

# Creating vocational streams: what will it take?

**Serena Yu**  
Workplace Research Centre  
University of Sydney



**Australian Government**

**Department of Education and Training**



## Publisher's note

To find other material of interest, search VOCED (the UNESCO/NCVER international database <<http://www.voced.edu.au>>) using the following keywords: education and training reform; employment; industry; labour market; qualifications; relevance of education and training; skill development; skills and knowledge.

© Commonwealth of Australia, 2015



With the exception of the Commonwealth Coat of Arms, the Department's logo, any material protected by a trade mark and where otherwise noted all material presented in this document is provided under a Creative Commons Attribution 3.0 Australia <<http://creativecommons.org/licenses/by/3.0/au>> licence.

The details of the relevant licence conditions are available on the Creative Commons website (accessible using the links provided) as is the full legal code for the CC BY 3.0 AU licence <<http://creativecommons.org/licenses/by/3.0/legalcode>>.

The Creative Commons licence conditions do not apply to all logos, graphic design, artwork and photographs. Requests and enquiries concerning other reproduction and rights should be directed to the National Centre for Vocational Education Research (NCVER).

This document should be attributed as Yu, S 2015, *Creating vocational streams: what will it take?*, NCVER, Adelaide.

COVER IMAGE: GETTY IMAGES/ISTOCK

ISBN 978 1 925173 14 7

TD/TNC 120.01

Published by NCVER, ABN 87 007 967 311

Level 11, 33 King William Street, Adelaide, SA 5000

PO Box 8288 Station Arcade, Adelaide SA 5000, Australia

Phone +61 8 8230 8400 Fax +61 8 8212 3436

Email [ncver@ncver.edu.au](mailto:ncver@ncver.edu.au) Web <<http://www.ncver.edu.au>> <<http://www.lsay.edu.au>>

Follow us:  <<http://twitter.com/ncver>>  <<http://www.linkedin.com/company/ncver>>

# About the research

## *Creating vocational streams: what will it take?*

Serena Yu, Workplace Research Centre, University of Sydney

This report is part of a wider three-year program of research, *Vocations: the link between post-compulsory education and the labour market*, which is investigating the educational and occupational paths that people take, and how their study relates to their work. In particular, this strand has been investigating the application of vocational streams in the labour market, which they argue can play a role in increasing workforce capacity and in addressing skill shortages. Previous research from the program has identified a vocational stream as a set of occupations linked by work-related capabilities within a broad field of practice. It has also identified two preconditions for a vocational stream: links in underpinning skills and knowledge; and the potential for commitment and cooperation across stakeholders on resolving issues.

As part of the third year of the program, the author interviewed a variety of industry stakeholders, with the aim of finding out how relationships between the social partners could facilitate vocational streams. This research is focused on the agriculture, financial services, healthcare and community services and engineering sectors.

## Key messages

- While there is currently the potential for the creation of vocational streams in the four industry areas, they are not flourishing. Further enhancing the viability of vocational streams requires coordination from the social partners and further work on how to support vocational streams. In order to facilitate vocational streams in each of these industry areas, stakeholders should focus their attention on:
  - In engineering there is a need to improve employers' understanding of mid-level skills.
  - While agriculture has a strong potential for regional vocational streams, employers have a low appreciation of how highly capable individuals are developed and retained.
  - In community services and healthcare there is an imperative to improve the scope for collaboration in areas of client and patient need.
  - Financial services has dynamic vocational streams but there is the potential for further gains from improved information sharing.

Dr Craig Fowler  
Managing Director, NCVET



# Contents

Tables and figures	6
Acknowledgments	7
Executive summary	8
Introduction	11
What will it take?	14
Community services and healthcare	14
Engineering	18
Financial services	22
Agriculture	25
Discussion and conclusions	32
References	36
Glossary	37
Participating organisations by sector	37
Appendices	
A: The capabilities approach to work	39
B: Research participants	42
NVETR Program funding	43

# Tables and figures

## Tables

1	Research participants in Strand 3, 2013	13
B1	Research participants in Strand 3, 2012	42

## Figures

1	Vocational stream preconditions and their potential to flourish	12
2	The capabilities approach, labour supply, labour demand and labour market dynamics	41

# Acknowledgments

The author thanks the members of our NCVER Research Consortium for their valuable input and feedback. In particular, the dedication of Leesa Wheelahan helped to significantly advance the paper from its earlier versions, and I am grateful for her leadership.

The views expressed herein and any remaining errors are those of the author alone, and do not necessarily reflect the position of the research participants.

# Executive summary

This report sets out the findings of the final year from Strand 3 of the three-year project entitled *Vocations: the link between post-compulsory education and the labour market*. The project investigated the potential to improve pathways and flows within and between education and work. It consisted of three strands: Strand 1 researched education and work outcomes from VET in Schools; Strand 2 researched the role of educational institutions in fostering educational and occupational pathways; and Strand 3 researched how to improve occupational pathways within the labour market.

Strand 3's research program has investigated how the structures of the labour market and its actors support or inhibit the development of vocational streams across four industry sectors: financial services; agriculture; community services and healthcare; and engineering. A vocational stream was defined as a set of occupations linked by the knowledge, skills and attributes required to work within a broad field of practice in which educational and broad occupational progression are combined. The analysis was embedded within a capabilities approach to work, an approach which focuses on the individual and the social and economic resources they require to flourish within their domain of practice.

We hypothesised that a strong vocational stream would be characterised by strong occupational mobility, linking educational and labour market progression in a virtually linear fashion. It would be valuable not only for supporting adaptable individuals facing uncertain labour market conditions, but also for employers seeking greater workforce capacity. The key findings in the project's first year, however, indicated that the Australian labour market is substantially segmented by occupation (Yu, Bretherton & Schutz 2012).

Given this segmentation, the research process in 2012 sought to identify where vocational streams existed, and how they were supported (Yu, Bretherton & Buchanan 2013). The key findings from this second stage of research posited that the conditions necessary for nurturing a vocational stream in any sector are:

- *Commonalities in capabilities*: the recognition of overlaps and links between the knowledge, skills and attributes underpinning related occupations
- *Stakeholder readiness*: the potential for stakeholder collaboration and cooperation (including commitment and allocation of resources) on workforce issues, across a broad range of institutions, which included employee, employer, government, educational and community groups.

We regard these as enabling conditions for developing a vocational stream: there are no *prima facie* assumptions that a vocational stream can emerge and flourish. Both identifiable occupational links (both horizontal and vertical) *and* committed stakeholders are required to provide the social infrastructure that supports individuals to move along these occupational paths. Differences across these two dimensions characterised the four case study sectors. In this third and final phase of research, we investigated how, given each sector's historical position on the two enabling conditions, a stronger vocational stream within the sector might prevail.

## Findings

The key results for the four case study sectors are set out below.



## Engineering – a prevailing need to improve employers’ understanding of mid-level skills

In seeking to identify a viable engineering vocational stream, the research focused on the usefulness of mid-level skills in fostering links within disciplines between engineering trades workers, engineering associates, engineering technologists, and professional engineers.

The research found amongst employers very limited demand for, and poor understanding of, mid-level engineering qualifications and the capabilities of their graduates. Much of the work relevant to mid-level engineering associates had also been outsourced to countries such as India and the Philippines. As a consequence of these clear career outcomes, students tended to choose education and training programs concentrated in the trades or in professional engineering. Therefore, the prospects for an engineering vocational stream were regarded as weak. While much attention has been given to the educational pathways available to students, there can be no improvement to the engineering skills distribution (currently top-heavy with professional engineers) without a commensurate improvement in the way employers understand and value mid-level engineering occupations.

## Agriculture – strong potential for regional vocational streams, but low employer appreciation of how highly capable individuals are developed and retained

In the context of vast environmental and technological change, a number of projects that embrace a regional vocational stream have been rolled out (for example, the Narrabri Make-It-Work model). The success of such projects has depended on identifying the skills needs of the region and systematically deploying individuals into employment and training across regional industries. The enabling conditions of the vocational stream are evident: community groups (particularly the local council), industry experts and educational institutions identify common cross-industry capabilities (for example, machinery operation in agriculture and mining) and commit to providing educational progression (for example, via a Certificate III in Rural Operations) as well as brokering occupational mobility.

Such models show what is possible, but not necessarily likely. While building a regional vocational stream holds great potential, at each site there are significant threshold questions about getting local stakeholders (particularly employers) to accept, promote and commit resources to a capabilities approach to regional careers.

## Community services and healthcare – imperative to improve scope for collaboration in areas of client and patient need

There are clearly recognised occupational links in areas such as care work, nursing, and allied health. These links have been identified in projects which focus on expanding the scope of practice of some workers; use an assistant workforce to support more highly qualified staff; and promote the use of generalist workers who possess knowledge across more specialised domains. Yet in this sector, concerns over skills dilution, quality of care and client outcomes, and occupational boundaries and regulation make the adoption of a vocational stream approach more difficult. Changes in the models of care (for example, developed by the NSW Agency of Clinical Innovation) that leverage these links must take account of, and evaluate the impact on, all staff, client outcomes and cost-effectiveness. Importantly, stakeholder collaboration from the outset (between government, occupational, executive, community services, educational and client groups) is critical to the success of the development and roll-out of new models of care. In health, reform is most likely to succeed if guided by the principle ‘patient-centred, clinician-led’, with an explicit rejection of the objective of promoting skill dilution in the name of cost control.

## Financial services – dynamic vocational streams, with potential further gains from improved information sharing

The financial services sector exemplified a number of active vocational streams, with several areas identified as viable in this regard, including financial advice, accounting, and asset management. These vocational streams were characterised by strong levels of horizontal and vertical mobility, both within and between firms. The sector is dominated by large employers, who showed strong commitment to career planning, with investment in formal and informal education and training, and progress reviews used to set medium-term career objectives.

Despite no explicit forms of stakeholder cooperation, we argue that, given strong interfirm mobility and weak links between qualifications and career progression, a tacit model of capability development exists. Given the implicit trust that exists between employers, it seems likely that improved information-sharing arrangements (indeed between competitors) might further enhance and coordinate workforce capability.

## Vocational labour markets – a new public good?

The findings from this research suggest that coherent external labour markets could be built on the notion of vocational streams. We call this concept a ‘vocational labour market’, which is defined as the labour market for a set of related occupations that share a common set of underpinning knowledge and practices. Our research suggests that such a vocational labour market is most likely to succeed within a geographically localised region or across large organisations within an industry. Importantly, the social actors within such a vocational labour market have a critical role in articulating common goals in workforce capabilities.

A vocational labour market differs from both a traditional internal labour market and an occupational labour market, but possesses traits from both.

The stability of traditional internal labour markets and occupational labour market structures is of declining relevance to Australian workers, most of whom work outside these traditional modes (Grimshaw et al. 2001). Yet, like a traditional internal labour market, a vocational labour market could foster a modern notion of employment security and career progression – not with one employer on a predictable job ladder, but across a range of related occupations, allowing individuals to move horizontally across their field of practice, or vertically into higher levels of technical/supervisory competence. Similar to a traditional occupational labour market, there is an understanding of the core skills and knowledge required to flourish within the field of practice; however, unlike a traditional occupational labour market, it is not necessary for the boundaries around the vocational stream to be anchored in narrowly defined qualifications validated by groups of highly specialised peers.

There is no guarantee that nascent vocational labour markets will flourish in the future. Challenges and risks arise in defining a vocational stream, and particularly for both employers and individuals in relation to who is responsible for adequate skill formation and training quality across a range of related occupations. Investment in these workforce capabilities is likely to be sub-optimal, as neither employers nor employees can be guaranteed a return on their investment. As with traditional occupational labour markets, an argument must be made for strong institutional intervention – either in the form of effective collaboration (and investment of resources) amongst stakeholders, including employer and employee groups, and/or with the investment of public funds to support the development of vocational capabilities.

# Introduction

In the first phase of the research, in 2011, we defined a vocational stream as a set of occupations linked by the knowledge, skills and attributes required to work within a broad field of practice in which educational and broad occupational progression are combined. These links may provide horizontal mobility across a range of roles such as between aged care workers, mental health care workers, and disability support workers. They may also provide vertical mobility to higher levels of technical/ managerial roles, such as between engineering associates and professional engineers.

Vocational streams are underpinned by capabilities. The capabilities approach to wellbeing focuses on what people are able to 'be and do', and the resources and social arrangements necessary to achieve this (Sen 1999; Nussbaum 2000). In its application to work, the capabilities approach refers to the broad-ranging knowledge, skills and attributes that individuals need to be skilful at work, to progress in their careers and studies, and to participate in their communities and in civil society (Wheelahan et al. forthcoming; Wheelahan & Moodie 2011; Yu, Bretherton & Schutz 2012). The capabilities approach to work is described more fully in appendix A.

This report on Strand 3's research in 2013 comprises the third and final year of the research program, and extends the line of questioning developed in the first two years. In the first year of the project, the research team was concerned with identifying how individuals commonly move into and through the labour market, and whether these trajectories could be described as vocational pathways. Full details can be found in Yu, Bretherton and Schutz (2012). Using nine waves of the Household, Income and Labour Dynamics in Australia (HILDA) longitudinal dataset, the research found strong evidence of labour market segmentation and, in particular, very limited occupational mobility. The movement of individuals through the labour market was characterised by three distinct profiles – high-skill: mostly accessed by those with specialised training; low-skill: characterised by entrenchment in low-skill work; and marginal attachment: typically affecting women and older workers with limited episodes of paid work. The job transitions observed during the course of this study suggested limited, not expansive, occupational choice for a wide range of labour market entrants of varied education and training levels. The data analysis was complemented by 32 in-depth qualitative interviews with employees from each of the four sectors (financial services, agriculture, engineering and community services/healthcare).

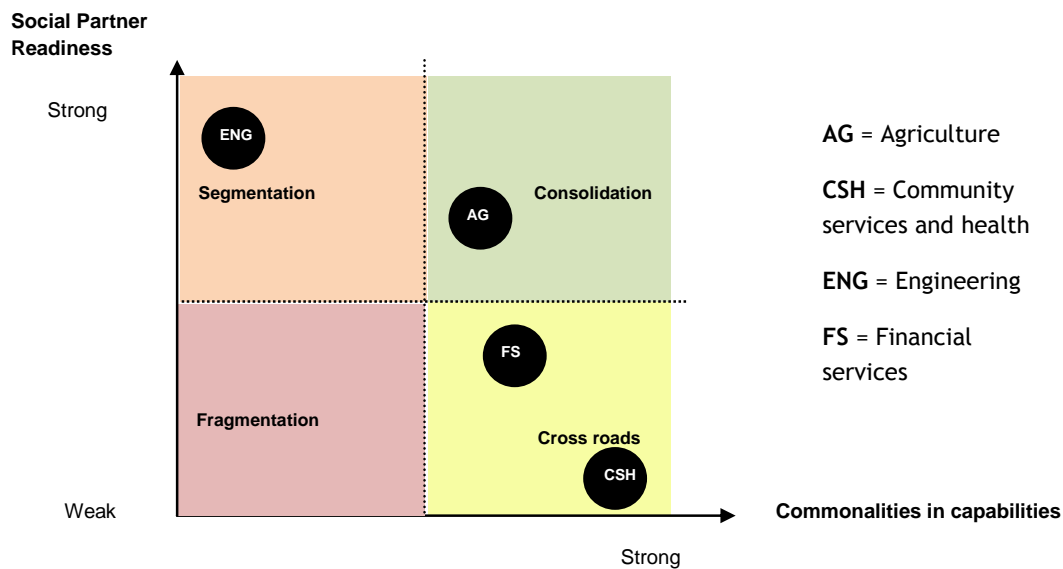
The second year of the research project focused on identifying commonalities across occupations in each of the four sectors and understanding the role of the social partners in overseeing these linkages. Full details can be found in Yu, Bretherton and Buchanan (2013), and a list of research participants is included at appendix B. Through a series of 14 in-depth stakeholder interviews, the researchers argued that the development of a vocational stream depends on two enabling conditions: *commonalities in capabilities* and *social partner readiness*.

Commonalities in capabilities encompasses how skills and knowledge overlap across related occupations, and thus how feasible movement between occupations might be. A clear example of this is the commonalities between an aged care worker, an enrolled nurse, a registered nurse, and a nurse practitioner. In engineering, however, jobs are strongly segmented along disciplinary lines, in both professional/paraprofessional engineering (for example, between civil, electrical, mechanical streams) as well as the engineering trades (for example, fabrication and mechanical trades).

The second precondition, social partner readiness, is the strength of the stakeholder relationships, the relationships that mediate the set of related occupations within a vocational stream. High levels of trust and engagement are more likely to promote collaboration and collective actions to address workforce development issues within the sector. In figure 1, both engineering and agriculture showed strong levels of social partner readiness, which is characterised by a strong mobilisation of stakeholders on workforce shortages. These stakeholders include industry, community, educational, employee and government bodies. Conversely, in healthcare and community services, ‘battle lines’ are drawn along occupational boundaries, which have been entrenched by vocal occupational groups and accompanying occupational segmentation and the bifurcation of the tertiary education sector.

A combination of these two preconditions gave rise to four possible scenarios, which characterise the potential for a vocational stream to flourish. These four scenarios were described as segmentation, consolidation, crossroads, and fragmentation. A full description can be found in Yu, Bretherton and Buchanan (2013).

**Figure 1 Vocational stream preconditions and their potential to flourish**



Yu, Bretherton and Buchanan (2013) argue that, by fostering both enabling conditions, all sectors stand to gain, in both workforce use and capacity, and improved pathways for students and workers. In this final year of the research program, we endeavour to consolidate the architecture of the vocational stream models prevailing in each industry and how they might evolve, and explore how their successes could (or could not) be deployed in different settings. The final year of our research was guided by the following research questions:

- How can the social partners leverage the existing networks and institutions to realise vocational stream potential?
- How could mid-level skills help to support stronger vocational streams?
- How could the organisational and regional dimensions of a vocational stream be exploited to help each stream flourish?

In answering these questions, we devised likely scenarios which alternately shift the sector towards consolidation or fragmentation (based on the current position of each sector) within figure 1. In a consolidation scenario, the sector shifts towards the top right-hand quadrant by a combination of greater recognised links between occupations as well as greater levels of institutional trust and collaboration. In a fragmentation scenario, we consider how either poorly conceived notions of capability or ineffectual institutional relationships could stall or reverse the development of a strong vocational stream.

The research design in this third and final year of the project comprised 16 in-depth stakeholder interviews. Four tailored discussion papers were sent to potential research participants in each of the four case study sectors. In this year, the research was coordinated between Strands 2 and 3, with Strand 3 focusing on how networks and relationships between the social partners could facilitate stronger vocational streams. As such, the research participants in Strand 3 lean more towards labour market actors than in 2012 (see table 1). Research undertaken by Strand 2 followed that conducted by Strand 3 and explored the required qualifications and role of educational institutions to support stronger vocational streams.

**Table 1 Research participants in Strand 3, 2013**

<b>Agriculture</b>	<b>Financial services</b>	<b>Healthcare and community services</b>	<b>Engineering</b>
AgriFood Skills Australia	Adelaide and Bendigo Bank	Community Services and Health Industry Skills Council	Engineers Australia (Accreditation group)
National Farmers Federation	An investment bank with Australian offices	Australian Nursing Federation	Consult Australia (industry body representing engineers in the built environment)
First IR (industrial relations consultancy firm servicing agricultural employers)	Industry and Business Skills Australia	NSW Agency for Clinical Innovation	Australian Industry Group
Australian Workers Union	Financial Services Union	Emergency Care Institute	Australian Council of Engineering Deans

# What will it take?

## Community services and healthcare

In the first two phases of the research, it was made clear that the community services and healthcare sector faces severe workforce and budgetary shortfalls. Specifically, shortages of nurses and doctors in certain geographical areas and in certain specialties as well as demand for aged care workers and nursing staff at all levels are driving ongoing work by Health Workforce Australia, state governments, and industry stakeholders in their efforts to expand workforce capacity in the health and community services industries.

Yu, Bretherton and Buchanan (2013) argued that the vocational stream settings in the sector are characterised along two dimensions. First, there is a strong overlap in the capabilities required across related occupations. The strongest example of this is the skills and knowledge required of care workers, ranging from personal care attendants, aged care, mental health, and disability support workers. Other examples include commonalities amongst allied health assistants and professionals, as well as general physicians/surgeons and their specialist counterparts. Second, the ability to leverage these commonalities is obstructed by role clarity and quality of care, and entrenched occupational and regulatory boundaries.

In this section, we argue that innovations in service delivery are possible in spite of these boundaries, and that such innovations may form the platform for consolidation within our vocational stream framework. It should be made clear that first-order issues, such as healthcare funding, the availability of clinical placements, and occupational regulation, are not the central concern in this report. Rather, within these systemic constraints, we are concerned with how occupational links can both increase workforce capacity and support the development of more adaptable individuals. It should be noted that, due to the profile of interviewees, the discussion focuses on skills needs (including mid-level skills) in healthcare rather than community services. However, the discussion shows that, even across traditionally tightly defined (and often antagonistic) occupational lines in healthcare, strong collaboration can facilitate positive outcomes, with strong implications for the community services sector.

Throughout the research, building occupational links, from assistants in nursing, to advanced clinical nurses, to doctors and specialists, involved careful, and not always successful, experimentation with the following strategies:

- change in skills mix, for example, by introducing an assistant workforce (for example, allied health, nursing) to support the degree-qualified clinicians
- expansion of scope for existing team members, for example, by having advanced clinical nurses or nurse practitioners take on the traditional function of a doctor in clearly specified circumstances
- linking of team members across settings, for example, acute and community settings, to provide continuity of localised care. This has been a particularly active area in aged healthcare
- promotion of generalist versus specialist roles, including a general allied health assistant, or general physician.

Each of these strategies promotes occupational links because individuals need to be supported both ways: more advanced staff are supported (and freed up for higher clinical duties), for example, by the assistant workforce and in return are required to take on supervisory, training and/or leadership

responsibilities. The seriousness of these responsibilities requires some consideration of when such strategies might be appropriate and when the quality and efficiency of care might require other (or no) changes to the model of care. The effective use of an assistant workforce was supported by interviewees across a number of existing and expected settings. Comments from the Australian Nursing Federation and the Community Services and Health Industry Skills Council, for example, suggested a range of possibilities:

You've got assistants in nursing, but I think you will see a role such as physio assistants, pharmacy assistants, other allied health assistants, and what I think will happen is that a group of workers will be developed with the sort of same level of training and skills, but work in a whole range of different settings ... I think they will grow in their scope, and I think that's what's happening overseas. (Australian Nursing Federation)

The use of an assistant workforce has been piloted successfully across different states, in different settings, including the use of nursing assistants in Victoria; allied health assistants in a rehabilitation model of care; and emergency department support officers responsible for patient movement and simple technical tasks such as cannulation.<sup>1</sup>

The key concerns about developing an effective assistant workforce include appropriate supervision, defining and ensuring that roles are understood, and potential skills dilution. This latter scenario has been prevalent in aged care, as highlighted by comments below:

We haven't been that successful over time [in resisting pressure to replace registered with enrolled nurses, and enrolled nurses with nursing assistants]. We have witnessed a reduction in registered and enrolled nurse numbers, and in certain settings [such as aged care] over time ... they've usually gone to the hospital sector, private or public, for a number of reasons. One of the reasons is that the work, the pay, and the conditions are better. (Australian Nursing Federation)

At face value, expanding the scope of practice of community service and healthcare workers has obvious benefits, including greater workforce capacity and the career development of the individuals themselves. This was flagged above in relation to comments on the potential scope of the activities of nursing and allied health assistants. It has also been successfully tested in other settings, including in rural settings, where advanced practice nurses and general practitioners are taking on greater responsibilities (Standing Council on Health 2012); the roll-out of Nurse Delegated Emergency Care in small emergency departments; and the expansion of paramedics' scope of practice in response to likely heart attack or stroke cases (NSW Agency for Clinical Innovation 2013). However, it was emphasised that such projects require careful management and clear frameworks, as indicated by the comments below:

They need to have clear objectives, they need to have clear evaluation criteria and the evaluation needs to include the impact on other staff and whether it's cost-effective and whether it actually makes any difference to patient care at all, because so many evaluations of the extended [scope] roles that we see in the literature is coming from that person doing the role: 'I saw 20 patients, I thought it was good, I felt empowered'; therefore it's good ... It has to be more than politics that drives this investment. (Emergency Care Institute)

These successful examples were bound by a demonstrated need, clear protocols and strong lines of supervision and support. It was strongly suggested by all interviewees that expanding the scope of

---

<sup>1</sup> The insertion of a tube into the body, usually for the delivery of a fluid, or to gather data.

practice for an individual healthcare worker is likely to be most effective in ‘classic’, low-risk and stable scenarios (for example, the first stage of emergency assessment in an aged care facility, or when a rural patient presents with classic symptoms of a urinary tract infection). Expansion of scope is more difficult, for example, in the case of nurse practitioners in an emergency care department, where patients present with insufficient information about their clinical condition and immediate care requirements. This unpredictable range of activities does not lend itself to the transparent division of training, work tasks and role clarity between nurse practitioners and emergency doctors.

The notion of occupational links is also clear in discussions about promoting generalist positions, whether it’s a generalist allied health assistant, generalist care worker, or a general surgeon. The notion of generalist roles, where an individual possesses the capabilities to deliver first-stage care across a breadth of specialties, has been flagged as a means of improving continuity of care, affordability and capacity within a healthcare team (see Yu, Bretherton & Buchanan 2013). While there is a history of generalist clinicians, the trend has been away from general to specialised training, as the comments below describe:

There is a sense in our system that people who do general work are unskilled [but] they’re not. They actually need to be more skilled often than some of the specialists with a broader base [of knowledge], so there is a sense that deep knowledge is better than broad knowledge and we really need to shift that around because it is damaging in health, and the people we need in the system in the future are the people with broad knowledge and skills, supported by those with deep knowledge and skills.

(NSW Agency for Clinical Innovation)

Feedback from interviewees suggested that in nursing and allied health areas a generalist assistant workforce showed strong potential for alleviating both financial and capacity pressures within the health system. Amidst calls for greater regulation of the unregulated workforce (in particular, mandating certificate III qualifications for aged and other care workers), the development and accreditation of training programs in this area may be central to the quality of care delivered by a team of healthcare workers.

The complexity of these innovations, involving multiple groups of clinicians, clients, and community service workers, suggests the level of collaboration and trust-building activities needed to ensure buy-in from a range of stakeholders. The Agency for Clinical Innovation reflected on the importance of buy-in from key stakeholders, power brokers and local champions:

If you don’t have both lots [clinicians from the bottom up and top down executive management structures] supporting the change, then the change doesn’t get implemented effectively and sustained ... we don’t say that our models are mandatory, they are available as tools and resources to support improvements. What the [local health] districts choose to take up will be from their own assessment on whether their clinicians see that they have got issues around that at the local level and whether the managers of the district see that’s something they think needs to be improved as well.

(NSW Agency for Clinical Innovation)

Securing the buy-in of a disparate range of stakeholders, who historically may have not collaborated well, or at all, requires multidimensional strategies. The Agency for Clinical Innovation has established 30 networks across New South Wales (commonly referred to as clinical service networks), in areas ranging from aged health, rural health, palliative care, to neurosurgery, burn injury and stroke. The process of establishing these networks (with up to 300–400 members) is initiated by open invitations to all stakeholders in each area, including clients, a full range of clinicians, managers and community service representatives, and health agencies. The resulting group elects an executive as



well as co-chairs responsible for mediating discussions and tensions within the network. The network typically has a strong communications strategy and an inclusive collaborative culture, as explained in the comments below:

[Network members are] people who are by their nature, highly collaborative and who are deeply interested in improving how care is provided or services are delivered ... They are usually very team-oriented and very focused on patient outcomes and will look at ways that they can deliver care more effectively across the professional boundaries that often are barriers in other settings.

(NSW Agency for Clinical Innovation)

This does not mean that network members have uniformly consensual views. Rather, interviewees explained that members are engaged early in a culture of respect and collaboration and with mechanisms for sharing decision-making and resolving disputes. Within the palliative care network, for example, tensions have arisen between medical specialists and community nurse representatives about the best way to deliver investments in palliative care services. These tensions are not resolved by the New South Wales Government or even the Agency for Clinical Innovation, but rather by the executive of the network itself, mediated by its elected co-chairs. The process is organised around solving problems for clients, or potential clients, in a setting where conditions for constructive dialogue are maximised. This is very different from a focus on driving reforms that move down the occupational hierarchy to deliver client care at lower cost. Such a framing of the issue – even if only implicit – generates deep resistance from powerful players in the health sector in particular.

The examples provided in this section demonstrate that real collaboration and innovation is possible within a system that is fragmented along regulatory, occupational and educational lines.

Notwithstanding the legacy of systemic design flaws, the discussion here has shown that there is general recognition that the status quo in healthcare delivery is unsustainable and that there is a broad willingness to collaborate – within significant constraints – across care settings and occupational groups. The key drivers of the successful development and roll-out of the innovations detailed in this section include:

- early inclusive engagement of a range of stakeholders, in particular, local champions and experts (both clinicians and managers) and clients
- formal but flexible mechanisms for shared decision-making and conflict resolution in a forum where all views can be heard and communicated
- strong emphasis on clear protocols and structures of support (including training) for individuals whose roles are changing, as well as those supervising those changes
- strong emphasis on evidence-based evaluation of changes to models of care, to ensure that the objectives of consistent and high standards of care are met, and that the impact on the team of healthcare workers is clearly understood.

The implications for a community services/healthcare vocational stream are clear. While in earlier research there was a significant focus on the entrenchment of occupational/regulatory boundaries, this discussion shows that links between occupations can be forged in incremental and innovative ways. The key prerequisite for moving beyond current fragmented arrangements and towards more effective delivery of services and skills development is establishing forums that facilitate dialogue and build trust.

## Engineering

The first two phases of the research took place in the context of severe engineering workforce shortages, particularly of experienced engineers (Yu, Bretherton & Schutz 2012; Yu, Bretherton & Buchanan 2013). Since that time, economic conditions have softened, and interviews in this last phase of the research indicated that the shortages are less dire, particularly of graduate and less experienced engineers.

The research also identified that engineering careers (particularly at entry level) are largely segmented by discipline and are characterised by specialised knowledge and skills, and limited mobility across occupational boundaries. Barriers also exist between the engineering trades and professional engineering: the requirements for higher-level mathematics knowledge and the inflexibility of an academic pathway are prohibitive for trained tradespersons, especially those with family and financial obligations (Yu, Bretherton & Schutz 2012). Career progression is typically into deeper specialisation or into managerial roles, as the comments below indicate:

There are some engineers who get into a certain area and they go deeper and deeper into it. So you might have somebody for example who qualifies as a chemical engineer and gets work on a refinery and gets involved in corrosion issues and pipe work ... [or] you might have someone who is a specialist in process control and computerised management and so forth – again deep knowledge that you can apply across different types of engineering, and then you have others who go into management, so they move away from the deep technical knowledge into the numbers game. (Engineers Australia)

The sector also shows strong stakeholder collaboration on initiatives for increasing workforce capacity. This includes research and policy development, spearheaded by the Australian National Engineering Taskforce, a consortium of employer, employee, and educational/scientific bodies, as well as the release of a parliamentary inquiry into a range of workforce issues (Commonwealth of Australia 2012).

The current settings for an engineering vocational stream therefore had limited overlap between skills, knowledge and capabilities (notwithstanding the wide recognition that engineers are valued in outside industries for their analytical and project management skills) and a high degree of stakeholder cooperation and dialogue. The scenarios developed for the engineering vocational stream for this final report therefore focused on occupational mobility *within* disciplines and, in particular, on the pathways between engineering associates, technologists and professional engineers. These occupations require a two-year associate degree/advanced diploma, a three-year bachelor degree, and a four-year bachelor degree, respectively. Greater consolidation would feature improved pathways between these occupations and a stronger paraprofessional workforce, while a fragmentation scenario would have barriers between these categories and continuing shortages at the associate and technologist levels. We argue that the current settings in the engineering vocational stream suggest that the most likely scenario is one of greater fragmentation, and this is driven by one core dynamic: the nature of, and relationship between, labour demand and supply.

### Engineering labour demand and supply

Current labour market structures do not appear likely to foster a strong paraprofessional engineering workforce. The engineering labour market is segmented in two significant ways, with emphatic implications for the paraprofessional workforce. First, there is a distinct segmentation between engineering associates and technologists/professional engineers, to the extent that employers recruit

for these positions separately, deploy graduates to distinct tasks and roles, and do not generally foster systematic progression from associate to professional. This pathway can be completed only by completing additional years of academic study and requires individuals (without the systematic support of employers) to overcome significant barriers to acquiring higher-level mathematics knowledge as well as balance work and study. Second, the engineering labour market remains highly segmented along disciplinary lines. This begins with early specialisation within engineering degrees (typically from the second year) and continues with the process of recruitment into engineering firms, and deployment at work. While graduates draw less on discipline-specific skills as they become more experienced (relying more on project management, teamwork and communication), it was observed repeatedly that graduates rely on the knowledge specific to mechanical, electrical, civil, structural, etc. engineering in the early years of working life.

This segmentation is entrenched for a number of reasons. First, the stakeholder interviews suggested that engineering firms tend to focus on recruiting professional engineering graduates (who have completed four-year Bachelor of Engineering degrees) because there is a status attached to professional engineering, which encourages employer demand for these graduates, and student demand for the degree, relative to associate degree and (three-year) Bachelor of Engineering Technology alternatives. This was clarified in the comments below:

There seems to be a very strong program of employing [four-year] graduate engineers ... there's a lot of prestige around the professional engineer in employing the new, 'this season's' graduates of professional engineers. I don't ever hear them talking that way about the associates or the architects they employ, or the scientists ... Maybe if the employers increased the status [of associates], that would do good things for [the role]. (Consult Australia)

Our society pretty much, and this is a really broad sword here, has convinced young people that a degree is a be-all-and-end-all and so getting an associate degree is probably not much good; and so they either go into trades or they go into higher degrees rather than do an associate degree. (Australian Council of Engineering Deans)

There is also a clearer understanding (compared with the three-year technologist and associate degree/advanced diploma programs) of what a professional engineering program entails, both from the student's perception of potential job outcomes and the perspective of employers hiring graduates. Interviewees consistently remarked that these two issues (low status and low understanding of lower-level engineering qualifications) resulted in professional engineers undertaking tasks more suitable for technologists and associates.

Despite some recognition that young workers' skills were underused, there was also strong acceptance that a close match exists between the skills and knowledge acquired in the Bachelor of Engineering degree, and those required and deployed on the job. In particular, there was a strong view that the match of graduates to their jobs was quite stable and narrow (that is, discipline-specific). To that end, as such, there was poor reception of the possibility of a more generalised engineering program (at both vocational and higher education levels), because recruitment and application of skills and knowledge occurs in these discipline-specific contexts. The comments below from Engineers Australia emphasise this point:

The specialisation occurs because of the jobs that people go into, so the danger with a generalist thing is that you can actually end up doing nothing. You can be very vanilla and then you get into the workforce and the employers say 'Crikey now we've got to actually teach you how to be whatever', and it wouldn't just be a top up it would be substantive. (Australian Industry Group)

The pathway from associate to professional is limited due to the onus of formal academic (particularly maths and physics) knowledge requirements, the absence of a work-based articulation path, and limited employer appetite for training young workers. Overall, interviewees viewed the two occupations as destinations in their own right, with few systematic opportunities to progress from associate to professional. There was also recognition of the disincentives to train both young professional and associate engineers, as exemplified by the comments below:

[Engineering firms] need clients who will pay them enough money to actually be able to spend that time and money on the training. At the moment, the clients tend to say, 'Right, you're all competent, so who's got the cheapest price for me?' So the cheapest bid wins, which means the guy who spends the least amount of money on training wins, which means everybody else gets sick of training and it all collapses. (Consult Australia)

These issues of status, understanding the value of a qualification, and the requirement of specialised capabilities affect engineering labour demand innately. In turn, they create an environment of low-viability for lower-level qualifications, including associate degrees/advanced diplomas, and the Bachelor of Engineering Technology. To support these programs, a significant resource investment would need to be made in a thin market, with little potential for returns to the institution. This is highlighted in the comments below:

It's very simple [why there are few accredited engineering associate programs], it's called viability ... From the university's perspective we need numbers of students to do the courses ... Industry for whatever reason haven't been crying out for that level of what we might refer to as a paraprofessional degree or a Bachelor of Technology and so students see that and know that and understand that, and so they opt to change to a [four-year] Bachelor of Engineering. (Australian Council of Engineering Deans)

Notwithstanding these levels of segmentation, the feedback suggested that, until recently, engineering shortages existed at the paraprofessional level (as well as amongst engineers with at least five years experience). However, Engineers Australia and the Australian Council of Engineering Deans observed that many of the functions undertaken by engineering associates have been outsourced to India and the Philippines to reduce costs and in response to the shortage of engineering paraprofessionals. The direction of the causality (between the shortage and outsourcing), however, is not clear. As a consequence of these dynamics in labour demand and supply, the viability of an engineering associate career may be limited, as the comments below explain:

India has large numbers of engineers so they can get a degree qualified engineer doing the drafting in India compared to someone here with a two-year degree ... so much is automated anyway, so no longer do you need all those higher-level skills that you used to need because they've been incorporated into software anyway with CAD [computer aided design] and so forth. So someone like a draftsman who would probably get some sort of entry-level job ... I don't think they'd make a career as a draftsman anymore and certainly not expect a high wage for it ... they would need to develop other skills like project management, team management, leadership etc. to enable them to progress. (Engineers Australia)

While it has been suggested that expanding the paraprofessional engineering workforce may appear to be a direct way of enhancing workforce capacity (Watson & McIntyre 2011), this approach is challenging for both the supply and demand sides due to employer and student preferences for professional engineering programs. For these primary reasons, few engineering associate degree and advanced diploma programs have applied for accreditation from Engineers Australia.

King, Dowling and Godfrey (2011) detail at length the design flaws and barriers to articulating between vocational education and training (VET) and higher education engineering qualifications and provide thoughtful recommendations for strengthening this pathway. However, these remain essentially supply-side solutions, focused on providing smoother pathways into and between tertiary study. Attempts to overcome these substantial barriers will nonetheless fail to produce more engineering associates, or associates moving into professional engineering, if the nature of labour demand remains unchanged.

It was suggested that gains in the intermediate engineering workforce could begin by encouraging cultural change by way of employers' – particularly the managers of engineering associates – valuing the associate and technologist more highly in the workplace and during recruitment. Further, educational providers would need to market these programs more actively and clarify the career options open to their graduates. The advantages of promoting the engineering associate role was highlighted in the comments below; however, the consensus was certainly that such change had not yet even been identified as desirable, let alone close to being advocated:

Team managers of the associates would have a role in being their advocate ... It would be cheaper for the employer [to hire associates] ... If their associates don't have the skills, then investing in them to bring them up to speed could well be cheaper than employing and paying at a higher rate all the time professional engineers ... A good experienced associate is probably far more capable and useful in the firm than an engineer who's only got a couple of years' experience ... a professional engineer who used to be a drafter is apparently the best engineer you can have, because they actually understand the nuts and bolts of how things are put together.

(Consult Australia)

## Learning from collaboration in engineering

While the nature of labour demand and supply in engineering presents significant headwinds to promoting a strong vocational stream, the sector nonetheless has mobilised many stakeholders to address workforce shortages and planning. In this discussion, we focus on the successes of the engineering sector in bringing stakeholders together in high-trust environments and with strong levels of collective action. While the realisation of an engineering vocational stream (and the occupational mobility this necessarily entails) may be challenging, having this potential for collaboration is nonetheless an important element.

The operation of the Australian National Engineering Taskforce was consistently recognised as valuable, in that it attracted the views of employee, employer, industry, science, and educational groups. The taskforce commissions and releases its own research and data and contributes to policy debates affecting its sector. The culture of the sector lies at the core of this and may be a distinguishing feature of this industry case study by comparison with financial services, healthcare or agriculture, as the following comments emphasise:

The culture of the engineering profession has a lot to do with [how the employers and unions work reasonably well together] ... we quite often have to remind [our members] that they need to speak on behalf of the business, as opposed to the profession, because they'll often go for things that are perhaps against their business interests, but for what they see as being better for the profession ... employers are typically engineers themselves and they typically want to give back to the profession.

(Consult Australia)

In this context, most engineering university faculties work with an industry advisory group, which fosters a two-way relationship, whereby the university and industry representatives collaborate on curriculum, assessment and recruitment. The process allows feedback to be provided both ways, on

the quality and capabilities of graduates and the integration of new knowledge into industry practice. Students gain direct access to employers, and in some of these programs, such as in the University of Technology Sydney Industry Advisory Network, students undertake extended industry placements to enhance the application of their engineering knowledge and develop strong project management, communication and teamwork skills. While work placements are common in university engineering degrees, there is some suggestion that more structured, and better assessed, projects could improve the consistency of the student and employer experience.

In the engineering trades, the Australian Industry Group has developed a project called 'Engineering Excellence', which is being piloted at ten educational provider sites, and has around 3000 apprentices involved (Australian Industry Group, interview). The project seeks to move from a time-based system of apprenticeship completion (typically four years) to a competency-based system, although the Australian Industry Group has been firm about the retention of underpinning knowledge elements and units. The project aligns education providers and employers in developing the training program while providing support to employers on how to better mentor and supervise their apprentices. While there is bound to be a range of outcomes across the providers and students, one major breakthrough has been the alignment of completed competency stages with wages progression. The execution of this major project, outside professional engineering, shows that across the sector significant collaboration takes place, whereby stakeholders can be mobilised around a common objective.

The key issue for this sector appears to be not just the technical specification of specialisation limiting the emergence of 'commonalities in capability', but how this specialisation is embedded in (indeed, is used to define) structures of labour demand and labour supply. The limited demand by employers for labour that is neither 'trade' nor 'professional engineer' results in a gap in potential career pathways. While there is a high degree of coordination and good will within both the trades and professional levels of engineering, the absence of employer demand for and recognition of the importance of associate and technologist-level labour is the major barrier to the emergence of more open (vertical) vocational streams in engineering.<sup>2</sup> Certainly there are complexities and imperfections in articulation between VET and higher education, but these problems are secondary to those in the structure of labour demand. This problem is all the more remarkable, given that the Australian National Engineering Taskforce identified this as a problem over two years ago and little has been subsequently done to address it (Watson & McIntyre 2011).

## Financial services

The financial services industry has been a counterpoint to the other case studies in this project. As an industry, it has not experienced the skills shortages seen in agriculture, engineering or healthcare, and perhaps, consequently, its stakeholders have not been sensitised to workforce planning issues at an industry level. In the first two phases of the research, financial services was identified as being highly dynamic, with only weak links between qualifications and career progression, but very high levels of occupational mobility. That is, individuals can move both laterally between different occupations, or vertically, becoming more specialised or into managerial positions. The industry primarily recruits according to strong generic skills across numerous fields of study, and the dominance of large firms in the sector means that a key avenue for progression and mobility is within the internal labour market.

---

<sup>2</sup> There are exceptions to this generalisation, including the Associate Degree in Mining Engineering offered by Central Queensland University, which was developed in conjunction with employers and the Minerals Council of Australia.

Thus the current settings for creating a vocational stream have high overlaps between the knowledge, skills and capabilities across related occupations, but low or implicit levels of stakeholder collaboration on workforce development. We regard the industry as having implicit workforce development processes and approaches, because, although there is no taskforce, parliamentary inquiry or action group on workforce planning, there is strong evidence that skills formation and career development takes place within and between firms in the industry and often without the explicit use of qualifications to value an individual's capabilities.

The financial services industry uses degree qualifications to set a high entry barrier for generic skills, and in particular analytical and numerical skills. Employer interviewees generally reported that recruitment below a university bachelor's degree was limited to frontline service roles, clerical roles, and roles which have regulatory requirements (and are professionalising quickly). This generally refers to advisory roles such as financial planners and brokers. At this lower entry point, however, individuals tend to be strongly supported by their organisation to complete certificate III, IV or diploma qualifications to progress their careers. A number of financial services firms are registered training organisations, providing training to staff, and include the Commonwealth Bank, Westpac, and Insurance Australia Group.

The mechanics of the internal labour market appear to vary by sub-industry, ranging from a more self-driven pursuit of opportunities in investment and wholesale banking, to more facilitated support in retail banking and insurance. The comments below emphasise this difference:

My understanding is that retail banking typically has a more structured approach to moving people around. We're similar to other investment banks, in that employees really drive that themselves. People don't want too much structure or HR intervention, we're more hands off. If we tried to implement a more structured approach often they would think that was a bit over the top ... people don't need someone to hold their hands really, they'll just go and do it.

(Australian Office of Investment Bank)

Employer interviewees in these large organisations noted that there was strong devolvement of decision-making to team managers when developing the skills mix and experience in their team. Success is perceived to be linked to the autonomy of these managers to direct their business-within-the-business, while higher-level workforce metrics may be used to monitor the depth of experience at an organisation-wide level. These team managers are offered strong incentives and are supported (by senior management and HR) to build 'the right team', as the following comments describe:

The [remuneration] incentives are there because in order for their team to succeed they need the right mix of people. That's one of the things that we are quite good at, is giving managers a lot of autonomy and making them feel like they have their business and they make the decisions for their business, that it's going to lead to success. If they feel like they don't have enough people or they need someone at a different level, then they just need to get approval from the person above, put forward a bit of a business case and they can go out and get that person.

(Australian Office of Investment Bank)

This process may not sound qualitatively different from what takes place in other industries, but there are significant differences. Being large organisations, they are able to allocate significant resources – and quickly – to recruiting and training new workers, and there is much less emphasis on the importance of qualifications. This is unlike the engineering and healthcare industry case studies, which have stable occupational labour markets and thus strong links between qualifications and

employment outcomes. It is also unlike the more dynamic agricultural industry, where operators are typically small and less willing to shoulder training and investment costs.

Workforce planning, while absent at the industry level, quietly and seriously takes place at the firm level. This long-term thinking concerns succession, stability and future leadership, and in particular has characterised the current contraction within the industry. Retention of key staff remains paramount and is embedded in regular performance review and internal promotion processes. Performance reviews were widely cited as a crucial means for establishing objectives and plans, not just for individual career progression, but to promote organisational development. This is evidenced by the comments below:

We go through a process of identifying who are the critical people and what are the key skills that we need to retain. We then focus on those people in terms of their development and try to make sure that they have opportunities that are aligned to their goals ... There are certain types of roles where stability's important and they're often the people that we want to try and retain. Otherwise it's normally people that are real stars that we think may be future leaders.

(Australian Office of Investment Bank)

The employers presented quite methodical and similar approaches to facing a hypothetical skills shortage, despite there being no industry coordination of workforce issues. The approach might first involve broadening the potential pool of applicants, as indicated in the comments below, for example:

[If there were a shortage of quantitative analysts, we'd] think about what's really required to be a good quantitative analyst and broaden the supply by broadening out the qualifications we'd look at and that type of thing. Not require someone that's got perhaps maths and finance but someone that just has engineering or science or straight degrees without finance.

(Australian Office of Investment Bank)

Simultaneously, they would consider the potential for developing the capabilities internally, by seeking individuals with the 'aptitude and interest' to step into the role. Generally, the interviewees prioritised internal opportunities, citing the advantages of organisational and industry knowledge. And finally, an external search would also be conducted, identifying where the required skills are located and attracting them to the organisation by emphasising the firm's reputation for expertise, market leadership and career opportunities (rather than remuneration).

Wherever possible, I believe the bank would probably have a preference to say, let's make sure we can recognise the talent we've got, and use that talent even if that's putting people in some stretch opportunities ... Maintaining that focus of growing people from within, it's worked well for the bank. But part of that also is moving people laterally, and so probably an exceptional thing that I think the bank does more than other organisations, and I'm not just talking about finance here, is giving people opportunities to step out of particular functions or areas, and go into different areas where they haven't been necessarily groomed or grown through the ranks.

Bendigo and Adelaide Bank

Our findings over the three-years of research suggest that financial services firms in the first instance, and the financial services industry in the second, are in fact vibrant examples of active vocational streams. This assessment is underpinned by a number of accepted features:

- *Dynamic occupational mobility both within firms and across the sector*: it is accepted that skills developed on the job prepare individuals for careers beyond the job with capabilities that enable them to adapt to different employers as well as changes in operating conditions.



- *Strong investment in recruitment and career development*: this includes employers bearing recruitment and training costs, the activity of firms with training and training departments, and processes promoting strong internal labour markets. From interviews with employees and managers, to stakeholders, the research provided evidence that there is agreement on the value and practice of investing in employees.
- *Implicit coordination of workforce development*: on face value, there is no explicit industry coordination of workforce planning. However, interviews with employers and other stakeholders revealed very similar approaches, at a firm level, of the systematic management of workforce development and of the related issues of succession, retention and stability. While the industry is currently leaner than before 2007, the long-term planning of the skills mix and experience of staff remains a strategic focus.

Unlike the other industry case studies, there is a virtual absence of resistance to the burden of training costs (highlighted within engineering and agriculture). There is also a virtual absence of occupational boundaries, which, unlike in the engineering and healthcare/community services sectors (where qualifications are tightly bound to work function), allows individuals in financial services to move across business lines or become more specialised.

Some of the institutional settings unique to financial services in our study cannot be readily replicated in other industries. First, there is limited occupational regulation in financial services (aside from those providing advice). In other industries where public risk is a regulatory concern mobility is limited. Second, the efficacy of internal labour markets in financial services relies on the existence of large well-endowed firms. Findings from engineering and agriculture found that thin or volatile profits underpinned reluctance to invest in training, while there are proportionately fewer large organisations in these sectors. And finally, financial services appears unlikely to be challenged with a skills shortage of the scale faced in the other three sectors. Interviews with employers and managers in financial services suggested that there has been little difficulty in attracting and retaining staff from broad educational and training backgrounds, who value the strong incentives and clear career opportunities available within the industry. In short, it is a sector with well-organised, although often tacit, vocational streams.

## Agriculture

The research during the first two phases of this project identified severe labour and skills shortages in the agriculture industries, with pressure points arising from the ageing workforce, emigration from rural areas, and the increasingly high-tech nature of agricultural production. Poor perceptions of careers in agriculture also increased the challenges of attracting new skilled workers to the industry (Yu, Bretherton & Schutz 2012; Yu, Bretherton & Buchanan 2013).

The skills ecosystem of many agricultural industries is characterised by: an historically low engagement with formal education and training; informal skills formation; and precarious forms of employment, all of which diminish individuals' access to any form of training. The agricultural industries are associated with casual, seasonal, contractor and labour hire employment, and with lower rates of investment in training for workers (Yu, Bretherton & Schutz 2012; Yu, Bretherton & Buchanan 2013). Research estimates that the average annual cost of staff turnover is \$33 500 per position, based on recruitment and training costs and lost productivity (Meat and Livestock Australia 2008). These costs emphasise the importance of retaining skilled workers, but also partially explain the reluctance to train young recruits and the growing use of labour hire firms.

Given this difficult context for supporting careers in agriculture, it was somewhat surprising that stakeholder interviews in the second phase of research found that agriculture (of our four case studies) was best positioned to foster the development of a vocational stream. First, it was identified as having fluid occupational labour markets with overlaps in the knowledge, skills and capabilities required to flourish across a range of related occupations. This included knowledge of animal and crop science and agribusiness, as well as skills in machinery operation and sustainable resource use. More importantly, however, there is a range of maturing networks comprising stakeholders with research, policy and leadership interests in attracting, developing and retaining workers in agriculture. These stakeholders included educational (for example, the Australian Council of the Deans of Agriculture), employer (National Farmers Federation, First IR) and employee (Australian Workers Union) voices, as well as the national skills advisory body, Agrifood. Many of these stakeholders work collaboratively in numerous taskforces and working groups to address different aspects of the workforce development and skills shortage challenges.

The key finding for the agricultural case study however was the viability of a regional vocational stream. In particular, regional initiatives such as the Narrabri Make It Work (Narrabri Shire 2013) project have shown that, despite the challenges of industries competing for workers and seasonal work, employers can secure a stable source of workers, individuals can secure a stable livelihood, and a community can help to build a pool of engaged residents and leaders. The project has been described as a ‘workforce development led regional development strategy’ (Agrifood interview), and is a key example of collaboration amongst community stakeholders, with the local council (and local community leaders) acting as both a labour hire firm and group training organisation for the region. The initiative deploys workers according to multi-industry seasonal need and trains them during down times. Individuals gain certified cross-industry skills (in areas such as machinery operation), and full-time equivalent, predictable employment. The key elements of the project (all from a regional, rather than industry-specific perspective) are a skills needs analysis, skills demand timeline, employer of choice survey, and cross-industry training provision via a Certificate III in Rural Operations. These four key elements are now being rolled out to four other locations: Warren Blackwood (Western Australia), Eyre Peninsula (South Australia), Loddon Mallee (Victoria), and Western Downs (Queensland). While the relevant industries in Narrabri were mining, agriculture and local council, they will be vastly different in these new locations, for example, Warren Blackwood may feature transport, timber and horticulture, within its own cross-industry Certificate III of Rural Operations.

The viability of such regional vocational streams already has momentum in supporting occupational mobility across a specific region. From these settings, this report focuses on the potential for two scenarios. The first is one of consolidation, which is characterised by increasing recognition of cross-industry mobility at a regional level, supported by both growth in intermediate skills and pathways into higher-skilled work. The second is one of fragmentation, where the agricultural industries regress (or remain entrenched) in patterns of precarious work, low levels of investment in training, and inadequate pools of both labour and skills. We argue that the outcome of these two scenarios pivots on the trajectory of three key dimensions of the skills ecosystem: the future direction of skill formation; the engagement of regional expert and community leaders; and the availability and balance between government and industry funding.

## Skill formation in agriculture

The operating environment for agricultural operators is highly volatile. The National Farmers Federation argues that over the past four decades, Australian agricultural businesses have experienced the second highest volatility of any nation, which presents significant challenges to

investing in the skill development of workers (National Farmers Federation 2013). Given such volatility, what knowledge, skills and capabilities do individuals need to flourish in a regional vocational stream? As one stakeholder made clear in the comments below:

What the people in that industry need are the skills that enable them to do well in that, but also enable them to get out of it ... We need people who two years ago were committed to the live cattle industry having the skills to do something else as well all of a sudden. We need them to quickly be trained to do other things ... giving them some transferable skills as well, such as horticulture or even aquaculture skills. (First IR)

The capabilities required to flourish in an agricultural vocational stream were clearly articulated by a range of stakeholders and included knowledge of animal, crop and soil science, production systems (for example, irrigation and fertilisation), sustainable land use, and agribusiness, as well as skills in stock handling, machinery/technology use, and chemical use. While the regional context for how these capabilities are applied varies, their transferability was highlighted in the comments below:

If you've been there for three or four years ... you will be able to work with machinery, you'll be able to weld, you'll be able to fix machinery, you'll have some basic mechanical skills, you won't be a motor mechanic but by jeez you'll keep most things running. You'll have a pretty high level of stock skills ... [and] the perceptions and the intelligence to understand are transferable to soil science as much as to animal science. If you can see what's going wrong with a cow you will fairly soon be able to see what's wrong with soil; it's a matter of looking and seeing and understanding. (First IR)

The delivery mechanism of such skills and knowledge, however, remains contentious. There is traditionally a low level of uptake of VET qualifications, poor understanding of what VET qualifications might deliver, and a problem with training packages being slow to evolve (National Farmers Federation interview). It was widely recognised during the research that, for small operators in particular, it is difficult to either release staff for off-site study or even to set aside on-site training hours for more inexperienced workers because the pressure to maximise productivity was paramount. Feedback from First IR and the Australian Workers Union suggested that employer recognition and investment in the training of their workers was isolated, and that the onus (time and money) of training was expected to be borne elsewhere. This is particularly the case with the increasing use of contractors and labour hire firms.

Consequently, there is widespread support for the public funding of skill sets (in addition to the funding currently available for certificate III level and above study). These are recognised clusters of units within different training packages, and it is envisaged that they would be 'bundled up' to form a qualification like the Certificate III in Rural Operations, so that an individual can customise their study to their regional needs. The research found quite disparate views of this process of disaggregation and reconstruction of skills and knowledge units. On the one hand, there appears to be a need for regionally developed (and therefore flexible) programs of study and the potential for skill sets to encourage individuals into extended study. On the other hand, there is also the potential (and indeed the desire) for training to address specific enterprise needs solely, without benefiting the individual in a way that fosters adaptability within their regional vocational stream. The capabilities approach to work starts with the individual, rather than with discrete work requirements. To be consistent with this approach, skill sets should provide the knowledge, skills and attributes to support a regionally focused career and not simply performance of immediate work tasks. Disparate views on skills sets are illustrated in the comments below:

[We have a] training industry that has its own language that employers are finding very difficult to understand and align with their businesses. What the VET system, in our view, needs to happen is it needs to be tailored to the individual enterprise and to move away from a national training package ... The industry doesn't see value in VET qualifications because on-farm practices are very specific whereas the training package can be very general. If you're working on a broad acre farm ... there may be some units of competency that will never be required by that employee, say, bio-security or sustainability practices, somebody might not be interested in them ... We're not saying move away from qualifications, we're saying into the mix add on 127 funded skill sets but allow industry to work with the industry skills council to be more flexible ...

(National Farmers Federation)

The biggest deterrent that I can see from [the point of view of] a worker is they may get rewarded in one seasonal industry for that [particular] skill set but when they go to somewhere else and they say, 'Oh look, I've got this skill and I've got this and it marries with this' then that industry won't reward them in the same way.

(Australian Workers Union)

We understand then that the nature of skills formation in the agricultural industries has reached a defining time, and we argue that the ability of regional vocational streams to flourish relies heavily on individuals having access to the resources that will enable and encourage their commitment and contribution to a regional community and economy. A scenario of consolidation, where the regional vocational stream supports skilled workers' mobility across industries, would feature:

- Access to training which delivers skills, knowledge and attributes to produce productive and adaptive individuals for the region's current and unforeseen industry needs. This requires a breadth of practical education, which allows individuals to acquire regionally relevant skills that surpass the needs of individual enterprises.
- With this in mind, the careful use of well-recognised (and funded) skill sets to customise education and training programs according to regional need. While there is significant variability in how skill sets could be defined and used, there is scope to identify the clusters of capabilities most relevant to a particular region and to build these towards a (geographically) contextualised program of study (likely a Certificate III in Rural Operations).

It is important to recognise that the capabilities approach begins with identifying what the individual needs to flourish in the vocational stream, rather than beginning from the position of specific enterprise need.

By contrast, a fragmentation scenario would eventuate in situations where individuals are unable to access training relevant to a regionally based career. This could be the case if either skill sets are accessed only to satisfy current enterprise-specific needs or are not well recognised across regional industries. Although differing by region, the fragmentation scenario is likely if the skill sets and accompanying regional qualifications are not developed with the participation and leadership of community and industry leaders, and are consequently held in low regard.

## Engagement of regional expert and community leaders

It was well recognised that the success of some regional initiatives (such as the Narrabri Make it Work project) was predicated on the strong leadership and grassroots engagement enjoyed from the outset. The Narrabri project included enlisting both industry and community leaders to participate in a jobs summit to identify regional skills needs, following which a regional steering group was formed to drive a regional workforce development plan. This included the development of a regionally based

qualification featuring cross-industry skills and knowledge. The engagement of such a grassroots steering group ensures that: a balance of views is represented; local decision-making; and a high level of credibility for the proposed actions and outcomes. As one stakeholder noted:

There are a number of regional plans that are out there that are problematic because they're really [just] a template. We think if you drive it from the ground level and it feeds up into an overarching mechanism ... then you can have underpinning data where informed decisions can be made ... I don't think you can say the Narrabri model will roll out across the country in success ... the Narrabri model is a grassroots model, you had a group steering committee that drove that process. [Individuals need to be] trained, retained and developed in the region.

(National Farmers Federation)

Within this group of regional stakeholders, a number of significant facilitator roles emerged. First, the industry skills council was essential to the process of accessing and distributing government funding (see section below). In the Narrabri case, Agrifood not only galvanised interest and planning efforts, it also enabled an initiative which might otherwise not have found monetary support. Second, the local council played a central role, acting as a labour hire firm and group training organisation to the region, as well as mediator between industry demands. This involved both administrative responsibilities (such as payroll and insurance) and pivotal coordination in facilitating the deployment of individuals to different industries and the provision of training during down times.

Finally, there was a recognition that, for a regional vocational stream to meet both individual and industry needs for seasonal but predictable skilled employment, there is a need to understand the prevailing job structures and their industrial relations implications. Specifically, the work often involves highly extended hours in some periods, zero hours in others, and the provision of non-cash benefits (for example, accommodation and board). Such arrangements may be incompatible with the conditions set out in most awards and agreements (for example, the payment of penalty rates for long shifts) and require a broker or mediator to establish baseline conditions which do not disadvantage individuals.

It is clear that, for a regional vocational stream to move towards consolidation, significant resources are required to effect changes to the content and delivery of skills formation as well as to job structures and forms of employment. These resources obviously include funding support, but also critically require the engagement of regional stakeholders and leaders to facilitate durable change. This has underpinned success in some regional initiatives. By contrast, a fragmentation scenario might eventuate if there is a low-trust, low-engagement environment amongst regional organisations. In this scenario, despite the implementation of template tools such as a skills demand timeline and the development of cross-industry training units, there would likely be a limited uptake of the resulting program and limited participation from industry stakeholders.

## Availability and balance of funding

It must be frankly stated that the success of various agricultural regional initiatives has been underpinned by substantial government funding, particularly from the state governments and the National Workforce Development Fund. There was significant feedback that the government funding decisions are too far devolved from the localities where the funding ultimately resides and therefore there is scope for a national steering group to support a more streamlined allocation of the available funds. Nonetheless, the industry skills council currently mediates between funding sources and regional initiatives, and mostly projects are fully funded with limited industry input. For example, Agrifood has successfully pitched for substantial funding for the roll-out of the four regional initiatives

based on the Narrabri model, with the support of four state governments. Their comments below suggest that, despite the persistent challenges of skills shortages and population emigration, there would otherwise be inadequate industry commitment (financial and otherwise) to pursue a regional workforce development strategy.

Would [regional stakeholders] have turned up in these other four regions if we hadn't got in with the cash ... Because we're coming in with the money, we're seen as enablers of those programs or those plans that they put in place but couldn't actually fund. I know in Emerald, the Queensland Rural Industry Training Council has been funded to put a mini Narrabri in, but ... it takes a lot of energy and a good driver to get people to come on board and see the advantage of it ... What the real value of what Agrifood is doing with this project in those regions is galvanising that effort.

(Agrifood)

Indeed, comments from all stakeholders indicated that employer investment in training remains low, constrained by both a volatile operating environment *and* an unwillingness to share the cost of producing a pipeline of skilled workers. In the past, large employers like Stanbroke Pastoral Company operated as a well-developed internal labour market, which trained for the industry, not just the enterprise. With the shift to corporate ownership and the ascendancy of shareholder value, its assets are now managed to maximise shareholder returns, not a sustained position in the industry, where a training function is valued. This is emphasised by the comments below:

Most of the people who are managing the big properties today were virtually all employed by and trained by Stanbroke Pastoral Company ... Now there is no Stanbroke [and] a lot of the industry expects AACo [Australian Agricultural Company] to perform the function that Stanbroke did ... But there isn't anyone with that sort of social conscience that Stanbroke had to commit to the training.

(First IR)

For these reasons, the viability of developing regional vocational streams currently relies on ongoing external funding. We would argue that this is not a sustainable assumption, and that future successes will require greater innovation in cost- and risk-sharing amongst regional stakeholders. There is precedent for such a scheme, for example, the People in Dairy program, which is an industry-wide and industry-led change-management program. This program recognised that industry investment was needed to effect durable change at a time when government investment outweighed industry investment by ten to one. The People in Dairy program is currently regarded as industry best practice for designing and implementing mechanisms for effecting change in work practices and culture in dairy farming (National Farmers Federation 2013). The program has established pathways for new entrants, human resource management support for farm managers, a well-resourced online platform, and communications strategies for embedding ideas of improvements in 'people culture'. It has launched two regional pilots in southwest Victoria and Tasmania (Dairy Australia 2013), with the objective of building industry capacity and changing approaches to workforce planning. The program has seen strong uptake of its Diploma in Human Resources Management (Dairy), and has received strong feedback from dairy farmers relating to improved retention of staff, improved value from training, and generally improved work practices.

Generally, the funding profile of agricultural initiatives appears strongly tilted towards government funding, with a long-standing (and growing) practice of outsourcing training requirements to educational institutions and the individuals themselves (who are increasingly employed as contractors and by labour hire firms). The success of some regional initiatives shows that the strong engagement by community and industry leaders can effect change in the way individuals are developed and deployed; however, for a regional vocational stream to reach a consolidation scenario, there needs to

be a long-term cost- and risk-sharing scheme that does not rely wholly on external funding. By contrast, a fragmentation scenario is easily envisaged, whereby external funding is unavailable or dries up, and there is limited commitment to a predominantly regionally funded development plan.

The agricultural sector is delicately poised. Deep skills and labour problems persist, and engagement with the formal training system is sporadic and afflicted with problems. On the one hand it is frequently criticised by employer bodies for being too complex and remote from local needs; on the other hand it has spawned a plethora of qualifications (over 70 at certificate III level alone), presumably devised to ‘meet specific industry needs’.

The formal VET training system clearly suffers from both too little and too much sensitivity to ‘industry need’. A different approach is required. At the moment considerable momentum is building for abandoning interest in coherent qualifications and instead allocating funds to meet individual farmers’ skills requirements for specific skill sets. Given the inadequacies of current qualifications arrangements, this is understandable, but it is not necessarily an optimal development. If there is a problem with qualifications, then a more sustainable approach would be to do something about the system that creates the current situation. Arguably, abandoning interest in the development of coherent skills is most likely to make a poor situation worse. The experience of the Narrabri Make it Work initiative shows that other trajectories are possible. But this initiative has succeeded despite, not because of, current policy settings. Policy currently works to ‘buy outcomes’ like ‘competencies acquired’ – not the development of capacity to skill a new generation of well-rounded agricultural workers. Unless there is a shift in the policy setting, the push for narrowly conceived skill sets rather than holistic qualifications will be irresistible. This will not be an optimal response to a difficult problem; rather, it will consolidate a system that does little to develop the skills needed in the sector and will in fact make the problem worse by entrenching ever-deepening fragmentation of the sector’s workforce and its system of workforce development.

# Discussion and conclusions

This final discussion draws together the findings from the three-year research program within Strand 3. We suggest that a vocational labour market, consisting of the demand and supply of occupations linked by common skills and knowledge, is a nascent concept. Vocational labour markets, if supported by strong stakeholder investment and oversight, could produce a coherent approach to skills development, one focused on greater mobility and economic security for individuals and adaptable workforce capacity for industry. However, this is far from a foregone conclusion, and it is instructive to first consider what we have learnt about how labour markets function.

In the first phase of the research, Strand 3 posited that occupational segmentation occurred along lines of 'good jobs' and 'bad jobs', as set out in labour market segmentation theory (Doeringer & Piore 1971). 'Good jobs' appeared to be concentrated in strong internal labour markets, as well as in traditional occupational labour markets, including in the trades and regulated professions. 'Bad jobs' existed in an unstructured secondary labour market and were characterised by unskilled jobs with little prospect for career progression. Recall that an internal labour market exists within an enterprise where employers frequently fill vacancies with current employees, rather than via external recruitment (Doeringer & Piore 1971). This market is traditionally characterised by regular ports of entry, integrated pay and training structures, and access to job ladders. There is significant evidence that traditional internal labour markets have diminished (Grimshaw et al. 2001), in favour of performance-based pay and promotion structures, outsourcing and temporary forms of employment. External labour markets and interfirm mobility have become much more important for most employees.

However, the research found that this dichotomy between good and bad jobs did not differentiate sufficiently the social and economic institutions enabling/constraining different economic sectors, and that a more nuanced notion of these labour markets was required. Neither internal nor external labour markets exist independently of the social and economic institutions which condition them, including labour market institutions and the education and training system. The debates on how the institutional foundations impact on the challenges faced in external labour markets centre on how labour market flexibility is traded off against standards of social security, the responsibilities of social actors for qualifications and skill formation, and the problems of managing social risks across the life cycle/modern career (Grunert 2008). The second phase of the research focused on these institutional foundations, finding a pivotal role for the social actors in enabling the development of a vocational stream. In this discussion, we focus on skill formation and how the concept of vocational streams might support a modern notion of occupation in the context of uncertain external labour markets.

Traditionally, an occupational labour market refers to a skilled labour market where individuals possess a particular skill set and/or qualification which has been validated by their peer group (Marsden 1999). Within an occupational labour market, firms take account of the qualifications of the workforce and design jobs around the capabilities of these workers. The standardisation of job structures provides a signal to both firms and workers about the likely structure of job vacancies, and forms a basis for investment in skills. Marsden (1999, p.216) argues that such skills, and their related occupational labour markets, have the qualities of a public good: a strong occupational labour market means that employers can expand (and reduce) their workforces as required without the lead times associated with training staff from scratch; it also means that workers are mobile and able to take advantage of transferable skills. They are also public goods in the sense that employers are able to free-ride and rely on the investments made by both trainees and other employers. Like all public



goods, their production is consequently below optimal levels, and shortages become more likely. This increases the incentives to poach the necessary skills, and the riskiness of investment in skills grows, destabilising the occupational labour market. A strong institutional structure is required to counter these forces, with a range of stakeholders responsible for resolving issues of training quality, the training approach to job design, and the prevention of free-riding.

Like traditional internal labour markets, craft labour markets are of declining relevance to most Australian workers. However, the features characterising an occupational labour market, such as the existence of known, standardised skills and job structures, its role as a public good, and the importance of institutional structures, are useful for devising a modern notion of occupation.

The findings from this research suggest that coherent external labour markets could be fostered on the notion of vocational streams. By coherent we mean that investment in skills formation is shared between government, employers and individuals and that the risks arising from employment, which increasingly demands flexibility, are also shared and managed systematically. A vocational labour market is defined as the labour market for a set of related occupations which share a common set of underpinning knowledge and practices. Our research suggests that such a market is most likely to succeed within a geographically localised region or across large organisations within an industry. Importantly, the social actors within such a vocational labour market must share common goals in workforce capabilities. Such institutional cooperation might manifest explicitly in the dialogue and actions between the employer, employee and government groups, or implicitly, in the tacit alignment of workforce development models within large organisations.

Like a traditional internal labour market, a vocational labour market could foster a modern notion of employment security and career progression – not with one employer on a predictable job ladder, but across a range of related occupations, allowing individuals to move horizontally across their field of practice or vertically into higher levels of technical/supervisory competence. Like a traditional occupational labour market, there is an understanding of the core skills and knowledge required to flourish within the field of practice; however, unlike a traditional occupational labour market, it is not necessary for the boundaries around the vocational stream to be anchored in narrowly defined qualifications validated by groups of highly specialised peers. Indeed, there are inherent challenges in defining a vocational stream, and this research project has sought to articulate groups of occupations relevant to agriculture, financial services, community services and healthcare, and engineering. Some areas were clearer than others, and it remains a dynamic area for future research. Defining the communities of trust required to achieve both coherence and openness in both skill development and use cannot be solved in advance of careful consideration of how domains of vocational expertise can be defined and who should be involved in defining and enforcing vocational standards.

The research in Stage 2 of the project showed that the potential for a strong vocational stream (and therefore vocational labour market) relied on two dimensions: the identification of common capabilities (skills, knowledge and attributes) across a range of related occupations; and the ‘readiness’ of institutional actors to collaborate around workforce issues. Where these two requirements coincided, the research showed that workers were more likely to acquire the capabilities to be adaptable and mobile across roles in their field of practice. We argued that interfirm mobility (in industries dominated by large organisations) and regional mobility are more likely associated with strong vocational labour markets.

A vocational labour market sits squarely within the ‘external labour market’, without the explicit protections of the firm or an occupational group. As such, challenges and risks arise for both

employers and individuals relating to who is responsible for adequate skill formation and training quality. Here, there are commonalities with the public-good nature of occupational labour markets. Vocational labour markets provide benefits to employers in the form of a workforce that is adaptable across a field of practice, and to employees who have transferable skills across a range of related occupations (for example, within an agricultural region). Investment in these workforce capabilities is likely to be sub-optimal, as neither employers nor employees can be guaranteed of a return on their investment. As with traditional occupational labour markets, an argument must be made for strong institutional intervention – either in the form of effective collaboration (and investment of resources) amongst stakeholders, including employer and employee groups, and/or with the investment of public funds to support the development of vocational capabilities.

The final phase of the research in this project showed that the potential outcomes in a vocational labour market depend very much on the institutional structure of its constituent occupations. For example, in engineering, the nature of accreditation and employer recruitment practices significantly hinders mobility between different levels of engineering occupations. Likewise, vocal occupational groups and various regulatory bodies in community services and health render stakeholder collaboration more difficult (but not impossible). And, like all labour markets, vocational labour markets are also sensitive to the general economic conditions. For example, despite the high level of interfirm mobility and a tradition of strong investment in worker capabilities, contraction in the financial services industry generally is likely to result in excess labour supply. Similarly, growth or contraction in agricultural regions has substantial implications for vocational (and all other) local labour markets.

It is not the final objective of this project to prescribe vocational streams for particular regions or industries. Rather, the aim of the project has been an investigation into the enabling conditions which might foster their growth, should the relevant stakeholders see the potential benefits from improving linkages between occupations within a field of practice by recognising their common underpinning capabilities. We have found that, across the sectors of agriculture, financial services, engineering and community services/healthcare, there are indeed strong examples of common skills, knowledge and attributes held by individuals across a field of practice. In all four sectors, collaborations between employer, employee, government and community groups that were established to realise the allied benefits of improved workforce capacity and adaptability were found to exist – but only in isolated regions or particular sub-sectors of these economic domains.

The most promising examples of nascent vocational labour markets involved rural operations workers in the cotton, mining, construction and local government sectors in the Narrabri region of New South Wales and in some parts of finance, where (implicit) well-developed career paths straddling many firms in the sector often functioned well. Possibilities were also identified in health and community services, but with the caveat that change in this sector requires allied changes in models of care, especially support for services based on cross-disciplinary networks of different professionals working to solve commonly defined problems.

While real serious possibilities for more coherent labour vocational markets were identified, they must be kept in perspective. Mainstream practice in all sectors involved fragmented labour market workforce development with some narrowly defined occupational labour markets, traces of old internal labour markets, and increasingly unstructured external labour markets. Although it is not inevitable that the current fragmented arrangements will continue forever, equally there is no guarantee that nascent vocational labour markets will flourish in the future. Without a conscious effort to address the public-good dimensions of vocational labour markets, coordination failure (not

merely market failure) will most likely result in fragmented, as opposed to more coherent, vocational labour markets prevailing. The potential benefit to individuals, firms and society of more coherent vocational labour markets warrants investigation, especially in their potential to deliver greater capacity for individuals and firms to adapt to rapidly changing circumstances. Prima facie evidence of greater adaptive capacity would, in turn, warrant further work on identifying how best to support more coherent vocational labour markets. And this support will not just require more public money or government provision of training, but rather support for nurturing and sustaining more effective communities of trust to overcome the coordination failures currently hindering the emergence of effective vocational labour markets.

# References

- Buchanan, J, Schofield, K, Briggs, C, Considine, G, Hager, P, Hawke, G, Kitay, J, Macintyre, J, Meagher, G, Mounier, A & Ryan, S 2001, *Beyond flexibility: skills and work in the future*, NSW Board of Vocational Education and Training, Sydney.
- Commonwealth of Australia 2012, 'The shortage of engineering and related employment skills', Senate standing Committee on Education, Employment and Workplace Relations, viewed 25 October 2012, <[http://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/Committees?url=eet\\_ctte/engineering/report/report.pdf](http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Committees?url=eet_ctte/engineering/report/report.pdf)>.
- Corbel, C, Wheelahan, L, Forward, P & Darwin, S 2014, *Building future capabilities for vocational education: why high-level teaching qualifications matter for TAFE teachers*, Australian Education Union, Melbourne.
- Dairy Australia 2013, *2013 Dairy people factfinder*, 2nd edn, prepared by the Harris Park Group for Dairy Australia's Industry People & Capability Group, Sydney.
- Doeringer, PB & Piore, MJ 1971, *Internal labor markets and manpower analysis*, Heath, Lexington, MA.
- Grimshaw, D, Ward, KG, Rubery, J & Beynon, H 2001, 'Organisations and the transformation of the internal labour market', *Work, Employment and Society*, vol.15, no.1, pp.25–54.
- Grunert, H 2008, "'Good" and "Bad" external labour markets', *SFB-Mitteilungen*, SFB 580.
- King, R, Dowling, D & Godfrey, E 2011, *Pathways from VET awards to engineering degrees: a higher education perspective*, Australian National Engineering Taskforce, Epping, NSW.
- Marsden, D 1999, *A theory of employment systems: micro-foundations of societal diversity*, Oxford University Press, London.
- Meat & Livestock Australia 2008, *Attracting and retaining staff in Australia's beef, sheep and pastoral wool industries*, prepared by the Centre for International Economics and the Ryder Group, Sydney.
- Moodie, G, Wheelahan, L, Fredman, N & Bexley, E 2015, *Towards a new approach to mid-level qualifications*, NCVET, Adelaide.
- Narrabri Shire 2013, 'Make it work: sharing workers locally', viewed 4 September 2012, <[http://www.narrabri.nsw.gov.au/index.cfm?page\\_id=1352](http://www.narrabri.nsw.gov.au/index.cfm?page_id=1352)>.
- National Farmers Federation 2013, *Agricultural employers' workforce planning capabilities*, submission to National Rural Advisory Council, Melbourne.
- NSW Agency for Clinical Innovation 2013, *Transfer of care guideline for stroke patients*, ACI, Epping, NSW.
- Nussbaum, MC 2000, *Women and human development: the capabilities approach*, Cambridge University Press, Cambridge.
- Sen, A 1999, *Development as freedom*, Anchor Books, New York.
- Standing Council on Health 2012, *National strategic framework for rural and remote health*, Commonwealth of Australia, Canberra.
- Watson, L & McIntyre, J 2011, *Scaling up: building engineering workforce capacity through education and training*, Australian National Engineering Taskforce (ANET), viewed 25 October 2012, <<http://www.anet.org.au/wp-content/uploads/2011/06/ANET-Scaling-Up2.pdf>>.
- Wheelahan, L & Moodie, G 2011, 'Rethinking skills in vocational education and training: from competencies to capabilities', report prepared for the NSW Board of Vocational Education, Sydney.
- Wheelahan, L, Leahy, M, Buchanan, J, Power, G, Yu, S, Moenstad, M & Jakubauskas, M forthcoming, *From competencies to capabilities: Stage 1 stakeholder engagement and research into vocational streams*, report prepared for the NSW Board of Vocational Education, Sydney.
- Winch, C 2010, *Education and broad concepts of agency, expertise, pedagogy and practice*, University of Wollongong.
- Yu, S, Bretherton, T & Schutz, H 2012, *Vocational trajectories within the Australian labour market*, NCVET, Adelaide.
- Yu, S, Bretherton, T & Buchanan, J 2013, *Defining vocational streams: insights from the engineering, finance, agriculture and care sectors*, NCVET, Adelaide.

# Glossary

## Participating organisations by sector

<b>ACDA</b>	Australian Council of the Deans of Agriculture represents thirteen universities which offer agricultural and related degrees and works to promote agricultural studies and careers.
<b>Agrifood</b>	Agrifood Skills Australia is the industry skills council for the rural, food processing, meat and seafood industries.
<b>AWU</b>	Australian Workers Union, a blue-collar trade union with a membership of over 135 000.
<b>First IR</b>	An employment and industrial relations consultancy specialising in the agricultural sector.
<b>NFF</b>	The National Farmers Federation is the peak national body representing farmers in Australia.
<b>ACED</b>	Australian Council of the Engineering Deans.
<b>APESMA</b>	The Association of Professional Engineers, Scientists and Managers Australia is the largest union representing professional engineers across essential industries and services, including IT, mining, construction, water, power, road and rail.
<b>CEPU</b>	The Communications, Electrical, and Plumbing Union represents workers in the essential industries of communications, electrical and plumbing.
<b>Consult</b>	Consult Australia represents the business interests of its members, engineering consulting firms operating in the built environment.
<b>AiG</b>	The Australian Industry Group is a peak industry association with a strong membership base in the engineering and manufacturing sectors.
<b>EA</b>	Engineers Australia is responsible for the accreditation of tertiary engineering programs.
<b>USQ</b>	The Faculty of Engineering and Surveying at the University of South Queensland offers associate, bachelor and postgraduate degrees in engineering.
<b>HWA</b>	Health Workforce Australia was set up to coordinate a national approach to health workforce planning.
<b>VicHealth</b>	The Victorian Department of Health manages public health services across 86 local hospital networks in Victoria, across the three portfolios of health, mental health and aged care.
<b>FacMed</b>	The Faculty of Medicine at Sydney University is responsible for training medical graduates.
<b>ACI</b>	The NSW Agency for Clinical Innovation is an agency working to promote new models of care.
<b>AMA</b>	The NSW branch of the Australian Medical Association is a member-based lobby group representing over 27 000 medical practitioners and students.
<b>ANF</b>	The Victorian branch of the Australian Nursing Federation is a lobby group representing registered nurses, enrolled nurses, midwives, nursing students and personal care workers.
<b>CSHISC</b>	The Community Services and Health Industry Skills Council provides information and advice on national workforce development and skills needs in community services and health.

- ECI The Emergency Care Institute is a network within the Agency for Clinical Innovation in NSW seeking to improve patient outcomes in hospital emergency departments.
- BEN Bendigo and Adelaide Bank is an Australian retail and wholesale banking business.
- CFA The Chartered Financial Analyst (CFA) Institute is a global association of investment professionals representing over 100 000 CFA Charterholders who have completed a postgraduate-level program. A further 220 000 candidates are currently enrolled in the program.
- FINSIA The Financial Services Institute of Australasia represents over 16 000 members working in corporate finance and wholesale banking, financial markets, managed funds and superannuation and private wealth management and retail banking.
- FSU The Financial Services Union represents employees in the financial services sector.
- IBSA Innovation and Business Skills Australia is the industry skills council with responsibility for the financial services sector.

# Appendix A: The capabilities approach to work

The capabilities approach to wellbeing focuses on what people are able to ‘be and do’, and the necessary resources and social arrangements that are needed to achieve this (Nussbaum 2000; Sen 1999). In its application to work, the capabilities approach refers to the broad-ranging knowledge, skills and attributes that individuals need to be skilful at work, to progress in their careers and studies, and to participate in their communities and in civil society (Wheelahan et al. forthcoming; Wheelahan & Moodie 2011; Yu, Bretherton & Schutz 2012).

Capabilities shape the way that individuals live their lives; exercise choice; and exercise autonomy, judgment and creativity at work. They are underpinned by individual, economic, social, cultural and environmental resources; that is, they are concerned with the knowledge, skills and attributes people need to flourish and the resources that will enable them to flourish in their field of activity. Capabilities are differentiated from employability skills or graduate attributes because they are not ‘general’ or ‘generic’. While there are some common foundation capabilities required of all workers (that is, problem-solving skills), aged care workers, for example, apply these in a vastly different context from animal technicians. The characteristics of work as well as the characteristics of the worker are important in enabling productive capabilities (Moodie et al. 2015). In a capabilities approach, the focus is on the development of the individual, and on the knowledge, skills and attributes they need to enable them to be creative problem-solvers and to exercise autonomy *in their domain of activity*. For example, nurses responsible for patient movement in different organisations may be required to operate a patient lift, share information and work in teams, and/or be solely responsible for both their and the patient’s safety. In these various settings, it is evident that the capabilities required of the individual are not independent of their work arrangements and resources, but neither are they so embedded in a particular workplace that they are of marginal relevance to other workplaces and to future (unforeseen) requirements (Corbel et al. 2014).

The capabilities approach starts with the person, and not with specific skills or tasks, and asks about the capabilities that people need to achieve a range of outcomes. Education and training based on capabilities would focus on developing individuals in three domains:

- *The knowledge base of practice*: this includes theoretical knowledge needed for the field of practice, but also for higher level study within the occupation.
- *The technical base of practice*: this includes industry skills, or the ability to perform particular tasks, that transcend particular workplaces.
- *The attributes the person needs for that occupation or profession*: this includes attributes such as ethical practice, but also effective communication skills, the capacity to work autonomously and in teams, creativity, information management and so forth. While these are sometimes described as generic, they are understood differently in different fields of practice and need to be developed within the context of specific disciplines and vocations.

Within the capabilities framework, we define a vocational stream as a set of linked occupations within a broad field of practice where the focus is on the attributes, knowledge and skills a person requires to work within a broadly defined vocation in which educational and occupational progression are combined (Buchanan et al. 2009). A vocation could emerge, for example, from the commonalities

between disability support, aged care and mental health support. The vocation is care work and fosters identification with the field of practice rather than with a specific employer or enterprise. Vocations are underpinned by capabilities. Capabilities link individuals, education and work by identifying the resources that individuals need to develop as autonomous and innovative workers within a broad range of occupations. Qualifications then would prepare students for a broad range of related occupations, support occupational progression through a career, and adapt to meet new and emerging needs.

## Capability and labour dynamics

The relationship between capabilities and workforce development can help to describe new ways of thinking about labour supply and labour demand, and is illustrated in figure 2. The supply of labour, especially its quality, is determined by the following:

- *Access to resources*: individuals need broad capabilities to engage in a field of practice. These capabilities are underpinned by basic individual, economic, social, cultural and environmental resources, such as access to healthcare and education.
- *Capabilities*: these include the fundamental abilities of all citizens and relate to the capacity to flourish – or at least fit in – socially at work and in their broader communities, but also complex capabilities that allow individuals to integrate and synthesise knowledge, skills and attributes to exercise judgement and autonomy in their lives and at work (Winch 2010).
- *Vocational expertise*: this refers to specialised systems of knowledge, technical capacities, intuitions, and reasoning associated with a distinct realm of practice such as in livestock farming, investment management, or nursing.

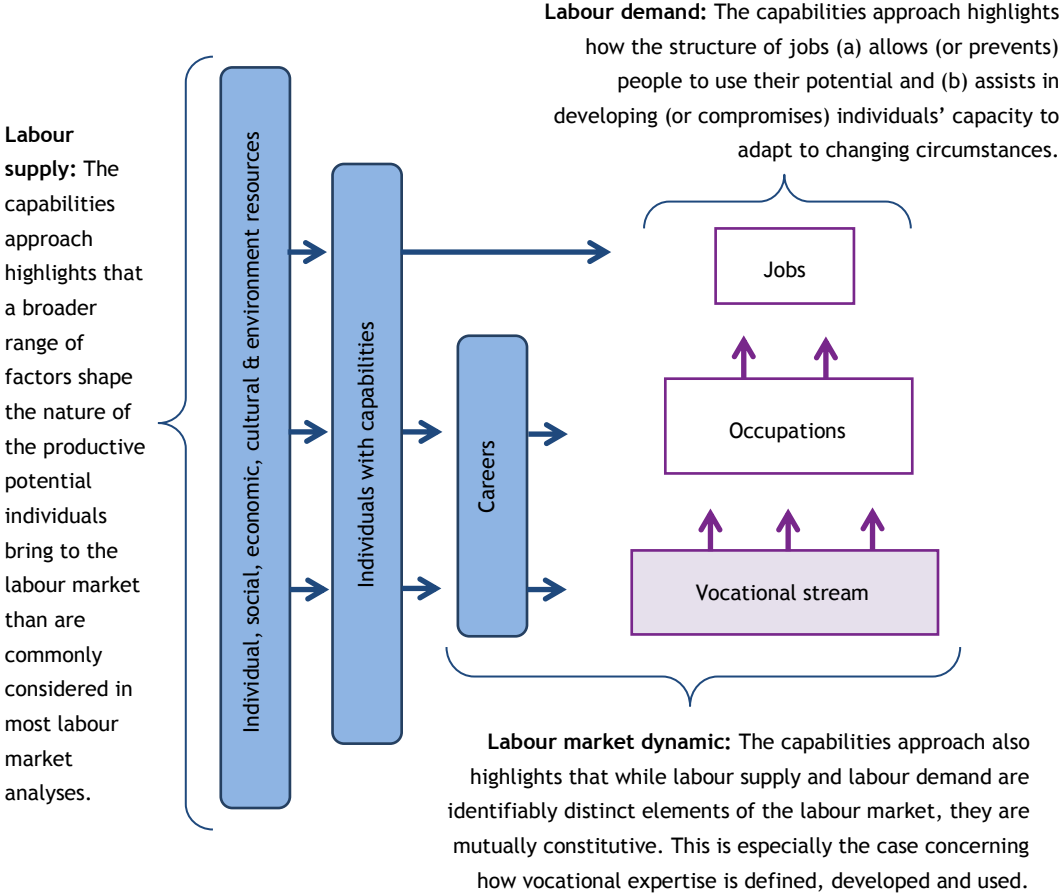
The demand for labour is characterised by the vocational stream's skills ecosystem, a cluster of skills in a particular region or industry which is shaped by the interdependencies between firms, markets and institutions (Buchanan et al. 2001). The conditions governing such a network determine how individuals' capabilities are developed and deployed and contribute fundamentally to career pathways (or separation) within the vocational stream. These conditions include: business settings, institutional and policy frameworks, modes of engaging labour, job structures, and types of skill formation (Buchanan et al. 2001).

These conditions vary substantially between the four case studies considered in this report. This led to clear differences in how workers were recruited, developed (referring to the level and nature of training, as well as the nature of career paths), and deployed. These differences are central to how the vocational streams in each sector are likely to evolve.

Where labour demand and supply interact is a space for social partners to collaborate, and to define and mediate the underpinning capabilities (and training).



**Figure 2 The capabilities approach, labour supply, labour demand and labour market dynamics**



# Appendix B: Research participants

**Table B1 Research participants in Strand 3, 2012**

<b>Agriculture</b>	<b>Financial Services</b>	<b>Healthcare and Community Services</b>	<b>Engineering</b>
Agrifood Skills Australia National Farmers Federation Australian Council of the Deans of Agriculture (ACDA)	Innovation and Business Skills Australia (IBSA) Chartered Financial Analyst (CFA) Institute Financial Services Institute of Australasia (FINSIA)	Community Services and Health Industry Skills Council (CSHISC) Health Workforce Australia (HWA) Victorian Department of Health NSW branch of the Australian Medical Association (AMA) Victorian branch of the Australian Nursing Federation (ANF)	Association of Professional Engineers, Scientists and Managers Australia (APESMA) Communications, Electrical, and Plumbing Union (CEPU) Faculty of Engineering and Surveying at the University of South Queensland (USQ)

# NVETR Program funding

The National Vocational Education and Training Research (NVETR) Program is coordinated and managed by NCVET on behalf of the Australian Government and state and territory governments. Funding is provided through the Australian Government Department of Education and Training.

The NVETR Program is based on national research priorities and aims to improve policy and practice in the VET sector. The research effort itself is collaborative and requires strong relationships with the research community in Australia's universities and beyond. NCVET may also involve various stakeholders, including state and territory governments, industry and practitioners, to inform the commissioned research, and use a variety of mechanisms such as project roundtables and forums.

Research grants are awarded to organisations through a competitive process, in which NCVET does not participate. To ensure the quality and relevance of the research, projects are selected using an independent and transparent process and research reports are peer-reviewed.

From 2012 some of the NVETR Program funding was made available for research and policy advice to National Senior Officials of the then Standing Council for Tertiary Education, Skills and Employment (SCOTESE) Principal Committees. They were responsible for determining suitable and relevant research projects aligned to the immediate priority needs in support of the national VET reform agenda.

For further information about the program go to the NCVET Portal <<http://www.ncvet.edu.au>>.



**National Centre for Vocational Education Research**

Level 11, 33 King William Street, Adelaide, SA 5000  
PO Box 8288 Station Arcade, Adelaide SA 5000, Australia

**Phone** +61 8 8230 8400 **Fax** +61 8 8212 3436

**Email** [ncver@ncver.edu.au](mailto:ncver@ncver.edu.au) **Web** <http://www.ncver.edu.au> <http://www.isay.edu.au>

**Follow us:**  <http://twitter.com/ncver>  <http://www.linkedin.com/company/ncver>

