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Clearing the pathway: Improving the transition for students moving between AQF levels 5, 6 and 7

Final Report 2013

“I didn’t think I could go to uni, you know, wasn’t clever enough, then I went to TAFE and that changed my mind...

...I wouldn’t be here if it wasn’t for TAFE.”

Lead university: RMIT University
Partner universities: University of Western Sydney, Curtin University, Deakin University

Authors: Patricia McLaughlin, Anthony Mills, Peter Davis, Swapan Saha, Mary Hardie
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Professor Anthony Mills, originally joint project leader at RMIT University, took up a chair in construction management at Deakin University during the project. Deakin University were subsequently granted permission to be included as a partner organisation in this project.

Project Assistant

Sofia Georgiadis  RMIT University
**List of acronyms used**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>ALTC</td>
<td>Australian Learning and Teaching Council Ltd.</td>
</tr>
<tr>
<td>AQF</td>
<td>Australian Qualifications Framework</td>
</tr>
<tr>
<td>ATN</td>
<td>Australian Technology Network (of Universities)</td>
</tr>
<tr>
<td>ATAR</td>
<td>Australian Tertiary Admissions Rank</td>
</tr>
<tr>
<td>AUBEA</td>
<td>Australasian Universities Building Education Association</td>
</tr>
<tr>
<td>OLT</td>
<td>Australian Government Office for Learning and Teaching</td>
</tr>
<tr>
<td>RMIT</td>
<td>Royal Melbourne Institute of Technology University</td>
</tr>
<tr>
<td>RPL</td>
<td>Recognition prior learning</td>
</tr>
<tr>
<td>STAT</td>
<td>Special Tertiary Admissions Test</td>
</tr>
<tr>
<td>TAFE</td>
<td>Technical and Further Education (institutions)</td>
</tr>
<tr>
<td>UAC</td>
<td>University Admissions Centre</td>
</tr>
<tr>
<td>UWS</td>
<td>University of Western Sydney</td>
</tr>
<tr>
<td>VET</td>
<td>Vocational Education and Training</td>
</tr>
<tr>
<td>UWSC</td>
<td>University Western Sydney College</td>
</tr>
<tr>
<td>WIL</td>
<td>Work Integrated Learning</td>
</tr>
<tr>
<td>NCSEHE</td>
<td>National Centre for the Study of Student Equity in Higher Education at University of South Australia</td>
</tr>
</tbody>
</table>
Executive summary

This project examined pathways between vocational education and higher education in the built environment (building and construction) discipline. It has focussed upon the nexus between VET (TAFE) and University (HE) and student movement between AQF levels 5, 6, and 7.

The construction industry has suffered critical skills gaps for the past decade, with the most chronic shortages in the professionally qualified (higher education) graduates group. The construction industry employs one in seven people in Australia and a skilled workforce in built environment is critical to national productivity. Yet, in spite of this, less than 10 per cent of the built environment workforce has higher education qualifications, compared with almost 50 per cent of the workforce with vocational education qualifications. Built environment discipline students are one of the least likely groups of all Australian students in VET (TAFE) to move onto university (HE) or to continue their formal education beyond initial training. In spite of agreed credit transfer arrangements between VET (TAFE) and university (HE), and policy recognition by tertiary institutions of the importance of pathways, the obstacles to movement between AQF levels 5, 6, and 7 appear precipitous for this discipline.

This project examined tertiary pathways that accounted for successful (high retention) student transitions between VET and HE, particularly AQF levels 5, 6, &7. The project, investigated the factors or enablers that operated to support students transferring from VET (TAFE) to university (HE), (diploma to degree) in the building and construction industry, as seen through the eyes of students who had made this transition. Whilst previous research on pathways has considered the question of enablers from policy and institutional perspectives, the poor movement by built environment students warranted deeper analysis to provide lessons for those involved in learning and teaching in this discipline.

The overall project aim was to establish critical factors (enablers) that contributed to student transitions and maximisation of student upskilling from VET (TAFE) to university (HE) in this discipline; and to disseminate such enablers to better inform industry, tertiary providers and other stakeholders of the critical factors in successful transitions.

The project examined the background to pathways within the industry, against the backdrop of skill and workforce needs. Former VET diploma students now studying in a degree were interviewed across a range of institutions to identify the enablers that had assisted them in continuing their studies. Their responses were interpreted and categorised using both software narrative analysis (Invivo) and the DEMO evaluation matrix developed by National Centre for the Study of Student Equity in Higher Education at University South Australia (NCSEHE), to identify critical success factors (enablers) within these student transitions. Two industry stakeholder forums were held throughout the project to consider the research, provide feedback and further identify options to improve industry pathways.

The project findings show that for the students in this study there were a number of enablers that were essential for successful transition between VET (TAFE) and university (HE), in the discipline of the built environment. These enablers were:
• the sustained interventions of people-rich resources, particularly VET teachers and staff;
• the engagement of learners through supportive learning experiences in VET that encouraged on-going learning and upskilling;
• the recognition by universities of the value of VET learning through admission, orientation, transition activities, recognised credit for prior studies and supportive programme architecture;
• the building of confidence and motivation in learners through VET experiences; and
• the collaboration and deep communication between the VET (TAFE) and university (HE), providers.

The project also identified that:

• In spite of robust VET (TAFE) to University (HE), articulation policy arrangements and nationally agreed credit transfer for built environment discipline students, less than 16 per cent of all VET (TAFE) built environment graduating students continue onto higher education in any one year;
• Transition of the existing built environment workforce between AQF levels 5, 6 and 7 is negligible in terms of total pathways (VET to HE) numbers per annum (2.4 per cent);
• Pathway students in this study also showed significant growth in awareness of their own abilities and capacities for learning, demonstrating a sense of self direction and motivation that stemmed from their pathways experience;
• Industry employers and other stakeholders can provide important insights and ideas upon which to build improved pathways and want to be partners in pathways development; and
• An industry and workforce development paradigm through the prism of skills needs and skills shortages could provide a powerful enabler in support for improving pathways from VET (TAFE) to university (HE), in the building and construction industry.

The project recommendations identify that the greatest opportunity to increase upskilling between AQF 5, 6 and 7 in the built environment disciplines is through greater dissemination of the enablers to industry stakeholders and increasing the participation of the existing workforce in upskilling models demonstrating these enablers.

The project, in meeting all of its objectives, has identified essential enablers that facilitate pathways movement between the AQF levels. The identification of these enablers of successful pathways between AQF levels 5, 6 and 7 in the built environment discipline facilitates the evaluation of all pathways models in this and other disciplines. It allows for a more informed examination of organisational structures and processes for student transition in all tertiary institutions. It thus contributes vital knowledge to both the discipline and the wider sector. By addressing these findings greater awareness of student engagement and industry upskilling needs can occur within tertiary institutions, for the benefit of all Australians.
Project recommendations:

In light of the findings and outcomes of this project it is recommended

- Immediate dissemination of the project findings be continued and increased to include both VET and HE academic and professional staff;
- Industry roundtables be convened to further disseminate the findings to industry partners, especially those involved in tertiary accreditation processes;
- Current accreditation processes for built environment providers be discussed with tertiary advisory committees and other stakeholders to commence a process of re-examination to include focus upon industry development models issues such as upskilling and articulation;
- Project partners disseminate outcomes to industry skills council to investigate future upskilling for individuals at AQF levels 1-4, through flexible delivery models; and
- Built environment models of flexible delivery such as blended learning, intensive workplace delivery formats, online and other formats be further examined in a number of selected pilot studies, to ascertain best practice models for use in this industry.
# Table of contents

Acknowledgements ..................................................................................................................... 3
List of acronyms used .................................................................................................................. 4
Executive summary ..................................................................................................................... 5
Tables and figures ..................................................................................................................... 10
  Tables ............................................................................................................................... 10
  Figures ............................................................................................................................. 10
Chapter 1  Overview of project ............................................................................................ 11
  1.1 Introduction ............................................................................................................ 11
  1.2 Project rationale ..................................................................................................... 12
  1.3 Project aims ............................................................................................................ 18
  1.4 The project overview .............................................................................................. 20
  1.5 Project outcomes .................................................................................................... 21
  1.6 Project deliverables ............................................................................................... 21
  1.7 Project methodology summary .............................................................................. 22
  1.8 The project limitations ........................................................................................... 22
Chapter 2  Project approach ................................................................................................. 25
  2.1 Introduction ............................................................................................................ 25
  2.2 Rationale of method ............................................................................................... 25
  2.3 Project design and methods ................................................................................... 26
  2.4 Summary ................................................................................................................. 31
Chapter 3  The transition between VET and HE: The built environment story ............... 32
  3.1 Introduction ............................................................................................................ 32
  3.2 Pathways and transition between AQF 5, 6 and 7 ................................................. 33
  3.3 The building and construction industry ................................................................. 42
  3.4 Summary ................................................................................................................ 45
Chapter 4  The transition between VET and HE: the student story .................................. 46
  4.1 Introduction ............................................................................................................ 46
  4.2 Analysis of the student data ................................................................................... 47
  4.3 Summary ................................................................................................................. 58
Chapter 5  The transition between VET and HE: The industry stakeholder story ............ 59
  5.1 Introduction ............................................................................................................ 59
  5.2 Industry Issues ........................................................................................................ 59
  5.3 Summary ................................................................................................................. 61
Chapter 6  Enablers of student movement between AQF 5, 6 & 7: Conclusions ............. 62
Tables and figures

Tables

*Table 1: Industry comparisons of AQF 5, 6 & 7 qualifications, Australia, 2009*

*Table 2: VET Student Outcomes –Further Study at university*

*Table 3: Project Phases, Methods and Purpose*

*Table 4: Project Objectives and Outcomes*

*Table 5: Project outcomes and dissemination timeline*

*Table 6: Recommendations and development areas*

Figures

*Figure 1: AQF Qualifications levels of Building and Construction industry workforce*

*Figure 2: Four strategies and ten characteristics of outreach programs*
Chapter 1  Overview of project

1.1  Introduction

In 2008, the Australian Qualifications Framework Council called for improved sector connections to provide flexible qualification linkages and pathways in education and training, including recognition of formal and informal learning. The council noted that improved qualification and recognition arrangements lead to more seamless pathways between the VET (TAFE) and university (HE) sectors. This benefits students and individuals wishing to gain or upgrade qualifications. Transparent seamless pathways with multiple exit and entry points encourage increased participation as well as non-linear lifelong learning.

Increasing participation in higher education relies upon a number of factors. One key factor is the increased access to higher education from individuals with VET qualifications. Pathways to lifelong learning must be part of the provision of mainstream tertiary education and not confined to special access, limited articulation or special entry programmes. At present student transition between AQF levels 5, 6 and 7 is problematic and often haphazard with many students not accessing or not aspiring to higher education. This is a significant social, economic and cultural loss to both the individual and the nation. Bradley (2008), notes that “much remains to be done to improve connectedness and ensure that pathways operate efficiently for all Australians.” (p, 181).

Seamless pathways are also a basic tenet of national policy as espoused by the Ministerial Council for Education, Employment, Training and Youth Affairs (2005). Pathways that encourage increased participation and use their seamlessness to reflect greater diversity for those seeking education and training have been emphasised by education policy makers for some time. But the seamlessness of movement between sectors and the use of pathways as a way of broadening participation has remained opaque and at the margins of educational investigation and research. Whilst some researchers have highlighted the difficulties and consequences of pathways models (Wheelahan, 2008; Phillips KPA, 2006), there has been little research into the models themselves in terms of specific disciplines. And where there is considerable evidence of pathways models that encourage lifelong learning and enable greater participation of specific disciplines, such research remains isolated and contextually specific, rather than mainstream to tertiary education.

Most tertiary institutions have, at a policy level, embraced pathways and articulation models for students. Yet as Karmel (Cited in Walls and Pardy, 2010) notes, the actual implementation is devolved to local alliances, partnerships or institutional arrangements that do not necessarily work in favour of the student. Current research still indicates substantial evidence of rigidities, inflexibilities and obstacles to learning and teaching that hinder individuals with VET qualifications accessing higher education with due recognition of their existing qualifications (NCVER, 2011). The further development of seamless pathways between these AQF levels 5, 6 and 7 in particular, is a key objective of the Federal Government (AQFC, 2009).

The movement between VET (AFQ levels 1-5) and HE (AQF 6-10) takes place on a spectrum ranging from well organised to haphazard according to Karmel (2009). Student mobility
between the sectors or AQF levels is not linear—in many cases policy and organisational processes lag behind the patterns of lifelong learning careers of students (McLaughlin and Mills, 2010). Research by Harris, Rainey & Sumner (2006) identified the issues as crazy paving which describes how student demand drives movement between the sectors in random and unexpected pathways. The phenomenon involves indirect transfer, where movement of tertiary students is not linear, but instead involves several moves within and between institutions and sectors.

This project examined pathways between vocational education and higher education in the built environment discipline. Less than 10 per cent of the built environment workforce has higher education qualifications, compared with almost 50 per cent with vocational education qualifications. In the built environment discipline, students are the least likely of all Australians to move between VET (TAFE) and university (HE) or to continue their lifelong education. The barriers to AQF levels 5, 6, and 7 are precipitous for this discipline. As a key economic leader, the industry suffers critical skills gaps, with chronic shortages of professionally qualified graduates.

The project examined those tertiary pathways that accounted for successful high retention student transitions between VET (TAFE) and University (HE), particularly AQF levels 5, 6, &7. The project investigated the factors or enablers that operated to support students transferring from VET (TAFE) to university (HE)- diploma to degree- in the building and construction industry, as seen through the eyes of students who had made this transition. Whilst previous research on pathways has considered the question of enablers, limited research has been undertaken from the perspective of students.

The overall project aim was to establish critical factors (enablers) that contributed to student transitions and maximisation of student upskilling from VET (TAFE) to university (HE) in this discipline and to disseminate such enablers to better inform industry, tertiary providers and other stakeholders of the critical factors in successful transitions.

The project examined the background to pathways within the industry, against the backdrop of skill and workforce needs. Former VET (TAFE) diploma students now studying in a degree were interviewed across a range of universities to identify the enablers that had assisted them in continuing their studies. Their responses were interpreted and categorised using both software narrative analysis and the DEMO evaluation matrix developed by National Centre for the Study of Student Equity in Higher Education at University South Australia (NCSEHE), to identify critical success factors (enablers) within these student transitions.

Two industry stakeholder forums were held throughout the project to consider the research and further identify ideas and options to improve pathways in this industry.

1.2 Project rationale

Tertiary institutions have a crucial role in developing the workforce of the future. Expanding student options and providing clear, fluid pathways to higher level qualifications in key industry areas is fundamental to meeting Australia’s needs. To deliver the Australian Government target of an additional 217, 000 students at bachelor level or above by 2025,
the interconnection between vocational and higher education must be enhanced. Skill needs and future work opportunities do not recognise the boundaries of VET (TAFE) and university (HE) currently in place in all states of Australia.

Raffe (2003) has suggested that seamless pathways between VET (TAFE) and university (HE) are an attractive metaphor for policy makers and the reality is dissonances between the sectors of Australian tertiary education, divergence of policy intentions across state and national jurisdictions and multiple institutional practices that both enable and inhibit student mobility.

More recent research indicates evidence of some existing excellent pathways initiatives between VET (TAFE) and university (HE), (Wheelahan, 2009; Harris, Rainey and Summer, 2006; Walls and Pardy, 2010) and in the built environment discipline (McLaughlin and Mills, 2009).

But in spite of these initiatives, built environment industry students remain stubbornly under-represented in tertiary pathways. Less than 10 per cent of individuals in the built environment industry possess higher education qualifications, whilst almost 50 per cent possess some level of vocational qualification. The remainder of the industry possess no qualifications (41 per cent). Significantly the built environment industry is also well above the national labour force industry average for those 25-44 year olds who lack any formal qualification (31 per cent) whatsoever (ABS, 2008).

Of all disciplines, the built environment has been one of the weakest in promoting movement between the VET (TAFE) and university (HE) sectors. Although the figures vary across tertiary institutions, of all built environment students qualifying at AQF 4, less than 10 per cent continue on to higher education (CPSISC, 2010). This figure is significantly reduced for workers currently employed in the industry, with less than 1 per cent of VET (TAFE) qualified persons seeking re-entry to the university discipline. Complexities in sectoral boundaries, barriers to transfer arrangements, external industry inducements, cultural and system weaknesses that operate hierarchically, amongst other factors, contribute to poor retention of built environment students beyond VET (TAFE) levels.
This qualification profile at the higher AQF levels is significantly below other key industries of similar size by employment and contribution to the economy as set out in Table 1.

**Table 1: Industry comparisons of AQF 5, 6 & 7 qualifications, Australia, 2009**

<table>
<thead>
<tr>
<th>Industry</th>
<th>AQF Qualification</th>
<th>Diploma/Advanced diploma</th>
<th>Bachelor degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Nos of persons</td>
<td>% of workforce</td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td>58,000</td>
<td>6.2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td>85600</td>
<td>8.8</td>
</tr>
<tr>
<td>Retail</td>
<td></td>
<td>87100</td>
<td>8.3</td>
</tr>
<tr>
<td>Health services</td>
<td></td>
<td>209700</td>
<td>18.1</td>
</tr>
</tbody>
</table>

(Source: ABS Education and Training Experience, 2009, Item 6278, Table 11)

Consequently very few companies in the built environment industry have a flexible workforce that is able to exercise skills broadening to match changing work requirements, especially in the area of new technology. Persistent skill shortages and skill gaps in this industry reflect this inflexibility. Narrow entry-level training that encourages students to exit at the AQF level 3 or 4, and a higher education focus on the professions has been to the detriment of the student and the industry. In effect the industry is not capitalising on the
Table 2: VET Student Outcomes –Further study at university

<table>
<thead>
<tr>
<th>Rank</th>
<th>Industry Skills Council</th>
<th>% going on to university</th>
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<tr>
<td>1</td>
<td>Not assigned</td>
<td>9.6</td>
</tr>
<tr>
<td>2</td>
<td>Business Services</td>
<td>9.1</td>
</tr>
<tr>
<td>3</td>
<td>Services (Retail, Tourism &amp; Hospitality)</td>
<td>9.0</td>
</tr>
<tr>
<td>4</td>
<td>Community services &amp; health</td>
<td>8.1</td>
</tr>
<tr>
<td>5</td>
<td>Government</td>
<td>5.6</td>
</tr>
<tr>
<td>6</td>
<td>Agrifoods</td>
<td>2.9</td>
</tr>
<tr>
<td>7</td>
<td>Manufacturing</td>
<td>2.1</td>
</tr>
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<td>8</td>
<td>Transport</td>
<td>2.0</td>
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<td>9</td>
<td>Construction</td>
<td>1.6</td>
</tr>
<tr>
<td>10</td>
<td>Electro/Electrical</td>
<td>1.1</td>
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<tr>
<td>11</td>
<td>Skills DMC</td>
<td>*</td>
</tr>
<tr>
<td>12</td>
<td>Forestry</td>
<td>*</td>
</tr>
<tr>
<td>ALL</td>
<td></td>
<td>6.8</td>
</tr>
</tbody>
</table>

(Source: NCVER Student Outcomes Survey, 2010. NCVER, 2011)

The significance of the industry cannot be under-estimated. The built environment sector employs one in seven people in Australia, yet built environment industry professionals make up 9 per cent of the workforce (ABS, 2008a). There is a strong link between national productivity and a qualified labour force. Without sufficient qualified workers, industries such as the built environment will have difficulty continuing to produce their current level of output, let alone expand output to keep pace with global markets. Modelling indicates the built environment industry will be unable to meet domestic consumption in the coming decades (DEEWR, 2008). Australia as a nation will not be able to build the schools, hospitals and infrastructure it needs without a better qualified built environment workforce. It is a lead economic industry and its workforce needs qualified professionals at all levels.

In the built environment industry the divide between vocational qualifications (AQF levels 1-5) and higher education qualifications is stark. It is important to examine this divide and promote improved movement between these levels to fully utilise the skills of the individuals. Without this movement the industry cannot deliver a skilled future workforce for Australia.

The industry and the tertiary institutions providing VET (TAFE) and university (HE) qualifications to the industry are significantly divided. The transition between vocational education (up to AQF level 5) and higher education (beyond AQF level 6) is negligible in the built environment disciplines. This project examined pathways between VET (TAFE) and
university (HE) in this discipline to establish critical factors or enablers that contributed to student transitions and maximisation of student outcomes.

It should be noted that whilst higher education is not necessarily better for all individuals in terms of life choices or economic prosperity, there is considerable evidence that access to up skilling is vital for built environment industry development and employability of individuals over time. Access to formal up skilling is important for a number of reasons (Construction and Property Services Industry Skills Council (CPSISC), 2010). These include:

- The physical demands of construction occupations, particularly trades. The impact of an ageing workforce coupled with physical requirements of the work means older workers need new skills to work in less physically demanding jobs in the industry as they age;
- The changing skill requirements of the industry mean that initial entry level skills training at AQF 3 & 4 can become out-dated over an individual’s lifetime in construction, particularly in areas such as technology, materials, energy usage and application;
- Regulatory and compliance issues are increasingly becoming more complex in the industry, initial training is quickly out-dated resulting in compliance concerns with existing workers;
- The organisation of work is changing. Pre-fabrication and PM techniques mean new work organisation which requires new skills for workers to remain employable; and
- Environmental and OHS considerations are constantly reviewed, requiring re-skilling and up skilling for existing workers to remain safe and aware of changing work requirements and opportunities.

The industry workforce of certificate III and below is at high risk during periods of economic downturn. For employees already in the industry, strategies are needed to upgrade qualifications, particularly amongst older workers who are at the greatest risk of redundancy or reduced physical capacity but who have the skills and experience to support entry into higher level qualifications and higher level construction occupations.

Persistent skill shortages and skill gaps in this industry reflect the inflexibility and lack of up skilling. Narrow entry-level training that encourages students to exit at the AQF level 3 or 4, and a higher education focus on the professions has been to the long-term detriment of the students and the industry. In effect the industry is not capitalising on the total potential of its workforce with most qualified students exiting at AQF 4 or 5. Without a thorough investigation of the reasons for students not aspiring to further education and an examination of those pathways models that promote retention of building and construction students, the skills and knowledge base of the industry will continue to suffer. The flow-on effect to other industries is substantial. In essence, the building and construction industry is perfectly placed to address increased participation and improved access from VET (TAFE) to university (HE).
1.2.1 Value of project to students

This research study and its findings has significant value for students. Studies by Harris, Summer and Rainey (2006) indicates that students, including those in the workforce, want movement between vocational education and higher education. Student movement between university (HE) and VET (TAFE) is three times higher nationally than linear movements from VET (TAFE) to university (HE). It is also significant that student “traffic” involves various combinations of complete and incomplete qualifications and concurrent enrolment. It appears students and workers are engaging in multiple entry and exit points as their lifelong learning needs change over time. Recognising the enablers that facilitate movement has benefits for all students.

As a result of the dissemination of this project, built environment discipline students will be better able to undertake learning at AQF levels 5, 6, and 7, contributing to both personal satisfaction and career based lifelong learning. In addition built environment discipline students will be able and encouraged to move in and between VET (TAFE) and university (HE) as their needs and aspirations dictate. The enablers identified in this study have the potential to impact across the total tertiary sector beyond the built environment discipline and create greater awareness of student transition needs.

1.2.2 Value of project to the tertiary sector

The range of initiatives undertaken to enable pathways movement have mostly been focussed at the policy level of tertiary institutions (Wheelahan, 2001). Policy has recognised pathways models that have included articulation, credit transfer, recognition of prior learning, appointment of specialist pathways officers and the provision of enabling courses. Much of this concentration is due to the cohort attending institutions for VET qualifications, which has driven improvements in pathways models in higher education (Harris et al., 2006). The lead university of this project, RMIT, is a complete tertiary sector university and deliberately teamed with two other partner institutions, UWS and Curtin University in this project to build upon their significant experience in the issues of pathways and their school missions of delivering a skilled workforce in the built environment.

The project deliverables detailed in the communication/dissemination plan-newsletters, videos and academic papers have enhanced dissemination and improved sector-wide understanding of the problems and solutions to student transition between AQF levels 5, 6 and 7. In addition, the high calibre representation on the project reference group, including the current ALTC pathways fellow Dr. Helen Smith, also a representative on the international think-tank, Dusseldorf Skills Foundation, and the ALTC discipline scholar, Associate Professor Sid Newton has ensured on-going, long term embedding of the project outcomes.

1.2.3 Value of project to the national agenda

Australia as a nation is facing a national skill shortage. The shortfall in qualified workers over the next five years is predicted at over 195,000 people in total (Bradley et al., 2008). This shortfall is expected to increase exponentially as the current labour force ages, the supply of available qualified people declines and industry requirements change. For the past decade robust economic growth has seen a tightening of the labour market with strong demand.
across many occupations. This demand has been spread unevenly with key industries such as engineering, and construction at the forefront of drastic skill shortages (CPSISC, 2010). More significantly, tertiary qualified professionals within these industries have been in continuing demand. Access Economics predicts that from 2010, demand for skilled professionals with bachelor qualifications across these industries will exceed supply levels.

Increasing participation of built environment discipline students in higher education will assist in national targets of 40 per cent of all 25-34 year olds attaining a bachelor’s qualification. The findings of this project have great potential to value-add to the qualifications of the built environment industry, a key economic driver. Improved productivity, GDP and well-being of the nation’s workforce can be linked to improvements in the training and education of its workforce. This is particularly true in the built environment industry. The findings of this project have the capacity to make significant improvements to Australia’s workforce and the quality of infrastructure (schools, hospitals etc.) provided for its citizens.

This study and its findings has immense value for all built environment students and staff, the wider industry and the whole tertiary sector, especially those disciplines struggling with the transition of students between AQF levels 5, 6 and 7 and pathways between VET and HE. It was supported by the involvement of the Industry Skills Council (CPSISC). This support was critical to the project as without full industry dissemination of the findings of this project, the built environment discipline and the industry it services would remain frozen in a qualifications and skills divide. This would result in significant loss of potential both of the individual students and of the wider industry. Skills loss is expensive and costly to the nation.

This project provides leadership in identifying the needs of students moving between AQF levels 5, 6, 7 and stands as a solution to the industry skill gaps into the future.

1.3 Project aims

This project had a number of key objectives:

- Review existing successful pathways transition models between VET and HE in the discipline of the built environment;
- Examine the efficacy and fluidity of such transition models;
- Evaluate the sustainability and equity of these transitional models using narrative analysis software (Invivo) and Gale’s (2010) Invention (DEMO) model;
- Map teaching and learning elements (enablers) of the successful models that maximise student transition;
- Test the efficacy of these elements (enablers) in two of the partner universities to this project; and
- Promote and disseminate these elements (enablers) to the discipline and the wider sector.
1.3.1 Definitions

A number of definitions have been adopted for the purposes of this report.

Built environment disciplines

The definition of built environment differs across universities and training providers, but in this report, built environment disciplines are used to describe the discipline which addresses the design, construction, management and use of man-made surroundings as an interrelated whole as well as their relationship to human activities over time) ranging in scale from buildings and parks or green space to neighbourhoods and cities that can often include their supporting infrastructure, such as water supply, or energy networks. The built environment is a material, spatial and cultural product of human labour that combines physical elements and energy in forms for living, working and playing. It encompasses professional studies in building, construction, urban development, property economics, quantity surveying, construction management, spacial science, construction economics and project management. In this report, building and construction and built environment have the same meaning.

Pathways (models)

The concept of lifelong learning encompasses notions of economic development and progress, personal development and enrichment and the extension of knowledge, with learning conceptualised as flexible, universal and accessible (Hyland & Merrill, 2003; Candy & Crebert, 1991).

Lifelong learning or pathways models offer a fundamental organising principle to broaden and diversify access to tertiary education by facilitating access to and movement across the education sectors. They are defined by principles of social inclusiveness and democratic understanding and activity (Aspin & Chapman, 2001).

Within the concept of lifelong learning is the notion that education can be non-linear and thus incorporate vertical articulation and horizontal integration across curriculum and programs to create effectiveness of learning pathways which are responsive to student needs and to labour force requirements. For the purposes of this review, pathways are defined in accordance with the broad meaning expressed in the revised Australian Qualifications Framework, (AQF) (AQFC: 2011) as ‘facilitating student movement and navigation into, between and through qualifications within the AQF, with full or partial recognition for qualifications and/or learning outcomes already possessed’. Jackson et al. (2011a) have developed a typology as part of the DEEWR funded Integrated Articulation and Credit Transfer Project. This typology proposed articulation as the overarching term with three types of articulation models:

- End-on models including entry only, credit transfer from VET (TAFE) to university (HE) and credit transfer from university (HE) to VET (TAFE);
- Embedded VET (TAFE) models - involving VET (TAFE) embedded in a university (HE); and
• Concurrent study models – involving concurrent study at both VET (TAFE) and university (HE) institutions.

In this typology both credit transfer and integrated qualification pathways become a subset of articulation, rather than separate types of pathways. For this study, this typology was adopted and pathways was defined as any movement between levels 5, 6 and 7 of the Australian Qualifications Framework. These AQF levels span the traditional sector division of Vocational Education and Training (VET/TAFE) and Higher Education (HE/university).

Enablers (elements)

Enablers refers to those factors identified by the stakeholders in this project as being of relevance and significant importance in their learning and teaching before, during and after transition between AQF levels 5, 6 and 7. The enablers were elicited from the narratives of the students given through the interviews. The student voices and subsequent understandings of the learning structures, processes and relationships presented to them in their movement between AQF levels were unique. Their comments and feelings about the educational journey they have taken belong to them as constructs of their experiences. As such the enablers cannot be prioritised or ranked in importance or quantitative results. Each response demonstrates the individual experience, however, parallels have been drawn from these responses to create a rich picture of transition enablers.

These definitions were adopted for the duration of the project across all participating universities.

1.4 The project overview

To understand the project, it is necessary to understand the context in which it was developed. This project builds upon a number of successful pathways projects that have targeted student articulation and lifelong learning. Over an eight year period the project leaders have undertaken ALTC, OLT and LTIF funded research into the investigation and trialling of pathways and articulation models (McLaughlin and Mills, 2009, 2010, 2011). These projects have developed insights into successful retention and articulation models in both the built environment and the wider tertiary sector.

In particular the ALTC funded research into Lifelong Learning Pathways (McLaughlin and Mills, 2010/12); has been successful in promoting change in teaching and learning practice in relation to transition and student pathways across the discipline of the built environment, with industry conferences focussed upon pathways and the development of discipline specific tactics to enable improved learning and teaching opportunities (McLaughlin and Mills, 2010). The final report for this project coincided with the industry launch of the ALTC sponsored Pathways book and video (Oct, 2012). This project built upon the skills and project management knowledge gained through this and other projects. It is worth noting that the project team were able to capitalise upon previous dissemination activities and were able to quickly implement project activities because of previous knowledge dissemination.

During this project the team was organised by a project manager/research associate who...
worked within a detailed research and dissemination plan. The plans for this project were prepared in accordance with the OLT Learning Partnership guidelines. Each member of the project team and reference group represented one of the primary stakeholders, and their involvement facilitated ongoing dissemination beyond the project. The total team comprised academics, administrators, industrialists, accreditation associations, and discipline scholars.

The project was funded for 12 months by the Australian Learning and Teaching Council.

1.5 Project outcomes

There were a number of project outcomes anticipated in this project:

- A database of transition models in the built environment discipline stored and available from Australian Universities Building Educators Association;
- Improved transition (VET/HE) rates for built environment students;
- Improved understandings and awareness of specific teaching and learning strategies to maximise the outcomes for students engaging in transition and enhance lifelong learning pathways for built environment students;
- Teaching and learning tools for built environment faculties;
- Improved productivity in the built environment industry due to improved access to higher education;
- Closer co-operation of built environment sector staff (VET/HE);
- Embedding of teaching and learning strategies for improved transition of built environment students in all institutions; and
- Increased numbers of built environment workforce with higher education qualifications.

1.6 Project deliverables

To achieve these outcomes there were a number of project deliverables, which have all been met:

- Multi-mode resources- project newsletters and project video;
- AUBEA Workshops 2012 (Industry bodies and all Australian universities with built environment programmes);
- Industry workshops/roundtables;
- Academic publications; and
- Final project report.

Detailed information on all of these project deliverables is available in Chapter 6.
1.7 Project methodology summary

The project was based primarily on case study research methodology (Yin, 2008). This approach allowed the collection of both qualitative data through interviews and focus groups and quantitative data relating to pathways movement in the built environment industry. The project utilised one of the key outcomes of the DEEWR/NCSEHE (2009) project into participation in higher education - the matrix for designing and evaluating higher education access programmes (DEMO). The matrix identifies a number of characteristics of successful and effective university outreach programmes. These characteristics enable identification of effective teaching and learning strategies in programmes designed to improve access to higher education from under-represented groups. The project leaders have been successful in using the matrix across previous pathways studies. By applying this matrix to built environment transition programmes or models, and examining the data in conjunction with narrative analysis software (Invivo) it was possible to isolate success factors or enablers which can then be used in alternate settings. Further information relating to the DEMO matrix is available in Appendix C.

The project had four distinct phases and was situated in the built environment discipline over a 12 month period. It should be noted that several of the phases were overlapping or ongoing during the project, since the project model was flexible enough to allow continuing development for the life of the project and beyond.

In summary the four project phases were:

1. Identification of pathways data pertaining to movement between AQF levels 5, 6 and 7 in built environment disciplines;
2. Analysis of the quantitative data, presentations to industry roundtables and collection qualitative student data;
3. Analysis and evaluation of qualitative data; and
4. Dissemination of project findings including industry roundtables.

1.8 The project limitations

All research has limitations – this study is not unique in having limitations and boundaries to what was researched and what interpretations and conclusions were drawn from the data.

One obvious limitation of the study lies in the boundaries placed around the AQF levels and the discipline examined. As indicated in the prevailing discussion, there are significant numbers of individuals employed in the built environment industry who do not possess any formal qualifications. Also there are significant numbers who possess AFQ level 3 & 4 qualifications. A clear limitation is that this study was only concerned with pathways at AQF levels 5, 6 and 7 in this industry. Whilst the authors acknowledge a study examining other AQF levels and pathways would be timely, it is beyond the scope of this study.

By examining only the formal movements of students between AQF 5, 6 and 7, in the built environment discipline only a very narrow slice of the total pathway experience was analysed. The pathway experience is far broader than the structures, processes and
relationships set up formally by a university or tertiary institution. This study only examined data collected from national transition models and students interviewed within those models. It thus examined only formal aspects of transition without identifying the contribution of social and informal environments to the total experience. However the boundary must be drawn at some point. Informal experiences and enablers such as peer pressure, alternate sources of information and social constructs were not examined. In addition there were institutional, economic and political nuances that affect the complex role the institution can play in the experience. In deciding where to limit the study, the key factor was the development of positive “enablers” that could be readily transferred to alternate settings and disciplines. The researchers were aware of the dangers of listing negative impacts that provide for much anguish and concern amongst stakeholders but do not create useable ideas or templates for adoption by learning and teaching practitioners across the sector. The research project was predicated upon the examination of real student experiences in national universities offering significant movement between VET and HE and the potential impact of transition models upon the built environment students in those universities. Although this creates limitations upon the data collected, the student insights provided a refreshing alternative to more generalised studies which have previously examined limitations and institutional barriers to upskilling.

A significant strength of this project was therefore the narratives of the students elicited through the interviews. Their voices and subsequent understandings of the learning structures, processes and relationships presented to them in their movement between AQF levels was unique. Their comments and feelings about the educational journey they have taken belong to them as constructs of their experiences. Their voices and reflections mirror their grasp of the learning situations – at the point in time in which they sought to express them. Their insights allowed reconstruction and interpretation for this project, analysed and selected as best suited to convey the messages of the constructs. Their contributions allowed for conclusions to be drawn in this project, conclusions which will contribute to the body of knowledge around pathways movement between VET (TAFE) and university (HE) in the built environment.

But this strength is also a limitation. As with previous pathways projects, although examined in greater depth, the individual participants and their narratives were exactly that – individuals, whose constructs of the learning structures, processes and relationships was their own. Of the annual number of students moving between AQF levels 5, 6 and 7 in the built environment discipline, the number interviewed in this project was approximately 10 per cent. This small number was deemed manageable given the data collection and analysis methods utilised, but this is a limitation of the study. However the richness of the data, the thick descriptions, the depth (or layers) of interpretation and the triangulation through the industry roundtables and the quantitative data sets, to a large extent, ameliorated this limitation.

One limitation of this research study is its historical context or its snapshot in time. The research relating to pathways and movement between sectors is significant, fluid and ongoing. It is dynamic as the Australian tertiary sector searches for improved performance in an industry competing for funding of undergraduate places. Eliciting interview data from students moving between VET and higher education has revealed a snapshot in time and is
limited to the policy, structures and institutional activity surrounding that time. Whilst the interview data has been carefully examined and analysed, changes in government legislation, tertiary institutional policy and even student choice is fluid and may reveal alternate results at another time. This limitation is true of all dynamic research, especially in the scholarship of learning and teaching.

A final limitation of this project was the sheer quantity of research data that could be included in phase one of the project, when pathways data pertaining to movement between VET (TAFE) and university (HE) was examined and reviewed. Whilst the literature highlighted in this report is relevant and significant, it is beyond the scope of this project to include every possible pathway and movement for examination. As noted in Chapter 3, the selection of previous research has been confined to a small number of relevant themes and is in no way exhaustive or indicative of the total literature reviewed, or of all the themes relevant to pathways between VET (TAFE) and university (HE).

This study had, as one of its objectives, the aim of contributing knowledge to develop and promote industry upskilling and movement of students between AQF levels 5, 6 and 7 in the built environment industry. Whilst the limitations discussed above have gravity and indicate some restrictions, the overall conclusions drawn from this report remain relevant to the whole tertiary sector and provide concrete challenges to create effective change in upskilling and educational participation for all Australians.
Chapter 2  Project approach

2.1  Introduction

The Australian Government has set an ambitious target to raise the proportion of young people enrolling and completing a bachelor level qualification by 2025, equating to 40 per cent of all 25 – 34 year olds. The achievement of this ambition will produce around 217,000 additional graduates by 2025.

The improvement of pathways and movements between the VET (TAFE) and higher education sectors is seen as critical to this target. Government policy documents – Transforming Australia’s higher education system, 2010 – indicate ‘tertiary education in Australia should be a continuum of delivery, with better connections between sectors in both directions, while avoiding one sector subsuming the other” (p.43, 2010).

Economically the imperative is stark – Australia faces a growing crisis in demand for a highly broadly and deeply skilled workforce to sustain its economic growth and provide the capacity to exploit its economic opportunities and resources. This imperative is not unique to Australia and is echoed in government policy of developed countries across the globe (Leathwood and Hayton, 2002).

This economic imperative is, to a large extent, driving a renewed focus on access and higher education. Bradley (2008) notes the inter-relationship of equity and economics when recommending increased participation in higher education – “for the benefits it brings to the individual and for the long-term social and economic benefits in terms of workforce participation and a more socially inclusive society” (p.28, 2008).

Over the last 20 years, there has been an increase in the rate of students obtaining bachelor level qualifications, primarily due to the reforms during the late 1980s and early 1990s as part of the move to mass participation in higher education. The current attainment rate for bachelor degrees for 25 to 34 year olds stands at around 32 per cent, and under current policy settings this is likely to rise only slightly, to around 34 per cent by 2025. However this is unlikely to be enough to meet the future economic needs of the nation. One important element of meeting future skill needs, especially in the built environment discipline is the upskilling of the existing workforce. In the built environment industry Harris, Sumner and Rainey (2006) indicate that students, including those in the workforce, want greater movement between vocational education and higher education. It is significant that student traffic involves various combinations of complete and incomplete qualifications and concurrent enrolment. It appears students and workers are engaging in multiple entry and exit points as their lifelong learning needs dictate. This project provides formal research about these AQF levels 5, 6 and 7 learning pathways and gives insight into the educational benefits these students are demanding from such upskilling.

2.2  Rationale of method

The examination of movements between AQF levels 5, 6 and 7 in the built environment discipline is premised upon a number of rationales.
Firstly the built environment sector is a significant contributor to the Australian economy and employs one in seven workers in Australia. Built environment industry professionals make up approximately 9 per cent of the workforce (ABS, 2008a). There is a strong link between national productivity and a qualified labour force. Without sufficient qualified workers, industries such as the built environment will have difficulty continuing to produce their current level of output, let alone expand output to keep pace with global markets. Modelling indicates the built environment industry will be unable to meet domestic consumption in the coming decades (DEEWR, 2008).

Secondly this project will directly benefit students. This project focuses upon the successful pathways movement between AQF levels 5, 6 and 7 that already exists in higher education institutions. By focussing upon successful transitions, this project has moved the current knowledge from known policy to the final effects of institutional policy and its enactment upon real students. The project findings have demonstrated the requirements for successful transitions, which once disseminated can be adopted for the benefit of all students across all disciplines.

Thirdly this project sits at the core of the university mission of the lead and partner institutions. The RMIT University Strategic Plan to 2010 details the university’s commitment to providing quality education which will “ensure flexible, useful pathways and learning opportunities for students” (RMIT Strategic Plan, Priority 4). RMIT University, along with the partner universities in this project, recognise the critical importance of continuing to build and focus on the development of learning pathways across the education sectors both locally and internationally. This commitment is reflected in the partner universities – UWS, and Curtin University – who are also committed to research examining pathways improvements arising from the introduction of effective pathways models and have embedded in their various strategic plans, deliberate and sustained commitments to this effect. This level of support indicates both the relevance and priority of the rationale to undertake this research.

2.3 Project design and methods

The project was based primarily on case study research methodology (Yin, 2008). This approach allowed the collection of both qualitative data through interviews and focus groups and quantitative data relating to pathway information. Two data collection methods were employed in this research: national case study interviews, along with desktop literature reviews. The interviews were conducted between September 2011 and August 2012, across seven tertiary institutions, with data from each institution treated as a separate case study and triangulated in the focus groups. The institutions were:

- RMIT Melbourne
- University of Technology Sydney
- University of Western Sydney, NSW
- Deakin University, Victoria
- Curtin University, WA
• University of South Australia
• Holmesglen Institute of TAFE, Victoria

These institutions between them have approximately 80 per cent of all enrolled students in the built environment discipline in Australia.

The project utilised two data analysis methods: narrative software (invivo) and the DEMO Design and Evaluation Matrix for (University) Outreach, developed by the UniSA National Centre for Student Equity in Higher Education. Developed by NCSEHE in conjunction with DEEWR, the matrix provides information in a readily available format for future sector adaption. The establishment of this approach enabled on-going dissemination to the wider industry throughout the project.

The project was designed around four key phases over a 12 month period. Each phase lasted for approximately three months, although the project phases were overlapping and project dissemination was ongoing. Table 3 provides a summary of each of the phases, outlining the methods utilised at each phase and the purposes of each phase. Ethics approval was granted by RMIT University on (CHEAN A—2000355-06/10) and subsequently from the partner institutions.

2.3.1 Phase one

Phase one of the project commenced in September 2011 and concluded in December 2011. The overall aim of this phase was to establish and expand the main themes of transition (VET to HE) models by developing baseline knowledge about current pathways and articulation practices within the built environment discipline. By developing a focus upon successful pathways an understanding of where the greatest number of transitioning students were retained and the models used within those institutions was available. In this phase existing literature on pathways and transition was reviewed. This phase developed baseline knowledge about current pathway movement between AQF 5, 6 and 7 and articulation practices within built environment disciplines in Australian universities. This information was disseminated at an industry roundtable attended by 25 organisations and representatives.

2.3.2 Phase two

Phase two of the project commenced in Jan 2011 and was completed in May 2011. The aim of this phase was to collect data by student case study interviews and where possible focus groups that identified student transition experiences. Interviews were set up with students who had transitioned from AQF level 5 to 7. Specific knowledge was collected from interviewees about retention and support for pathways. A copy of the semi-structured interview questions is available in Appendix A. Interviews were administered at seven universities, where the largest numbers of built environment articulating students undertaking degrees at AQF level 7 were located. This created a picture of successful transitions which facilitated learning pathways in a systematic way and allowed documentation of both enablers and obstacles to access and participation by student groups.
### Table 3: Project Phases, Methods and Purpose

<table>
<thead>
<tr>
<th>Project Stage</th>
<th>Methods and Methodology</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 1</strong></td>
<td>Project team meeting November 2011</td>
<td>Identify known literature on pathways and quantitative data on actual movements of students</td>
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<td></td>
<td>Desktop Review of National and International Research</td>
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<tr>
<td></td>
<td>Industry Roundtable</td>
<td>Identify tertiary institutions with greatest student cohorts of sustained transitions in built environment</td>
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<td></td>
<td>Conference Attendance AUBEA 2012</td>
<td>Validate data and discuss project positioning</td>
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<tr>
<td></td>
<td>Establish data about stakeholder experiences/concerns</td>
<td>Establish data about stakeholder experiences/concerns</td>
</tr>
<tr>
<td><strong>Phase 2</strong></td>
<td>7 tertiary institutions face to face interviews Focus groups</td>
<td>Establish data and characteristics of articulating students</td>
</tr>
<tr>
<td></td>
<td>Conference attendance NCVER No Frills July 2012</td>
<td>Apply a “lens” to pathways students to ascertain patterns of participation/continuance</td>
</tr>
<tr>
<td><strong>Phase 3</strong></td>
<td>Invivo software</td>
<td>Create a picture of successful transitions which facilitated learning pathways in a systematic way and allowed documentation of both enablers and obstacles to access and participation by student groups.</td>
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<td></td>
<td>DEMO matrix</td>
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<td></td>
<td>Conference attendance LHMARTIN INSTITUTE Pathways video</td>
<td></td>
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<tr>
<td><strong>Phase 4</strong></td>
<td>Industry Roundtable</td>
<td>Summary of published project reports and conference papers</td>
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<td></td>
<td>Monograph of project papers</td>
<td>Facilitate project discussion and interest</td>
</tr>
<tr>
<td><strong>Final Project Report</strong></td>
<td>Analysis of all literature and data (statistical analysis, interviews, industry roundtables and literature) against project objectives</td>
<td>Satisfies project funding contract</td>
</tr>
</tbody>
</table>
2.3.3 Phase three

This phase of the project lasted approximately from May 2012 to August 2012. The overall aim of this phase was to evaluate the collected data using the software Invivo and DEMO matrix to elicit common themes within the student interviews. Information pertaining to the DEMO matrix is detailed in Appendix C. This phase also involved collection of additional case study data and further interviews at UTS Sydney and Curtin University. This data provided a number of additional sources of information for the project. It established quantitative data on the number of pathways students at UTS and Curtin University as well as qualitative data on the characteristics of pathways (articulating) students at these institutions. This meant that existing data on characteristics of transitioning students in construction could be refined and added to in the total data picture. Following the data trails also meant that the researchers could ensure the collected data addressed key objectives of the project, particularly to develop schema to discern and map critical enablers.

An added advantage of this phase was the opportunity to ensure that consultation about pathways experiences in educational institutions was advanced and kept on the policy agenda of built environment disciplines. This coincided with the AUBEA conference in 2012.

2.3.4 Phase four

This phase of the project commenced in September 2012 and was formally completed in November 2012, although a number of dissemination activities such as the NSW book launch and the video presentations were ongoing into December 2012 and 2013. The overall aim of this phase was to evaluate and disseminate the outcomes of the project across both the built environment sector and the wider higher education sector.

In this phase the project team presented the final project findings to a second industry roundtable. As a result a number of recommendations arising from the project were formed. Thus the final phase of the project built up a strong picture of enablers to movement between AQF levels 5, 6 and 7. In this phase a number of dissemination activities were also commenced and completed including a summary of published project reports and conference papers to facilitate project discussion and interest.

Evaluation occurred continuously through the project life, but particularly in phase 4. At the early stages of the project (0-3 months), the project team worked with the reference group to develop a formative evaluation. This provided information for improvement by identifying aspects of the project that were successful and areas in need of improvement. At this phase of the project a summative evaluation was undertaken by the project team and provided an overall perspective of the project. This summative evaluation was undertaken at project team meeting in November 2012, at RMIT University.

**Dissemination and embedding strategies**

The project deliverables detailed in the communication and dissemination plan enhanced dissemination and improved sector-wide understanding of the problems and solutions to student transition between AQF levels 5, 6 and 7.
An essential part of the engagement strategy was the industry roundtables which included:

- Australian Institute of Building (AIB);
- Australian Institute of Quantity Surveyors (AIQS);
- Australian Institute of Building Surveyors (AiBS);
- Royal Institute of Chartered Surveyors (RICS);
- Chartered Institute of Building (CIOB);
- Pacific Association of Quantity Surveyors (PAQS);
- Construction Property Services Industry Skills Council (CPSISC);
- Skills Australia; and
- Master Builders Association Australia.

A full list of the organisations participating in the industry roundtable is included in Appendix B.

On-going dissemination during the project through the roundtables and the project newsletter allowed the opportunity to receive comment, the potential to gain extra data/exemplars and the capacity to modify the project based on feedback. This strategy offered a chance to involve external and new stakeholders, to establish informal partners and to extend ownership. Other advantages included the ability to publish progressive reports, interim evaluations and the preliminary data analysis.

The main dissemination events during the project were:

- Industry roundtables;
- Reference group workshops;
- AUBEA conference 2012;
- LHMARTIN Conference, 2012;
- Project newsletters; and
- Project meetings.

The main dissemination events at the conclusion of the project were:

- Academic publications;
- Final report;
- Project video; and
- AUBEA Conference 2013.

Detailed information on each of the project outcomes and dissemination activities is contained in Chapter 6.
2.4 Summary

This chapter has outlined the key methods and methodology used to collect and interpret data in this project. The next chapter examines existing data about pathways and its effectiveness in the built environment industry in facilitating movement between AQF levels 5, 6 and 7.
Chapter 3 The transition between VET and HE: The built environment story

3.1 Introduction

A new paradigm for the higher education sector emerged with the publication of the Bradley Report (2008) and subsequent broad acceptance by government of key recommended reforms including: new participation targets for both bachelor and diplomas combined with new equity targets for participation; the introduction of demand based funding of higher education; the establishment of two new regulatory agencies; and, a new Tertiary Ministerial Council.

Bradley called for a ‘more flexible and responsible tertiary and training system with closer links between VET and higher education’ encompassing closer collaborations, shared information bases, integrated responses to workforce needs, especially in outer metropolitan and regional areas, more efficient regulatory and accountability frameworks and clearer and stronger pathways between the sectors in both directions (Australian Government, 2008).

The federal government response to the Bradley review recognised that VET and HE have different purposes whilst supporting improved interconnections with a continuum of delivery in both directions (Commonwealth of Australia, 2009). This position was reinforced by Skills Australia (2011) in its Roadmap to the Future policy statement.

Some commentators have argued that both the Bradley Report and the government’s response has not really changed the status quo, maintaining the historical policy legacy, of sector distinction and focus, whilst seeking to support better conduits for students to move through the separate sectors of the tertiary system. (Karmel, (2009); and Moodie et al., 2009) Wheelahan (2010a) argues that pathways must become center stage in a coherent tertiary education policy if the Bradley participation and equity targets are to be met (see also below on equity as a driver).

Other writers have commented on the blurring of the boundaries being brought about by meeting the participation targets, the new forms of combined curriculum/qualifications and changes to a more vocational higher education system (Skills Australia, 2010; Brown et al. 2009).

In response to the Bradley Review, the government commissioned the Australian Qualifications Framework Council (AQFC) to do further work on pathways. Carnegie (2009) in her Review of Policy and Regulation for the AQFC Pathways project noted that the multiple Commonwealth, COAG and national key policies and regulatory systems governing tertiary education supported pathways in principle but policy settings were incoherent and many failed to reference the AQF and its associated pathways policy within their policy settings. The Final Pathways Project Report to the AQFC (2009) suggested a range of policy reforms, which informed the new Pathways Policy within the revised Australian Qualifications Framework, (AQFC, 2011) and aspects of the revised Framework.
In this revised AQF, pathways are both integral to the framework (as set out in both the AQF Levels and qualifications descriptors) and mandatory for issuing institutions (AQFC, 2011). The AQF Levels creates a new set of relationships between the sectors, often implicit but now explicit. (Phillips KPA, 2010)

3.2 Pathways and transition between AQF 5, 6 and 7

The literature examining practice and implementation of pathways has followed a number of threads. For the purposes of this report these are identified as:

- Patterns of student movement and data studies on transfer;
- Organisational arrangements for developing pathways; and
- Enablers and barriers.

3.2.1 Patterns of student movement and data studies on transfer

Whilst national policy settings have traditionally focused on building linear and more seamless pathways from lower to higher qualifications, (particularly from VET to HE), studies on student movement have shown that students do not always follow this route. This was the focus of Golding’s seminal work from 1993 to 2000 examining student movement from university (HE) to VET (TAFE). In summarizing this research, Golding and Vallence (2000) suggested that ‘a two-way movement model linked to the notion of lifelong learning is more useful than a one-way articulation and credit transfer model in explaining movement and recognition between the VET (TAFE) and higher education sectors in Australia’. The authors proposed that a wide range of factors come into play in making sense of actual student experiences and transitions in formal education over a lifetime.

New terms were created to explain these experiences including reverse student transfer and reverse articulation alongside churning and swirling, which reflected the experiences of some students in moving in and between the sectors.

Buckley’s study of key players in pathways development in Western Australia (2006) found that entrenched perspectives, based on sectoral and institutional containment rather than flexible student development, offers limited hope for innovative thinking about pathways.

Harris et al. (2006) found that patterns of student movements are quite complex, within and across different fields of study; that students move into and out of qualifications in various ways including using qualifications as stepping stones or moving in zig zags or lurches – the crazy paving approach. Curtis (2009) found similar patterns, identifying three types of student transfer: step up; sidestep and new direction. Curtis identified this mosaic of student movement as being driven by employment and career needs.

Carnegie (2009) identified the need to delineate between general student traffic and movement and transfer that occurs through the use of pathways; the former reflects students using the qualifications system broadly whereas pathways involve creating
particular routes and/or signals and supports that students can use to facilitate specific transfer destinations. Guthrie et al. (2011) also distinguish pathways as ‘ordered with known destinations and with routes to them clearly marked out’, identifying three different types of pathways: learning, occupational and career (Guthrie et al., 2011).

Karmel (2009) in analysing NCVER student data from 2007 looked at reverse articulation students and found that VET students with a higher education qualification had remained fairly static, at around 5-6 per cent of the total student pool, over the previous five year period. Even so this percentage corresponded to over 100,000 students, significantly more than the numbers moving from VET to HE. Karmel noted that those with a university (HE) qualification were more likely to do a non-AQF program and their motivations were varied.

Wheelahan, (2009b), quoting from Stanwick (2006) noted the importance of the Diploma as the pathway qualification for step-up or vertical pathways from VET to HE, based on the percentages of students going on to higher education with this qualification. Wheelahan’s study of pathway students in Victoria and NSW found that VET students who apply for place in a university are offered places at a similar rate to other categories of non-school leaver applicants, at least up until 2008 (Wheelahan, 2009b). This point was also highlighted in the AQFC Pathways Project (Wheelahan, 2009c) and in the Pathways Project Final Report (AQFC, 2009).

Wheelahan provide some interesting perspectives on who makes use of diploma to degree pathways. Looking at SES profiles, she found little difference between diploma and higher education students (both are from higher SES), thus suggesting that whilst pathways from diplomas to degrees may provide an educational ladder of opportunity they do not necessarily lead to a social ladder of opportunity(2009b). Quoting Stanwick (2006) she further disaggregated diploma students into three types – under 25s with year 12; over 25s undertaking diplomas for employment purposes an over 25s without any post school qualifications. The first cohort is much more likely to go onto university (Wheelahan, 2009b).

Abbot-Chapman (2011) reflected that the days of a single linear education pathway and lifelong careers are over and that increasingly students, especially disadvantaged students, will experience fragmentary careers within a mosaic of study and work destinations with a smorgasbord of choices. Guthrie, Stanwick and Karmel’s study (2011) of selected 2009 &2010 data on student movement confirmed other previous studies showing student movement occurs in every direction including movement at the same levels within VET.

Harris et al. (2006) also reflect that in knowledge society, many other types and directions of movement within and between educational sectors is needed rather than a linear focus on pathways. Surveying students in both Australia and Singapore who had experience of both VET and HE, they used the concept of a career capital framework to better understand pathways’ decisions from the perspective of individuals. They suggest a typology of student decision making based on: knowing why capital; knowing how capital; and knowing whom capital and that within a framework of lifelong learning the freedom to move across sectors and at different ages and stages is essential in accumulating the career capital needed over a working life.
A number of data studies have been undertaken, looking at both general patterns and trends on student transfer and by discipline or other characteristics. Most authors sound caution over the reliability and utility of some data sets.

Phillips KPA (2006a) provided a snapshot on VET (TAFE) to university (HE) transfer and credit using DEST data. In a comprehensive data study for the AQFC Pathways Project, NCVER (2009) identified nine relevant data collections that provide information on pathways comprising three groups: student enrolment data collections; graduate outcome (tracker) surveys; and analytic type surveys (NCVER, 2009). Analysis of this data showed: significant variations in admissions on the basis of a VET (TAFE) award by universities (highest in non-aligned and ATN; lowest in Group of 8) and by discipline (highest in education, nursing and management); evidence of churning in VET (TAFE); variations in data on university (HE) students in VET (TAFE).

The variations in admissions between different universities from VET (TAFE) to university (HE) have been noted by other authors, including Abbot-Chapman (2011), Wheelahan (2009), Moodie (2010) and Palmer et al. (2011). Abbot-Chapman (2011) notes that more VET (TAFE) students transfer to the regional and technological universities and that institutional responsiveness and degree of inter-sectoral collaboration is not uniform. Wheelahan (2009b), analysing DEST data on basis of admission by university (HE) provider for 2005-7, refers to the recruiting and selecting universities and noted that the Group of 8 admit 23 school leavers for every VET (TAFE) student; for these selecting institutions the focus is on school students with high entrance scores, whilst for the recruiting universities a wider and more diverse pool of students is needed.

Some studies have also looked at VET (TAFE) to university (HE) student transfer and pathways by discipline, including Curtis (2009); Wheelahan (2009b); Moodie (2010c) & Guthrie et al. (2011). Curtis (2009) found that the main fields of transfer have remained fairly constant – business, education and nursing, with 40 per cent of transfer students moving into university (HE) in the same discipline as their VET (TAFE) studies. Wheelahan (2009b) noted that VET (TAFE) students are underrepresented in professional faculties such as medicine, dentistry and law... reflecting the unequal relationships between universities and VET (TAFE) institutions and the hierarchical structure of degree courses. Moodie (2010c) found transfers from VET (TAFE) to university (HE) were most important in the fields of nursing, education and IT with management and commerce having the largest share of undergraduates admitted on the basis of a VET (TAFE) qualification. The fields with the lowest upwards transfers included engineering and natural and physical sciences. Moodie(2010) suggests that strategies are needed to redress these variations by field, such as, incentives or specific measures similar to the equity incentives to universities by the government.

Additional studies have focused on examining pathways in a particular discipline. These include: engineering (King et al., 2011); construction management (Mills and McLaughlin, 2010;2011); VET educators (IBSA, 2011); nursing (Kimberley-Parsons 2010); nursing (Phillips KPA 2006b); mental health worker (CSHISC: 2009)s; and early childhood educators (Watson, 2006).
3.2.2 Institutional and organisational arrangements for developing pathways

The literature considers a number of different institutional arrangements for developing pathways. Most common and long standing are the partnership arrangements between individual VET (TAFE) providers and universities, particularly in the context of credit transfer and/or articulation agreements. Phillips KPA (2006a) explored this model in some detail, particularly through the institutional case studies (2006b). Case studies can provide an interesting snapshot in time but rarely over time; Carnegie’s (2009) updates of some of the Phillips KPA case studies provide an evolutionary perspective of growth and development.

Moodie et al. (2011) refers to this model of institutional partnerships between the sectors as one that maintains differences between the sectors whilst using pathways as the conduit.

Some studies have looked at broader partnership which include other organisations working with the university (HE) and VET (TAFE) partners such as schools, industry and Industry Skills Councils and local government as a mechanism to broaden pathways and support regional development. Kimberley-Parsons (2010) reflects on the need for expanding partnerships in nursing to include schools, VET (TAFE), university and industry in the Hunter region; Skills Australia (2010) identifies a key role for Skills Councils in partnerships; Cram (2011) suggest the need for a framework for developing regional pathways and courses involving industry, shire councils, community organisations and educational institutions. Paez et al. (2011b) suggest a new framework for engagement between industry and the tertiary education sector is needed in which industry is an equal partner in developing pathways.

The formation of state-wide agreements involving multiple providers in VET with individual universities is another type of partnership arrangement, explored by some researchers. This approach provides broader and more consistent outcomes for students (Jackson et al., 2010).

The dual sector institutions in Victoria and the NT constitute another intra-organisational model with pathways forming core business through legislative purpose, student choice, educational value, equity and efficiency grounds. Studies by Milne et al. (2007) and the University of Ballarat and Swinburne University (2010) reflect both on the desire for extending pathways and collaboration against the background of internal and external challenges and the maze of dual obligations and regulatory responsibilities these organisations.

In response to the changing tertiary environment and increasing blurring of sectoral boundaries, Moodie et al. (2009) have called attention to the emergence of a new institutional model, which is termed mixed-sector provision, proposing a new classification system for tertiary institutions based on the mix of sectoral student load that an institution carries.

- single sector institutions (where more than 97 per cent of load is in one sector;
- mixed sector institutions (with load of between 3-20 per cent in a minority
sector); and

• dual sector institutions (where there is mixed load of at least 20 per cent but less than 80 per cent in both sectors).

Mixed sector provision has meant both the offering of some bachelor degrees in VET (TAFE) and the return to sub-degree offerings by some higher education providers and establishment of their own Registered Training Organisations (RTO). Such internal programs offer another model for pathways. As noted by the authors the blurring of boundaries is by institution, not in the program design and requirements, which remain sector differentiated.

In a further study for NCVER examining mixed sector provision, Moodie et al. (2011) and Wheelahan et al. (2012) contend that these changes are a response to the changing tertiary institutional landscape in the policy context of meeting the Bradley targets and a more market driven tertiary education system. They note a variety of reasons for mixed sector provision including improved vertically integrated pathways for their students and improving business opportunities and to meet industry needs. They conclude that ‘mixed sector institutions will play an important role in opening access to educational pathways and higher-level education for disadvantaged students, and that diverse institutions may offer distinctive educational opportunities, particularly in niche and specialised areas’ (Wheelahan et al. 2012).

3.2.3 Enablers and the barriers to pathways

The practice of pathways can be assisted or impeded in different contexts by different factors. As noted by Phillips KPA (2006c) what can be presented as an enabler in one context may be considered a disabler in another and a failure to implement known enablers could also be considered as an impediment. The key enablers identified by Phillips KPA (2006c) were: people and systems; mutual respect and trust; effective information provision to staff and students; and organised transition arrangements. The push factors of increased industry backing for pathways and increasing demand by students were identified as potential enablers. More recent studies have also focused on integrated tertiary qualifications as enablers, because they lead to better pathways.

Phillips KPA (2006c) categorised the people enablers into four types: leaders, doers, evaluators and promoters; effective management and administration systems incorporated a number of facets - the provision of up to date institutional policies, formal agreements and MoUs between partner organisations, clear delineation of institutional responsibilities and accountabilities, management committee structures, human resources to implement the policies and information, promotion and evaluation systems (Phillips KPA, 2006b). These system elements are now embedded in the AQFC’s Pathways Policy (AQFC, 2011).

Wheelahan (2009c) also notes the importance of teachers, a group that has been relatively ignored in policy and cross-sectoral research, yet they are the key to helping students to develop aspirations to go on to university (HE) and to developing coherent and supportive pathways.
Paez et al. (2011b) in noting and agreeing with the enablers identified by Phillips KPA (2006) have recast these as a corporate strategy approach to managing pathways, requiring executive leadership with authority and supported by dedicated and trained staff and systems that give effect to the new AQF pathways policy.

The building of strong relationships between staff in each sector, through shared experience in collaboration around pathways development, has been identified as the most effective approach in addressing cultural differences and attitudinal issues between VET (TAFE) and university (HE) staff, by building trust and understanding (Phillips KPA:2006c), (Wheelahan, 2009c), (King et al.:2011).

The building of effective information and promotion systems was identified as a key enabler of credit transfer (pathways) in Phillips KPA (2006 a, b & c). The final report (2006c) emphasised a number of aspects around information systems including:

- the availability of Web based information that is accessible and prominent;
- other promotional material that is readily available to prospective students;
- a coordinated register of credit transfer arrangements and precedents; and
- staff that can provide information and acts as a point of contact (Phillips KPA 2006c:vi).

National Guidelines to support more effective information provision were developed by MCEEDYA (2006), followed by further guidance from the AQFC (2009, 2011).

Despite the focus on information as a key enabler, limited research has been undertaken on students’ knowledge of pathways. As part of the IACTP (Byrnes et al., 2010) a student survey was conducted across VET (TAFE) and university (HE) institutions in Queensland on this issue drawing 12,815 valid responses. Analysis of the results found that ‘current students are, on the whole, more aware of articulation and credit transfer opportunities than was expected’ (Byrnes et al., 2010 p8). The results also showed greater awareness by students of terms like credit transfer than pathways, with little difference between sectors or SES in the level of awareness but some differences in age (with younger students less aware). Significantly teachers were the most important factor in creating awareness, followed by other staff and fellow students. The web accounted for only 21 per cent of awareness overall. The survey also found that 27 per cent of the respondents were influenced in their choice of study by the potential for credit transfer or RPL (Byrnes et al., 2010).

Transition arrangements are another aspect of implementation that can be identified as both barrier and enabler. The transition to university for all students including those prepared for an academic stream through school can be difficult, but the demands for those transitioning from VET (TAFE) can create special challenges (Brown et al., 2011). Effective transition arrangements need to be put in place which prepare students before and after they transfer, including induction and orientation programs both at the commencement and through the course of study (Abbot-Chapman, 2011; Hassard 2011).
One aspect of transition issues, raised by a number of authors, is the impact of block credit, which enables pathways students to move into second year, missing various orientations and, as a consequence, not gaining access to the scholarship, theoretical concepts, academic literacy and critical thinking skills that are formed as part of first year university experience (Jackson 2010; Harris et al. 2006; Milne et al. 2006; Watson 2006; and Wheelahan 2009c). The need for bridging skills in these areas and in some knowledge areas, such as mathematics in engineering has been more recently identified (King et al. 2011).

In a study on transition for the IACT Project, Blacker J et al. (2011b) refer to a need to encompass transition as part of articulation arrangements, founded on a cross-sectoral collaborative approach involving staff in the execution of student engagement and retention. This approach further fosters mutual respect and understanding. The authors identify three types of transition programs: preparatory/pathways (before); transition (between); and support (after).

The increasing development of cross-sectoral, integrated qualifications (as distinct from the end-on, binary divide models of credit transfer and articulation) has also been identified as a way of addressing these transition issues whilst providing a more effective pathway model in general. Bradley et al. (2008) noted that employers argue for an integrated post-secondary skills environment whilst the changing nature of work reflects a need to better combine skills and qualifications across sectors (Foley, 2007). Cram and Watson (2008) found that cross-sectoral collaboration in curriculum pays off for institutions and for students. Carnegie (2009) flagged the Associate Degree as the basis for creating a new hybrid tertiary qualification, combining elements of the curricula of each sector with a guaranteed pathway to the last stages of the bachelor degree; the AQFC Pathways Project Report (2009) argued the need for developing purpose designed Diploma pathway qualifications, combining elements of both (that could sit alongside or in place of industry based vocational diplomas, similar to the UK’s Foundation Degrees). Phillip KPA (2010) suggest these combined qualifications are the means to transforming the tertiary landscape, particularly in various fields where there is a symmetry between VET (TAFE) and university (HE) learning outcomes, or a regulatory need for work and as a means to achieving COAG targets in both upper level VET (TAFE) and University (HE).

King et al. (2011) also see blended courses as the means to strengthening pathways whilst Cram (2011) argues that such programs are essential for regional delivery and in the national interest. Paez et al. (2011c) note that when faced with all the facts, many institutions realise that it is often easier to develop these programs than more traditional credit transfer pathways and the outcomes can be broader, meeting the needs of sectors, industry and the students.

The barriers to effective pathways have also been the subject of various studies and reports. Phillips KPA (2006c) identified the following:

- sectoral differences in funding and accountabilities;
- cultural differences;
• curriculum, assessment and qualifications design; and
• administration and internal resourcing issues.

More recent research has highlighted the continuation of these barriers. The failure to effectively implement policies that are seen as enablers can also be construed as a barrier.

The differing accountability requirements between the sectors have also been identified as a particular barrier for dual sector organisations and those involved at the sticky end of cross-sectoral qualifications, requiring dual quality standards and requirements, dual funding arrangements, and separate curricula requirements.

The pedagogical and cultural differences between VET (TAFE) and university (HE) has been cited as a barrier to pathways by a number of authors. This has been a particular theme of Wheelahan and Moodie who both critique competency based training (CBT), in general and as a barrier to pathways, because CBT focuses (inter alia) on atomised, task based knowledge over the development of broad based theoretical and disciplinary knowledge of HE. Other authors have also identified the CBT framework of VET as a major barrier to pathways, including more recently, Skills Australia (2010) and King et al. (2011). The key elements in this discourse are that: CBT based qualifications do not provide adequate knowledge to underpin the knowledge needs of transferring students; specific competencies are too narrow and task based; non-graded assessment does not adequately sort good and poor students; and, the quality issues and differences between institutions in assessment are a barrier in supporting more systemic credit. IBSA (2011) refers to the different languages of VET (TAFE) and university (HE) in the form of dissonant curriculum, academic discourse and teaching style while for Keating, (2008), VET (TAFE) addresses human capital needs of competencies and applied skills, while higher education attends to the social and cultural needs of knowledge mastery and conceptual understandings (cited in Walls and Pardy 2010). As Walls and Pardy respond defining the equivalence between these is complicated but ‘in practice it is learning equivalence that remains the point of impasse for achieving equitable credit transfer arrangements. A means for establishing equivalence is imperative to ensuring that credit is recognised and awarded without prejudice’ (2010).

Other authors have suggested that it is not the differences in curricula, per se, that is the key issue but problems in the design of the qualifications within training packages, which are too flexible and varied in content, especially those with a limited core - Phillips KPA (2006c), Phillips KPA (2010), Paez et al. (2011b).

The lack of knowledge about VET (TAFE) within universities (HE) also contributes to maintaining the cultural divide between the two sectors. As Paez et al. (2011a) note entrenched attitudes and culture of the education and training sectors continue to impact on collaboration between stakeholders and the formation of partnerships (but) quantifying the extent of the impact is challenging. In the post Bradley era there is a new environment and impetus for working together and the cultural divide is becoming more blurred as higher education has a greater vocational thrust and VET (TAFE) at the upper levels becomes more knowledge focused and capability focused (Wheelahan 2011).
The differing systems of administration between the sectors have also been raised in the literature as a barrier, particularly in relation to building embedded and concurrent models of integrated qualifications. These include differences in timetabling, student categories, study structures, timing of results (Phillips KPA (2006c)).

Phillips KPA Report (2006b) included a review of current practice, for credit transfer between VET (TAFE) and university (HE), using case studies and vignettes to contribute to a broader understanding of current arrangements of the time. The authors noted that this case study approach was neither representative of all situations or practices or meant to be read as complete or comprehensive. They observed that no single factor stood out in assisting improved pathways, rather it is a complex interplay of factors; and, that, in all sites, progress was marked by phases of development where significant steps forward interspersed with periods of lesser activity (Phillips KPA, 2006b).

Beyond individual case studies, other reports and studies have shown significant variations in practice continue, particularly around credit transfer pathways. In a study of credit transfer in Victoria, Walls and Pardy (2010) found that the actual practice of articulation occurs on a spectrum ranging from well organised to haphazard. An OECD analysis (2010) found that while Australia and Victoria have made great improvements in developing pathways in education, articulation between VET (TAFE) Institutes and universities remains a challenge. The OECD noted the absence of state wide mechanisms found in other states and recommended that existing collaborative mechanisms needed to be scaled up. IBSA (2011) also noted that there is no consistent system for giving credit for VET qualifications; rather it is an ad hoc process.

Paez et al. (2010) in exploring practice in Queensland for the Integrated Articulation and Credit Transfer Project (IACTP) also found that even where partnerships have been developed with MoUs and detailed credit transfer arrangements, the majority were ad-hoc, formed most commonly on a mapping basis that differs from partnership to partnership.

One of the gaps in recent literature on practice is exploration of the experiences of students in pathways, a point noted by Wheelahan (2009c) who refers to the earlier work of Abbot-Chapman (2006) and Milne et al. (2006). One reason postulated by Wheelahan may be because some studies confirmed that VET (TAFE) students do as well as other cohorts, including school leavers. Indeed Abbot-Chapman (2011) found that despite the early challenges of transition from VET into university study, those transfer students who persisted over the three years performed academically as well as other students. Similar findings on progression and retention are documented by Phillips KPA (2006b), Carnegie (2009) and Jackson et al. (2010). Reasons for this success include the supports and the experiences of VET in making the transition, the greater maturity and capacity for self-directed learning and higher aspirations to succeed, having successfully made the transfer from VET to HE.

The focus of this research study was on the enablers that supported transition from paraprofessional level qualifications in building at diploma/advanced diploma (AQF 5 & 6) into professional level qualifications in construction management and related bachelor degrees (AQF 7). One reason often cited for the lack of upskilling between AQF levels in the built environment industry is the high wage levels at the vocational levels of the industry. To
better understand the nuances of this reasoning, the industry needs have to be understood. The next section provides a snapshot of the industry and its employment profile and skill needs; its skills/qualifications base and current education provision and pathways data.

3.3 The building and construction industry

The building and construction industry is vital to the Australian economy and a major contributor to economic growth. According to the Australian Bureau of Statistics this industry accounted for 6.8 per cent of GDP in 2008/9 and 9.1 per cent of the total workforce (ABS, 2010). Relative to other industries it is the fourth largest by both economic value and employment. Only financial services, manufacturing and mining contribute more to the economy; by employment, only retail trade, health care/social assistance and manufacturing are more significant (ABS, 2010).

The workforce profile is trade-centric. The most significant occupations in the industry (by numbers employed) are, in order:

- carpenters and joiners;
- electricians; and
- plumbers.

Together, these occupations constitute 26.85 per cent of the workforce and, when bricklayers and painting trades are added, the ‘trades’ make up just over a third of the workforce. (DEEWR: 2011, ABS:2011).

The industry also employs large numbers of unskilled and semiskilled workers in such jobs as:

- labouring;
- concreting;
- plant operators; and
- truck drivers.

At the professional and para-professional levels the main occupations are:

- construction managers;
- architectural, building and survey technicians; and
- civil engineering professionals.

The qualifications profile of the industry broadly mirrors this employment profile. This translates into:

- 40 per cent of employees with a certificate III/IV;
- 9 per cent with a bachelor degree;
- 5.9 per cent with a diploma/advanced diploma; and
- 45 per cent with no post school qualifications (ABS,2011).
Whilst this qualifications structure may have reflected the industry’s needs of the past, the question arises as to how well it meets current and future skills needs and employment demand. In this regard, an examination of current employment trends and skills shortages sheds some light.

Construction management, which is a bachelor degree qualified occupation, has become the fourth largest occupation in the industry (after the three key trades) and showed the largest growth of all occupations both in the two years to 2010 at 19.1 per cent. (ABS, 2011), and in the five years 2005-2010 growing by 55 per cent, compared with total employment growth in the industry of 17.8 per cent (Skills Australia, 2011). In the same time period building technician jobs, which are AQF 5 and 6 qualified, fell by 11.3 per cent, signalling much lower demand for these occupations. It is a myth that the industry skill shortage is concentrated at the lower AQF levels.

The industry is cyclical and subject to significant shifts in employment, in response to broad economic circumstances, particularly for semi-skilled and skilled/trade level work. Thus, whilst the trades grew in the five years to 2009/10 in the order of 30 per cent, more recent data shows trade level employment fell by approximately 10 per cent over 2011/2012 (DEEWR, 2012).

Despite the softening of the labour market in the trades, the demand for qualified professionals, in particular construction managers, remained high and is at the forefront of current and forecasted skills shortages and future skill gaps. The Commonwealth (DEEWR, 2011) has forecast continuing high demand for this occupation and continued employment growth in the order of 4.7 per cent per annum until, at least, 2015/16, whilst the Australian Workforce Productivity Agency has projected employment growth for construction management of between 2.7-3-3 per cent per annum, depending on different economic scenarios, for at least 15 years (Skills Australia, 2011).

The basis for this skills shortfall includes a number of factors. These include:

- changing qualification requirements – the industry is increasingly seeking degree qualified personnel in construction management jobs, whereas previously there would have been many ‘experience based’ managers;
- an ageing workforce, particularly in ‘experience based’ construction managers, with projected replacement needs in the order of 70-75000 persons, over the period 2010-2025;
- the increasing professionalisation of project management including construction management;
- increasing internationalisation and globalisation within parts of the industry and needs for suitably qualified staff;
- the increasing needs for project managers for large infrastructure project experience, particularly in the resources sector;
- increasing regulation and complexity of the industry, requiring staff with such skills and qualifications; and
- the gap between higher education provision in construction management and industry requirements for suitably qualified staff.
Skills Australia (now the Australian Workforce Productivity Agency) has recognised construction management as a specialised occupation meaning that it is of high value to the Australian economy and contributes significantly to medium and long-term skills needs. Occupations in this list require specialised skills learned in formal, extended education and training over a long lead time (four years for a university (HE) qualification). Specialised occupations represent both high use (a good occupational fit) and high risk, where the impact of skills shortages imposes significant economic or community costs (AWPA, 2012).

Addressing the skills shortages in construction management and other professional occupations in this industry will rely upon a number of factors and strategies. These will have to include increasing the number of bachelor degree holders.

Skills Australia has estimated the need to increase construction professionals with bachelor degrees by 25 per cent in the period to 2025. Such an increase will necessitate expanding current provision of higher education in the discipline (building), which is extremely small at just 854 Effective Full Time Student Load (DEEWR Student Statistics 2011). Significantly, building related studies constitute only 18.33 per cent of all student load in architecture and building; the other 81.77 per cent of students are in architecture and related studies, which is not a skill shortage occupation. This increase in degree holders working as construction professionals may come from other higher education areas including engineering and management, but little evidence exists to support this movement. Other mechanisms to expand degree holders could include:

- increased migration of suitably qualified persons;
- improved Recognition of Prior Learning (RPL) to credential existing employees with relevant experiential skills and knowledge. This approach was strongly supported by industry representatives in the project Round Table discussions; and
- increase pathways into construction management and related degrees for VET qualified students.

Pathways can provide a means to higher paid jobs and retention of skilled workers who might otherwise leave the industry through age or other factors. Pathways also provide recognition for existing workers who have obtained some of the skills of project management through experience or for younger students/employees seeking access into degree level studies. Without such pathways the industry is not capitalising on the total potential of its workforce or one of the mechanisms that can help address its skills shortage in construction professionals.

At present, such pathways are problematic and haphazard with many students either not accessing or aspiring to ongoing higher education. This is particularly true for the vast majority of VET qualified students below diploma level. For 2010/11, only 1.1 per cent of certificate III/IV graduates in this discipline went on to study a bachelor degree compared with 5.1 per cent of graduates at these AQF levels across all fields (NCVER, 2011). In numerical terms this represented just 270 graduates out of a total pool of 24,580 graduates at AQF 3/4. Of course, the intention and motivation of the vast majority of these graduates was an employment outcome but this would also be true of the significantly greater numbers of graduates that moved into a degree across all fields of education at these qualification levels (17,553 of 344,180 graduates at certificate III/IV). Based on these figures,
the capacity to move into a degree for trade-qualified students is significantly lower than certificate III/IV graduates in general. Of all graduates covered by the Construction and Property Skills Council only 2.0 per cent were undertaking a bachelor degree.

Such data suggest that internal pathways into diplomas from these lower VET qualifications may be needed in this industry to enable more students to up-skill into higher education. It is, as noted by Wheelahan (2009), the holding of diploma level qualifications that constitute the main gateways into university for all VET graduates (on a percentage basis). Whilst the percentages of all students transitioning into HE, make this industry appear to have similar pathways outcomes at diploma level to other industries, the actual numbers of graduates transitioning to a degree show a different picture. That is because there are so few diploma graduates in this discipline – only 2,810 out of an estimated pool of 81,000. When examined by numbers of graduates, this translates to estimates of just 464 graduates (NCVER, 2011). Thus, another key issue for this industry is getting more students into diplomas from lower AQF qualifications or equivalent and more students graduating and then progressing into degrees.

Whilst as Gale (2010) notes, higher education is not necessarily better for all individuals in terms of life choices or economic prosperity, there is considerable evidence that access to a degree provides significant benefits whilst lifelong learning is vital for industry development, especially in the context of skills shortages in construction.

The need to build better pathways to support this industry’s current and future skills needs is clear; more graduates in construction management and related degrees are needed, in both the short and medium terms, to address identified skills shortages for construction professionals. Understanding pathways at AQF levels 5, 6 and 7 offer part of the solution.

3.4 Summary

This chapter has reviewed existing research on transition between AQF levels 5, 6 and 7 in the context of overall pathways movement and has also examined the policy settings contributing to increased focus on articulation needs. The chapter has also outlined the very poor transition of built environment discipline students in spite of these policy initiatives and overall improved articulation of Australian students. The next chapter examines data from students who have transitioned, to create a richer picture of the discipline enablers.
Chapter 4  The transition between VET and HE: the student story

4.1 Introduction

This project was concerned with building a coherent picture of the enablers to movement between AQF levels 5, 6 and 7 in the built environment discipline across Australian tertiary institutions. A key source of information about enablers was those students who themselves have experienced the transition between VET and HE first hand. This chapter details the student interviews.

The students for this study were identified through academic contacts at the selected tertiary institutions and the interviews completed over several months in the course of the project. As is common with this type of research contacting the students and then finding opportunities to hold the interviews was difficult. More students than the final list of 36 were contacted but did not participate for reasons including disinterest or simply failing to attend at the agreed interview time. Most interviews were conducted in person in a one-on-one basis; some were conducted by telephone and in the case of some of the UWS students, as a small group. At each university a focus group was established to triangulate data.

All of the students had undertaken a diploma or had been recognised by their university as having an equivalent qualification. The most common initial qualification held was the Diploma of Building from the national training package; a few students had completed the Diploma of Building Design, others the Diploma of Quantity Surveying, also from the training package. A couple had only completed a certificate IV but with work experience were given recognition and entry. The most common pathway destination degree was a Bachelor of Construction Management, sometimes in association with economics or architecture. Approximately five of the students were classified as mature-aged entry students under their particular institution guidelines, rather than VET transfer students.

To keep the interviews succinct only minimal data was collected on the students’ background including gender, age, postcode and family connections with building and construction. The gender focus is unsurprising given this industry has the highest proportion of male employees of any industry in Australia (ABS, 2011). All the students were in their early to mid-20s in age and had either come directly to university after finishing their VET qualification or within a year or two following. This reflects the findings of Wheelahan (2009) who categorised diploma students into three types – under 25 with year 12; over 25 undertaking a diploma for employment purposes and over 25 without any post school qualifications. Wheelahan’s age analysis showed that the first group were much more likely to go on to university.

This also reflects the motivations of the students interviewed, with many indicating that they chose to undertake a diploma as a means for gaining entry into higher education either because they had not been initially accepted into the degree of first choice on the basis of their tertiary entrance ranking or because they were aware that VET provided an alternative entry point into university.

“I wanted to get into construction degree, so going to Granville TAFE was the way to get there. I didn’t get the entry to UWS” (UWS).
“I chose this program because it offered me a chance to go to uni that is something I didn’t see myself doing.” (UTS).

“Well I got an ok score in year 12 but it wasn’t enough for the degree so I chose TAFE because I knew it could get me into construction management if I did well” (Deakin).

These responses are not surprising given the high tertiary entrance requirements for the destination construction and related degrees of choice and the limited number of places on offer. They also indicate, within the case study cohort, a group that deliberately chose VET as a stepping stone and who had prior awareness of pathway possibilities.

Other students indicated a number of other reasons for undertaking VET as their initial qualification including:

- work in the industry or to gain work in the industry;
- wanted to get practical experience first;
- unsure of ability and saw the diploma as an easier option;
- personal time commitment and flexible offering made the diploma attractive;
- relevance of the diploma to current work/workplace;
- cheaper fees in diploma (excluding Victoria); and
- perceived shorter course/study period.

For these students the option of going on to higher education appears to be more directly related to their experience as a VET (TAFE) student and the guidance given to them in the course of their studies.

In terms of choosing this industry as their field of study, many of the students interviewed had a family member within the industry and/or had obtained work in the industry through family. For some there was no direct connection to the industry but interest was created laterally:

“Well my family was having renos on the house and I watched that and thought I could do that” (UNiSA).

“I originally wanted to do advertising but then got into building design but I hated the CAD so looked at other jobs in the industry and project management looked far more interesting” (Deakin).

4.2 Analysis of the student data

Analysis of the data using Invivo software indicated the presence of a number of characteristics or enablers. The enablers most commonly reflected in the students’ responses were identified and evaluated using the DEMO matrix. In interpreting the responses the most commonly identified characteristics have been grouped into themes which were categorised using the DEMO matrix (Gale et al., 2010) as the commencement platform. These themes were:
• The assembling or availability of resources that were people-rich and sustained over time;
• The engagement of learners that recognised difference and provided enhanced curricula; and
• The building of confidence and motivation in learners.

Whist these were the most common themes and thus identified as enablers, it is not appropriate to rank or prioritise these enablers, given the qualitative base of the research and the limited number of interviewees.

4.2.1 The availability of people-rich resources sustained over time

Using both Gale’s DEMO matrix (2010) and Invivo software, characteristics of this enabler comprised:

• People-rich encounters - this was defined as the development of relationships between the students and other people who are in a position to offer ongoing guidance and support that is appropriate and relevant to the situation and capacities of the students. In this study, such guidance relates to pathways knowledge and advice, support for continuing studies, identification of pathways opportunities at university (HE) institutions and assistance in gaining information about entry and transition requirements.

• Early and sustained intervention – was defined as working with students from the commencement of their studies – in this context from the commencement of VET (TAFE) AQF level 5 work through to the transition into Higher Education (AQF 6 or 7).

Many of the students interviewed identified a strong people-rich component in their decision to go onto higher education following their VET (TAFE) studies. This was particularly important where students had not initially contemplated going on to a degree - it was the staff of the VET (TAFE) provider they knew who first gave them ideas of continuing their education. Teachers were the most commonly cited people in providing such advice and guidance but other staff were also mentioned, including heads of department and co-ordinators. The students commented upon the knowledge and willingness of VET (TAFE) staff to answer their questions, undertake enquiries for them and provide support as they progressed through VET (TAFE) studies. Gale (2010) stresses the importance of extended conversations to provide resources for learners.

“When I started the diploma I wasn’t really thinking about the degree you know...it was just as I was finishing I talked to (teacher - name)...who told me about the degree” (UTS).

“I didn’t think I could do it actually, then Mr.(teacher - name)...said it wasn’t that much more involved really” (RMIT).

“Other VET staff... yeah head of TAFE suggested” (UniSA).

It is noted that the capacity of VET (TAFE) staff to provide a people-rich experience is also dependent upon their understandings of pathways and the opportunities a degree might provide to their students in addition to a VET (TAFE) qualification. VET (TAFE) staff who
know which universities might offer a place and who have a collegial relationship with their university colleagues can make this guidance more specific.

“Well this uni had a relationship with the Leederville TAFE and that meant you could find out about the degree” (Curtin).

“The TAFE coordinator knew all the staff at Curtin” (Curtin).

Other significant people-rich resources that can provide guidance include family and employers (for the students who were working). Many of the students had family working in the industry, family who were aware of the job opportunities offered by a degree. Employers could also give such advice:

“My father made me go to uni he expects us to achieve and people at work told him the pay was better” (UniSA).

“No, none of my family have come here (to uni), but they wanted me to get qualified in building” (UWS).

“At work they told me the degree would be more helpful...I wasn’t sure till I spoke with the programme director” (Holmesglen).

The use of mentors, tutors and peers as support resources is seen as a valuable aspect of enabling resources in the context of outreach (Gale et al., 2010). In this study, such resources were not so evident in the student data, although it could be argued that VET staff also played a mentoring role in guiding students with the capacity, towards HE, because there knew them quite well (a consequence of much smaller classes in VET – see below). Some students also mentioned peers:

“I knew students who had gone to HE last year and they gave me advice about the electives etc” (RMIT).

The second enabler identified as a resource was financial support. Examining the responses of all the students, it could be said that this was not a major enabler for this total group of students. Only a few students raised this issue. This might be because the other students were still living at home and quite a number had part time jobs in the industry... so the enablers existed but they were not substantially recognised or quoted by students. The financial value to students of undertaking a pathway has been cited in the literature, on the basis of a reduced higher education contribution scheme student (HECS) debt but this point did not show up in the interviews. Higher VET (TAFE) fees for diploma qualifications have also been identified as a possible barrier, especially if followed by a HECS debt for pathway students. Only one student saw the value of paying the fees because of the pathway.

“If your diploma isn’t actually going to get you anywhere, then it’s a bit of a worry paying that much ... because I knew it was my pathway to uni, I was happy to pay” (UWS).

The third enabler identified was early and sustained intervention. In the context of this
study such interventions are evident in the commitment by institutions to developing sustainable pathways through models that suit their contexts such as partnerships, mixed provision and transparent or guaranteed pathways. The development of these models requires a commitment to human, financial and infrastructure resources by the institutions and other parties involved in long term sustainable pathways; but these resources sit in the background for students: they are not necessarily aware of what or who may have enabled them to have had access to a particular pathway from their VET (TAFE) provider into the university (HE) provider in which they are now studying.

In an environment where the pathway is the focus of the initial VET studies, the students are more aware of these interventions. For example, UWS has a college pathways model that involves foundation studies and the diploma of construction management, which feeds directly into the second year of the construction management degree. The pathway is transparent to the student and students can move fluidly with guaranteed entry and one year’s credit from the college model into the degree.

For others their experience of such interventions was evident in the ease of transition:

“Admission was fine and I just got the credit” (UniSA).

“It was really smooth... the staff all knew what credit you got and what subjects you would have to do…”(UTS).

Such examples can only exist where tertiary institutions have well-established systems that are well resourced in which it is not up to the students; rather the systems are in place and operating well.

4.2.2 The engagement of learners that recognise difference and provide enhanced curricula

This enabler contained a number of characteristics. Using the DEMO matrix context these were categorised as:

- Recognition of difference –defined as the importance of valuing the existing knowledge that VET students bring with them along with valuing the knowledge that students who have worked in the industry may have – expressed through admission in university (HE) and credit for the VET (TAFE) awards. It also includes a recognition of difference that students coming from VET (TAFE) into university (HE) may have specific needs in making the transition; and

- The provision of enhanced curricula- defined as learning experiences that prepare students for higher education and/or curriculum that may be modified to enhance learning experiences in a pathway model.

Many of the students across the interviews commented positively on the recognition they received by the university for their VET (TAFE) studies, through both gaining entry and the provision of credit. For some, the granting of credit was one of the most important enablers:

“I did the diploma because I knew I could get credit into the degree and I didn’t have any
work experience so I probably wouldn’t have got in without the diploma” (Deakin).

“But the university as a whole yeah they do, they give you exemptions so they obviously value the education that you’ve learned if you choose to take that” (Curtin).

“Admission was fine and I got 18 months credit but was block so ended up doing subjects I’d done at TAFE” (UniSA).

“It was a simple decision- I just went where the best credit was given and where it was available” (Curtin).

Some students also had concerns with the amount and form of credit recognition.

“I only got 2 units credit … I thought I should have got more… no point doing the pathway without credit” (note incomplete VET Qualification) (Curtin).

“I don’t know if there is a relationship between Petersham TAFE and UTS, but I got the same credit as the others” (UTS).

“If you’re exempt from those subjects based on your TAFE subject, so you jump in with the third or the fourth part of that, you missed out the technology bit, so you struggle to use technology” (UTS).

This issue of block credit and its impacts has been raised by other researchers, in particular, the concern that these students may be disadvantaged because they miss out on various orientations and skills formed as part of first year university experience. For other students in our study, this was not an issue, perhaps because of the solid grounding provided in the VET (TAFE) studies in this discipline:

“ I thought the credit was pretty generous but I’ve done the continuation studies for the initial subjects I got credit for and I haven’t had any difficulty with them” (UTS).

In the Gale et al. (2010) study on outreach programmes, it is the valuing and recognition of individual knowledge brought by students from diverse backgrounds that the authors emphasise. Applied to this study, this would require a Recognition of Prior Learning (RPL) assessment. Some students indicated this approach was used in determining the credit they received but, for most, the credit was predetermined with uniform credit outcomes of between 12-18 months granted for the diploma on the basis of standardised credit transfer agreements for this discipline by the universities.

Another concern over the valuing and recognition of their prior studies related to admission. Obviously all the students in this study gained entry to university but there was confusion and anxiety about the whole process and the basis for admission into some of the intake universities.

“Well I did the entry test thing- the STATS, and then I don’t know how they decided, but I was accepted, which is good!” (UTS).
“Some of my friends from TAFE were not accepted, but they were just as good as me (UTS) and definitely, it was still a worry after I got my diploma……to try and think whether I got in or would I still get in. You apply and wait and wait and worry and then start thinking that everyone else gets in but you” (UTS).

“It was hard to get in as the RMIT had quotas on numbers...so some kids missed out” (RMIT).

These quotes suggest that improved policy interventions are needed to ensure greater transparency, clarity and commonality of admission processes for diploma students aiming to transfer to university (HE) in this discipline. In recent years, tertiary admissions rankings (ATAR) scores have steadily risen nationally with construction degrees, compounded by the limited offerings available for places. This has sapped confidence for students in some institutions, where expectations of transfer are high, but not always met.

Recognition of difference can also be reflected in sharing a common understanding that transition students do not have the same prior learning experiences as other students and that for some of these students moving into a university (HE) environment, extra time and effort is needed to address knowledge gaps.

Some students commented on the fact that they would have liked to see extra curricula in the diploma to support the transition to university (HE) but that their VET (TAFE) teachers had explained this was not possible because it was a training package qualification that could not be altered. However, in UWS case study this was not an issue because the college diploma had been accredited through higher education and could encompass foundation subjects.

“Well at UWS College, they would recognise that the students are different and treat them like that....you know different teaching ways and different resources......”

“Everyone says you get more help at the UWS College. ....I knew from my school and my friends.”

Where a VET (TAFE) provider had the opportunity/capacity to modify and enhance learning experiences to meet pathways students’ needs and align the outcomes with the university curriculum, the advantages were obvious. However, if changes were too broad or changed the actual outcomes of the recognised diploma this had negative implications for the amount of credit, which students emphasised as an important enabler.

The value of the learning experiences offered by VET (TAFE) was commented on by many of the students and it is this aspect of enhanced curriculum that stood out as an enabler. The students identified a number of different aspects in their learning experiences which helped them in their VET studies and subsequent transfer to university. These included the:

- level of interest, encouragement and assistance given by the VET (TAFE) teachers in class (also another aspect of people-rich);
• small size of VET classes compared with university;
• way the learning is done in class as a group; and
• similarity of the study in VET (TAFE) and the base it provided for university studies.

Of all the enablers, this was the one which generated the most common and broad ranging response. The observations of the students were detailed and provide a very clear picture of the value of their VET learning experiences:

“The TAFE experience was incredible. The things I learnt here at uni, at UTS, and the way it is delivered is nowhere near what it was in TAFE. It was a more of smaller groups, small focussed, plus the price was cheaper as well” (UTS).

“Because I did the course, I mean the diploma, I liked it so much, they made me enjoy it so much, that I wanted to do the degree in it as well” (UWS).

“I got to discuss with professional older people who had a lot of experience, what to do” (UWS).

“The teacher we had was fantastic; he had a lot of experience and things in project management, so it just got me all excited about doing the work and going on......to UTS.”

“The number of teachers was sort of more” (Newcastle Uni).

“You were there more......(Curtin) and they really worked with you on assignments and things” (Deakin).

“At uni people just get up and walk out, at TAFE, they are involved in conversations. If I didn’t go to TAFE, I would have missed that, but lucky I did, or else I would not have liked uni....it would be strange to not talk to everyone at least for the first year. In TAFE the difference is that when you sit in that room, they’re focused on you, not 80 other students, and they’ll be able to guide you step by step if you want to, and understand each concept, each principle, and then ... until you’re ready to move on, you can move on. Not just the lecture’s ended, so go home and do what you want to do” (UWS).

“The work is about the same, some subjects are different, but it has been mostly the same type of work. The difference is the smaller classes. You could ask a question of one of the teachers at TAFE and they would straight away be there to answer you” (UWS).

These or similar views were expressed by nearly all of the students in this study, with one or two exceptions. The quotes demonstrate a common thread of a rich and positive learning experience in VET (TAFE) that supported these students both within VET and as the foundations for their studies in HE. The difference with university learning environment was noted:

“Here the class sizes are much bigger and it’s a bit hard to, it’s more impersonal I’d say. It’s not so much face-to-face time with your lecturers and you don’t get to interact with them as much as you do at TAFE”.
4.2.3 The building of confidence and motivation in learners

Gale et al. (2010) identified a number of characteristics of this enabler, which were adopted for this project:

- collaboration in program/pathways development between different sectors and agencies and different stakeholders;
- cohort-based, involving an approach that engages whole cohorts;
- communication/information about university life and pathways through digital and other media; and
- familiarisation and site experiences through site visits.

Collaboration was evidenced through students’ knowledge of the arrangements in place to support pathways, and the parties involved, although this was certainly not detailed. However, as expressed in some of the earlier comments, the students were well aware of the collaborations between their teachers and other parties that laid the basis for them to go on to higher education. The students were also appreciative of the efforts made to encourage pathways through VET/university (HE) collaboration:

“I tried to speak with someone in construction here, it was a while ago, but each time I rang they spoke saying you have to do the diploma, then they all gave me the same advice...do the diploma first” (UWS).

“I went for a job interview and they said to ring the uni, so I did and they said to apply with the diploma” (UTS).

Of note was the understanding of students at UWS were the interviewees indicated that there was active feedback between the UWS College and the university about the performance, quality and learning experiences requirements of the various courses and the need to prepare students who would be transitioning to higher education. Additionally the provision of informed link people both within the university (HE) institution and the VET (TAFE) institution was seen as providing valuable assistance to pathways students.

Collaboration through geographic co-location appears to be an enabler. A number of students commented that coming to the VET (TAFE) part of the university or to a co-located campus was the first time they had been exposed to university culture and experiences. However, apart from having access to a university site, it would appear few explicit opportunities were made to involve the pathways students in university activities, prior to transition. UWS and RMIT, UTS held briefing meetings, but all institutions relied upon open days and external university marketing to reach pathways students. However, co-curricular and teaching collaboration was not in the experience of any of the students interviewed, indicating a continued separation between institutions. The students seemed to acknowledge the difficulties:

“I don’t know why they do not do it, too many applicants I suspect” (UTS).

“Well it is too hard to co-ordinate the two timetables I guess” (RMIT).
Collaboration in a pathways context also included other stakeholders beyond the institutions. The involvement of family has already been noted as part of ‘people-rich’ resources. Family, also plays a role in collaboration with those involved in pathways by reinforcing and encouraging students to continue with their studies and to assist them in the transfer process. The role of employers in encouraging students has also been noted under the enabler of people-rich. It would seem that employers valued students who have both VET (TAFE) and university (HE) skills and knowledge:

One student commented:
“Oh definitely I got the job because I had a TAFE qualification. I was surprised, but the employer said he would take me ahead of just uni students you know” (UTS).

and another:
“Yeah, like, I can get jobs that the other students can’t” (UWS).

The other identified characteristic of working together is developing an approach that engages with the cohort to change cultures and which provides supports to individuals in the cohort. A clear influence is the size of the cohort – how many students are involved. But the actual number in a cohort is not as important as the contribution this number can make. In this study, the contribution of this cohort (of pathways students) reflects the impact they can have in changing attitudes of other students, teachers and institutions towards the cohort.

Gale et al. (2010) make the point that the operational footprint could be state-wide, even by the measure of one student. Essentially it is the capacity of that one student to influence the attitudes and behaviour of peers and others. This sense of cohort is evident through the combined voices of the interviewees in sharing their journey and success in university (HE) and in identifying themselves as sometimes better, more hardworking and more motivated students than other groups. A number of the students demonstrated this perspective:

“Being at TAFE made us the most motivated of our uni cohorts... gives a good understanding of what happens on the ground and motivates to get a job or a degree... instils a better work ethic”... (UniSA).

And in comparison with school cohorts:

“A lot of them don’t really have the drive ... especially in first year, and these people like have dropped out, I haven’t seen them since, and they come in kind of with a high school kind of attitude. You can see that. Also, coming into such a conceptual course, they’re coming from high school, ...they’re quite lost for directions, they want directions, they need structure. I’ve found some of them struggle with that. But all the mature-age students I know definitely find it a lot easier” (Curtin).

Certainly, there was no evidence from any of the students interviewed that they saw themselves as inferior to other cohorts... although some indicated they would not have had the current confidence in themselves, as students, without the cohort experience of VET
(TAFE), changing their prior perceptions of university and giving them the confidence to go on not only to a first degree but to continue with study.

*If I hadn’t done this programme I wouldn’t know of the pathways now I know I can always come back to University and try to get another degree*” (Curtin).

Interpreting the students’ views of themselves as being a specific VET (TAFE) cohort within the university had mixed responses. One student commented about peers and the idea of being a VET (TAFE) Cohort.

“They had a special meeting of all the TAFE kids to explain the procedures, but that was it really” (UWS).

Another suggested that having some peers from VET (TAFE) at university helped:

“It was hard because of the numbers (at university), but then there were a few of us, so that didn’t matter so much” (UTS).

Whilst others recognised the value of having being part of VET (TAFE) first:

“TAFE is a good opportunity. You get a fair bit out of it, it leads somewhere” (Curtin).

From the student responses in these interviews, communication and information provision is extremely important but it comes from people-rich sources that the students know and trust rather than digital and other media. Surprisingly, the availability of web-based and other media communications/information about pathways did not feature highly in the student interviews. It is surprising because these enablers are often referred to as an essential component of effective pathways. Phillips KPA (2006) focused on the importance of such systems so that students can make informed decisions. Policy on pathways has also emphasised the importance of these enablers. Our project findings are similar to those of a substantive survey on student awareness of pathways conducted for the Integrated Articulation and Credit Transfer Project in which only 21 per cent identified the web as a key information source (IACTP, 2011).

The importance of familiarisation and site visits was evident throughout a number of the interviews. Orientation and information nights were conducted in a number of university and college settings before the students commenced university (HE) and relevant teachers briefed students about transition to university (HE). In the case of RMIT and UTS, because of co-location, geography made such site visits easier. UWS staff had to work harder at creating this experience, using link staff who were familiar with both the students and the pathways model and who conducted special orientation nights. In these experiences, students were exposed to staff who had all been employed at the university for some time and who were able to give casual advice about university pathways and credit transfer. Other students indicated they simply used the same orientation programs and supports available to all students or simply familiarised themselves.

“The best part was the orientation and information night, because only us TAFE kids went” (UTS).
“They took us to Deakin one day and explained all the pathways and the different career path that we could take from there” (Gordon TAFE to Deakin).

“Well I knew where to go, so that was fine” (Curtin).

Another aspect of building confidence that came through the transcripts was the very real transformation in confidence levels that occurred through the learning experiences of VET (TAFE) and followed by success in HE. A number of the students indicated that they had felt genuine concerns about their ability to cope with university and anxious in their first year but found they were well prepared and often better prepared than school based students. Continually the researchers were confronted with comments such as

“ I didn’t think I could go to uni then I went through TAFE and changed my mind. I just didn’t think I was clever enough to go...then I found out about TAFE here” (Newcastle).

“Obviously I used TAFE as a stepping-stone to here, but I learnt a lot along the way. I’m much better off, I’ve got much more than a stepping stone... I had one-on-one learning, I learnt the environment (of tertiary education), it was an adult environment. I’m more reliable on myself now thanks to TAFE” (Newcastle).

“I probably think it was the best thing that I did, was to do that first and then go through to university because I don’t think that I could have gone from school and have the same sort of success that I’m having now at university as I would if I hadn’t gone through the path that I had” (Curtin).

In some cases, students commented that they were performing better than their non-pathway peers and that they were more motivated.

“I definitely think TAFE helped build my confidence to cope here...the ones straight from school are not as motivated You want to be there so you work well... the kids are not so dedicated (UniSA – First class honours)”.

“If I’m going to be there I’m going to do the best I can” (Curtin).

“I work much harder to do well at uni” (Deakin).

“It (the pathway) has been really good for me I think, in like maturing as a person and also in giving me a better understanding of where I want to go in the future.”

One of the reasons these students cited for holding this perspective is that by upskilling from AQF level 5 to 7, they have developed a far clearer understanding of the industry and career they have chosen and their degree focus. These students know from their VET studies what upskilling involves and from studying in a tertiary environment what they need to do to succeed.

The students’ perceptions of themselves as more focussed, more motivated and prepared
to do as well or better than other cohorts is important. It is this sense of self-belief and of a capacity for self-directed learning, which constitutes an important enabler.

4.3 Summary

This chapter has given insight into the student interviews and the enablers identified by the students in their movements between VET (TAFE) and university (HE) (AQF levels 5, 6 and 7). The student interviews provided much greater depth than has been reported here, but the essential enablers have remained the same. For the students in this study there were a number of enablers that were essential for successful transition between VET (TAFE) and university (HE) in the discipline of the built environment.

These enablers were:

- the sustained interventions of people-rich resources, particularly VET (TAFE) teachers and staff;
- the engagement of learners through supportive learning experiences in VET (TAFE) that encouraged on-going learning and upskilling;
- the recognition by universities of the value of VET (TAFE) learning through admission, orientation, transition activities, recognised credit for prior studies and supportive programme architecture;
- the building of confidence and motivation in learners through VET (TAFE) experiences; and
- the collaboration and deep communication between the VET (TAFE) and university (HE) providers.

The next chapter considers the industry stakeholders responses to the quantitative and qualitative data.
Chapter 5: The transition between VET and HE: The industry stakeholder story

5.1 Introduction

The importance of industry input and support for the project was a key element of the project design. Each stage of the research was considered by convened industry ‘Round Table’ forums. The purpose of these was threefold:

- to provide industry and other stakeholders with information about the project at each major stage of research, as part of communications and dissemination;
- to provide opportunities for the participants to discuss the research findings and the issues raised; and
- to elicit ideas and options on improving pathways movement between AQF 5, 6 and 7 in this industry to further inform the project impacts.

The first roundtable discussed the research findings relating to national data sets on the industry, as covered in Chapter 3 of this report. The second forum considered the student data presented in Chapter 4. To guide the proceedings, a discussion paper was developed for each roundtable with specific questions to focus consideration of the issues. The participants showed keen interest in discussing the issues and all were cognisant of the project’s relevance to future workforce development and skill needs in building and construction. All recognised the importance of building improved pathways between VET (TAFE) and higher education as part of meeting industry skills needs. A full list of industry organisations/participants is available in Appendix B.

5.2 Industry Issues

One of the key issues to emerge at the discussions was industry recognition of the important role that they can play in fostering and developing pathways and industry upskilling between VET (TAFE) and university (HE) for this industry. The industry representatives also were interested in developing tertiary models of education that addressed the skill requirements of the industry, not education sector requirements.

The industry representatives indicated that this was an area in which they had not played a significant role in the past but which was now urgent in the light of skills shortages in construction management and the important economic role of the industry. It was suggested that the time may be right to consider a national workforce development policy involving VET (TAFE), higher education, government and themselves.

In relation to the data collected for this project, industry representatives identified the need for improved career advice, starting in schools about jobs in the industry at paraprofessional and professional levels and pathway opportunities. In this regard, industry representatives agreed that they needed to take a more proactive role not only in guiding careers advice but also in providing opportunities, such as cadetships for students whilst studying in HE. In addition, the industry representatives saw a need for industry associations to advocate more effectively with individual employers on the need for constant up-skilling and the provision of up-skilling opportunities. The link to licensing was also raised.
A further issue considered in the roundtables was the low student numbers in the diploma and the small supply of student places in the degree, as set out in the data on students. The current levels of provision in both the diploma of building and construction and degree level studies present a significant constraint to improving the actual numbers of students who might make use of a pathway. In examining this issue the roundtable participants suggested that rather than focus only on the Diploma of Building as a pathway focus, more pathways could be opened up by the creation of alternatives such as a pathway from the certificate IV in Building, which has greater numbers of student enrolments, into an associate degree or even from certificate III into this qualification. An alternative might be to modify a generic diploma of project management (currently a qualification of another skills council) to include an elective focus on construction and to use this as a key pathways qualification in the industry.

It was clear at the industry roundtables that one of the constraints to improving pathways currently between diplomas and degrees in building and construction was the small numbers of students in both VET (TAFE) and higher education. As the NCVER data on students outcomes showed, the numbers of graduates in building related diplomas is pitifully small at approximately 2,810 in 2010/11. Thus even whilst the per cent going on to university was comparable with other industries, this translated into just 464 graduates. This data suggests an urgent need to extend the pool, if the numbers of pathways students into degrees are to improve. Consideration of this issue by stakeholders led to a number of impact statements.

These included:

- Industry taking a greater role in providing information and advice to school students about industry careers and the different routes into these careers including pathways from the Diploma of Building into construction management and related degrees;
- Extending the range of qualifications that support pathways, for example from a certificate IV into directly into an associate degree and then completion of the bachelor award and/or co-design of generic project management diplomas with construction electives;
- Improving pathways for graduates-existing workers with certificate III qualifications (which is a substantial pool) into higher VET (TAFE) qualifications/or provide RPL for these qualifications and then onto degrees; and
- Improved recognition of prior learning processes for industry employees to gain entry and credit directly into construction degrees.

However, even if the numbers of students/employees wanting to use these pathways increased it was identified by industry stakeholders that there is still a constraint on how many more students the universities offering degrees in this discipline could take, or be willing to take, from a pathways cohort. Key constraints to increasing undergraduate provision identified by the higher education representatives at the roundtable include the availability of teachers/academics and limited space/resources. The increased use of work based learning and integrated learning models developed in collaboration with construction companies was identified as a possible option to support increased higher education
provision. This approach would also give industry a greater role in undergraduate education and students improved access to real world project management experiences.

An overall point of agreement was that much greater flexibility in the creation of building pathways is needed; using different combinations of VET and higher education qualifications to create rolling entry and exit points and enabling students/employees to up-skill in chunks that suited their work and other commitments. Greater use of the associate degree qualification was supported as a destination pathway qualification as long as it provided an ongoing pathway into the degree.

Greater flexibility in pathway combinations may go some way to ameliorating the supply side constraints of provision in higher education. However, one of the main reasons for the low student numbers in building and construction degrees is the lack of suitably qualified academics and the availability of space. The greater use of industry in higher education provision, through work-based and blended learning, was identified as one mechanism that may help to address these pressures and also provide students with real world experiences of construction management.

A specific concern raised is the limited up-skilling undertaken by graduates/employees with a certificate III into higher VET (TAFE) and then on to degrees. Identified constraints included, on the industry side, perceived loss of pay and benefits and on the education side, the lack of visible vertical pathways because VET qualifications can no longer be nested. Given the huge numbers of students and workers with these qualifications, this gap in the pathways chain within VET (TAFE) is an issue that needs to be addressed.

One measure identified that may help is the much wider use of Recognition of Prior Learning (RPL) by both VET (TAFE) and university (HE) providers. This point was raised in both roundtables as an area needing urgent attention; if existing workers could be assessed and given recognition through credit then this may provide a strong incentive for undertaking a higher qualification.

5.3 Summary

The industry roundtables gave the employing stakeholders and other industry organisations opportunities to consider and discuss options for upskilling between AQF level 5 and 6 and 7. The recognition that one of the means to address skills shortages was to improve up-skilling of existing workers and students with lower level AQF qualifications through pathways into higher level qualifications with due recognition for relevant knowledge and skills was a key outcome. Projecting a workforce development need onto pathways development was seen as an important enabler from the industry’s perspective. The next chapter outlines the project conclusions based upon the three data collection methods.
Chapter 6    Enablers of student movement between AQF 5, 6 & 7: Conclusions

6.1 Introduction

This study has identified the enablers for improving student pathways from AQF levels 5, 6 and 7 or between VET and higher education in the built environment industry through a number of different lenses. These include:

- consideration of the workforce needs of the industry and implications for pathways through identified literature;
- the levels of current educational provision in diplomas and degrees and pathways data between AQF levels 5, 6 & 7 in this field;
- the enablers as expressed through voices of pathways’ students; and
- stakeholder perspectives.

Information supporting the project has been collected through a mix of quantitative data identification and review of nationally published statistics, interviews with students at a mix of tertiary institutions and roundtable dialogues with stakeholders.

The contextualisation of the research against industry workforce needs has had significant implications as it places pathways and movement between AQF levels 5, 6 and 7 in a broader ambit and provides a further rationale for pathways development. As set out in chapter 1 of this report, the industry has a current skills shortage of construction managers; the destination degree and principal occupation of the students in this study. This occupation has also shown the most significant growth in percentage terms of any occupation in the industry in recent years. The workforce studies, making these projections, included those conducted by key government and industry agencies - the Australian Workforce Productivity Agency (AWPA), DEEWR, the ABS and the Skills Council.

The Industry stakeholders represented at the roundtables also confirmed this workforce need. The AWPA identified this occupation as specialised requiring a long lead time in formal education. Where once the skills and knowledge may have been grounded in informal learning, the reality is that a degree is now necessary and expected for people coming into this type of work. It was continually established throughout the interviews and industry roundtables that upskilling from AQF levels 5 to 7 in the built environment industry was critical.

This chapter summarises the findings and identifies in a concise way the essential enablers of transition between AQF levels 5, 6 and 7 in the built environment discipline for emulation by all disciplines. The identification of these enablers means that learning and teaching practice can be adjusted to facilitate transition of students between all AQF levels, but in particular those levels where movement is organised by tertiary segment.
This chapter also presents key recommendations to ensure the sustainability and embedding of the project findings and outcomes for greater embedding and depth in improved learning and teaching for all students.

It is hoped this research has contributed to wider understandings of the importance of pathways to workforce needs in the building and construction industry, the factors/enablers which assist students in using these pathways and further ideas upon which to build and improve pathways.

6.2 Overall findings

The project findings show that for the students and stakeholders in this study there were a number of enablers that were essential for successful transition between VET (TAFE) and university (HE) in the discipline of the built environment.

These enablers were:

- the sustained interventions of people-rich resources, particularly VET teachers and staff;
- the engagement of learners through supportive learning experiences in VET (TAFE) that actively encouraged ongoing learning and upskilling;
- the recognition by universities of the value of VET (TAFE) learning through admission, orientation, transition activities, recognised credit for prior studies and supportive programme architecture;
- the building of confidence and motivation in learners through VET (TAFE) experiences; and
- the collaboration and sustained, deep communication between the VET (TAFE) and university (HE) providers.

Each of these is discussed below.

6.2.1 The sustained interventions of people-rich resources, particularly VET teachers and staff

The students in this study identified informed people as a significant enabler. This is classified by Gale et al. (2010) as people-rich resources. Students noted the availability of staff, including VET (TAFE) teachers who gave advice, encouragement and upskilling information as key to their progression from AQF 5 to 7. They identified a number of factors including the VET (TAFE) institution, the actual built environment school/department staff, and the information available through the university personnel, the knowledgeable staff who understood and explained credit and transition procedures and the overall level of motivating staff as important enablers.

The provision and interaction of knowledgeable staff and motivating educators in VET (TAFE), who were able to give consistent, long-term advice to students about future study and upskilling options is critical. The staff who were fluent in articulation arrangements and credit transfer opportunities and kept regular professional contact with other staff in higher education were also highly enabling. They were in fact extremely knowledgeable about the
built environment and passed that knowledge onto students. The frequency of expert, knowledgeable staff as an enabler of pathways was significant. To a lesser extent this was also noted as important in the higher education institution, especially by the interview respondents but it was not seen as an essential enabler of access.

Information on industry careers and upskilling advantages outlined by staff and other institutional personnel also acted as enablers for the students. Most importantly this people-rich experience was repeated over time, which helped build familiarity and ongoing interest in transitioning to HE. It also helped the building of confidence in learners through VET experiences which developed a high motivation to study and succeed at university and a clear focus on the value of the degree, the work it leads to and the industry chosen. Students in this study did not see the online or printed information as a significant enabler.

6.2.2 The engagement of learners through supportive learning experiences in VET that encouraged on-going learning and upskilling

The engagement of learners is not specific to pathways or students moving between AQF levels 5, 6 and 7. Evidence exists that the engagement of learners from all backgrounds and at all levels of study is crucial to a satisfying and productive experiences in education. But in this project it was evident that there were some particular determinants of engagement that promoted the aspiration to continue. A key enabler in engagement of the students transitioning from AQF levels 5 to 7 was the need for recognition of difference. Interviewees regularly spoke of the understanding of the institution or the acceptance of them as different learners who had different needs to the mainstream. The effectiveness of the model was improved if staff, students and administrators undertook steps, however minor, to enhance the curriculum for these students. This may have included modified curriculum, gap teaching or programme architecture to recognise staged learning.

The engagement of learners, represented primarily through the learning experiences in VET (TAFE), gave these students the skills and confidence to go onto higher education. In the case of the UWS College students, this enabler was further enhanced by the modified curriculum in the VET Diploma to include foundation skills and a guaranteed pathway into the second year of the degree.

6.2.3 The recognition by universities of the value of VET/TAFE learning through admission, orientation, transition activities, recognised credit for prior studies and supportive programme architecture

Another key enabler in built environment disciplines was the recognition by the university (HE) provider of the value of the VET/TAFE experience of the student. Where the credit transfer process was widely understood, clearly presented and publically available, the enablers were strong. Where VET students felt appreciated for the study they had undertaken and evidence existed that this was valued, the students were more likely to transition to AQF level 7.

The recognition of difference, expressed through recognition for prior VET studies given by the destination universities in the forms of credit and guaranteed entry (where provided) or ease of admission was also seen as important to these learners.
Finally the value of orientation, admission programmes and other familiarisation activities was constantly emphasised by this research. Where there were strong transition programmes, students were more likely to feel at ease and continue with upskilling.

6.2.4 The collaboration and sustained, deep communication between the VET/TAFE and university (HE) providers

The collaboration and communication between the VET (TAFE) and university (HE) providers expressed through familiarity activities such as orientations, strong communications between staff and link personnel in both institutions was an important enabler. The ability to build confidence in learners about their ability to continue in education to achieve greater skills and knowledge beyond the existing was continually addressed in the interviews. It was the intervention of enablers such as confidence activities like visits to the university campus, examples of university work and assessment, meeting university staff and talking with other students who had articulated that built confidence and resilience into the learner and thus the transition.

6.3 Additional findings

There are also a number of additional key findings arising from this project:

- In spite of robust VET (TAFE) to HE articulation arrangements and nationally agreed credit transfer for built environment discipline students, less than 16 per cent of all VET (TAFE) built environment graduating students continue onto higher education in any one year;
- Transition of the existing built environment workforce between AQF levels 5, 6 and 7 is negligible in terms of total pathways numbers per annum (2.4 per cent);
- Pathway students in this study also showed growth in awareness of their own abilities and capacities for learning, demonstrating a sense of self direction and motivation that stemmed from their pathways experience;
- Industry and other stakeholders provide important insights and ideas upon which to build improved pathways and need to be partners in pathways development; and
- An industry and workforce development paradigm through the prism of skills needs and skills shortages could provide a powerful enabler in support for improving pathways from VET (TAFE) to university (HE) in the building and construction industry.

6.4 Factors affecting project success

This project has been a success and has met all project objectives; disseminating knowledge about improved movement between AQF levels 5, 6 and 7; changed learning and teaching performance in tertiary institutions through constant dissemination of the project and its phases; and industry involvement in the project and its outcomes.
The original project objectives were:

- to establish critical factors (enablers) that contributed to student transitions and maximisation of student upskilling from VET (TAFE) to university (HE) in this discipline; and
- to disseminate such enablers to better inform industry, tertiary providers and other stakeholders of the critical factors in successful transitions.

Each of these objectives has been achieved. The table below indicates the project scorecard against these objectives and the project outcomes.
Table 4: Project Objectives and Outcomes

<table>
<thead>
<tr>
<th>PROJECT OBJECTIVE</th>
<th>PROJECT ACTIVITY</th>
<th>OUTCOME/EVIDENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review existing pathways movements between AQF 5,6,7 in built environment discipline</td>
<td>Project team meeting November 2011 Desert view review of national and international research Industry Roundtable No 1</td>
<td>-Project briefing paper produced and disseminated to roundtable participants</td>
</tr>
<tr>
<td>Validate reviewed data</td>
<td></td>
<td>-Industry roundtable 25 participants April 26, 2012</td>
</tr>
<tr>
<td>Evaluate the sustainability and characteristics of these student transitions.</td>
<td>Face to face interviews In 7 tertiary institutions Focus groups Conference attendance NCVER No Frills July 2012</td>
<td>Published Journal Article: McLaughlin, P. &amp; Mills, A. (2012), Construction Pathways: Attracting the missing students and workers to University, Economies and Building - Conference Series Vol 1, no,1 UTS Press Scholarly Works</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conference Presentation No Frills, Adelaide July 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-project video completed October 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Industry roundtable 21 participants Sept 17, 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-OLT dissemination workshop, Latrobe uni 29 October 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Published Final Report(Dec, 2012)</td>
</tr>
</tbody>
</table>
The project team note the enormous support given to them by all seven of the participating tertiary institutions. This has included the collecting of relevant data, organising interviews and promoting the project to other staff. The partner organisations support has also been exemplary. Again special note must be made of the individual project team members at these institutions, whose assistance has been invaluable. Various project team members have arranged interview rooms, sought out student groups and provided refreshments and travel to institutions. Most importantly they have been enthusiastic supporters of the project throughout.

The built environment discipline members in the partner universities have also promoted the project within their own institutions, distributed materials, provided advice about local arrangements and helped disseminate the project outcomes.

Industry support for the project has also been strong, indicating the seriousness with which the industry considers upskilling. Individual built environment companies, employer organisations, VET (TAFE), other private training providers and unions have all attended at least one project roundtable.

The industry roundtables have allowed further dissemination, discussion and the opportunity to network with interested industry partners to trial innovative upskilling models such as blended learning delivery for the existing workforce and RPL projects. The partnerships formed with industry over upskilling have already produced fertile discussions and will continue beyond the life of the project. This has been a very positive incidental outcome for the project team.

6.5 Recommendations

In light of the findings and outcomes of this project it is recommended:

- Immediate dissemination of the project findings be continued and increased to include both VET (TAFE) and university (HE) academic and professional staff;
- Industry roundtables be convened to further disseminate the findings to industry partners, especially those involved in tertiary accreditation processes;
- Current accreditation processes for built environment providers be discussed with tertiary advisory committees and other stakeholders to commence a process of re-examination to include focus upon industry development models issues such as upskilling and articulation;
- Project partners disseminate outcomes to industry skills council to investigate future upskilling for individuals at AQF levels 1-4, through flexible delivery models; and
- Built environment models of flexible delivery - blended learning, intensive workplace delivery formats, online and other formats - be examined to ascertain best practice models for dissemination and use in this industry.
6.6 Dissemination

A range of activities have been undertaken to disseminate the project throughout the life of the project and beyond. A number of these are detailed in the Table No: 4 “Project Objectives and Outcomes” above. The aim of the dissemination was improved sector-wide understanding of the problems and solutions to student transition between AQF levels 5, 6 and 7.

The dissemination strategy adopted in this project deliberately involved academics from partner institutions who were in a position to bring about change in teaching and learning practices at their institutions. This was achieved through the AUBEA (Australian Building Educators Association) conference 2012, where members of the project team have presented learning and teaching presentations and refereed papers. The flow on from these conference presentations have established a network of interested educators in built environment disciplines, enthusiastic to implement changed practice in relation to pathways and transition between VET and HE. A regular inclusion of AUBEA conferences is now a dedicated stream on industry upskilling, articulation and innovative practices.

An essential part of the engagement strategy was the industry roundtables which included:

- Australian Institute of Building (AIB);
- Australian Institute of Quantity Surveyors (AIQS);
- Australian Institute of Building Surveyors (AIBS);
- Royal Institute of Chartered Surveyors (RICS);
- Chartered Institute of Building (CIOB);
- Pacific Association of Quantity Surveyors (PAQS);
- Construction Property Services Industry Skills Council (CPSISC);
- Skills Australia; and
- Master Builders Association Australia.

A full list of the organisations participating in the industry roundtable is included in Appendix B.

On-going dissemination during the project through the roundtables and the project newsletter allowed the opportunity to receive comment, the potential to gain extra data/exemplars and the capacity to modify the project based on feedback. This strategy offered a chance to involve external and new stakeholders, to establish informal partners and to extend ownership. Other advantages included the ability to publish progressive reports, interim evaluations and the preliminary data analysis. The project team also worked with the industry accreditation and related bodies to ensure that inclusive curriculum principles were embedded in built environment education and accreditation.

Dissemination during the project development also allowed an opportunity to receive comment, to gain extra data/exemplars and the capacity to modify the project based on
feedback. A summary of the two broad approaches to dissemination which have occurred during and post the life of the project is detailed below.

6.6.1 Information provision

This project has published newsletters, interim reports and industry roundtable briefing papers. There has been distribution of information in written form to universities, professional bodies and accrediting authorities. This distribution has provided a set of resources with detailed information that interested parties could use for an in-depth appreciation of the project outcomes. Having detailed information immediately on hand encouraged project adoption by tertiary institutions. The dissemination also took advantage of the ready access to existing networks of academics in the areas in which project team members were already involved, for example AUBEA.

The main dissemination events during the project for information provision were:

- AUBEA conference July 4-6 UNSW 2012;
- LHMARTIN Conference, 25-26th Oct 2012, Melbourne University;
- Project newsletters and video (https://sites.google.com/.au/creating-pathways/);
- Academic Publications (see table above); and
- Final Report (contained).

The main dissemination events of the project for engaged provision were:

- AUBEA Conference July 4-6 UNSW 2012; and
- Project meetings., 22 Nov, 2011; 24 May 2012; 8 Nov 2012.

6.6.2 Engagement strategies

The importance of project engagement was paramount in the dissemination of the project activities. Stakeholders were identified as industry organisations, employers, tertiary schools offering built environment programs and wider sector parties such as Skills Australia. The dissemination initiatives that were created engaged activity included:

**Industry Roundtable sessions:** These promoted awareness, engaged potential users, gathered exemplars, provided advice and about upskilling initiatives within programs and reported on progress. The roundtables provided an opportunity to showcase by example what project outcomes had been achieved at each stage and how best they should be utilised. They were also an opportunity to additional data and gather feedback. Two roundtables were held.

**AUBEA Educators Network:** This is a group of built environment academics, led by the project team and the reference group members of this project, who have established ongoing streams at the AUBEA annual meetings and conference to promote upskilling and
pathways. The key achievement of this group to date has been the publication of the pathways monograph and the introduction of a pathways stream at the AUBEA conferences.

Conferences: Project participants have presented at relevant conferences and reported project findings and provided evidence to support improved transition between AQF levels 5, 6 and 7 (See Table above.)

6.7 Deliverables and outcomes

There were a number of project deliverables.

6.7.1 The project deliverables

- Multi-mode resources (project newsletter/video/google docs site) for use initially by the built environment discipline, but available to all;
- Workshops (roundtables) with industry bodies, partner universities and industry seminars;
- Academic publications; and
- Final project report.

All project deliverables were met as detailed in Table 4 above.

Multimode resources included a project newsletter and video and published information and support materials such as quantitative and qualitative data, web links (google docs site) and a project monograph (to be collated/published).

Workshops (industry roundtables) with industry bodies, partner universities and industry stakeholders were held progressively throughout the project.

6.7.2 Project outcomes

There were a number of project outcomes anticipated in this project. The project short and long term outcomes were expected to be:

- A database of transition models and information in the built environment discipline available from Australian Universities Building Educators Association;
- Improved transition (VET/HE) rates for built environment students;
- Improved understandings and awareness of specific teaching and learning strategies to maximise the outcomes for students engaging in transition and enhance lifelong learning pathways for built environment students;
- Teaching and learning tools for built environment faculties;
- Improved productivity in the built environment industry due to improved access to higher education;
- Closer co-operation of built environment sector staff (VET/HE);
- Embedding of Teaching and Learning strategies for improved transition of built environment students in all institutions; and
- Increased numbers of built environment workforce with higher education qualifications.

These project outcomes and dissemination strategies are detailed in the chart below, with the relevant timeline indicated. These timelines indicate that the impact of the project will continue beyond the project funding period.

**Table 5: Project outcomes and dissemination timeline**

<table>
<thead>
<tr>
<th>PROJECT OUTCOME</th>
<th>TIMELINE</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved transition rates for built environment discipline students between VET and HE.</td>
<td>1 year-5 years</td>
<td>As competitive, targeted funding models impact upon universities, transition numbers will improve. As industry becomes more aware of need to upskill, transition numbers will improve.</td>
</tr>
<tr>
<td>Transition models and information in the built environment discipline available from Australian Universities Building Educators Association.</td>
<td>Present/achieved and ongoing</td>
<td>AUBEA conference to include upskilling themes for all future conferences. AUBEA database of academic papers and models stored at URL: <a href="http://hdl.handle.net/2100/1338">http://hdl.handle.net/2100/1338</a></td>
</tr>
<tr>
<td>Improved productivity in the built environment industry due to improved access to higher education</td>
<td>1 year -5 years</td>
<td>If project recommendations are adopted.</td>
</tr>
<tr>
<td>Improved understandings and awareness of specific teaching and learning strategies to maximise the outcomes for students engaging in transition</td>
<td>Present and Ongoing</td>
<td>As project dissemination continues and tertiary staff embrace competitive funding models for student demand, greater awareness of student needs will emerge.</td>
</tr>
<tr>
<td>Increased numbers of built environment workforce with higher education qualifications.</td>
<td>1 year – 5 years</td>
<td>As project recommendations are adopted and industry dissemination continues.</td>
</tr>
<tr>
<td>Embedding of Teaching and Learning strategies for improved transition of built environment students in all institutions</td>
<td>Present and Ongoing</td>
<td>As project findings are further disseminated and tertiary staff become aware of need for greater student engagement in learning and teaching delivery. If project recommendations are adopted as well.</td>
</tr>
<tr>
<td>Closer co-operation of built environment sector staff (VET/HE)</td>
<td>Present /achieved and ongoing</td>
<td>Achieved through on-going projects such as this one. Continued through greater awareness by all tertiary staff of student transition needs.</td>
</tr>
</tbody>
</table>
6.8 Areas for further study and development

The project recommendations clearly set out the next steps in achieving full impact of the project findings and outcomes. Broadly these three areas are:

- Continued dissemination of project findings;
- National blended learning models for built environment industry workers;
- Industry promotion of pathways/upskilling between AQF levels 5, 6 and 7;
- Upskilling models and workforce development in programme accreditation; and
- Examination of pathways models and RPL for individuals at AQF levels 1-4 currently employed in the industry.

The matching recommendations are:

Table 6: Recommendations and development areas.

<table>
<thead>
<tr>
<th>Area</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued dissemination of project findings</td>
<td>Immediate dissemination of the project findings be continued and increased to include both VET and HE academic and professional staff. Industry roundtables be convened to further disseminate the findings to industry partners, especially those involved in tertiary accreditation processes.</td>
</tr>
<tr>
<td>National blended learning models for built environment industry workers</td>
<td>Built environment models of flexible delivery - blended learning, intensive workplace delivery formats, online and other formats - be examined to ascertain best practice models for dissemination and use in this industry.</td>
</tr>
<tr>
<td>Industry promotion of pathways/upskilling between AQF levels 5, 6 and 7</td>
<td>Project partners disseminate outcomes to industry skills council to investigate future upskilling models for the built environment industry workforce that will include flexible delivery to match industry needs.</td>
</tr>
<tr>
<td>Upskilling models and workforce development in programme accreditation</td>
<td>Current accreditation processes for built environment providers be discussed with tertiary advisory committees and other stakeholders to commence a process of re-examination to include focus upon industry development models issues such as upskilling and articulation.</td>
</tr>
</tbody>
</table>
Examination of pathways models and RPL for individuals at AQF levels 1-4 currently employed in the industry.

Pathways models for individuals with AQF qualifications 1-4 be examined and further research conducted to facilitate upskilling projects.

6.9 Concluding comments

The impact of a project such as this cannot be measured in simple outputs alone. Upskilling and transitioning between VET (TAFE) and university (HE) is an enormous hurdle for individuals in the built environment discipline and the wider industry. This is evidenced by the data. In spite of critical skill shortages at the professional levels (AQF 7) and supportive institutional policy surrounding tertiary pathways, less than 10 per cent of the built environment workforce has higher education qualifications, compared with almost 50 per cent of the workforce with vocational education qualifications. Built environment discipline students are one of the least likely groups of all Australian students in VET (TAFE) to move onto University (HE) or to continue their lifelong education beyond initial training. This creates critical problems for the individual, the industry and the wider Australian community.

The social, economic and personal benefits of moving between VET (AQF 5 and 6) and HE (AQF 7) in this discipline were clear to all those who had made the transition, but it was only through the experiences of the project and the interviews that the project team became aware of the enormous hurdle these individuals had overcome to upskill. The project team believes it is only through rigorous adoption of the project recommendations that effective change will occur in this discipline. The commitment of the project team to pursue these recommendations and findings was inspired by the student who noted:

“I didn’t think I could go to uni, you know, wasn’t clever enough, then I went to TAFE and that changed my mind...."
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Appendix A  Case study interview questions

Thank you for attending the interview today. This research is being conducted by Professor Anthony Mills and Dr Patricia McLaughlin to gather research on building and construction students and their pathways to university. Participation is voluntary. The data will be used to improve pathways for students.

- Have you signed the ethics clearances and permission form?
- Do you understand that we will be recording your responses and you will receive a written copy of what you say?
- If you do not wish anything to be recorded, you can delete those statements from the written copy.

Q1. What is your home post code or Suburb?
Q2. What VET programme or uni degree are you currently undertaking?
Q3. What year are you currently undertaking?
Q4. Have you ever worked in or been exposed to the construction industry
Q5. Why/(Why not) did you enrol into the university degree course?
Q6. Was there anyone in particular who helped you get involved?
Q7. Do you know of credit for previous studies and how it works? How much credit will you obtain in your degree by doing this program? (Know which courses?)
Q8. Do you feel that you were well-prepared for university courses (If not why?)
Q9. If in VET: Do you want to continue construction studies at bachelor’s degree level in the future? Why or why not?
Q10. When were you first made aware of the program in Construction Management at university?
Q11. How did you become aware of these programs at Uni?
Q12. Did this current VET program or one you undertook previously help you to make the decision to study construction management?
Q13. If this VET program did not exist, would you have been interested in gaining access to a construction degree?
Q14. If you do not take a place in the construction management degree at Uni what else would you do?
Q15. If you decided to go to another university, which one and what course would you seek?
Q16. Was the work undertaken in your VET studies helpful to this course? How/why?
Q17. If you did not go onto uni, where do you see yourself going with your current VET qualification?
Q18. Any other comment?
Appendix B  Industry roundtable organisations

Abi Group
ACCI
AIB
AIQS
Building Commission
CFMEU
CIOB
CPSISC
DEEWR
Deakin University
Hooker Cockram
LU Simon
MBAV
Master Builders Australia
NCVER
RMIT University
Skills Australia
University of Canberra
The University of New South Wales
University of Southern Queensland
The University of Western Australia
VBCICC(ITAB)
WATPAC
Appendix C  The DEMO model

The Design and Evaluation Matrix for Outreach (DEMO) was developed by Gale., Hattam, Comber., Tranter, Bills, Sellar,. & Parker. (2010), at the National Centre for Student Equity in Higher Education. The matrix provides a conceptualisation of the relationship between particular features of effective programs that are designed to improve equity and access of under-represented students in higher education. Prompted by the Bradley Review of Australian Higher Education (2008: 37) and its call for “a more sophisticated approach” to outreach, the matrix draws on work by Anderson on access to higher education in Australia.

Anderson & Vervoorn (1983) identified four necessary conditions for entry: the availability of places, students’ academic achievement, the accessibility of higher education to qualified aspirants, and students’ aspirations for higher education. Anderson imagined these conditions to have causal associations: availability influencing achievement, achievement and aspiration as mutually influential, and both influencing accessibility.

The research also identified seven of these 26 programs as case studies. Drawing on the international research literature and on case study exemplars undertaken as part of NCSEHE studies, Gale et al. (2010) were able to identify a number of or determinants, strategies and perspectives of successful outreach models.

Their research indicates that programs that are quite likely to increase the number of disadvantaged students going on to higher education than otherwise would have been the case, exhibit at least 4 (from 10) design characteristics, 3 (from 4) implementation strategies (see Figure 2). This is then translated into an equity perspective.

**Figure 2: Four strategies and ten characteristics of outreach programs**

<table>
<thead>
<tr>
<th>Assembling Resources</th>
<th>Engaging learners</th>
<th>Working together</th>
<th>Building Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>People –rich</td>
<td>Recognition of difference</td>
<td>Collaboration</td>
<td>Communication/information</td>
</tr>
<tr>
<td>Financial support/incentives</td>
<td>Enhanced curriculum</td>
<td>Cohort-based</td>
<td>Familiarisation/site experiences</td>
</tr>
<tr>
<td>Early intervention/sustained</td>
<td>Research driven</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Gale, Sellar et al. 2010: 15*

These characteristics or determinants, strategies and perspectives form the basis of a meta-analysis, which was named the Design and Evaluation Matrix for Outreach (DEMO). The DEMO foregrounds program conceptualisation and design as significant factors contributing to the likelihood of programs making a difference for disadvantaged students. In these terms, the overall effectiveness of a program depends on the combination of depth (the number of characteristics or determinants), breadth (the number of strategies), and equity orientation (the number of equity perspectives).

The combination of characteristics or determinants with the orientation of the program provides a better abstract indicator of likely effectiveness than specifications of required program structures or checklists of required features. Yet there can be no simple formula for a sophisticated approach to outreach activities.
The DEMO was not designed to be used as the final arbiter of a program’s merit. Instead, it was intended to be used to promote discussion and debate, to inform design and to strengthen evaluations that also draw on a range of other data (Gale et al., 2010). By using the DEMO to analyse the data in this research project, the project is able to evaluate and contribute to the debate about the effectiveness of pathways models in the built environment discipline.

The DEMO Matrix emphasises the importance and value of combining or determinants and draws attention to the strengthening of pathways programs that results from synergistic relationships between different determinants and strategies. It is an ideal tool to categorise the diverse responses given for students undertaking higher education. The DEMO matrix has been specifically developed to evaluate the likelihood of success of particular models in under-represented and disadvantaged individuals accessing higher education. By applying it in this project, it can categorise the responses and predict the likelihood of the responses as “enablers of access” to higher education or up skilling in the construction discipline. Analysis of the national survey and the case study data was undertaken using the DEMO matrix, with emphasis on the determinants and strategies as indicators of achieving cohort diversity in built environment disciplines.