>What are the challenges/ obstacles on incorporating sustainability into the curriculum?</li> <li>What is your view on the enhancement of student employability through the incorporation of sustainability into the curriculum?</li> </ul>	<ul style="list-style-type: none"> <li>In your opinion, why do you think it is important to incorporate sustainability into the property portfolio?</li> <li>What do you think is the best strategy for incorporating sustainability into the property portfolio?</li> <li>What are the challenges/ obstacles on incorporating sustainability into the property portfolio?</li> <li>What is your view on the enhancement of the University's image and reputation through the incorporation of sustainability into the property portfolio?</li> </ul>
<p><b>Good practices/ Case studies</b></p>	
<ul style="list-style-type: none"> <li>Are you aware of some courses, units or examples which you would define as good practice on embedding sustainability into the curriculum?</li> </ul>	<ul style="list-style-type: none"> <li>Are you aware of some of the examples (new property development, refurbishment, maintenance or management projects), which you would define as good practice on incorporating sustainability into the property portfolio?</li> </ul>
<p><b>Additional comment</b></p>	

1 Each participant was interviewed once in a face-to-face setting. All interviews were digitally  
2 recorded and transcribed with the permission of the participants. Content analysis was used to  
3 analyse the interview data. Data coding and analysis took place after all interviews were complete.  
4 The data was analysed and themes were identified (McCracken, 1998). The policy and course  
5 documents were reviewed to identify common themes and topics which address each research  
6 question.  
7

#### 8 **4. Research Findings and Discussions**

##### 9 **4.1 University's practical implementations for incorporating sustainability within the** 10 **curriculum design**

11 Practices for incorporating sustainability within the curriculum varies vastly among different  
12 courses and units in the university, some courses or units have heavily incorporated sustainability  
13 throughout the whole curriculum across different degree levels while some courses or units do not  
14 even mention it. Unit in an Australian context means module in the UK higher education system.  
15 The incorporation of sustainability has depended very much on individual teaching staff's initiatives  
16 and the nature of the course or unit. For example, built environment courses and units are more  
17 likely to incorporate sustainability into the curriculum as there is a strong link between  
18 sustainability and building. However, with the shortening of the trimester, it becomes more difficult  
19 to add or incorporate new content, such as sustainability, into the curriculum. The University runs a  
20 trimester system. In the past, there were 13 weeks in one trimester. This was reduced to 12 weeks  
21 in the early 2010s and then down to 11 weeks from 2013. The comment about adding  
22 sustainability as new content in the curriculum demonstrated the University had not implemented  
23 one of the important strategies on the incorporation of sustainability within curriculum as identified  
24 by Fenner *et al.* (2005).  
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31 One of the reasons causing this unsystematic incorporation of sustainability within the curriculum  
32 was due to the lack of institutional requirement for it. Despite the necessity to incorporate  
33 sustainability within the curriculum being mentioned in the University's Strategic Plan, there was  
34 no strict procedure or policy on assuring sustainability had been incorporated into the curriculum.  
35 There was also the lack of quality assurance mechanisms to ensure sustainability had been  
36 incorporated into all courses and modules. However, the real picture on incorporating sustainability  
37 may not be as insufficient as it has been described above. Interviewee 3 provided rationale to  
38 explain the situation *'I don't think a lot of academic colleagues have a detailed understanding on*  
39 *what is meant by sustainability. They might teach sustainability in their units but they do not realize*  
40 *it or call it sustainability. For example, the unit 'Accounting for Intangibles' focuses on creating*  
41 *responsibility in society and it is a sustainability concept. However, the teaching staff of this unit do*  
42 *not call it 'sustainability' and therefore they do not think they have incorporated sustainability in the*  
43 *curriculum'*.  
44  
45

46 There is also some innovative practice on incorporating sustainability within the university  
47 curriculum. There is a specialist sustainability unit, which is called *'Creating Sustainable Future'*.  
48 This unit is a cross-faculty unit involving all faculties of the University. This unit is compulsory  
49 for the students who study for a Major in sustainability. Students who study in other disciplines can  
50 study this unit as an optional unit.  
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52

53 A problem-based approach has been used as a delivery mechanism for this unit. The problem-  
54 based approach has been identified by the United Nations as a suitable method for developing a  
55 sustainable society (Ubuntu Declaration on Education, 2002). The delivery of this unit involved  
56 academics from different disciplines across the University. The academics provided guest lectures  
57 throughout the whole unit, which were aimed at addressing sustainability with different disciplines  
58 focus, such as property, construction, engineering, health and education etc. The University's  
59  
60

1 Sustainability Office and Facilities Service Division also provided support for this unit. These two  
2 departments provided real life projects for students to use as 'case studies' for their project work in  
3 order to offer them an authentic learning experience on sustainability. Students are also  
4 encouraged to identify real life projects from their industrial partners in the discipline. For example,  
5 one of the projects that students did in the past was managing a site for the building structure and  
6 managing wastages. The students did a project plan which provided detailed information on the  
7 cost required, milestones and quality specification, and finally handed over the finalised plan to the  
8 project principal. Group work is used as part of the assessment plan. Students are asked to form  
9 an inter-disciplinary team to explain sustainability and explore solutions, which is another  
10 successful pedagogical technique on sustainable higher education as mentioned in Clugston and  
11 Calder (1999) and Social Sciences and Humanities Research Council of Canada (2002).  
12

13 In addition to developing students' practical actions and intellectual knowledge on sustainability,  
14 this unit also developed students' understanding of sustainability at an emotional level. A model  
15 called 'Head, Hands and Heart' was created as part of this unit. Students were required to do  
16 journal writing and reflect on how sustainability affects people in a wider context. The purpose of  
17 this journal writing exercise was to inspire students to think sustainability is not the only issue for  
18 environmental science, but an issue for humanity. The focus of encouraging students to think of  
19 sustainability with emotion has echoed Shephard's (2008) pedagogical viewpoint on educating  
20 sustainability. This pedagogy method also encouraged students to address the social aspect of  
21 the triple bottom line sustainability measures. Interviewee 7 summarised the principle on  
22 incorporating sustainability within the curriculum, she stated '*my philosophy in teaching is to get*  
23 *students in real life and real situations. Because sustainability is so broad, I encourage students to*  
24 *pick units through their course to get them into the focus of their interest*'.  
25  
26  
27

28 On the other hand, the change of the University's Graduate Learning Attributes has made  
29 sustainability become a less obvious institutional education objective. In the past, sustainability  
30 was one of the nine University's Graduate Learning Attributes. The University has changed to have  
31 eight Deakin Graduate Learning Outcomes (DGLOs) from 2013. Sustainability is no longer an  
32 independent DGLO. Instead, the concept of sustainability has been considered as one of the three  
33 elements in DGLO6 Global Citizenship, with Internationalisation and Ethics as the other two  
34 elements. In other words, sustainability has become a less obvious university required learning  
35 outcome after the change. Interviewee 7 expressed her concern on it. She stated '*I think the*  
36 *University is going backwards, although it has signed up to commitment of sustainability. But*  
37 *sustainability as one of the University Learning Attributes has disappeared after the changes to*  
38 *Deakin Graduate Learning Outcomes*'.  
39  
40

41 There is a general view that Deakin University has more focus on the environmental and physical  
42 aspects of the sustainability management, such as having a smoke free campus and providing  
43 shuttle buses etc. However, there is not much attention paid to incorporating sustainability within  
44 education and curriculum development. This view has been shared by several interviewees.  
45 Interviewee 3 stated that '*there is no sustainable education development model in the university,*  
46 *although sustainability has been considered within the University's operation model*'. The  
47 interviewees have a general view that the University does not provide clear direction and guidance  
48 on how to ensure sustainable education. They commented that although the staffs in the  
49 University were told of the necessity to incorporate sustainability within the education system,  
50 sometimes it is only a box ticking exercise and there is little or no oversight. This comment can  
51 be reinforced by the remark of Interviewee 5, who is a Course Director for the two largest cross-  
52 Faculty business management courses in the University. She stated that she has not seen  
53 sustainability being considered as a key factor incorporating within the curriculum of the two  
54 courses since she has been in the Course Director role. She considered this as a sign that  
55 sustainability is not important in the agenda. In terms of Business Subject area, there is a lot of  
56 research and textbooks on the area of sustainability, but this is not really incorporated within the  
57 curriculum. Interviewee 5 further commented that '*it is not sustainability being ignored, but it is*  
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1 snapped. In the new cross-Faculty programme we developed, we have not created a unit called  
2 Sustainability but we have developed a unit called Corporate Social Responsibility. The challenge  
3 is to provide a clear definition of sustainability'. This comment reinforced the earlier comment, that  
4 academics lack understanding on the definition of sustainability. This view is further reinforced by  
5 Interviewee 2's comment. Interviewee 2 is an Associate Dean for Teaching and Learning and he  
6 has been working in the University since 1996. He was a Course Director and also Associate  
7 Head for Teaching and Learning for eight years prior to taking up his current role. He is involved in  
8 all aspects of course development and enhancement. He also has extensive experience on policy  
9 development on courses and assurance of learning. He was surprised that the questions about  
10 incorporating sustainability within the curriculum and sustainable education development are so  
11 new to him and that his knowledge on this aspect was so limited.  
12

#### 14 **4.2 University's practical implementations for incorporating sustainability in the property** 15 **portfolio within the higher education sector** 16

17  
18 The University has adopted a realistic approach and aimed for cost effectiveness when  
19 incorporating sustainability within its property portfolio. The University used a design standards  
20 approach to maintain sustainability in the property portfolio. The University required that every new  
21 building and refurbishment project must have some level of sustainability incorporated into its  
22 design in order to achieve a 5 Green Star rating. The University usually uses external consultants  
23 who are familiar with the University's design standards on specific tasks in order to ensure stability  
24 of finance and quality. The University also aims to increase the Green Star rating for existing  
25 buildings to five stars through refurbishments and redevelopment projects. This demonstrates that  
26 the University has a clear commitment to ensure the environmental aspect of the triple bottom line  
27 of sustainability is met. The University also showed a higher commitment to incorporating  
28 sustainability into the property portfolio, as compared to the other universities mentioned in  
29 literature such as Su and Chang's (2010) and Niu *et al.* (2010), which focus mainly on ensuring  
30 sustainability on new build projects.  
31

32  
33 Despite the fact that there are higher sustainability ratings, up to 7 stars, available, the University  
34 was not inclined to achieve a 6 or higher Green Star rating as the additional investment to achieve  
35 this is not considered cost effective. In addition to ensuring sustainable property development and  
36 refurbishment, the University also paid attention to sustainable property maintenance and  
37 management and reducing energy consumption, such as using alternative energy sources, like  
38 solar power, solar hot water and window shielding, etc. Ultimately, the University's approach to  
39 ensuring sustainability in the property portfolio is largely a financial decision, which demonstrates  
40 the University's commitment to achieve the economic aspect of the triple bottom line of  
41 sustainability measures. Interviewee 9 pointed out that sustainable building is usually more  
42 expensive to build but at the same time, has lower running costs over the long term, than  
43 comparable non-sustainable buildings. The question is how the University secures the additional  
44 initial financial investment at the beginning of the construction project. This comment links back to  
45 an earlier point, which is that the University aims for properties with a 5 Green Star rating instead  
46 of 7 stars due to the financial implications in the initial development stage. The previous studies,  
47 such as Velazquez *et al.* (2005) and Wright (2010), have also raised financial concerns for initial  
48 investment possibly being a hindrance for incorporating sustainability in the property portfolio in  
49 the higher education sector.  
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#### 54 **4.3 Good practices for engaging sustainability good practice within the curriculum** 55 **design and property portfolio within the higher education sector** 56 57 58 59 60

1 Reflecting on the practical implementation of incorporating sustainability within the curriculum and  
2 property portfolio in the University, there are some good practices which have been identified and  
3 are applicable to the wider higher education sector.

4 The first good practice for engaging sustainability within the curriculum is the use of a problem-  
5 based approach as a delivery mechanism for 'Creating Sustainable Future'. The involvement of  
6 colleagues from the Facilities Services Department and Sustainability Office and the  
7 encouragement to students using real life projects as case studies for this unit has enhanced the  
8 students' authentic learning experience. As this is a cross-institutional sustainability unit, it has  
9 involved the contributions of academics from different disciplines and has clearly demonstrated to  
10 the students that sustainability is not only relevant within academic disciplines but also within their  
11 daily lives. The multiple disciplines delivery approach has further reinforced that sustainability is an  
12 important concept in different disciplines, and not necessarily restricted to their own discipline.  
13  
14

15 A key good practice for successfully incorporating sustainability into the property portfolio is that  
16 the University has a clear vision on what it has planned to achieve, which is to ensure a balance  
17 between sustainability and value for money. This was commented upon in previous literature, such  
18 as Littlelyke *et al.* (2013) and Velazquez *et al.* (2005). Velazquez *et al.* (2005) discussed the  
19 importance of having clear goals and also having policies and procedures to support the achieving  
20 of these goals. The University's realistic implementation plan, which is to ensure all buildings  
21 achieve a 5 Green Star rating, through initial construction, redevelopment or refurbishment, is also  
22 a realistic goal.  
23  
24

#### 25 26 27 **4.4 Areas of improvement for incorporating sustainability within the curriculum design** 28 **and property portfolio in the higher education sector**

29 Same as the identification of good practices, there are also some areas of improvement which  
30 have been identified and are applicable to the higher education sector.  
31  
32

33 It is important to have a strategic plan to list out what is expected from incorporating sustainability  
34 within the operation of an organisation. However, it is even more important to have a clear  
35 connection between policy and implementation in order to ensure successful implementation of  
36 the strategic plan, and be able to enforce implementation at a local level. The University has  
37 successfully implemented this Strategic Plan in the property portfolio management (see Section  
38 4.3) but the implementation within the curriculum is polarised. There is successful incorporation of  
39 sustainability in some courses or units in the University but sustainable higher education is a  
40 relatively unheard concept in other parts of the University. In order to enhance the comprehensive  
41 incorporation of sustainability across the whole university, it is important to develop an institutional  
42 culture on incorporating sustainability within the curriculum. As mentioned by Velazquez *et al.*  
43 (2005), the senior management's backing is important but is not sufficient for the successful  
44 incorporation of sustainability within the curriculum and instituting solid programmes, the support  
45 of stakeholders, such as teaching staff, students and administrative staff are also the other key  
46 elements for success.  
47  
48

49 It is also important to enhance staff and students understanding of the definition and importance of  
50 sustainability. As pointed out by Interviewee 3 (see Section 4.1), colleagues actually have  
51 incorporated sustainability within the curriculum at a higher level than they realised. Therefore,  
52 their current claim of incorporating sustainability within the curriculum is understated. The students  
53 also need to be reminded that sustainability is an important issue. The incorporation of  
54 sustainability within the curriculum is not aimed to re-orient their learning, but to enhance their  
55 learning experience (Chhokar, 2010; Down, 2006).  
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1 Finally, better communication of identified good practice across the institution, more systematic  
2 evaluation on the incorporation of sustainability and identifying lessons learnt are also required.  
3 For example, there are some good practices on incorporating sustainability in the 'Creating  
4 Sustainable Future' unit, such as using a problem-based learning approach, real life projects and  
5 forming students into inter-disciplinary teams for group assignments. These good practices should  
6 be captured and disseminated widely within the University.  
7

## 8 **5. Conclusions**

9  
10 Sustainability literacy for professionals, such as the built environment sector, have been at a  
11 struggling low level for the last several decades (Dixon *et al.*, 2008). At the same time the sector  
12 has faced the challenges of developing the professionals' sustainability literacy (see Section 2.1).  
13 Therefore, it is important to gain understanding on the good practice of incorporating sustainability  
14 within the curriculum of university courses, in order to increase professionals' sustainability  
15 literacy. Real estate is one of the key assets for large organizations, such as universities and the  
16 use of building has a major impact on sustainability, both at the construction stage and whole life-  
17 cycle of using the building. Therefore, it is important to investigate the strategy on sustainable  
18 development, management and maintenance of property portfolios.  
19

20  
21 This paper adopted a case study approach to evaluate Deakin University's Strategic Plan and how  
22 it affects the level of incorporation of sustainability within the curriculum design and property  
23 portfolio. The University has a clear sustainability strategy, Sustainability 2020, and it has been  
24 explicitly recognised in Deakin University's Strategic Plan: LIVE Strategy. Deakin's sustainability  
25 goals focused on the aspects of operations, learning and research. This research is pioneering,  
26 investigating the incorporation of sustainability into higher education in a more comprehensive way  
27 and considering the impact of strategic planning on the incorporation of sustainability within the  
28 sector, on both curriculum design and property portfolio management. It is expected the findings of  
29 this research will be useful for the university sector to develop strategies to incorporate  
30 sustainability within the curriculum and property portfolio.  
31

32  
33 Despite the University having clear strategic aims and initiatives for the incorporation of  
34 sustainability within the organisation, there is disconnection between policy development and  
35 policy implementation and the incorporation of sustainability varies largely within the institution.  
36 The incorporation of sustainability within the property portfolio is clear and effective. The University  
37 has a realistic but not over-ambitious target which is to achieve a 5 Green Star rating for all new  
38 built and refurbishment projects and also ensure sustainable property management. There is also  
39 a clear consideration on the balance between achieving sustainability goals and their financial  
40 implications. However, the incorporation of sustainability in the curriculum is polarised. Some parts  
41 of the university really drive it and 'Creating Sustainability Future' is a very successful example. On  
42 the other hand, the incorporation of sustainability within the curriculum is inconsistent in other  
43 parts of the University. The driver for incorporating sustainability within the curriculum very much  
44 depends on the nature of the course and individuals' initiatives. Furthermore, the academic  
45 managers' knowledge and understanding of sustainability was also quite limited as some of the  
46 interviewees did not know the definition of sustainability.  
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51 In order to effect a successful implementation of incorporating sustainability within the curriculum,  
52 it is important to have support from all stakeholders, including academics and students. For the  
53 academics, the sharing of their positive personal experiences and good practice with the  
54 incorporation of sustainability within the curriculum is a suitable way to encourage their peers to do  
55 the same. One of the ways to encourage students to support the incorporation of sustainability into  
56 the curriculum is through recognising and rewarding their achievement. For example, awarding  
57 badges to students who have engaged in sustainability. Although badges cannot be transferred to  
58  
59  
60



1 credit for their degree, it is still a way of recognizing their achievement and they can still include it  
2 in their resume.

3 The limitation for this research is that it was based on the experience of one single institution,  
4 which limits the generalizability. Having said that, this research highlighted some lessons learnt  
5 which are required for the successful incorporation of sustainability within the curriculum design  
6 and property portfolio in the higher education sector.  
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